#### ANALYSING SINGLE NUCLEOTIDE VARIATION IN DRUG RESISTANT STRAINS OF Mycobacterium tuberculosis USING BOWTIE & SAMTOOLS

A Major Project dissertation submitted in partial fulfilment of the requirement for the degree of

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In

**Bioinformatics** 

Submitted by

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CERTIFICATE

This is to certify that the M. Tech. dissertation entitled "ANALYSING SINGLE NUCLEOTIDE VARIATION IN DRUG RESISTANT STRAINS OF *Mycobacterium tuberculosis* USING BOWTIE & SAMTOOLS" submitted by ANU KHERA (2K11/BIO/02) in partial fulfilment of the requirement for the award of the degree of Master of Technology, Delhi Technological University (Formerly Delhi College of Engineering, University of Delhi), is an authentic record of the candidate's own work carried out by her under my guidance.

The information and data enclosed in this dissertation is original and has not been submitted elsewhere for honouring of any other degree.

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## DECLARATION

I hereby declare that this project titled "ANALYSING SINGLE NUCLEOTIDE VARIATION IN DRUG RESISTANT STRAINS OF *Mycobacterium tuberculosis* USING BOWTIE & SAM TOOLS", submitted to Delhi Technological University (Formerly Delhi College of Engineering, University of Delhi), Delhi is the original and independent work carried out by me under the guidance of Dr. Jai Gopal (Associate Professor), Department of Biotechnology, Delhi Technological University, New Delhi, in partial fulfilment of the requirements for the award of Degree of Master of Technology in Bioinformatics and this dissertation or part of it has not been submitted by me for any other degree /diploma in any University/Institute.

Anu Khera

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## LIST OF ABBREVIATIONS

AIDS	Acquired Immuno Deficiency Syndrome
AFLP	Amplified fragment length Polymorphism
BAM	Binary Alignment/Map
BCF	Binary Call Format
BCG	Bacille Calmette Guerin
BWT	Burrows Wheeler Transform
DNA	Deoxyribonucleic Acid
DR	Drug Resistant
EAI	East African Indian
EMBL	European Molecular Biology laboratory
dN	Rate of non-synonymous substitutions
dS	Rate of synonymous substitutions
HGT	Horizontal Gene Transfer
HIV	Human Immuno deficiency Virus
IGRA	Interferon Gamma Release Assays
MDR	Multi Drug Resistant
MTBC	Mycobacterium tuberculosis Complex
NIH	National Institute of Health
qname	Variable used in SAM format
RNA	Ribonucleic Acid

SAM	Sequence Alignment/Map
SNVs	Single Nucleotide Variations
sSNVs SNVs	Synonymous SNVs
nsSNVs SNVs	Non-synonymous SNVs.
ТВ	Tuberculosis
Ts	Transitions
Tv	Transversions
VCF	Variant Call Format
WHO	World Health Organization
XDR	Extremely Drug Resistant
TB	Tuberculosis
Ts	Transitions
Tv	Transversions
WHO	World Health Organization

### Analysing Single Nucleotide Variation in Drug resistant strains of Mycobacterium tuberculosis using BOWTIE & SAMTOOLS

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# ABSTRACT

The occurrence of drug resistance in Mycobacterium tuberculosis, the causative agent of tuberculosis (TB), is hampering the management and control of TB in the world. Genome-wide scans for genetic variation have been conducted with the aim of clarifying the genetic basis of disease, and recent advancements in DNA genotyping technologies have revealed many susceptibility genes and variants for common diseases. It examines the variations among the different strains of same species and relate with trait. The Single Nucleotide Variation in different strains of Mycobacterium tuberculosis were identified using BOWTIE & SAMTools and then examines the impact of SNVs on the virulence and pathogenicity. For this analysis, genome sequences of three strains of Mycobacterium tuberculosis: AAKR, AMXW and AQQC were analyzed for the single nucleotide variations with reference to the H37Rv, a pathogenic laboratory strain. The SNVs were found more in the genic region than in intergenic region. Transition to transversion ratios (Ts/Tv ratio) were also calculated in each strain and analysis of SNVs supports the transitional bias in all the strains. Then further categories the SNVs in different functional categories of TubercuList under lipid metabolism, information pathways, cell wall and cell processes, stable RNAs, insertion seqs and phages. PE/PPE, intermediary metabolism and respiration, regulatory protein, conserved hypotheticals etc. The results suggest that the drug resistant phenotype may be due to changes in a number of genes. This result will further give light on the evolution of drug resistant strains.

# INTRODUCTION

According to World Health Organization (WHO) factsheet of March 2012, Tuberculosis (TB) is second only to HIV/AIDS as the greatest killer worldwide due to a single infectious agent. In 2011, 8.7 million people fell ill with TB and 1.4 million died from TB. It is caused by various strains of *Mycobacterium tuberculosis*, a successful pathogen that has latently infected one third of world population. Though, BCG vaccines are developed for the treatment of the disease, the worldwide emergence of drug resistant strains hampered progress in treatment and control of the disease. These organisms are also resistant to multiple drugs which limit the choice of drugs for TB control (Lawn and Wilkinson, 2006).

A number of studies are ongoing particularly in Mycobacteria to understand the genetic alterations in order to identify the mechanism involved in the resistance (Telenti 1998). These studies based on few target gene sequences. The other major drug resistance in M. tuberculosis is detection of polymorphisms based on methods such as spoligotyping (Sola *et al.* 2000), amplified fragment length polymorphism (AFLP) (Vosa *et al.* 1995) etc.

Availability of complete genome sequences of different strains of drug resistant Mycobacteria gives a way to understand genetic alteration and drug resistance. The comparison of genomic DNA sequence of different individuals (strains) revealed some variations like single nucleotide variations (SNVs), deletions and insertions. Some of the genetic differences, however, have proven to be very important in the study of phenotypic differences among drug resistant strains.

Single nucleotide variations are DNA sequence variations that occur when a single nucleotide (A,T,C,or G) in the genome sequence is altered. SNV might change the DNA sequence. These are the most common form of intra-species variations (Durbin *et al*, 2010). Single-nucleotide polymorphisms may fall within coding sequences of genes, non-coding regions of genes, or in the intergenic regions (regions between genes). Depending on where SNV occurs, it might have different consequences at the phenotypic level (Nicol and Wilkinson, 2008). The researchers divided the SNP data into two major classes: genic and nongenic. Further, the genic SNVs are differentiated into two catagories: synonymous (s SNVS) and non-synonymous (ns SNVs). Synonymous SNVs do not alter the amino acid sequence, whereas, non-synonymous SNVs change the amino acid sequence of a protein. Selection pressure would be stronger in non synonymous mutations of the genic region. (Barreiro *et al* 2008).

The analysis of dN/dS ratio, which is the most widely used statistical test, shows selective pressure in the protein coding region of the genome (Kryazhimskiy and Plotkin, 2008). dN/dS ratio refers to the number of non-synonymous substitution per non-synonymous site to the number of synonymous substitutions per synonymous site.

dN/dS > 1 refers to the positive or purifying selection (changes allowed during natural selection), dN/dS < 1 refers to purifying selection and dN/dS = 1 refers to neutral selection or no selection (Yang *et al*, 2000). Therefore, SNVs may play more direct role in disease by affecting the function of a gene.

*M. tuberculosis* H37Rv is a pathogenic laboratory strain, derived from its parent H37, a clinical isolate obtained from a patient with chronic pulmonary tuberculosis (Zheng *et al*, 2008), and is most widely used strain for tuberculosis research. Genomes of three drug resistant strains AQQC, AAKR, AMXW analyzed for the single nucleotide variations with reference to H37Rv strain. These SNVs were then classified and analyzed for each functional category of TubercuList. Bowtie 0.12.7 (http://Bowtie.cbcb.umd.edu/; Langmead *et al*, 2009) is used for alignment of the strains and all the scripts for genome analysis and SNV detection written in R language using various packages of Bioconductor.

The combination of genomics and bioinformatics has the potential to generate the information and knowledge that will enable the conception and development of new therapies and interventions needed to treat this airborne disease and to elucidate the unusual biology of its etiological agent, *Mycobacterium tuberculosis*.

# **REVIEW OF LITERATURE**

#### 3.1. Tuberculosis

Tuberculosis (TB) is an infectious disease that is caused by a bacterium called *Mycobacterium tuberculosis*. TB is a major cause of illness and death worldwide, especially in Africa and Asia. Each year the disease kills almost 2 million people. The disease is also prevalent among people with HIV/AIDS.

It is transmitted by aerosols containing infectious *Mycobacterium tuberculosis* released from the lungs of infected individuals upon coughing. TB primarily affects the lungs, but it can also affect organs in the central nervous system, lymphatic system, and circulatory system among others *Mycobacterium tuberculosis* 

#### 3.1.1. History

Archaeological evidence from Egyptian mummies indicated manifestation of TB as early as 5000 BC (Schaaf & Zumla 2009). In the  $18^{th}$  and  $19^{th}$  centuries, TB reached epidemic proportions in Europe and North America and was referred to as "The Great White Plague" (Dubos 1952). On March 24, 1882, the German scientist Robert Koch changed the course of TB history when he identified *Mycobacterium tuberculosis* as the causative agent of TB. The discovery of the tubercle bacillus paved the way for great advances in the areas of TB diagnosis, prevention and control.

#### 3.1.2. Epidemiology

According to the Global Tuberculosis Report 2012, tuberculosis remains to be problem worldwide, estimates that there were 8.7 million new cases in 2011 and 1.4 million deaths. In 2010 there were an estimated 8.8 million cases of TB and 1.4 million estimated deaths caused by TB. The highest incidence rate was observed in Asia and African low and middle income counties (Figure 1), reflecting the high prevalence of HIV infection in this region (Raviglione *et al.* 2012). Over 80% of the worldwide TB burden is borne by 22 low-income and middle income countries, with the majority of the estimated cases occurring in Asia (59%) and Africa (26%). The three countries with largest number of incident cases in 2010 were India, China, South Africa, Indonesia, and Pakistan (World Health Organisation, 2011b)

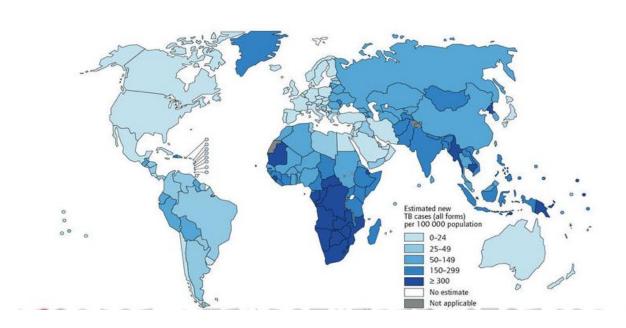


Figure 1. Estimated tuberculosis incidence in 2011 (Global Tuberculosis Report, WHO, 2011b).

#### 3.1.3. Symptoms

When a person becomes infected with tuberculosis, the bacteria in the lungs multiply and cause pneumonia along with chest pain, coughing up blood, and a prolonged cough. In addition, lymph nodes near the heart and lungs become enlarged. As the TB tries to spread to other parts of the body, it is often interrupted by the body's immune system. The immune system forms scar tissue or fibrosis around the TB bacteria, and this helps fight the infection and prevents the disease from spreading throughout the body and to other people. If the body's immune system is unable to fight TB or if the bacteria breaks through the scar tissue, the disease returns to an active state with pneumonia and damage to kidneys, bones, and the meninges that line the spinal cord and brain (Figure 2).

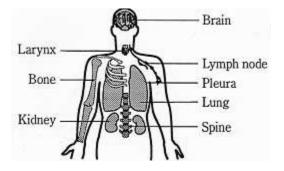


Figure 2. Common sites of Tuberculosis infection

#### 3.1.4. Mechanism

TB infection begins when the Mycobacteria reach the pulmonary alveoli, where they invade and replicate within endosomes of alveolar macrophages (Houben *et al*, 2006). The primary site of infection in the lungs, known as the "Ghon focus", is generally located in either the upper part of the lower lobe, or the lower part of the upper lobe. Tuberculosis of the lungs may also occur via infection from the blood stream. This is known as a Simon focus and is typically found in the top of the lung (Khan, 2011). This hematogenous transmission can also spread infection to more distant sites, such as peripheral lymph nodes, the kidneys, the brain, and the bones.

#### 3.1.5. Diagnosis

A diagnosis of TB when there is sign of lung disease or constitutional symptoms lasting longer than two weeks (Escalante *et al*, 2006). In the initial evaluation chest X-ray and sputum culture can be done. Tuberculin test now a days are of little (Metcalfe *et al* 2011). IGRA have similar limitations in those with HIV. A definitive diagnosis of TB is made by identifying M. *tuberculosis* in a clinical sample (e.g. sputum, pus, or a tissue biopsy). However, the difficult culture process for this slow-growing organism can take two to six weeks for blood or sputum culture. Thus, treatment is often begun before cultures are confirmed (NIH and clinical excellence guideline).

The Mantoux tuberculin skin test is often used to screen people at high risk for TB. Those who have been previously immunized may have a false-positive test result. (Rothel *et al*, 2005). Interferon gamma release assays (IGRAs), on a blood sample, are recommended in those who are positive to the Mantoux test.

#### 3.1.6. Prevention, Treatment and limitation

The DOTS program treatment involves administration of four drugs isoniazid, rifampicin, pyrazinamide and ethambutol for the first two months followed by four months of isoniazid and rifampicin. After 2007, there is lots of tuberculosis strain that are choice resistance to drugs. Hence, there is an urgent need to develop TB regimens that can cure all forms of TB and that are safe and compatible.

Since 1921, *Mycobacterium bovis* bacillus Calmette-Guérin (BCG) has been the only vaccine used against tuberculosis. It is a live attenuated vaccine that was derived upon 230 repeated subcultures of a strain of *Mycobacterium bovis* on potato slices soaked in glycerol and ox bile, leading to the in vitro accumulation of mutations and ultimately attenuation (Calmette 1931). Over 4 billion people have been vaccinated with BCG so far making it the most widely used vaccine in the world (Kaufmann & Hussey 2010). BCG is effective against severe forms of TB in children (Trunz *et al.* 2006), but it offers very little protection against adult pulmonary TB, the most prevalent form of the disease (Fine 1995). In addition, BCG is not recommended for use

children diagnosed as HIV-positive owing to the risk of disseminated BCG.

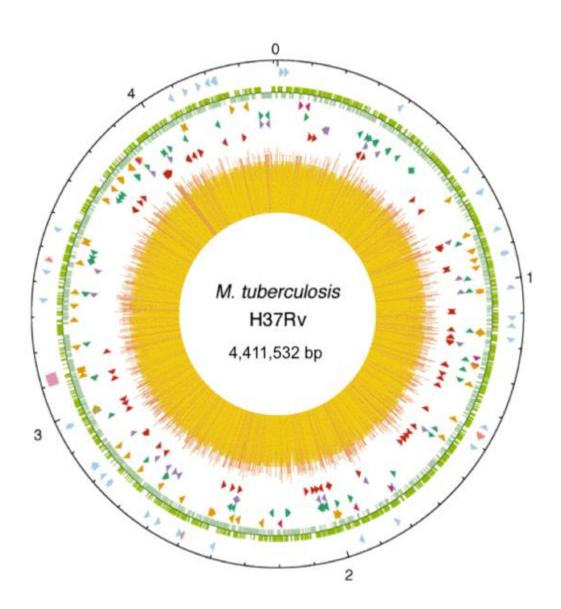
#### **3.2.** *Mycobacterium tuberculosis*

*M. tuberculosis* is a pathogenic, gram-positive bacterial species of genus. Based on the evidence accumulated from these studies, it has been suggested that *M. tuberculosis* evolved in Africa as a human pathogen, where all main M. tuberculosis lineages have been isolated (Hershberg *et al*, 2008). It belongs to the *Mycobacterium tuberculosis* Complex (MTBC), a group of slow growing Mycobacteria that are closely related at the DNA level but their phenotypes and host preferences are different (Brosch *et al*, 2001; Sreevatsan *et al*, 1997). The MTBC includes the human-adapted strains *M. tuberculosis*, *M. africanum* and *M. Canneti*, being *M. cannetti* the most divergent within the MTBC complex (Gutierrez *et al*, 2005).

*M. tuberculosis* H37Rv is a pathogenic laboratory strain, derived from its parent H37, a clinical isolate obtained from a patient with chronic pulmonary tuberculosis (Zheng et al, 2008), and is most widely used strain for tuberculosis research. The complete genome sequence and annotation of this strain was published in 1998 (Cole et al, 1998) (figure 3). The information from this TubercuList project was incorporated into the public database (http://tuberculist.epfl.ch/). The circular *M. tuberculosis* H37Rv genome consists of 4,411,532 bp and displays a high G+C content of 65% (Table 1). It contains over 4000 protein-coding and 50 stable RNA genes, using around 91% of its potential coding capacity. It displays a gene density at one gene per kilobase, which is comparable to other prokaryotes. Genes are evenly distributed on the forward and reverse strands, and 59% of the transcription is in the same polarity as the replication fork. More than half of the coding sequences in *M. tuberculosis* have arisen from gene duplication or domain-shuffling events (Tekaia et al. 1999).

DNA sequence	4,411,532 bp
Protein genes	4,018
Pseudogenes	13
tRNA genes	45
rRNA genes	3
Nc RNA genes	30
Misc RNA genes	2
GC percentage	65.9 %
Gene density	0.91 genes per kb
Average length	1,002 bases per gene
Protein coding percentage	91.2 %
Protein coding bases	4,027,296

Table 1: Genomic features of Mycobacterium tuberculosis H37Rv strain.





The outer circle shows the scale in megabases, with 0 representing the origin of replication. The first ring from the exterior denotes the positions of stable RNA genes (tRNAs are blue, and others are pink) and the direct-repeat region (pink cube); the second ring shows the coding sequence by strand (clockwise, dark green; anticlockwise, light green); the third ring depicts repetitive DNA (insertion sequences, orange; 13E12 REP family, dark pink; prophage, blue); the fourth ring shows the positions of the PPE family members (green); the fifth ring shows the positions of the PE family members (green); the sixth ring shows the positions of the PGRS sequences (dark red). The histogram (center) represents the G+C content, with <65% G+C in yellow and >65% G+C in red (S. Cole et al. 1998).

The *M. tuberculosis* genes have been broadly classified into eleven functional categories (Table 2). The genome sequence highlighted several characteristics of the biology of *Mycobacterium tuberculosis*, which have been summarized below for each functional category.

Category	Function	Number of features	% of total
0	Virulence, Detoxification and adaptation	238	5.8
1	Lipid metabolism	272	6.6
2	Cell wall and cell processes	773	18.9
3	Stable RNAs	73	1.8
4	Insertion seqs and phages	147	3.6
5	PE/PPE proteins	168	4.1
6	Intermediary metabolism and respiration	936	22.9
7	Unknown	16	0.4
8	Information pathways	242	5.9
9	Regulatory proteins	198	4.8
10	Conserved hypotheticals	1032	25.2

Table 2. Broad classification of M. tuberculosis genes according to the functional categories of TubercuList database (Lew *et al.* 2011).

#### 3.3. Drug resistant Mycobacterium tuberculosis strain

Information As of August 2012, the National Center for Biotechnology European (http://www.ncbi.nlm.nih.gov/) and the **Bioinformatics** Institute (http://www.ebi.ac.uk/) databases hold complete genome sequences for 48 Mycobacterial strains and partial sequences (scaffolds/contigs) for 33 strains.

Discrimination between strains of pathogenic bacteria is crucial from an epidemiological perspective. The emergence of multidrug-resistant (MDR) and extensively drug-resistant (XDR) *Mycobacterium tuberculosis* a major public health problem that threatens tuberculosis (TB) care and control in many countries. Molecular 'strain typing' or genotyping tools have been used to study disease outbreaks and transmission (Small *et al.* 1994), to assess the relative contributions of reinfection and reactivation to disease (Van Rie *et al.* 1999), and to address a number of other issues relevant to TB control.

Though, tuberculosis is curable yet it has become one of the leading diseases due to the development of drug resistant strains. These strains hurdles the cure of this disease and make it untreatable. The cause of emergence of these multi drug resistant strains was assumed to be the reduced purifying selection constraints. This reduced constraint might allow the mutation to persist in the drug resistant strain even in the absence of the antibiotic. Therefore this persistence of mutation might have role in the epidemic emergence of the multidrug resistant strains of

*M. tuberculosis* and so multidrug resistant tuberculosis (Hershberg *et al*, 2008).

The drug resistant strains AQQC, AMXW and AAKR isolated from different countries match with the reference genome H37Rv in order to show the variations. AQQC, AMXW, and AAKR are the whole genome shotgun project.

AAKR, AMXW and AQQC consist of whole sequence contigs of *Mycobacterium tuberculosis* strain C, X122 and EAI/OSDD271 resp. AAKR is a drug-susceptible strain that has caused a large proportion of new tuberculosis cases in New York. AAMX is the first isolate of Extensively Drug-Resistant (XDR) *Mycobacterium tuberculosis* in Malaysia.

AQQC is being recently sequenced by IGIB Institute, Delhi is Multidrug resistant *Mycobacterium tuberculosis* East African Indian (EAI) clinical isolate OSDD271.

#### **3.3.1. R and Bioconductor:**

R (http://www.r-project.org/) language is a project designed to create a free, open source language, initially written by Ross Ihaka and Robert Gentleman at the Department of Statistics of the University of Auckland in Auckland, New Zealand. It provides statistical environment and programming language for data analysis and graphics. Bulk of data is generated nowadays using high throughput techniques. Thus, we need to develop the algorithms to perform fast on such big data. R is a complete, interactive, object-oriented language: designed by statisticians, for statisticians. The language provides objects, operators and functions that make the process of exploring, modeling, and visualizing data a natural one. Complete data analyses can often be represented in just a few lines of code.

In addition, thousands of others have contributed additional functionality to the R language by creating add-on "packages" for use by the 2 million users of R worldwide. One such functionality is "BIOCONDUCTOR package".

Bioconductor (http://www.Bioconductor.org/) is based primarily on the R programming language, but also contains contributions of other programming languages. The functional scope of the Bioconductor includes the analysis of all types of genomic data. Bioconductor methods use advanced programming techniques or R resources (such as transparent data base or network access) to minimize memory requirements and integrate with diverse resources. More than 500 Bioconductor packages have been developed for expression and other microarrays, sequence analysis, imaging, and other domains.

Packages provide functionality beyond that available in base R. There are over 4000 packages in CRAN (comprehensive R archive network) and more than 600 Bioconductor packages. Packages are contributed by diverse members of the community; they vary in quality (many are excellent)

and sometimes contain idiosyncratic aspects to their implementation.

The main Bioconductor packages used in high throughput sequence analysis is given in Table 3

Procedure	Packages
Annotation	GenomicFeatures, VariantAnnotation
Data representation	IRanges ,GenomicRanges, GenomicFeatures, Biostrings, BSgenome, girafe
Input / Output	ShortRead, Rsamtools, rtracklayer, VariantAnnotation, R453Plus1Toolbox.
Alignment	Rsubread, Biostrings, R Bowtie, RSamtools, QuasR
ChIP-seq etc.	BayesPeak, baySeq, ChIPpeakAnno, chipseq, ChIPseqR, ChIP-sim, CSAR, DiBind, MEDIPS, mosaics, NarrowPeaks, nu-cleR, PICS, PING, REDseq, Repitools, TSSi.
Database	SRAdb

Table 3 : Bioconductor packages used in High Throughput analysis.

#### 3.4. Comparative analysis of Mycobacterium tuberculosis strain

The new sequencing technologies generated high throughput data in the form of short reads. Aligning these short reads was the computing bottleneck for the analysis of next generation sequencing data. Thus, several alignment softwares have developed to open this bottleneck. They all output in SAM (Sequence Alignment/Map) format, which has become standard alignment format and supported by many other alignment viewers and generic variant callers. Bowtie aligns Illumina reads to human genome at a rate of over 25 million reads per hour. It indexes the reference genome Burrows Wheeler Transform (BWT; Li and Durbin, 2009) to keep its footprint small. Thus it extends the previous Burrows-Wheeler techniques with a novel quality-aware backtracking algorithm that permits mismatches. To achieve even greater alignment speed multiple processor cores can be used simultaneously. Therefore, speed do not hurdles data processing pipeline (Li and Homer, 2010). Bowtie is free, open source software available from its website (http://Bowtie.cbcb.umd.edu/; Langmead *et al*, 2009).

Previously, all the strains of *Mycobacterium tuberculosis* were considered genetically identical but the data from recent studies showed greater genetic diversity than originally expected (Hirsh *et al*, 2004; Gagneux *et al*; 2006, Hershberg *et al*, 2008). This diversity may relate to various phenotypic consequences from virulence to emergence of drug resistance. Duplication may be present in either drug resistant or drug sensitive strain. Multiple duplication of same genic region was reported in different strains of *M.tuberculosis*. Gene duplication might play role in

expression of other genes or the evolution of new gene function (Weiner *et al*, 2012). A greater knowledge of the diversity present in *M. tuberculosis* and MTBC strains can also lead to deeper understanding of the biological consequences associated with strain variability. The variation in circulating *M. tuberculosis* isolates has been critical for identification of strains, outbreaks and changes within the population. Association was also seen with phenotypic properties that are relevant in terms of the disease, such as transmission potential, immunological response and manifestation of the disease (Nicol and Wilkinson, 2008).

Genetic diversity within bacterial species is usually generated by mutations and by the exchange of genetic material. The process of HGT (Horizontal Gene Transfer) is thought to be an important driver of bacterial evolution in both pathogenic and non-pathogenic bacteria (Becq *et al*, 2007). Horizontally transferred genes can be acquired in clusters known as genomic islands or pathogenicity islands that can be identified by characteristics that distinguish them from the host genome, such as GC content, flanking nucleotide repeats and insertion elements. In the case of *M. tuberculosis*, there is evidence of ancient gene transfer events that could have taken place in a progenitor tubercle bacilli pool before the clonal expansion that gave rise to the MTBC (Gutierrez *et al*, 2005).There is a growing recognition that there is substantial genetic diversity among isolates. At the level of SNVs changes can be either synonymous (sSNV) or non-synonymous (nsSNV) and this diversity has been undeniably useful for typing and defining evolutionary relationships among strains.

Comparing DNA sequences of related organisms show an excess of transitional substitutions over the transversional substitutions. This bias could be due to relatively high rate of mutation of methylated cytosine to thymine. Excluding these mutations associated with the methylation left The genome of *Mycobacterium tuberculosis* contains two large gene families named as PE and PPE. Though the function of this gene family is not confirmed, it is thought to be cell surface associated and involved in virulence and antigenic variation of bacteria. PE/PPE genes in H37Rv, comprises 10% of organism's genomic coding potential (Cole *et al*, 1998). It had previously been shown that non-PE/PPE families show the significant variation. However the variations in PE-PPE gene family showed further increase as compared to those non-PE/PPE genes (McEvoy, 2012).

The variation of amino acid substitution rates in proteins depends on several variables. Among these, the protein's expression level, functional category, essentiality, or metabolic costs of its amino acid residues may play an important role. In their analysis, the rate of non-synonymous substitution was shown to correlate with expression levels independently of the rate of synonymous substitution. The results also suggested an important direct influence of expression levels, or at least codon usage bias for translation optimization, on the rates of non-synonymous substitutions in bacteria. It was also indicated that when a control for this variable is included, essentiality plays no significant role in the rate of protein evolution in bacteria (Rocha and Danchin, 2004).

The availability of complete genome sequences of *M. tuberculosis* H37Rv and related strains combined with advances in high-throughput experimental technologies have led to tremendous advances in our knowledge of the evolution, population biology, and virulence of *M.tuberculosis*, which has been applied to the development of new diagnostic tests, better drugs and vaccines against TB.

# METHODOLOGY

Download FASTA files of 3 Supercontigs of drug resistant *Mycobacterium tuberculosis* strain

Supercontigs of 3 *M. tuberculosis* strains: AMXW, AAKR, AQQC were downloaded from Whole Genome Shotgun Sequencing Project of EMBL-EBI (http://www.ebi.ac.uk/genomes/wgs.html). AMXW, AQQC, AAKR are the clinical isolates of drug resistant Malaysian, Indian and USA strain respectively.

AMXW (accession number AMXW01000001:AMXW01000158)

AQQC (accession number AQQC01000001:AQQC01000182) and

AAKR (accession number AAKR01000001:AAKR01000160).

Genomes of all the three AMXW,AQQC, AAKR strains were analyzed for the single nucleotide variations with reference to H37Rv strain.

#### **Obtain fASTA file of reference strain :-**

*Mycobacterium tuberculosis* H37Rv used as reference strain. Obtained the fasta file of complete genome of *Mycobacterium tuberculosis* H37Rv (Accession number NC\_000962.3) from NCBI (http://www.ncbi.nlm.nih.gov/genome/).

#### **Bioconductor installation in R** :-

R is a free software programming language and a software environment for statistical computing and graphics. The R language is widely used among statisticians and data miners for developing statistical software and data analysis. The source code for the R software environment is written primarily in C, Fortran, and R. R is freely available under the GNU General Public License, and pre-compiled binary versions are provided for various operating systems. R uses a command line interface; however, several graphical user interfaces are available for use with R.

Bioconductor provides tools for the analysis and comprehension of high-throughput genomic data. Bioconductor uses the R statistical programming language, and is open source and open development.

Install R, then get the version of Bioconductor by starting R and entering the commands :-

```
source(http://Bioconductor.org/biocLite.R)
biocLite( )
```

There are above 500 different software packages in Bioconductor .

Install the package according to the use using commands in R. Use the biocLite.R script to install Bioconductor packages. To install core packages, type the following in an R command window:

```
source(http://Bioconductor.org/biocLite.R)
biocLite("package name")
```

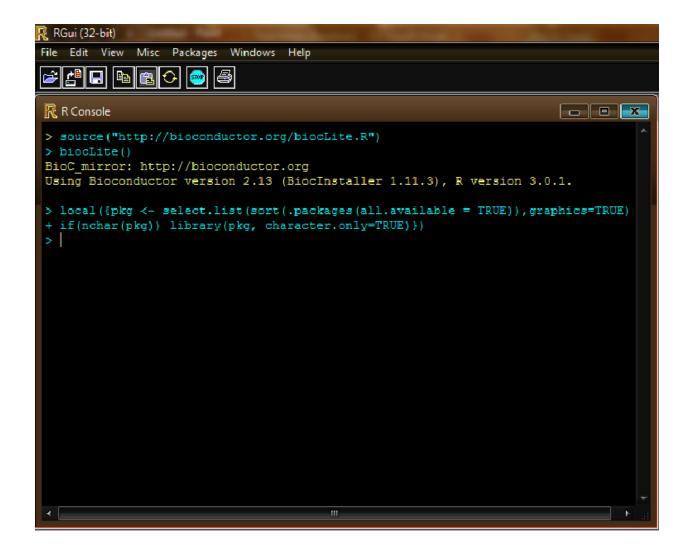


Figure 4. Showing the R window and installation of Bioconductor in R.

#### Generate the short read of 40 bp long stretch for each contig :

Breaking the contig i.e AMXW, AQQC, AAKR into short read of fixed length. Lets take it as 40 bp long.

Biostrings is Bioconductor package used in the analysis. It is memory efficient string containers, string matching algorithms, and other utilities, for fast manipulation of large biological sequences or sets of sequences.

#fasta file of short reads of produced for each strain

```
>AMXW = read.DNAStringSet("AMXW.fa")
>length(AMXW)
>xaa = DNAStringSet(AMXW[[1]], start = seq(1,width(AMXW[1]) - 39,1), width =40)
>amxwfull40mers=xaa;
>for (i in 2:158)
{
    temp = DNAStringSet(AMXW[[i]], start = seq(1,width(AMXW[i]) - 39,1), width =40);
    amxwfull40mers = append(amxwfull40mers, temp)
}
>length(amxwfull40mers)
>names(amxwfull40mers) = as.character(seq(1,4270064,1))
>write.XStringSet(amxwfull40mers,file="amxwfull40mers.fa",format ="fasta")
```

It generates the output file name amxwfull40mers.fa

#### Indexing the reference genome using Bowtie :-

Bowtie is an ultrafast, memory-efficient short read aligner geared toward quickly aligning large sets of short DNA sequences (reads) to large genomes. Bowtie indexes the genome with a Burrows-Wheeler index to keep its memory footprint small. Bowtie can also output alignments in the standard SAM format. Bowtie runs on the command line under Windows, Mac OS X, Linux, and Solaris.

Bowtie-build builds a Bowtie index from a set of DNA sequences. It indexes the genome to keep its memory footprint small. Bowtie build outputs a set of 6 files with suffixes .1.ebwt, .2.ebwt, .3.ebwt, .4.ebwt, .rev.1.ebwt, and .rev.2.ebwt. These files together constitute the index: they are all that is needed to align reads to that reference. The original sequence files are no longer used by Bowtie once the index is built.

Indexing the genome H37Rv in the command prompt using the command :-

bowtie-build H37Rv.fa H37Rv

Then the output generates 6 files which constitute the index :-

- 1. H37Rv.1.ebwt,
- 2. H37Rv.2.ebwt,
- 3. H37Rv.3.ebwt,
- 4. H37Rv.4.ebwt,
- 5. H37Rv.rev.1.ebwt,
- 6. H37Rv.rev.1.ebwt.

#### Indexing of H37Rv used for conversion of SAM to BAM :

Alignment of reference strain H37rv with query strains AMXW, AQQC, AAKR generated output in SAM format. SAM is Sequence Alignment Map which is a TAB-delimited text format contains header section (optional) and alignment section. Alignment section contains 11 mandatory fields and several other optional fields. Thus to improve performance, these SAM files were further manipulated by using SAM tools (Li *et al*, 2009) which converts the SAM format into BAM (Binary Alignment Map) format and generates alignment in per position format, so that we were able to detect the number of reads of query strain representing single base position in the reference genome sequence. SAM format contains the detailed information of alignment, while the BAM format contains the same data in compressed, indexed and binary form to achieve fast random access.

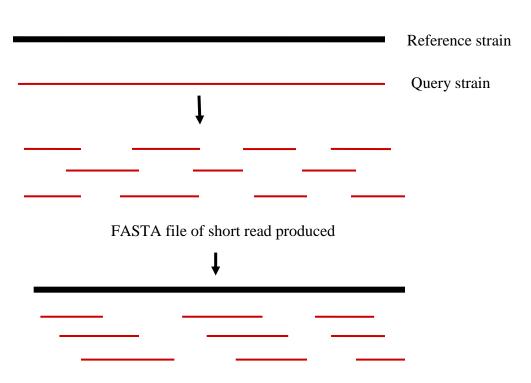
For indexing the reference H37Rv in FASTA format following command was used in command prompt :

samtools faidx H37Rv.fa

This command results into creation of 'H37Rv.fa.fai' file which was further used to convert SAM format into BAM format. BAM files were then sorted and indexed to achieve fast retrieval of alignments overlapping a specified region without going through the whole alignments. Therefore, the alignment was generated in per position format.

#### Alignment using Bowtie :-

Bowtie aligns the short read i.e. amxwfull40mers to the reference H37Rv.fa using the RBowtie, Rsamtools etc. package in R platform (figure 4). Install the RBowtie, Rsamtools, Genomic Ranges and IRanges in R.



Alignment of short read with reference

Figure 4. Representation of alignment using Bowtie.

The parameter used for bowtie alignment is as follows :-

- ✤ -p: the no. processors used for alignment
- ✤ -n: no. of allowed mismatches
- ✤ -l: length of short reads
- ✤ --sam: print alignments in SAM format

Bowtie command in R platform using Rbowtie package :-

>system("bowtie -n 3 -l 40 -sam H37Rv.fa amxwfull40mers.fa amxwfull40mers.sam")

- ✤ #-p 6: no. of processors used
- ✤ #-n 0: Bowtie run on identity
- ✤ #-1 40: length of short read
- ✤ #--sam: print in SAM format

Generate file amxwfull40mers.sam.

It generates the output in SAM format. SAM contains 11 mandatory fields. These fields always

appears in the same order.

The 11 mandatory fields according to their order are as follows:-

- QNAME
- FLAG
- RNAME
- POS
- MAPQ
- CIGAR
- RNEXT
- PNEXT
- TLEN
- SEQ
- QUAL

These 11 mandatory fields either take valus as '0' or '\*'.

'\*' means information is unavailable .

#### Convert SAM to BAM using SAM Tools :-

SAM Tools provide various utilities for manipulating alignments in the SAM format, including sorting, merging, indexing and generating alignments in a per-position format.

Samtools utilities

- ✤ import: SAM-to-BAM conversion
- ✤ view: BAM-to-SAM conversion and subalignment retrieval
- ✤ sort: sorting alignment
- ✤ merge: merging multiple sorted alignments
- index: indexing sorted alignment
- ✤ faidx: FASTA indexing and subsequence retrieval
- tview: text alignment viewer
- pileup: generating position-based output and consensus/indel calling.

SAM is a TAB-delimited text format whereas Bam is binary format. SAM is easy to understand, easy to parse, easy to generate and easy to check for errors. However, SAM is a bit slow to parse. SAM convert into BAM as BAM is human readable version stores the same data but in a compresses, indexed and binary form.

Scripts for converting SAM into BAM :-

>system("samtools import H37Rv.fa.fai amxwfull40mers.sam amxwfull40mers.bam)

Output : generates file amxwfull40mers.bam

BAM is the compressed binary version of the Sequence Alignment/Map (SAM) format, a compact and index-able representation of nucleotide sequence alignments.

#### Sort and create index of BAM file :-

Sorting is used for ordering of the alignments. An SAM/BAM file can be sorted by the reference coordinates, by query names, or unsorted. However, most operations on the alignments only work on a BAM sorted by the leftmost reference coordinate. Such an order is crucial to data processing on a stream and to indexing. A command-line tool is provided to sort an unsorted BAM in the required order.

#### Scripts for sorting :-

>system("samtools sort amxwfull40mers.bam amxwfull40mers\_sorted")

Output :- amxwfull40mers\_sorted.bam

The sort command appends amxwfull40mers.bam to amxwfull40mers\_sorted, creating a BAM file of alignments ordered by leftmost position on the reference assembly.

#### Indexing

As BAM supposed to work on spliced alignments, indexing must be efficient for alignments sppaning long distance on the reference genome.

Scripts used for indexing sorted file :-

>system("samtools index amxwfull40mers\_sorted.bam")

Output :- file name amxwfull40mers\_sorted.bam.bai

The index command generates a new file, amxwfull40mers\_sorted.bam.bai, with which genomic coordinates can quickly be translated into file offsets in amxwfull40mers.sorted.bam.

#### Validation for Duplication :-

Length of the query strain is critical for alignment, because long read would hardly align to any

region of the reference and very short read might show identity to themselves. Very short reads would represent the identical or duplicated reads, therefore, multiple reads aligned at the same region of the reference strain and script would not correctly detect the exact SNV position.

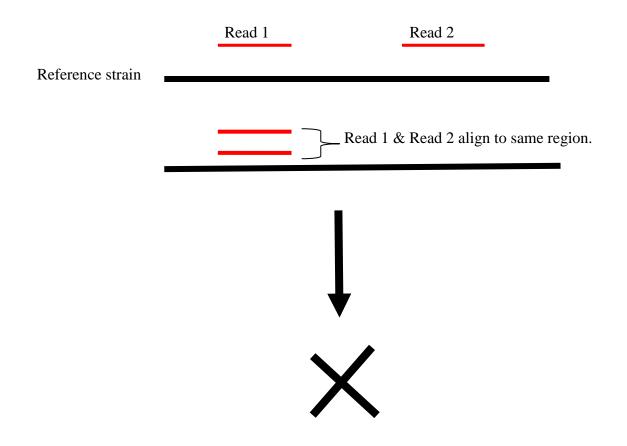


Figure 5. Duplication in the query strain.

In figure 2, read 1 and read 2 are at different paces in genome and found to be identical; therefore, align to the same region of reference genome. The position of SNVs nearby these reads could not be detected correctly. Hence, length of the read should be such that each read should align to the unique region of reference genome. This optimum read length was found to be 40.

#Scripts for validation of duplication:

>properalign = function(x,y) #create properalign function.

{

x1 = read.csv(x, header=T);

```
xaa = GRanges("gi|57116681|ref|NC_000962.2|", IRanges(x1$end, width = 1));
```

#myparam1 retrieve the qname and seq of GRanges object.

```
myparam1 = ScanBamParam(which = xaa, what = c("qname", "seq"));
```

#same for bam file, param decides which fields and what records are imported.

```
tempA = scanBam(y, param = myparam1);
```

tempB = NULL;

```
for (i in 1: length(x1$end))
```

```
{
```

```
tempB = c(tempB, length(tempA[[i]]$qname))
```

};

```
return(tempB)
}
```

Example >tempB1 =properalign("AHHX\_identity\_table.csv","ahhxfull40mers\_aligned\_reads\_sorted.bam")

```
>tempC = which(tempB1 > 1)
```

If no duplicated reads were present in file, tempC would return value to zero.

#### SNV Detection using SAM pile up :-

SNV detection using samtool pileup command by utilising Rsamtools Bioconductor package in R platform.

Scripts used :-

>system ("samtools mpileup –uD –r –f H37Rv.fa amxwfull40mers\_sorted.bam > bcftools view - bvcg - > var.raw.bcf "

Parameter :-

- ✓ -u:- tells ouput into an uncompressed file.
- ✓ -D :- keep read depth for each sample.
- ✓ -r :- region to call SNPs (for whole genome no need to use this)
- ✓ -f :- shows that next argument be the reference genome file.
- ✓ -b :- output to BCF FORMAT
- ✓ -c :- SNP calling
- $\checkmark$  -v : variant sites (exclude monomorphic ones).
- $\checkmark$  -g :- call genotypes for each sample in addition to just calling SNPs.

In the command line above, samtools collects summary information in the input BAMs, computes the likelihood of data given each possible genotype and stores the likelihoods in the BCF format. It does not call variants.

Bcftools applies the prior and does the actual calling. It can also concatenate BCF files, index BCFs for fast random access and convert BCF to VCF. In addition, bcftools can operate on some VCFs (e.g. calling SNPs from GL-tagged VCFs), but not for all VCFs; VCF to BCF conversion is not working at the moment, either.

INDEX	FIELD NAME	DESCRIPTION
1	Chr	Chromosome identifier
2	Pos	1-based coordinate
3	RBase	Reference base
4	CBase	Consensus base
5	CQual	Consensus quality
6	SNP	SNP quality
7	MAPQ	Maximum mapping quality
8	DEPTH	Number of reads covering this site

The pile consensus format consists of :- (Table 4)

9	BASE	Read bases
10	QUAL	Base quality

Table 4. Pile up consensus format.

#### **Convert BCF into VCF :-**

BCF, or the binary variant call format, is the binary version of VCF. It keeps the same information in VCF, while much more efficient to process especially for many samples. The relationship between BCF and VCF is similar to that between BAM and SAM.

Script used

>system("samtools beftools view var.raw.bcf | vcfutils.pl varFilter –D100 >var.flt.vcf")

This line converts the BCF file into a VCF file (a flat text file rather than a binary, making it a lot easier to view), and then we pipe that into vcfutils.pl with the varFilter -D100 option, which filters out SNPs that had read depth higher than 100 (we don't want to trust SNPs at sites with super high coverage, because they might be represent variation between variable copy number repeats, i.e., the reads that map to this location in the reference are actually from duplicated sites in your sample; you can–and should–change this parameter based on the kind of coverage you have in your dataset, e.g., -D500).

The Variant Call Format (VCF) is the emerging standard for storing variant data(figure 6). Originally designed for SNPs and short INDELs, it also works for structural variations.

VCF consists of a header section and a data section. The header must contain a line starting with one '#', showing the name of each field, and then the sample names starting at the 10th column. The data section is TAB delimited with each line consisting of at least 8 mandatory fields (the first 8 fields in the table below). The FORMAT field and sample information are allowed to be absent.

The file lists the chromosome, position, ID, reference allele at that nucleotide position, and alternate alleles detected in our dataset (across all samples). It also tells you the "Quality" – which is basically a measure of how confident Samtools is that there really is a SNP there (higher is better) – and whether or not that SNP passed the quality filters. The "Info" field tells you various statistics about each position; the information in this field can vary, but what exactly each symbol (e.g., NS, DP, etc.) should be explained in the file header. The "Format" field tells

you what type of data are found in the rest of the fields (there should be one additional field for each sample that you ran through Samtools). For example, GT:GQ:DP means that the sample fields for this position tell you the genotype, genotype quality, and depth (coverage) of each sample that you fed into Samtools; again, explanations of these symbol names (GT, GT, DP) can be found in the header of your VCF file.

Col	Field	Description
1	CHROM	Chromosome name
2	POS	1-based position. For an indel, this is the position preceding the indel.
3	ID	Variant identifier. Usually the dbSNP rsID.
4	REF	Reference sequence at POS involved in the variant. For a SNP, it is a
		single base.
5	ALT	Comma delimited list of alternative seuqence(s).
6	QUAL	Phred-scaled probability of all samples being homozygous reference.
7	FILTER	Semicolon delimited list of filters that the variant fails to pass.
8	INFO	Semicolon delimited list of variant information.
9	FORMAT	Colon delimited list of the format of individual genotypes in the following
		fields.
10	Sample(s)	Individual genotype information defined by FORMAT.

Table 5. VCF format

#### Generate table for SNVs detected :-

Alignment of query with reference strain result in mismatches. These SNV detected through BOWTIE and SAMtools command line interface . now these SNVs are generated in table format to analyse the number of SNV occurring .

#### Scripts used

system("samtools pileup -vcf H37Rv.fa amxwfull40mers\_sorted.bam > raw.pileup")

nents.
s.

snps <- readPileup("raw.pileup", variant="SNP")</pre>

#read SNPs

indels <- readPileup("raw.pileup", variant="indel")

#read indels

write.table(as.data.frame(snps), "snps.csv")

# generate SNP excel sheet

These scripts would generate a table showing the SNV position and the nucleotide substitution at that position.

Example :- filter and see some SNPs Let us see first 10 SNPs snps[1:10] table(seqnames(snps))

# table snps per chromosomesnps

<- snps[elementMetadata(snps)\$coverage > 3]

# keep only snps with coverage > 3

#### Genome analysis :-

These SNVs were further categorized into transitions and transversions on the basis of nucleotide change for each strain. The identified SNVs were further classified into genic and intergenic SNVs on the basis of their occurence in the genome. Genic SNVs were further classified into synonymous and non-synonymous SNVs. The annotation for the reference genome obtained from TubercuList and EnsemblBacteria. TubercuList page (figure) has annotated the function of each transcript into 10 categories designated as: cell wall and cell processes, conserved hypotheticals, information pathways, insertion seqs and phages, intermediary metabolism and respiration, lipid metabolism, PE/PPE, regulatory proteins, virulence, detoxification, adaptation and rest for which function was not confirmed are in collectively placed in the a category named as unknown. The list of functional category can be downloaded by submitting the start and end coordinate of the sequence. Besides, the functional category the TubercuList also contains the complete genomic information available till date about *M. tuberculosis* H37Rv strain.

#### Calculate dN/dS ratio :-

In genetics, the dN/dS ratio (or  $\omega$ ,ka/ks),is the ratio of the number of Non synonymous substitutions per non-synonymous site (K<sub>a</sub>) to the number of synonymous substitutions per synonymous site (K<sub>s</sub>), which can be used as an indicator of selective pressure acting on a protein-coding gene. Comparisons of homologous genes with a high dN/dS ratio are usually said to be evolving under positive selection. The dN/dS ratio is used to infer the direction and magnitude

of natural selection acting on protein coding genes. A ratio greater than one implies positive or Darwinian selection; less than one implies purifying (stabilizing) selection; and a ratio of one indicates neutral (i.e. no) selection. However, a combination of positive and purifying selection at different points within the gene or at different times along its evolution may cancel each other out, giving an average value that may be lower, equal or higher than one.

Mycobacterium tuberculosis I	H37Rv	Tul	bercuList
			New website - version 2.6
Quick Search	Advanced Search What's new	w About us TB Mut	Release 27 - March 2013
		<u>BLAST</u> s	earch
Search by peptide moti	f (amino acid one letter code)	Sea	arch
	Free text search	Sea	arch
	Enter author name	Sea	arch M. tuberculosis H37Rv 4.411.522 bp
	Enter protein function	Sea	arch
Search	by Gene Ontology annotation	Sea	arch
		Enter chromosomal r	egion
from	to	kb 💌 Sea	arch
Select functional of	category Choose one category	▼ Sea	arch
	Search protein by Molec	ular mass and Isoelectric	point
Molecul	ar mass:	to	kDa
Isoelectric po	int: to	Sea	arch Swiss Institute of Bioinformatics
			ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE <u>MycoBrowser</u>

Figure 6. Showing the page of TubercuList(http://tuberculist.epfl.ch/) having the information about Mycobacterium tuberculosis strain H37Rv used as reference in the present analysis .

# RESULTS

FASTA file of *Mycobacterium tuberculosis* H37Rv strain downloaded from NCBI contains 4,411,532 bp.

FASTA file of Drug resistant *Mycobacterium tuberculosis* AAKR, AMXW, AQQC strain downloaded from WGS (whole Genome Shotgun) project, they do not include any gaps. The information about the downloaded FASTA file is given in Table 6.

Super	Strain Name	Country	Accession Number	No.	Total Length
Contig		Name		of Contigs	(bp)
Name					
AAKR	Mycobacterium	U.S.A	AAKR01000001:AA	164	4,276,200
	tuberculosis C		KR01000164		
AMXW	Mycobacterium	Malaysia	AMXW01000001:AM	196	4,270,064
	tuberculosis		XW01000196		
	X122				
AQQC	Mycobacterium	India	AQQC01000001:AQ	182	4,169,405
	tuberculosis		QC01000182		
	EAI/OSDD271				

Table 6 :- Showing the information about downloaded fasta files of the 3 Supercontigs.

All the contigs were changed into short sequence reads of 40 bp length. So, the number of short sequence of 40 bp length generated in each contig were:-

- 1. AAKR :- 106905
- 2. AMXW :- 106752
- 3. AQQC :- 104236

The short sequence reads of drug resistant strains of *Mycobacterium tuberculosis* taken from different countries were compared with M. tuberculosis H37Rv strain in a pair-wise manner to identify SNVs. SNVs were identified using programs BOWTIE and SAMTOOLS.

BOWTIE align these short reads of query strain AAKR, AMXW, AQQC with the reference strain *Mycobacterium tuberculosis* H37Rv and generated file in SAM format.

Bowtie output :-

1. AAKR

- # reads processed: 4269960
- # reads with at least one reported alignment: 4197043 (98.29%)
- # reads that failed to align: 72917 (1.71%)

#### 2. AMXW :-

- # reads processed: 4263902
- # reads with at least one reported alignment: 4241291 (99.47%)
- # reads that failed to align: 22611 (0.53%)
- 3. AQQC :-
  - # reads processed: 4162307
  - # reads with at least one reported alignment: 4101745 (98.54%)
  - # reads that failed to align: 60562 (1.46%)

Genome of these three drug resistant strains analyzed using R scripts and various Bioconductor packages and genome wide SNV table generated for each of the three strains. Here, (Table 7) shows regions of query strains that were found to be show variation with the reference H37Rv strain. It shows only 8 SNVs when AQQC Indian strain align with reference strain H37Rv.

Seqnames	Start	End	Reference	Consensus	Consensus	SNP	Max	Cover-
			Base	Base	Quality	Quality	Mapping	-age
							Quality	
gi 448814763 re	1977	1977	А	G	105	190	60	40
f NC_000962.3								
gi 448814763 re	2369	2369	G	А	50	50	60	40
f NC_000962.3								
gi 448814763 re	2532	2532	Т	С	69	69	60	40
f NC_000962.3								
gi 448814763 re	4013	4013	Т	С	70	70	60	40
f NC_000962.3								
gi 448814763 re	6112	6112	G	Т	69	69	60	40
f NC_000962.3								
gi 448814763 re	6124	6124	С	Т	69	69	60	40
f NC_000962.3								
gi 448814763 re	7362	7362	G	С	70	70	60	40
f NC_000962.3								
gi 448814763 re	7585	7585	G	С	50	50	60	40
f NC_000962.3								

Table 7: first 8 SNPs showing when query(AQQC) align with reference strain

Rest of the alignment between AQQC strain *and Mycobacterium tuberculosis* H37Rv showing in supplementary table of Appendix.

Result of alignment between query strain (AMXW and AAKR) and Mycobacterium tuberculosis H37Rv given in the Appendix.

Total SNVs reported :-

- 1. AAKR :- 1623
- 2. AMXW :- 1327
- 3. AQQC :- 2139

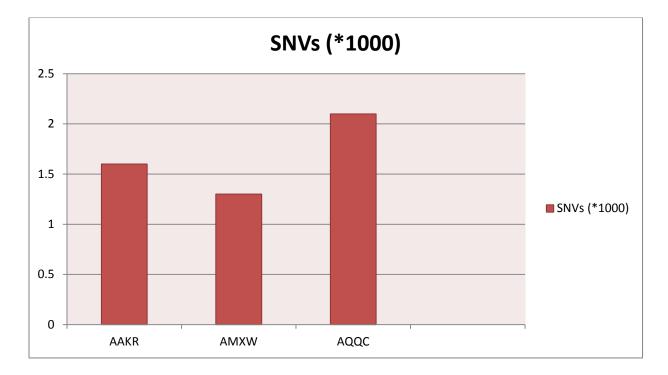


Figure 7. Showing total SNVs reported in each strain.

There is more number of SNVs in AQQC Strain compare to AAKR and AMXW suggest that AQQC are more drug resistant than the other two strain. This can be validated after analysing the synonymous mutation in AQQC.

#### **ANALYSIS OF SNV :-**

More number of SNVs are reported in genic region than intergenic region when compare the SNVs with the H37Rv tuberculosis strain database. Total number of transistions in AAKR, AMXW and AQQC were 868, 789, 1363 respectively. On the other hand the transversions in

AAKR, AMXW and AQQC were 678, 501 and 746 respectively.

#### 1. AAKR :-

Transistion :-

- A → G -- 157
- G→A -- 290
- C→T -- 275
- T→C -- 146 Total :- 868

Transversions :-

- A →C -- 53
  A →T -- 27
- A /1 -- 2/
- G→C --146
- G→T --99
- C→A --130
- C→G --129
- T→A -- 25
- T→G -- 61

Total :- 1546

#### 2. AMXW :-

Transistion :-

•	$A \rightarrow G - 206$
٠	G→A 192
•	C →T 190
•	T→C 201
	Total :-789

Transversions :-

- A →C -- 74
- A →T -- 11
- G→C --112
- G→T -- 68
- C→A -- 72
- C→G -- 97
- T→A -- 10
- T →G -- 57
  - Total : 501

### 3. AQQC :-

Transistion :-

- A → G -- 348
- G→A -- 374
- C→T -- 359
- T→C -- 282
  - Total :- 1363

## Transversions :-

- A →C -- 81
- A →T -- 27
- G→C --147
- G→T -- 129
- C→A --127
- C→G --135
- T→A -- 21
- T→G -- 79

Total :- 746

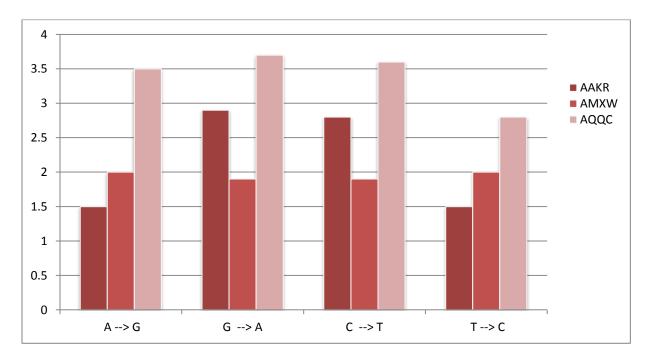
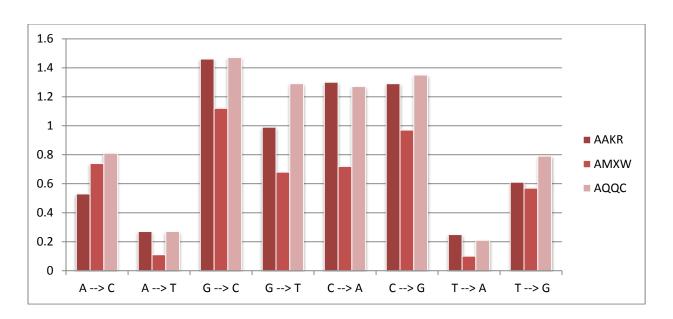
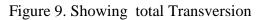


Figure 8. Showing total Transistions.





From the above figure it can be concluded that there were few  $A \rightarrow T$  and  $T \rightarrow A$  conversion.

Ts/Tv (Transistion/Transversion)

Transistion to transversion ratio calculated in each strain.

- 1. AAKR :- 1.280
- 2. AMXW :- 1.575
- 3. AQQC :- 1.827

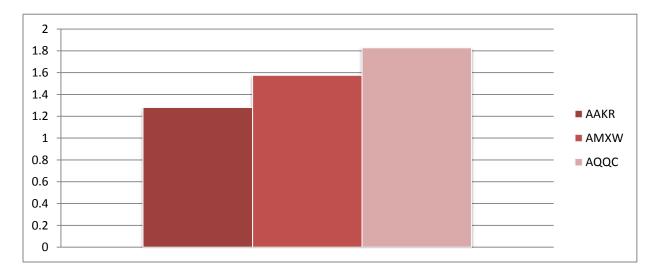


Figure 10. Showing Ts/Tv ratio in each of three strains.

This shows that there is more transistional bias in all the three strains.

Then the further analysis of the SNVs occurring in genic and intergenic region.(figure). The total number of SNVs in genic region of AAKR, AMXW, AQQC were 1207, 982 and 1659 respectively. The total number of SNVs found in intergenic region of AAKR, AMXW, and AQQC were 416, 345 and 480 resp. There is significant number of SNVs in genic region to cause different phenotypic effect, moreover it should result in variation in amino acid sequence of protein. Further categorisation of transistion and transversion in genic and intergenic region reveals that there were more number of transistion occur in both genic and intergenic region in all three strains.

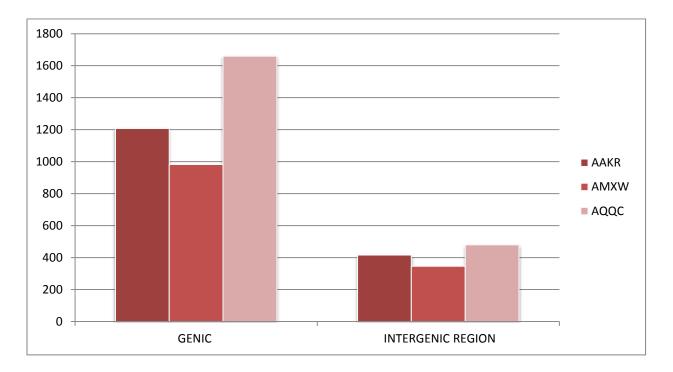
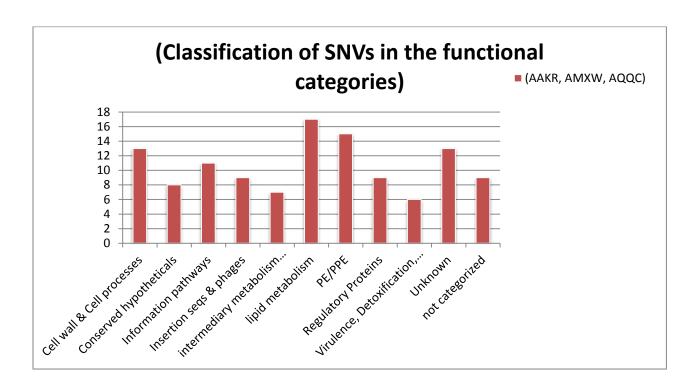


Figure 11. Showing genic and intergenic SNVs in each of the strain.

76 % of the total SNVs reported was found to be in genic region. In the genic region, Ts/Tv ratio is approx. 1.29 further shows the transistional bias in this region.

The genic SNVs were further categorized into synonymous and non-synonymous SNVs for each functional category of TubercuList and this count was normalized by the total no. of genes in each functional category. SNVs reported for unknown category of TubercuList were equal for each strain (Figure 12). Thus percent of SNVs in each category for all the three strains is 13-14% in cell wall and cell processes, 8-9 % in conserved hypotheticals, 10-11% in information pathways,9% insertion seqs and phages, 6-7% in intermediary metabolism and respiration, 17% in lipid metabolism, 13-17% in PE/PPE, 8-10% in regulatory proteins,6-7% in virulence,



detoxification, adaptation, 13% in unknown and 9% of the total SNVs were not categorized.

Figure 12. Showing classification of SNVs in each of the functional category.

#### Natural selection during evolution :-

All the SNVs on checking with synonymous and non synonymous substitution found that in all the three strains non-synonymous substitutions are greater than synonymous substitution.

In all the three strain, dN/dS ratio (ratio of the number of Nonsynonymous substitutions per nonsynonymous site (Ka) to the number of synonymous substitutions per synonymous site (Ks)), is greater than 1. dN/dS ratio calculated for each functional category of the reference to show whether those non synonymous substitution can be positively selected. In all functional category, this value is greater than 1 except in "uncategorised" and "unknown" where its value is less than 1.

So, it can be concluded that changes were accepted during the process of natural selection as the dN/dS ratio in all the three strain are greater than 1.

# DISCUSSION

Many *Mycobacterium tuberculosis* strain shows drug resistance. Some of the genetic variation however useful to identify mechanism involved in resistance. In the present genome wide analysis has shown that variation in *M. tuberculosis* strains may not be due to loss or gain of genes (Ochman *et al.* 2001). Rather, the changes are many, comprising mostly SNVs, small insertions/deletions, alteration in the number of tandem repeats and insertion/deletion. The variation found in the three strains i.e. AAKR, AQQC, AMXW strains of *M. tuberculosis* were more in genic region due to presence of ~91% of coding region in H37Rv strain. In almost all the strains dN/dS ratio greater than one shows that changes are allowed during natural selection. This results in the phenotypic differences in all the strains. The phenotypic properties that are relevant in terms of the disease, such as transmission potential, immunological response and manifestation of the disease (Nicol and Wilkinson, 2008).

In almost all the strains the transitional bias was maintained resulting into more number of transitions than transversions. Adenine to Thymine s and vice versa conversions are very low. Contribution of some specific nucleotide substitution in this bias was also found. Ts/Tv ratio greater than one further validate the transistional bias in all three strains.

Mycobacterium tuberculosis possesses two highly polymorphic sets of genes called the PE and PPE families. These unique families of proteins account for about 10% of the Mycobacterial genome, and is shown by the previous studies on the M.tuberculosis strain.(McEvoy,2012). The higher number of SNVs approx 15% found in PE/PPE gene family. PE/PPE accounts for multiple levels of infectious process including host immune response (Sampson,2011).

The SNVs in the PE/PPE and also in other gene region may effects its function if they fall in the active sites of that protein by changing the binding affinity of ligand of that protein. This information helpful to better understand the immunological importance of PE/PPE proteins and their roles in Mycobacterial virulence.

Comparing all the classes of genes associated with altered metabolism in organisms of different geographical origin. The SNVs belonging to functional categories are likely to affect drug sensitivity directly or indirectly. For example, entry of drugs is an important first step in their action. Changes in the membrane by lipid alteration can alter drug transport processes. Inhibition in the uptake of the drug has been postulated to be a mechanism of drug resistance in Mycobacteria (Raynaud *et al.* 1999).

High throughput approaches are very useful to analysis different strains of same species which can be further used to identify genomic variations and can further linked with phenotypes to obtain biological insights.

# **CONCLUSION AND FUTURE PRESPECTIVE**

The emergence of drug resistance *M.tuberculosis* strain hampered the progress in the treatment of tuberculosis. Variability in the genome of *M. Tuberculosis is* significant barrier in the treatment of tuberculosis. The fully sequenced genomic sequences can be analysed to identify

all the variations and a detailed study can be conducted to correlate genetic and phenotypic differences. This variability plays role in the virulence and survival of this pathogen but extent of the impact of this strain variability is still unclear. High protein coding efficiency of genome of *Mycobacterium tuberculosis* contributes to greater variations in the genic region. Specific nucleotide substitutions lead to the transitional bias of the strains.

In case of non-synonymous substitutions, there is likely to be an alteration in the overall structure. PE/PPE multi-gene family shows maximum variation that may contribute to the host immune response and virulence of the strains. These SNVs may lead to change in function of the resulting protein..

The larger number of SNVs observed in XDR strains suggest that this can be a potential mechanism for the evolution of drug resistance in Mycobacteria. Future work on systems-level analysis of these strains may throw a more definitive light on this important area.

In further study, all the non synonymous mutation and interactions of resulting protein and host immune response can be analyse using computational methods. After analysing effect of SNVs that cause drug resistance, we can develop new therapeutics to control the drug resistant Mycobacterium tuberculosis which helps to control the mortality due to the tuberculosis.

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- http://www.bioconductor.org/
- http://www.r-project.org/

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#### APPENDIX I :-

#### Result of alignment of AAKR strain with Mycobacterium tuberculosis H37Rv

Chromosome	Coordinate Base	ref. Base	Consensus e Qual		SNP ty	MAPQ	Depth
gi  448814763   ref   NC_000962. gi  448814763   ref   NC_000962.	Base 3 1849 3 1977 3 4013 3 7362 3 7572 3 7585 3 9304 3 10345 3 10345 3 10345 3 10345 3 10345 3 10345 3 11820 3 11820 3 11879 3 14785 3 14861 3 15117 3 21795 3 24716 3 26959 3 32804 3 34044 3 36008 3 7305 3 39158 3 42281 3 42967 3 49360 3 50557 3 51949 3 54394 3 55553 3 56738	Base C A T G G G C C A T G C G A C G C C C C C C C C C C C C C C	e Qual A G C C C C C C A C T G G C T G G C T C G G G T T C G G T T	ity Quali 37 105 70 69 50 70 50 69 37 69 69 69 70 43 37 52 69 50 69 50 69 50 69 50 69 50 69 50 69 50 69 50 69 50 70 43 37 52 69 50 70 50 70 70 70 70 70 70 70 70 70 70 70 70 70	ty 37 190 70 69 50 50 69 37 69 69 70 43 37 50 69 50 69 50 69 70 43 37 50 69 50 69 70 50 50 50 50 50 50 50 50 50 5	60 60 60 60 60 60 60 60 60 60 60 60 60 6	40 40 40 40 40 40 40 40 40 40 40 40 40 4
gi  448814763 ref NC_000962. gi  448814763 ref NC_000962.	3  63146 3  69989 3  70267 3  70816 3  71336	A G G G A G	G T A T G C	37 69 70 38 69 50	37 69 70 38 69 50	60 60 60 60 60 60	40 40 40 40 40 40
gi  448814763 ref NC_000962. gi  448814763 ref NC_000962.	3  75247 3  75940 3  87468 3  90111 3  91649 3  92199 3  99166 3  104712		АССТВТВСТС	93 69 102 37 44 69 105 1 48 50	176 69 188 37 44 69 189 1 181 50	60 60 60 60 60 60 60 60 60	40 40 40 21 40 40 7 18 40

gi 448	3814763	ref	NC_000962.3	116000	Т	G	70	70	60	40
gi 448	814763	ref	NC_000962.3	117726	G	Α	37	37	60	40
gi 448	3814763	ref	NC_000962.3	122109	Α	G	37	37	60	40
gi 448	3814763	ref	NC_000962.3	123520	Т	С	70	70	60	40
gi 448	814763	ref	NC_000962.3	132417	Ċ	G	37	37	60	40
			NC_000962.3	133839	ē	Ť	70	70	60	40
			NC_000962.3	141889	Ã	Ġ	102	176	60	40
			NC_000962.3	143207	Ť	č	69	69	60	40
			NC_000962.3	146087	Ť	č	70	70	60	40
			NC_000962.3	147262	Ġ	Ť	37	37	60	40
			NC_000962.3	154082	č	Ť	96	169	60	40
			NC_000962.3	154191	Ă	Ġ	27	68	60	12
i			NC_000962.3	154283	÷.	č	26	26	60	40
i			NC_000962.3	157884	ć	Ğ	37	37	60	40
i			NC_000962.3	170156			70	70	60	40
i					G	Ç				
i			NC_000962.3	175994	G	A	105	189	60	40
i			NC_000962.3	177857	Ģ	A	69	69	60	40
i			NC_000962.3	188800	Ţ	ç	69	69	60	40
- 1 - i			NC_000962.3	190816	A	ç	50	50	60	40
i			NC_000962.3	194681	G	ç	70	70	60	40
i			NC_000962.3	196642	ē	Т	69	69	60	40
			NC_000962.3	199470	Ţ	G	70	70	60	40
			NC_000962.3	200697	Ţ	G	69	69	60	40
I			NC_000962.3	203826	G	A	39	39	60	40
			NC_000962.3	206339	т	C	50	50	60	40
			NC_000962.3	208782	А	C	70	70	60	40
			NC_000962.3	210136	G	Α	69	69	60	40
			NC_000962.3	216469	C	т	102	189	60	40
			NC_000962.3	217201	Т	C	102	189	60	40
			NC_000962.3	223942	Т	C	69	69	60	40
			NC_000962.3	225323	Т	C	69	69	60	40
gi 448	3814763	ref	NC_000962.3	227098	Т	C	102	189	60	40
gi 448	3814763	ref	NC_000962.3	230170	C	Т	39	39	60	40
gi 448	3814763	ref	NC_000962.3	231114	C	G	37	37	60	40
	3814763	ref	NC_000962.3	249522	Т	C	105	188	60	40
	814763	ref	NC_000962.3	251575	G	Α	96	189	60	40
gi   448	814763	ref	NC_000962.3	261869	Т	C	96	183	60	40
gi 448	814763	ref	NC_000962.3	262268	Α	т	69	69	60	40
			NC_000962.3	264129	G	Α	93	188	60	40
			NC_000962.3	265554	Α	C	102	189	60	40
			NC_000962.3	275392	C	Ť	105	190	60	40
			NC_000962.3	278681	ē	Ġ	50	50	60	40
			NC_000962.3	282393	č	Ă	37	37	60	40
			NC_000962.3	282892	č	Ť	69	69	60	40
			NC_000962.3	283614	Ť	ċ	69	69	60	40
01 448	814763	ref	NC_000962.3	285772	Å	č	71	71	60	34
01 448	814763	ref	NC_000962.3	285799	Ĝ	Ť	26	26	60	34
01 448	814763	ref	NC_000962.3	285871	A	Ġ	69	69	60	40
01 440	814762	ref	NC_000962.3	300111	ĉ	G	70	70	60	40
01/440	81/762	rof	NC_000962.3	304923	Ă	Ğ	39	39	60	40
			NC_000962.3	308061	ĉ	T	69	69	60	40
						G	70			
9ij440	0014/05	rer	NC_000962.3	309847	Α	G	70	70	60	40

ai	448814763 ref	NC 000962.31	310973	G	Α	102	189	60	40
	448814763 ref		311613	Ğ	T	69	69	60	40
	448814763 ref		321558	č	Ť	52	52	60	40
	448814763 ref		324809	č	Ġ	69	69	60	40
gi	448814763 ref	INC_000962.51	325505	Ţ	ç	70	70	60	40
	448814763 ref		331737	G	ç	52	52	60	40
gj	448814763 ref	NC_000962.3	336005	G	A	70	70	60	34
	448814763 ref		336050	Α	G	39	111	60	18
gi	448814763 ref	NC_000962.3	336053	G	C	33	65	60	15
qi	448814763 ref	NC_000962.3	338768	G	Α	9	34	60	6
	448814763 ref		338810	G	C	44	44	60	19
	448814763 ref		340343	ē	Ť	53	53	60	34
i	448814763 ref	NC 000962 3	340372	Ť	ċ	70	70	60	34
3	448814763 ref	NC 000962 3	342146	À	č	69	69	60	40
	448814763 ref		344952	Â	Ğ	69	69	60	40
91	440014703 rei	INC_000962.31							
	448814763 ref		346275	ç	G	37	37	60	40
gj	448814763 ref	NC_000962.3	353309	G	A	69	69	60	40
gj	448814763 ref	NC_000962.3	353365	G	A	105	188	60	40
gı	448814763 ref	NC_000962.3	356528	А	G	69	69	60	40
gi	448814763 ref	NC_000962.3	360809	G	A	50	50	60	40
gi	448814763 ref	NC_000962.3	367492	C	G	37	37	60	40
qi	448814763 ref	NC_000962.3	368102	Т	W	29	29	60	25
āi	448814763 ref	NC 000962.3	372913	Α	C	49	49	60	40
	448814763 ref		372987	Ť	č	102	190	60	40
	448814763 ref	NC 000962 3	374126	Ť	č	69	69	60	40
3	448814763 ref	NC 000962 31	376774	÷	č	69	69	60	40
	448814763 ref		384380		č	69	69	60	40
				A	G				
gi	448814763 ref	INC_000962.31	386432	ç		32	32	60	40
gi	448814763 ref	NC_000962.3	390828	Ţ	C	69	69	60	40
gj	448814763 ref	NC_000962.3	391853	Α	G	69	69	60	40
	448814763 ref		392261	т	C	69	69	60	40
	448814763 ref		396199	т	C	50	50	60	40
gi	448814763 ref	NC_000962.3	401678	С	A	33	56	60	14
gi	448814763 ref	NC_000962.3	403980	G	A	69	69	60	40
āi	448814763 ref	NC_000962.3	404326	т	C	37	37	60	40
āi	448814763 ref	NC 000962.3	410538	Α	C	50	50	60	40
	448814763 ref		414486	c	Ť	39	39	60	40
	448814763 ref		415129	Ā	Ġ	69	69	60	40
91	448814763 ref	NC 000962 31	420008	Â	Ğ	69	69	60	40
91	448814763 ref	NC 000962.31	424981	Ĝ	A	37	37	60	40
gi	440014703 rei	NC_000962.31							
gi	448814763 ref	INC_000962.51	434023	ç	Ţ	69	69	60	40
	448814763 ref		445780		Ţ	102	190	60	40
	448814763 ref		454295	Ţ	C	31	31	60	38
	448814763 ref		454333	т	G	69	69	60	38
	448814763 ref		457452	т	G	70	70	60	40
	448814763 ref		459399	Α	C	105	188	60	40
gi	448814763 ref	NC_000962.3	467585	G	C	48	182	60	17
	448814763 ref		467590	Т	C	48	57	60	17
	448814763 ref		467621	т	G	72	72	60	28
	448814763 ref		467638	Ġ	Ť	38	38	60	37
	448814763 ref		471347	č	Ť	69	69	60	40
	448814763 ref		475178	Ť	ć	69	69	60	40
					Ť				
	448814763 ref		475651	ç		69	69	60	40
	448814763 ref		477234	Ţ	Ģ	19	19	60	40
	448814763 ref		477737	ç	Ţ	102	189	60	40
	448814763 ref		483526	A	C	105	190	60	40
	448814763 ref		483935	Ţ	G	49	49	60	40
	448814763 ref		484596	C	Т	69	69	60	40
gi	448814763 ref	NC_000962.3	486341	Α	C	105	190	60	40

ai	448814763 ref	NC_000962.31	489240	Α	G	69	69	60	40
	448814763 ref		489935	G	C	37	37	60	40
	448814763 ref		491742	Ť	č	26	26	60	40
	448814763 ref		492150	Ġ	č	25	25	60	40
	448814763 ref		497491	Ğ	Ă	105	189	60	40
	448814763 ref		498531	Ă	Ĝ	70	70	60	33
	448814763 ref		498557	ĉ	A	84	187	60	33
	448814763 ref			č	Ĝ	50	50		40
			502589		č			60	
	448814763 ref		503354	G		102	190	60	40
	448814763 ref		505974	G	A	70	70	60	40
	448814763 ref		506125	ç	Ţ	70	70	60	40
	448814763 ref		513257	Ţ	ç	105	190	60	40
	448814763 ref		517358	Ţ	ç	69	69	60	40
	448814763 ref		519116	ç	G	102	189	60	40
	448814763 ref		522053	C	A	50	50	60	40
gi	448814763 ref	NC_000962.3	524891	ç	A	50	50	60	40
	448814763 ref		529255	ç	A	39	39	60	40
	448814763 ref		541201	A	G	69	69	60	40
	448814763 ref		542014	C	G	69	69	60	40
	448814763 ref		546357	Α	G	37	37	60	40
g1	448814763 ref	NC_000962.3	549671	Т	C	105	190	60	40
g1	448814763 ref	NC_000962.3	550941	Α	G	105	190	60	40
	448814763 ref		551077	С	т	105	188	60	40
	448814763 ref		551525	Α	C	69	69	60	40
	448814763 ref		555991	А	G	50	50	60	40
	448814763 ref		565655	А	G	37	37	60	40
	448814763 ref		565745	C	т	69	69	60	40
	448814763 ref		570641	С	A	69	69	60	40
	448814763 ref		572417	С	G	69	69	60	40
	448814763 ref		572591	С	т	50	50	60	40
	448814763 ref		573262	Α	G	105	189	60	40
ģi	448814763 ref	NC_000962.3	574139	C	т	69	69	60	40
ģi	448814763 ref	NC_000962.3	584171	Т	C	69	69	60	40
ģi	448814763 ref	NC_000962.3	590436	Т	C	69	69	60	40
	448814763 ref		597816	Α	G	69	69	60	40
	448814763 ref		598475	G	Α	105	189	60	40
	448814763 ref		599868	Α	G	37	37	60	40
	448814763 ref		610120	Т	G	52	52	60	40
qi	448814763 ref	NC_000962.3	623422	т	Y	118	118	60	36
gi	i		623472	A	G	70	70	60	36
ai	448814763 ref		623508	C	G	37	37	60	36
	448814763 ref		623842	C	т	45	178	60	18
	448814763 ref		623851	C	т	18	124	60	9
	448814763 ref		624162	G	Ċ	27	69	60	12
	448814763 ref		624497	ē	Ŧ	38	38	60	40
	448814763 ref		627485	Ğ	Â	102	189	60	40
	448814763 ref		628303	Ā	ĉ	69	69	60	40
	448814763 ref		628864	Ť	č	37	37	60	40
	448814763 ref		636195	À	č	105	190	60	40
	448814763 ref		637319	G	Ă	25	25	60	40
	448814763 ref		638899	č	Â	70	70	60	40
	448814763 ref		640954	Ă	Ĝ	37	37	60	40
	448814763 ref		643813	ĉ	Ť	50	50	60	40
	448814763 ref		646138	č	÷	102	189	60	40
	448814763 ref		648002	Ť	Ġ	102	189	60	40
	448814763 ref		648465	Å	G	69	69	60	40
	448814763 ref		648856	Ť	č	105	189	60	40
	448814763 ref		655986	÷	G	99	189	60	40
	448814763 ref		657081	ć	T	99	189	60	40
gı	1440014/00 liter	Inc_000302.31	007001	C		33	105	00	40

ai	448814763 ref	NC_000962.3	657142	С	т	99	189	60	40
	448814763 ref		659341	Т	C	105	189	60	40
	448814763 ref		660424	ċ	Ť	37	37	60	40
	448814763 ref		662546	č	Ġ	37	37	60	40
	448814763 ref		662624	Ă	Ğ	70	70	60	40
	448814763 ref	INC 000962 31	662911	Ŧ	č	70	70	60	40
91	448814763 ref	INC_000962.31			Ğ	37	37		40
			665293	A				60	
gi			666070	G	A	38	38	60	40
	448814763 ref		669398	Ţ	ç	37	37	60	40
gj	448814763 ref	NC_000962.3	669565	Т	G	102	190	60	40
gj	448814763 ref	NC_000962.3	670545	G	A	102	189	60	40
gı	448814763 ref	NC_000962.3	672491	С	G	50	50	60	40
	448814763 ref		680072	С	т	99	189	60	40
			685461	С	G	26	26	60	40
	448814763 ref		685608	Т	C	69	69	60	40
gi	448814763 ref	NC_000962.3	686972	Т	C	25	25	60	40
gi	448814763 ref	NC_000962.3	690450	Α	C	50	50	60	38
gi	448814763 ref	NC_000962.3	690465	Т	G	39	39	60	38
ģi	448814763 ref	NC_000962.3	695160	G	Α	69	69	60	40
ai	448814763 ref		696917	G	т	105	189	60	40
ai	448814763 ref	NC 000962.3	698968	G	A	102	188	60	40
ai	448814763 ref	NC 000962.3	701183	ē	A	50	50	60	40
	448814763 ref		707334	Ť	ĉ	50	50	60	40
gi	448814763 ref		709200	ċ	Ă	38	38	60	40
	448814763 ref		712693	Ă	Ĝ	105	189	60	40
	448814763 ref		713310	Ŧ	č	69	69	60	40
	448814763 ref	INC 000962 31	717730	Ġ	Ă	102	186	60	40
	448814763 ref		720176	č	Â	102	189	60	40
			724288	č	÷	39	39	60	40
				G		26	26	60	40
	448814763 ref		725190		A				
gi	448814763 ref	INC_000962.31	726857	G	ç	69	69	60	40
	448814763 ref		741458	ç	Ţ	69	69	60	40
	448814763 ref		749176	A	G	70	70	60	40
			754186	A	G	31	31	60	40
gj			757139	ç	A	102	188	60	40
	448814763 ref		757182	Α	G	69	69	60	40
	448814763 ref		761155	C	Т	69	69	60	40
gj	448814763 ref		763031	Т	C	69	69	60	40
gi			765121	G	A	52	52	60	40
gi	448814763 ref		765570	С	Т	69	69	60	40
	448814763 ref		767414	G	A	69	69	60	40
gi	448814763 ref	NC_000962.3	771396	G	A	70	70	60	40
gi	448814763 ref	NC_000962.3	772684	G	Т	69	69	60	40
gi	448814763 ref	NC_000962.3	775639	Т	C	105	190	60	40
qi	448814763 ref	NC_000962.3	776100	G	Α	69	69	60	40
	448814763 ref		781395	т	C	37	37	60	40
	448814763 ref		793696	C	G	37	37	60	40
ai	448814763 ref	NC 000962.3	794798	G	Ā	105	188	60	40
	448814763 ref		798355	G	C	25	25	60	40
	448814763 ref		798769	č	Ğ	50	50	60	40
	448814763 ref		799115	č	Ğ	37	37	60	40
	448814763 ref		808434	Ť	Ğ	69	69	60	40
91	448814763 ref	NC 000962 3	809958	Ġ	Ť	102	190	60	40
	448814763 ref		811753	č	Ť	102	189	60	40
	448814763 ref		820483	Ğ	ť	39	39	60	40
	448814763 ref		820752	č	Ť	99	190	60	40
	448814763 ref		827041	Ť	Ġ	26	26	60	40
	448814763 ref		841764	Ġ	č	70	70	60	40
	448814763 ref		847995	T	č	37	37	60	40
gr	14400T4\0211.6L	INC_000302.31	04/333	1	C C	57	37	00	40

gi	448814763	ref	NC_000962.3	852910	C	т	39	39	60	40
gi			NC_000962.3	857696	Ā	Ġ	69	69	60	40
			NC_000962.3	863233	Ĝ	Ť	105	189	60	40
			NC_000962.3	866439	A	Ġ	50	50	60	40
<u>g</u> 1										
gj			NC_000962.3	875561	A	G	69	69	60	40
_ g1			NC_000962.3	876141	G	Ţ	69	69	60	40
g1			NC_000962.3	880562	G	т	70	70	60	40
gi			NC_000962.3	882257	т	C	99	189	60	40
gi			NC_000962.3	891011	А	G	72	72	60	28
gi	448814763	ref	NC_000962.3	891220	C	Т	54	74	60	20
gi			NC_000962.3	893733	т	G	69	69	60	40
gi			NC_000962.3	894554	ċ	Ğ	96	190	60	40
gi			NC_000962.3	900221	Ŧ	č	52	52	60	40
gi			NC_000962.3	903537	Ġ	Ť	70	70	60	40
			NC_000962.3	903550	Ť	ć	37	37	60	40
							50	50		
<u>g</u> j			NC_000962.3	903687	Ē	A			60	40
gj			NC_000962.3	903913	Ţ	C	105	190	60	40
_ g1			NC_000962.3	906857	Α	G	70	70	60	40
g1			NC_000962.3	907373	G	Α	102	188	60	40
gi			NC_000962.3	911655	G	Α	69	69	60	40
gi			NC_000962.3	923026	G	т	25	25	60	40
gi	448814763	ref	NC_000962.3	925453	C	Т	69	69	60	40
gi	448814763	ref	NC_000962.3	931123	т	C	102	190	60	40
gi			NC_000962.3	932280	Ť	č	69	69	60	40
gi			NC_000962.3	934230	ċ	Ğ	37	37	60	40
gi			NC_000962.3	934611	Ğ	Ť	37	37	60	40
			NC_000962.3	937975	č	÷	69	69	60	40
<u>g</u> 1			NC_000962.3	940602	ç	G	39	39	60	40
gj			NC_000962.3	941845	ç	A	105	189	60	40
_ g1			NC_000962.3	945214	G	A	69	69	60	40
g1			NC_000962.3	945915	C	т	105	188	60	40
gı			NC_000962.3	949535	т	C	69	69	60	40
gi			NC_000962.3	955524	А	G	50	50	60	40
gi	448814763	ref	NC_000962.3	957117	Т	C	50	50	60	40
gi		ref	NC_000962.3	960367	Α	G	69	69	60	40
gi			NC_000962.3	967387	Α	G	70	70	60	40
gi			NC_000962.3	969762	C	G	50	50	60	40
gi			NC_000962.3	971779	Ŧ	č	105	190	60	40
gi			NC_000962.3	972980	ċ	Ť	69	69	60	40
			NC_000962.3	979704	Ğ	ċ	50	50	60	40
		-			-	_	_		_	
9	440014703	rei	NC_000962.3	986463	Ģ	C	25	25	60	40
			NC_000962.3	989418	Ţ	ç	105	189	60	40
			NC_000962.3	990001	G	ç	26	26	60	40
_ g1	448814/63	ret	NC_000962.3	993346	A	C	19	19	60	40
gı	448814763	ret	NC_000962.3	1013213		A	50	50	60	40
			NC_000962.3	1017836		G	37	37	60	40
			NC_000962.3	1022003		C	50	50	60	40
gi	448814763	ref	NC_000962.3	1023277	G	Α	69	69	60	40
gi	448814763	ref	NC_000962.3	1024346		G	69	69	60	40
ai	448814763	ref	NC_000962.3	1025106		c	52	52	60	40
			NC_000962.3	1037012		č	105	190	60	40
			NC_000962.3	1037911		Ť	105	187	60	40
gi			NC_000962.3	1038962		÷	3	7	60	6
			NC_000962.3	1038362		Ġ	69	69	60	40
91	1440014/03	nof	NC_000962.3	1040345				189	60	40
gi	440014/03	n er	INC_000902.3			ç	105			
			NC_000962.3	1048350		G	50	50	60	40
			NC_000962.3	1054007		ç	69	69	60	40
			NC_000962.3	1054189		<u>c</u>	70	70	60	40
gi	448814763	ref	NC_000962.3	1054685	C	т	70	70	60	40
1.1										

qi	448814763 ref	NC_000962.3	1054784 C	G	69	69	60	40
	448814763 ref		1057334 T	C	69	69	60	40
	448814763 ref		1068151 T	č	105	190	60	40
ai	448814763 ref	NC 000962.3	1068432 A	Ğ	105	189	60	40
gi	i		1070687 C	Ğ	70	70	60	39
	448814763 ref		1070702 T	č	50	50	60	39
31	448814763 ref	NC 000962 3	1073309 A	č	70	70	60	40
	448814763 ref		1074558 G	Ă	32	32	60	40
	448814763 ref		1075279 T	ĉ	105	183	60	40
g1	i		1075904 T	č	69	69	60	40
<u>g</u> 1				T				
<u>g</u> i	448814763 ref	INC_000962.3	1076309 G		69	69	60	40
gi	448814763 ref	NC_000962.3	1077312 A	G	105	183	60	40
gi	448814763 ref	NC_000962.3	1079927 C	A	50	50	60	40
	448814763 ref		1080013 C	Ţ	31	31	60	40
	448814763 ref		1080192 G	A	69	69	60	40
	448814763 ref		1081681 T	ç	50	50	60	40
	448814763 ref		1084194 T	G	70	70	60	40
	448814763 ref		1087193 G	C	69	69	60	40
gi	448814763 ref		1093406 A	G	50	50	60	40
gı	448814763 ref		1093928 G	R	105	151	60	26
gi			1094567 C	A	50	50	60	39
gi			1095990 C	G	6	12	60	5
gi	448814763 ref	NC_000962.3	1097220 C	т	69	69	60	40
	448814763 ref		1098523 T	A	37	37	60	40
ģi	448814763 ref	NC_000962.3	1099058 G	A	69	69	60	40
	448814763 ref		1099797 C	Α	105	189	60	40
qi	448814763 ref	NC_000962.3	1100234 T	C	37	37	60	40
	448814763 ref		1102468 C	Α	69	69	60	40
ai	448814763 ref	NC 000962.3	1103046 G	C	102	190	60	40
	448814763 ref		1104690 T	G	37	37	60	40
	448814763 ref		1104944 C	T	99	189	60	40
gi	448814763 ref		1106422 T	ċ	70	70	60	40
qi	i		1106464 G	Ā	69	69	60	40
	448814763 ref	NC 000962.3	1107940 A	ĉ	105	189	60	40
01	448814763 ref	NC 000962.3	1109975 A	Ğ	37	37	60	40
	448814763 ref		1111448 A	Ğ	69	69	60	40
gi	448814763 ref		1126889 G	č	70	70	60	40
gi	448814763 ref		1127469 C	Ť	69	69	60	40
qi			1127648 C	Å	37	37	60	40
	448814763 ref		1135498 C	î	70	70	60	40
	448814763 ref		1135798 C	Ť	69	69	60	40
	448814763 ref		1144585 A	Ġ	37	37	60	40
	448814763 ref		1144585 A 1146909 C	G	69	69	60	40
				G				40
	448814763 ref		1148259 A		50	50	60	
<u>gi</u>	448814763 ref	INC_000962.3	1149551 C	Ţ	37	37	60	40
gi	448814763 ref	NC_000962.3	1150402 C	T	99	190	60	40
	448814763 ref		1150585 G	A	52	52	60	40
	448814763 ref		1151054 C	G	69	69	60	40
	448814763 ref		1160770 T	A	51	182	60	20
	448814763 ref		1161026 G	A	42	177	60	17
gj	448814763 ref	NC_000962.3	1163134 T	ç	19	19	60	40
	448814763 ref		1164336 G	A	102	189	60	40
	448814763 ref		1168776 T	G	96	188	60	40
	448814763 ref		1171107 G	<u>c</u>	37	37	60	40
	448814763 ref		1173750 G	Т	69	69	60	40
	448814763 ref		1175343 C	Т	69	69	60	40
	448814763 ref		1178116 T	C	69	69	60	40
	448814763 ref		1181132 A	G	19	19	60	40
gi	448814763 ref	NC_000962.3	1189891 C	Y	22	22	60	39

gi 448814763 ref NC	000962.3	1190761 T	G	38	38	60	40
gi 448814763 ref NC		1191615 C	Ŷ	25	25	60	41
gi 448814763 ref NC		1191741 G	R	150	150	60	38
Thissesses and the state		1200418 A	Ĝ	50	50	60	40
gi 448814763 ref NC		1201581 A	C	69	69	60	40
gi 448814763 ref NC	2_000962.3	1211369 A	C	69	69	60	40
gi 448814763 ref NC	2_000962.3	1214372 A	C	50	50	60	40
gi 448814763 ref NC	2_000962.3	1216555 C	т	102	188	60	40
gi 448814763 ref NC	000962.3	1220034 C	т	39	39	60	40
gi 448814763 ref NC		1220680 T	Ċ	105	189	60	40
gi 448814763 ref NC		1224367 T	č	69	69	60	40
gi 448814763 ref NC	000062.31	1227830 G	Ť	69	69	60	40
g1 440014705 [FEI ]NC							
gi 448814763 ref NC	000962.51	1228498 C	Ţ	99	187	60	40
gi 448814763 ref NC		1230778 G	A	52	52	60	40
gi 448814763 ref NC		1248382 A	G	69	69	60	40
gi 448814763 ref NC		1248936 G	C	24	24	60	40
gi 448814763 ref NC	2_000962.3	1248978 T	C	50	50	60	40
gi 448814763 ref NC		1250340 A	G	69	69	60	40
gi 448814763 ref NC	000962.3	1251199 C	Ť	37	37	60	40
gi 448814763 ref NC		1252164 T	ċ	38	38	60	40
Thissesson and the second		1254562 A	G	50	50	60	40
gi 448814763 ref NC	000962.3	1268653 G	A	69	69	60	40
gi 448814763 ref NC	2_000962.3	1275957 T	C	9	36	60	7
gi 448814763 ref NC	2_000962.3	1281118 T	C	69	69	60	40
gi 448814763 ref NC	2_000962.3	1281771 T	C	38	38	60	40
gi 448814763 ref NC		1292102 A	G	70	70	60	40
gi 448814763 ref NC		1295388 G	Ā	37	37	60	40
gi 448814763 ref NC		1304443 G	Â	96	189	60	40
gi 448814763 ref NC		1306259 A	Ĝ	70	70	60	40
g1 440014705 [ref ]NC							
gi 448814763 ref NC	000962.3	1307598 C	G	70	70	60	40
gi 448814763 ref NC		1310756 G	C	69	69	60	40
gi 448814763 ref NC		1315191 A	C	50	50	60	40
gi 448814763 ref NC		1315359 C	Α	96	189	60	40
gi 448814763 ref NC	2_000962.3	1315884 G	Α	93	176	60	40
gi 448814763 ref NC	000962.3İ	1317655 C	т	69	69	60	40
gi 448814763 ref NC		1324909 A	Ġ	70	70	60	40
gi 448814763 ref NC		1325886 G	Ť	70	70	60	40
				52	52		
gi 448814763 ref NC		1327890 G	A			60	40
gi 448814763 ref NC		1328687 G	C	14	14	60	40
gi 448814763 ref NC		1328869 T	G	70	70	60	40
gi 448814763 ref NC	2_000962.3	1329234 G	Α	102	189	60	40
gi 448814763 ref NC	2_000962.3	1351172 A	G	69	69	60	40
gi 448814763 ref NC	2_000962.3	1360209 T	C	69	69	60	40
gi 448814763 ref NC		1361190 G	Ā	102	189	60	40
gi 448814763 ref NC		1362006 T	ĉ	52	52	60	40
gi 448814763 ref NC		1367484 T	G	25	25	60	40
g1 440014703 [FEI ]NC							
gi 448814763 ref NC		1374065 T	ç	69	69	60	40
gi 448814763 ref NC		1375724 A	<u>c</u>	69	69	60	40
gi 448814763 ref NC		1376677 C	Т	69	69	60	40
gi 448814763 ref NC		1382628 T	C	39	39	60	40
gi 448814763 ref NC	2_000962.3	1386936 C	G	70	70	60	40
gi 448814763 ref NC		1388682 G	Ā	69	69	60	40
gi 448814763 ref NC		1390763 C	Ť	99	189	60	40
gi 448814763 ref NC	000962 3	1393626 A	Ġ	69	69	60	40
			T				
gi   448814763   ref   NC		1393812 C		102	189	60	40
gi 448814763 ref NC		1395196 G	A	50	50	60	40
gi 448814763 ref NC		1396922 T	C	99	190	60	40
gi 448814763 ref NC		1411210 T	G	69	69	60	40
gi 448814763 ref NC	2_000962.3	1413148 C	Т	70	70	60	40

ai	448814763 ref	NC 000962.31	1414021 C	т	69	69	60	40
	448814763 ref		1438399 G	ċ	32	32	60	40
	448814763 ref		1440469 C	Ğ	27	27	60	40
	448814763 ref		1445781 A	Ğ	69	69	60	40
	448814763 ref		1455328 G	Ă	69	69	60	40
	448814763 ref		1457144 C	Ţ	39	39	60	40
	448814763 ref		1462787 C	Α	69	69	60	40
	448814763 ref		1466127 C	Т	69	69	60	40
	448814763 ref		1471659 C	Т	69	69	60	40
gi	448814763 ref	NC_000962.3	1479085 T	C	69	69	60	40
gi	448814763 ref	NC_000962.3	1480972 T	Y	35	35	60	80
	448814763 ref		1482627 T	C	69	69	60	40
	448814763 ref		1484708 A	C	69	69	60	40
	448814763 ref		1490905 A	G	69	69	60	40
	448814763 ref		1494305 C	Ğ	69	69	60	40
	448814763 ref		1498951 G	Ť	69	69	60	40
	448814763 ref		1499274 C	Ġ	37	37	60	40
	448814763 ref		1501700 G	A	69	69	60	40
				Ť				
	448814763 ref		1521261 G		69	69	60	40
	448814763 ref		1521997 T	G	69	69	60	40
	448814763 ref		1526819 C	A	69	69	60	40
	448814763 ref		1527844 G	A	105	188	60	40
	448814763 ref		1533583 G	A	93	188	60	35
	448814763 ref		1536251 G	Т	102	189	60	40
	448814763 ref		1537443 C	т	50	50	60	40
gi	448814763 ref	NC_000962.3	1540141 T	C	69	69	60	40
	448814763 ref		1544255 C	т	96	181	60	40
	448814763 ref		1546703 C	т	69	69	60	40
	448814763 ref		1547125 T	Ċ	38	38	60	40
	448814763 ref		1552547 G	Ā	99	189	60	40
	448814763 ref		1556787 T	ĉ	70	70	60	40
	448814763 ref		1560871 G	Ă	69	69	60	40
	448814763 ref		1561949 G	ĉ	37	37	60	40
	448814763 ref		1563717 C	Ť	25	25	60	40
			1570566 C	Å	53	53	60	40
	448814763 ref							
	448814763 ref		1570771 G	A	69	69	60	40
	448814763 ref		1573660 T	G	70	70	60	40
	448814763 ref		1577241 G	A	105	189	60	40
	448814763 ref		1588899 G	Ţ	99	189	60	40
gi	448814763 ref		1589948 C	Т	70	70	60	40
	448814763 ref		1593331 G	A	69	69	60	40
	448814763 ref		1595342 T	C	102	187	60	40
	448814763 ref		1606673 G	т	99	175	60	40
gi	448814763 ref	NC_000962.3	1608276 A	C	14	14	60	40
gi	448814763 ref	NC_000962.3	1609840 A	G	105	189	60	40
qi	448814763 ref	NC_000962.3	1613035 T	C	69	69	60	40
	448814763 ref		1624791 C	G	70	70	60	40
	448814763 ref		1627351 T	C	105	189	60	40
ai	448814763 ref	NC 000962.3	1630148 A	č	105	189	60	40
	448814763 ref		1634208 C	š	3	3	60	23
	448814763 ref		1634609 C	Ť	42	57	60	20
	448814763 ref		1634609 C	ť	42	57	60	19
					27	68	60	17
gi	448814763 ref	INC_000962.3	1638235 T	Ą				
	448814763 ref		1638238 A	T	27	68	60	14
	448814763 ref		1639594 C	A	26	26	60	40
	448814763 ref		1640695 C	Ţ	69	69	60	40
	448814763 ref		1643864 T	C	105	187	60	40
	448814763 ref		1645802 T	<u>c</u>	52	52	60	40
gi	448814763 ref	NC_000962.3	1646042 C	Т	99	189	60	40

ai	448814763 ref	NC 000962.31	1646283 C	т	69	69	60	40
	448814763 ref		1650072 A	G	69	69	60	40
	Lassasses C		1650786 C	Ť	52	52	60	40
			1651308 A	Ġ	37	37	60	40
	448814763 ref		1655560 A	G	19	19	60	40
9!	440014703 rei	INC_000962.3						
gi	448814763 ref	NC_000962.3	1657415 G	A	69	69	60	40
	448814763 ref		1676290 C	Α	105	189	60	40
	448814763 ref		1678706 A	C	69	69	60	40
	448814763 ref		1679097 T	G	50	50	60	40
gi	448814763 ref	NC_000962.3	1682361 C	Т	69	69	60	40
gi	448814763 ref	NC_000962.3	1688300 T	C	52	52	60	40
qi	448814763 ref	NC_000962.3	1689349 C	т	105	189	60	40
āi	448814763 ref	NC 000962.3	1692141 A	C	37	37	60	40
	i		1693561 A	G	105	189	60	40
	448814763 ref		1695796 C	Ť	69	69	60	40
	448814763 ref		1698911 G	Å	105	186	60	40
31	448814763 ref	NC 000962 31	1699849 G	Â	69	69	60	40
91	448814763 ref	NC 000062 21	1706119 T	ĉ		189		40
				Ť	105		60	
	448814763 ref		1709432 C		70	70	60	40
gj	448814763 ref	NC_000962.3	1711670 C	T	69	69	60	40
gj	448814763 ref	NC_000962.3	1713192 A	G	99	189	60	40
gi	448814763 ref	NC_000962.3	1716472 A	G	50	50	60	40
gi	448814763 ref	NC_000962.3	1722228 A	C	69	69	60	40
gi	448814763 ref	NC_000962.3	1723007 G	C	38	38	60	40
ģi	448814763 ref	NC_000962.3	1728837 A	G	25	25	60	40
āi	448814763 ref	NC_000962.3	1735002 G	т	70	70	60	40
	448814763 ref		1752561 T	C	50	50	60	40
ai	448814763 ref	NC 000962.3	1759252 G	Ť	50	50	60	40
	448814763 ref		1760292 A	Ġ	69	69	60	40
	448814763 ref		1760964 T	Ϋ́	17	17	60	13
	i		1762630 T	Ġ	19	19	60	40
	448814763 ref		1778430 T	č	102	189	60	40
9!	448814763 ref	INC_000962.3	1781786 C	Ğ	9	27	60	40
9!	440014703 rei	INC_000962.3						
gi	448814763 ref	INC_000962.51	1789446 C	Ţ	54	181	60	22
	448814763 ref		1789516 A	Ģ	105	190	60	40
			1789564 C	Ţ	45	45	60	40
	448814763 ref		1789565 C	A	45	45	60	40
	448814763 ref		1793561 T	G	37	37	60	40
gi	448814763 ref	NC_000962.3	1798355 G	A	39	39	60	40
gi	448814763 ref	NC_000962.3	1803265 G	A	69	69	60	40
gi	448814763 ref	NC_000962.3	1804409 C	A	26	26	60	40
gi	448814763 ref	NC_000962.3	1811375 G	т	26	26	60	40
	448814763 ref		1817976 A	т	105	189	60	40
	448814763 ref		1819317 T	C	105	188	60	40
	448814763 ref		1821322 G	Ā	69	69	60	40
	448814763 ref		1831220 A	ĉ	25	25	60	40
	448814763 ref		1831226 A	Ğ	50	50	60	40
	448814763 ref		1831288 C	Ť	52	52	60	40
	448814763 ref		1834177 A	ċ	50	50	60	40
gi	448814763 ref	INC_000962.51	1836286 G	ç	50	50	60	40
gi	448814763 ref	INC_000962.3	1839759 G	ç	20	20	60	40
	448814763 ref		1846439 T	ç	69	69	60	40
	448814763 ref		1847919 C	G	69	69	60	40
	448814763 ref		1849609 T	C	69	69	60	40
	448814763 ref		1854300 T	C	50	50	60	40
	448814763 ref		1856777 G	C	39	39	60	40
	448814763 ref		1859559 C	Α	69	69	60	40
	448814763 ref		1862600 A	C	69	69	60	40
	448814763 ref			Α	69	69	60	40

ai	448814763 ref	NC 000962.31	1877744 A	C	69	69	60	40
	448814763 ref		1879769 T	Ğ	37	37	60	40
	448814763 ref		1881090 C	Ť	102	189	60	40
	448814763 ref		1885772 G	Å	102	189	60	40
	448814763 ref		1894422 A	Ĝ	102	190	60	40
91	448814763 ref	INC_000962.31		T	102			40
			1897608 C			188	60	
	448814763 ref		1901171 T	ç	70	70	60	40
			1901493 T	C	70	70	60	40
	448814763 ref		1907296 G	C	38	38	60	40
gı	448814763 ref	NC_000962.3	1916137 A	G	69	69	60	40
gi	448814763 ref	NC_000962.3	1917972 A	G	69	69	60	40
	448814763 ref		1931179 C	A	39	39	60	40
	448814763 ref		1931718 G	C	69	69	60	40
gi	448814763 ref	NC_000962.3	1933988 G	A	26	26	60	40
gi	448814763 ref	NC_000962.3	1935473 G	C	70	70	60	40
qi	448814763 ref	NC_000962.3	1944107 A	G	70	70	60	40
	448814763 ref		1944402 T	C	70	70	60	40
	448814763 ref		1950767 T	C	50	50	60	40
	i		1951496 G	C	38	38	60	40
	448814763 ref		1955941 G	č	69	69	60	40
	448814763 ref		1960284 C	Ā	69	69	60	40
ai	448814763 ref	NC 000962.3	1967237 C	Â	102	190	60	40
i	448814763 ref	NC 000962 3	1967543 C	Â	69	69	60	40
	Lassassen C		1968117 G	Â	13	13	60	40
gi	i		1971725 G	ĉ	38	38	60	40
	448814763 ref		1980652 G	Ť	69	69	60	40
	448814763 ref		1983291 C	ť	15	51	60	10
91	448814763 ref	NC_000962.3		Ġ	36	36		54
			1983313 T				60	
	448814763 ref		1989959 G	A	3	4	60	3
			1998063 T	A	39	74	60	16
gi	448814763 ref	NC_000962.3	1998122 G	A	57	74	60	22
gi	448814763 ref	NC_000962.3	1998141 G	ç	36	45	60	15
	448814763 ref		1998300 T	ç	54	56	60	23
	448814763 ref		2001324 C	T	3	4	60	4
	448814763 ref		2001333 T	C	30	161	60	13
	448814763 ref		2003827 A	C	70	70	60	40
gj	448814763 ref	NC_000962.3	2008256 G	C	69	69	60	40
	448814763 ref		2009346 G	Α	69	69	60	40
gi	448814763 ref		2022868 T	C	105	189	60	40
gi	448814763 ref		2023628 C	G	37	37	60	40
gi	448814763 ref	NC_000962.3	2030855 T	Y	31	31	60	66
gi	448814763 ref	NC_000962.3	2045310 A	G	69	69	60	40
gi	448814763 ref	NC_000962.3	2047343 C	G	96	188	60	40
	448814763 ref		2049065 T	C	38	38	60	34
	448814763 ref		2049097 G	C	87	188	60	34
	448814763 ref		2050822 G	C	70	70	60	40
	448814763 ref		2051746 T	C	69	69	60	40
	448814763 ref		2052035 G	Т	70	70	60	40
	448814763 ref		2055271 A	G	50	50	60	40
ai	448814763 ref	NC 000962.3	2057774 A	Ť	69	69	60	40
01	448814763 ref	NC 000962.3	2061958 A	Ġ	69	69	60	40
	448814763 ref		2069002 C	Ť	69	69	60	40
	448814763 ref		2072313 C	Å	50	50	60	40
	448814763 ref		2074754 C	÷	38	38	60	40
	448814763 ref		2096186 A	Ġ	38	38	60	40
	448814763 ref		2103447 C	T	69	69	60	40
				÷	70	70	60	40
	448814763 ref		2103687 C					
	448814763 ref		2108141 T	C C	37	37	60	40
g٦	448814763 ref	TWC_000962.31	2108890 A	C	70	70	60	40

11	448814763 ret	NC 000962.31	2108890 A	C	70	70	60	40
- 11	448814763 ref	NC 000962.3	2116903 C	Ť	69	69	60	40
- 44	448814763 ref	NC 000962 3	2117686 G	Å	70	70	60	40
- 23	448814763 ref	NC 000962 3	2119323 C	î	105	189	60	40
				ć	69		60	40
	448814763 ref		2122186 T			69		
	448814763 ref		2122395 C	T	99	189	60	40
	448814763 ref		2122976 C	G	32	32	60	40
	448814763 ref		2123169 T	G	50	50	60	40
	448814763 ref		2123850 C	Т	99	189	60	40
	448814763 ref		2128870 A	G	105	189	60	40
ji	448814763 ref	NC_000962.3	2131184 C	т	50	50	60	40
Ji	448814763 ref	NC_000962.3	2133475 A	R	73	73	60	16
ji	448814763 ref	NC_000962.3	2135870 T	C	37	37	60	40
ii	448814763 ref	NC_000962.3	2138453 C	т	19	19	60	40
ii	448814763 ref	NC_000962.3	2143328 G	C	37	37	60	40
	448814763 ref		2144094 T	C	69	69	60	40
	448814763 ref		2146523 C	Ť	99	188	60	40
- 11	448814763 ref	NC 000962.3	2147022 A	ċ	37	37	60	40
- 44	448814763 ref	NC 000962 3	2153739 G	š	5	5	60	14
	448814763 ref		2154724 C	Ă	52	52	60	40
	448814763 ref		2155689 C	Ĝ	69	69	60	40
- 22	448814763 ref	NC_000962.31	2153089 C 2158109 T	č	69	69	60	40
- 22	440014703 rei	NC_000962.3						
1	448814763 ref	NC_000962.31	2160998 G	A	69	69	60	40
	448814763 ref		2165286 A	ç	105	189	60	40
	448814763 ref		2167926 A	G	69	69	60	40
	448814763 ref		2172380 A	ç	99	169	60	40
31	448814763 ref	NC_000962.3	2173860 A	ç	69	69	60	40
- 11	448814763 ref	NC_000962.3	2185674 A	G	69	69	60	40
31	448814763 ref	NC_000962.3	2187587 G	C	105	189	60	40
31	448814763 ref	NC_000962.3	2199052 C	G	38	38	60	40
31	448814763 ref	NC_000962.3	2200042 C	Т	38	38	60	40
31	448814763 ref	NC_000962.3	2209465 G	Α	69	69	60	40
	448814763 ref		2211826 A	G	20	20	60	40
	448814763 ref		2216443 C	A	99	189	60	40
Ji	448814763 ref	NC_000962.3	2220512 T	G	70	70	60	40
ji	448814763 ref	NC_000962.3	2221584 G	C	105	190	60	40
ji	448814763 ref	NC_000962.3	2223293 T	C	50	50	60	40
	448814763 ref		2228967 A	G	69	69	60	40
ii	448814763 ref	NC_000962.3	2229801 C	G	31	31	60	40
	448814763 ref		2239156 G	т	69	69	60	40
	448814763 ref		2241449 C	Т	69	69	60	40
	448814763 ref		2244421 G	Ť	50	50	60	40
	448814763 ref		2247677 A	ċ	102	189	60	40
	448814763 ref		2251999 A	Ğ	38	38	60	40
- 11	448814763 ref	NC_000962.3	2258019 T	č	99	169	60	40
	448814763 ref		2260100 C	Ť	38	38	60	40
	448814763 ref		2260525 C	Ť	105	188	60	40
- 44	448814763 ref	NC 000962 31	2262620 T	Å	63	73	60	24
- 22	448814763 ref	NC 000962 31	2262679 G	Â	36	73	60	14
			2262679 G	ĉ		44		21
	448814763 ref			č	44 45	57	60	17
	448814763 ref		2262857 T				60	
	448814763 ref		2264782 C	A	99	189	60	40
	448814763 ref		2265059 T	G	39	39	60	40
	448814763 ref		2266487 G	S	118	118	60	61
	448814763 ref		2266624 G	ĸ	44	44	60	48
	448814763 ref		2267015 T	ç	105	190	60	40
	448814763 ref		2267535 C	Ţ	96	183	60	40
	448814763 ref		2268536 G	Ţ	99	190	60	40
31	448814763 ref	NC_000962.3	2268627 G	C	105	190	60	40

ai	448814763 ref	NC 000962.3	2269780 T	C	69	69	60	40
	448814763 ref		2270102 A	Ğ	105	186	60	40
	448814763 ref		2282787 C	Ť	105	189	60	40
	448814763 ref		2285251 C	Å	37	37	60	40
	448814763 ref		2287121 A	Ĝ	105	190	60	40
	448814763 ref		2288085 G	ç	70	70	60	40
	448814763 ref		2288757 C	Т	51	51	60	40
	448814763 ref		2294007 T	C	102	190	60	40
	448814763 ref		2296042 G	C	20	20	60	38
gi	448814763 ref	NC_000962.3	2300237 A	G	69	69	60	48
gi	448814763 ref	NC_000962.3	2300546 A	W	23	23	60	6
āi	448814763 ref	NC_000962.3	2300552 T	K	2	2	60	8
	448814763 ref		2300555 A	R	5	5	60	10
	448814763 ref		2306306 A	G	36	73	60	15
	448814763 ref		2310843 T	Ğ	50	50	60	40
	448814763 ref		2311099 C	Ğ	14	14	60	40
31	448814763 ref	NC 000962 3	2313837 A	č	105	190	60	40
	448814763 ref		2317969 G	Ă	37	37		40
							60	
gj	448814763 ref		2319843 A	G	102	190	60	40
	448814763 ref		2321583 G	A	102	189	60	40
gj	448814763 ref	NC_000962.3	2323937 G	A	37	37	60	40
	448814763 ref		2328543 T	C	99	190	60	40
gi	448814763 ref		2329533 A	G	50	50	60	40
gi	448814763 ref		2331620 A	C	37	37	60	40
gi	448814763 ref	NC_000962.3	2331789 G	т	69	69	60	40
qi	448814763 ref	NC_000962.3	2334007 A	G	69	69	60	40
	448814763 ref		2335075 A	G	37	37	60	40
āi	448814763 ref	NC 000962.3	2335494 A	G	96	190	60	40
	448814763 ref		2337179 C	Ť	69	69	60	40
qi	448814763 ref		2339255 A	Ġ	102	190	60	40
	448814763 ref		2340621 C	Ğ	33	33	60	20
	448814763 ref		2341636 C	Ğ	69	69	60	40
	448814763 ref	NC 000962 3	2344134 T	Ğ	69	69	60	40
91	448814763 ref	NC_000962.3	2344246 G	č	50	50	60	40
	448814763 ref		2345037 C	A	70	70	60	40
	448814763 ref		2346763 C	A	105	188	60	40
gj	448814763 ref	NC_000962.3	2348446 C	G	50	50	60	40
gj	448814763 ref	NC_000962.3	2359398 A	C	105	190	60	40
g1	448814763 ref		2361604 C	G	70	70	60	40
gi	448814763 ref	NC_000962.3	2362041 C	A	69	69	60	40
gi	448814763 ref	NC_000962.3	2369186 G	C	50	50	60	40
gi	448814763 ref	NC_000962.3	2369326 C	G	31	31	60	40
qi	448814763 ref	NC_000962.3	2374097 C	т	26	26	60	40
	448814763 ref		2381021 A	C	99	189	60	40
	448814763 ref		2386389 G	Α	69	69	60	40
	448814763 ref		2387733 T	C	69	69	60	40
	448814763 ref		2388641 G	Ă	70	70	60	40
	448814763 ref		2396194 G	ĉ	37	37	60	40
	448814763 ref		2397228 G	Ă	69	69	60	40
	448814763 ref		2399734 G	Â	69	69	60	40
	448814763 ref		2411810 G	A	69	69	60	40
	448814763 ref		2413246 C	A	70	70	60	40
	448814763 ref		2415656 G	ç	32	32	60	40
	448814763 ref		2421816 A	G	102	183	60	40
	448814763 ref		2423375 G	A	99	189	60	37
	448814763 ref		2423819 C	G	36	36	60	28
	448814763 ref		2423822 A	G	61	61	60	25
	448814763 ref		2424925 A	G	19	19	60	40
gi	448814763 ref	NC_000962.3	2425471 T	C	38	38	60	40
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ail	448814763	Inef	NC_000962.3	2440926	G	т	69	69	60	40
gi	448814763	ref	NC_000962.3	2442398		Ť	37	37	60	40
	440014762	nof	NC_000962.3	2448458		Ť	69	69	60	40
			NC_000962.3	2451030		A	69	69	60	40
			NC_000962.3	2459699		Т	69	69	60	40
			NC_000962.3	2462871	G	A	39	39	60	40
gil	448814763	ref	NC_000962.3	2470591	A	C	26	26	60	40
			NC_000962.3	2472157	G	Α	37	37	60	40
			NC_000962.3	2484526		C	19	19	60	40
			NC_000962.3	2499726		Ā	69	69	60	40
			NC_000962.3	2506309		f	50	50	60	40
<u>g</u> 1	440014703		INC_000902.31							
			NC_000962.3	2509140		ç	69	69	60	40
			NC_000962.3	2509722		G	69	69	60	40
			NC_000962.3	2510350		G	69	69	60	40
			NC_000962.3	2516567		C	50	50	60	40
			NC_000962.3	2521342	Т	C	105	190	60	40
gi	448814763	ref	NC_000962.3	2521428	A	G	70	70	60	40
ail	448814763	ref	NC_000962.3	2526974	Т	C	37	37	60	40
gi	448814763	ref	NC_000962.3	2529680	Α	G	69	69	60	40
			NC_000962.3	2531742		Ğ	69	69	60	40
			NC_000962.3	2533377		č	99	190	60	40
			NC_000962.3		÷	č	69	69	60	40
<u>ai i</u>	448814763	ret	NC_000962.3	2545013		A	105	189	60	40
gil	448814763	ret	NC_000962.3	2545305		<u>c</u>	50	50	60	40
g1  -	448814763	ret	NC_000962.3	2548700		Т	102	190	60	40
			NC_000962.3	2562644		т	99	189	60	40
			NC_000962.3	2573553	G	A	69	69	60	40
gil	448814763	ref	NC_000962.3	2573756	C	A	25	25	60	40
ail	448814763	ref	NC_000962.3	2578626	Α	G	99	189	60	40
			NC_000962.3	2582198	Т	G	105	189	60	40
			NC_000962.3	2586076		Ğ	69	69	60	40
			NC_000962.3	2586127		Ğ	102	190	60	40
			NC_000962.3	2589216		č	102	189	60	40
			NC_000962.3	2594373		Ă	70	70	60	40
<u>g</u> 1	440014/03	rei	INC_000962.31							
gil	440014703	rer	NC_000962.3	2598400		G	105	190	60	40
			NC_000962.3	2600260		G	37	37	60	40
			NC_000962.3	2601576		G	69	69	60	40
			NC_000962.3	2602098	C	т	69	69	60	40
			NC_000962.3	2603736	C	Т	50	50	60	40
gi	448814763	ref	NC_000962.3	2605187	C	т	99	190	60	40
			NC_000962.3	2606782	G	C	38	38	60	40
			NC_000962.3	2608117		Α	105	189	60	40
			NC_000962.3	2609348		A	69	69	60	40
			NC_000962.3	2610122		G	69	69	60	40
			NC_000962.3	2612632		Ă	51	51	60	40
			NC_000962.3	2615675			50	50		40
						ç			60	
			NC_000962.3	2619271		ç	70	70	60	40
			NC_000962.3	2620214		ç	70	70	60	40
			NC_000962.3	2623273		Α	96	183	60	40
			NC_000962.3	2624356		C	69	69	60	40
			NC_000962.3	2624594	C	Т	105	189	60	40
gil	448814763	ref	NC_000962.3	2626394	G	Α	51	182	60	20
			NC_000962.3	2627946		G	105	190	60	40
			NC_000962.3	2637174		Ā	37	37	60	40
			NC_000962.3	2637541	Č.	Ť	69	69	60	40
			NC_000962.3	2638521	č	Ý	22	22	60	37
			NC_000962.3	2638997		Ŕ	40	40	60	26
			NC_000962.3				105			40
				2639219		A T		188	60	
<b>9</b> 1  -	440014/03	rer	NC_000962.3	2642383	C	1	105	189	60	40
1.1										

ai	448814763 ref	NC_000962.3	2648929 C	т	102	189	60	40
	448814763 ref		2655247 G	Á	69	69	60	40
	448814763 ref		2656225 A	G	69	69	60	40
	448814763 ref		2660319 C	Ğ	69	69	60	40
	448814763 ref		2672607 G	Ă	69	69	60	40
gj	448814763 ref	NC_000962.3	2673818 C	G	70	70	60	40
	448814763 ref		2680658 T	G	69	69	60	40
	448814763 ref		2695378 C	G	37	37	60	40
	448814763 ref		2697489 C	Т	102	190	60	40
	448814763 ref		2704886 G	R	22	22	60	12
gi	448814763 ref	NC_000962.3	2711722 T	G	37	37	60	40
qi	448814763 ref	NC_000962.3	2713795 C	т	102	189	60	40
āi	448814763 ref	NC_000962.3	2715268 G	C	26	26	60	40
ai	448814763 ref	NC 000962.3	2715344 G	Ā	102	189	60	40
	448814763 ref		2718852 T	G	69	69	60	40
	i		2721562 C	Ğ	20	20	60	40
_ g1				č	69	69	60	40
	448814763 ref		2723506 T					
gi	448814763 ref	NC_000962.3	2724004 C	G	51	51	60	40
gj	448814763 ref	NC_000962.3	2729058 A	C	69	69	60	40
	448814763 ref		2730205 C	Α	93	162	60	40
	448814763 ref		2732174 A	G	105	190	60	40
gi	448814763 ref	NC_000962.3	2734074 T	C	70	70	60	40
qi	448814763 ref	NC_000962.3	2736921 G	т	37	37	60	40
	448814763 ref		2737453 A	C	69	69	60	40
ai	448814763 ref	NC 000962.3	2737572 C	A	69	69	60	40
	448814763 ref		2740693 T	ĉ	70	70	60	40
	448814763 ref		2741209 G	Ă	105	188	60	40
	i		2750230 G	Â	69	69	60	40
_ g1	448814763 ref			Ť	70	70	60	40
			2751804 C					
gi	448814763 ref	INC_000962.3	2752698 C	A	50	50	60	40
gi	448814763 ref	NC_000962.3	2756202 T	G	105	190	60	40
	448814763 ref		2760152 A	G	102	189	60	40
	448814763 ref		2778196 G	A	70	70	60	40
	448814763 ref		2779136 T	C	37	37	60	40
	448814763 ref		2782240 T	C	37	37	60	40
gi	448814763 ref	NC_000962.3	2783790 C	т	105	190	60	40
qi	448814763 ref	NC_000962.3	2786952 A	G	50	50	60	40
āi	448814763 ref	NC 000962.3	2789798 G	т	50	50	60	40
ai	448814763 ref	NC 000962.3	2791098 C	Ť	69	69	60	40
_ 01	448814763 ref	NC 000962.3	2796232 G	Å	69	69	60	40
	448814763 ref	NC 000962 3	2807486 C	Â	50	50	60	40
	448814763 ref		2809621 T	ĉ	102	190	60	40
	448814763 ref		2815465 G	Ť	50	50	60	40
gi	448814763 ref	INC_000962.31	2818837 A	Ģ	105	189	60	40
	448814763 ref		2821342 C	Ţ	102	189	60	40
	448814763 ref		2825403 G	Т	50	50	60	40
	448814763 ref		2825466 G	Α	37	37	60	40
	448814763 ref		2827984 G	Т	70	70	60	35
gi	448814763 ref	NC_000962.3	2828019 T	C	51	51	60	31
gi	448814763 ref	NC_000962.3	2828055 G	Α	70	70	60	36
	448814763 ref		2830525 C	Α	70	70	60	40
	448814763 ref		2833329 G	A	69	69	60	40
	448814763 ref		2841022 A	Ĝ	102	176	60	40
	448814763 ref		2847281 A	Ğ	102	190	60	40
	448814763 ref		2855259 A	G	69	69	60	40
	448814763 ref		2865760 A	G	52	52	60	40
9	448814763 ref	NC 000062 2	2865882 T	č	69	69		40
gi	440014/03 [Per	INC_000902.3					60	
	448814763 ref		2867401 A	C C	9	16	60	7
g1	448814763 ref	[MC_000962.3]	2867756 T	C	50	50	60	40

qi	448814763 ref	NC_000962.3	2880615 G	Α	105	189	60	40
	448814763 ref		2880668 C	т	70	70	60	34
	448814763 ref		2880702 G	ċ	51	51	60	34
	448814763 ref		2881472 T	č	69	69	60	40
	448814763 ref		2884068 A	č	69	69	60	40
	448814763 ref		2886570 A	Ğ	37	37	60	40
91	448814763 ref	NC 000962.3	2888201 T	č	37	37	60	40
9!	440014703 rei	INC_000962.3		T	102		60	40
	448814763 ref		2889499 C			189		
	448814763 ref		2889633 T	ç	70	70	60	40
gi	448814763 ref	NC_000962.3	2891267 C	Ţ	50	50	60	40
gi	448814763 ref	NC_000962.3	2891728 A	G	50	50	60	40
	448814763 ref		2894208 G	A	69	69	60	40
	448814763 ref		2898522 T	ç	99	190	60	40
	448814763 ref		2903945 G	Α	102	189	60	40
g1	448814763 ref	NC_000962.3	2910461 G	Т	105	189	60	40
gi	448814763 ref	NC_000962.3	2911293 C	G	99	190	60	40
gi	448814763 ref	NC_000962.3	2912294 T	G	50	50	60	40
gi	448814763 ref	NC_000962.3	2917291 T	C	69	69	60	40
ģi	448814763 ref	NC_000962.3	2923391 T	C	69	69	60	40
	448814763 ref		2925962 T	C	50	50	60	40
	448814763 ref		2927939 T	c	69	69	60	40
	448814763 ref		2932819 G	Ť	69	69	60	40
	448814763 ref		2939373 G	ċ	96	169	60	40
	448814763 ref		2939657 T	č	52	52	60	40
	448814763 ref		2944524 C	Ğ	6	12	60	3
	448814763 ref	INC 000962.3	2948230 G	Ă	69	69	60	40
9!	448814763 ref	INC_000962.3		ĉ	70	70		40
			2954439 T				60	
	448814763 ref		2955322 T	ç	69	69	60	40
	448814763 ref		2969197 A	G	52	52	60	40
	448814763 ref		2973569 A	G	50	50	60	40
	448814763 ref		2973867 G	Α	69	69	60	40
	448814763 ref		2974933 A	G	70	70	60	36
	448814763 ref		2975227 T	G	69	69	60	40
	448814763 ref		2976654 G	A	50	50	60	40
	448814763 ref		2978583 C	G	70	70	60	40
gi	448814763 ref	NC_000962.3	2983873 A	G	70	70	60	40
gi	448814763 ref	NC_000962.3	2984740 A	G	105	190	60	40
qi	448814763 ref	NC_000962.3	2988630 C	G	52	52	60	40
	448814763 ref		2993172 G	Α	96	182	60	40
	448814763 ref		2994187 T	C	102	190	60	40
ai	448814763 ref	NC 000962.3	3003115 C	Ğ	50	50	60	40
	448814763 ref		3005185 G	Ť	52	52	60	40
	448814763 ref		3009692 A	Ġ	105	188	60	40
	448814763 ref		3010420 A	Ğ	69	69	60	40
	448814763 ref		3010993 C	Ť	52	52	60	40
	448814763 ref		3017465 T	ċ	105	189	60	40
	448814763 ref		3020577 G		70	70	60	40
				A				
	448814763 ref		3024021 C	A	69	69	60	40
	448814763 ref		3024420 G	A	69	69	60	40
	448814763 ref		3026684 C	G	37	37	60	40
	448814763 ref		3027798 T	ç	105	189	60	40
gj	448814763 ref	NC_000962.3	3031168 A	G	99	190	60	40
	448814763 ref		3032240 G	Т	37	37	60	40
	448814763 ref		3033189 G	Α	50	50	60	40
	448814763 ref		3036826 C	Т	102	190	60	40
	448814763 ref		3037377 T	C	69	69	60	40
ģi	448814763 ref	NC_000962.3	3041871 G	Т	102	189	60	40
gi	448814763 ref	NC_000962.3	3044763 A	G	69	69	60	40
	448814763 ref		3054081 A	G	24	24	60	40
						-		

0	i l	448814763	ref	NC_000962.3	3054321	Α .	G	50	50	60	40
				NC_000962.3			Ā	102	189	60	40
				NC_000962.3			Â	52	52	60	40
				NC_000962.3			G	70	70	60	40
_				NC_000962.3			T	102	188	60	40
_				NC_000962.3			G	26	26	60	40
				NC_000962.3	3080795		G	37	37	60	40
				NC_000962.3	3086788		ç	105	189	60	40
2				NC_000962.3			C	69	69	60	40
<u> </u>				NC_000962.3			Т	69	69	60	40
g	ן רו	448814763	ref	NC_000962.3	3097729		Т	50	50	60	40
g	<b>j</b> 1	448814763	ref	NC_000962.3	3103682		C	105	190	60	40
9				NC_000962.3			G	70	70	60	40
g				NC_000962.3	3111476		Т	105	189	60	40
9	ji	448814763	ref	NC_000962.3	3112877	G	A	39	39	60	40
0	ii	448814763	ref	NC_000962.3	3113872	Α	т	105	190	60	40
	ii İ	448814763	ref	NC_000962.3	3115384	G	С	105	189	60	40
				NC_000962.3			G	37	37	60	40
				NC_000962.3			Ā	70	70	60	40
	ii	448814763	ref	NC_000962.3	3127274	-	T	37	37	60	40
				NC_000962.3	3131473		M	118	144	60	20
				NC_000962.3	3133536		c	26	26	60	40
	-	440014703	rof	NC_000962.3			č	102	189	60	40
				NC_000962.3			Ă	48	180	60	19
	2	440014703	nof	NC_000962.3	3137058		Ā	102		60	40
							Ť		189		
	!!	440014703	rei	NC_000962.3	3139686			69	69	60	40
_				NC_000962.3			A	69	69	60	40
				NC_000962.3	3159191		Ţ	105	189	60	40
9	ŋ l	448814763	ret	NC_000962.3	3162805		G	70	70	60	40
2				NC_000962.3			G	99	170	60	40
<u> </u>				NC_000962.3			A	70	70	60	40
				NC_000962.3			A	37	37	60	40
g	ji	448814763	ref	NC_000962.3	3186860		G	102	190	60	40
g				NC_000962.3			G	31	31	60	40
g				NC_000962.3			A	69	69	60	40
				NC_000962.3			C	70	70	60	40
g	ji	448814763	ref	NC_000962.3	3226181		C	26	26	60	40
0	i	448814763	ref	NC_000962.3	3228143	G	т	69	69	60	40
- C	ii	448814763	ref	NC_000962.3	3240567	G	A	99	176	60	40
				NC_000962.3			C	102	190	60	40
				NC_000962.3			G	50	50	60	40
				NC_000962.3			С	38	38	60	40
				NC_000962.3			Y	26	26	60	20
				NC_000962.3			G	37	37	60	40
				NC_000962.3	3256494		Ğ	50	50	60	40
				NC_000962.3	3256848		Ă	69	69	60	40
				NC_000962.3	3266030		Ĝ	105	190	60	40
				NC_000962.3	3269581		G	102	190	60	40
				NC_000962.3	3270784	?	G	38	38	60	40
				NC_000962.3	3276703	<del>ç</del>	G	37	37	60	40
				NC_000962.3	3284855		Т	70	70	60	40
				NC_000962.3	3295919	A I	C	105	189	60	40
				NC_000962.3	3296843		G	105	189	60	40
				NC_000962.3	3302400		A	19	19	60	40
				NC_000962.3	3304966	9	A	25	25	60	40
				NC_000962.3	3305290		ç	69	69	60	40
				NC_000962.3	3308606		A	105	190	60	40
				NC_000962.3			A	69	69	60	40
g	<b>j</b> 1	448814763	ref	NC_000962.3	3314412	A	G	69	69	60	40

ai	448814763	Iref	NC_000962.3	3316955 A	C	52	52	60	40
			NC_000962.3	3320975 T	Č	69	69	60	40
			NC_000962.3	3326554 A	č	70	70	60	40
qi			NC_000962.3	3335708 G	č	14	14	60	40
qi			NC_000962.3	3336825 T	č	69	69	60	40
			NC_000962.3	3338603 G	č	37	37	60	40
g			NC_000962.3	3346511 A	č	99	190	60	40
				3352932 C	Ğ	69	69		40
	1		NC_000962.3		Ť			60	
91				3358235 A		69	69	60	40
91			NC_000962.3	3363338 A	G	26	26	60	40
gj	448814763	ret	NC_000962.3	3367765 G	A	105	189	60	40
	448814/63	ret	NC_000962.3	3377271 G	S	34	34	60	25
_ g1			NC_000962.3	3382910 G	A	99	175	60	40
_ g1			NC_000962.3	3385512 G	A	52	52	60	40
_ <u>g</u>			NC_000962.3	3401871 A	G	69	69	60	40
_ g1			NC_000962.3	3402816 C	T	19	19	60	40
_ g1			NC_000962.3	3404376 C	G	69	69	60	40
gr			NC_000962.3	3405675 C	G	39	39	60	40
gr			NC_000962.3	3420825 A	G	69	69	60	40
gi			NC_000962.3	3421951 A	G	105	190	60	40
gi			NC_000962.3	3424878 C	т	70	70	60	40
gi			NC_000962.3	3425854 C	т	69	69	60	40
gi	448814763	ref	NC_000962.3	3428917 C	A	69	69	60	40
gi	448814763	ref	NC_000962.3	3436300 C	т	99	190	60	40
gi		ref	NC_000962.3	3440464 T	G	51	51	60	40
gi	448814763	İref	NC_000962.3	3440468 G	C	50	50	60	40
			NC_000962.3	3442941 T	G	69	69	60	40
qi	448814763	İref	NC_000962.3	3444109 G	Α	105	189	60	40
qi			NC_000962.3	3447102 G	т	99	169	60	40
qi			NC_000962.3	3450725 T	ć	69	69	60	40
gi			NC_000962.3	3454263 C	Ğ	70	70	60	40
			NC_000962.3	3455686 G	č	105	189	60	40
gi			NC_000962.3	3456397 A	Ğ	69	69	60	40
gi			NC_000962.3	3456666 A	Ğ	105	189	60	40
gi			NC_000962.3	3462135 G	č	49	49	60	40
gi	448814763	ref	NC_000962.3	3463875 G	Ă	69	69	60	40
			NC_000962.3	3466919 C	Ĝ	24	24	60	40
9	448814763	ref	NC_000962.3	3467465 C	Ğ	69	69	60	40
qi			NC_000962.3	3478092 C	Ğ	105	189	60	40
			NC_000962.3	3480383 A	Ğ	69	69	60	40
			NC_000962.3	3480474 G	A	26	26	60	40
			NC_000962.3	3480789 T	ĉ	69	69	60	40
			NC_000962.3	3483703 G	Ā	105	188	60	40
			NC_000962.3	3486977 A		27	43	60	14
					G T		69		40
			NC_000962.3	3487108 C		69		60	
g	440014703	ref	NC_000962.3	3489490 A	G	70	70	60	40
<u>g</u> ]	448814763	ret	NC_000962.3	3492434 T	G	69	69	60	40
			NC_000962.3	3500243 G	ç	69	69	60	40
			NC_000962.3	3503895 C	Ţ	69	69	60	40
			NC_000962.3	3510120 T	Ģ	50	50	60	40
_ <u>9</u> 1			NC_000962.3	3513538 A	T	69	69	60	40
			NC_000962.3	3518167 A	G	70	70	60	40
			NC_000962.3	3518555 A	G	105	189	60	40
			NC_000962.3	3527396 G	A	52	52	60	40
			NC_000962.3	3530955 C	G	105	189	60	40
			NC_000962.3	3534662 T	ç	105	189	60	40
			NC_000962.3	3537016 G	A	69	69	60	40
			NC_000962.3	3542049 G	A	102	189	60	40
gi	448814763	ref	NC_000962.3	3556275 A	G	70	70	60	40

ai	448814763	refl	NC_000962.3	3559689 G	т	69	69	60	40
ai	448814763	ref	NC_000962.3	3572804 T		37	37	60	40
01	448814763	ref	NC_000962.3	3576359 G		50	50	60	40
gi			NC_000962.3	3577497 C		50	50	60	40
	1		NC_000962.3	3578190 G		69	69	60	40
gı			NC_000962.3	3581414 A		102	190	60	40
gı	440014703	nof	NC_000962.3	3591063 T		70	70	60	40
	440014/03	ner i	NC_000962.3	3594658 A		70	70		
gj	LAADDA ARCOL		NC_000962.3			69		60	40
gj				3597249 C			69	60	40
			NC_000962.3	3600576 C		102	181	60	40
gj	448814763	ret	NC_000962.3	3604821 G		37	37	60	40
			NC_000962.3	3614824 G		38	38	60	40
gj			NC_000962.3	3614982 T		105	189	60	40
gj			NC_000962.3	3621423 A		102	190	60	40
gj			NC_000962.3	3622441 A		69	69	60	40
gi			NC_000962.3	3625065 T		105	190	60	40
gj	448814/63	reț	NC_000962.3	3631847 C		32	32	60	40
gj			NC_000962.3	3638093 G		69	69	60	40
gj	1		NC_000962.3	3653988 G		102	190	60	40
			NC_000962.3	3666301 A		69	69	60	40
_ g1	448814763	ret	NC_000962.3	3667296 G		102	189	60	40
_ g1			NC_000962.3	3670040 C		102	189	60	40
_ g1			NC_000962.3	3674157 T		105	189	60	40
gi			NC_000962.3	3678249 A		69	69	60	40
gi			NC_000962.3	3681144 C		102	187	60	40
			NC_000962.3	3681548 A		69	69	60	40
gi	448814763	ref	NC_000962.3	3686038 G		70	70	60	40
gi			NC_000962.3	3688434 A		70	70	60	40
gi			NC_000962.3	3689523 G		70	70	60	40
gi			NC_000962.3	3690016 A		69	69	60	40
gi	448814763	ref	NC_000962.3	3690948 C		69	69	60	40
gi			NC_000962.3	3693681 A		70	70	60	40
gi	448814763	ref	NC_000962.3	3693966 G		69	69	60	40
gi			NC_000962.3	3697299 C		49	49	60	40
gi	448814763	ref	NC_000962.3	3697978 A		69	69	60	40
gi			NC_000962.3	3704596 G		70	70	60	40
gi	448814763	ref	NC_000962.3	3708875 C	G	50	50	60	40
gi	448814763	ref	NC_000962.3	3712372 A	G	27	68	60	12
gi	448814763	ref	NC_000962.3	3712581 C		45	74	60	20
gi			NC_000962.3	3714211 G		69	69	60	40
gi	448814763	ref	NC_000962.3	3714757 A	c	37	37	60	40
gi	448814763	ref	NC_000962.3	3718357 C		52	52	60	40
gi	448814763	ref	NC_000962.3	3720439 T	́А	69	69	60	40
gi	448814763	ref	NC_000962.3	3721806 G	C	37	37	60	40
			NC_000962.3	3725630 A		31	31	60	40
qi	448814763	ref	NC_000962.3	3730407 A		9	92	60	4
qi	448814763	ref	NC_000962.3	3730416 A		9	92	60	4
qi	448814763	ref	NC_000962.3	3743899 G		69	69	60	40
			NC_000962.3	3745864 G		50	50	60	40
			NC_000962.3	3746409 A		70	70	60	40
			NC_000962.3	3750407 G		33	55	60	14
			NC_000962.3	3750417 A		24	65	60	14
			NC_000962.3	3750421 T		30	69	60	14
			NC_000962.3	3752207 A		30	69	60	15
01	448814763	ref	NC_000962.3	3762013 A		99	169	60	40
01	448814763	ref	NC_000962.3	3775409 T		70	70	60	35
01	448814763	ref	NC_000962.3	3775441 A		38	38	60	35
			NC_000962.3	3778396 C		70	70	60	40
			NC_000962.3	3784180 C		102	190	60	40
91	11100211001			5, 5, 100 0	· · ·	102	100		14

ai	448814763 ref	NC 000962.31	3784492 G	Α	69	69	60	40
	448814763 ref		3785133 G	A	50	50	60	40
	448814763 ref		3788150 G	Â	31	31	60	40
	448814763 ref		3798081 C	Ť	50	50	60	39
	448814763 ref		3798095 A	ċ	70	70	60	39
91	1440014703 ref	INC_000962.3						
	448814763 ref		3811672 G	Ţ	69	69	60	40
gi	448814763 ref		3815477 G	Т	69	69	60	40
gı			3817117 C	Α	102	190	60	40
	448814763 ref		3820049 A	G	96	189	60	40
gi	448814763 ref	NC_000962.3	3821845 G	т	69	69	60	40
	448814763 ref		3823159 A	т	69	69	60	40
āi	448814763 ref	NC 000962.3	3826684 C	т	70	70	60	40
	448814763 ref		3829770 T	ċ	70	70	60	40
gi	i		3830349 C	Ť	99	189	60	40
	448814763 ref		3830695 A	Ġ	69	69	60	40
	448814763 ref		3835520 C	Ă	105	189	60	40
	448814763 ref		3838871 A	G	69	69	60	40
	448814763 ref		3841356 G	A	50	50	60	40
	448814763 ref		3842113 G	Α	12	110	60	5
	448814763 ref		3842126 G	A	12	27	60	5
	448814763 ref		3842317 T	ĸ	85	85	60	55
gi	448814763 ref	NC_000962.3	3842620 A	R	152	152	60	69
āi	448814763 ref	NC 000962.3	3842625 A	R	41	41	60	59
ai	448814763 ref	NC 000962.3	3843714 T	Y	93	93	60	53
	448814763 ref		3844726 G	ċ	70	70	60	35
	448814763 ref		3844992 T	Ă	105	188	60	40
	448814763 ref		3845695 C	î	37	37	60	40
	448814763 ref		3845761 G	ċ	70	70	60	40
gi	448814763 ref	INC_000962.3	3846622 G	ĸ	10	10	60	36
gi	448814763 ref	NC_000962.3	3846687 A	R	117	117	60	60
	448814763 ref		3847039 G	Α	15	125	60	6
	448814763 ref		3847052 G	Α	15	32	60	6
	448814763 ref		3847364 C	т	52	52	60	33
gi	448814763 ref	NC_000962.3	3847367 G	A	42	42	60	33
qi	448814763 ref	NC_000962.3	3847546 A	R	8	8	60	41
	448814763 ref		3848451 G	Α	69	69	60	40
	448814763 ref		3851487 G	C	50	50	60	40
qi	Lassaareni C		3851887 A	ē	28	28	60	40
qi	Lassasses C		3851888 T	č	28	28	60	40
	448814763 ref		3859893 C	Ť	70	70	60	40
91	448814763 ref	INC 000962.3	3862009 G	_	50	50		40
				ç			60	
	448814763 ref		3864995 T	ç	50	50	60	40
	448814763 ref		3870010 A	G	105	189	60	40
	448814763 ref		3871246 T	ç	37	37	60	40
	448814763 ref		3877421 A	G	50	50	60	40
	448814763 ref		3882338 C	G	70	70	60	40
gi	448814763 ref	NC_000962.3	3884734 G	S	86	86	60	57
gi	448814763 ref	NC_000962.3	3884748 G	R	1	1	60	56
	448814763 ref		3884787 A	R	28	28	60	79
	448814763 ref		3885886 T	C	99	190	60	40
	448814763 ref		3888617 G	Ā	69	69	60	40
	448814763 ref		3892671 A	Ĝ	69	69	60	40
	448814763 ref		3893480 G	Ă	24	24	60	40
	448814763 ref		3895727 C	Â	102	190	60	40
								40
	448814763 ref		3896340 T	G	105	189	60	
	448814763 ref		3898408 A	G	69	69	60	40
	448814763 ref		3907592 G	ç	102	190	60	40
	448814763 ref		3909235 G	ç	69	69	60	40
g٦	448814763 ref	NC_000962.3	3920949 C	т	50	50	60	40

6	ni l	448814763	refl	NC_000962.3	3920949 C	т	50	50	60	40
				NC_000962.3	3943435 C	À	6	24	60	3
				NC_000962.3	3943444 C	Â	ĕ	12	60	3
				NC_000962.3	3952800 G	Â	69	69	60	40
				NC_000962.3	3958143 A	Ĝ	50	50	60	40
				NC_000962.3	3958403 A	G	69	69	60	40
				NC_000962.3	3959418 C	Ţ	69	69	60	40
				NC_000962.3	3960940 G	A	69	69	60	40
9				NC_000962.3	3961552 C	Т	69	69	60	40
9				NC_000962.3	3964031 G	Α	39	39	60	40
9				NC_000962.3	3970594 C	G	38	38	60	40
9				NC_000962.3	3979990 C	G	69	69	60	40
9	gi	448814763	ref	NC_000962.3	3981983 G	Α	50	50	60	40
9	gi	448814763	ref	NC_000962.3	3984321 G	Α	69	69	60	40
0	gi	448814763	ref	NC_000962.3	3993058 G	A	50	50	60	40
0	qi	448814763	ref	NC_000962.3	3998034 G	Α	50	50	60	40
				NC_000962.3	4001622 T	C	52	52	60	40
				NC_000962.3	4004893 G	A	52	52	60	40
				NC_000962.3	4005114 G	ĉ	50	50	60	40
				NC_000962.3	4005607 T	č	70	70	60	40
1				NC_000962.3	4008747 A	Ğ	70	70	60	40
				NC_000962.3	4019099 C	Ğ	50	50	60	40
				NC_000962.3	4020620 T	č	50	50	60	40
				NC_000962.3	4020020 T 4024273 T	č	37	37	60	40
9				NC_000962.3	4026899 G	A	69	69	60	40
9	91.	448814763	ret	NC_000962.3	4028752 A	G	69	69	60	40
				NC_000962.3	4032625 G	Ţ	105	188	60	40
				NC_000962.3	4034827 C	T	102	189	60	40
				NC_000962.3	4037283 T	G	37	37	60	40
9				NC_000962.3	4041581 C	т	50	50	60	40
				NC_000962.3	4055801 G	Α	52	52	60	40
9				NC_000962.3	4056416 C	A	69	69	60	40
9				NC_000962.3	4056693 G	Т	70	70	60	40
9				NC_000962.3	4059046 G	т	70	70	60	40
0	gi	448814763	ref	NC_000962.3	4059904 A	G	70	70	60	40
0	gi	448814763	ref	NC_000962.3	4060210 T	A	51	180	60	20
		448814763	ref	NC_000962.3	4060882 C	G	38	38	60	40
	gi	448814763	ref	NC_000962.3	4069292 G	Α	69	69	60	40
				NC_000962.3	4069977 T	G	37	37	60	40
				NC_000962.3	4074482 C	Ť	32	32	60	40
6				NC_000962.3	4089058 T	ċ	50	50	60	40
ľ	i.	448814763	ref	NC_000962.3	4090667 G	Ă	105	190	60	40
ľ	i.	448814763	ref	NC_000962.3	4095295 T	ĉ	37	37	60	40
				NC_000962.3	4096171 A	Ğ	69	69	60	40
				NC_000962.3	4099304 G	Ť	32	32	60	40
				NC_000962.3	4100975 T	ć	49	49	60	40
		440014703	nof	NC_000962.3	4101731 A	č	26	26	60	40
1		440014703	nef	NC_000962.3						
9		440014703	rer	NC_000962.3	4107074 T	ç	70	70	60	40
				NC_000962.3	4111303 G	ç	102	190	60	40
				NC_000962.3	4112429 T	ç	105	190	60	40
				NC_000962.3	4122287 G	Ţ	70	70	60	40
				NC_000962.3	4126654 G	ç	69	69	60	40
				NC_000962.3	4128254 G	A	26	26	60	40
9	91	448814763	ref	NC_000962.3	4133316 A	Т	105	190	60	40
				NC_000962.3	4137950 C	Т	69	69	60	40
				NC_000962.3	4141505 G	C	24	24	60	40
				NC_000962.3	4143738 C	Т	70	70	60	40
				NC_000962.3	4145737 A	G	69	69	60	40
9	gi	448814763	ref	NC_000962.3	4151855 A	G	50	50	60	40
1.1				-						

ai	448814763	Iref	NC_000962.3	4151855 A	G	50	50	60	40
ai	448814763	ref	NC_000962.3	4156099 C	Ā	69	69	60	40
qi			NC_000962.3	4156503 C	Ť	69	69	60	40
gi			NC_000962.3	4159195 T	ċ	69	69	60	40
gi			NC_000962.3	4162339 A	Ğ	93	189	60	40
			NC_000962.3	4165481 G	č	33	33	60	40
g			NC_000962.3	4166441 G	Ă	102	187	60	40
91									
g			NC_000962.3	4167656 A	G	105	188	60	40
_ <u>91</u>			NC_000962.3	4168959 C	G	37	37	60	40
_ <u>g</u>			NC_000962.3	4169852 G	Ţ	70	70	60	40
_ <u>g</u>			NC_000962.3	4170739 G	ç	70	70	60	40
_ <u>g</u>	448814763	ret	NC_000962.3	4174131 G	ç	69	69	60	40
_ <u>g</u>	448814763	ret	NC_000962.3	4176540 C	A	69	69	60	40
_ g1			NC_000962.3	4179089 C	Т	69	69	60	40
g			NC_000962.3	4179832 G	C	69	69	60	40
gr			NC_000962.3	4182387 G	C	69	69	60	40
gi			NC_000962.3	4182695 G	A	105	189	60	40
gi			NC_000962.3	4187485 T	C	69	69	60	40
gi	448814763	ref	NC_000962.3	4187817 A	G	69	69	60	40
gi	448814763	ref	NC_000962.3	4188055 C	т	105	188	60	40
gi	448814763	ref	NC_000962.3	4196560 G	A	37	37	60	40
gi	448814763	ref	NC_000962.3	4204441 A	G	50	50	60	40
gi			NC_000962.3	4205120 A	G	50	50	60	40
gi	448814763	İref	NC_000962.3	4205325 A	G	96	182	60	40
gi	448814763	ref	NC_000962.3	4210274 A	Ğ	51	51	60	40
gi			NC_000962.3	4215484 G	č	39	39	60	40
gi			NC_000962.3	4217557 A	Ğ	105	190	60	40
gi			NC_000962.3	4220746 G	Ă	52	52	60	40
			NC_000962.3	4221490 C	Ĝ	70	70	60	40
gi			NC_000962.3	4222073 A	Ğ	105	189	60	40
gi			NC_000962.3	4222882 A	Ğ	70	70	60	40
			NC_000962.3	4223172 T	č	49	49	60	40
1			NC_000962.3	4226004 G	Ă	70	70	60	40
1			NC_000962.3	4231865 C	Â	24	148	60	11
	440014703	nof	NC_000962.3	4232049 G	ĉ	70	70	60	34
g			NC_000962.3	4232049 G	č	39	39	60	34
g					č	32			40
91			NC_000962.3	4233767 G			32	60	
			NC_000962.3	4234805 G	A	39	39	60	40
			NC_000962.3	4242643 C	T	99	189	60	40
			NC_000962.3	4246088 A	G	69	69	60	40
			NC_000962.3	4248003 A	G	70	70	60	40
			NC_000962.3	4251297 G	ç	20	20	60	40
			NC_000962.3	4254006 G	Ţ	69	69	60	40
			NC_000962.3	4254431 G	A	105	190	60	40
			NC_000962.3	4255922 A	G	99	189	60	40
			NC_000962.3	4257220 A	G	102	190	60	40
			NC_000962.3	4262388 C	Т	26	26	60	40
			NC_000962.3	4264825 C	G	52	52	60	40
			NC_000962.3	4267647 T	C	69	69	60	40
gi	448814763	ref	NC_000962.3	4271162 G	Α	70	70	60	40
gi	448814763	ref	NC_000962.3	4275985 G	C	69	69	60	40
gi	448814763	ref	NC_000962.3	4284113 T	C	102	190	60	40
gi	448814763	ref	NC_000962.3	4284429 G	Α	69	69	60	40
ai	448814763	ref	NC_000962.3	4286369 G	C	50	50	60	40
			NC_000962.3	4286805 G	Ā	69	69	60	40
			NC_000962.3	4287164 A	G	50	50	60	40
			NC_000962.3	4287178 C	Ť	69	69	60	40
			NC_000962.3	4290135 C	Ť	99	189	60	40
			NC_000962.3	4292795 G	Å	96	182	60	40
3.									

qi   4	448814763	ref	NC_000962.3	4296015 G	Α	105	189	60	40
			NC_000962.3	4301075 G	C	105	190	60	40
			NC_000962.3	4302036 T	C	102	190	60	40
			NC_000962.3	4306155 C	Ť	37	37	60	40
			NC_000962.3	4306758 T	Å	31	31	60	40
			NC_000962.3	4306822 A	G	102	189	60	40
			NC_000962.3	4307179 G	Ă	102	190	60	40
			NC_000962.3	4308395 G	Â	69	69	60	40
			NC_000962.3	4313128 C	f	50	50	60	40
			NC_000962.3	4314645 A	Ġ	70	70	60	40
			NC_000962.3	4314800 G	Ă	70	70	60	40
			NC_000962.3	4319985 G	ĉ	69	69	60	40
			NC_000962.3	4325373 C	Ť	93	188	60	40
			NC_000962.3	4329782 G	Å	50	50	60	40
			NC_000962.3	4330337 T	ĉ	69	69	60	40
			NC_000962.3	4338600 A	M	0	1	60	5
			NC_000962.3	4338732 G	A	50	50	60	40
			NC_000962.3	4342484 T	ĉ	69	69	60	40
			NC_000962.3	4345707 C	Ť	69	69	60	40
			NC_000962.3	4351039 G	÷	105	189	60	40
			NC_000962.3	4356110 G	ċ	105	189	60	40
			NC_000962.3	4357597 C	Ğ	69	69	60	40
			NC_000962.3	4357804 T	Ğ	105	190	60	40
			NC_000962.3	4359165 G	č	39	39	60	40
			NC_000962.3	4361970 C	Ă	37	37	60	40
			NC_000962.3	4362568 T	Ĝ	50	50	60	40
			NC_000962.3	4363544 A	č	70	70	60	40
			NC_000962.3	4366195 T	č	37	37	60	40
			NC_000962.3	4366272 G	č	37	37	60	40
			NC_000962.3	4368398 C	Ť	105	188	60	40
			NC_000962.3	4369381 C	÷	69	69	60	40
			NC_000962.3	4370593 T	Ġ	70	70	60	40
			NC_000962.3	4371956 T	č	37	37	60	40
			NC_000962.3	4372353 G	č	26	26	60	40
			NC_000962.3	4375628 G	Ť	69	69	60	40
			NC_000962.3	4378504 T	ċ	69	69	60	40
			NC_000962.3	4379680 C	Ğ	37	37	60	40
			NC_000962.3	4382054 T	č	105	189	60	40
			NC_000962.3	4382275 G	Ť	24	24	60	40
			NC_000962.3	4383655 A	Ġ	50	50	60	40
			NC_000962.3	4384007 C	Ğ	38	38	60	40
			NC_000962.3	4386228 T	č	105	190	60	40
			NC_000962.3	4389003 G	R	105	190	60	40
			NC_000962.3	4393178 A	Ĝ	96	189	60	44
			NC_000962.3	4395083 G	č	37	37	60	40
			NC_000962.3	4397736 C	Ť	70	70	60	40
			NC_000962.3	4407588 T	ć	105	181	60	40
			NC_000962.3	4407388 T 4408114 C	Ă	38	38	60	40
			NC_000962.3	4408114 C 4408923 C	Ť	105	189	60	40
a.l.	++0014/03	i ei	[mc_000902.5]	4400923 C	1	103	103	00	40

>

## **APPENDIX II :-**

## Alignment of AQQC query strain with Mycobacterium tuberculosis strain H37Ry.

$\begin{array}{c c c c c c c c c c c c c c c c c c c $
gi       448814763       ref       NC_000962.3       2369       G       A       50       50       60       40         gi       448814763       ref       NC_000962.3       2532       T       C       69       69       60       40         gi       448814763       ref       NC_000962.3       4013       T       C       70       70       60       40         gi       448814763       ref       NC_000962.3       6112       G       C       69       69       60       40         gi       448814763       ref       NC_000962.3       6112       G       C       69       69       60       40         gi       448814763       ref       NC_000962.3       6124       C       T       69       69       60       40         gi       448814763       ref       NC_000962.3       7585       G       C       50       50       60       40         gi       448814763       ref       NC_000962.3       9143       T       C       39       39       60       40         gi       448814763       ref       NC_000962.3       10489       G       A <td< td=""></td<>
gi       448814763       ref       NC_000962.3       2369       G       A       50       50       60       40         gi       448814763       ref       NC_000962.3       2532       T       C       69       69       60       40         gi       448814763       ref       NC_000962.3       4013       T       C       70       70       60       40         gi       448814763       ref       NC_000962.3       6112       G       C       69       69       60       40         gi       448814763       ref       NC_000962.3       6112       G       C       69       69       60       40         gi       448814763       ref       NC_000962.3       6124       C       T       69       69       60       40         gi       448814763       ref       NC_000962.3       7585       G       C       50       50       60       40         gi       448814763       ref       NC_000962.3       9143       T       C       39       39       60       40         gi       448814763       ref       NC_000962.3       10489       G       A <td< td=""></td<>
gi       448814763       ref       NC_000962.3       2532       T       C       69       69       60       40         gi       448814763       ref       NC_000962.3       4013       T       C       70       70       60       40         gi       448814763       ref       NC_000962.3       6112       G       C       69       69       60       40         gi       448814763       ref       NC_000962.3       6124       C       T       69       69       60       40         gi       448814763       ref       NC_000962.3       7362       G       C       70       70       60       40         gi       448814763       ref       NC_000962.3       7585       G       C       50       50       60       40         gi       448814763       ref       NC_000962.3       8452       C       T       105       190       60       40         gi       448814763       ref       NC_000962.3       9143       T       C       39       39       60       40         gi       448814763       ref       NC_000962.3       9304       G       A <t< td=""></t<>
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gi       448814763       ref       NC_000962.3       6124       C       T       69       69       60       40         gi       448814763       ref       NC_000962.3       7362       G       C       70       70       60       40         gi       448814763       ref       NC_000962.3       7585       G       C       50       50       60       40         gi       448814763       ref       NC_000962.3       7585       G       C       50       50       60       40         gi       448814763       ref       NC_000962.3       9143       T       C       39       39       60       40         gi       448814763       ref       NC_000962.3       9143       T       C       39       39       60       40         gi       448814763       ref       NC_000962.3       10089       G       A       70       70       60       40         gi       448814763       ref       NC_000962.3       11879       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       12234       C       G       <
gi       448814763       ref       NC_000962.3       7362       G       C       70       70       60       40         gi       448814763       ref       NC_000962.3       7585       G       C       50       50       60       40         gi       448814763       ref       NC_000962.3       7585       G       C       50       50       60       40         gi       448814763       ref       NC_000962.3       9143       T       C       39       39       60       40         gi       448814763       ref       NC_000962.3       9143       T       C       39       39       60       40         gi       448814763       ref       NC_000962.3       9304       G       A       70       70       60       40         gi       448814763       ref       NC_000962.3       10089       G       A       105       189       60       40         gi       448814763       ref       NC_000962.3       11879       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       12234       C       G
gi       448814763       ref       NC_000962.3       7585       G       C       50       50       60       40         gi       448814763       ref       NC_000962.3       8452       C       T       105       190       60       40         gi       448814763       ref       NC_000962.3       9143       T       C       39       39       60       40         gi       448814763       ref       NC_000962.3       9304       G       A       70       70       60       40         gi       448814763       ref       NC_000962.3       10089       G       A       105       189       60       40         gi       448814763       ref       NC_000962.3       11879       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       12234       C       G       26       26       60       40         gi       448814763       ref       NC_000962.3       12234       C       G       26       26       60       40         gi       448814763       ref       NC_000962.3       12697       G       A
gi       448814763       ref       NC_000962.3       8452       C       T       105       190       60       40         gi       448814763       ref       NC_000962.3       9143       T       C       39       39       60       40         gi       448814763       ref       NC_000962.3       9304       G       A       70       70       60       40         gi       448814763       ref       NC_000962.3       10089       G       A       105       189       60       40         gi       448814763       ref       NC_000962.3       11879       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       12234       C       G       26       26       60       40         gi       448814763       ref       NC_000962.3       12234       C       G       26       26       60       40         gi       448814763       ref       NC_000962.3       12697       G       A       52       52       60       40         gi       448814763       ref       NC_000962.3       13298       G       C
gi       448814763       ref       NC_000962.3       9143       T       C       39       39       60       40         gi       448814763       ref       NC_000962.3       9304       G       A       70       70       60       40         gi       448814763       ref       NC_000962.3       10089       G       A       105       189       60       40         gi       448814763       ref       NC_000962.3       11879       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       12234       C       G       26       26       60       40         gi       448814763       ref       NC_000962.3       12234       C       G       26       26       60       40         gi       448814763       ref       NC_000962.3       12697       G       A       52       52       60       40         gi       448814763       ref       NC_000962.3       13298       G       C       69       69       60       40
gi       448814763       ref       NC_000962.3       9304       G       A       70       70       60       40         gi       448814763       ref       NC_000962.3       10089       G       A       105       189       60       40         gi       448814763       ref       NC_000962.3       11879       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       12234       C       G       26       26       60       40         gi       448814763       ref       NC_000962.3       12234       C       G       26       26       60       40         gi       448814763       ref       NC_000962.3       12697       G       A       52       52       60       40         gi       448814763       ref       NC_000962.3       13298       G       C       69       69       60       40
gi       448814763       ref       NC_000962.3       10089       G       A       105       189       60       40         gi       448814763       ref       NC_000962.3       11879       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       12234       C       G       26       26       60       40         gi       448814763       ref       NC_000962.3       12234       C       G       26       26       60       40         gi       448814763       ref       NC_000962.3       12697       G       A       52       52       60       40         gi       448814763       ref       NC_000962.3       13298       G       C       69       69       60       40
gi       448814763       ref       NC_000962.3       12234       C       G       26       26       60       40         gi       448814763       ref       NC_000962.3       12697       G       A       52       52       60       40         gi       448814763       ref       NC_000962.3       13298       G       C       69       69       60       40
gi 448814763 ref NC_000962.3 12697 G A 52 52 60 40 gi 448814763 ref NC_000962.3 13298 G C 69 69 60 40
gi 448814763 ref NC_000962.3 13298 G C 69 69 60 40
gi  448814763 ref NC_000962.3  13304 C T 37 37 60 40 gi  448814763 ref NC_000962.3  13460 A G 105 190 60 40
g1 448814763 ref NC_000962.3 13460 A G 105 190 60 40 g1 448814763 ref NC_000962.3 14401 A G 70 70 60 40
gi 448814763 ref NC_000962.3 14785 T C 69 69 60 40
gi 448814763 ref NC_000962.3 15117 C G 69 69 60 40
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gi 448814763 ref NC_000962.3 34601 C M 103 103 60 57
gi 448814763 ref NC_000962.3 36538 T C 70 70 60 40
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gi 448814763 ref NC_000962.3 42281 C A 70 70 60 40
gi  448814763 ref NC_000962.3   42967 G C 50 50 60 40 gi  448814763 ref NC_000962.3   43945 A G 102 189 60 40
Trinnen i fine eres el terto e de terto
g1 448814763 ref NC_000962.3 46114 C G 99 189 60 40 g1 448814763 ref NC_000962.3 50557 T C 37 37 60 40
gi 448814763 ref NC_000962.3 51949 A G 69 69 60 40
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gi 448814763 ref NC_000962.3 55553 C T 4 17 60 24
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gi 448814763 ref NC_000962.3  97696 T C 32 32 60 40

gi 4	48814763	ref	NC_000962.3	189948	C	G	70	70	60	40
			NC_000962.3		C	G	50	50	60	40
gi 4	48814763	ref	NC_000962.3	194681	Ğ	č	70	70	60	40
			NC_000962.3	195360	Ť	č	70	70	60	40
			NC_000962.3	196642	ċ	Ť	69	69	60	40
			NC_000962.3	196874	č	Ť	105	189	60	40
			NC_000962.3	199470	Ť	Ġ	70	70	60	40
	48814763	ref	NC_000962.3	199857	Ġ	Ă	90	115	60	40
			NC_000962.3	199859	č	Â	90	115	60	40
			NC_000962.3	206339	Ť	ĉ	50	50	60	40
			NC_000962.3	211639	Ġ	č	69	69	60	40
			NC_000962.3	211039			50	50		
				211995	ç	A T			60	40
g1 4	40014703	rer	NC_000962.3		ç		105	188	60	40
			NC_000962.3	217155	ç	Ţ	70	70	60	40
			NC_000962.3	217201	Ţ	ç	102	189	60	40
			NC_000962.3	219722	Ģ	Ţ	69	69	60	40
			NC_000962.3	223942	Ţ	ç	69	69	60	40
			NC_000962.3	225039	G	A	38	38	60	40
			NC_000962.3	225323	Т	<u>c</u>	69	69	60	40
			NC_000962.3	225668	ç	Ţ	70	70	60	40
			NC_000962.3	226676	G	A	32	32	60	40
			NC_000962.3	227098	Т	C	102	189	60	40
			NC_000962.3	231114	C	G	37	37	60	40
			NC_000962.3	233358	А	C	90	180	60	40
			NC_000962.3	233364	G	C	37	37	60	40
			NC_000962.3	234268	G	т	38	38	60	40
			NC_000962.3	243598	Α	G	105	176	60	40
gi 4	48814763	ref	NC_000962.3	244550	А	G	70	70	60	40
			NC_000962.3	249522	Т	C	105	188	60	40
			NC_000962.3	251575	G	Α	96	189	60	40
gi 4	48814763	ref	NC_000962.3	251669	Т	C	69	69	60	40
gi 4	48814763	ref	NC_000962.3	254903	C	Α	69	69	60	40
gi 4			NC_000962.3	260282	G	т	69	69	60	40
			NC_000962.3	261869	Т	C	96	183	60	40
gi 4	48814763	ref	NC_000962.3	263149	Α	C	102	183	60	40
gi 4	48814763	ref	NC_000962.3	264298	C	Α	38	38	60	40
	48814763	ref	NC_000962.3	264984	C	G	26	26	60	40
	48814763	ref	NC_000962.3	265554	Α	C	102	189	60	40
			NC_000962.3	271991	Т	G	50	50	60	40
			NC_000962.3	272678	C	т	102	188	60	40
			NC_000962.3		C	G	50	50	60	40
			NC_000962.3	281208	C	т	105	189	60	40
			NC_000962.3	282878	č	Ť	70	70	60	40
			NC_000962.3	283614	Т	Ċ	69	69	60	40
			NC_000962.3	284310	Å	Ğ	50	50	60	40
			NC_000962.3	285772	A	č	70	70	60	40
			NC_000962.3	285871	A	Ğ	69	69	60	40
ail4	48814763	ref	NC_000962.3	290374	Ť	č	102	189	60	40
gi 4	48814763	ref	NC_000962.3	304923	À	Ğ	39	39	60	40
gi 4	48814763	ref	NC_000962.3	308312	G	Ă	69	69	60	40
			NC_000962.3	309765	č	î	105	190	60	40
			NC_000962.3	310973	Ğ	Å	102	189	60	40
oi la	48814763	ref	NC_000962.3	311613	Ğ	f	69	69	60	40
			NC_000962.3	320180	Ă	Ġ	37	37	60	40
			NC_000962.3	325505	Ŧ	č	70	70	60	40
			NC_000962.3	326002	Å	G	50	50	60	40
			NC_000962.3	328777	ĉ	T	69	69	60	40
014	48814762	ref	NC_000962.3	331588	Ğ	Å	70	70	60	40
			NC_000962.3		č	Ť	102	182	60	40
9114	40014/03	i ei	[mc_000302.5]	331940	C	1	102	102	00	40

ai	448814763	Iref	NC_000962.3	332787	т	C	15	29	60	8
			NC_000962.3	332916	Ť	G	36	45	60	15
			NC_000962.3	333212	Ġ	č	50	50	60	40
qi			NC_000962.3	333259	Ă	Ğ	33	33	60	34
gi			NC_000962.3	333292	Â	Ğ	90	188	60	34
			NC_000962.3	333640	Ĝ	Ă	60	182	60	23
			NC_000962.3	335642	A	Ĝ	24	64	60	11
<u>g</u> ]										
	440014703	rei	NC_000962.3	335819	Ģ	ç	44	44	60	20
<u>g</u> j			NC_000962.3	335826	Ţ	G	33	45	60	13
gj	i		NC_000962.3	335844	Ţ	ĸ	9	9	60	10
gj			NC_000962.3	335865	A	G	45	74	60	16
gj			NC_000962.3	335885	Ţ	G	33	163	60	13
gj			NC_000962.3	335906	Ţ	ç	42	74	60	16
			NC_000962.3	336050	A	G	39	111	60	18
_ g1			NC_000962.3	336053	G	c	33	65	60	15
_ g1			NC_000962.3	336182	G	A	6	45	60	5
_ g1			NC_000962.3	336193	Т	G	12	110	60	5
gı			NC_000962.3	337499	Т	G	75	186	60	28
gı			NC_000962.3	337503	т	G	42	42	60	24
			NC_000962.3	337535	C	G	24	51	60	9
gi			NC_000962.3	337547	Α	т	24	154	60	9
gi	448814763	ref	NC_000962.3	338600	G	C	21	39	60	8
gi	448814763	ref	NC_000962.3	338607	Т	G	18	36	60	8
gi			NC_000962.3	338628	Α	G	6	24	60	5
gi	448814763	ref	NC_000962.3	338648	Т	G	27	161	60	11
	448814763	ref	NC_000962.3	338669	Т	C	39	74	60	15
ai	448814763	ref	NC_000962.3	338719	т	C	36	167	60	15
gi			NC_000962.3	338810	G	C	44	44	60	19
gi			NC_000962.3	338963	Т	Ċ	71	71	60	35
gi			NC_000962.3	339508	Ċ	Ť	69	69	60	40
gi			NC_000962.3	339702	ē	Ť	27	66	60	15
			NC_000962.3	339705	ē	Ť	24	64	60	12
ai	448814763	ref	NC_000962.3	339738	č	Ť	36	56	60	15
gi			NC_000962.3	339747	č	Å	63	73	60	24
gi	1		NC_000962.3	339843	Ğ	Ť	12	27	60	5
gi			NC_000962.3	339846	č	Ġ	15	24	60	8
gi			NC_000962.3	339867	Ğ	Ă	54	54	60	24
			NC_000962.3	340132	Ğ	Â	25	25	60	40
			NC_000962.3	340372	Ť	ĉ	69	69	60	40
9	448814763	ref	NC_000962.3	342146	Å	č	69	69	60	40
9	448814763	ref	NC_000962.3	343281	Ĝ	č	25	25	60	40
91	440014703	nof	NC_000962.3	344288	č	Ğ	69	69	60	40
			NC_000962.3	346275	č	G	37	37	60	40
			NC_000962.3	350208	č	G	33	54		14
			NC_000962.3	350208		T	18	129	60	
					ç				60	9 7
			NC_000962.3	350423	G	ç	9	11	60	
			NC_000962.3	350426	A	G	12	27	60	10
			NC_000962.3	350489	G	ç	70	70	60	40
			NC_000962.3	355677	G	Ţ	39	39	60	40
			NC_000962.3	356528	A	G	69	69	60	40
gj	448814/63	ret	NC_000962.3	357582	G	A	70	70	60	40
gj	448814763	ret	NC_000962.3	358926	A	ç	69	69	60	40
			NC_000962.3	361652	Ģ	A	84	186	60	31
			NC_000962.3	361675	A	C	38	38	60	19
			NC_000962.3	361690	Ţ	<u>c</u>	69	185	60	24
			NC_000962.3	361708	C	Т	36	173	60	13
gi	448814763	ref	NC_000962.3	367298	Т	G	24	47	60	9
			NC_000962.3	367302	C	G	24	27	60	9
gi	448814763	ref	NC_000962.3	368102	Т	W	29	29	60	25

ai	448814763 ref	NC 000962.3	368691	С	G	29	29	60	31
	448814763 ref		368698	ē	Ğ	52	52	60	31
gi	448814763 ref		368948	Ť	č	69	69	60	40
	448814763 ref		370056	Ġ	Ă	102	189	60	40
<u>g</u> 1			372149	Ğ	Â	44	44	60	23
gj									
	448814763 ref		372913	A	ç	49	49	60	40
gj	448814763 ref		376774	Т	C	69	69	60	40
gı	448814763 ref		377831	G	C	50	50	60	40
gi	448814763 ref		378357	т	G	69	69	60	40
gi			378939	G	C	39	39	60	40
qi	448814763 ref	NC_000962.3	380772	G	Α	69	69	60	40
āi	448814763 ref	NC_000962.3	381030	Α	G	69	69	60	40
	448814763 ref		384380	A	ē	69	69	60	40
gi			386432	ĉ	Ğ	32	32	60	40
gi	448814763 ref		390828	Ť	č	69	69	60	40
			391853	Å	Ğ	69	69	60	40
<u>g</u> 1									
	448814763 ref		392261	Ţ	ç	69	69	60	40
	448814763 ref		393941	ç	T	105	189	60	40
gj	448814763 ref		396750	G	A	105	190	60	40
g٦	448814763 ref		397558	C	т	38	38	60	40
gi			403980	G	Α	69	69	60	40
gi	448814763 ref	NC_000962.3	404326	Т	C	37	37	60	40
āi	448814763 ref	NC 000962.3	406274	Т	С	105	189	60	40
	448814763 ref		406389	G	Α	102	186	60	40
qi	448814763 ref		406992	Ğ	Ť	69	69	60	40
qi	448814763 ref		407540	Ğ	Å	70	70	60	40
qi			412280	Ť	Ĝ	105	189	60	40
	448814763 ref			ċ	T	39	39		40
			414486					60	
_	448814763 ref		415061	G	A	69	69	60	40
gj			418742	ç	T	69	69	60	40
gj	448814763 ref		420008	Α	G	69	69	60	40
gı	448814763 ref		420405	C	т	69	69	60	40
gi	448814763 ref	NC_000962.3	423334	G	A	69	69	60	40
gi	448814763 ref	NC_000962.3	424250	А	G	25	25	60	40
qi	448814763 ref	NC_000962.3	424932	Т	Α	69	69	60	40
gi	448814763 ref		426768	C	т	69	69	60	40
gi	448814763 ref		431102	G	Ċ	31	31	60	40
qi	i		434327	Ā	Ğ	102	189	60	40
	448814763 ref		436226	ĉ	Ğ	69	69	60	40
	448814763 ref		438271	Ğ	Ă	69	69	60	40
	448814763 ref		439711	Ţ	ç	69	69	60	40
	448814763 ref		441890	A	Ģ	69	69	60	40
	448814763 ref		445668	ç	Ţ	69	69	60	40
gı	448814763 ref	NC_000962.3	445780	C	Т	102	190	60	40
	448814763 ref		447138	Т	C	102	176	60	40
gi	448814763 ref	NC_000962.3	447442	C	Т	37	37	60	40
gi	448814763 ref	NC_000962.3	447525	G	C	70	70	60	40
qi	448814763 ref	NC_000962.3	451479	C	т	70	70	60	40
	448814763 ref		454295	Т	C	31	31	60	40
	448814763 ref		455329	Ť	ē	65	65	60	40
01	448814763 ref	NC 000962 3	456511	Ġ	Ă	69	69	60	40
3	448814763 ref	NC 000962 3	457114	Ğ	Â	69	69	60	40
	448814763 ref		457452	Ť	Ĝ	70	70	60	40
	448814763 ref		458233	T	ç	69	69	60	40
	448814763 ref		459399	A	c	105	188	60	40
	448814763 ref		462806	G	A	50	50	60	40
	448814763 ref		465697	G	C	69	69	60	40
	448814763 ref		467585	G	C	48	182	60	17
gí	448814763 ref	NC_000962.3	467590	т	C	48	57	60	17

ii 448314763       ref WC_000962.3       467631       T       G       72       72       60       28         ii 448314763       ref WC_000962.3       467637       A       G       37       37       60       40         ii 448314763       ref WC_000962.3       467942       C       T       105       189       60       40         ii 448314763       ref WC_000962.3       471320       G       A       69       69       60       40         ii 448314763       ref WC_000962.3       471566       A       G       70       70       60       40         ii 448314763       ref WC_000962.3       483335       T       G       69       60       40         ii 448314763       ref WC_000962.3       4845330       T       A       105       190       60       40         ii 448314763       ref WC_000962.3       489353       G       C       77       76       60       40         ii 448314763       ref WC_000962.3       491250       G       C       25       60       40       448314763       ref WC_000962.3       492150       G       50       60       40       448314763       ref WC_000962.3       492150										
ii 448814763       ref INC_000962.3       467638       G       T       38       38       60       37         ii 448814763       ref INC_000962.3       469307       A       G       37       60       40         ii 448814763       ref INC_000962.3       471320       G       A       69       69       60       40         ii 448814763       ref INC_000962.3       471320       G       49       49       60       40         ii 448814763       ref INC_000962.3       4837335       T       G       49       49       60       40         ii 448814763       ref INC_000962.3       4837335       T       G       69       60       40         ii 448814763       ref INC_000962.3       483735       T       G       69       60       40         ii 448814763       ref INC_000962.3       481742       T       C       26       60       40         ii 448814763       ref INC_000962.3       492745       C       T       50       50       60       40         ii 448814763       ref INC_000962.3       492745       C       T       50       50       40       448814763       ref INC_000962.3       492745	ai	448814763 ref	NC 000962.31	467621	т	G	72	72	60	28
ii 448814763       ref INC_000962.3       468357       A       G       37       37       60       40         ii 448814763       ref INC_000962.3       471320       G       A       69       69       60       40         ii 448814763       ref INC_000962.3       471320       G       A       69       69       60       40         ii 448814763       ref INC_000962.3       471378       T       C       70       70       60       36         ii 448814763       ref INC_000962.3       483935       T       G       49       90       60       40         ii 448814763       ref INC_000962.3       483235       C       T       102       190       60       40         ii 448814763       ref INC_000962.3       49150       G       C       25       50       40         ii 448814763       ref INC_000962.3       492150       G       C       25       50       40       448814763       ref INC_000962.3       492150       G       25       60       40       448814763       ref INC_000962.3       492150       G       37       37       60       40       448814763       ref INC_000962.3       492150       G <td< td=""><td>ai</td><td>448814763 ref</td><td>NC 000962.3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	ai	448814763 ref	NC 000962.3							
ii 448814763       ref INC_000962.3       469042       C       T       105       189       60       40         ii 448814763       ref INC_000962.3       471320       G       A       69       69       60       40         ii 448814763       ref INC_000962.3       475178       T       C       70       70       60       36         ii 448814763       ref INC_000962.3       488333       T       G       49       49       60       40         ii 448814763       ref INC_000962.3       488337       T       G       69       69       60       40         ii 448814763       ref INC_000962.3       488337       T       C       26       26       60       40         ii 448814763       ref INC_000962.3       482130       G       C       37       77       60       40         ii 448814763       ref INC_000962.3       492150       G       C       25       50       60       40       448814763       ref INC_000962.3       492150       G       73       75       60       40       448814763       ref INC_000962.3       492150       G       73       75       60       40       448814763       ref INC_000962.	ai	448814763 ref	NC 000962.3							
ii 448814763       ref Ix_000962.3       471360       A       69       69       60       40         ii 448814763       ref Ix_000962.3       4715178       T       C       70       70       60       36         gi 448814763       ref Ix_000962.3       4483935       T       G       49       60       400         gi 448814763       ref Ix_000962.3       4483935       T       A       105       190       60       400         gi 448814763       ref Ix_000962.3       485783       T       G       69       69       60       400         gi 448814763       ref Ix_000962.3       481742       T       C       26       60       400         gi 448814763       ref Ix_000962.3       492655       G       A       69       60       400         gi 448814763       ref Ix_000962.3       492655       G       A       50       50       60       400         gi 448814763       ref Ix_000962.3       492655       G       A       69       60       400       448814763       ref Ix_000962.3       492655       G       70       50       50       400       448814763       ref Ix_000962.3       495473       C										
ii       448814763       ref       NC_000962.3       475178       T       C       70       60       36         ii       448814763       ref       NC_000962.3       483935       T       G       49       49       60       40         ii       448814763       ref       NC_000962.3       483935       T       G       69       60       40         ii       448814763       ref       NC_000962.3       483935       T       G       69       60       40         ii       448814763       ref       NC_000962.3       483935       G       C       37       76       640         ii       448814763       ref       NC_000962.3       492148       C       T       50       50       60       400         ii       448814763       ref       NC_000962.3       492748       C       T       50       50       60       400         ii       448814763       ref       NC_000962.3       495835       C       G       37       76       40         ii       448814763       ref       NC_000962.3       495857       C       T       50       50       60       40       <										
ii       448814763       ref       NC_000962.3       475178       T       C       70       70       60       36         ii       448814763       ref       NC_000962.3       488393       T       A       105       190       60       40         ii       448814763       ref       NC_000962.3       485735       T       G       69       69       60       40         ii       448814763       ref       NC_000962.3       485735       T       C       26       26       60       40         ii       448814763       ref       NC_000962.3       492172       T       C       26       60       40         ii       448814763       ref       NC_000962.3       492173       C       T       50       50       60       40         ii       448814763       ref       NC_000962.3       495873       C       T       50       50       60       40         ii       448814763       ref       NC_000962.3       498517       C       G       50       50       60       40         ii       448814763       ref       NC_000962.3       502589       C       S0       <										
ii       448814763       ref       NC_000962.3       484839       T       A       105       190       60       40         ii       448814763       ref       NC_000962.3       485785       T       G       69       69       60       400         ii       448814763       ref       NC_000962.3       485785       T       G       69       69       60       400         ii       448814763       ref       NC_000962.3       492140       G       C       25       60       400         ii       448814763       ref       NC_000962.3       4921430       G       C       25       50       40         ii       448814763       ref       NC_000962.3       492743       C       T       50       50       60       400         ii       448814763       ref       NC_000962.3       498857       C       A       99       190       60       36         ii       448814763       ref       NC_000962.3       498557       C       A       99       190       60       36         ii       448814763       ref       NC_000962.3       501066       C       105       189 <td>_</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	_									
ii       448814763       ref       NC_000962.3       448339       T       A       105       190       60       40         ii       448814763       ref       NC_000962.3       485785       T       G       69       69       60       40         ii       448814763       ref       NC_000962.3       485125       G       37       60       40         ii       448814763       ref       NC_000962.3       491742       T       C       25       25       60       40         ii       448814763       ref       NC_000962.3       492655       G       A       69       60       40         ii       448814763       ref       NC_000962.3       4926457       C       T       50       50       60       40         ii       448814763       ref       NC_000962.3       498517       C       A       60       40         ii       448814763       ref       NC_000962.3       498513       A       G       70       70       60       36         ii       448814763       ref       NC_000962.3       503547       G       50       50       60       40       448814763 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>										
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gi       448814763       ref       NC_000962.3       492150       G       C       25       56       40         gi       448814763       ref       NC_000962.3       492748       C       T       69       69       60       40         gi       448814763       ref       NC_000962.3       495473       C       T       69       69       60       40         gi       448814763       ref       NC_000962.3       498010       T       C       50       50       60       40         gi       448814763       ref       NC_000962.3       498157       C       A       99       190       60       36         gi       448814763       ref       NC_000962.3       503546       C       102       190       60       40         gi       448814763       ref       NC_000962.3       503534       G       102       190       60       40         gi       448814763       ref       NC_000962.3       503574       G       A       50       50       60       40         gi       448814763       ref       NC_000962.3       513257       T       C       105       189						ē				
gi       448814763       ref       NC_000962.3       492655       G       A       69       69       60       40         gi       448814763       ref       NC_000962.3       495473       C       T       50       50       60       40         gi       448814763       ref       NC_000962.3       495473       C       T       50       50       60       40         gi       448814763       ref       NC_000962.3       498531       A       G       70       70       60       36         gi       448814763       ref       NC_000962.3       498531       A       G       70       70       60       36         gi       448814763       ref       NC_000962.3       499196       C       T       105       189       60       40         gi       448814763       ref       NC_000962.3       50354       G       102       105       189       60       40       448814763       ref       NC_000962.3       51257       T       C       105       189       60       40       448814763       ref       NC_000962.3       51257       T       C       105       189       60	_									
gi       448814763       ref       NC_000962.3       495473       C       T       50       50       60       40         gi       448814763       ref       NC_000962.3       496482       C       G       37       37       60       40         gi       448814763       ref       NC_000962.3       498010       T       C       50       50       60       40         gi       448814763       ref       NC_000962.3       498537       C       A       99       190       60       36         gi       448814763       ref       NC_000962.3       50166       C       T       105       189       60       40         gi       448814763       ref       NC_000962.3       503354       G       C       102       190       60       40         gi       448814763       ref       NC_000962.3       503574       G       A       70       70       60       40         gi       448814763       ref       NC_000962.3       513257       T       C       105       180       60       40         gi       448814763       ref       NC_000962.3       514557       T										
gi       448814763       ref       NC_000962.3       495473       C       T       69       69       60       40         gi       448814763       ref       NC_000962.3       4988010       T       C       G       37       76       60       40         gi       448814763       ref       NC_000962.3       498531       A       G       70       70       60       36         gi       448814763       ref       NC_000962.3       4985357       C       A       99       190       60       36         gi       448814763       ref       NC_000962.3       500587       C       T       105       189       60       40         gi       448814763       ref       NC_000962.3       501547       G       A       50       60       40         gi       448814763       ref       NC_000962.3       513257       T       C       105       190       60       40       448814763       ref       NC_000962.3       514557       T       C       105       189       60       40       448814763       ref       NC_000962.3       514557       T       C       105       189       60										
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gi       444814763       ref       NC_000962.3       S01066       C       T       S4       S6       60       21         gi       444814763       ref       NC_000962.3       S02589       C       G       S0       50       60       40         gi       448814763       ref       NC_000962.3       S03547       G       A       50       50       60       40         gi       448814763       ref       NC_000962.3       S03547       G       A       70       70       60       40         gi       448814763       ref       NC_000962.3       S1257       T       C       105       189       60       40         gi       448814763       ref       NC_000962.3       S17358       T       C       69       69       60       40         gi       448814763       ref       NC_000962.3       S17411       A       G       105       189       60       40         gi       448814763       ref       NC_000962.3       S12312       C       T       99       189       60       40         gi       448814763       ref       NC_000962.3       S223213       C	ai	448814763 ref	NC 000962.3							
gi       448814763       ref       NC_000962.3       502589       C       G       50       50       60       40         gi       448814763       ref       NC_000962.3       503354       G       C       102       190       60       40         gi       448814763       ref       NC_000962.3       503647       G       A       50       50       60       40         gi       448814763       ref       NC_000962.3       513257       T       C       105       190       60       40         gi       448814763       ref       NC_000962.3       517358       T       C       60       69       60       40         gi       448814763       ref       NC_000962.3       517411       A       G       105       189       60       40         gi       448814763       ref       NC_000962.3       512185       T       G       69       69       60       40         gi       448814763       ref       NC_000962.3       522081       A       50       50       60       40         gi       448814763       ref       NC_000962.3       524891       C       A										
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gi       448814763       ref       NC_000962.3       503647       G       A       50       50       60       40         gi       448814763       ref       NC_000962.3       503974       G       A       70       70       60       40         gi       448814763       ref       NC_000962.3       513257       T       C       105       189       60       40         gi       448814763       ref       NC_000962.3       517358       T       C       69       69       60       40         gi       448814763       ref       NC_000962.3       517411       A       G       105       189       60       40         gi       448814763       ref       NC_000962.3       517412       G       A       69       69       60       40         gi       448814763       ref       NC_000962.3       522081       A       6       69       60       40         gi       448814763       ref       NC_000962.3       527316       C       A       70       70       60       40         gi       448814763       ref       NC_000962.3       527316       C       A										
gi       448814763       ref       NC_000962.3       513257       T       C       105       190       60       40         gi       448814763       ref       NC_000962.3       513257       T       C       105       189       60       40         gi       448814763       ref       NC_000962.3       514657       T       G       105       189       60       40         gi       448814763       ref       NC_000962.3       517411       A       G       105       189       60       40         gi       448814763       ref       NC_000962.3       517412       G       A       69       69       60       40         gi       448814763       ref       NC_000962.3       522081       A       G       69       60       40         gi       448814763       ref       NC_000962.3       52213       C       T       99       189       60       40         gi       448814763       ref       NC_000962.3       527316       C       G       70       70       60       40         gi       448814763       ref       NC_000962.3       541362       C       A	ai	448814763 ref	NC 000962.3							
	ai	448814763 ref	NC_000962.3							
gi       448814763       ref       NC_000962.3       517742       G       A       69       69       60       40         gi       448814763       ref       NC_000962.3       519185       T       G       69       69       60       40         gi       448814763       ref       NC_000962.3       522081       A       G       69       69       60       40         gi       448814763       ref       NC_000962.3       52213       C       T       99       189       60       40         gi       448814763       ref       NC_000962.3       527316       C       G       70       70       60       40         gi       448814763       ref       NC_000962.3       528354       C       A       70       70       60       40         gi       448814763       ref       NC_000962.3       541201       A       G       69       69       60       40         gi       448814763       ref       NC_000962.3       541362       C       G       50       50       60       40         gi       448814763       ref       NC_000962.3       543647       T <td< td=""><td></td><td></td><td></td><td></td><td>Α</td><td>G</td><td></td><td></td><td></td><td></td></td<>					Α	G				
$g_i$ $448814763$ $ref$ $NC_000962.3$ $519185$ TG $69$ $69$ $60$ $40$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $522081$ AG $69$ $69$ $60$ $40$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $5223213$ CT $99$ $189$ $60$ $40$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $524891$ CA $50$ $50$ $60$ $40$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $527316$ CG $70$ $70$ $60$ $40$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $534277$ TA $105$ $189$ $60$ $40$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $541201$ AG $69$ $60$ $40$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $541362$ CG $50$ $50$ $60$ $40$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $543618$ CA $33$ $167$ $60$ $14$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $543618$ CT $39$ $74$ $60$ $14$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $554525$ AC $69$ $69$ $60$ $40$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $5559545$ TC $70$ $70$ $60$ $40$ $g_i$ $44881$							69			
gi $448814763$ refNC_000962.3 $523213$ CT99 $189$ 6040gi $448814763$ refNC_000962.3 $524891$ CA $50$ $50$ $60$ $40$ gi $448814763$ refNC_000962.3 $527316$ CG $70$ $70$ $60$ $40$ gi $448814763$ refNC_000962.3 $52854$ CA $70$ $70$ $60$ $40$ gi $448814763$ refNC_000962.3 $54427$ TA $105$ $189$ $60$ $40$ gi $448814763$ refNC_000962.3 $541201$ AG $69$ $69$ $60$ $40$ gi $448814763$ refNC_000962.3 $543607$ TC $6$ $67$ $60$ $3$ gi $448814763$ refNC_000962.3 $543618$ CA $33$ $167$ $60$ $14$ gi $448814763$ refNC_000962.3 $543641$ CT $39$ $74$ $60$ $14$ gi $448814763$ refNC_000962.3 $54357$ AG $37$ $37$ $60$ $40$ gi $448814763$ refNC_000962.3 $55945$ TC $70$ $70$ $60$ $40$ gi $448814763$ refNC_000962.3 $555945$ TC $70$ $70$ $60$ $40$ gi $448814763$ refNC_000962.3 $5559350$ GA $105$				519185	т		69	69	60	40
$g_i$ $448814763$ $ref$ $NC_000962.3$ $523213$ $C$ $T$ $99$ $189$ $60$ $40$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $524891$ $C$ $A$ $50$ $50$ $60$ $40$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $527316$ $C$ $G$ $70$ $70$ $60$ $40$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $528354$ $C$ $A$ $70$ $70$ $60$ $40$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $541201$ $A$ $G$ $69$ $69$ $60$ $40$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $541201$ $A$ $G$ $69$ $60$ $40$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $543607$ $T$ $C$ $6$ $67$ $60$ $3$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $543618$ $C$ $A$ $33$ $167$ $60$ $14$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $543617$ $A$ $G$ $37$ $37$ $60$ $40$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $54357$ $A$ $G$ $37$ $37$ $60$ $40$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $555955$ $A$ $C$ $69$ $69$ $60$ $40$ $g_i$ $448814763$ $ref$ $NC_000962.3$ $555955$ $A$ $C$ $70$ $70$ $60$				522081	Α		69	69	60	40
gi       448814763       ref       NC_000962.3       524891       C       A       50       50       60       40         gi       448814763       ref       NC_000962.3       527316       C       G       70       70       60       40         gi       448814763       ref       NC_000962.3       528354       C       A       70       70       60       40         gi       448814763       ref       NC_000962.3       541201       A       G       69       69       60       40         gi       448814763       ref       NC_000962.3       541362       C       G       50       50       60       40         gi       448814763       ref       NC_000962.3       541362       C       G       50       50       60       40         gi       448814763       ref       NC_000962.3       543641       C       T       33       167       60       14         gi       448814763       ref       NC_000962.3       546357       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       551525       A <t< td=""><td></td><td></td><td></td><td>523213</td><td>С</td><td>т</td><td>99</td><td>189</td><td>60</td><td>40</td></t<>				523213	С	т	99	189	60	40
gi       448814763       ref       NC_000962.3       528354       C       A       70       70       60       40         gi       448814763       ref       NC_000962.3       534427       T       A       105       189       60       40         gi       448814763       ref       NC_000962.3       541201       A       G       69       69       60       40         gi       448814763       ref       NC_000962.3       541362       C       G       50       50       60       40         gi       448814763       ref       NC_000962.3       543618       C       A       33       167       60       14         gi       448814763       ref       NC_000962.3       543641       C       T       39       74       60       14         gi       448814763       ref       NC_000962.3       546357       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       555957       C       T       39       39       60       40         gi       448814763       ref       NC_000962.3       555957       C				524891	С	А	50	50	60	40
gi       448814763       ref       NC_000962.3       528354       C       A       70       70       60       40         gi       448814763       ref       NC_000962.3       534427       T       A       105       189       60       40         gi       448814763       ref       NC_000962.3       541201       A       G       69       69       60       40         gi       448814763       ref       NC_000962.3       541362       C       G       50       50       60       40         gi       448814763       ref       NC_000962.3       543618       C       A       33       167       60       14         gi       448814763       ref       NC_000962.3       543641       C       T       39       74       60       14         gi       448814763       ref       NC_000962.3       546357       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       555957       C       T       39       39       60       40         gi       448814763       ref       NC_000962.3       555995       T	ği	448814763 ref	NC_000962.3	527316	C	G	70	70	60	40
gi $448814763$ refNC_000962.3 $534427$ TA1051896040gi $448814763$ refNC_000962.3 $541201$ AG69696040gi $448814763$ refNC_000962.3 $541362$ CG50506040gi $448814763$ refNC_000962.3 $543607$ TC667603gi $448814763$ refNC_000962.3 $543618$ CA331676014gi $448814763$ refNC_000962.3 $543641$ CT39746014gi $448814763$ refNC_000962.3 $546357$ AG37376040gi $448814763$ refNC_000962.3 $549251$ CT39396040gi $448814763$ refNC_000962.3 $555945$ TC70706040gi $448814763$ refNC_000962.3 $555991$ AG50506040gi $448814763$ refNC_000962.3 $555950$ GA1051896040gi $448814763$ refNC_000962.3 $5559350$ GA1051896040gi $448814763$ refNC_000962.3 $566066$ A1051896040gi $448814763$ ref <td< td=""><td>qi</td><td>448814763 ref</td><td>NC_000962.3</td><td></td><td>С</td><td>Α</td><td>70</td><td>70</td><td>60</td><td>40</td></td<>	qi	448814763 ref	NC_000962.3		С	Α	70	70	60	40
gi       448814763       ref       NC_000962.3       541362       C       G       50       50       60       40         gi       448814763       ref       NC_000962.3       543607       T       C       6       67       60       3         gi       448814763       ref       NC_000962.3       543618       C       A       33       167       60       14         gi       448814763       ref       NC_000962.3       543641       C       T       39       74       60       14         gi       448814763       ref       NC_000962.3       546357       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       551525       A       C       69       69       60       40         gi       448814763       ref       NC_000962.3       555945       T       C       70       70       60       40         gi       448814763       ref       NC_000962.3       555991       A       G       50       50       60       40         gi       448814763       ref       NC_000962.3       556035       G				534427	Т		105	189	60	40
gi       448814763       ref       NC_000962.3       543607       T       C       6       67       60       3         gi       448814763       ref       NC_000962.3       543618       C       A       33       167       60       14         gi       448814763       ref       NC_000962.3       543641       C       T       39       74       60       14         gi       448814763       ref       NC_000962.3       546357       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       549251       C       T       39       39       60       40         gi       448814763       ref       NC_000962.3       555945       T       C       69       69       60       40         gi       448814763       ref       NC_000962.3       555991       A       G       50       50       60       40         gi       448814763       ref       NC_000962.3       555991       A       G       50       50       60       40         gi       448814763       ref       NC_000962.3       556035       G	gi	448814763 ref	NC_000962.3	541201	Α	G	69	69	60	40
gi       448814763       ref       NC_000962.3       543618       C       A       33       167       60       14         gi       448814763       ref       NC_000962.3       543641       C       T       39       74       60       14         gi       448814763       ref       NC_000962.3       546357       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       549251       C       T       39       39       60       40         gi       448814763       ref       NC_000962.3       551525       A       C       69       69       60       40         gi       448814763       ref       NC_000962.3       551525       A       C       69       69       60       40         gi       448814763       ref       NC_000962.3       555945       T       C       70       70       60       40         gi       448814763       ref       NC_000962.3       555991       A       G       50       50       60       40         gi       448814763       ref       NC_000962.3       55635       G <td< td=""><td>ģi</td><td>448814763 ref</td><td>NC_000962.3</td><td>541362</td><td>С</td><td>G</td><td>50</td><td>50</td><td>60</td><td>40</td></td<>	ģi	448814763 ref	NC_000962.3	541362	С	G	50	50	60	40
gi       448814763       ref       NC_000962.3       543641       C       T       39       74       60       14         gi       448814763       ref       NC_000962.3       546357       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       549251       C       T       39       39       60       40         gi       448814763       ref       NC_000962.3       551525       A       C       69       69       60       40         gi       448814763       ref       NC_000962.3       555945       T       C       70       70       60       40         gi       448814763       ref       NC_000962.3       555991       A       G       50       50       60       40         gi       448814763       ref       NC_000962.3       555995       G       T       50       50       60       40         gi       448814763       ref       NC_000962.3       556035       G       T       50       50       60       40         gi       448814763       ref       NC_000962.3       560666       A <td< td=""><td>ģi</td><td>448814763 ref</td><td>NC_000962.3</td><td>543607</td><td>т</td><td>C</td><td>6</td><td>67</td><td>60</td><td>3</td></td<>	ģi	448814763 ref	NC_000962.3	543607	т	C	6	67	60	3
gi       448814763       ref       NC_000962.3       543641       C       T       39       74       60       14         gi       448814763       ref       NC_000962.3       546357       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       549251       C       T       39       39       60       40         gi       448814763       ref       NC_000962.3       551525       A       C       69       69       60       40         gi       448814763       ref       NC_000962.3       555945       T       C       70       70       60       40         gi       448814763       ref       NC_000962.3       555991       A       G       50       50       60       40         gi       448814763       ref       NC_000962.3       555995       G       T       50       50       60       40         gi       448814763       ref       NC_000962.3       556035       G       T       50       50       60       40         gi       448814763       ref       NC_000962.3       560666       A <td< td=""><td>gi</td><td>448814763 ref</td><td>NC_000962.3</td><td>543618</td><td>C</td><td>А</td><td>33</td><td>167</td><td>60</td><td>14</td></td<>	gi	448814763 ref	NC_000962.3	543618	C	А	33	167	60	14
gi       448814763       ref       NC_000962.3       546357       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       549251       C       T       39       39       60       40         gi       448814763       ref       NC_000962.3       551525       A       C       69       69       60       40         gi       448814763       ref       NC_000962.3       555945       T       C       70       70       60       40         gi       448814763       ref       NC_000962.3       555991       A       G       50       50       60       40         gi       448814763       ref       NC_000962.3       555991       A       G       50       50       60       40         gi       448814763       ref       NC_000962.3       556035       G       T       50       50       60       40         gi       448814763       ref       NC_000962.3       560664       C       T       45       45       60       40         gi       448814763       ref       NC_000962.3       564723       C <td< td=""><td>gi</td><td>448814763 ref</td><td>NC_000962.3</td><td>543641</td><td>С</td><td></td><td>39</td><td>74</td><td>60</td><td>14</td></td<>	gi	448814763 ref	NC_000962.3	543641	С		39	74	60	14
gi       448814763       ref       NC_000962.3       551525       A       C       69       69       60       40         gi       448814763       ref       NC_000962.3       555945       T       C       70       70       60       40         gi       448814763       ref       NC_000962.3       555991       A       G       50       50       60       40         gi       448814763       ref       NC_000962.3       555991       A       G       50       50       60       40         gi       448814763       ref       NC_000962.3       559350       G       A       105       189       60       40         gi       448814763       ref       NC_000962.3       560664       C       T       45       45       60       40         gi       448814763       ref       NC_000962.3       560666       A       G       33       33       60       40         gi       448814763       ref       NC_000962.3       564723       C       T       105       190       60       40         gi       448814763       ref       NC_000962.3       565404       G	ģi	448814763 ref	NC_000962.3	546357	Α	G	37	37	60	40
gi       448814763       ref       NC_000962.3       555945       T       C       70       70       60       40         gi       448814763       ref       NC_000962.3       555991       A       G       50       50       60       40         gi       448814763       ref       NC_000962.3       556035       G       T       50       50       60       40         gi       448814763       ref       NC_000962.3       559350       G       A       105       189       60       40         gi       448814763       ref       NC_000962.3       560664       C       T       45       45       60       40         gi       448814763       ref       NC_000962.3       560666       A       G       33       33       60       40         gi       448814763       ref       NC_000962.3       564723       C       T       105       190       60       40         gi       448814763       ref       NC_000962.3       565404       G       T       50       50       60       40         gi       448814763       ref       NC_000962.3       565415       C	gi	448814763 ref	NC_000962.3	549251	C		39	39	60	40
gi       448814763       ref       NC_000962.3       555991       A       G       50       50       60       40         gi       448814763       ref       NC_000962.3       556035       G       T       50       50       60       40         gi       448814763       ref       NC_000962.3       559350       G       A       105       189       60       40         gi       448814763       ref       NC_000962.3       560664       C       T       45       45       60       40         gi       448814763       ref       NC_000962.3       560666       A       G       33       33       60       40         gi       448814763       ref       NC_000962.3       564723       C       T       105       190       60       40         gi       448814763       ref       NC_000962.3       565404       G       T       50       50       60       40         gi       448814763       ref       NC_000962.3       565415       C       T       69       69       60       40         gi       448814763       ref       NC_000962.3       565655       A	gi	448814763 ref	NC_000962.3	551525	Α		69	69	60	40
gi       448814763       ref       NC_000962.3       556035       G       T       50       50       60       40         gi       448814763       ref       NC_000962.3       559350       G       A       105       189       60       40         gi       448814763       ref       NC_000962.3       560664       C       T       45       45       60       40         gi       448814763       ref       NC_000962.3       560666       A       G       33       33       60       40         gi       448814763       ref       NC_000962.3       564723       C       T       105       190       60       40         gi       448814763       ref       NC_000962.3       565404       G       T       50       50       60       40         gi       448814763       ref       NC_000962.3       565404       G       T       50       50       60       40         gi       448814763       ref       NC_000962.3       565415       C       T       69       69       60       40         gi       448814763       ref       NC_000962.3       565655       A	gi	448814763 ref	NC_000962.3		Т	C	70	70	60	
gi       448814763       ref       NC_000962.3       559350       G       A       105       189       60       40         gi       448814763       ref       NC_000962.3       560664       C       T       45       45       60       40         gi       448814763       ref       NC_000962.3       560666       A       G       33       33       60       40         gi       448814763       ref       NC_000962.3       564723       C       T       105       190       60       40         gi       448814763       ref       NC_000962.3       564723       C       T       105       190       60       40         gi       448814763       ref       NC_000962.3       565404       G       T       50       50       60       40         gi       448814763       ref       NC_000962.3       565415       C       T       69       69       60       40         gi       448814763       ref       NC_000962.3       565655       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       565655       A										
gi       448814763       ref       NC_000962.3       560664       C       T       45       45       60       40         gi       448814763       ref       NC_000962.3       560666       A       G       33       33       60       40         gi       448814763       ref       NC_000962.3       564723       C       T       105       190       60       40         gi       448814763       ref       NC_000962.3       565404       G       T       50       50       60       40         gi       448814763       ref       NC_000962.3       565415       C       T       69       69       60       40         gi       448814763       ref       NC_000962.3       565415       C       T       69       69       60       40         gi       448814763       ref       NC_000962.3       565655       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       567446       G       A       69       69       60       40							50		60	
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gi  448814763   ref  NC_000962.3  564723 CT1051906040gi  448814763   ref  NC_000962.3  565404 GT50506040gi  448814763   ref  NC_000962.3  565415 CT69696040gi  448814763   ref  NC_000962.3  565655 AG37376040gi  448814763   ref  NC_000962.3  565655 AG37376040gi  448814763   ref  NC_000962.3  567446 GA69696040	gi	448814763 ref	NC_000962.3							
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g1 448814763 ref NC_000962.3  567667 C T 69 69 60 40										
	gí	448814763 ref	NC_000962.3	567667	С	т	69	69	60	40

qi	448814763	ref	NC_000962.3	568693	G	т	102	189	60	40
			NC_000962.3	569045	C	T	70	70	60	40
ai	448814763	ref	NC_000962.3	573262	Ā	Ġ	105	189	60	40
gi	448814763	ref	NC_000962.3	573384	Ť	Ğ	102	189	60	40
gi			NC_000962.3	580336	ċ	Ă	69	69	60	40
			NC_000962.3	584171	Ť	ĉ	69	69	60	40
<u>g</u> 1			NC_000962.3	584511	Ġ	Ť	69	69	60	40
	440014703	rer	INC_000962.31							
<u>g</u> j			NC_000962.3	589190	ç	Ţ	96	189	60	40
<u>g</u> j			NC_000962.3	590436	Ţ	ç	69	69	60	40
gj	I		NC_000962.3	590763	G	ç	69	69	60	40
			NC_000962.3	591965	G	A	102	189	60	40
_ g1			NC_000962.3	595501	G	A	99	175	60	40
_ g1			NC_000962.3	595742	C	т	96	162	60	40
gi			NC_000962.3	597816	А	G	69	69	60	40
gi			NC_000962.3	598079	Α	R	12	12	60	50
gi			NC_000962.3	598475	G	Α	105	189	60	40
gi	448814763	ref	NC_000962.3	599868	Α	G	37	37	60	40
gi	448814763	ref	NC_000962.3	606435	G	Т	26	26	60	40
gi	İ448814763İ	ref	NC_000962.3	610120	т	G	52	52	60	40
gi			NC_000962.3	615938	G	Α	37	37	60	40
			NC_000962.3	621390	G	A	102	188	60	40
gi			NC_000962.3	622354	ē	Ť	69	69	60	40
gi			NC_000962.3	627350	č	Ġ	25	25	60	40
gi			NC_000962.3	631435	Ă	Ť	27	151	60	12
			NC_000962.3	637319	Ĝ	Å	25	25	60	40
	1440014703	nof	NC_000962.3	643483	Ğ	Â	69	69	60	40
-			NC_000962.3	643665	Ğ	ĉ	102	189	60	40
g1			NC_000962.3	644134	č	Ť	52	52	60	40
gi			NC_000962.3	646531		÷	70	70	60	40
<u>g</u> ]					A					
<u>g</u> j	448814763	ret	NC_000962.3	648002	Ţ	G	105	189	60	40
	440014703	ref	NC_000962.3	648856	Ţ	ç	105	189	60	40
gj			NC_000962.3	649345	ç	Ţ	69	69	60	40
<u>g</u> 1			NC_000962.3	653287	G	A	70	70	60	40
_ <u>g</u> j			NC_000962.3	655707	G	A	68	68	60	40
			NC_000962.3	655986	Т	G	99	189	60	40
_ g1	448814763	ret	NC_000962.3	657578	Α	G	99	189	60	40
_ g1			NC_000962.3	659341	Т	C	105	189	60	40
gi			NC_000962.3	662911	Т	C	70	70	60	40
gı			NC_000962.3	665293	А	G	37	37	60	40
gi	448814763	ref	NC_000962.3	667492	G	A	102	189	60	40
gi	448814763	ref	NC_000962.3	669398	Т	C	37	37	60	40
gi	448814763	ref	NC_000962.3	670545	G	Α	102	189	60	40
gi	448814763	ref	NC_000962.3	678440	C	т	105	189	60	40
gi	448814763	ref	NC_000962.3	680965	G	Α	70	70	60	40
gi	448814763	ref	NC_000962.3	683450	C	Α	69	69	60	40
qi	448814763	ref	NC_000962.3	683910	C	т	70	70	60	40
qi	448814763	ref	NC_000962.3	684290	Α	G	37	37	60	40
			NC_000962.3	685153	Α	G	105	188	60	40
			NC_000962.3	685461	C	G	26	26	60	40
			NC_000962.3	685608	Ť	č	69	69	60	40
			NC_000962.3	685955	Ġ	Ă	69	69	60	40
			NC_000962.3	686972	Ť	ĉ	25	25	60	40
			NC_000962.3	690248	ċ	Ă	20	20	60	40
91	448814763	ref	NC_000962.3	690450	Ă	ĉ	50	50	60	38
			NC_000962.3	690465	Ť	G	39	39	60	38
91	1448914762	ref	NC_000962.3	695620		Ť	51	51	60	40
					C		102	188	60	40
			NC_000962.3	698968	G	A				
			NC_000962.3	699693	G	A	96	188	60	40
gi	1440014/03	rer	NC_000962.3	700180	С	A	50	50	60	40

gi	448814763	Iref	NC_000962.3	700776	Т	C	37	37	60	40
gi			NC_000962.3	704997	Ġ	Ă	69	69	60	40
			NC_000962.3	705570	č	î	96	189	60	35
g1			NC_000962.3		Ť	ć	70	70	60	35
gj				705602						
_ g1			NC_000962.3	711155	G	A	96	189	60	40
gı			NC_000962.3	712693	А	G	69	186	60	26
gi			NC_000962.3	713310	т	C	69	69	60	40
gi	448814763	Iref	NC_000962.3	715266	Α	G	69	69	60	40
gi			NC_000962.3	717588	Α	G	69	69	60	40
gi			NC_000962.3	718904	T	ē	24	150	60	11
			NC_000962.3	719181	ċ	Ť	27	161	60	10
<u>g</u> 1	440014703	i ei	NC_000962.3			ť	15			
gj				719188	ç			107	60	8
gj			NC_000962.3	719688	A	G	3	10	60	2
_ g1			NC_000962.3	719711	C	т	3	43	60	2
gi			NC_000962.3	719805	G	C	0	0	60	4
gi	448814763	ref	NC_000962.3	719813	C	A	21	63	60	12
gi	448814763	ref	NC_000962.3	720863	G	Т	50	50	60	40
gi			NC_000962.3	722086	C	G	69	69	60	40
gi			NC_000962.3	722852	Ğ	Ă	69	69	60	40
gi			NC_000962.3	726498	č	Â	69	69	60	40
			NC_000962.3	730087	Ğ	Â	69	69	60	40
gj										
<u>g</u> 1			NC_000962.3	734116	Т	ç	105	189	60	40
_ g1			NC_000962.3	735623	C	A	37	37	60	40
gi			NC_000962.3	745876	C	G	37	37	60	40
gi	448814763	ref	NC_000962.3	756901	G	C	105	190	60	40
gi	448814763	Iref	NC_000962.3	757182	Α	G	69	69	60	40
gi	448814763	İref	NC_000962.3	759546	Α	G	105	189	60	40
gi			NC_000962.3	760490	C	Ť	70	70	60	40
gi			NC_000962.3	761155	č	Ť	69	69	60	40
			NC_000962.3	763031	Ť	ċ	69	69	60	40
<u>g</u> 1										
gj			NC_000962.3	763884	ç	Ţ	38	38	60	40
<u>g</u> 1			NC_000962.3	763886	ç	A	38	38	60	40
_ g1			NC_000962.3	765171	C	т	69	69	60	40
gı			NC_000962.3	765844	C	т	69	69	60	40
gi	448814763	ref	NC_000962.3	767414	G	Α	69	69	60	40
gi	448814763	Iref	NC_000962.3	767516	G	Т	69	69	60	40
gi	448814763	İref	NC_000962.3	767609	Α	G	105	189	60	39
gi			NC_000962.3	773366	G	Ť	102	188	60	40
gi			NC_000962.3	775639	Ť	ċ	105	190	60	40
			NC_000962.3	776100	Ġ	Ă	69	69	60	40
<u>g</u> 1	440014703	i ei	INC_000902.31							
			NC_000962.3	776395	Ą	G	37	37	60	40
			NC_000962.3	781395	Ţ	ç	37	37	60	40
			NC_000962.3	781822	A	G	25	25	60	40
gi	448814763	ref	NC_000962.3	786137	Α	C	69	69	60	40
			NC_000962.3	794482	G	C	50	50	60	40
gi	448814763	ref	NC_000962.3	797597	C	Т	99	189	60	40
ai	448814763	İref	NC_000962.3	800357	C	Α	37	37	60	40
			NC_000962.3	810287	ē	G	38	38	60	40
			NC_000962.3	811492	č	Ğ	69	69	60	40
			NC_000962.3	812502	č	Ť	69	69	60	40
					Ť	ć				
			NC_000962.3	815236			69	69	60	40
			NC_000962.3	815851	A	G	69	69	60	40
			NC_000962.3	817696	G	A	69	69	60	40
gi	448814763	ref	NC_000962.3	819213	Т	C	37	37	60	40
gi	448814763	ref	NC_000962.3	820483	G	Т	39	39	60	40
gi	448814763	ref	NC_000962.3	820712	С	Т	50	50	60	40
			NC_000962.3	820752	C	т	99	190	60	40
			NC_000962.3	821907	Ť	ċ	69	69	60	40
			NC_000962.3	829719	Ġ	Ā	99	189	60	40
9.	1.10014705		1.167000000101	020720	-	0		200		

ai	448814763 ref	NC_000962.3	829719	G	Α	99	189	60	40
	448814763 ref		832602	C	Т	27	67	60	12
gi	i		832776	G	Â	29	29	60	17
gi	448814763 ref		833088	Ğ	A	30	69	60	13
gi	i		833095	Ğ	Ť	21	41	60	13
	448814763 ref		833101	Ğ	Å	30	71	60	13
	448814763 ref		833290	Ğ	Â	33	71	60	18
	448814763 ref		833293	G	Ŧ	30	165	60	15
	i			A	ć	3	4	60	2
<u>g</u> 1			833448						
gj	448814763 ref		837679	Ţ	A	33	170	60	12
gi	448814763 ref	NC_000962.3	838822	G	c	12	34	60	5
gi	448814763 ref	NC_000962.3	841353	G	A	39	45	60	16
	448814763 ref		841356	A	G	42	59	60	19
gi	448814763 ref		841605	C	Т	3	27	60	4
gj			846996	G	Α	50	50	60	40
gi			847995	Т	C	37	37	60	40
gi	448814763 ref	NC_000962.3	848407	C	т	19	19	60	40
gi	448814763 ref	NC_000962.3	850985	Α	G	105	190	60	40
gi	448814763 ref	NC_000962.3	852361	G	Α	69	69	60	40
gi	Lasses seens 1 C		852910	C	Т	39	39	60	40
ği	i		856563	G	т	37	37	60	40
	448814763 ref		857696	Α	G	69	69	60	40
	448814763 ref		865761	C	Ť	90	189	60	40
	448814763 ref		871271	Ā	ċ	69	69	60	40
	448814763 ref		877646	ĉ	Ť	69	69	60	40
gi	448814763 ref		880562	Ğ	÷	70	70	60	40
	448814763 ref		882257	Ť	ć	99	189	60	40
gı	448814763 ref		885598	Ġ	č	50	50	60	40
91	448814763 ref	INC_000962.3			Ť	69	69		
			885689	G				60	40
	448814763 ref		889003	ç	Ţ	40	40	60	19
gi			891011	A	G	54	74	60	21
gi	448814763 ref		891404	ç	Y	42	42	60	39
gi	448814763 ref	NC_000962.3	893733	T	G	69	69	60	40
gi	448814763 ref	NC_000962.3	894888	Т	C	105	190	60	40
gj	448814763 ref	NC_000962.3	895082	Α	G	70	70	60	38
gi	448814763 ref		895120	C	т	102	190	60	38
gi	448814763 ref		895249	C	Α	52	52	60	40
gi	448814763 ref		897836	G	Т	70	70	60	40
gi	448814763 ref	NC_000962.3	899255	G	C	37	37	60	40
qi	448814763 ref	NC_000962.3	899389	G	Α	70	70	60	40
	448814763 ref		900221	Т	C	52	52	60	40
	448814763 ref		903550	Т	C	37	37	60	40
ai	448814763 ref	NC 000962.3	903913	Ť	ē	105	190	60	40
	448814763 ref		906857	À	Ğ	70	70	60	40
	448814763 ref		909534	Â	Ğ	70	70	60	40
	448814763 ref	INC 000962 3	910015	ĉ	Ă	105	188	60	40
	448814763 ref		911261	Ť	ĉ	49	49	60	40
	448814763 ref		913274	ċ	Ğ	69	69	60	40
					G	37			
	448814763 ref		916046	Ţ			37	60	40
	448814763 ref		921115	G	A	69	69	60	40
	448814763 ref		929491	G	Ţ	69	69	60	40
	448814763 ref		929688	A	<u>c</u>	37	37	60	40
	448814763 ref		929748	ç	Ţ	96	181	60	40
	448814763 ref		929803	G	Т	69	69	60	40
	448814763 ref		931123	Т	C	102	190	60	40
gi	448814763 ref	NC_000962.3	932280	Т	C	69	69	60	40
	448814763 ref		933699	G	т	69	69	60	40
	448814763 ref		934230	C	G	37	37	60	40
	448814763 ref		934611	G	т	37	37	60	40
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a	i   448814763	Iref	NC_000962.3	938246	Α	G	69	69	60	40
q			NC_000962.3	939805	C	Ť	69	69	60	40
q			NC_000962.3	941845	õ	Å	105	189	60	40
q			NC_000962.3	945214	Ğ	Â	69	69	60	40
_			NC_000962.3	948294	Ť	ĉ	70	70	60	40
g										
g			NC_000962.3	948557	ç	A	102	190	60	40
g			NC_000962.3	949087	S	T	102	189	60	40
g			NC_000962.3	949535	Т	C	69	69	60	40
g			NC_000962.3	951142	C	Α	105	189	60	40
g			NC_000962.3	952597	C	т	69	69	60	40
g	i 448814763	ref	NC_000962.3	955524	Α	G	50	50	60	40
g	i 448814763	Iref	NC_000962.3	957117	Т	C	50	50	60	40
q			NC_000962.3	960367	Α	G	69	69	60	40
ģ			NC_000962.3	964907	G	Α	12	45	60	5
q			NC_000962.3	965027	Ğ	A	60	73	60	24
g			NC_000962.3	969067	Ğ	Ť	3	5	60	4
_			NC_000962.3	969072	č	Ġ	15	28	60	9
g				972717	č	Ť	32		60	40
g			NC_000962.3					32		
g			NC_000962.3	972966	ç	Ţ	29	29	60	30
g	1 448814/63	ILLE	NC_000962.3	973380	G	A	36	40	60	15
g			NC_000962.3	973383	A	G	42	64	60	18
g			NC_000962.3	973503	G	C	12	44	60	8
g			NC_000962.3	973560	G	C	37	37	60	40
g	i 448814763	ref	NC_000962.3	976043	G	Т	69	69	60	40
g	i 448814763	ref	NC_000962.3	977196	G	Α	50	50	60	40
g	i 448814763	Iref	NC_000962.3	979704	G	C	50	50	60	40
ģ		İref	NC_000962.3	986463	G	C	25	25	60	40
ģ			NC_000962.3	986841	Т	C	33	72	60	14
ģ			NC_000962.3	987601	Ċ	Ť	50	50	60	40
g	i 448814763	Iref	NC_000962.3	990001	Ğ	ċ	26	26	60	40
g			NC_000962.3	993346	Ă	č	19	19	60	40
g		Inef	NC_000962.3	996219	G	Ă	105	190	60	40
			NC_000962.3	996345	č	Â	102	189	60	40
g			NC_000962.3	1002342		ĉ	102	189	60	40
g										
g			NC_000962.3	1005386		Ţ	69	69	60	40
g			NC_000962.3	1009490		Ţ	105	189	60	40
g			NC_000962.3		Ţ	G	69	69	60	40
g			NC_000962.3	1021243		A	39	39	60	40
_			NC_000962.3	1021244		Α	39	39	60	40
g	1 448814763	Iret	NC_000962.3	1021952		Α	45	45	60	40
g	i 448814763	ref	NC_000962.3			Α	45	45	60	40
			NC_000962.3	1022613		Α	69	69	60	40
g	i 448814763	ref	NC_000962.3	1024346	Α	G	69	69	60	40
			NC_000962.3	1024560	G	Α	105	188	60	40
ģ			NC_000962.3	1025106		C	52	52	60	40
			NC_000962.3	1027455		A	39	39	60	40
			NC_000962.3	1027727		C	26	26	60	40
			NC_000962.3	1027941		Ť	102	187	60	40
			NC_000962.3	1029997		Ġ	105	190	60	40
g			NC_000962.3	1032524		č	69	69	60	40
			NC_000962.3	1037012		č	105	190	60	40
g	- 440014/03	rer	NC_000962.3	1037911		Ţ	105	187	60	40
			NC_000962.3	1040706		ç	50	50	60	40
			NC_000962.3	1043136		Ţ	70	70	60	40
			NC_000962.3	1044762		A	31	31	60	40
			NC_000962.3	1047165		C	105	189	60	40
			NC_000962.3	1048102		A	102	186	60	40
			NC_000962.3	1050367		т	102	190	60	40
g	i 448814763	ref	NC_000962.3	1054784	C	G	69	69	60	40

ai	448814763 ref	NC 000962.3	1061386 T	С	31	31	60	40
ai	448814763 ref	NC 000962.3	1063765 G	Ā	26	26	60	40
ai	448814763 ref	NC 000962.3	1063922 C	Ť	102	189	60	40
	448814763 ref		1065290 G	À	69	69	60	40
	448814763 ref		1066038 A	Ĝ	69	69	60	40
	448814763 ref		1068151 T	č	105	190	60	40
	448814763 ref		1068432 A	Ğ	105	189	60	40
	448814763 ref		1070702 T	ç	50	50	60	40
	448814763 ref		1072342 A	G	69	69	60	40
	448814763 ref		1073716 C	Ţ	105	188	60	40
	448814763 ref		1074558 G	A	32	32	60	40
	448814763 ref		1075279 T	C	105	183	60	40
	448814763 ref		1076309 G	Т	69	69	60	40
	448814763 ref		1076694 C	G	37	37	60	40
	448814763 ref		1077312 A	G	105	183	60	40
	448814763 ref		1077754 C	т	99	189	60	40
gi	448814763 ref	NC_000962.3	1078564 C	A	69	69	60	40
qi	448814763 ref	NC_000962.3	1079927 C	Α	50	50	60	40
	448814763 ref		1080192 G	Α	69	69	60	40
	448814763 ref		1081681 T	C	50	50	60	40
	448814763 ref		1083755 A	Ğ	37	37	60	40
	448814763 ref		1086648 C	Ă	105	189	60	40
i	448814763 ref	NC 000962 3	1087193 G	ĉ	69	69	60	40
	448814763 ref		1087852 G	Ă	69	69	60	40
	448814763 ref		1091077 G	ĉ	9	14	60	9
	448814763 ref		1091415 C	Ă	72	72	60	25
				Ť	48	74		
gi	448814763 ref	INC_000962.31	1091423 A				60	19
	448814763 ref		1093907 T	ç	48	56	60	19
	448814763 ref		1095990 C	G	6	12	60	4
	448814763 ref		1097023 G	A	70	70	60	40
gi	448814763 ref	NC_000962.3	1098523 T	A	37	37	60	40
	448814763 ref		1100234 T	ç	37	37	60	40
	448814763 ref		1104690 T	G	37	37	60	40
g1	448814763 ref	NC_000962.3	1104928 C	т	105	189	60	40
	448814763 ref		1105284 G	A	105	189	60	40
	448814763 ref		1106422 T	C	70	70	60	40
gi	448814763 ref	NC_000962.3	1107940 A	C	105	189	60	40
ģi	448814763 ref	NC_000962.3	1109163 C	G	69	69	60	40
	448814763 ref		1109975 A	G	37	37	60	40
	448814763 ref		1110956 T	G	70	70	60	40
ai	448814763 ref	NC 000962.3	1111228 G	Ā	69	69	60	40
	448814763 ref		1111518 T	ĉ	93	188	60	34
	448814763 ref		1113290 G	č	99	189	60	40
	448814763 ref		1117405 C	Ť	69	69	60	40
	448814763 ref		1119739 C	÷	50	50	60	40
	448814763 ref		1121071 G	Å	71	71	60	34
gi	448814763 ref	INC_000962.51	1121120 A	G	42	174	60	17
	448814763 ref		1123597 A	G	69	69	60	40
	448814763 ref		1126889 G	ç	70	70	60	40
	448814763 ref		1127555 T	C	69	69	60	40
	448814763 ref		1127648 C	A	37	37	60	40
	448814763 ref		1131300 G	Α	70	70	60	40
	448814763 ref		1139222 G	Α	102	189	60	40
	448814763 ref		1141032 C	Т	105	188	60	40
	448814763 ref		1143832 A	C	37	37	60	40
ği	448814763 ref	NC_000962.3	1144585 A	G	37	37	60	40
	448814763 ref		1148259 A	G	50	50	60	40
	448814763 ref		1149551 C	Ť	37	37	60	40
	448814763 ref		1150585 G	À	54	56	60	21
9.	i i i contrat i contrat i contrat i contrat i contrat i contrat i contrat i contrat i contrat i contrat i contra							

ai	448814763 ref	NC 000962.3	1155700 C	Т	25	25	60	40
	448814763 ref		1157771 G	ċ	52	52	60	40
	448814763 ref		1160113 C	Ğ	70	70	60	40
	448814763 ref		1163134 T	č	19	19	60	40
	448814763 ref		1164336 G	Ă	102	189	60	40
	448814763 ref		1165114 C	î	37	37	60	40
91	448814763 ref	NC_000962.3	1171115 C	ť	50	50	60	40
				ć				
	448814763 ref		1175537 T		96	189	60	40
	448814763 ref		1176214 C	T	69	69	60	40
gi	448814763 ref	NC_000962.3	1178116 T	ç	69	69	60	40
	448814763 ref		1184826 G	Ţ	105	189	60	40
	448814763 ref		1186988 G	T	50	50	60	40
	448814763 ref		1188628 C	G	48	56	60	19
	448814763 ref		1188637 T	G	21	62	60	10
	448814763 ref		1190918 C	T	9	25	60	10
	448814763 ref		1190922 A	G	6	22	60	6
	448814763 ref		1191817 A	C	18	19	60	10
	448814763 ref		1192830 G	Α	102	189	60	40
	448814763 ref		1193888 G	Α	105	190	60	40
	448814763 ref		1194475 C	Α	52	52	60	40
	448814763 ref		1195358 T	G	25	25	60	40
	448814763 ref		1199019 T	C	50	50	60	40
	448814763 ref		1200418 A	G	50	50	60	40
gi	448814763 ref	NC_000962.3	1203824 T	C	70	70	60	40
qi	448814763 ref	NC_000962.3	1208286 G	Α	102	189	60	40
qi	448814763 ref	NC_000962.3	1211369 A	C	69	69	60	40
	448814763 ref		1216189 G	Α	69	69	60	40
	448814763 ref		1218151 C	Т	3	13	60	5
ai	448814763 ref	NC 000962.3	1218449 G	C	18	45	60	10
āi	448814763 ref	NC 000962.3	1218861 G	Α	63	72	60	24
	448814763 ref		1220570 G	Ť	70	70	60	40
	448814763 ref		1220680 T	ċ	105	189	60	40
	448814763 ref		1224367 T	č	69	69	60	40
ai	448814763 ref	NC 000962.3	1228116 A	Ğ	50	50	60	40
ai	448814763 ref	NC 000962.3	1230778 G	Ă	52	52	60	40
i	448814763 ref	NC 000962 3	1232544 C	Ť	69	69	60	40
	448814763 ref		1235446 T	ċ	69	69	60	40
	448814763 ref		1237403 G	Ă	39	39	60	40
31	448814763 ref	NC 000962 3	1241110 C	î	37	37	60	40
	448814763 ref		1248382 A	Ġ	69	69	60	40
	448814763 ref	NC 000962.3	1248936 G	č	24	24	60	40
	448814763 ref	INC 000962.3	1248978 T	č	50	50	60	40
	448814763 ref	NC 000962.3	1250340 A	Ğ	70	70	60	36
	448814763 ref			G	70	70		36
9!	448814763 ref	INC_000962.3	1250357 T	T	37	37	60 60	40
91	448814763 ref	NC_000962.3	1251199 C 1252164 T	ć	38	38	60	40
	448814763 ref		1254562 A	G	50	50		40
							60	
	448814763 ref		1262230 C	Ţ	99	189	60	40
	448814763 ref		1275957 T	ç	9	36	60	7
	448814763 ref		1276423 T	ç	37	37	60	24
	448814763 ref		1276432 C	T	42	45	60	17
gi	448814763 ref	NC_000962.3	1276774 T	A	27	27	60	37
	448814763 ref		1281118 T	ç	69	69	60	40
	448814763 ref		1281307 C	T	69	69	60	40
	448814763 ref		1281771 T	ç	38	38	60	40
	448814763 ref		1283519 G	ç	50	50	60	40
	448814763 ref		1283526 G	<u>c</u>	37	37	60	40
	448814763 ref		1284812 C	T	105	189	60	40
gi	448814763 ref	NC_000962.3	1287112 T	C	69	69	60	40

ai	448814763	Iref	NC_000962.3	1287160 A	C	69	69	60	40
			NC_000962.3	1292102 A	Ğ	70	70	60	40
			NC_000962.3	1303051 G	Ă	102	189	60	40
_			NC_000962.3	1306259 A	Ĝ	70	70	60	40
					č	38	38		
<u>g</u> j			NC_000962.3	1306444 T				60	40
_ g1			NC_000962.3	1307598 C	G	70	70	60	40
_ g1			NC_000962.3	1310316 C	т	69	69	60	40
gı			NC_000962.3	1314617 C	Т	69	69	60	40
gi			NC_000962.3	1315191 A	C	50	50	60	40
gi	448814763	ref	NC_000962.3	1315884 G	A	93	176	60	40
gi	448814763	ref	NC_000962.3	1316354 G	Α	105	189	60	40
			NC_000962.3	1320508 G	Α	102	190	60	40
gi	i		NC_000962.3	1320614 C	G	70	70	60	40
gi			NC_000962.3	1327890 G	Ā	15	40	60	8
gi			NC_000962.3	1328687 G	ĉ	14	14	60	40
			NC_000962.3	1342468 C	Ť	9	20	60	6
			NC_000962.3	1344857 C	÷	69	69	60	40
	440014703	rei	INC_000962.31						
<u>g</u> j			NC_000962.3	1351172 A	G	69	69	60	40
_ <u>g</u> j			NC_000962.3	1352296 C	G	50	50	60	40
_ g1			NC_000962.3	1355439 C	T	105	188	60	40
_ g1			NC_000962.3	1356648 C	т	102	188	60	40
gı			NC_000962.3	1357190 C	A	69	69	60	40
gi			NC_000962.3	1357199 C	A	102	175	60	40
gi	448814763	ref	NC_000962.3	1358940 C	A	69	69	60	40
gi	448814763	İref	NC_000962.3	1360209 T	C	69	69	60	40
gi			NC_000962.3	1361350 A	C	69	69	60	40
			NC_000962.3	1362006 T	C	52	52	60	40
ai	448814763	ref	NC_000962.3	1367484 T	Ğ	25	25	60	40
gi			NC_000962.3	1368947 A	Ğ	102	190	60	40
gi			NC_000962.3	1369389 C	Ť	69	69	60	40
gi			NC_000962.3	1369735 G	Å	69	69	60	40
			NC_000962.3	1371020 T	ĉ	105	189	60	40
<u>g</u> ]			NC_000962.3	1372348 G	Ť	52			
<u>g</u> 1							52	60	40
<u>g</u> 1			NC_000962.3	1373258 C	Ţ	69	69	60	40
<u>g</u> 1			NC_000962.3	1374065 T	ç	69	69	60	40
_ g1			NC_000962.3	1374578 C	Ţ	105	190	60	40
_ g1			NC_000962.3	1374639 T	Α	69	69	60	40
_ g1	448814763	ret	NC_000962.3	1375724 A	C	69	69	60	40
gi			NC_000962.3	1382628 T	C	39	39	60	40
gi			NC_000962.3	1386178 G	т	70	70	60	40
gi	448814763	ref	NC_000962.3	1387211 G	A	105	189	60	40
gi	448814763	ref	NC_000962.3	1389866 C	т	69	69	60	40
gi	448814763	ref	NC_000962.3	1390763 C	т	99	189	60	40
			NC_000962.3	1393626 A	G	69	69	60	40
			NC_000962.3	1395010 A	Ğ	50	50	60	40
			NC_000962.3	1396608 T	Ğ	50	50	60	40
			NC_000962.3	1396922 T	č	99	190	60	40
			NC_000962.3	1397215 C	Ğ	35	35	60	16
	448814763	ref	NC_000962.3	1397986 G	Ă	50	50	60	40
91	448814762	ref	NC_000962.3	1400396 A	Ĝ	105	189	60	40
91	440014763	n ef	INC 000962.3						40
			NC_000962.3	1410062 G	ç	37	37	60	
			NC_000962.3	1411210 T	Ģ	69	69	60	40
			NC_000962.3	1413148 C	Ţ	70	70	60	40
			NC_000962.3	1414021 C	Ţ	69	69	60	40
			NC_000962.3	1417019 C	Ţ	102	190	60	40
			NC_000962.3	1417554 G	C	50	50	60	40
			NC_000962.3	1417793 G	Α	69	69	60	40
			NC_000962.3	1424699 T	C	69	69	60	40
gi	448814763	ref	NC_000962.3	1426589 C	Т	102	189	60	40

ai	448814763 re	f[NC_000962.3]	1426928 C	т	50	50	60	40
		f NC_000962.3	1427335 G	A	90	168	60	40
		f NC_000962.3	1440469 C	G	27	27	60	40
		f NC_000962.3	1443354 C	Ť	50	50	60	40
qi		f NC_000962.3	1445781 A	Ġ	69	69	60	40
		f NC_000962.3	1445977 C	Ť	105	190	60	40
		f NC_000962.3	1457144 C	Ť	39	39	60	40
		f NC_000962.3	1457833 A	Ġ	99	189	60	40
gı		f NC_000962.3	1458144 C	A	69	69	60	40
gı		f NC_000962.3	1458144 C	ĉ	12	96		7
g1		f NC_000962.3			52		60	29
			1468255 G	Ţ		52	60	
		f NC_000962.3	1468424 T	ç	42	45	60	20
<u>g</u> 1		f   NC_000962.3	1468426 G	ç	40	40	60	18
gj		f   NC_000962.3	1470261 G	Ą	69	69	60	40
gj		f[NC_000962.3]	1471659 C	Ţ	69	69	60	40
		f[NC_000962.3]	1479085 T	ç	69	69	60	40
	448814/63 re	f NC_000962.3	1480972 T	ç	15	51	60	8
gj		f NC_000962.3	1482627 T	C	69	69	60	40
gj		f NC_000962.3	1484708 A	ç	69	69	60	40
gj		f NC_000962.3	1486485 G	A	105	189	60	40
gj		f NC_000962.3	1490905 A	G	69	69	60	40
gj		f NC_000962.3	1490911 G	A	70	70	60	40
gi		f NC_000962.3	1492194 T	C	69	69	60	40
gı		f NC_000962.3	1496964 G	Т	105	188	60	40
gi		f NC_000962.3	1499274 C	G	37	37	60	40
gi		f NC_000962.3	1499347 C	G	15	15	60	40
gi	448814763 re	f NC_000962.3	1505194 T	C	105	190	60	40
gi	448814763 re	f NC_000962.3	1505973 G	A	38	38	60	40
gi	448814763 re	f NC_000962.3	1507999 G	A	50	50	60	40
gi		f NC_000962.3	1509067 C	т	69	69	60	40
gi	448814763 re	f NC_000962.3	1514010 G	т	37	37	60	40
gi	448814763 re	f NC_000962.3	1521526 T	C	37	37	60	40
gi	448814763 re	f NC_000962.3	1522772 C	Α	69	69	60	40
gi	448814763 re	f[NC_000962.3]	1522862 C	т	105	188	60	40
gi	448814763 re	f[NC_000962.3]	1523175 A	C	70	70	60	40
gi	448814763 re	f[NC_000962.3]	1523791 A	G	37	37	60	40
		f[NC_000962.3]	1525160 G	Α	38	38	60	40
	448814763 re	f[NC_000962.3]	1526819 C	Α	69	69	60	40
qi		f[NC_000962.3]	1528079 A	G	69	69	60	40
qi		f[NC_000962.3]	1534548 G	Α	69	69	60	40
		f NC_000962.3	1535643 C	Т	105	190	60	40
		f NC_000962.3	1536251 G	Ť	102	189	60	40
		f NC_000962.3	1537947 C	Ť	102	189	60	40
		f NC_000962.3	1540141 T	ċ	69	69	60	40
		f NC_000962.3	1544255 C	Ť	96	181	60	40
01	448814763 re	f NC_000962.3	1545119 C	Ť	69	69	60	40
		f NC_000962.3	1546703 C	Ť	69	69	60	40
01	448814763 re	f NC_000962.3	1547125 T	ċ	38	38	60	40
01	448814763 re	f NC_000962.3	1548087 G	Ă	37	37	60	40
91	448814763 re	f NC_000962.3	1552547 G	Â	99	189	60	40
		f NC_000962.3	1555846 G	Â	69	69	60	40
		f NC_000962.3	1557608 C	÷	69	69	60	40
		f NC_000962.3	1559562 C	Å	102	190	60	40
		f NC_000962.3	1560912 G	Â	25	25	60	40
		f NC_000962.3	1563686 G	Ť	93	188	60	36
		f NC_000962.3	1563717 C	Ť	25	25	60	36
		f NC_000962.3	1573660 T	Ġ	70	70	60	40
		f NC_000962.3	1574206 T	Č	50	50	60	40
		f NC_000962.3	1575275 C	A	69	69	60	40
gr	144001410211.6	[mc_000302.5]	T1/17/13 C	A	09	09	00	40
_								

gi	448814763	Iref	NC_000962.3	1575275 C	Α	69	69	60	40
			NC_000962.3	1575793 A	G	69	69	60	40
			NC_000962.3	1580141 G	т	70	70	60	40
gi			NC_000962.3	1580181 G	Α	50	50	60	40
gi			NC_000962.3	1581377 C	т	69	69	60	40
gi			NC_000962.3	1584379 A	Ċ	105	190	60	40
			NC_000962.3	1585404 G	Α	105	189	60	40
			NC_000962.3	1588899 G	т	99	189	60	40
			NC_000962.3	1589739 C	Ť	105	189	60	40
qi			NC_000962.3	1590555 C	т	39	39	60	40
			NC_000962.3	1596515 C	т	105	189	60	40
			NC_000962.3	1600685 C	т	50	50	60	40
			NC_000962.3	1601528 C	т	93	189	60	40
gi			NC_000962.3	1604290 A	т	105	190	60	40
gi			NC_000962.3	1608276 A	C	14	14	60	40
qi	448814763	ref	NC_000962.3	1609840 A	G	105	189	60	40
gi	448814763	ref	NC_000962.3	1611283 T	C	69	69	60	40
	448814763	ref	NC_000962.3	1613035 T	C	69	69	60	40
	448814763	ref	NC_000962.3	1613522 C	т	69	69	60	40
gi	448814763	ref	NC_000962.3	1616831 A	G	105	189	60	40
gi	448814763	ref	NC_000962.3	1617833 C	т	52	52	60	40
gi	448814763	ref	NC_000962.3	1623655 G	т	105	189	60	40
			NC_000962.3	1624064 C	А	105	189	60	40
gi			NC_000962.3	1624791 C	G	70	70	60	40
gi			NC_000962.3	1625259 A	C	105	188	60	40
gi			NC_000962.3	1627351 T	C	105	189	60	40
gi			NC_000962.3	1630148 A	C	105	189	60	40
			NC_000962.3	1634609 C	Т	42	57	60	20
gi			NC_000962.3	1634610 C	Т	42	57	60	19
gi			NC_000962.3	1634762 C	Т	42	57	60	18
_ g1			NC_000962.3	1638364 C	Т	55	55	60	22
gj			NC_000962.3	1639418 A	G	105	190	60	40
			NC_000962.3	1639594 C	A	26	26	60	40
			NC_000962.3	1639643 T	ç	69	69	60	40
<b>g</b> 1			NC_000962.3	1640442 C	Ţ	37	37	60	40
<u>g</u> 1			NC_000962.3	1644268 G	A	3	8	60	3
<u>g</u> 1			NC_000962.3	1644284 T	A	6	24	60	3
			NC_000962.3	1644321 G	A	0 52	10	60	1 40
			NC_000962.3	1645802 T 1647830 G	C A	69	52 69	60 60	40
		_			-				
			NC_000962.3	1649513 A 1650072 A	G	105 69	189 69	60 60	40 40
			NC_000962.3	1653711 C	G	69	69	60	40
			NC_000962.3	1658535 G	T	26	26	60	40
			NC_000962.3	1659902 T	ć	70	70	60	40
			NC_000962.3	1659994 C	Ť	37	37	60	40
			NC_000962.3	1662358 C	÷	69	69	60	40
			NC_000962.3	1676290 C	Å	105	189	60	40
			NC_000962.3	1681536 A	Ĝ	70	70	60	40
01	448814763	ref	NC_000962.3	1688300 T	č	52	52	60	40
			NC_000962.3	1689250 T	Ğ	69	69	60	40
			NC_000962.3	1689349 C	Ť	21	136	60	10
			NC_000962.3	1691088 T	ċ	50	50	60	40
			NC_000962.3	1691520 T	Ğ	99	189	60	40
ai	448814763	ref	NC_000962.3	1692141 A	č	37	37	60	40
ai	448814763	ref	NC_000962.3	1693561 A	Ğ	105	189	60	40
			NC_000962.3	1695674 G	Ā	105	189	60	40
			NC_000962.3	1697243 C	Т	40	40	60	35
			NC_000962.3	1697267 T	C	93	189	60	35
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α	i   448814763	Iref	NC_000962.3	1575275 C	Α	69	69	60	40
q			NC_000962.3	1575793 A	G	69	69	60	40
g			NC_000962.3	1580141 G	Ť	70	70	60	40
g			NC_000962.3	1580181 G	Å	50	50	60	40
_			NC_000962.3	1581377 C	î	69	69	60	40
g				1581377 C	ć				
g			NC_000962.3			105	190	60	40
g			NC_000962.3	1585404 G	A	105	189	60	40
g	• • • • • • • • • • • • • •		NC_000962.3	1588899 G	Ţ	99	189	60	40
g			NC_000962.3	1589739 C	Т	105	189	60	40
g			NC_000962.3	1590555 C	Т	39	39	60	40
g			NC_000962.3	1596515 C	Т	105	189	60	40
g			NC_000962.3	1600685 C	Т	50	50	60	40
g			NC_000962.3	1601528 C	т	93	189	60	40
g			NC_000962.3	1604290 A	т	105	190	60	40
g			NC_000962.3	1608276 A	C	14	14	60	40
q	i 448814763	ref	NC_000962.3	1609840 A	G	105	189	60	40
ā	i   448814763	Iref	NC_000962.3	1611283 T	C	69	69	60	40
q			NC_000962.3	1613035 T	C	69	69	60	40
g			NC_000962.3	1613522 C	Ť	69	69	60	40
g			NC_000962.3	1616831 A	Ġ	105	189	60	40
g	• • • • • • • • • • • • • •		NC_000962.3	1617833 C	Ť	52	52	60	40
9			NC_000962.3	1623655 G	Ť	105	189	60	40
_	• • • • • • • • • • • • • •		NC_000962.3	1624064 C	Å	105	189	60	40
g			NC_000962.3	1624791 C	Ĝ	70	70	60	40
g					č	105	188		
g	• • • • • • • • • • • • • •		NC_000962.3	1625259 A				60	40
g			NC_000962.3	1627351 T	ç	105	189	60	40
_			NC_000962.3	1630148 A	ç	105	189	60	40
g			NC_000962.3	1634609 C	Ţ	42	57	60	20
g			NC_000962.3	1634610 C	Т	42	57	60	19
g			NC_000962.3	1634762 C	Т	42	57	60	18
g			NC_000962.3	1638364 C	Т	55	55	60	22
g			NC_000962.3	1639418 A	G	105	190	60	40
g	i 448814763	ref	NC_000962.3	1639594 C	A	26	26	60	40
g	i 448814763	ref	NC_000962.3	1639643 T	C	69	69	60	40
g			NC_000962.3	1640442 C	т	37	37	60	40
g	i 448814763	ref	NC_000962.3	1644268 G	A	3	8	60	3
g	i 448814763	ref	NC_000962.3	1644284 T	Α	6	24	60	3
g	i 448814763	ref	NC_000962.3	1644321 G	Α	0	10	60	1
q	i   448814763	ref	NC_000962.3	1645802 T	C	52	52	60	40
ģ	• • • • • • • • • • • • • •		NC_000962.3	1647830 G	A	69	69	60	40
a			NC_000962.3	1649513 A	C	105	189	60	40
			NC_000962.3	1650072 A	G	69	69	60	40
			NC_000962.3	1653711 C	Ğ	69	69	60	40
			NC_000962.3	1658535 G	Ť	26	26	60	40
			NC_000962.3	1659902 T	ċ	70	70	60	40
			NC_000962.3	1659994 C	Ť	37	37	60	40
			NC_000962.3	1662358 C	÷	69	69	60	40
			NC_000962.3	1676290 C		105	189	60	40
9	1 440014/03	n er	NC_000962.3	1681536 A	A G	70	70	60	40
			NC_000962.3	1688300 T	ç	52	52	60	40
			NC_000962.3	1689250 T	Ģ	69	69	60	40
			NC_000962.3	1689349 C	Ţ	21	136	60	10
			NC_000962.3	1691088 T	ç	50	50	60	40
			NC_000962.3	1691520 T	G	99	189	60	40
			NC_000962.3	1692141 A	C	37	37	60	40
			NC_000962.3	1693561 A	G	105	189	60	40
			NC_000962.3	1695674 G	Α	105	189	60	40
			NC_000962.3	1697243 C	Т	40	40	60	35
g	1   448814763	ref	NC_000962.3	1697267 T	C	93	189	60	35

gi 448814763 ref NC_000962.3		А	69	69	60	40
gi 448814763 ref NC_000962.3		C	105	189	60	40
gi 448814763 ref NC_000962.3		A	69	69	60	40
gi 448814763 ref NC_000962.3		Т	70	70	60	40
gi 448814763 ref NC_000962.3		G	102	190	60	40
gi 448814763 ref NC_000962.3		C	15	32	60	6
gi 448814763 ref NC_000962.3	1710933 C	T	15	52	60	6
gi 448814763 ref NC_000962.3		G	99	189	60	40
gi 448814763 ref NC_000962.3		G	50	50	60	40
qi  448814763 ref NC_000962.3		ç	69	69	60	40
gi   448814763   ref   NC_000962.3		G	37 26	37 26	60 60	40 40
gi  448814763   ref   NC_000962.3 gi  448814763   ref   NC_000962.3		G	25	25	60	40
gi 448814763 ref NC_000962.3	1731563 A	Ť	105	189	60	40
gi 448814763 ref NC_000962.3	1735903 A	Ġ	37	37	60	40
gi 448814763 ref NC_000962.3		Ă	37	37	60	40
gi 448814763 ref NC_000962.3		Ĝ	57	183	60	22
gi 448814763 ref NC_000962.3		Ă	105	189	60	40
gi 448814763 ref NC_000962.3		ĉ	50	50	60	40
gi 448814763 ref NC_000962.3		č	102	189	60	40
gi 448814763 ref NC_000962.3	1754983 C	т	105	189	60	40
gi 448814763 ref NC_000962.3	1758790 C	т	52	52	60	40
gi 448814763 ref NC_000962.3		Α	102	187	60	40
gi 448814763 ref NC_000962.3		т	50	50	60	40
gi 448814763 ref NC_000962.3	1760292 A	G	69	69	60	40
gi 448814763 ref NC_000962.3	1760923 T	C	70	70	60	40
gi 448814763 ref NC_000962.3	1778430 T	C	102	189	60	40
gi 448814763 ref NC_000962.3		C	25	25	60	40
gi 448814763 ref NC_000962.3		G	30	70	60	13
gi   448814763   ref   NC_000962.3		<u>A</u>	70	70	60	40
gi 448814763 ref NC_000962.3		T G	3 50	10	60	6
gi  448814763   ref   NC_000962.3 gi  448814763   ref   NC_000962.3	1789446 C	T	50	50 181	60 60	40 21
Tilleren in the second		Ý	12	12	60	30
gi  448814763 ref NC_000962.3 gi  448814763 ref NC_000962.3		Ť	39	112	60	16
gi 448814763 ref NC_000962.3		Ġ	51	69	60	20
gi 448814763 ref NC_000962.3		Ğ	51	174	60	20
gi 448814763 ref NC_000962.3		Ğ	75	92	60	32
gi 448814763 ref NC_000962.3	1789795 A	G	9	91	60	7
gi 448814763 ref NC_000962.3	1789798 A	G	6	17	60	5
gi 448814763 ref NC_000962.3	1791823 T	C	69	69	60	40
gi 448814763 ref NC_000962.3	1792347 G	A	69	69	60	40
gi 448814763 ref NC_000962.3		Α	105	189	60	40
gi 448814763 ref NC_000962.3		G	37	37	60	40
gi 448814763 ref NC_000962.3		A	39	39	60	40
gi 448814763 ref NC_000962.3		A	69	69	60	40
gi 448814763 ref NC_000962.3		A	26	26	60	40
gi   448814763   ref   NC_000962.3		Ţ	105	189	60	40
gi  448814763   ref   NC_000962.3 gi  448814763   ref   NC_000962.3		C A	50 70	50 70	60	40
gi 448814763 ref NC_000962.3		Ť	105	189	60 60	40 40
gi 448814763 ref NC_000962.3		ċ	102	190	60	40
gi 448814763 ref NC_000962.3		Ť	37	37	60	40
gi 448814763 ref NC_000962.3		Å	105	189	60	40
gi 448814763 ref NC_000962.3		Ĝ	71	71	60	40
gi 448814763 ref NC_000962.3		Ť	37	37	60	40
gi 448814763 ref NC_000962.3		Å	69	69	60	40
gi 448814763 ref NC_000962.3		C	50	50	60	40
gi 448814763 ref NC_000962.3		G	50	50	60	40
1	83					

ai	448814763	Iref	NC_000962.3	1839306 A	G	70	70	60	35
			NC_000962.3	1839329 G	Ă	70	70	60	35
			NC_000962.3	1839759 G	ĉ	20	20	60	40
			NC_000962.3	1841115 C	Ť	69	69	60	40
<u>g</u> 1					÷				
<u>g</u> j			NC_000962.3	1846841 C		32	32	60	40
			NC_000962.3	1847919 C	G	69	69	60	40
			NC_000962.3	1848147 C	Α	37	37	60	40
			NC_000962.3	1849191 T	C	50	50	60	40
gi			NC_000962.3	1849609 T	C	69	69	60	40
gi			NC_000962.3	1853974 C	т	102	190	60	40
gi	448814763	ref	NC_000962.3	1854045 A	G	99	189	60	40
			NC_000962.3	1854277 G	Α	70	70	60	34
			NC_000962.3	1854300 T	C	51	51	60	34
ai	448814763	ref	NC_000962.3	1855413 G	Α	50	50	60	40
gi	448814763	ref	NC_000962.3	1856777 G	ĉ	39	39	60	40
qi			NC_000962.3	1859559 C	Ā	69	69	60	40
gi			NC_000962.3	1859989 C	f	70	70	60	36
			NC_000962.3	1860021 C	Å	26	26	60	36
			NC_000962.3	1863660 C	÷	70	70	60	40
91	440014/03	rei	INC_000962.31			70			
			NC_000962.3	1864325 C	A		70	60	40
			NC_000962.3	1873954 G	Ţ	102	189	60	40
<u>g</u> 1			NC_000962.3	1874508 C	Ţ	52	52	60	40
<u>g</u> 1			NC_000962.3	1876114 G	Ţ	102	189	60	40
			NC_000962.3	1876393 C	Т	69	69	60	40
gı	448814763	ref	NC_000962.3	1876739 T	G	31	31	60	40
			NC_000962.3	1882264 G	C	57	74	60	22
gi			NC_000962.3	1882331 C	т	18	58	60	7
gi	448814763	ref	NC_000962.3	1882337 T	A	21	49	60	8
gi	448814763	ref	NC_000962.3	1882359 C	т	60	73	60	23
qi	448814763	Iref	NC_000962.3	1885772 G	Α	102	189	60	40
ai			NC_000962.3	1886263 C	G	96	183	60	40
			NC_000962.3	1887284 G	А	50	50	60	40
ai	448814763	ref	NC_000962.3	1887795 G	A	69	69	60	40
qi	448814763	ref	NC_000962.3	1889073 G	ĉ	37	37	60	40
gi			NC_000962.3	1894422 A	Ğ	102	190	60	40
			NC_000962.3	1897646 G	č	38	38	60	40
9	448814763	ref	NC_000962.3	1900800 A	Ğ	69	69	60	40
9	448814763	ref	NC_000962.3	1901493 T	č	70	70	60	40
			NC_000962.3	1901623 G	Ť	105	188	60	40
<u>g</u> i	440014703	rer	NC_000962.3	1901894 C	G	26	26	60	40
			NC_000962.3	1902156 G	A	50	50	60	40
			NC_000962.3	1906336 A	G	69	69	60	40
			NC_000962.3	1907177 C	Ţ	105	188	60	40
			NC_000962.3	1907296 G	ç	38	38	60	40
			NC_000962.3	1907648 A	G	102	190	60	40
			NC_000962.3	1916137 A	G	69	69	60	40
			NC_000962.3	1916998 A	Т	69	69	60	40
			NC_000962.3	1917972 A	G	69	69	60	40
gi	448814763	ref	NC_000962.3	1920120 G	т	69	69	60	40
			NC_000962.3	1923223 A	G	70	70	60	40
			NC_000962.3	1923985 G	Α	105	189	60	40
			NC_000962.3	1924959 T	C	105	190	60	40
			NC_000962.3	1931179 C	A	39	39	60	40
			NC_000962.3	1931470 G	A	70	70	60	40
			NC_000962.3	1931718 G	ĉ	69	69	60	40
			NC_000962.3	1933988 G	Ă	26	26	60	40
			NC_000962.3	1935695 T	Ĝ	70	70	60	40
			NC_000962.3	1936525 G	Ă	99	188	60	40
			NC_000962.3	1940307 G	î	25	25	60	40
gr	1440014/03	n ei	[nc_000302.3]	1940307 0		23	23	00	40
				0.4					

g1	448814/63	ret	[NC_000962.3]	1943/23	C I	I /	/0 /0	0 60	40
ai	448814763	İref	NC_000962.3	1944107	A (	G 7	70 70	0 60	40
			NC_000962.3	1944402			70 70		40
			NC_000962.3	1948644				89 60	
qi			NC_000962.3	1950767			50 50		40
qi			NC_000962.3	1952160			59 6		
			NC_000962.3	1956930			50 50		
	448814763	Inof	NC_000962.3	1960284			59 6		
gı			NC_000962.3	1963383			52 52		40
gı			NC_000962.3	1963957			59 6		
			NC_000962.3	1967237				90 60	40
gı			NC_000962.3	1967783			50 50		40
gı			NC_000962.3	1971725			38 3		
91									
			NC_000962.3	1978807			59 69		
<u>g</u> j			NC_000962.3	1979026			59 69		
<u>g</u> j			NC_000962.3	1982118			1 1		7
gi	448814763	ret	NC_000962.3	1982193			9 34		
	1		NC_000962.3	1983313			37 3		40
gj			NC_000962.3	1984413			59 69		40
gj	448814763	Inet	NC_000962.3	1989057			3 6	60	_
	448814763	Inet	NC_000962.3	1992161				25 60	6
_ g1			NC_000962.3	1992172			L2 1		6
_ g1			NC_000962.3	1992221			9 20		6
_ g1	448814763	ret	NC_000962.3	1992224			L2 24		
g1			NC_000962.3	1993808				89 60	40
g1			NC_000962.3	2000964		51		60	19
g1	448814763	ref	NC_000962.3	2008669				90 60	
gi			NC_000962.3	2010614			19 49		40
g1			NC_000962.3	2010679			37 37		40
gi			NC_000962.3	2013943			59 69	9 60	40
gi	448814763	ref	NC_000962.3	2017291	т (	Z (	59 69	9 60	40
gi			NC_000962.3	2017560			59 69		40
gi			NC_000962.3	2019236			59 69		40
gi	448814763	ref	NC_000962.3	2022643		Г 2	26 20		40
gi	448814763	ref	NC_000962.3	2022868				89 60	40
gi			NC_000962.3	2023211	G 1	г (	59 69	9 60	40
gi			NC_000962.3	2035937			LO2 1	90 60	40
gi	448814763	ref	NC_000962.3	2039884	т	57	70 70	0 60	40
gi	448814763	ref	NC_000962.3	2040722	C 1	Г 2	25 25	5 60	40
gi	448814763	ref	NC_000962.3	2045310	A (	G (	59 69	9 60	40
qi	448814763	ref	NC_000962.3	2045849	C 1	Г 1	LO2 1	89 60	40
qi	448814763	ref	NC_000962.3	2049065	т (		38 31	B 60	34
gi	448814763	ref	NC_000962.3	2049097	G (	C 8	37 13	88 60	34
gi	448814763	ref	NC_000962.3	2050061	A (	G (	59 65	9 60	40
			NC_000962.3	2050822	G (	Z 7	70 70	0 60	40
			NC_000962.3	2051746			59 69	9 60	40
qi			NC_000962.3	2052035			70 70	0 60	40
			NC_000962.3	2052687				90 60	
			NC_000962.3	2053320	G 1		70 70		
			NC_000962.3	2055271			50 50		40
			NC_000962.3	2055611			59 69		
			NC_000962.3	2057593			59 6		
ai	448814763	ref	NC_000962.3	2057774			59 6		
ai	448814763	ref	NC_000962.3	2059364			52 53		
			NC_000962.3	2062237			5 70		
			NC_000962.3	2062922			59 6		
01	448814763	ref	NC_000962.3	2066471		- 2	59 6		40
			NC_000962.3	2068353			50 50		
			NC_000962.3	2072190				90 60	
91	110021100		1.12_000000101	20/2200					10

ai	448814763 re	efl	NC 000962.3	2074754 C	т	38	38	60	40
qi				2079724 C	Ť	102	190	60	40
gi				2083124 T	ċ	70	70	60	40
				2083610 G	č	70	70	60	40
gi					Ť	69		60	40
<u>g</u> 1	448814763 re	닢	NC_000962.3	2088864 C			69		
	448814763 re			2090306 G	A	69	69	60	40
_ g1				2092391 G	Т	69	69	60	40
gı				2092970 C	т	69	69	60	40
gi				2094850 C	Т	102	189	60	40
gi				2096094 C	т	102	189	60	40
qi	448814763 re	efĺ	NC_000962.3	2096186 A	G	38	38	60	40
gi	i			2096430 A	C	105	189	60	40
gi				2097144 G	C	70	70	60	40
gi				2103626 T	č	99	189	60	40
				2104779 C	Ť	50	50	60	40
g1	448814763 re			2104779 C 2108141 T	ċ	37	37	60	40
gj	i			2108890 A	ç	70	70	60	40
_ g1	i			2110365 A	<u>c</u>	70	70	60	40
_ g1				2110812 G	Т	102	189	60	40
gı				2116903 C	Т	12	44	60	7
gi	448814763 re	ef	NC_000962.3	2120796 T	A	38	38	60	40
gi	448814763 re	ef	NC_000962.3	2120953 C	G	70	70	60	40
gi	i			2122625 A	G	71	71	60	40
gi				2122826 G	Α	69	69	60	40
gi				2122976 C	G	32	32	60	40
	448814763 re			2123169 T	Ğ	50	50	60	40
	448814763 re			2128372 A	Ğ	102	189	60	40
					Ğ				40
<u>g</u> 1				2128870 A		105	189	60	
_ g1				2129281 C	A	69	69	60	40
_ g1	i			2130529 A	G	39	39	60	40
_ g1	448814763 re	et i	NC_000962.3	2131540 C	Т	102	190	60	40
gı				2132062 C	G	26	26	60	40
gi	448814763 re	ef	NC_000962.3	2133475 A	R	73	73	60	16
gi	448814763 re	ef	NC_000962.3	2135870 T	C	37	37	60	40
gi	448814763 re	efĺ	NC_000962.3	2138767 G	C	25	25	60	40
gi				2143328 G	C	37	37	60	40
	448814763 re			2143973 A	G	70	70	60	40
gi	i	efi	NC 000962.3	2145878 A	G	37	37	60	40
gi	i			2146024 G	Ā	50	50	60	40
qi				2147022 A	ĉ	37	37	60	40
	448814763 re			2147429 G	č	69	69	60	40
	448814763 re			2148979 G		70	70		40
					A T			60	
	448814763 re			2151678 G		38	38	60	40
	448814763 re			2154724 C	A	52	52	60	40
	448814763 re			2155168 C	G	70	70	60	40
	448814763 re			2156868 G	Т	39	47	60	18
	448814763 re			2158109 T	C	69	69	60	40
gi	448814763 re	ef	NC_000962.3	2160998 G	A	69	69	60	40
	448814763 re			2167926 A	G	69	69	60	40
	448814763 re			2167983 C	т	50	50	60	40
	448814763 re			2177073 T	C	93	189	60	40
	448814763 re			2177968 G	Ť	69	69	60	40
	448814763 re			2178620 C	Ť	69	69	60	40
	448814763 re			2180771 C	Ť	105	190	60	40
	448814763 re			2182138 A	ć	50	50	60	40
	448814763 re			2182138 A 2184262 C	Ă	26	26	60	40
	448814763 re			2185358 G	A	69	69	60	40
	448814763 re			2189899 G	A	51	51	60	40
g٦	448814763 re	et	NC_000962.3	2192617 C	т	69	69	60	40

ai	448814763 ref	NC_000962.3	2196882 A	G	6	7	60	3
	448814763 ref		2197239 A	C	15	20	60	7
	448814763 ref		2197250 A	Ğ	12	27	60	7
qi	i		2197278 T	Ŷ	21	21	60	43
qi			2199052 C	Ġ	38	38	60	40
	448814763 ref	NC 000962 31	2199416 A	Ğ	28	28	60	40
	448814763 ref	NC 000962.31	2199550 G	T	69	69	60	40
	448814763 ref		2209465 G	A G	42	73 20	60	18 40
<u>g</u> j			2211826 A		20		60	
	448814763 ref		2214229 G	ç	39	39	60	40
gi	448814763 ref	NC_000962.3	2216370 G	ç	38	38	60	40
	448814763 ref		2216443 C	A	99	189	60	40
	448814763 ref		2218012 A	G	69	69	60	39
gj	448814763 ref		2218051 C	Т	105	190	60	39
g٦			2218488 G	C	37	37	60	40
	448814763 ref		2220512 T	G	70	70	60	40
gi	448814763 ref	NC_000962.3	2221212 C	т	105	189	60	40
gi	448814763 ref	NC_000962.3	2222308 T	C	50	50	60	40
	448814763 ref		2223136 G	Α	105	190	60	40
ği	448814763 ref	NC_000962.3	2223293 T	C	50	50	60	40
	448814763 ref		2227790 A	G	52	52	60	40
	448814763 ref		2228967 A	Ğ	69	69	60	40
	448814763 ref		2229801 C	Ğ	31	31	60	40
	448814763 ref		2230669 C	Ť	50	50	60	40
			2231486 A	Ġ	69	69	60	40
	i		2237497 G	č	69	69	60	40
<u>g</u> 1			2237497 G	č	105	190	60	40
	448814763 ref							
gi	448814763 ref	INC_000962.3	2239055 C	T	50	50	60	40
	448814763 ref		2240062 C	G	50	50	60	40
gj	448814763 ref		2241646 C	Т	70	70	60	40
gj			2241742 A	G	50	50	60	40
	448814763 ref		2242808 G	Α	102	189	60	40
	448814763 ref		2243034 T	G	105	189	60	40
	448814763 ref		2245149 G	т	69	69	60	40
gi	448814763 ref	NC_000962.3	2246960 G	C	71	71	60	40
gi	448814763 ref	NC_000962.3	2247677 A	C	102	189	60	40
ği	i	NC_000962.3	2249035 A	G	102	189	60	40
	448814763 ref		2249789 G	Α	37	37	60	40
	448814763 ref		2251999 A	G	38	38	60	40
ai	448814763 ref	NC 000962.3	2255942 G	Ŧ	70	70	60	40
	448814763 ref		2260100 C	Ť	38	38	60	40
	448814763 ref		2260467 G	Å	69	69	60	40
	448814763 ref		2260525 C	î	105	188	60	40
	448814763 ref		2261427 A	Ġ	21	48	60	10
91	448814763 ref	NC 000062 2	2263156 G		51	56		22
9!	440014703 rei	INC_000962.31	2263136 G 2264782 C	A			60	
	448814763 ref			A	99	189	60	40
	448814763 ref		2265059 T	G	39	39	60	40
	448814763 ref		2266487 G	S	118	118	60	61
	448814763 ref		2266624 G	ĸ	44	44	60	48
	448814763 ref		2269780 T	C	69	69	60	40
	448814763 ref		2270102 A	G	105	186	60	40
	448814763 ref		2275795 G	Α	69	69	60	40
	448814763 ref		2282376 C	Т	45	45	60	40
	448814763 ref		2282377 C	Т	45	45	60	40
gi	448814763 ref	NC_000962.3	2282787 C	Т	105	189	60	40
gi	448814763 ref	NC_000962.3	2285251 C	Α	37	37	60	40
gi	448814763 ref	NC_000962.3	2287121 A	G	105	190	60	40
	448814763 ref		2295400 A	C	9	33	60	4
	448814763 ref		2295404 G	ē	15	52	60	7
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ai	448814763 re	ef   NC_000962.3	2447539 A	G	69	69	60	40
gi		ef NC_000962.3	2448288 G	Ā	38	38	60	40
gi		ef NC_000962.3	2448458 C	Ť	69	69	60	40
		ef NC_000962.3	2448574 G	ċ	70	70	60	40
gi		ef NC_000962.3	2449255 G	Ă	69	69	60	40
<u>g</u> 1								
gj		ef   NC_000962.3	2449295 G	A	50	50	60	40
_ g1		ef   NC_000962.3	2449799 C	Т	69	69	60	40
gı		ef   NC_000962.3	2450045 G	Α	96	190	60	40
gi		ef NC_000962.3	2451081 C	G	32	32	60	40
gi	448814763 re	ef NC_000962.3	2462871 G	A	39	39	60	40
gi	448814763 re	ef   NC_000962.3	2470485 G	т	50	50	60	40
gi		ef   NC_000962.3	2470591 A	C	26	26	60	40
gi		ef NC_000962.3	2472956 T	C	69	69	60	40
gi		ef NC_000962.3	2474811 C	Ť	69	69	60	40
gi		ef NC_000962.3	2476570 G	Å	69	69	60	40
		ef NC_000962.3	2485387 T	ĉ	102	189	60	40
<u>g</u> 1					38			
gj		ef   NC_000962.3	2494233 G	A		38	60	40
_ g1		ef   NC_000962.3	2494340 G	A	69	69	60	40
_ g1		ef NC_000962.3	2495500 T	C	69	69	60	40
gı		ef[NC_000962.3]	2499726 G	Α	69	69	60	40
gi	448814763 re	ef NC_000962.3	2500892 C	Т	69	69	60	40
gi	448814763 re	ef   NC_000962.3	2503549 C	A	99	189	60	40
gi		ef NC_000962.3	2508395 G	A	70	70	60	40
gi		ef NC_000962.3	2509140 G	C	69	69	60	40
gi		ef NC_000962.3	2509181 C	Ğ	52	52	60	40
gi		ef NC_000962.3	2509722 A	Ğ	69	69	60	40
		ef NC_000962.3	2511712 G	Ť	37	37	60	40
1		ef NC_000962.3	2516567 G	ċ	50	50	60	40
<u>g</u> ]								
gj		ef   NC_000962.3	2517288 C	Ţ	69	69	60	40
_ g1		ef   NC_000962.3	2517610 G	A	70	70	60	40
91	448814763 re	ef   NC_000962.3	2518132 C	Т	70	70	60	40
_ g1		ef NC_000962.3	2521198 G	Α	102	189	60	40
gi		ef NC_000962.3	2521342 T	C	105	190	60	40
gi		ef NC_000962.3	2526974 T	C	37	37	60	40
gi	448814763 re	ef   NC_000962.3	2527070 G	A	105	187	60	40
gi		ef NC_000962.3	2528931 G	Α	102	189	60	40
gi		ef NC_000962.3	2529680 A	G	69	69	60	40
gi		ef NC_000962.3	2530434 G	Ť	38	38	60	40
gi		ef NC_000962.3	2531081 T	Å	69	69	60	40
9	1448814763 ne	ef  NC_000962.3	2531742 A	Ĝ	69	69	60	40
91	1440014703 re	ef NC_000962.3	2536705 T	Ğ	70	70	60	40
		ef   NC_000962.3	2538793 G	A	69	69	60	40
		ef   NC_000962.3	2544979 T	A	37	37	60	40
		ef   NC_000962.3	2546406 T	ç	69	69	60	40
_ g1		ef[NC_000962.3]	2547274 A	G	69	69	60	40
gi		ef NC_000962.3	2552592 A	C	37	37	60	40
gi	448814763 re	ef NC_000962.3	2553682 C	Т	50	50	60	40
gi	448814763 re	ef   NC_000962.3	2562783 T	C	105	189	60	40
qi	448814763 re	ef   NC_000962.3	2563958 A	C	105	190	60	40
ai	448814763 re	ef NC_000962.3	2569593 A	G	102	190	60	40
01	448814763 re	ef NC_000962.3	2573434 G	Ť	37	37	60	40
gi	448814763	ef NC_000962.3	2573756 C	Å	25	25	60	40
gi		ef NC_000962.3	2574598 C	î	70	70	60	40
		ef NC_000962.3	2577246 A	Ġ	39	72	60	16
1								
		ef   NC_000962.3	2578626 A	G	99	189	60	40
gj	1440014763 re	ef   NC_000962.3	2581109 C	A	69	69	60	40
gj	448814/63 re	ef   NC_000962.3	2581513 G	A	69	69	60	40
		ef   NC_000962.3	2582324 G	A	69	69	60	40
g٦	448814763 re	ef NC_000962.3	2586127 A	G	102	190	60	40
1.1								

ai	448814763	ref	NC_000962.3	2589216 G	C	102	189	60	40
gi	448814763	ref	NC_000962.3	2596717 T	G	70	70	60	40
gi			NC_000962.3	2598400 A	Ğ	105	190	60	40
gi			NC_000962.3	2602575 G	Ă	50	50	60	40
			NC_000962.3	2605293 G	î	102	189	60	40
g1			NC_000962.3	2608117 C	Å	102	189	60	40
g1			NC_000962.3	2608256 G	Â	103	189	60	40
g1			NC_000962.3		ĉ	102	190		40
<u>g</u> ]				2608488 T				60	
<u>g</u> 1			NC_000962.3	2611704 A	ç	99	168	60	40
<u>g</u> j	440014703	ref	NC_000962.3	2612632 C	A	51	51	60	40
<u>g</u> j			NC_000962.3	2619271 T	ç	70	70	60	40
<u>g</u> j			NC_000962.3	2622402 G	A	50	50	60	40
<b>g</b> j			NC_000962.3	2622508 C	Т	69	69	60	40
<u>g</u> 1			NC_000962.3	2624624 C	G	102	189	60	40
	448814/63	ret	NC_000962.3	2624968 A	G	37	37	60	40
_ g1			NC_000962.3	2631641 T	G	50	50	60	40
_ g1			NC_000962.3	2632500 A	G	69	69	60	40
_ g1			NC_000962.3	2637088 C	т	50	50	60	40
91			NC_000962.3	2637541 C	Т	69	69	60	40
gı			NC_000962.3	2641620 C	т	102	188	60	40
gi			NC_000962.3	2641840 A	G	99	176	60	40
gi			NC_000962.3	2642383 C	т	105	189	60	40
gi			NC_000962.3	2643653 G	A	105	189	60	40
gi			NC_000962.3	2651881 C	G	27	33	60	14
gi	448814763	ref	NC_000962.3	2651954 T	A	6	39	60	5
gi	448814763	ref	NC_000962.3	2652908 C	G	70	70	60	40
gi	448814763	ref	NC_000962.3	2654583 C	т	69	69	60	40
gi		ref	NC_000962.3	2656225 A	G	69	69	60	40
gi	448814763	ref	NC_000962.3	2660319 C	Α	69	69	60	40
gi			NC_000962.3	2663210 G	Α	69	69	60	40
gi			NC_000962.3	2680658 T	G	69	69	60	40
gi			NC_000962.3	2681368 G	Α	50	50	60	40
gi			NC_000962.3	2688225 G	C	105	190	60	40
ai			NC_000962.3	2691713 T	Č	70	70	60	40
gi	448814763	ref	NC_000962.3	2695378 C	Ğ	37	37	60	40
gi			NC_000962.3	2696977 G	č	69	69	60	40
gi			NC_000962.3	2704291 G	Ā	70	70	60	40
gi		ref	NC_000962.3	2704588 C	Ť	69	69	60	40
ai			NC_000962.3	2704886 G	Ř	22	22	60	12
gi			NC_000962.3	2705561 A	Ĝ	70	70	60	40
ai			NC_000962.3	2709795 A	Ğ	69	69	60	40
01	448814763	ref	NC_000962.3	2712913 C	Ă	69	69	60	40
			NC_000962.3	2713795 C	Ť	102	189	60	40
9	448814763	ref	NC_000962.3	2718852 T	Ġ	69	69	60	40
91	448814763	ref	NC_000962.3	2719850 G	Ă	102	190	60	40
gi			NC_000962.3	2721562 C	Ĝ	20	20	60	40
gi			NC_000962.3	2723506 T	č	69	69	60	40
			NC_000962.3	2725472 G	Ă	69	69	60	40
			NC_000962.3	2726051 G	Â	50	50		40
			NC_000962.3	2727037 A	Ť	69	69	60 60	40
91	1440014/03	ner	NC_000962.3	2727744 T	A	105	189	60	40
			NC_000962.3	2731741 G	A	50	50	60	40
			NC_000962.3	2734074 T	ç	70	70	60	40
gj	448814/63	ret	NC_000962.3	2737572 C	A	69	69	60	40
			NC_000962.3	2739385 T	ç	69	69	60	40
			NC_000962.3	2740693 T	ç	70	70	60	40
			NC_000962.3	2740845 C	Ţ	69	69	60	40
			NC_000962.3	2745739 G	A	50	50	60	40
g٦	448814/63	ret	NC_000962.3	2745839 G	Α	70	70	60	40

ai	448814763	ref	NC_000962.3	2745839 G	Α	70	70	60	40
			NC_000962.3	2751804 C	Ť	70	70	60	40
gi			NC_000962.3	2752698 C	Å	50	50	60	40
_			NC_000962.3	2753041 C	f	105	176	60	40
<u>g</u> j									
gj			NC_000962.3	2755112 G	A	69	69	60	40
_ g1			NC_000962.3	2757357 C	Т	50	50	60	40
g1			NC_000962.3	2758363 T	C	105	189	60	40
gi			NC_000962.3	2759534 C	G	39	39	60	40
gi	448814763	ref	NC_000962.3	2760152 A	G	102	189	60	40
gi		ref	NC_000962.3	2764206 A	G	105	190	60	40
gi			NC_000962.3	2764939 G	A	32	32	60	40
gi			NC_000962.3	2765753 G	Â	70	70	60	40
			NC_000962.3	2773955 G	ĉ	102	190	60	40
g1				2779136 T		37			
gj			NC_000962.3		ç		37	60	40
gj	448814763	ret	NC_000962.3	2786952 A	G	50	50	60	40
_ g1			NC_000962.3	2787989 C	Т	105	190	60	40
gi			NC_000962.3	2788966 G	т	69	69	60	40
gi	448814763	ref	NC_000962.3	2789661 C	A	52	52	60	40
gi			NC_000962.3	2790458 A	C	37	37	60	40
ği	448814763	ref	NC_000962.3	2791098 C	т	69	69	60	40
gi			NC_000962.3	2791257 A	Ť	39	39	60	40
			NC_000962.3	2791475 A	Ġ	50	50	60	40
			NC_000962.3	2794278 C	Ť	99	189	60	40
gj			NC_000962.3	2799493 A	ç	9	36	60	6
gj			NC_000962.3	2805238 T	G	52	52	60	30
gı			NC_000962.3	2805246 T	C	63	185	60	24
gi			NC_000962.3	2807486 C	A	50	50	60	40
gi	448814763	ref	NC_000962.3	2809621 T	C	102	190	60	40
gi	448814763	ref	NC_000962.3	2809895 G	Α	69	69	60	40
	448814763	ref	NC_000962.3	2815277 C	т	70	70	60	40
gi	448814763	ref	NC_000962.3	2817158 C	Å	26	26	60	40
gi	448814763	ref	NC_000962.3	2818837 A	G	105	189	60	40
			NC_000962.3	2821342 C	Ť	102	189	60	40
g1				2824432 G	Å	37	37	60	40
<u>9</u> 1			NC_000962.3						
gj			NC_000962.3	2825466 G	A	37	37	60	40
_ g1			NC_000962.3	2827984 G	T	70	70	60	35
gı			NC_000962.3	2828019 T	C	50	50	60	34
			NC_000962.3	2828058 G	A	105	188	60	39
gi	448814763	ref	NC_000962.3	2829666 C	т	6	11	60	3
gi	448814763	ref	NC_000962.3	2830126 A	G	69	69	60	40
			NC_000962.3	2830525 C	А	70	70	60	40
			NC_000962.3	2833442 C	т	50	50	60	40
			NC_000962.3	2841022 A	Ġ	102	176	60	40
			NC_000962.3	2847281 A	Ğ	102	190	60	40
			NC_000962.3	2855259 A	Ğ	70	70	60	33
91	440014703	n el	NC 000062 3						
gi	440014703	ref	NC_000962.3	2855291 C	Ţ	84	188	60	33
			NC_000962.3	2856314 A	Ţ	32	32	60	40
			NC_000962.3	2858669 G	Т	52	52	60	40
			NC_000962.3	2864603 G	A	6	11	60	10
gi	448814763	ref	NC_000962.3	2864605 C	т	6	11	60	8
qi	448814763	ref	NC_000962.3	2865760 A	G	52	52	60	40
ai	448814763	ref	NC_000962.3	2865882 T	č	69	69	60	40
01	448814763	ref	NC_000962.3	2867333 C	Ā	70	70	60	40
			NC_000962.3	2869242 T	ĉ	31	31	60	40
			NC_000962.3	2870386 C	Ť	69	69	60	40
									40
			NC_000962.3	2878980 C	Ţ	69	69	60	
			NC_000962.3	2880702 G	ç	50	50	60	40
			NC_000962.3	2881244 A	G	69	69	60	40
gı	448814763	ref	NC_000962.3	2883043 C	G	70	70	60	40
				70					

ai	448814763	Iref	NC_000962.3	2883043 C	G	70	70	60	40
			NC_000962.3	2886570 A	Ğ	37	37	60	40
			NC_000962.3	2888201 T	č	37	37	60	40
gj	448814765	ret	NC_000962.3	2889633 T	ç	70	70	60	40
			NC_000962.3	2891267 C	Т	50	50	60	40
			NC_000962.3	2891728 A	G	50	50	60	40
gi	448814763	ref	NC_000962.3	2893883 A	G	50	50	60	40
ai	448814763	İref	NC_000962.3	2894208 G	Α	69	69	60	40
gi	448814763	ref	NC_000962.3	2894594 G	A	69	69	60	40
			NC_000962.3	2894642 A	G	37	37	60	40
			NC_000962.3	2897528 G	Ă	69	69	60	40
				2897871 A	Ĝ		50		
			NC_000962.3			50		60	40
gi	440014703	rer	NC_000962.3	2899890 G	Ţ	50	50	60	40
1	448814763	ILLE	NC_000962.3	2900343 G	<u>c</u>	37	37	60	40
			NC_000962.3	2903101 G	Т	69	69	60	40
91	448814763	ret	NC_000962.3	2906008 C	т	70	70	60	40
			NC_000962.3	2910461 G	т	105	189	60	40
			NC_000962.3	2911293 C	G	99	190	60	40
qi	448814763	ref	NC_000962.3	2912294 T	G	50	50	60	40
ai	448814763	İref	NC_000962.3	2915482 C	Α	25	25	60	40
			NC_000962.3	2922984 T	C	105	189	60	40
			NC_000962.3	2923391 T	č	69	69	60	40
			NC_000962.3	2925683 G	Ă	105	189	60	40
			NC_000962.3	2925962 T	ĉ	50	50	60	40
			NC_000962.3		Ť	70	70		40
gi	440014703	rei	INC_000962.31	2926882 C				60	
gj	448814763	ILLE	NC_000962.3	2926927 A	ç	69	69	60	40
			NC_000962.3	2927511 G	T	105	189	60	40
_ g1	448814763	ret	NC_000962.3	2927939 T	C	69	69	60	40
g1			NC_000962.3	2933049 T	G	50	50	60	40
			NC_000962.3	2939373 G	C	96	169	60	40
gi	448814763	ref	NC_000962.3	2939657 T	C	52	52	60	40
gi	448814763	ref	NC_000962.3	2940608 C	т	70	70	60	40
			NC_000962.3	2943732 A	R	68	68	60	32
gi			NC_000962.3	2944291 C	Α	30	70	60	14
			NC_000962.3	2944524 C	G	6	12	60	4
			NC_000962.3	2948650 T	č	105	190	60	40
			NC_000962.3	2952293 C	Ť	105	188	60	40
9	440014703	nof	NC_000962.3	2953307 G	÷	51	74	60	21
91	440014703	in ef	INC_000962.31	2954439 T	ć	70			
<u>g</u> 1	440014703	rei	NC_000962.3				70	60	40
			NC_000962.3	2955233 C	T	70	70	60	40
			NC_000962.3	2959324 A	G	105	189	60	40
			NC_000962.3	2960306 T	A	51	181	60	20
<b>g</b> 1	448814763	ref	NC_000962.3	2961099 G	A	69	69	60	40
gi	448814763	ref	NC_000962.3	2961446 A	т	105	190	60	40
gi	448814763	ref	NC_000962.3	2961605 C	G	50	50	60	40
			NC_000962.3	2963627 G	Α	69	69	60	40
			NC_000962.3	2963892 G	Α	105	189	60	40
			NC_000962.3	2973809 G	C	30	70	60	13
			NC_000962.3	2975136 C	Ğ	30	57	60	14
			NC_000962.3	2975157 T	č	38	38	60	34
			NC_000962.3	2975207 C	Ă	18	113	60	9
			NC_000962.3			93	188	60	34
				2982898 T	A				
			NC_000962.3	2982918 C	T	71	71	60	30
			NC_000962.3	2982945 C	G	63	73	60	28
gj	448814763	ret	NC_000962.3	2984740 A	G	105	190	60	40
			NC_000962.3	2985216 G	A	70	70	60	40
			NC_000962.3	2987918 G	Α	50	50	60	40
			NC_000962.3	2988630 C	G	52	52	60	40
gi	448814763	ref	NC_000962.3	2989683 C	Т	38	38	60	40
_									

ai	448814763 ref NC_000962.3	2990752 A	C	69	69	60	40
ai	448814763 ref NC_000962.3	2992374 G	Ť	69	69	60	40
	448814763 ref NC_000962.3	2992564 G	Å	70	70	60	40
	448814763 ref NC_000962.3	2993523 T	ĉ	69	69	60	40
	448814763 ref NC_000962.3	2994187 T	ç	102	190	60	40
	448814763 ref NC_000962.3	2996912 C	Т	69	69	60	40
	448814763 ref NC_000962.3	3000362 T	C	69	69	60	40
	448814763 ref NC_000962.3	3003115 C	G	50	50	60	40
gi	448814763 ref NC_000962.3	3005185 G	т	52	52	60	40
	448814763 ref NC_000962.3	3006898 G	А	69	69	60	40
	448814763 ref NC_000962.3	3007238 A	G	105	190	60	40
gi	448814763 ref NC_000962.3	3009692 A	Ğ	105	188	60	40
gi	448814763 ref NC_000962.3	3010420 A	Ğ	69	69	60	40
	448814763 ref NC_000962.3	3011506 T	č	53	53	60	28
	448814763 ref NC_000962.3	3015379 G	A	105	189	60	40
	448814763 ref NC_000962.3	3017465 T	ç	105	189	60	40
	448814763 ref NC_000962.3	3024241 A	C	70	70	60	34
	448814763 ref NC_000962.3	3025431 C	Т	37	37	60	40
	448814763 ref NC_000962.3	3027606 C	G	69	69	60	40
gi	448814763 ref NC_000962.3	3027798 T	C	105	189	60	40
gi	448814763 ref NC_000962.3	3031168 A	G	99	190	60	40
	448814763 ref NC_000962.3	3031285 A	т	50	50	60	40
	448814763 ref NC_000962.3	3032887 G	À	69	69	60	40
	448814763 ref NC_000962.3	3035101 G	Â	70	70	60	40
	448814763 ref NC_000962.3	3035683 T	Ĝ	70	70	60	40
g1	448814763 ref NC_000962.3	3036413 G		69	69	60	40
			A				
	448814763 ref NC_000962.3	3037377 T	ç	69	69	60	40
	448814763 ref NC_000962.3	3041508 A	G	69	69	60	40
	448814763 ref NC_000962.3	3041871 G	Т	102	189	60	40
	448814763 ref NC_000962.3	3053973 C	Т	105	189	60	40
gi	448814763 ref NC_000962.3	3054081 A	G	24	24	60	40
gi	448814763   ref   NC_000962.3	3054321 A	G	50	50	60	40
gi	448814763 ref NC_000962.3	3064632 G	A	69	69	60	40
gi	448814763 ref NC_000962.3	3064809 G	Α	50	50	60	40
	448814763 ref NC_000962.3	3066271 T	C	70	70	60	34
	448814763 ref NC_000962.3	3069167 A	Ğ	70	70	60	40
gi	448814763 ref NC_000962.3	3069805 G	č	69	69	60	40
	448814763 ref NC_000962.3	3070311 C	Ă	69	69	60	40
	448814763 ref NC_000962.3	3074830 C	î	69	69	60	40
gj	448814763 ref NC_000962.3	3078178 C	Ť	102	188	60	40
	448814763 ref NC_000962.3	3078826 G	A	70	70	60	40
	448814763 ref NC_000962.3	3079877 A	G	26	26	60	40
	448814763 ref NC_000962.3	3080282 C	A	25	25	60	40
	448814763 ref NC_000962.3	3080795 A	G	37	37	60	40
	448814763 ref NC_000962.3	3085693 G	A	70	70	60	40
gi	448814763 ref NC_000962.3	3086261 T	C	70	70	60	40
gi	448814763 ref NC_000962.3	3086788 T	C	105	189	60	40
	448814763 ref NC_000962.3	3088625 A	G	37	37	60	40
	448814763 ref NC_000962.3	3092402 A	Ċ	69	69	60	40
	448814763 ref NC_000962.3	3094454 A	Ğ	69	69	60	40
01	448814763 ref NC_000962.3	3097349 C	Ť	102	189	60	40
	448814763 ref NC_000962.3	3103682 T	ć	102	190	60	40
	448814763 ref NC_000962.3	3104189 A	G	73	73	60	80
gj	448814763 ref NC_000962.3	3105144 C	A	69	69	60	40
	448814763 ref NC_000962.3	3112877 G	A	39	39	60	40
	448814763 ref NC_000962.3	3113872 A	T	105	190	60	40
	448814763 ref NC_000962.3	3114814 G	Α	105	190	60	40
	448814763 ref NC_000962.3	3118000 A	G	37	37	60	40
gi	448814763 ref NC_000962.3	3118449 A	G	105	187	60	40

ai	448814763 ref NC	000962 31	3131473	Δ	М	118	144	60	20
	448814763 ref NC	000062.31	3132956		T	12	74	60	7
gı	448814763 ref NC		3132975		G	21	63	60	11
gi	448814763 ref NC	000962.3	3133536	т	C	26	26	60	40
gi	448814763 ref NC	000962.3	3135852	G	т	24	60	60	11
	448814763 ref NC		3135871		Ġ	15	52	60	9
gj	448814763 ref NC		3137058		A	102	189	60	40
gı	448814763 ref NC	000962.3	3137237	т	C	69	69	60	40
gi	448814763 ref NC	000962.3	3137681	G	A	96	189	60	40
gi	448814763 ref NC		3155934		K	12	12	60	35
	448814763 ref NC		3156042		ĸ	13	13	60	39
	4400147031161140	_000902.31							
_ g1	448814763 ref NC		3163527		C	18	71	60	10
gı	448814763 ref NC		3163531	C	G	6	7	60	6
gi	448814763 ref NC	_000962.3	3164730	G	A	50	50	60	40
gi	448814763 ref NC		3169993	Δ	G	50	50	60	40
	448814763 ref NC		3174496		Ğ	99	170	60	40
_ g1	448814763 ref NC		3177884		A	70	70	60	40
gı	448814763 ref NC		3180988	C	A	37	37	60	40
qi	448814763 ref NC	_000962.3	3186860	т	G	102	190	60	40
gi	448814763 ref NC	000962.3	3188428	c	т	105	189	60	40
gi	448814763 ref NC		3188769		Ġ	96	189	60	40
	448814763 ref NC		3189242		G	31	31	60	40
gı	448814763 ref NC	_000962.3	3190342		A	38	38	60	40
gi	448814763 ref NC	_000962.3	3195731	т	C	105	190	60	40
qi	448814763 ref NC		3197917	G	Α	105	190	60	40
gi	448814763 ref NC		3199287		T	39	39	60	40
	448814763 ref NC		3200304		Ġ	105	190	60	40
_ g1	448814763 ref NC		3202130		A	69	69	60	40
gı	448814763 ref NC		3202629		Т	99	189	60	40
gi	448814763 ref NC	_000962.3	3205565	G	A	105	189	60	40
gi	448814763 ref NC		3208394	G	Α	69	69	60	40
gi	448814763 ref NC		3214299		A	99	167	60	40
	448814763 ref NC		3214481		î	37	37	60	40
<u>g</u> j									
_ g1	448814763 ref NC		3226181		C	26	26	60	40
gı	448814763 ref NC	000962.3	3228143		Т	69	69	60	40
gi	448814763 ref NC	_000962.3	3229692	G	Α	52	52	60	40
gi	448814763 ref NC		3231456	C	т	69	69	60	40
gi	448814763 ref NC			Ā	Ġ	69	69	60	40
	448814763 ref NC					69		60	
				G	A		69		40
	448814763 ref NC		3241244		A	70	70	60	40
gi	448814763 ref NC	000962.3	3242138	A	C	69	69	60	40
qi	448814763 ref NC	_000962.3	3244414	A	G	69	69	60	40
	448814763 ref NC		3247089	G	Α	69	69	60	40
	448814763 ref NC		3247316		G	50	50	60	40
9	440014703   el NC	_0000502.31							
<u>gi</u>	448814763 ref NC	_000962.3	3247883		Y	31	31		18
	448814763 ref NC		3249298		G	37	37	60	40
gi	448814763 ref NC	000962.3	3254758	A	C	37	37	60	40
	448814763 ref NC		3254880	G	т	69	69	60	40
	448814763 ref NC		3256494		Ġ	50	50	60	40
			3264912						
	448814763 ref NC				A	38	38		40
	448814763 ref NC		3266030		G	105	190	60	40
gi	448814763 ref NC	_000962.3	3266196	G	A	70	70	60	40
	448814763 ref NC		3269581	A	G	102	190	60	40
	448814763 ref NC		3270784		Ğ	38	38	60	40
	448814763 ref NC		3271037		Ğ	69	69		40
	448814763 ref NC		3273138		G	102	190		40
	448814763 ref NC		3274545		Α	69	69		40
	448814763 ref NC		3277293	A	G	69	69	60	40
	448814763 ref NC		3280132		Α	105	189	60	40
				-	-				

a.	i   448814763	Iref	NC_000962.3	3293003 C	т	45	74	60	19
d.			NC_000962.3	3293146 G	Ť	45	74	60	18
_			NC_000962.3	3293423 A	Ġ	70	70	60	40
g.									
g.			NC_000962.3	3293601 T	<u>c</u>	69	69	60	40
g.			NC_000962.3	3295124 C	т	50	50	60	40
g*			NC_000962.3	3296721 C	G	70	70	60	40
g.	i 448814763	ref	NC_000962.3	3296843 A	G	105	189	60	40
d.	i 448814763	Iref	NC_000962.3	3299413 G	Α	69	69	60	40
q.			NC_000962.3	3302683 C	т	69	69	60	40
d.			NC_000962.3	3306594 T	Ġ	69	69	60	40
g.			NC_000962.3	3308446 T	č	105	189	60	40
d.			NC_000962.3	3308606 G	Ă	105	190	60	40
_			NC_000962.3	3309009 C	Â	70	70	60	40
g			NC_000962.3	3311119 G	ĉ	102	189	60	40
g.					Ă	102	188		40
g.			NC_000962.3	3312942 G				60	
g.			NC_000962.3	3314243 G	A	90	189	60	34
g.			NC_000962.3	3314412 A	G	69	69	60	40
g			NC_000962.3	3326150 A	G	69	69	60	40
g			NC_000962.3	3326554 A	C	70	70	60	40
g.			NC_000962.3	3327041 G	A	69	69	60	40
g.	i 448814763	ref	NC_000962.3	3328495 G	C	39	39	60	40
d.	i 448814763	İref	NC_000962.3	3335708 G	C	14	14	60	40
g.			NC_000962.3	3336825 T	C	69	69	60	40
g.	1 4 4 9 9 4 4 7 5 9		NC_000962.3	3337247 T	C	69	69	60	40
d.			NC_000962.3	3338603 G	č	37	37	60	40
d.			NC_000962.3	3338834 C	Ă	69	69	60	40
-			NC_000962.3	3351472 G	Â	37	37	60	40
g			NC_000962.3	3352932 C	Ĝ	69	69	60	40
g.					Ť				
g.			NC_000962.3	3358235 A		69	69	60	40
g.			NC_000962.3	3363222 G	A	70	70	60	40
g.			NC_000962.3	3363338 A	G	26	26	60	40
g.			NC_000962.3	3365841 G	A	52	52	60	40
g.			NC_000962.3	3367765 G	Α	105	189	60	40
g.			NC_000962.3	3369869 G	т	96	182	60	40
g			NC_000962.3	3371260 T	C	99	190	60	40
g.	i  448814763	ref	NC_000962.3	3375131 G	A	69	69	60	40
g.	i 448814763	ref	NC_000962.3	3377809 C	G	51	74	60	18
d.	i 448814763	ref	NC_000962.3	3380249 C	G	51	74	60	22
q.	i 448814763	İref	NC_000962.3	3382485 C	т	6	11	60	3
a			NC_000962.3	3393361 C	G	105	190	60	40
a	i 448814763	ref	NC_000962.3	3394177 C	Т	102	176	60	40
			NC_000962.3	3401850 G	Â	52	52	60	33
			NC_000962.3	3401871 A	G	70	70	60	33
d.			NC_000962.3	3402816 C	Ť	19	19	60	40
			NC_000962.3	3404376 C	Ġ	69	69	60	40
			NC_000962.3	3406798 G	A	105	189	60	40
9	1 440014703	in ef	NC_000962.3		÷				40
9	1 440014703	rei	INC_000962.31	3407028 C		50	50	60	
_			NC_000962.3	3415332 A	G	69	69	60	40
g.			NC_000962.3	3418689 C	Ţ	102	188	60	40
			NC_000962.3	3420825 A	G	69	69	60	40
			NC_000962.3	3424462 C	Т	99	189	60	40
			NC_000962.3	3425854 C	т	69	69	60	40
			NC_000962.3	3427632 C	т	69	69	60	40
g.	i 448814763	ref	NC_000962.3	3428917 C	Α	69	69	60	40
g.			NC_000962.3	3431407 G	Т	70	70	60	34
			NC_000962.3	3440464 T	Ğ	51	51	60	40
			NC_000962.3	3440468 G	č	50	50	60	40
			NC_000962.3	3440542 A	Ğ	37	37	60	40
			NC_000962.3	3442240 C	Ă	96	187	60	40
a				511221V C			207		

aı	1448814/63	Iret	NC_000962.3	344/10/ G	А	37	37	60	40
qi			NC_000962.3	3447480 A	C	96	169	60	40
gi			NC_000962.3	3448714 G	č	70	70	60	40
			NC_000962.3	3450240 C	Ă	52	52	60	40
<u>g</u> 1									
gj			NC_000962.3	3450725 T	ç	69	69	60	40
_ <u>g</u> į			NC_000962.3	3453382 C	Т	102	188	60	40
g1			NC_000962.3	3454263 C	G	70	70	60	40
gi			NC_000962.3	3455686 G	C	105	189	60	40
gi	448814763	ref	NC_000962.3	3456666 A	G	105	189	60	40
gi			NC_000962.3	3460765 G	C	49	49	60	40
gi			NC_000962.3	3462135 G	ē	49	49	60	40
gi			NC_000962.3	3464629 A	Ğ	37	37	60	40
			NC_000962.3	3466919 C	Ğ	24	24	60	40
<u>9</u> ]									
_ g1			NC_000962.3	3467465 C	G	69	69	60	40
_ g1			NC_000962.3	3472045 T	C	50	50	60	40
gı			NC_000962.3	3474597 C	Α	105	188	60	40
gi	448814763	ref	NC_000962.3	3475159 A	G	37	37	60	40
gi	448814763	ref	NC_000962.3	3479561 G	Α	69	69	60	40
gi			NC_000962.3	3480474 G	Α	26	26	60	40
gi			NC_000962.3	3480789 T	C	60	73	60	23
gi			NC_000962.3	3486977 A	Ğ	37	37	60	40
			NC_000962.3	3493873 G	Ă	69	69	60	40
<u>g</u> ]									
_ g1			NC_000962.3	3497586 C	G	70	70	60	40
_ g1			NC_000962.3	3498418 A	G	69	69	60	40
gr			NC_000962.3	3503895 C	Т	69	69	60	40
gi			NC_000962.3	3505005 A	C	25	25	60	40
gi	448814763	ref	NC_000962.3	3509091 G	C	37	37	60	40
gi	448814763	İref	NC_000962.3	3510120 T	G	50	50	60	40
gi			NC_000962.3	3518167 A	G	70	70	60	40
gi			NC_000962.3	3518555 A	Ğ	105	189	60	40
			NC_000962.3	3521044 A	Ğ	50	50	60	40
			NC_000962.3	3525292 C	Ť	69	69	60	40
91									
gj			NC_000962.3	3525374 A	G	105	190	60	40
_ g1			NC_000962.3	3526986 A	G	50	50	60	40
_ g1			NC_000962.3	3527483 T	C	105	189	60	40
gı			NC_000962.3	3527974 G	Α	18	58	60	11
gi			NC_000962.3	3528151 C	A	50	50	60	40
gi	448814763	ref	NC_000962.3	3530145 C	Α	69	69	60	40
gi			NC_000962.3	3530955 C	G	105	189	60	40
gi			NC_000962.3	3531656 C	Ť	50	50	60	40
gi			NC_000962.3	3531706 A	Ġ	105	190	60	40
			NC_000962.3	3533759 G	Ă	37	37	60	40
					î	70	70	60	40
			NC_000962.3	3536008 G					
			NC_000962.3	3538128 G	A	69	69	60	40
			NC_000962.3	3540356 G	Ţ	105	189	60	40
			NC_000962.3	3547956 G	Α	37	37	60	40
			NC_000962.3	3554354 A	G	52	52	60	40
gi	448814763	ref	NC_000962.3	3555699 A	G	102	189	60	40
ai	448814763	İref	NC_000962.3	3556127 C	т	69	69	60	40
ai	448814763	İref	NC_000962.3	3556275 A	G	70	70	60	40
01	448814763	ref	NC_000962.3	3557634 G	Ā	69	69	60	40
			NC_000962.3	3560645 C	î	39	39	60	40
				3566943 A	Ŕ	25	25		37
91	440014703	n er	NC_000962.3					60	
			NC_000962.3	3571262 G	A	102	188	60	40
			NC_000962.3	3571834 T	G	69	69	60	40
			NC_000962.3	3573636 T	C	69	69	60	40
gi	448814763	ref	NC_000962.3	3577958 A	G	69	69	60	40
			NC_000962.3	3581414 A	G	102	190	60	40
			NC_000962.3	3585644 A	G	69	69	60	40
19.					-				-

	448814/63 ret		3591063	C	70	70	60	40
	448814763 ref		3597682 C	т	105	188	60	40
	448814763 ref		3598632 G	C	41	41	60	26
gi	448814763 ref	NC_000962.3	3598640 G	C	45	45	60	18
gi	448814763 ref		3598705 A	G	55	55	60	23
qi	448814763 ref		3600390 G	Α	93	188	60	40
gi	448814763 ref		3604821 G	C	37	37	60	40
	448814763 ref		3608259 A	G	37	37	60	40
qi	448814763 ref	NC 000962.3	3608865 C	Ť	38	38	60	40
qi	448814763 ref		3614982 T	ċ	105	189	60	40
gi	448814763 ref		3621423 A	Ğ	102	190	60	40
	448814763 ref		3622441 A	č	69	69	60	40
	448814763 ref		3624486 T	č	69	69	60	40
gi	448814763 ref		3625065 T	Ğ	105	190	60	40
gi	448814763 ref		3626467 C	Ť	105	189	60	40
gi	448814763 ref		3629203 G	Å	69	69	60	40
	448814763 ref		3638093 G	Â	69	69	60	40
gi	448814763 ref		3640050 T	ĉ	50	50	60	40
gi	448814763 ref		3647041 A	Ğ	37	37	60	40
gi	448814763 ref		3647591 A	Ğ	105	190	60	40
	448814763 ref		3655382 A	Ğ	25	25	60	40
	448814763 ref		3658266 C	G	26	26	60	40
	448814763 ref		3660060 C	A	52	52	60	40
1	448814763 ref		3661802 C	Ť	69	69	60	40
g1	448814763 ref		3664603 A	÷	39	39	60	40
	448814763 ref		3668904 G		69	69		
				A T			60	40
<u>g</u> 1	448814763 ref		3670040 C		102	189	60	40
<u>g</u> j	448814763 ref		3670118 G	T	102	188	60	40
gj	448814763 ref		3671532 G	ç	25	25	60	40
	448814763 ref		3671843 A	ç	32	32	60	40
	448814763 ref		3672105 G	ç	37	37	60	40
gj	448814763 ref		3678091 G	A	69	69	60	40
gj	448814763 ref		3679764 G	A	69	69	60	40
	448814763 ref		3679949 A	G	50	50	60	40
	448814763 ref		3681548 A	ç	69	69	60	40
gj	448814763 ref		3683237 G	T	69	69	60	40
gj	448814763 ref		3683715 T	G	69	69	60	40
gj	448814763 ref		3687372 A	G	69	69	60	40
	448814763 ref		3689492 C	T	70	70	60	36
gj	448814763 ref		3689523 G	T	70	70	60	36
<u>g</u> j	448814763 ref		3690016 A	G	69	69	60	40
	448814763 ref		3693681 A	ç	70	70	60	40
	448814763 ref		3696181 A	G	50	50	60	40
	448814763 ref		3697708 A	G	69	69	60	40
	448814763 ref		3704261 C	A	69	69	60	40
	448814763 ref		3704596 G	ç	70	70	60	40
	448814763 ref		3712372 A	G	48	74	60	19
	448814763 ref		3712765 C	Y	41	41	60	41
	448814763 ref		3714211 G	Ţ	69	69	60	40
	448814763 ref		3714757 A	ç	37	37	60	40
	448814763 ref		3718357 C	Ţ	52	52	60	40
gj	448814763 ref	INC_000962.3	3721806 G	ç	37	37	60	40
gj	448814763 ref	NC_000962.3	3729383 T	A	21	35	60	13
	448814763 ref		3729387 T	G	21	74	60	10
g1	448814763 ref	NC_000962.3	3729396 C	A	9	36	60	4
	448814763 ref		3729424 G	ç	30	34	60	11
	448814763 ref		3729430 C	G	33	72	60	14
	448814763 ref		3729444 T	ç	39	74	60	14
gı	448814763 ref	[NC_000962.3]	3729472 A	G	21	133	60	12

ai	448814763 ref NC_000962.3	3729482 T	C	36	54	60	16
	448814763 ref NC_000962.3	3729586 G	Ă	105	190	60	40
gj		3730466 A	G	3	10	60	2
_ g1		3732194 A	G	3	10	60	2
gı	448814763 ref NC_000962.3	3734121 C	т	37	37	60	40
gi	448814763 ref NC_000962.3	3743837 A	G	27	161	60	10
gi	448814763 ref NC_000962.3	3745483 C	Α	69	69	60	40
gi	Livesing Clus seess al	3745816 C	т	69	69	60	40
gi	i	3746409 A	G	70	70	60	40
gi	Lucautral Clus accord al	3746719 G	č	9	36	60	8
	i	3746909 G	Ă	36	73	60	13
	Lovestowers close second of	3746921 G	ĉ	6	9	60	6
<u>g</u> 1	Lovestowers close second of						
gj	· · · · · · · · · · · · · · · · · · ·	3747038 G	ç	30	55	60	11
gj		3747045 A	G	45	57	60	18
_ g1		3747059 G	A	54	74	60	21
gı		3747442 C	т	9	57	60	6
gi		3747461 G	A	66	72	60	25
gi	448814763 ref NC_000962.3	3750177 A	т	6	13	60	8
gi	448814763 ref NC_000962.3	3750178 A	C	6	13	60	7
gi	I	3750407 G	S	32	32	60	20
gi	Lucas uncel clus second al	3750417 A	Ť	42	74	60	20
gi	I	3750421 T	Ý	43	43	60	24
	Lange areal five according	3750464 C	Ġ	30	157	60	15
gı	I	3750533 C	G	54	54	60	27
<u>g</u> 1							
gj		3752327 A	G	8	8	60	4
_ g1		3752363 G	A	36	171	60	13
_ g1		3755973 G	A	15	32	60	6
_ g1		3755978 A	G	15	32	60	6
gi		3756009 A	G	15	40	60	6
gi	448814763 ref NC_000962.3	3756020 C	G	1	1	60	4
gi	448814763 ref NC_000962.3	3756072 G	C	33	34	60	12
gi	i	3757262 T	W	93	93	60	53
gi	i	3760744 G	Ť	105	189	60	40
gi	Livesing Clus seess al	3762173 C	Å	69	69	60	40
gi	i	3763539 C	Ť	39	39	60	40
gi	i	3764166 G	Å	51	51	60	40
	i	3764167 G	Â	51	51	60	40
		3764364 A	Ř	2	2	60	57
<u>g</u> 1							
gj		3765945 G	A	102	189	60	40
gj	448814763 ref NC_000962.3	3766240 C	G	15	32	60	6
gj	448814763 ref NC_000962.3	3766245 A	<u>c</u>	15	16	60	6
gı	448814763 ref NC_000962.3	3766319 A	Ţ	15	52	60	8
	448814763 ref NC_000962.3	3770325 C	Т	69	69	60	40
gi	448814763 ref NC_000962.3	3771628 A	C	70	70	60	40
gi		3772616 G	Α	37	37	60	40
gi		3773808 C	т	37	37	60	40
ai	448814763 ref NC_000962.3	3774506 G	Α	99	188	60	40
ai	448814763 ref NC_000962.3	3779086 C	Т	6	19	60	6
	448814763 ref NC_000962.3	3779915 G	R	19	41	60	10
gi	I	3780737 C	Ť	102	188	60	40
gi		3781181 C	Ť	50	50	60	40
	448814763 ref NC_000962.3	3784975 G	Å	102	190	60	40
g	1448814762 mof NC 000062 3						
	448814763 ref NC_000962.3	3785946 A	G	50	50	60	40
	448814763 ref NC_000962.3	3786033 A	G	37	37	60	40
	448814763 ref NC_000962.3	3788365 T	G	37	37	60	40
gj		3788751 T	ç	69	69	60	40
gı	448814763 ref NC_000962.3	3793634 A	G	105	189	60	40
	448814763 ref NC_000962.3	3793791 C	Т	70	70	60	40
gi	448814763 ref NC_000962.3	3798095 A	C	70	70	60	40

qi	448814763 ref	NC_000962.3	3808103 T	C	37	37	60	40
	448814763 ref		3811629 G	A	105	189	60	40
	448814763 ref		3815268 G	A	50	50	60	40
	448814763 ref		3815477 G	Ť	69	69	60	40
	448814763 ref		3817117 C	Å	102	190	60	40
	448814763 ref		3820722 G	Â	70	70	60	34
					69	69		
	448814763 ref		3823159 A	T			60	40
	448814763 ref		3823820 G	A	69	69	60	40
	448814763 ref		3826684 C	T	70	70	60	40
	448814763 ref		3829770 T	C	57	74	60	25
gj	448814763 ref	NC_000962.3	3830566 G	Α	70	70	60	40
	448814763 ref		3830695 A	G	69	69	60	40
	448814763 ref		3838871 A	G	69	69	60	40
	448814763 ref		3842088 C	G	9	26	60	5
gi	448814763 ref	NC_000962.3	3842096 T	C	24	66	60	10
gi	448814763 ref	NC_000962.3	3843520 A	т	53	53	60	25
	448814763 ref		3843522 G	т	66	66	60	25
	448814763 ref		3844805 T	C	102	175	60	40
	448814763 ref		3844992 T	Ā	105	188	60	40
	448814763 ref		3845328 T	ĉ	50	50	60	40
	448814763 ref		3845695 C	Ť	37	37	60	40
	448814763 ref		3846687 A	Ġ	30	161	60	13
	448814763 ref		3847014 C	Ğ	15	39	60	7
	448814763 ref		3847022 T	č	24	65	60	10
gi	448814763 ref	INC_000962.31	3847608 C	A	15	52	60	6
	448814763 ref		3847622 A	Ţ	3	4	60	5
	448814763 ref		3847664 A	G	39	57	60	14
	448814763 ref		3847690 G	A	18	32	60	12
	448814763 ref		3851084 A	G	70	70	60	40
g1	448814763 ref	NC_000962.3	3851887 A	C	28	28	60	40
	448814763 ref		3851888 T	C	28	28	60	40
	448814763 ref		3854899 T	C	69	69	60	40
	448814763 ref		3859893 C	Т	70	70	60	40
	448814763 ref		3860749 C	A	105	189	60	40
gi	448814763 ref	NC_000962.3	3861914 C	т	69	69	60	40
gi	448814763 ref	NC_000962.3	3864041 G	A	93	189	60	40
qi	448814763 ref	NC_000962.3	3864053 C	т	40	40	60	40
	448814763 ref		3864995 T	C	50	50	60	40
	448814763 ref		3868738 C	A	69	69	60	40
	448814763 ref		3869108 A	G	69	69	60	40
ai	448814763 ref	NC 000962.3	3871246 T	č	37	37	60	40
	448814763 ref	NC 000962 3	3876953 G	Ă	69	69	60	40
	448814763 ref		3877421 A	Ĝ	24	51	60	11
	448814763 ref		3883563 T	č	30	57	60	14
	448814763 ref		3883566 T	č	36	171	60	16
					29			11
	448814763 ref		3883605 T	ç		29	60	
	448814763 ref		3883788 C	A	9	33	60	6
	448814763 ref		3883796 G	Ţ	9	23	60	9
	448814763 ref		3883797 G	A	9	23	60	9
	448814763 ref		3883845 T	ç	105	190	60	40
	448814763 ref		3883915 G	A	105	189	60	40
	448814763 ref		3884351 A	C	12	65	60	7
	448814763 ref		3884731 G	C	70	70	60	40
	448814763 ref		3884734 G	C	99	189	60	40
gi	448814763 ref	NC_000962.3	3884787 A	G	65	65	60	40
gi	448814763 ref	NC_000962.3	3884791 C	Α	26	26	60	40
	448814763 ref		3895727 C	Α	102	190	60	40
	448814763 ref		3896340 T	G	105	189	60	40
	448814763 ref		3897374 G	Α	105	188	60	40
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ai	448814763 ref	NC 000962.31	3898408 A	G	69	69	60	40
	448814763 ref		3898869 C	Α	19	19	60	40
	448814763 ref		3899654 C	A	105	190	60	40
	448814763 ref		3904922 G	ĉ	14	14	60	40
	448814763 ref		3906878 C	Ť	50	50	60	40
					52			
- ·	448814763 ref		3906926 C	Ţ		52	60	40
			3906991 A	G	105	188	60	40
	448814763 ref		3909235 G	C	69	69	60	40
gi	448814763 ref	NC_000962.3	3913737 G	A	69	69	60	40
	448814763 ref		3920109 G	т	102	190	60	40
gi	448814763 ref	NC_000962.3	3921094 C	т	102	190	60	40
			3922157 C	т	69	69	60	40
	448814763 ref		3922836 T	C	70	70	60	40
	448814763 ref		3936696 A	Ğ	105	189	60	40
	448814763 ref	NC 000962 3	3941232 A	č	1	1	60	3
	448814763 ref		3942043 C	Ğ	15	51	60	8
gi	448814763 ref	INC_000962.51	3943724 T	ç	15	51	60	11
gi	448814763 ref	NC_000962.3	3943731 G	ç	3	3	60	4
gj	448814763 ref	NC_000962.3	3944264 G	Ç	6	10	60	4
	448814763 ref		3944287 C	Α	9	20	60	4
gi	448814763 ref	NC_000962.3	3948630 C	A	9	20	60	4
gi	448814763 ref	NC_000962.3	3948639 C	A	6	12	60	3
qi	448814763 ref	NC_000962.3	3949230 C	Α	21	39	60	9
āi	448814763 ref	NC 000962.3	3949239 C	Α	1	1	60	4
	448814763 ref		3949830 C	A	15	32	60	7
			3949839 C	Â	9	20	60	4
	448814763 ref		3952800 G	Â	69	69	60	40
	448814763 ref		3954694 C	÷	69	69	60	40
	448814763 ref		3958007 C	Ţ	99	190	60	40
	448814763 ref		3958403 A	G	69	69	60	40
			3959418 C	Т	69	69	60	40
g1	448814763 ref	NC_000962.3	3961790 G	т	105	189	60	40
gi	448814763 ref	NC_000962.3	3961802 A	G	102	190	60	40
	448814763 ref		3964058 C	G	69	69	60	40
gi	448814763 ref	NC_000962.3	3964293 G	т	70	70	60	40
	448814763 ref		3967223 G	Α	69	69	60	40
	448814763 ref		3970112 C	T	105	189	60	40
	448814763 ref		3974142 G	Å	69	69	60	40
	448814763 ref		3979151 T	Â	27	27	60	40
	448814763 ref		3984321 G	Â	69	69	60	40
gı	448814763 ref		3984926 G	Â	69	69	60	40
	448814763 ref		3986569 T	ç	69	69	60	40
	448814763 ref		3988745 C	G	69	69	60	40
	448814763 ref		3989107 C	Т	105	190	60	40
	448814763 ref		3989914 G	т	102	182	60	40
	448814763 ref		3994898 A	G	70	70	60	40
gi	448814763 ref	NC_000962.3	3998895 G	A	69	69	60	40
qi	448814763 ref	NC_000962.3	4003645 C	т	102	188	60	40
	448814763 ref		4005114 G	C	50	50	60	40
	448814763 ref		4005607 T	C	70	70	60	40
01	448814763 ref	NC 000962 3	4008747 A	Ğ	70	70	60	40
	448814763 ref		4012219 T	č	70	70	60	40
	448814763 ref		4012219 G	Ā	52	52	60	40
91	440014763 m-f	NC_000902.3			105			
	448814763 ref		4014173 G	A		189	60	40
	448814763 ref		4014431 C	Ţ	69	69	60	40
	448814763 ref		4019103 G	Ţ	102	189	60	40
	448814763 ref		4020756 C	G	69	69	60	40
	448814763 ref		4034827 C	Т	102	189	60	40
gi	448814763 ref	NC_000962.3	4037100 T	G	39	74	60	18

g٦	448814/63 ret	NC_000962.3	403/106 C	А	24	37	60	12
qi	448814763 ref	NC_000962.3	4037656 C	G	12	19	60	8
	448814763 ref		4040517 A	G	69	69	60	40
	448814763 ref		4044740 G	Α	49	49	60	40
	448814763 ref		4047879 C	Ť	102	188	60	40
ai	448814763 ref	NC 000962.3	4051642 G	Å	69	69	60	40
	448814763 ref		4054364 C	Ť	69	69	60	40
	448814763 ref		4054637 A	Ġ	105	189	60	40
	448814763 ref		4055801 G	A	52	52	60	40
				Â	69	69	60	
gi	448814763 ref	INC_000962.51	4056416 C					40
	448814763 ref		4057081 A	G	70	70	60	40
	448814763 ref		4058711 T	ç	69	69	60	40
	448814763 ref		4059904 A	G	70	70	60	40
	448814763 ref		4061113 G	Ţ	69	69	60	40
gj	448814763 ref	NC_000962.3	4064270 G	T	69	69	60	40
	448814763 ref		4067152 G	A	102	189	60	40
	448814763 ref		4067326 C	Α	69	69	60	40
	448814763 ref		4069292 G	A	69	69	60	40
gi	448814763 ref	NC_000962.3	4069797 C	т	50	50	60	40
gi	448814763 ref	NC_000962.3	4076092 G	т	69	69	60	40
qi	448814763 ref	NC_000962.3	4077177 G	Α	69	69	60	40
āi	448814763 ref	NC 000962.3	4078863 C	т	32	32	60	40
ai	448814763 ref	NC 000962.3	4079871 G	Ť	69	69	60	40
gi	448814763 ref	NC 000962.3	4081987 G	ċ	69	69	60	40
	448814763 ref		4081996 G	č	50	50	60	40
	448814763 ref		4082893 A	Ğ	70	70	60	40
31	448814763 ref	INC 000962 31	4083360 T	Ğ	105	188	60	40
	448814763 ref	INC 000962.3	4085200 G	č	102	189	60	40
91	448814763 ref	INC_000962.3	4085200 G 4086550 C	Ť	102	188	60	40
	448814763 ref		4087609 G	R	22	22	60	41
	448814763 ref		4089058 T	ç	50	50	60	40
	448814763 ref		4091273 C	T	105	188	60	40
	448814763 ref		4095295 T	ç	37	37	60	40
	448814763 ref		4096190 G	A	37	37	60	40
	448814763 ref		4096636 C	Т	49	49	60	40
	448814763 ref		4097101 C	Т	105	188	60	40
	448814763 ref		4100975 T	C	49	49	60	40
	448814763 ref		4101018 C	Т	52	52	60	40
gi	448814763 ref	NC_000962.3	4105757 C	т	39	39	60	40
gi	448814763 ref	NC_000962.3	4106154 C	т	37	37	60	40
qi	448814763 ref	NC_000962.3	4107074 T	C	70	70	60	40
	448814763 ref		4111303 G	C	81	187	60	30
	448814763 ref		4112429 T	C	105	190	60	40
	448814763 ref		4115029 G	A	69	69	60	40
	448814763 ref		4116058 G	A	105	188	60	40
	448814763 ref		4116682 T	ĉ	70	70	60	40
	448814763 ref		4117161 C	Ă	70	70	60	40
	448814763 ref		4119246 T	ĉ	105	188	60	40
	448814763 ref		4120926 A	Ğ	36	72	60	15
	448814763 ref		4126087 T	G	105	189	60	40
	448814763 ref		4130711 G	ç	69	69	60	40
	448814763 ref		4133907 G	A	105	189	60	40
gj	448814763 ref	INC_000962.3	4137190 T	ç	50	50	60	40
	448814763 ref		4138377 A	G	99	189	60	40
	448814763 ref		4141864 C	A	96	189	60	40
	448814763 ref		4142689 G	Α	69	69	60	40
	448814763 ref		4145737 A	G	69	69	60	40
	448814763 ref		4146922 G	Α	69	69	60	40
gi	448814763 ref	NC_000962.3	4151855 A	G	50	50	60	40
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gi 4	448814763	ref	NC_000962.3	4155266	C	G	30	30	60	40
			NC_000962.3	4156099		Ā	69	69	60	40
			NC_000962.3	4156239		Ĝ	50	50	60	40
			NC_000962.3	4156503		Ť	69	69	60	40
			NC_000962.3	4157259		Å	69	69	60	40
- 1 - i - i - i										
			NC_000962.3	4158361		G	69	69	60	40
			NC_000962.3	4159195		C	69	69	60	40
			NC_000962.3	4160536		A	15	109	60	8
			NC_000962.3	4162339		G	6	62	60	9
			NC_000962.3	4163558		C	99	190	60	40
			NC_000962.3	4167642	G	т	52	52	60	40
gi  4	448814763	ref	NC_000962.3	4169170	C	Т	70	70	60	40
gi 4	448814763	ref	NC_000962.3	4169719	C	т	69	69	60	40
			NC_000962.3	4176559		A	69	69	60	40
			NC_000962.3	4179089		Ť	69	69	60	40
			NC_000962.3	4182695		À	105	189	60	40
			NC_000962.3	4187063		Â	37	37	60	40
			NC_000962.3			ĉ	69	69	60	40
			NC_000962.3	4187817		Ğ	69	69	60	40
				4190089		G	36	173	60	
			NC_000962.3							13
			NC_000962.3	4190101		G	15	117	60	8
			NC_000962.3	4190962		A	50	50	60	40
			NC_000962.3	4191173		A	39	39	60	40
			NC_000962.3	4196279		A	105	189	60	40
g1 4	448814763	ref	NC_000962.3	4197189		G	50	50	60	40
			NC_000962.3	4200220		G	105	190	60	40
			NC_000962.3	4201105	G	Α	70	70	60	40
			NC_000962.3	4202383	Α	C	70	70	60	40
gi 4	448814763	ref	NC_000962.3	4204441	Α	G	50	50	60	40
gi 4	448814763	ref	NC_000962.3	4205120	Α	G	50	50	60	40
gi 4	448814763	ref	NC_000962.3	4210274	Α	G	51	51	60	40
			NC_000962.3	4210876		C	99	189	60	40
			NC_000962.3	4215484		č	18	36	60	9
			NC_000962.3	4216255		Ğ	51	51	60	36
gi 4	448814763	ref	NC_000962.3	4217557		Ğ	105	190	60	40
			NC_000962.3	4221490		Ğ	70	70	60	40
			NC_000962.3	4222073		Ğ	105	189	60	40
			NC_000962.3	4222882		Ğ	70	70	60	40
			NC_000962.3	4223172		č	49	49	60	40
								70		40
			NC_000962.3	4226661		A	70		60	
			NC_000962.3	4232327		G	50	50	60	40
			NC_000962.3	4234255		A	31	31	60	40
			NC_000962.3	4239593		A	49	49	60	40
			NC_000962.3	4240671		T	69	69	60	40
g1   4	448814763	ret	NC_000962.3	4241042		G	69	69	60	40
g1 4	448814763	ref	NC_000962.3	4242643		Т	99	189	60	40
gi 4	448814763	ref	NC_000962.3	4243848		Α	102	189	60	40
			NC_000962.3	4244167		т	50	50	60	40
			NC_000962.3	4245969	C	Т	19	19	60	40
gi 4	448814763	ref	NC_000962.3	4247646	Α	C	105	190	60	40
gi İ 4	448814763 İ	ref	NC_000962.3	4247730		Α	52	52	60	40
			NC_000962.3	4251297		C	20	20	60	40
			NC_000962.3	4255922		Ğ	99	189	60	40
			NC_000962.3	4257220		Ğ	102	190	60	40
			NC_000962.3	4261210		Ť	102	188	60	40
			NC_000962.3	4261499		Å	102	187	60	40
	448814762	ref	NC_000962.3	4262953		f	26	26	60	40
			NC_000962.3	4263279		Ġ	69	69	60	40
			NC_000962.3	4269387		G	50	50	60	40
9114	++0014/03	( ei	Inc_000302.51	420936/	1	u u	50	50	00	40

ai	448814763 ref NC_000962.3	4269606 A	G	105	189	60	40
qi	Liveniers Clus energy		A	99	189	60	40
gi	LANDA ARCAL CLUG DODDCA		G	69	69	60	40
gi			Ť	105	189	60	40
	Lugar real flue accors		ċ	69	69	60	40
<u>g</u> 1							
gj			A	69	69	60	40
g			G	50	50	60	40
gr			A	105	188	60	40
gi			C	39	39	60	40
gi			G	70	70	60	40
gi	448814763 ref NC_000962.3	4286156 T	C	69	69	60	40
gi	LANDA ARCAL CLUG DODDCA		G	50	50	60	40
gi	laannaard Cing noonen n		Ť	105	189	60	40
gi	Luggarized Clus gooden a		Ġ	102	189	60	40
gi	Lugar real flue access		Ť	69	69	60	40
	Lugar real flue access		Ġ	26	26	60	40
	live a versi clive second						
_ <u>g</u> j			A	105	189	60	40
gj			Ţ	70	70	60	40
g			Т	69	69	60	40
gr			A	37	37	60	40
gi			C	102	190	60	40
gi	448814763 ref NC_000962.3	4303407 A	C	37	37	60	40
gi	448814763 ref NC_000962.3	4306155 C	т	37	37	60	40
qi	Luggarizati Clus googes a		т	105	189	60	40
qi	Lugar real flue accors		Å	102	190	60	40
qi	Lugar real flue access		Ĝ	69	69	60	40
	inneen areal Cinc eeees a		Ť	50	50	60	40
1	inneen areal Cinc eeees a		Ġ	70	70	60	40
gj			A	105	189	60	40
g			Ţ	37	37	60	40
_ g1			G	69	69	60	40
gr			A	69	69	60	40
gı			C	50	50	60	40
gi			A	50	50	60	40
gi	448814763 ref NC_000962.3	4326432 G	A	25	25	60	40
qi	448814763 ref NC_000962.3	4329782 G	А	50	50	60	40
gi	live a versi clive second		C	69	69	60	40
qi	inneen areal Cinc eeees a		A	69	69	60	40
gi	LARGE ARCOL CLUS GOODS		G	37	37	60	40
gi	i		Ă	12	108	60	8
	448814763 ref NC_000962.3			50	50	60	40
	448814763 ref NC_000962.3		A A	69	69	60	40
	448814763 ref NC_000962.3		Y	20	20	60	26
	448814763 ref NC_000962.3		Y	69	69	60	16
	448814763 ref NC_000962.3		Ţ	105	189	60	40
	448814763 ref NC_000962.3		А	39	39	60	40
	448814763 ref NC_000962.3		т	69	69	60	40
gi	448814763 ref NC_000962.3	4351039 G	т	105	189	60	40
gi	448814763 ref NC_000962.3	4351759 G	C	70	70	60	40
qi	448814763 ref NC_000962.3	4353223 C	т	32	32	60	40
ai	448814763 ref NC_000962.3	4354969 G	A	105	188	60	40
01	448814763 ref NC_000962.3	4356110 G	ĉ	105	189	60	40
	448814763 ref NC_000962.3		Ğ	69	69	60	40
gi			Ă	69	69	60	40
	448814763 ref NC_000962.3		Ť	50	50	60	40
	448814763 ref NC_000962.3		ç	37	37	60	40
	448814763 ref NC_000962.3		ç	37	37	60	40
	448814763 ref NC_000962.3		G	50	50	60	40
g٦	448814763 ref NC_000962.3	4369499 G	Α	53	53	60	29
-							

gi 448814763 ref NC_000962.	3 4369848 G	A	50	50	60	40
gi 448814763 ref NC_000962.	3İ 4372353 G	C	26	26	60	40
gi 448814763 ref NC_000962.		C	105	190	60	40
gi 448814763 ref NC_000962.		Ā	105	189	60	40
gi 448814763 ref NC_000962.		Ť	69	69	60	40
gi 448814763 ref NC_000962.		Ġ	102	176	60	40
gi 448814763 ref NC_000962.	3 4377033 G	č	37	37	60	40
gi 448814763 ref NC_000962.	3 4379680 C	Ğ	37	37	60	40
gi 448814763 ref NC_000962.		č	105	189	60	40
gi 448814763 ref NC_000962.		Ť	24	24	60	40
gi 448814763 ref NC_000962.		ċ	105	189	60	40
gi 448814763 ref NC_000962.	3 4383655 A	Ğ	50	50	60	40
gi 448814763 ref NC_000962.		Ğ	38	38	60	40
gi 448814763 ref NC_000962.		Ğ	37	37	60	40
		Ť	25	25	60	40
gi 448814763   ref   NC_000962. gi 448814763   ref   NC_000962.		÷	50	50	60	40
		Ġ	105	187	60	40
		G	50	50	60	40
		G	96	189	60	40
		č	37		60	40
gi   448814763   ref   NC_000962.				37		
gi  448814763 ref NC_000962.		G	70	70	60	40
gi 448814763 ref NC_000962.		A	105	189	60	40
gi 448814763 ref NC_000962.		G	105	190	60	40
gi 448814763 ref NC_000962.		G	105	189	60	40
gi 448814763 ref NC_000962.		A	69	69	60	40
gi 448814763 ref NC_000962.		ç	105	181	60	40
gi 448814763 ref NC_000962.		A	39	39	60	40
gi 448814763 ref NC_000962.		G	38	38	60	40
gi 448814763 ref NC_000962.		т	57	57	60	40
gi 448814763 ref NC_000962.		т	99	189	60	40
gi 448814763 ref NC_000962.		A	69	69	60	40
gi 448814763 ref NC_000962.	3  4411400 G	т	26	26	60	40

## **APPENDIX III :-**

Chromosome	Coordinate	ref.	Consensus	Consensus	SNP	MAPQ	Depth
	Base		Base	Quality	Quality		
gi 448814763 ref NC_000962.3 gi 448814763 ref	429 1977 4013 7221 7362 7585 9304 11102 11113 11370 11879 13436 14380 14446 14534 14545 14785 21795 24716 26959 30688 30943 31077 34044 34543 36451 36451 36451 36450 36500 37031 38542 38575 38586 42470 42967 44734 44789 46127 54394 55153 57393		דפטטטטאאאדפטטאדפדטאגפפדדטדאטטטאפדדטפפאפטי <b>א</b> ד	69105 70 69700 570 444 697 768 369 743 769 705 70 244 697 768 369 743 769 705 70 244 697 768 369 743 769 709 815 769 699 50 969 50 50 969 50 5	69 190 70 69 70 69 70 66 44 93 72 68 28 24 69 73 76 73 69 70 66 49 73 72 68 28 24 69 73 76 73 69 70 87 26 83 27 69 70 87 69 70 69 70 69 70 69 70 70 69 70 66 44 93 72 68 24 69 73 76 83 76 83 76 83 76 83 76 83 76 83 76 83 76 83 76 83 76 83 76 83 76 83 76 83 76 83 76 83 76 70 83 76 83 76 83 76 83 76 83 76 83 76 83 76 83 76 83 76 83 76 83 76 83 76 70 83 76 83 76 83 76 70 83 76 70 83 76 70 83 76 83 76 70 83 76 70 83 70 70 70 70 70 70 70 70 70 70 70 70 70	60000000000000000000000000000000000000	40 40 40 40 40 40 40 40 40 40 40 40 40 4
gi  448814763   ref  NC_000962.3 gi  448814763   ref  NC_000962.3 gi  448814763   ref  NC_000962.3 gi  448814763   ref  NC_000962.3 gi  448814763   ref  NC_000962.3 gi  448814763   ref  NC_000962.3 gi  448814763   ref  NC_000962.3	58404 60249 62049 62657 66285 69871	rou a a u u a	- C G G A G T A	37 39 37 70 25 70 70	37 39 37 70 25 70 70	60 60 60 60 60 60 60	40 40 40 40 40 40 40 40
gi 448814763 ref NC_000962.3 gi 448814763 ref NC_000962.3 gi 448814763 ref NC_000962.3 gi 448814763 ref NC_000962.3 gi 448814763 ref NC_000962.3 gi 448814763 ref NC_000962.3 gi 448814763 ref NC_000962.3 gi 448814763 ref NC_000962.3 gi 448814763 ref NC_000962.3 gi 448814763 ref NC_000962.3	70816 71336 75264 75940 76303 80616 83982	GAGCGGCAFG	A G C T C A G G G T	70 69 70 102 69 70 70 105 69	70 69 70 188 69 70 70 189 69	60 60 60 60 60 60 60 60 60	40 40 36 40 40 40 40 40 40 40
gi   448814763   ref   NC_000962.3 gi   448814763   ref   NC_000962.3 gi   448814763   ref   NC_000962.3	106268	C G	G A	26 69	26 69	60 60	40 40 40

## **Result of alignment of AMXW strain with** *Mycobacterium tuberculosis* H37Rv

ai	448814763	Iref	NC_000962.3	116000	т	G	70	70	60	40
			NC_000962.3	122109	À	Ğ	37	37	60	40
			NC_000962.3	125545	Â	Ğ	99	189	60	40
			NC_000962.3	127953	ĉ	Ť	102	189	60	40
31	440014763	nof	NC_000962.3	131910	Ğ	Å	69	69	60	40
						Ĝ				
gi			NC_000962.3	132417	ç		37	37	60	40
gi			NC_000962.3	133839	ç	Т	70	70	60	40
_			NC_000962.3	135389	G	A	38	38	60	34
gi			NC_000962.3	135419	C	G	8	8	60	6
gi			NC_000962.3	135950	G	C	45	74	60	18
gi	448814763	ref	NC_000962.3	135989	G	C	44	44	60	21
	448814763	İref	NC_000962.3	136036	G	С	38	38	60	34
			NC_000962.3	136061	C	G	70	70	60	34
			NC_000962.3	136072	G	ē	70	70	60	36
			NC_000962.3	146087	Ť	č	70	70	60	40
			NC_000962.3	149731	Ġ	Ă	102	189	60	40
			NC_000962.3	150283	č	Â	21	146	60	12
gi			NC_000962.3	154283	Ţ	ç	26	26	60	40
gi			NC_000962.3	154613	G	R	131	131	60	64
			NC_000962.3	163573	Α	C	50	50	60	40
			NC_000962.3	177177	Α	C	50	50	60	40
gi	448814763	ref	NC_000962.3	177596	т	C	69	69	60	40
qi	448814763	ref	NC_000962.3	177857	G	A	69	69	60	40
	448814763	İref	NC_000962.3	178946	C	т	105	189	60	40
			NC_000962.3	179994	ē	Ť	37	37	60	40
gi			NC_000962.3	184377	č	Ť	50	50	60	40
gi			NC_000962.3	188800	Ť	ċ	69	69	60	40
			NC_000962.3		ć	Ť	70	70		
gi				191086					60	40
			NC_000962.3	194191	G	A	50	50	60	40
-			NC_000962.3	194681	G	C	70	70	60	40
g1			NC_000962.3	196642	С	т	69	69	60	40
gi			NC_000962.3	201985	Α	т	105	190	60	40
gi	448814763	ref	NC_000962.3	202049	C	т	45	45	60	40
gi	448814763	ref	NC_000962.3	202053	G	A	47	47	60	40
ği			NC_000962.3	206339	т	C	50	50	60	40
ği			NC_000962.3	223942	т	č	69	69	60	40
gi			NC_000962.3	225323	Ť	č	69	69	60	40
			NC_000962.3	227098	÷	č	102	189	60	40
			NC_000962.3	231114	ċ	Ğ	37	37	60	40
<u>g1</u>			NC_000962.3			T				
gi				232574	G		69	69	60	40
gi	448814/63	ref	NC_000962.3	234445	ç	G	27	43	60	13
_ g1	448814763	ret	NC_000962.3		G	A	69	69	60	40
			NC_000962.3		G	A	38	38	60	40
			NC_000962.3	249545		т	37	37	60	40
			NC_000962.3	253144	Α	C	37	37	60	40
gi	448814763	ref	NC_000962.3	257052	С	A	69	69	60	40
			NC_000962.3	258499	С	т	50	50	60	40
			NC_000962.3	261869	т	Ċ	96	183	60	40
			NC_000962.3	265554	À	č	102	189	60	40
			NC_000962.3	265968		Ğ	70	70	60	40
9	440014763	ref	NC_000962.3	275667	Ğ	A	37	37	60	40
			NC_000962.3	278681	ç	G	50	50	60	40
			NC_000962.3	283614		ç	69	69	60	40
			NC_000962.3		G	A	70	70	60	40
			NC_000962.3	285772	Α	C	70	70	60	40
			NC_000962.3	285871	Α	G	69	69	60	40
			NC_000962.3	291619	C	т	99	175	60	40
gi	448814763	ref	NC_000962.3	292687	G	С	29	29	60	18
			NC_000962.3	292698	G	С	12	25	60	7
			NC_000962.3	292756	A	č	45	74	60	16
			NC_000962.3	292789		č	32	32	60	34
3.					-	-				

ai	4400147621	rof	NC_000962.3	297180	С	т	69	69	60	40
g1	448814/63	ret	NC_000962.3	302304	G	A	69	69	60	40
gı	448814763	ret	NC_000962.3	304923	Α	G	39	39	60	40
qi	448814763	ref	NC_000962.3	310973	G	A	102	189	60	40
			NC_000962.3	311613	G	т	69	69	60	40
	449914762	ref	NC_000962.3	319832	ē	Å	102	189	60	40
<u>g</u> 1										
			NC_000962.3	330806	C	Т	70	70	60	40
gi			NC_000962.3	333455	т	G	43	43	60	23
gi			NC_000962.3	333474	A	G	3	4	60	4
ği	448814763	ref	NC_000962.3	336645	C	т	3	10	60	2
ği			NC_000962.3	336670	G	C	3	10	60	2
			NC_000962.3	340568	Ğ	č	39	39	60	40
g1			NC_000962.3	346275	č	Ğ	37	37	60	40
-										
g1			NC_000962.3	356230	G	A	70	70	60	36
gi			NC_000962.3	356255	G	C	38	38	60	36
gi	448814763	ref	NC_000962.3	356528	A	G	69	69	60	40
ği	448814763	ref	NC_000962.3	362190	Α	C	27	67	60	12
ği	448814763	ref	NC_000962.3	362198	A	Ğ	3	7	60	4
			NC_000962.3	362565	G	Ť	69	69	60	40
gi			NC_000962.3	364155	G	A	36	56	60	15
gi			NC_000962.3	365454	C	т	48	74	60	19
gi	448814763	ref	NC_000962.3	366982	C	G	38	38	60	34
qi	448814763	ref	NC_000962.3	367347	G	A	50	50	60	36
ği			NC_000962.3	368185	G	Α	99	189	60	40
ği			NC_000962.3	372913	Ā	c	49	49	60	40
gi			NC_000962.3	376774	Ť	č	69	69	60	40
			NC_000962.3			M				
gi				378311	ç		119	119	60	60
	448814/63	ret	NC_000962.3	378314	C	Y	125	125	60	60
gi			NC_000962.3	384380	Α	C	69	69	60	40
gi	448814763	ref	NC_000962.3	386432	C	G	32	32	60	40
ği	448814763	ref	NC_000962.3	390828	т	С	69	69	60	40
qi			NC_000962.3	391853	A	G	69	69	60	40
ği			NC_000962.3	395895	ĉ	Ă	21	139	60	10
31			NC_000962.3	397275	Ğ	ĉ	37	37	60	40
						÷				
gi	448814763	rer	NC_000962.3	398498	ç	T	71	71	60	30
gi			NC_000962.3	398507	C	т	72	72	60	27
gi			NC_000962.3	398577	G	A	69	69	60	40
gi	448814763	ref	NC_000962.3	399405	C	т	40	40	60	30
ği	448814763	ref	NC_000962.3	399464	C	т	52	52	60	31
ği			NC_000962.3	399474	Ğ	À	71	71	60	32
gi			NC_000962.3	401678	č	Ä	33	56	60	14
			NC_000962.3	403980	Ğ		69	69	60	40
<u>g</u> 1	440014/05	I EI	INC_000362.5			A				
gi	448814763	rer	NC_000962.3	404326	Т	c	37	37	60	40
g1	448814763	ret	NC_000962.3	406205	G	A	69	69	60	40
gi	448814763	ref	NC_000962.3	414486	C	т	39	39	60	40
gi	448814763	ref	NC_000962.3	420008	Α	G	69	69	60	40
āi	448814763	ref	NC_000962.3	425704	C	т	45	74	60	18
			NC_000962.3	427144	Ā	Ġ	27	161	60	10
	140014762	nof	NC_000962.3	427158	ĉ	Ť	6	58	60	10
9	440014/03	nof	NC_000962.3							
gi	448814763	rer	NC_000962.3	427507	A	ç	50	50	60	40
gj	448814763	ret	NC_000962.3	428343	A	G	69	69	60	40
gi	448814763	ref	NC_000962.3	450615	C	т	39	39	60	31
gi	448814763	ref	NC_000962.3	451056	C	т	49	49	60	40
ai	448814763	ref	NC_000962.3	454295	т	С	31	31	60	40
ai	448814763	ref	NC_000962.3	457452	Ť	Ğ	70	70	60	40
01	448814762	ref	NC_000962.3	457621	Ġ	č	39	39	60	40
9	448014762	rof	NC_000962.3		č	Ă	38	38	60	34
91	440014/05	I CI	NC_000962.3	457629						
			NC_000962.3	462221	ç	Ţ	50	50	60	40
			NC_000962.3	474174	C	т	50	50	60	40
			NC_000962.3	474218	C	т	30	54	60	13
gi	448814763	ref	NC_000962.3	474425	C	A	15	15	60	40
-										

ai	448814763	Inef	NC_000962.3	474426	т	G	16	16	60	40
			NC_000962.3	474466	Ġ	Ă	45	74	60	19
			NC_000962.3	474557	Ğ	Â	39	66	60	17
			NC_000962.3	475178	Ť	ĉ	69	69	60	40
			NC_000962.3		÷	Ğ	69	69		40
				478945					60	
			NC_000962.3	483935	Т	G	49	49	60	40
-			NC_000962.3	484505	A	G	69	69	60	40
			NC_000962.3	489073	C	G	105	189	60	40
gi			NC_000962.3	489935	G	С	37	37	60	40
			NC_000962.3	492748	C	A	50	50	60	40
gi	448814763	ref	NC_000962.3	498557	C	A	105	190	60	40
			NC_000962.3	501615	C	G	69	69	60	40
			NC_000962.3	502589	C	G	50	50	60	40
			NC_000962.3	503354	G	č	102	190	60	40
			NC_000962.3	509256	č	Ā	3	4	60	2
			NC_000962.3	509265	Ğ	Â	21	138	60	11
			NC_000962.3	509271	č	Â	33	169	60	15
			NC_000962.3		č	Â	52	52		40
				509322					60	
			NC_000962.3	513257	Ţ	<u>c</u>	105	190	60	40
			NC_000962.3	514245	ç	Ţ	102	189	60	40
_			NC_000962.3	524891	C	A	50	50	60	40
			NC_000962.3	530624	G	A	93	189	60	40
			NC_000962.3	531565	G	C	21	63	60	10
gi	448814763	ref	NC_000962.3	541201	Α	G	69	69	60	40
qi	448814763	ref	NC_000962.3	542935	G	A	102	188	60	40
ği			NC_000962.3	544421	G	Α	69	69	60	40
			NC_000962.3	544461	C	т	102	188	60	40
			NC_000962.3	546914	Ğ	Å	69	69	60	40
			NC_000962.3	551525	Ă	ĉ	69	69	60	40
			NC_000962.3	565655	Â	Ğ	37	37	60	40
			NC_000962.3	569841	ĉ	Ť	45	179	60	19
			NC_000962.3	573262	Ă	Ġ	105	189	60	40
						т				
			NC_000962.3	573630	ç		102	189	60	40
			NC_000962.3	582395	G	A	50	50	60	40
			NC_000962.3	589566	T	к	4	4	60	80
_ g1			NC_000962.3	590436	Т	C	69	69	60	40
-			NC_000962.3	597816	A	G	69	69	60	40
			NC_000962.3	598475	G	A	105	189	60	40
gi			NC_000962.3	599165	Α	C	99	189	60	40
gi			NC_000962.3	609642	C	т	105	189	60	40
			NC_000962.3	610120	т	G	52	52	60	40
ģi	448814763	ref	NC_000962.3	611208	т	C	70	70	60	40
			NC_000962.3	614250	C	т	69	69	60	40
			NC_000962.3	622796	т	G	70	70	60	40
			NC_000962.3	623048	Ġ	č	38	38	60	40
			NC_000962.3	623050	Ğ	č	38	38	60	40
			NC_000962.3	623158	Ğ	Ă	43	43	60	26
			NC_000962.3	623161	Ğ	Â	57	74	60	23
91	440014763	nof	NC_000962.3					45		
				623184	G	A	45		60	16
			NC_000962.3	623472	A	G	70	70	60	36
			NC_000962.3	623508	ç	G	37	37	60	36
			NC_000962.3	624236	G	A	57	74	60	20
			NC_000962.3	624239	G	T	57	74	60	20
			NC_000962.3	624269	G	A	23	23	60	30
gi	448814763	ref	NC_000962.3	624320	G	A	9	14	60	9
			NC_000962.3	624322	G	A	9	12	60	7
			NC_000962.3	624365	G	A	41	41	60	27
			NC_000962.3	624483	G	A	69	69	60	40
			NC_000962.3	626282	Α	G	70	70	60	36
			NC_000962.3	626318	C	Ť	93	189	60	32
			NC_000962.3	626340	Ť	Å	84	187	60	34
3.										

ai	448814763 ref	NC 000962.31	626355	G	т	72	72	60	26
ği			628895	Ğ	Ä	50	50	60	40
qi			631166	č	Ť	102	188	60	40
-	448814763 ref		637319			25	25	60	40
gi				G	A				
gı	448814763 ref		642852	C	G	25	25	60	40
gi	448814763 ref		648002	т	G	105	189	60	40
gi	448814763 ref	NC_000962.3	652610	C	т	50	50	60	40
qi	448814763 ref	NC_000962.3	652671	C	т	51	51	60	33
qi	448814763 ref	NC 000962.3	657269	Α	G	69	69	60	40
ği	448814763 ref		663383	C	T	50	50	60	40
qi	448814763 ref		665293	Ā	Ġ	37	37	60	40
gi	448814763 ref		665398	ĉ	Ğ	99	189	60	40
	448814763 ref		669398	Ť	č	37	37	60	40
gi				-					
gi	448814763 ref		675322	ç	Ţ	37	37	60	40
gį	448814763 ref		675328	C	Т	69	69	60	40
gi	448814763 ref		675377	G	т	69	69	60	40
gi	448814763 ref		675387	G	т	69	69	60	40
gi	448814763 ref	NC_000962.3	683338	G	A	69	69	60	40
qi	448814763 ref	NC_000962.3	685461	C	G	26	26	60	40
āi	448814763 ref	NC 000962.3	685608	т	С	69	69	60	40
ği	448814763 ref		686655	ċ	Ť	50	50	60	40
ği	448814763 ref		686972	Ť	ċ	25	25	60	40
qi	448814763 ref		690465	÷	Ğ	30	44	60	13
			691766	ć	Ť	96	189	60	40
gi					÷				
<u>g</u> 1	448814763 ref		694393	ç		50	50	60	40
gi	448814763 ref		698968	G	<u>A</u>	102	188	60	40
gį	448814763 ref		703310	G	T	102	189	60	40
gi	448814763 ref		708419	A	C	38	38	60	36
gi	448814763 ref		712160	G	A	70	70	60	40
gi	448814763 ref		712693	А	G	105	189	60	40
gi			713028	G	A	37	37	60	40
gi	448814763 ref		719491	т	C	105	189	60	40
gi	448814763 ref	NC_000962.3	724607	C	т	70	70	60	33
gi	448814763 ref	NC_000962.3	724630	C	т	21	141	60	11
qi	448814763 ref	NC_000962.3	724680	т	G	9	14	60	4
qi	448814763 ref	NC_000962.3	724714	G	Α	27	53	60	10
ği	448814763 ref		724732	G	С	1	1	60	6
qi	448814763 ref		726816	G	c	50	50	60	40
ği	448814763 ref		727491	ē	Ğ	9	21	60	8
qi	448814763 ref		727609	Ğ	Ă	9	36	60	4
qi	448814763 ref		727691	Ğ	Â	36	47	60	16
ği	448814763 ref		727736	Ğ	ĉ	31	31	60	40
ai	448814763 ref	NC_000962.3	736333	Ğ	Ā	39	45	60	16
	448814763 ref			_		3	3		64
			738644	Ţ	ĸ			60	
	448814763 ref		741220	ç	G	69	69	60	40
	448814763 ref		743040	G	Ţ	70	70	60	40
	448814763 ref		745712	C	Т	50	50	60	34
	448814763 ref		745744	C	т	51	51	60	35
	448814763 ref		745828	C	т	70	70	60	40
	448814763 ref		746010	G	A	96	189	60	40
gi	448814763 ref	NC_000962.3	746542	C	A	105	182	60	40
gi	448814763 ref	NC_000962.3	747423	G	т	37	37	60	36
ği	448814763 ref	NC_000962.3	747456	C	A	93	186	60	36
	448814763 ref		747514	G	C	37	37	60	40
	448814763 ref		751172	Ŧ	č	69	69	60	40
	448814763 ref		754186	À	Ğ	31	31	60	40
	448814763 ref		760811	ĉ	Ť	70	70	60	36
	448814763 ref		760847	č	÷	30	71	60	11
	448814763 ref		765150	Ğ	Å	44	44	60	20
	448814763 ref		767069	A	ĉ	3	4	60	20
	448814763 ref		767077	Ĝ	Ť	3	10	60	2
g i	1440074/021161	Inc_000305151	10/0//	9	1		10	00	2

ai	448814763	Iref	NC_000962.3	767275	т	С	105	188	60	40
qi			NC_000962.3	767337	À	Ť	102	189	60	40
			NC_000962.3	767414	G	Å	69	69	60	40
			NC_000962.3		Ă	Ĝ	69	69	60	40
				765272						
gj			NC_000962.3	775639	Ţ	<u>c</u>	105	190	60	40
gi			NC_000962.3	778780	C	т	21	32	60	10
			NC_000962.3	779856	G	A	69	69	60	40
gi			NC_000962.3	781395	т	C	37	37	60	40
gi			NC_000962.3	788259	G	т	38	38	60	40
ği	448814763	ref	NC_000962.3	800219	Т	C	50	50	60	40
ği	448814763	ref	NC_000962.3	806172	Α	G	60	73	60	23
āi			NC_000962.3	819702	т	C	69	69	60	40
qi			NC_000962.3	820483	Ġ	Ť	39	39	60	40
	448814763	ref	NC_000962.3	833010	ē	À	38	38	60	40
			NC_000962.3	833061	Ğ	ĉ	45	45	60	18
qi			NC_000962.3	833075	č	Ť	3	3	60	4
							99	187	60	40
			NC_000962.3	833412	ç	A				
			NC_000962.3		G	C	9	17	60	7
<u>g</u> 1			NC_000962.3	836222	C	A	12	45	60	5
gı			NC_000962.3	836239	G	A	12	27	60	5
gi			NC_000962.3	840686	G	A	36	73	60	13
gi			NC_000962.3	840716	C	G	57	73	60	22
gi	448814763	ref	NC_000962.3	840741	G	A	70	70	60	32
ği	448814763	ref	NC_000962.3	840796	C	Α	1	1	60	4
qi	448814763	ref	NC_000962.3	840799	C	G	6	8	60	7
qi			NC_000962.3	841764	G	C	70	70	60	40
qi	448814763	ref	NC_000962.3	844892	G	т	38	38	60	40
			NC_000962.3	850591	č	Ť	69	69	60	40
qi			NC_000962.3	852910	ē	Ť	39	39	60	40
ği			NC_000962.3	857696	Ā	Ġ	69	69	60	40
qi	448814763	ref	NC_000962.3		G	Ă	50	50	60	40
			NC_000962.3		č	Â	69	69	60	40
gi			NC_000962.3	869440	č	f	69	69	60	40
qi			NC_000962.3	877224	č	Å	50	50	60	40
			NC_000962.3	880562	Ğ	÷	70	70	60	40
			NC_000962.3		Т	ć	99	189	60	40
<u>g</u> 1				882257	-					
<u>g</u> 1			NC_000962.3	889002	ç	Y	3	3	60	42
-			NC_000962.3		G	A	15	23	60	7
gi			NC_000962.3	890288	ç	G	1	1	60	3
gj			NC_000962.3	890352	C	G	3	43	60	2
g1			NC_000962.3	893733	т	G	69	69	60	40
gi			NC_000962.3	897209	G	С	69	69	60	40
			NC_000962.3	900221	т	C	52	52	60	40
			NC_000962.3	902413	C	т	69	69	60	40
			NC_000962.3	903218	A	G	69	69	60	40
gi	448814763	ref	NC_000962.3	903550	т	C	37	37	60	40
ği	448814763	ref	NC_000962.3	903913	Т	C	105	190	60	40
āi	448814763	ref	NC_000962.3	906611	G	Α	69	69	60	40
			NC_000962.3	906857	Α	G	70	70	60	40
			NC_000962.3	916480	G	Α	70	70	60	40
			NC_000962.3	918316	т	C	39	39	60	40
			NC_000962.3	919574	Ť	č	105	189	60	40
			NC_000962.3	923065	Ť	Ā	105	189	60	40
			NC_000962.3	925203	Ġ	Â	42	42	60	26
			NC_000962.3	925485	Ğ	Â	56	56	60	25
			NC_000962.3	925493	G	÷	70	70	60	33
			NC_000962.3	925543	G	Å	39	39	60	40
91	440014763	ref	NC_000962.3					44		
91	440014/03	n ef	INC_000962.3	926022	G	A	30		60	14
			NC_000962.3	926079	G	R	30	30	60	15
			NC_000962.3		G	Ţ	15	32	60	6
gi	448814/63	rer	NC_000962.3	929680	С	G	44	44	60	18

i   44814763   ref   NC_000962.3       929785       T       G       12       26       60       7         i 448814763   ref   NC_000962.3       930189       C       A       105       159       60       40         i 448814763   ref   NC_000962.3       930189       C       A       105       159       60       40         i 448814763   ref   NC_000962.3       933352       A       C       50       50       60       40         i 448814763   ref   NC_000962.3       933542       G       C       52       52       60       29         i 448814763   ref   NC_000962.3       933542       G       C       52       50       60       40         i 448814763   ref   NC_000962.3       933546       C       T       50       60       40         i 448814763   ref   NC_000962.3       945370       C       T       50       60       40         i 448814763   ref   NC_000962.3       945370       C       T       50       50       60       40         i 448814763   ref   NC_000962.3       945375       C       T       50       60       40         i 448814763   ref   NC_000962.3       950230       C       T       69       60 </th <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>											
ii)       ii)       iii)       iii)       iii)       iiii)       iiii)       iiii)       iiii)       iiii)       iiii)       iiii)       iiii)       iiii)       iiii)       iiii)       iiii)       iiiii)       iiii)       iiiii)       iiii)       iiiii)       iiii)       iiiii)       iiiii)       iiiii)       iiiii)       iiiii)       iiiii)       iiiii)       iiiiii)       iiiiii)       iiiiii)       iiiiiii)       iiiiiii)       iiiiiii)       iiiiiii)       iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii	ai L	4400147621	nofl		020795	-	6	10	26	60	7
i 448814763 ref NC_000962.3       931306 G       A       105       189       669       60         i 448814763 ref NC_000962.3       933522 A       C       50       50       60       40         i 448814763 ref NC_000962.3       933542 G       T       71       71       60       34         i 448814763 ref NC_000962.3       933546 G       C       T       50       50       60       40         i 448814763 ref NC_000962.3       933576 G       C       T       50       50       60       40         i 448814763 ref NC_000962.3       943930 C       T       69       69       60       40         i 448814763 ref NC_000962.3       945770 C       G       244       60       40         i 448814763 ref NC_000962.3       945777 C       T       50       50       60       40         i 448814763 ref NC_000962.3       945935 T       C       69       60       40         i 448814763 ref NC_000962.3       945935 T       C       69       60       40         i 448814763 ref NC_000962.3       953775 G       T       38       88       60       40         i 448814763 ref NC_000962.3       955224 A       G       50       50 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>											
i 448814763 ref NC_000962.3       933352 A       C       50       60       40         i 448814763 ref NC_000962.3       933352 A       C       T       71       71       60       34         i 448814763 ref NC_000962.3       933352 A       C       T       71       71       60       34         i 448814763 ref NC_000962.3       933576 G       C       52       52       60       29         i 448814763 ref NC_000962.3       945214 G       A       69       69       60       40         i 448814763 ref NC_000962.3       945770 C       T       50       50       60       40         i 448814763 ref NC_000962.3       945777 C       T       50       50       60       40         i 448814763 ref NC_000962.3       945777 C       T       50       50       60       40         i 448814763 ref NC_000962.3       945777 C       T       58       88       60       40         i 448814763 ref NC_000962.3       95114 A       C       24       41       60       11         i 448814763 ref NC_000962.3       955777 C       T       38       38       60       40         i 448814763 ref NC_000962.3       955177 C       T											
i 448814763 ref       NC_000962.3       933542       A       C       50       50       60       40         i 448814763 ref       NC_000962.3       933542       G       T       71       71       60       34         i 448814763 ref       NC_000962.3       933576       G       C       52       52       60       40         i 448814763 ref       NC_000962.3       931576       C       T       50       50       60       40         i 448814763 ref       NC_000962.3       943930       C       T       69       69       60       40         i 448814763 ref       NC_000962.3       945770       C       G       24       60       40         i 448814763 ref       NC_000962.3       945777       C       T       50       50       60       40         i 448814763 ref       NC_000962.3       945935       T       C       69       60       40         i 448814763 ref       NC_000962.3       953775       G       T       38       38       60       40         i 448814763 ref       NC_000962.3       955524       A       G       50       50       60       40         i					930189	C	A	105	189	60	40
i 448814763 ref       NC_000962.3       933542       A       C       50       50       60       40         i 448814763 ref       NC_000962.3       933542       G       T       71       71       60       34         i 448814763 ref       NC_000962.3       933576       G       C       52       52       60       40         i 448814763 ref       NC_000962.3       931576       C       T       50       50       60       40         i 448814763 ref       NC_000962.3       943930       C       T       69       69       60       40         i 448814763 ref       NC_000962.3       945770       C       G       24       60       40         i 448814763 ref       NC_000962.3       945777       C       T       50       50       60       40         i 448814763 ref       NC_000962.3       945935       T       C       69       60       40         i 448814763 ref       NC_000962.3       953775       G       T       38       38       60       40         i 448814763 ref       NC_000962.3       955524       A       G       50       50       60       40         i	gila	448814763	ref	NC_000962.3	931306	G	A	69	69	60	40
i   448814763   ref   NC_000962.3       933542 G       T       71       71       60       34         i   448814763   ref   NC_000962.3       933545 C       A       78       78       60       29         i   448814763   ref   NC_000962.3       933545 C       T       50       60       40         i   448814763   ref   NC_000962.3       943514 G       A       69       60       40         i   448814763   ref   NC_000962.3       945214 G       A       69       60       40         i   448814763   ref   NC_000962.3       9455770 C       G       24       24       60       60         i   448814763   ref   NC_000962.3       945535 T       C       69       69       60       40         i   448814763   ref   NC_000962.3       955375 G       T       38       38       60       40         i   448814763   ref   NC_000962.3       955377 C       T       38       38       60       40         i   448814763   ref   NC_000962.3       955717 C       T       38       38       60       40         i   448814763   ref   NC_000962.3       955717 C       T       50       50       60       40         i   448814763   ref   NC_000962.3       955717 C       T <td></td> <td></td> <td></td> <td></td> <td></td> <td>Δ</td> <td></td> <td></td> <td></td> <td>60</td> <td>40</td>						Δ				60	40
i 448814763       ref NC_000962.3       933376       G       S2       S2       60       29         i 448814763       ref NC_000962.3       933376       G       S2       S2       60       40         i 448814763       ref NC_000962.3       943330       C       T       50       50       60       40         i 448814763       ref NC_000962.3       945314       G       A       69       69       60       40         i 448814763       ref NC_000962.3       945777       C       T       50       50       60       40         i 448814763       ref NC_000962.3       945935       T       C       63       69       60       40         i 448814763       ref NC_000962.3       945935       T       C       69       69       60       40         i 448814763       ref NC_000962.3       95377       C       T       38       38       60       40         i 448814763       ref NC_000962.3       95377       C       T       38       38       60       40         i 448814763       ref NC_000962.3       95377       C       T       38       38       60       40         i											
i 448814763       ref NC_000962.3       9333576       G       C       52       52       52       60       29         i 448814763       ref NC_000962.3       943300       C       T       69       69       60       400         i 448814763       ref NC_000962.3       945214       G       A       69       69       60       400         i 448814763       ref NC_000962.3       945770       C       G       24       24       60       400         i 448814763       ref NC_000962.3       945535       T       C       69       69       60       400         i 448814763       ref NC_000962.3       945535       T       C       69       69       60       400         i 448814763       ref NC_000962.3       955274       A       G       50       50       60       400         i 448814763       ref NC_000962.3       955777       C       T       38       860       400         i 448814763       ref NC_000962.3       955717       C       T       38       860       400         i 448814763       ref NC_000962.3       955717       T       C       50       50       60       400											
i 448814763       ref NC_000962.3       943300       C       T       50       50       60       40         i 448814763       ref NC_000962.3       943300       C       T       69       69       60       40         i 448814763       ref NC_000962.3       945777       C       T       50       50       60       40         i 448814763       ref NC_000962.3       945777       C       T       50       50       60       40         i 448814763       ref NC_000962.3       945514       A       C       24       41       60       11         i 448814763       ref NC_000962.3       945535       T       C       69       60       400         i 448814763       ref NC_000962.3       955230       C       T       38       86       400         i 448814763       ref NC_000962.3       955237       C       T       38       86       400         i 448814763       ref NC_000962.3       955377       C       T       38       86       400         i 448814763       ref NC_000962.3       955170       C       T       50       50       60       400         i 448814763       ref N											
iiii       448814763       ref       NC_000962.3       943930       C       T       69       69       60       40         iii       448814763       ref       NC_000962.3       945770       C       G       24       24       60       400         iii       448814763       ref       NC_000962.3       945777       C       T       50       50       60       410         iii       448814763       ref       NC_000962.3       94535       T       C       69       69       60       400         iii       448814763       ref       NC_000962.3       953275       G       T       38       86       400         iii       448814763       ref       NC_000962.3       953277       C       T       38       86       400         iii       448814763       ref       NC_000962.3       955177       C       T       38       86       400         iii       448814763       ref       NC_000962.3       955177       C       T       38       86       400         iii       448814763       ref       NC_000962.3       955177       C       T       38       86       40	gi   4	448814763	ref	NC_000962.3	933576	G	C	52	52	60	29
iiii       448814763       ref       NC_000962.3       943930       C       T       69       69       60       40         iii       448814763       ref       NC_000962.3       945770       C       G       24       24       60       400         iii       448814763       ref       NC_000962.3       945777       C       T       50       50       60       410         iii       448814763       ref       NC_000962.3       94535       T       C       69       69       60       400         iii       448814763       ref       NC_000962.3       953275       G       T       38       86       400         iii       448814763       ref       NC_000962.3       953277       C       T       38       86       400         iii       448814763       ref       NC_000962.3       955177       C       T       38       86       400         iii       448814763       ref       NC_000962.3       955177       C       T       38       86       400         iii       448814763       ref       NC_000962.3       955177       C       T       38       86       40	aile	448814763 İ	refi	NC 000962.3	937156	C	т	50	50	60	40
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iii       iii       iiii       iiii       iiiii       iiiii       iiiiii       iiiiii       iiiiii       iiiiiii       iiiiiii       iiiiiii       iiiiiiiii       iiiiiiiiiiiii       iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii	gile	448814763	ref	NC_000962.3	945777	C	т	50	50	60	35
i       i		448814763 İ	refi	NC 000962.3	945914	A	С	24	41	60	11
i       i											
i   448814763   ref   NC_000962.3       950230 C       T       69       60       40         i   448814763   ref   NC_000962.3       953775 G       T       38       38       60       40         gi   448814763   ref   NC_000962.3       95577 G       T       38       38       60       40         gi   448814763   ref   NC_000962.3       955124 A       G       50       50       60       40         gi   448814763   ref   NC_000962.3       958107 C       T       50       50       60       40         gi   448814763   ref   NC_000962.3       958624 G       C       71       71       60       30         gi   448814763   ref   NC_000962.3       958425 G       A       21       21       60       40         gi   448814763   ref   NC_000962.3       993916 A       G       60       60       40         gi   448814763   ref   NC_000962.3       996463 G       C       25       25       60       40         gi   448814763   ref   NC_000962.3       9001 G       C       26       26       60       40         gi   448814763   ref   NC_000962.3       1021748 A       G       105       150       60       40         gi   448814763   ref   NC_000962.3       1											
i 448814763       ref       NC_000962.3       953775       G       T       38       38       60       40         gi 448814763       ref       NC_000962.3       955224       A       G       50       50       60       40         gi 448814763       ref       NC_000962.3       955124       A       G       50       50       60       40         gi 448814763       ref       NC_000962.3       955127       C       T       50       50       60       40         gi 448814763       ref       NC_000962.3       958483       C       A       6       18       60       6         gi 448814763       ref       NC_000962.3       95916       A       G       69       60       40         gi 448814763       ref       NC_000962.3       95794       G       C       50       50       60       40         gi 448814763       ref       NC_000962.3       993465       G       C       25       60       40       448814763       ref       NC_000962.3       993346       C       19       10       60       40       448814763       ref       NC_000962.3       1021856       G       37							5				
i   448814763   ref   NC_000962.3   953777 C       T       38       38       60       40         gi   448814763   ref   NC_000962.3   955124 A       G       50       50       60       40         gi   448814763   ref   NC_000962.3   955117 T       T       C       50       50       60       40         gi   448814763   ref   NC_000962.3   95843 C       A       G       69       60       40         gi   448814763   ref   NC_000962.3   95843 C       A       G       69       60       40         gi   448814763   ref   NC_000962.3   959316 A       G       G       50       50       60       40         gi   448814763   ref   NC_000962.3   934455 G       A       C       50       50       60       40         gi   448814763   ref   NC_000962.3   93445 T       G       102       176       60       40         gi   448814763   ref   NC_000962.3   93346 A       C       19       19       60       40         gi   448814763   ref   NC_000962.3   1019748 A       G       105       190       60       40         gi   448814763   ref   NC_000962.3   1019748 A       G       105       180       60       40         gi   448814763   ref   NC_000962.3   1019748 A       G       105       180 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>											
	gili	448814763	ref	NC_000962.3	953775	G		38	38	60	40
i   448814763   ref   NC_000962.3   955524 A       G       50       50       60       40         gi   448814763   ref   NC_000962.3   957117 T       C       50       50       60       40         gi   448814763   ref   NC_000962.3   958483 C       A       6       18       60       6         gi   448814763   ref   NC_000962.3   958624 G       C       71       71       60       30         gi   448814763   ref   NC_000962.3   958046 A       G       69       69       60       40         gi   448814763   ref   NC_000962.3   95404 A       G       69       60       40         gi   448814763   ref   NC_000962.3   994495 G       A       C       50       50       60       40         gi   448814763   ref   NC_000962.3   993465 T       G       102       176       60       40         gi   448814763   ref   NC_000962.3   993346 A       C       19       19       60       40         gi   448814763   ref   NC_000962.3   1019748 A       G       105       130       60       40         gi   448814763   ref   NC_000962.3   1025106 T       C       52       52       60       40         gi   448814763   ref   NC_000962.3   1037012 T       C       105       180       60       400	ail	448814763	refi	NC 000962.3	953777	C	т	38	38	60	40
i 448814763       ref       NC_000962.3       956107       C       T       50       50       60       40         gi 448814763       ref       NC_000962.3       957117       T       C       50       50       60       40         gi 448814763       ref       NC_000962.3       958424       G       C       71       71       60       30         gi 448814763       ref       NC_000962.3       958455       G       A       21       21       60       34         gi 448814763       ref       NC_000962.3       969455       G       A       21       21       60       34         gi 448814763       ref       NC_000962.3       983455       T       G       102       176       60       40         gi 448814763       ref       NC_000962.3       99346       A       C       19       19       60       40         gi 448814763       ref       NC_000962.3       101748       A       G       105       190       60       40         gi 448814763       ref       NC_000962.3       102105       T       105       187       60       40         gi 448814763       ref											
gi       448814763       ref       NC_000962.3       957117       T       C       50       50       60       40         gi       448814763       ref       NC_000962.3       958483       C       A       6       18       60       6         gi       448814763       ref       NC_000962.3       958916       A       G       69       69       60       40         gi       448814763       ref       NC_000962.3       97704       G       C       50       50       60       40         gi       448814763       ref       NC_000962.3       983485       T       G       102       176       60       40         gi       448814763       ref       NC_000962.3       993346       C       19       19       60       40         gi       448814763       ref       NC_000962.3       101748       G       105       190       60       40         gi       448814763       ref       NC_000962.3       1037012       T       105       180       60       40         gi       448814763       ref       NC_000962.3       1037012       T       105       180       60											
i 448814763 ref       NC_000962.3       958483 C       A       6       18       60       6         gi 448814763 ref       NC_000962.3       958624 G       C       71       71       60       30         gi 448814763 ref       NC_000962.3       95916 A       G       69       69       60       40         gi 448814763 ref       NC_000962.3       95916 A       G       102       176       60       40         gi 448814763 ref       NC_000962.3       97704 G       C       50       50       60       40         gi 448814763 ref       NC_000962.3       9983465 T       G       102       176       60       40         gi 448814763 ref       NC_000962.3       993346 A       C       19       19       60       40         gi 448814763 ref       NC_000962.3       1021748 A       G       105       190       60       40         gi 448814763 ref       NC_000962.3       1021948 A       G       105       190       60       40         gi 448814763 ref       NC_000962.3       102710 T       C       105       180       60       40         gi 448814763 ref       NC_000962.3       102710 T       C <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>											
gi       448814763       ref       NC_000962.3       958624       G       C       71       71       60       30         gi       448814763       ref       NC_000962.3       95916       A       G       69       60       40         gi       448814763       ref       NC_000962.3       95916       A       C       50       50       60       40         gi       448814763       ref       NC_000962.3       983485       T       G       102       176       60       40         gi       448814763       ref       NC_000962.3       99346       C       102       176       60       40         gi       448814763       ref       NC_000962.3       101748       A       G       105       190       60       40         gi       448814763       ref       NC_000962.3       1027106       T       C       52       52       60       40         gi       448814763       ref       NC_000962.3       1037012       T       C       105       180       60       40         gi       448814763       ref       NC_000962.3       1037012       T       C       105											
gi       448814763       ref       NC_000962.3       958624       G       C       71       71       60       30         gi       448814763       ref       NC_000962.3       95916       A       G       69       69       60       40         gi       448814763       ref       NC_000962.3       964495       G       C       50       50       60       40         gi       448814763       ref       NC_000962.3       983485       T       G       102       176       60       40         gi       448814763       ref       NC_000962.3       99001       G       25       25       60       40         gi       448814763       ref       NC_000962.3       1021856       A       G       105       190       60       40         gi       448814763       ref       NC_000962.3       1021856       A       G       105       190       60       40         gi       448814763       ref       NC_000962.3       1027102       T       105       180       60       40         gi       448814763       ref       NC_000962.3       1037911 <c< td="">       T       105       18</c<>					958483	C	A	6	18	60	6
gi       448814763       ref       NC_000962.3       95916       A       G       69       69       60       40         gi       448814763       ref       NC_000962.3       97704       G       C       50       50       60       40         gi       448814763       ref       NC_000962.3       983485       T       G       102       176       60       40         gi       448814763       ref       NC_000962.3       993346       C       25       25       60       40         gi       448814763       ref       NC_000962.3       1019748       A       G       105       190       60       40         gi       448814763       ref       NC_000962.3       1021856       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       1027106       T       105       187       60       40         gi       448814763       ref       NC_000962.3       1037012       T       105       187       60       40         gi       448814763       ref       NC_000962.3       1037012       T       105       187       6	aile	448814763 İ	refi	NC 000962.3	958624	G	C	71	71	60	30
gi       448814763       ref       NC_000962.3       979704       G       C       50       50       60       40         gi       448814763       ref       NC_000962.3       979704       G       C       50       50       60       40         gi       448814763       ref       NC_000962.3       9983485       T       G       102       176       60       40         gi       448814763       ref       NC_000962.3       990001       G       C       25       25       60       40         gi       448814763       ref       NC_000962.3       1019748       A       G       105       190       60       40         gi       448814763       ref       NC_000962.3       1021856       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       1037911       C       T       105       187       60       40         gi       448814763       ref       NC_000962.3       1047165       T       C       105       189       60       40         gi       448814763       ref       NC_000962.3       106491       C </td <td></td> <td>448814763</td> <td>ref</td> <td>NC 000962 3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		448814763	ref	NC 000962 3							
gi       448814763       ref       NC_000962.3       979704       G       C       50       50       60       40         gi       448814763       ref       NC_000962.3       983485       T       G       102       176       60       40         gi       448814763       ref       NC_000962.3       990001       G       C       25       25       60       40         gi       448814763       ref       NC_000962.3       1019748       A       G       105       190       60       40         gi       448814763       ref       NC_000962.3       1021856       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       1037012       T       C       105       190       60       40         gi       448814763       ref       NC_000962.3       1047165       T       C       105       189       60       40         gi       448814763       ref       NC_000962.3       1047165       T       C       105       189       60       40         gi       448814763       ref       NC_000962.3       1068151		440014763	nof	NC_000962.3							
gi       448814763       ref       NC_000962.3       983485       T       G       102       176       60       40         gi       448814763       ref       NC_000962.3       990001       G       25       25       60       40         gi       448814763       ref       NC_000962.3       993346       A       C       19       19       60       40         gi       448814763       ref       NC_000962.3       1019748       A       G       105       190       60       40         gi       448814763       ref       NC_000962.3       10215106       T       C       52       52       60       40         gi       448814763       ref       NC_000962.3       1037012       T       105       187       60       40         gi       448814763       ref       NC_000962.3       1047165       T       C       105       189       60       40         gi       448814763       ref       NC_000962.3       106491       C       105       189       60       40         gi       448814763       ref       NC_000962.3       106491       C       105       189       <											
gi       448814763       ref       NC_000962.3       986463       G       C       25       25       60       40         gi       448814763       ref       NC_000962.3       9903146       A       C       19       19       60       40         gi       448814763       ref       NC_000962.3       1019748       A       G       105       190       60       40         gi       448814763       ref       NC_000962.3       1021856       A       G       37       760       40         gi       448814763       ref       NC_000962.3       1025106       T       C       52       52       60       40         gi       448814763       ref       NC_000962.3       1037012       T       C       105       187       60       40         gi       448814763       ref       NC_000962.3       1047165       T       C       105       189       60       40         gi       448814763       ref       NC_000962.3       105807       G       A       69       69       60       40         gi       448814763       ref       NC_000962.3       1068432       A       G </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>C</td> <td></td> <td></td> <td></td> <td></td>							C				
gi       448814763       ref       NC_000962.3       990001       G       C       26       26       60       40         gi       448814763       ref       NC_000962.3       1019748       A       G       105       190       60       40         gi       448814763       ref       NC_000962.3       1021856       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       1025106       T       C       52       52       60       40         gi       448814763       ref       NC_000962.3       1037911       C       T       105       189       60       40         gi       448814763       ref       NC_000962.3       1047165       T       C       105       189       60       40         gi       448814763       ref       NC_000962.3       106491       C       105       189       60       40         gi       448814763       ref       NC_000962.3       1068432       A       G       105       189       60       40         gi       448814763       ref       NC_000962.3       107702       T	gili	448814763	ref	NC_000962.3	983485	т		102	176	60	40
gi       448814763       ref       NC_000962.3       990001       G       C       26       26       60       40         gi       448814763       ref       NC_000962.3       1019748       A       G       105       190       60       40         gi       448814763       ref       NC_000962.3       1021856       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       1025106       T       C       52       52       60       40         gi       448814763       ref       NC_000962.3       1037911       C       T       105       189       60       40         gi       448814763       ref       NC_000962.3       1047165       T       C       105       189       60       40         gi       448814763       ref       NC_000962.3       106491       C       105       189       60       40         gi       448814763       ref       NC_000962.3       1068432       A       G       105       189       60       40         gi       448814763       ref       NC_000962.3       107702       T	ail	448814763	refi	NC 000962.3	986463	G	с	25	25	60	40
gi       448814763       ref       NC_000962.3       993346       A       C       19       19       60       40         gi       448814763       ref       NC_000962.3       1021856       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       1021856       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       1037012       T       C       105       190       60       40         gi       448814763       ref       NC_000962.3       1037911       C       T       105       189       60       40         gi       448814763       ref       NC_000962.3       1043014       G       C       105       189       60       40         gi       448814763       ref       NC_000962.3       1055807       G       A       69       69       60       40         gi       448814763       ref       NC_000962.3       1055807       G       A       105       189       60       40         gi       448814763       ref       NC_000962.3       1070702					990001	G				60	40
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gi       448814763       ref       NC_00962.3       1021856       A       G       37       37       60       40         gi       448814763       ref       NC_000962.3       1037012       T       C       52       52       60       40         gi       448814763       ref       NC_000962.3       1037012       T       C       105       187       60       40         gi       448814763       ref       NC_000962.3       1037911       C       T       105       187       60       40         gi       448814763       ref       NC_000962.3       1047165       T       C       105       189       60       40         gi       448814763       ref       NC_000962.3       1065811       T       C       105       189       60       40         gi       448814763       ref       NC_000962.3       1068151       T       C       105       189       60       40         gi       448814763       ref       NC_000962.3       1070702       T       C       50       50       60       40         gi       448814763       ref       NC_000962.3       107779 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>											
gi       448814763       ref       NC_000962.3       1025106       T       C       52       52       60       40         gi       448814763       ref       NC_000962.3       1037012       T       C       105       190       60       40         gi       448814763       ref       NC_000962.3       1037011       C       T       105       187       60       40         gi       448814763       ref       NC_000962.3       1043014       G       C       105       189       60       40         gi       448814763       ref       NC_000962.3       106491       C       A       105       189       60       40         gi       448814763       ref       NC_000962.3       106491       C       A       105       189       60       40         gi       448814763       ref       NC_000962.3       1068432       A       G       105       189       60       40         gi       448814763       ref       NC_000962.3       107702       T       C       105       183       60       40         gi       448814763       ref       NC_000962.3       1077312											
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gi       448814763       ref       NC_000962.3       1037012       T       C       105       190       60       40         gi       448814763       ref       NC_000962.3       1037911       C       T       105       187       60       40         gi       448814763       ref       NC_000962.3       1047165       T       C       105       189       60       40         gi       448814763       ref       NC_000962.3       1055807       G       A       69       69       60       40         gi       448814763       ref       NC_000962.3       1068151       T       C       105       189       60       40         gi       448814763       ref       NC_000962.3       1068432       A       G       105       189       60       40         gi       448814763       ref       NC_000962.3       107702       T       C       50       50       60       40         gi       448814763       ref       NC_000962.3       1077312       A       G       105       183       60       40         gi       448814763       ref       NC_000962.3       1077312	ail	448814763	refl	NC_000962.3	1025106	т	C	52	52	60	40
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gi       448814763       ref       NC_000962.3       1043014       G       C       105       189       60       40         gi       448814763       ref       NC_000962.3       1055807       G       A       69       69       60       40         gi       448814763       ref       NC_000962.3       1055807       G       A       69       69       60       40         gi       448814763       ref       NC_000962.3       1060491       C       A       105       189       60       40         gi       448814763       ref       NC_000962.3       1068151       T       C       105       189       60       40         gi       448814763       ref       NC_000962.3       1074558       G       A       32       32       60       40         gi       448814763       ref       NC_000962.3       1075279       T       C       105       183       60       40         gi       448814763       ref       NC_000962.3       1075279       T       C       105       183       60       40         gi       448814763       ref       NC_000962.3       1075326       <							Ŧ				
gi       448814763       ref       NC_000962.3       1047165       T       C       105       189       60       40         gi       448814763       ref       NC_000962.3       1055807       G       A       69       69       60       40         gi       448814763       ref       NC_000962.3       1060491       C       A       105       189       60       40         gi       448814763       ref       NC_000962.3       1068432       A       G       105       189       60       40         gi       448814763       ref       NC_000962.3       1070702       T       C       50       50       60       40         gi       448814763       ref       NC_000962.3       1075279       T       C       105       183       60       40         gi       448814763       ref       NC_000962.3       1075279       T       C       105       183       60       40         gi       448814763       ref       NC_000962.3       1077312       A       G       105       183       60       40         gi       448814763       ref       NC_000962.3       107895											
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gi       448814763       ref       NC_000962.3       1060491 C       A       105       189       60       40         gi       448814763       ref       NC_000962.3       1068151 T       C       105       190       60       40         gi       448814763       ref       NC_000962.3       1068432 A       G       105       189       60       40         gi       448814763       ref       NC_000962.3       1070702 T       C       50       50       60       40         gi       448814763       ref       NC_000962.3       1074558 G       A       32       32       60       40         gi       448814763       ref       NC_000962.3       1075279 T       C       105       183       60       40         gi       448814763       ref       NC_000962.3       1077312 A       G       105       183       60       40         gi       448814763       ref       NC_000962.3       1078895 C       T       69       69       60       37         gi       448814763       ref       NC_000962.3       1081681 T       C       50       50       60       40         gi						-					
gi       448814763       ref       NC_000962.3       1060491 C       A       105       189       60       40         gi       448814763       ref       NC_000962.3       1068151 T       C       105       190       60       40         gi       448814763       ref       NC_000962.3       1068432 A       G       105       189       60       40         gi       448814763       ref       NC_000962.3       1070702 T       C       50       50       60       40         gi       448814763       ref       NC_000962.3       1074558 G       A       32       32       60       40         gi       448814763       ref       NC_000962.3       1077579 T       C       105       183       60       40         gi       448814763       ref       NC_000962.3       1077312 A       G       105       183       60       40         gi       448814763       ref       NC_000962.3       1078895 C       T       69       69       60       37         gi       448814763       ref       NC_000962.3       1081681 T       C       50       50       60       40         gi	gi   4	448814763	ref	NC_000962.3	1055807	G	A	69	69	60	40
gi       448814763       ref       NC_000962.3       1068151       T       C       105       190       60       40         gi       448814763       ref       NC_000962.3       1068432       A       G       105       189       60       40         gi       448814763       ref       NC_000962.3       1070702       T       C       50       50       60       40         gi       448814763       ref       NC_000962.3       1074558       G       32       32       60       40         gi       448814763       ref       NC_000962.3       1075279       T       C       105       183       60       40         gi       448814763       ref       NC_000962.3       1075279       T       C       105       183       60       40         gi       448814763       ref       NC_000962.3       1077312       A       G       105       183       60       40         gi       448814763       ref       NC_000962.3       1078895       C       T       69       69       60       37         gi       448814763       ref       NC_000962.3       1081681       T       <	aile	448814763	refi	NC 000962.3	1060491	C	Α	105	189	60	40
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gi       448814763       ref       NC_000962.3       1079927       A       50       50       60       40         gi       448814763       ref       NC_000962.3       1081681       T       C       50       50       60       40         gi       448814763       ref       NC_000962.3       1082436       G       A       70       70       60       34         gi       448814763       ref       NC_000962.3       1085897       T       A       57       57       60       35         gi       448814763       ref       NC_000962.3       1085900       C       G       45       45       60       32         gi       448814763       ref       NC_000962.3       1085932       C       A       53       53       60       26         gi       448814763       ref       NC_000962.3       1085959       C       A       87       185       60       34         gi       448814763       ref       NC_000962.3       1085966       C       A       93       189       60       34         gi       448814763       ref       NC_000962.3       1087193       G       69 <td>911</td> <td>440014703</td> <td></td> <td>NC_000362.3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	911	440014703		NC_000362.3							
gi       448814763       ref       NC_000962.3       1081681       T       C       50       50       60       40         gi       448814763       ref       NC_000962.3       1082436       G       A       70       70       60       34         gi       448814763       ref       NC_000962.3       1085897       T       A       57       57       60       35         gi       448814763       ref       NC_000962.3       1085900       C       G       45       45       60       32         gi       448814763       ref       NC_000962.3       1085932       C       A       53       53       60       26         gi       448814763       ref       NC_000962.3       1085959       C       A       87       185       60       34         gi       448814763       ref       NC_000962.3       1085966       C       A       93       189       60       34         gi       448814763       ref       NC_000962.3       1087193       G       69       69       60       40         gi       448814763       ref       NC_000962.3       1088167       T       105 </td <td>911</td> <td>448814/63</td> <td>rer</td> <td>NC_000962.3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	911	448814/63	rer	NC_000962.3							
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gi         448814763         ref         NC_000962.3         1088167         T         105         189         60         40         gi         448814763         ref         NC_000962.3         1093406         A         G         50         50         60         40         gi         448814763         ref         NC_000962.3         1093406         A         G         50         50         60         40         gi         448814763         ref         NC_000962.3         1093672         T         71         71         60         38         38											
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g1 4	48814/63	rei	NC_000962.3	109375			3	8	60	
			NC_000962.3	109392		R	120	152	60	26
gi 4	48814763	ref	NC_000962.3	109394	42 C	M	19	19	60	13
	48814763	refi	NC_000962.3	109399	59 T	A	9	36	60	4
			NC_000962.3	109397		Â	6	24	60	3
			NC_000962.3	109398		т	6	17	60	3
			NC_000962.3	109554		т	3	10	60	2
gi 4	48814763	ref	NC_000962.3	109554	48 C	т	6	17	60	5
gi 4	48814763	refi	NC_000962.3	109562	25 G	C	24	41	60	10
			NC_000962.3	109562		Ŧ	15	46	60	7
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			NC_000962.3	109603		A	27	43	60	10
			NC_000962.3	109609	54 T	A	18	57	60	9
gi 4	48814763	ref	NC_000962.3	109899	93 G	т	51	74	60	21
			NC_000962.3	109912	27 A	C	36	73	60	16
			NC_000962.3	109913		ē	69	72	60	26
			NC_000962.3	110023		č	37	37	60	40
			NC_000962.3	110642		C	70	70	60	40
gi 4	48814763	ref	NC_000962.3	110997	75 A	G	37	37	60	40
gi 4	48814763	ref	NC_000962.3	111379	96 G	С	105	189	60	40
			NC_000962.3	111380		č	50	50	60	40
			NC_000962.3	111502			105	188		40
						A			60	
			NC_000962.3	111730		A	69	69	60	40
			NC_000962.3	112141		т	39	39	60	40
gi 4	48814763	ref	NC_000962.3	112152	24 G	т	15	125	60	11
			NC_000962.3	112158		т	33	40	60	12
			NC_000962.3	112159		÷	33	55	60	12
			NC_000962.3	112203		C	24	44	60	13
			NC_000962.3	112688		C	70	70	60	40
gi 4	48814763	ref	NC_000962.3	112764	48 C	A	37	37	60	40
			NC_000962.3	112814	45 T	G	102	190	60	40
			NC_000962.3	1135 91		Ť	55	55	60	22
			NC_000962.3	114829		A	39	39	60	40
			NC_000962.3	114955		т	37	37	60	40
			NC_000962.3	115058	35 G	A	52	52	60	40
gi 4	48814763	ref	NC_000962.3	115497	76 G	A	52	52	60	40
			NC_000962.3	116313		ĉ	19	19	60	40
			NC_000962.3	116433		Ä	90	189	60	34
			NC_000962.3	116430		A	84	187	60	34
			NC_000962.3	116619	93 A	G	42	45	60	15
gi 4	48814763	ref	NC_000962.3	116622	26 G	A	9	27	60	6
	48814763	ref	NC_000962.3	116957	76 C	S	8	8	60	38
			NC_000962.3	117040		Ā	69	69	60	36
			NC_000962.3				105		60	40
				117339		A		188		
			NC_000962.3	117330		т	69	69	60	40
			NC_000962.3	117434	47 C	т	50	50	60	40
ail4	48814763	ref	NC_000962.3	117442	28 G	C	70	70	60	40
			NC_000962.3	117540		Ŧ	50	50	60	40
			NC_000962.3	117811			69	69	60	40
						<u> </u>				
			NC_000962.3	117829		т	69	69	60	40
gi   4	48814763	ref	NC_000962.3	117928	36 G	C	69	69	60	40
gi 4	48814763	ref	NC_000962.3	119001	L7 G	A	42	174	60	18
			NC_000962.3	119174	41 G	A	60	184	60	22
			NC_000962.3	120041		G	50	50	60	40
						Ŧ				
			NC_000962.3	120509		Ţ	12	34	60	7
			NC_000962.3	120510		т	24	65	60	11
gi   4	48814763	ref	NC_000962.3	120521	L7 A	т	69	72	60	26
gi İ 4	48814763	refi	NC_000962.3	120523	33 A	т	21	60	60	10
			NC_000962.3	120774		ć	18	57	60	9
			NC_000962.3	120779		Ť	51	74	60	21
211	40014765	nof	NC_000062.5							
g1 [4	48814/63	rer	NC_000962.3	120780	00 C	т	72	72	60	29
-										

ai	448814763	refl	NC_000962.3	1207826	C	A	35	35	60	29
			NC_000962.3	1207829		Ť	54	54	60	29
			NC_000962.3	1213331		Å	12	20	60	5
										5
			NC_000962.3	1213334		A _	12	27	60	
gj			NC_000962.3	1213366		Ţ	52	52	60	32
gi	448814763	ret	NC_000962.3	1215531		т	38	38	60	40
			NC_000962.3	1215624		A	105	189	60	40
gi			NC_000962.3	1215675		т	69	69	60	40
gi	448814763	ref	NC_000962.3	1220680	т	C	105	189	60	40
āi	448814763	ref	NC_000962.3	1241327	G	т	6	23	60	5
			NC_000962.3	1241340	Α	C	34	34	60	18
			NC_000962.3	1248978		č	50	50	60	40
ai	448814763	ref	NC_000962.3	1251199		Ť	37	37	60	40
			NC_000962.3	1252164		ċ	38	38	60	40
			NC_000962.3	1256806		Ť	105	189	60	40
			NC_000962.3	1259969		A	102	188	60	38
			NC_000962.3	1260295		C	15	32	60	8
			NC_000962.3	1275957		C	9	36	60	7
			NC_000962.3	1276432		т	43	43	60	22
gi			NC_000962.3	1277908	G	R	153	153	60	78
ği	448814763	ref	NC_000962.3	1281118	Т	C	69	69	60	40
	448814763	refi	NC_000962.3	1281938	G	т	9	17	60	9
			NC_000962.3	1281941		G	9	14	60	12
ği			NC_000962.3	1281982		Ğ	24	41	60	11
			NC_000962.3	1281987		Ğ	5	18	60	6
31	440014703	nof	NC_000962.3	1282099		G	53	53	60	29
gj			NC_000962.3	1283978		A	18	130	60	9
			NC_000962.3	1284064		C	70	70	60	40
			NC_000962.3	1292102		G	70	70	60	40
gi			NC_000962.3	1292464		т	102	189	60	40
gi	448814763	ref	NC_000962.3	1294559	A	G	51	74	60	21
gi	448814763	ref	NC_000962.3	1294571	G	C	18	27	60	9
ği			NC_000962.3	1296228	C	т	69	69	60	40
			NC_000962.3	1297032		G	39	39	60	40
			NC_000962.3	1297333		ē	25	25	60	40
ği			NC_000962.3	1306259		Ğ	70	70	60	40
			NC_000962.3	1307598		Ğ	70	70	60	40
			NC_000962.3	1313401		č	15	32	60	9
gj			NC_000962.3	1315191		ç	50	50	60	40
gi			NC_000962.3	1315437		ç	9	13	60	6
gi			NC_000962.3	1327890		A	52	52	60	40
gı			NC_000962.3	1328687		C	14	14	60	40
gi			NC_000962.3	1329633		A	102	188	60	40
gi	448814763	ref	NC_000962.3	1338527	G	A	52	52	60	29
qi	448814763	ref	NC_000962.3	1338693	G	A	69	69	60	40
			NC_000962.3	1339399		Y	84	84	60	60
			NC_000962.3	1341044		Ŷ	67	67	60	52
			NC_000962.3	1341064		Ŵ	86	86	60	52
			NC_000962.3	1341148		Ÿ	116	116	60	60
			NC_000962.3			Ť				
				1341624			69	72	60	27
			NC_000962.3	1342452		S	3	3	60	41
			NC_000962.3	1346562		G	40	40	60	31
			NC_000962.3	1346581		Т	54	54	60	24
			NC_000962.3	1346593		A	33	72	60	12
			NC_000962.3	1351092	G	ĸ	33	33	60	73
			NC_000962.3	1353770	т	G	9	92	60	4
			NC_000962.3	1353778		G	9	27	60	4
			NC_000962.3	1353818		Ā	36	171	60	16
			NC_000962.3	1360209		ĉ	69	69	60	40
			NC_000962.3	1362006		č	52	52	60	40
gi	440014/03	rer	NC_000962.3	1371721	C .	A	50	50	60	40

a i	440014762	Inof	NC_000962.3	1374065 T	6	69	69	60	40
					c				
gi			NC_000962.3	1375724 A	C	69	69	60	40
gi	448814763	Iref	NC_000962.3	1377067 C	т	39	39	60	33
ği		İref	NC_000962.3	1377124 T	G	15	40	60	6
_			NC_000962.3	1377136 C	Ť	15	32	60	ĕ
gi									
gı			NC_000962.3	1377265 G	C	25	25	60	13
gi	448814763	ref	NC_000962.3	1377279 T	A	72	72	60	27
ģi			NC_000962.3	1382628 T	C	39	39	60	40
			NC_000962.3	1385421 G	Ť	69	69	60	40
<u>g</u> 1									
gı			NC_000962.3	1385469 A	т	105	187	60	40
gi	448814763	ref	NC_000962.3	1385867 C	A	69	69	60	40
ği			NC_000962.3	1386250 C	A	69	69	60	40
			NC_000962.3	1393626 A	G	69	69	60	40
gi									
g1			NC_000962.3	1393994 C	т	105	189	60	40
gi	448814763	ref	NC_000962.3	1396922 T	C	99	190	60	40
ģi	448814763	İref	NC_000962.3	1397970 C	A	99	189	60	40
ği			NC_000962.3	1402587 C	т	50	50	60	40
_ <u>g</u> 1			NC_000962.3	1405192 G	C	37	37	60	40
gi	448814763	ret	NC_000962.3	1407150 G	C	70	70	60	40
gi	448814763	ref	NC_000962.3	1409623 G	A	105	189	60	40
ği			NC_000962.3	1411210 T	G	69	69	60	40
			NC_000962.3	1413148 C	Ť	70	70	60	40
<u>g</u> 1									
gi	448814763	ret	NC_000962.3	1414021 C	т	69	69	60	40
gi	448814763	ref	NC_000962.3	1421040 C	G	14	14	60	40
ģi	448814763	İref	NC_000962.3	1425005 G	т	69	69	60	40
gi			NC_000962.3	1440469 C	Ġ	27	27	60	40
_									
gi	448814/63	rer	NC_000962.3	1444202 C	G	69	69	60	40
gi	448814763	ref	NC_000962.3	1445849 T	C	27	133	60	14
gi	448814763	Iref	NC_000962.3	1445852 T	C	24	63	60	11
ği			NC_000962.3	1450319 T	G	9	36	60	8
			NC_000962.3	1457144 C	Ť	39	39	60	40
gi	440014/05	I EI	INC_000962.3						
gi			NC_000962.3	1471659 C	т	69	69	60	40
gi			NC_000962.3	1475193 C	A	50	50	60	40
ģi	448814763	İref	NC_000962.3	1480972 T	C	69	69	60	40
gi			NC_000962.3	1481185 A	č	105	190	60	40
_ <u>g</u> 1			NC_000962.3	1482627 T	C	69	69	60	40
gi			NC_000962.3	1484708 A	C	69	69	60	40
gi	448814763	ref	NC_000962.3	1495326 A	G	50	50	60	40
ği			NC_000962.3	1499274 C	G	37	37	60	40
_			NC_000962.3	1516532 C	Ă	52	52	60	40
gi									
g1			NC_000962.3	1524704 C	G	50	50	60	40
gi	448814763	ref	NC_000962.3	1524749 C	т	37	37	60	40
gi	448814763	Iref	NC_000962.3	1526819 C	A	69	69	60	40
gi			NC_000962.3	1527384 G	A	69	69	60	40
ai			NC_000962.3	1530748 G	Â	69	69	60	40
			NC_000962.3	1530981 T	A	99	189	60	40
qi	448814763	ref	NC_000962.3	1535889 C	т	69	69	60	40
			NC_000962.3	1536251 G	т	102	189	60	40
	440014762	nof	NC_000962.3	1538659 T	Ġ	70	70	60	40
-	440014/05	I EI	INC_000362.5		9				
g1			NC_000962.3	1547125 T	C	38	38	60	40
gi	448814763	ref	NC_000962.3	1551381 C	т	70	70	60	36
ai	448814763	Iref	NC_000962.3	1551400 C	т	70	70	60	36
01	448814763	ref	NC_000962.3	1552547 G	Á	99	189	60	40
2	440014763	nof	NC_000062_2		- 2		190		
-			NC_000962.3	1553633 T	c	105		60	40
gi			NC_000962.3	1556904 G	A	18	44	60	9
ai	448814763	ref	NC_000962.3	1559992 C	A	69	69	60	40
- ai	448814763	Iref	NC_000962.3	1560961 T	G	38	38	60	34
				1561101 G	č	40	40	60	15
			NC_000962.3		<u> </u>				
			NC_000962.3	1563717 C	т	25	25	60	40
gi	448814763	ref	NC_000962.3	1567503 G	A	102	190	60	40
ai	448814763	ref	NC_000962.3	1570566 C	A	53	53	60	40
1.									

ai	440014762	Inof	NC_000962.3	1573978	Τ.	G	70	70	60	40
			NC_000962.3	1580680		т	69	69	60	40
gı	448814763	ref	NC_000962.3	1580944	G	A	70	70	60	40
gi	448814763	ref	NC_000962.3	1586309	G	т	24	144	60	11
qi			NC_000962.3	1586430	G	Α	21	63	60	10
gi		ref	NC_000962.3	1588899		Ť	99	189	60	40
3	440014703	nof	NC_000062.3			Ġ				
			NC_000962.3	1589383		-	69	69	60	40
gi			NC_000962.3	1592365		A	18	58	60	7
			NC_000962.3	1592414	G	A	27	53	60	12
āi	448814763	ref	NC_000962.3	1592476	G	A	50	50	60	40
gi	448814763	ref	NC_000962.3	1597268	G	т	27	45	60	12
			NC_000962.3	1597276		ċ	45	45	60	16
	440014703	nof	NC_000962.3	1597312	2		29	29		25
gi						A			60	
gi			NC_000962.3	1609840		G	105	189	60	40
gi	448814763	ref	NC_000962.3	1613035	т	C	69	69	60	40
qi	448814763	ref	NC_000962.3	1614359	G	A	99	189	60	36
ği			NC_000962.3	1614395	т	G	6	67	60	3
			NC_000962.3	1619121		Ā	12	40	60	7
	440014703	nof	NC_000962.3	1619136		Â	51	182	60	22
<u>g</u> 1										
			NC_000962.3	1619181		A	105	188	60	40
gi			NC_000962.3	1624791		G	70	70	60	40
gi	448814763	ref	NC_000962.3	1627351	т	C	105	189	60	40
āi	448814763	İref	NC_000962.3	1630148	A	С	105	189	60	40
			NC_000962.3	1631140		A	24	24	60	40
gi			NC_000962.3	1631497		Ť	19	19	60	34
				1631522		÷	70	70		34
	448814765	rei	NC_000962.3						60	
gi			NC_000962.3	1631601		Т	9	18	60	6
gi	448814763	ret	NC_000962.3	1634394		A	81	186	60	32
gi	448814763	ref	NC_000962.3	1634398	G	C	51	51	60	34
ģi			NC_000962.3	1637950	т	С	3	7	60	2
ği			NC_000962.3	1637996		A	15	118	60	8
			NC_000962.3	1638000		ĉ	12	34	60	ĕ
			NC_000962.3	1639594		Ă	26	26	60	40
gi										
gi	448814763	rei	NC_000962.3	1645802		ç	52	52	60	40
			NC_000962.3	1650072		G	69	69	60	40
gi			NC_000962.3	1653376	C	A	12	27	60	7
gi	448814763	ref	NC_000962.3	1655647	C	т	50	50	60	40
ği			NC_000962.3	1655651	C	т	39	39	60	40
ği			NC_000962.3	1656182	G	S	29	29	60	26
			NC_000962.3	1656262		Ğ	18	36	60	9
	440014703	nof	NC_000962.3	1656268		Ă	36	69	60	15
gi										
gi			NC_000962.3	1658513		Т	63	73	60	25
gı	448814763	ret	NC_000962.3	1669358		A	26	26	60	40
gi	448814763	ref	NC_000962.3	1673280		т	50	50	60	40
qi	448814763	ref	NC_000962.3	1676290	C	A	105	189	60	40
			NC_000962.3	1678817		C	21	21	60	20
			NC_000962.3	1689349		Ŧ	105	189	60	40
			NC_000962.3	1692141		ċ	37	37	60	40
			NC_000962.3	1693561		G	105	189	60	40
			NC_000962.3	1698911		A	105	186	60	40
			NC_000962.3	1702542	A	G	69	69	60	40
gi	448814763	ref	NC_000962.3	1706119	т	C	105	189	60	40
			NC_000962.3	1709432	C	т	70	70	60	40
ai	448814763	ref	NC_000962.3	1711645		ċ	102	189	60	40
	448814762	ref	NC_000962.3	1713192		Ğ	99	189	60	40
			NC_000962.3							40
				1723736		A	69	69	60	
<u>g</u> 1	448814/63	rer	NC_000962.3	1724722		C	105	190	60	40
			NC_000962.3	1728350		C	24	24	60	40
			NC_000962.3	1728622	C	G	50	50	60	40
qi	448814763	ref	NC_000962.3	1728837	Α	G	25	25	60	40
			NC_000962.3			G	99	189	60	40
1.						-				

ai	449914762	Inof	NC_000962.3	1752561 T	с	50	50	60	40
91	440014/05	I EL	INC_000362.3						
			NC_000962.3	1759252 G	т	50	50	60	40
			NC_000962.3	1760043 G	A	50	50	60	40
qi	448814763	ref	NC_000962.3	1760058 G	C	51	51	60	33
qi			NC_000962.3	1760088 C	т	84	187	60	33
			NC_000962.3	1760292 A	Ġ	70	70	60	34
_ <u>g</u> 1			NC_000962.3	1760319 G	C	52	52	60	34
gi			NC_000962.3	1762587 T	G	24	51	60	11
qi	448814763	Iref	NC_000962.3	1762594 C	G	3	7	60	4
qi	448814763	iref	NC_000962.3	1766074 G	A	69	69	60	40
qi			NC_000962.3	1781786 C	G	9	27	60	4
					т				
			NC_000962.3	1789564 C		45	45	60	40
gı			NC_000962.3	1789565 C	A	45	45	60	40
gi	448814763	ref	NC_000962.3	1791750 G	C	99	189	60	40
qi	448814763	Iref	NC_000962.3	1793120 G	A	105	186	60	40
ği	448814763	iref	NC_000962.3	1798355 G	A	39	39	60	40
			NC_000962.3	1802466 C	Ť	26	26	60	40
-					-				
			NC_000962.3	1803265 G	A	69	69	60	40
gi			NC_000962.3	1804409 C	A	26	26	60	40
gi	448814763	ref	NC_000962.3	1817976 A	т	105	189	60	40
gi	448814763	Iref	NC_000962.3	1819203 C	т	102	190	60	40
			NC_000962.3	1828856 T	A	15	107	60	11
qi			NC_000962.3	1828858 G	Â	15	102	60	9
-									
gi			NC_000962.3	1834957 C	G	50	50	60	40
gı			NC_000962.3	1836286 G	C	50	50	60	40
gi	448814763	ref	NC_000962.3	1838036 C	т	99	188	60	40
qi	448814763	ref	NC_000962.3	1838546 G	A	93	188	60	34
qi	448814763	iref	NC_000962.3	1838578 G	A	71	71	60	34
ği			NC_000962.3	1838648 A	ĉ	9	36	60	7
			NC_000962.3	1838662 C	A	54	74	60	21
91			NC_000962.3	1847919 C	G	69	69	60	40
gi			NC_000962.3	1852055 A	G	70	70	60	40
gi	448814763	ref	NC_000962.3	1854300 T	C	50	50	60	40
ği	448814763	iref	NC_000962.3	1856017 C	т	71	71	60	30
			NC_000962.3	1856027 C	À	38	38	60	40
			NC_000962.3	1856098 G	Â	12	27	60	7
<u>g</u> 1									
gi			NC_000962.3	1856777 G	C	39	39	60	40
			NC_000962.3	1860733 G	A	99	187	60	40
gi	448814763	ref	NC_000962.3	1864811 T	C	70	70	60	40
gi	448814763	lref	NC_000962.3	1866897 C	A	69	69	60	40
gi			NC_000962.3	1870365 C	G	27	27	60	31
gi			NC_000962.3	1875207 C	Ť	69	69	60	40
			NC_000962.3	1880312 A	Т	105	189	60	40
gı			NC_000962.3	1885772 G	A	102	189	60	40
			NC_000962.3	1888194 A	C	99	169	60	40
qi	448814763	Iref	NC_000962.3	1892651 C	т	50	50	60	40
			NC_000962.3	1894422 A	G	102	190	60	40
			NC_000962.3	1896387 T	č	70	70	60	40
			NC_000962.3	1901493 T	ç	70	70	60	40
			NC_000962.3	1907296 G	C	38	38	60	40
gi	448814763	ref	NC_000962.3	1916137 A	G	69	69	60	40
qi	448814763	Iref	NC_000962.3	1917972 A	G	69	69	60	40
			NC_000962.3	1931179 C	A	39	39	60	40
oi.	448814763	ref	NC_000962.3	1933988 G	Â	26	26	60	40
9	448814762	ref	NC_000962.3	1942029 G	f	5	20	60	6
91	440014/03	I EI	INC_000962.3						
			NC_000962.3	1944107 A	G	70	70	60	40
gi	448814763	ref	NC_000962.3	1944402 T	C	70	70	60	40
qi	448814763	ref	NC_000962.3	1950767 T	C	50	50	60	40
			NC_000962.3	1952601 C	T	99	189	60	40
			NC_000962.3	1952708 C	Ť	69	69	60	40
			NC_000962.3		Å	69	69	60	40
91	1440014/05	n er	[nc_000302.5]	1000204 C	<u> </u>	05	05	00	40

ai	448814763 ref	NC 000962.31	1960391 G	А	38	38	60	40
	448814763 ref		1967237 C	A	102	190	60	40
	448814763 ref		1982901 G	Ť	48	56	60	20
	i		1983317 G	À	70	70	60	39
	448814763 ref		1983513 A	ĉ	50	50	60	40
	448814763 ref		1989057 A	Ř	1	1	60	7
gi			1989805 G	ĉ	30	55	60	13
	448814763 ref		1989993 C	Ğ	36	45	60	13
	448814763 ref		1991984 G	A	18	124	60	10
91	1440014705   CI	INC_000962.3		Ť				40
gi	448814763 ref	INC_000962.3	1993808 A		105	189	60	
	448814763 ref		1997069 G	A	15	24	60	6
gj			1997368 C	G	3	4	60	2
	448814763 ref		1997432 C	G	6	69	60	3
	448814763 ref		2001604 G	Т	102	189	60	40
gi	448814763 ref		2003540 C	G	70	70	60	40
	448814763 ref		2007502 G	A	50	50	60	40
	448814763 ref		2020144 G	A	70	70	60	40
			2022868 T	C	105	189	60	40
gi	448814763 ref	NC_000962.3	2024700 A	т	39	39	60	40
gi	448814763 ref		2026148 C	т	105	189	60	40
ği	448814763 ref	NC_000962.3	2028374 A	C	9	27	60	4
	448814763 ref		2028406 A	т	9	34	60	5
ği		NC_000962.3	2028422 G	т	15	52	60	8
	448814763 ref		2030840 T	Y	17	17	60	30
	448814763 ref		2032383 C	Ť	21	49	60	8
	448814763 ref		2032407 T	À	81	187	60	28
	448814763 ref		2032420 C	Ť	71	71	60	28
			2032443 C	Ť	71	71	60	27
	448814763 ref		2032463 C	Å	81	188	60	32
	448814763 ref		2032482 C	Â	69	180	60	28
	448814763 ref		2032482 C	÷	105	189	60	40
	448814763 ref		2033501 C 2043512 C	÷	27	68	60	12
91	448814763 ref	INC_000962.3	2043567 G	Å	37	37	60	40
			2045310 A	Ĝ	69	69	60	40
	448814763 ref							
	448814763 ref		2049065 T	ç	38	38	60	34
<u>g</u> 1			2049097 G	ç	87	188	60	34
gi	448814763 ref	INC_000962.3	2051746 T	ç	69	69	60	40
	448814763 ref		2052035 G	T	70	70	60	40
gi			2053215 G	ç	69	69	60	40
	448814763 ref		2055271 A	G	50	50	60	40
			2057141 G	A	69	69	60	40
			2057774 A	T	69	69	60	40
	448814763 ref		2061887 C	Т	70	70	60	33
gi	448814763 ref		2061906 C	т	52	52	60	31
	448814763 ref		2061923 C	т	52	52	60	29
	448814763 ref		2061958 A	G	27	69	60	10
	448814763 ref		2074754 C	т	38	38	60	40
	448814763 ref		2077164 C	т	52	52	60	40
gi	448814763 ref	NC_000962.3	2079580 A	G	52	52	60	40
gi	448814763 ref	NC_000962.3	2080105 C	т	69	69	60	40
gi	448814763 ref	NC_000962.3	2081225 A	G	69	69	60	40
gi	448814763 ref	NC_000962.3	2081960 C	т	70	70	60	40
ği	448814763 ref	NC_000962.3	2082588 C	G	37	37	60	40
ği	448814763 ref	NC_000962.3	2088473 C	A	45	74	60	18
āi	448814763 ref	NC_000962.3	2088480 C	т	36	71	60	18
ai	448814763 ref	NC_000962.3	2088491 C	Ť	42	72	60	18
	448814763 ref		2090187 T	ć	102	190	60	37
	448814763 ref		2090255 T	Ā	54	74	60	21
	448814763 ref		2093177 C	Ť	70	70	60	35
	448814763 ref		2093209 C	Ť	48	56	60	19
	448814763 ref		2093267 C	Ť	12	45	60	6
3.	i							-

ai	449914762	Inef	NC_000962.3	2093311	<i>c</i>	т	50	50	60	38
			NC_000962.3	2094124		A	69	69	60	40
gı	448814763	ret	NC_000962.3	2095579		G	39	39	60	40
gi	448814763	ref	NC_000962.3	2096186	A	G	38	38	60	40
qi	448814763	ref	NC_000962.3	2096828	C	G	19	19	60	40
			NC_000962.3	2103709		Ā	69	69	60	40
			NC_000962.3	2108141		ĉ	37	37	60	40
						5				
			NC_000962.3	2113689		т	37	37	60	40
			NC_000962.3	2114675		т	96	181	60	40
gi	448814763	ref	NC_000962.3	2115210	A	C	69	69	60	40
	448814763	iref	NC_000962.3	2116606	G	т	69	69	60	40
			NC_000962.3	2116903		Ť	69	69	60	40
	440014762	nof	NC_000962.3	2123169		Ġ	50	50	60	40
						-				
			NC_000962.3	2124545		A	50	50	60	40
			NC_000962.3	2128870		G	105	189	60	40
			NC_000962.3	2132152		C	102	190	60	40
gi	448814763	ref	NC_000962.3	2133475	A	R	73	73	60	16
āi	448814763	ref	NC_000962.3	2135870	т	C	37	37	60	40
			NC_000962.3	2140737		G	37	37	60	40
			NC_000962.3	2143328		č	37	37	60	40
			NC_000962.3			c	37	37	60	40
			NC_000962.3	2158582		A	102	189	60	40
			NC_000962.3	2160461		т	69	69	60	40
			NC_000962.3	2160998	G	A	69	69	60	40
gi	448814763	ref	NC_000962.3	2162803	т	C	69	69	60	40
	448814763	iref	NC_000962.3	2163375	т	Y	14	14	60	35
			NC_000962.3	2163444		Ý	16	16	60	32
			NC_000962.3	2165286		ċ	105	189	60	40
91	440014703	n of	NC_000962.3							
			NC_000962.3	2165428		W	8	8	60	43
_			NC_000962.3	2165503		W	40	40	60	37
			NC_000962.3	2168453		C	105	187	60	40
gi	448814763	ref	NC_000962.3	2168742	C	т	69	69	60	40
			NC_000962.3	2172025	G	C	37	37	60	40
			NC_000962.3	2189408		т	70	70	60	40
			NC_000962.3	2202833		À	68	68	60	40
gi	440014762	raf	NC_000962.3	2210521		Â	96	182	60	40
			NC_000962.3	2211826		G	20	20	60	40
			NC_000962.3	2216443		A	99	189	60	40
			NC_000962.3	2220512	т	G	70	70	60	40
gi	448814763	ref	NC_000962.3	2223293	т	C	50	50	60	40
			NC_000962.3	2225456	A	т	69	69	60	40
			NC_000962.3	2228967		G	69	69	60	40
			NC_000962.3	2242126		Ğ	26	26	60	40
			NC_000962.3	2247677		č	102	189	60	40
			NC_000962.3			G	69	69	60	40
			NC_000962.3	2251999		G	38	38	60	40
			NC_000962.3	2252120	C	т	70	70	60	35
gi	448814763	ref	NC_000962.3	2253243	G	т	69	69	60	40
			NC_000962.3	2260525	C	т	105	188	60	40
āi	448814763	ref	NC_000962.3	2263760		т	50	50	60	40
			NC_000962.3	2264782		Å	99	189	60	40
				2265059						
			NC_000962.3			G	39	39	60	40
			NC_000962.3	2266487		S	118	118	60	61
			NC_000962.3	2266624		К	44	44	60	48
			NC_000962.3	2269780	т	C	69	69	60	40
qi	448814763	ref	NC_000962.3	2270102	Α	G	105	186	60	40
			NC_000962.3	2276968		G	50	50	60	40
			NC_000962.3	2280447		Ă	69	69	60	40
			NC_000962.3	2282787		f	105	189	60	40
3	440014765	nof	NC_000962.3				37	37	60	40
91	440014/03	I CI	INC_000962.3	2285251		A				
gı	448814/63	rer	NC_000962.3	2287121	A	G	105	190	60	40
1										

ai	448814763	Iref	NC_000962.3	2290354	G	A	102	189	60	40
			NC_000962.3	2295917		Ŷ	45	45	60	41
	440014703	nof	NC_000962.3			Ś			60	
<u>g</u> 1				2296042			1	2		39
gj			NC_000962.3	2300237		R	47	47	60	37
gi			NC_000962.3	2300546		W	17	17	60	14
gi			NC_000962.3	2302007	C	Y	19	19	60	39
gi			NC_000962.3	2306306	A	R	22	22	60	43
gi	448814763	ref	NC_000962.3	2307701	G	A	90	167	60	40
ği	448814763	İref	NC_000962.3	2311099	C	G	14	14	60	40
ği	448814763	ref	NC_000962.3	2313340		т	50	50	60	40
ği			NC_000962.3	2322022		ć	42	42	60	24
gi			NC_000962.3	2325009		Ť	37	37	60	40
gi			NC_000962.3		Ť	Ġ	50	50	60	40
			NC_000962.3		Å	č	45	45	60	19
gi			NC_000962.3			G	50		60	40
gi				2329533				50		
gj			NC_000962.3	2330324		A	96	162	60	40
gi			NC_000962.3		A	G	69	69	60	40
gi			NC_000962.3		A	G	37	37	60	40
gi			NC_000962.3	2335494	A	G	96	190	60	40
gi			NC_000962.3		A	G	24	65	60	11
gi	448814763	ref	NC_000962.3	2338716	G	C	15	42	60	9
ģi	448814763	ref	NC_000962.3	2338720	т	C	30	69	60	13
ği			NC_000962.3	2338768		т	68	68	60	40
gi			NC_000962.3		G	À	69	69	60	37
gi			NC_000962.3	2338866		G	70	70	60	40
gi			NC_000962.3	2338912		č	99	189	60	40
			NC_000962.3	2338961		Ă	69	69	60	40
g1			NC_000962.3	2339605		Ĝ	12	72	60	
gi										12
gi			NC_000962.3	2340621		G	33	33	60	20
gi			NC_000962.3	2341920		T	69	72	60	27
gi			NC_000962.3	2345037		A	70	70	60	40
gi			NC_000962.3	2348446		G	50	50	60	40
gı			NC_000962.3	2361604		G	70	70	60	40
gi			NC_000962.3	2362041	C	A	69	69	60	40
gi	448814763	ref	NC_000962.3	2366382	G	A	18	28	60	8
gi	448814763	ref	NC_000962.3	2366681	C	G	6	12	60	3
ği	448814763	ref	NC_000962.3	2366684	G	A	6	7	60	5
ği			NC_000962.3	2366745	C	S	48	48	60	6
ği			NC_000962.3	2369326		G	31	31	60	40
gi			NC_000962.3		Ğ	Ā	105	189	60	40
ği			NC_000962.3	2376968		Ť	50	50	60	40
gi			NC_000962.3	2386389		Å	69	69	60	40
gi			NC_000962.3		Ť	ĉ	63	73	60	24
			NC_000962.3	2399162		č	70	70	60	40
				2404396		Ť	69	69	60	40
			NC_000962.3							
			NC_000962.3	2415656		ç	32	32	60	40
gj	448814/63	ret	NC_000962.3	2416156		A	39	39	60	40
			NC_000962.3	2416590		Т	30	68	60	13
g1			NC_000962.3	2418540		G	34	34	60	31
			NC_000962.3	2418563		G	15	24	60	8
gi	448814763	ref	NC_000962.3	2418795	G	т	57	72	60	20
gi	448814763	ref	NC_000962.3	2418937	т	A	69	69	60	40
			NC_000962.3	2422282		С	19	19	60	40
			NC_000962.3	2422927		G	37	37	60	40
			NC_000962.3	2424246		Ŧ	1	1	60	2
			NC_000962.3	2424266		À	38	38	60	22
ai	448814763	ref	NC_000962.3	2424270		Â	50	50	60	24
qi	448814762	ref	NC_000962.3	2424326		Â	69	69	60	40
			NC_000962.3	2424925		Ĝ	19	19	60	40
			NC_000962.3	2428549		G	3	4	60	40
						т				
gr	1440014/03	i ei	NC_000962.3	2428561	C	1	34	34	60	16

ai	448814763	Iref	NC_000962.3	2439974 G	А	105	190	60	40
ai.	449914762	ref	NC_000962.3	2440926 G	Ť	69	69	60	40
<u>g</u> 1			NC_000962.3	2459148 C	Ţ	27	27	60	40
			NC_000962.3	2462871 G	A	39	39	60	40
gi			NC_000962.3	2473955 C	т	69	69	60	40
gi			NC_000962.3	2483708 A	т	99	189	60	40
gi	448814763	ref	NC_000962.3	2492654 C	т	15	15	60	40
ği	448814763	ref	NC_000962.3	2499726 G	A	69	69	60	40
ği			NC_000962.3	2507266 A	G	69	69	60	40
ği			NC_000962.3	2509140 G	c	69	69	60	40
ği			NC_000962.3	2509722 A	Ğ	69	69	60	40
qi			NC_000962.3	2514749 C	Ğ	15	51	60	9
			NC_000962.3	2514814 C	G	37	37	60	40
g1			NC_000962.3	2516567 G		50	50	60	40
g1					ç				
<u>g</u> 1			NC_000962.3	2526974 T	ç	45	45	60	20
gi			NC_000962.3	2527120 C	T	36	173	60	13
			NC_000962.3	2529680 A	G	69	69	60	40
gı			NC_000962.3	2531742 A	G	69	69	60	40
gi			NC_000962.3	2549647 G	A	102	189	60	40
gi			NC_000962.3	2550982 G	A	27	33	60	10
ği	448814763	ref	NC_000962.3	2551281 C	G	12	27	60	8
ği	448814763	iref	NC_000962.3	2551284 G	A	12	20	60	8
gi			NC_000962.3	2551345 C	S	34	37	60	3
gi			NC_000962.3	2555483 G	Ā	42	57	60	17
gi			NC_000962.3	2556055 C	Â	69	69	60	40
gi			NC_000962.3	2573756 C	Â	25	25	60	40
			NC_000962.3	2574022 C	÷	96	183	60	40
g1			NC_000962.3	2578338 G		50		60	40
gi					A		50		
gi	448814/63	rei	NC_000962.3	2578626 A	G	99	189	60	40
gi			NC_000962.3	2579056 T	ç	69	69	60	40
<u>g</u> 1			NC_000962.3	2580954 G	S	50	50	60	40
gi			NC_000962.3	2582348 G	Т	50	50	60	40
gi			NC_000962.3	2586127 A	G	102	190	60	40
gi			NC_000962.3	2589216 G	C	102	189	60	40
gi			NC_000962.3	2598400 A	G	105	190	60	40
gi			NC_000962.3	2603797 G	A	69	69	60	40
gi			NC_000962.3	2608117 C	A	105	189	60	40
gi	448814763	ref	NC_000962.3	2610702 T	C	99	189	60	40
gi	448814763	ref	NC_000962.3	2612632 C	A	51	51	60	40
ği	448814763	ref	NC_000962.3	2612742 G	A	70	70	60	40
ği			NC_000962.3	2617673 G	A	102	190	60	40
gi			NC_000962.3	2618207 G	A	69	69	60	40
gi			NC_000962.3	2626114 T	W	135	135	60	68
			NC_000962.3	2634002 A	Ť	60	184	60	23
			NC_000962.3	2636545 G	Å	12	19	60	5
			NC_000962.3	2636844 C	G	12	27	60	6
			NC_000962.3	2636847 G	Ă	15	24	60	6
			NC_000962.3	2636908 C	ŝ	34	37	60	3
					T				
gi			NC_000962.3	2637541 C		69	69	60	40
			NC_000962.3	2638567 A	G	105	188	60	40
gi	448814/63	ret	NC_000962.3	2642383 C	Ţ	105	189	60	40
	448814763	reț	NC_000962.3	2646651 A	T	50	50	60	40
			NC_000962.3	2655494 G	A	54	54	60	27
			NC_000962.3	2655508 G	A	30	70	60	13
			NC_000962.3	2655624 C	G	15	52	60	9
			NC_000962.3	2655786 C	т	105	188	60	40
ği	448814763	ref	NC_000962.3	2656225 A	G	69	69	60	40
gi	448814763	ref	NC_000962.3	2660319 C	G	69	69	60	40
			NC_000962.3	2671061 C	A	69	69	60	40
			NC_000962.3	2671577 G	A	69	69	60	40
			NC_000962.3		C	69	69	60	40

ai	448814763	refl	NC_000962.3	2680658 T	G	69	69	60	40
			NC_000962.3	2693514 G	Ā	6	16	60	6
			NC_000962.3	2693566 C	A	12	45	60	5
			NC_000962.3	2693577 G	Â	12	34	60	5
gi			NC_000962.3	2693638 G	Â	39	39	60	21
			NC_000962.3	2695378 C	Ĝ	37	37	60	40
					Ă	70			40
			NC_000962.3	2699671 C			70	60	
<u>g</u> 1			NC_000962.3	2700239 G	A	69	69	60	40
			NC_000962.3	2704886 G	R	22	22	60	12
			NC_000962.3	2713795 C	Т	102	189	60	40
			NC_000962.3	2718852 T	G	69	69	60	40
			NC_000962.3	2721562 C	G	20	20	60	40
			NC_000962.3	2729167 A	т	45	74	60	18
			NC_000962.3	2734074 T	C	70	70	60	40
gi	448814763	ref	NC_000962.3	2737572 C	A	69	69	60	40
gi	448814763	ref	NC_000962.3	2739174 T	G	44	44	60	27
qi	448814763	ref	NC_000962.3	2744358 G	A	69	69	60	40
			NC_000962.3	2751804 C	т	70	70	60	40
			NC_000962.3	2752698 C	A	50	50	60	40
			NC_000962.3	2752854 G	A	105	189	60	40
			NC_000962.3	2760152 A	G	102	189	60	40
			NC_000962.3	2760241 G	Ă	19	19	60	40
			NC_000962.3	2768261 C	Ĝ	21	44	60	13
			NC_000962.3	2768264 G	č	18	61	60	10
			NC_000962.3		č	70	70	60	40
				2776339 G					
			NC_000962.3	2779136 T	ç	37	37	60	40
			NC_000962.3	2783764 C	T	32	32	60	40
			NC_000962.3	2786952 A	G	50	50	60	40
			NC_000962.3	2788745 C	Т	69	69	60	40
			NC_000962.3	2804960 G	A	45	74	60	18
			NC_000962.3	2805648 C	т	42	45	60	18
gi			NC_000962.3	2805659 C	A	9	36	60	7
gi			NC_000962.3	2807159 A	G	12	34	60	5
			NC_000962.3	2807179 C	G	31	31	60	25
gi	448814763	ref	NC_000962.3	2807191 C	т	51	51	60	32
gi	448814763	ref	NC_000962.3	2807343 G	т	50	50	60	40
ği	448814763	ref	NC_000962.3	2807514 G	A	105	190	60	40
			NC_000962.3	2808319 C	A	102	189	60	40
ği			NC_000962.3	2808506 G	C	25	25	60	40
			NC_000962.3	2809621 T	C	102	190	60	40
			NC_000962.3	2810892 C	Ŧ	70	70	60	33
ği			NC_000962.3	2810906 A	ċ	45	45	60	19
			NC_000962.3	2818837 A	Ğ	105	189	60	40
			NC_000962.3	2821342 C	Ť	102	189	60	40
ai	448814763	ref	NC_000962.3	2821730 G	Å	38	38	60	40
			NC_000962.3	2827984 G	÷	70	70	60	35
			NC_000962.3	2828019 T	ċ	50	50	60	35
				2828822 G	Ť				
			NC_000962.3			69	72	60	27
			NC_000962.3	2829650 G	S	33	33	60	33
			NC_000962.3	2830278 C	G	38	38	60	40
			NC_000962.3	2830525 C	A	70	70	60	40
			NC_000962.3	2832083 G	A	37	37	60	40
			NC_000962.3	2834932 C	Т	45	73	60	18
			NC_000962.3	2835035 C	т	12	45	60	5
			NC_000962.3	2841238 C	A	50	50	60	40
			NC_000962.3	2843095 C	A	45	74	60	18
			NC_000962.3	2855259 A	G	69	69	60	40
			NC_000962.3	2863047 C	G	19	19	60	38
			NC_000962.3	2863971 C	т	50	50	60	40
			NC_000962.3	2864440 G	A	69	69	60	40
			NC_000962.3	2864691 C	A	55	55	60	26
21									

gi	448814763	Inef	NC_000962.3	2864709 G	т	60	176	60	26
			NC_000962.3	2864717 G	Å	63	73	60	26
			NC_000962.3	2864815 G	Â	ő	10	60	1
						-			
91			NC_000962.3	2864842 G	<u>A</u>	30	166	60	11
_ <u>g</u> 1			NC_000962.3	2864853 C	Т	24	60	60	10
g1			NC_000962.3	2865238 C	G	105	189	60	40
gi			NC_000962.3	2865760 A	G	52	52	60	40
gi	448814763	ref	NC_000962.3	2865882 T	C	69	69	60	40
gi	448814763	ref	NC_000962.3	2866876 A	G	9	31	60	6
gi	448814763	ref	NC_000962.3	2867347 A	G	48	74	60	20
ģi	448814763	ref	NC_000962.3	2870649 C	A	69	69	60	40
			NC_000962.3	2871977 C	G	37	37	60	40
ği			NC_000962.3	2877245 C	т	50	50	60	40
ği			NC_000962.3	2880702 G	Ċ	50	50	60	40
ği			NC_000962.3	2882869 T	ē	46	46	60	21
gi			NC_000962.3	2885734 G	Ā	69	69	60	40
gi			NC_000962.3	2888201 T	ĉ	37	37	60	40
gi			NC_000962.3	2889633 T	č	70	70	60	40
			NC_000962.3	2891267 C	Ť	50	50	60	40
gi				2891728 A	Ġ	50	50		
<u>g</u> 1			NC_000962.3					60	40
<u>g</u> i			NC_000962.3	2894208 G	A	69	69	60	40
<u>91</u>			NC_000962.3	2902743 C	<u>A</u>	69	69	60	40
91			NC_000962.3	2906978 C	Ţ	70	70	60	40
gi			NC_000962.3	2910461 G	т	105	189	60	40
g1			NC_000962.3	2911293 C	G	99	190	60	40
gi			NC_000962.3	2912294 T	G	50	50	60	40
gi			NC_000962.3	2918263 G	C	21	140	60	10
gi			NC_000962.3	2918269 G	C	15	50	60	10
gi			NC_000962.3	2918273 G	C	21	47	60	10
gi	448814763	ref	NC_000962.3	2922003 G	A	69	69	60	40
ģi	448814763	ref	NC_000962.3	2922072 C	т	71	71	60	35
ģi	448814763	ref	NC_000962.3	2922089 C	т	70	70	60	35
ği			NC_000962.3	2922908 G	A	9	36	60	4
ği			NC_000962.3	2922931 G	C	63	73	60	22
ği			NC_000962.3	2922951 T	G	38	38	60	35
ği			NC_000962.3	2923391 T	č	69	69	60	40
ği			NC_000962.3	2927939 T	ē	69	69	60	40
gi			NC_000962.3	2932023 G	Ŧ	102	176	60	40
gi			NC_000962.3	2932103 G	À	37	37	60	40
gi			NC_000962.3	2934151 G	ĉ	50	50	60	40
gi			NC_000962.3	2934204 G	č	69	69	60	40
			NC_000962.3	2937452 C	Ť	19	19	60	26
<u>g1</u>			NC_000962.3	2937454 C	÷	19	19	60	24
gi			NC_000962.3	2939373 G	ć	96	169	60	40
<u>g1</u>			NC_000962.3		č	52	52	60	40
gi					č				
<u>9</u> ]			NC_000962.3	2941238 T	_	20	20	60	40
			NC_000962.3	2942207 T	ç	102	188	60	40
			NC_000962.3	2944103 T	A	45	45	60	24
			NC_000962.3	2944106 T	G	21	21	60	21
91	448814763	ref	NC_000962.3	2944557 G	R	29	29	60	6
			NC_000962.3	2944571 C	M	17	17	60	8
			NC_000962.3	2944588 T	A	9	36	60	4
			NC_000962.3	2944606 G	A	30	71	60	11
			NC_000962.3	2944610 C	т	30	55	60	11
gi	448814763	ref	NC_000962.3	2946570 G	A	69	69	60	40
gi	448814763	ref	NC_000962.3	2947782 C	т	6	24	60	3
gi	448814763	ref	NC_000962.3	2947791 C	A	3	4	60	3
qi	448814763	ref	NC_000962.3	2947917 G	A	30	54	60	13
āi	448814763	ref	NC_000962.3	2953367 T	C	105	189	60	40
			NC_000962.3		ē	70	70	60	40
			NC_000962.3		Ā	39	39	60	40
12.									

ai	448814763 ref	INC 000962.31	2961052 C	т	37	37	60	36
	448814763 ref		2961085 C	Ġ	43	43	60	24
				_				
	448814763 ref		2962104 A	Ţ	6	24	60	3
	448814763 ref		2962130 C	A	6	12	60	3
	448814763 ref		2969970 C	т	18	18	60	26
gi	448814763 ref	NC_000962.3	2970095 G	т	9	13	60	6
āi	448814763 ref	NC_000962.3	2973077 G	A	34	34	60	17
	448814763 ref		2973376 C	G	9	20	60	4
	448814763 ref		2973379 G	Ā	9	14	60	4
	448814763 ref		2973440 C	ŝ	õ	10	60	3
				G	-	70		
gi	448814763 ref	INC_000962.3	2974933 A		70		60	36
gi	448814763 ref	NC_000962.3	2977046 A	C	38	38	60	40
	448814763 ref		2983224 C	S	30	30	60	45
	448814763 ref		2984740 A	G	105	190	60	40
gi	448814763 ref	NC_000962.3	2990583 C	т	69	69	60	40
	448814763 ref		2990627 C	Y	34	34	60	56
āi	448814763 ref	NC 000962.3	2990682 C	Y	46	46	60	21
ai	448814763 ref	NC 000962 3	2992841 G	Ť	70	70	60	35
31	448814763 ref	NC 000962 2	2992871 C	Ť	70	70	60	35
91	440014/05 1Cl	INC_000962.51						
gi	448814763 ref	INC_000962.3	2993358 C	G	49	49	60	40
gı	448814763 ref	NC_000962.3	2993655 G	т	105	188	60	40
gi	448814763 ref	NC_000962.3	2993768 C	A	102	189	60	40
gi	448814763 ref	NC_000962.3	3001191 C	A	37	37	60	40
qi	448814763 ref	NC_000962.3	3001481 G	т	70	70	60	33
āi	448814763 ref	NC 000962.3	3005185 G	т	52	52	60	40
	448814763 ref		3005618 C	Ť	99	189	60	40
- 9 ·	448814763 ref	NC 000962 2	3009692 A	Ġ	105	188	60	40
91	448814763 ref	INC_000962.3	3017276 A	G	69	69	60	40
gi	440014705 [ C	INC_000962.31						
gi	448814763 ref	NC_000962.3	3017465 T	ç	105	189	60	40
gı	448814763 ref	NC_000962.3	3018773 G	C	37	37	60	40
	448814763 ref		3018813 G	C	37	37	60	40
gi	448814763 ref	NC_000962.3	3022840 T	G	15	24	60	9
qi	448814763 ref	NC_000962.3	3022844 G	A	3	3	60	5
	448814763 ref		3022855 A	C	12	29	60	7
ai	448814763 ref	NC 000962.3	3022900 G	т	105	189	60	38
	448814763 ref		3022914 C	Ġ	27	27	60	39
	448814763 ref		3026196 C	Ť	50	50	60	40
	448814763 ref		3026201 C	Ġ	24	24	60	40
gi	448814763 ref	INC_000962.3	3026272 G	ç	69	69	60	40
	448814763 ref		3027030 C	G	50	50	60	40
	448814763 ref		3033230 C	A	1	1	60	2
	448814763 ref		3033253 G	т	3	43	60	2
gi	448814763 ref	NC_000962.3	3033334 G	т	6	17	60	3
ği	448814763 ref	NC_000962.3	3034844 C	G	19	19	60	40
	448814763 ref	NC_000962.3	3037377 T	C	69	69	60	40
	448814763 ref		3038697 C	Ŧ	52	52	60	40
	448814763 ref		3041871 G	Ť	102	189	60	40
31	448814763 ref	NC_000962.3	3049991 C	÷	50	50	60	40
91	440014/05 1Cl	INC_000962.51						
gi	448814763 ref	NC_000962.3	3050323 C	A	26	26	60	40
gı	448814763 ref	NC_000962.3	3051071 G	A	69	69	60	40
	448814763 ref		3051626 C	т	50	50	60	40
	448814763 ref		3054081 A	G	24	24	60	40
gi	448814763 ref	NC_000962.3	3054321 A	G	50	50	60	36
āi	448814763 ref	NC_000962.3	3060029 C	A	105	188	60	40
ai	448814763 ref	NC 000962.3	3060132 G	т	50	50	60	40
	448814763 ref		3069167 A	Ġ	70	70	60	40
oi.	448814763 ref	NC 000962 2	3078178 C	Ť	102	188	60	40
2	448814763 ref	NC 000962 2	3080795 A	Ġ	37	37	60	40
	448814763 ref		3086208 G	T	50	50	60	40
	448814763 ref		3086788 T	ç	105	189	60	40
gí	448814763 ref	NC_000962.3	3089776 G	A	105	190	60	40

a i	14400147C2104	ef   NC_000962.3	3095598 C	т	63	73	60	25
gi		ef   NC_000962.3	3095611 C	Т	70	70	60	33
gi		ef NC_000962.3	3096938 C	A	69	69	60	40
gi	448814763 re	ef   NC_000962.3	3097084 G	A	46	46	60	22
ği		ef NC_000962.3	3097182 G	A	39	39	60	40
		ef NC_000962.3	3103682 T	ĉ	105	190	60	40
<u>g</u> 1								
g1		ef NC_000962.3	3105748 C	т	105	189	60	40
gi	448814763 re	ef NC_000962.3	3107322 G	С	51	51	60	34
gi	448814763 re	ef   NC_000962.3	3107345 G	A	22	22	60	32
ği		ef NC_000962.3	3107383 C	т	39	39	60	38
gi		ef NC_000962.3	3113872 A	Ť	105	190	60	40
_								
gi		ef NC_000962.3	3118000 A	G	37	37	60	40
gi		ef NC_000962.3	3119187 T	Y	29	29	60	14
gi	448814763 re	ef   NC_000962.3	3120520 G	R	5	5	60	20
ği	1448814763 re	ef NC_000962.3	3120524 T	W	28	28	60	14
gi		f NC_000962.3	3129359 C	Ť	24	24	60	40
							60	
gi		ef NC_000962.3		M	118	144		20
gi		ef   NC_000962.3	3133536 T	С	26	26	60	40
gi	448814763 re	ef NC_000962.3	3134292 C	A	99	189	60	40
ģi	448814763 re	ef   NC_000962.3	3134383 C	т	45	45	60	18
ği		ef NC_000962.3	3134865 G	ć	70	70	60	35
		ef NC_000962.3	3134900 C	Ť	50	50	60	35
<u>g</u> 1								
_ g1		ef NC_000962.3	3137058 G	A	102	189	60	40
gi		ef NC_000962.3	3143072 C	т	37	37	60	40
gi	448814763 re	ef   NC_000962.3	3162805 C	G	70	70	60	40
ği	1448814763 re	ef NC_000962.3	3170663 T	С	99	189	60	40
gi		f NC_000962.3	3177884 C	Ā	70	70	60	40
				÷	69	69		
gj		ef NC_000962.3	3183881 C				60	40
gi		ef   NC_000962.3	3184107 C	т	102	189	60	40
gi	448814763 re	ef NC_000962.3	3186860 T	G	102	190	60	40
gi	448814763 re	ef   NC_000962.3	3194202 G	R	18	18	60	63
ği		ef NC_000962.3	3194218 G	S	16	16	60	79
gi		ef NC_000962.3	3200865 T	Ā	12	110	60	5
_	440044763110	EINC_000962.3						
gi		ef NC_000962.3	3201009 A	G	69	69	60	40
gi		ef   NC_000962.3	3201113 C	A	40	40	60	28
gi	448814763 re	ef NC_000962.3	3201126 C	A	33	69	60	15
gi	448814763 re	ef   NC_000962.3	3201141 T	A	30	71	60	15
ği		ef NC_000962.3	3201146 C	т	51	74	60	20
		f NC_000962.3	3207445 G	ċ	6	17	60	5
<u>g</u> 1								
gi		ef NC_000962.3	3212707 G	A	50	50	60	40
gı		ef   NC_000962.3	3215701 G	C	54	54	60	25
gi	448814763 re	ef   NC_000962.3	3226181 A	C	26	26	60	40
gi	448814763 re	ef   NC_000962.3	3228143 G	т	69	69	60	40
ği	1448814763 re	ef NC_000962.3	3229460 G	A	69	69	60	40
		f NC_000962.3	3231091 C	A	39	39	60	40
		ef NC_000962.3	3240682 G					
9	440014/05/10	ET INC_000962.31		A	27	53	60	12
91	448814/63 re	ef NC_000962.3	3240691 G	A	54	74	60	21
gi	448814763 re	ef   NC_000962.3	3247316 C	G	50	50	60	40
qi	448814763 re	ef   NC_000962.3	3247883 T	Y	26	26	60	20
ği		ef NC_000962.3	3256494 A	G	50	50	60	40
i		f NC_000962.3	3258274 A	č	105	189	60	40
	440014/05110	EINC_000962.3		÷ .				
gi		ef NC_000962.3	3265472 C	T	26	26	60	40
		ef NC_000962.3	3268447 C	т	21	21	60	21
gi	448814763 re	ef   NC_000962.3	3268609 C	A	25	25	60	17
ği	448814763 re	ef NC_000962.3	3269581 A	G	102	190	60	40
		f NC_000962.3	3270784 A	Ğ	38	38	60	40
	448814762 04	ef NC_000962.3	3276334 C	Ť	69	69	60	40
		ef NC_000962.3	3289923 C	A	50	50	60	40
gi	448814763 re	ef NC_000962.3	3294896 G	т	37	37	60	40
		ef NC_000962.3	3295539 G	т	105	190	60	40
		ef NC_000962.3	3295622 G	т	69	69	60	40

ai	448814763	Iref	NC_000962.3	3295699	с т	48	68	60	20
91	440014703	n of	NC_000062.3						
gi	448814763	rei	NC_000962.3	3295701	-	48	68	60	22
g٦	448814763	ret	NC_000962.3	3296843		105	189	60	40
gi	448814763	ref	NC_000962.3	3308606	G A	105	190	60	40
gi	448814763	lref	NC_000962.3	3309354	т с	69	69	60	40
ai			NC_000962.3	3331173		3	6	60	8
	440014762	nof	NC_000962.3	3331186		42	74	60	18
<u>g</u> ]									
gi			NC_000962.3	3336825		69	69	60	40
gı	448814763	ret	NC_000962.3		G C	37	37	60	40
gi	448814763	ref	NC_000962.3	3340661	C G	30	54	60	13
gi	448814763	iref	NC_000962.3	3348499	G C	38	38	60	22
āi			NC_000962.3	3348508		46	46	60	17
ği	448814763	ref	NC_000962.3	3348512		21	21	60	17
			NC_000962.3		T G	69	69	60	40
91	440014703	nof	NC_000062.3	3343370					
			NC_000962.3		A G	105	189	60	40
gi			NC_000962.3	3352932		69	69	60	40
gı	448814763	ref	NC_000962.3		с т	96	182	60	40
gi	448814763	ref	NC_000962.3	3358235	А Т	69	69	60	40
gi	448814763	ref	NC_000962.3	3362483	G A	39	73	60	16
			NC_000962.3	3362550		3	10	60	8
ai	448814763	ref	NC_000962.3		A G	26	26	60	40
	440014762	raf	NC_000962.3	3363438		70	70	60	40
gi									
	448814763	rer	NC_000962.3	3367765		105	189	60	40
g1			NC_000962.3	3370847		30	44	60	13
gi			NC_000962.3	3370888		12	16	60	5
gi	448814763	ref	NC_000962.3	3370891	G C	12	16	60	7
			NC_000962.3	3370902	C G	18	28	60	7
ği			NC_000962.3	3370930		39	39	60	33
ai			NC_000962.3		ā č	50	50	60	36
	440014763	nof	NC_000962.3	3377271		9	75	60	6
<u>g</u> 1	440014/05	I CI	NC_000962.3						
gi	448814763	rei	NC_000962.3	3377275		6	10	60	4
			NC_000962.3	3377994		70	70	60	58
gı			NC_000962.3	3379708		6	47	60	4
			NC_000962.3	3379784	C A	22	22	60	21
gi	448814763	ref	NC_000962.3	3380434	C A	3	10	60	3
ği			NC_000962.3	3381641	G T	69	72	60	26
ai	448814763	ref	NC_000962.3	3382469		11	11	60	46
			NC_000962.3	3383914		105	189	60	40
g1			NC_000962.3	3386729		54	54	60	24
<u>g</u> 1									
			NC_000962.3	3386828		69	69	60	40
g1			NC_000962.3	3394621		27	69	60	10
gi			NC_000962.3	3396897	C G	38	38	60	34
gi			NC_000962.3	3396914	G C	72	72	60	28
gi	448814763	ref	NC_000962.3	3396934	T G	55	55	60	21
āi	448814763	İref	NC_000962.3	3396962	G A	30	30	60	30
			NC_000962.3	3396964		24	24	60	30
			NC_000962.3	3401871		69	69	60	40
3	440014763	nof	NC_000962.3	3402816					40
91	440014/03	I EI	NC_000962.3			19	19	60	
gi	448814763	rer	NC_000962.3	3404376		69	69	60	40
g1	448814763	ret	NC_000962.3	3425854		69	69	60	40
			NC_000962.3	3428374		70	70	60	40
gi	448814763	ref	NC_000962.3	3428917	C A	69	69	60	40
gi	448814763	ref	NC_000962.3	3440464		51	51	60	40
ai	448814763	ref	NC_000962.3	3440468		50	50	60	40
01	448814763	ref	NC_000962.3	3440895		105	189	60	40
	449914763	ref	NC_000962.3	3450452		45	57	60	18
9	440044763	n of	NC_000962.3						
91	440014/03	I CI	NC_000962.3	3450705		51	51	60	34
gj	448814763	rer	NC_000962.3	3450725		42	74	60	17
g1	448814763	ref	NC_000962.3	3450749		12	38	60	8
			NC_000962.3	3455686		105	189	60	40
gi	448814763	ref	NC_000962.3	3456666	A G	105	189	60	40
1.2		-							

ai	448814763	ref	NC_000962.3	3459479 T	А	6	24	60	3
ai	448814763	ref	NC_000962.3	3459504 C	Ť	12	34	60	7
			NC_000962.3		Å	42	74	60	18
	440014762	nof	NC_000962.3	3459562 C	f	36	50	60	18
gi									
gi			NC_000962.3	3459563 C	Ţ	36	50	60	18
_ g1			NC_000962.3	3462135 G	C	52	52	60	29
g1			NC_000962.3	3462467 C	т	69	69	60	40
gi			NC_000962.3		A	70	70	60	40
gi	448814763	ref	NC_000962.3	3466389 C	т	102	189	60	40
gi	448814763	ref	NC_000962.3	3480474 G	A	26	26	60	40
ģi		ref	NC_000962.3	3481604 C	S	5	5	60	37
ği		ref	NC_000962.3	3482432 C	A	69	69	60	44
ği			NC_000962.3	3483603 G	C	70	70	60	40
ği			NC_000962.3	3486977 A	G	37	37	60	40
gi			NC_000962.3	3496541 C	Ť	50	50	60	40
gi			NC_000962.3	3502050 C	À	31	31	60	40
gi			NC_000962.3	3503895 C	Ť	69	69	60	40
gi			NC_000962.3	3505406 G	Å	70	70	60	40
			NC_000962.3	3518167 A	Ĝ	70	70	60	40
_ g1			NC_000962.3	3518187 A	G	69	69	60	40
gi									
gi			NC_000962.3	3518555 A	G	105	189	60	40
gi			NC_000962.3	3521531 T	A	1	1	60	2
gi			NC_000962.3	3523378 T	A	15	52	60	8
91			NC_000962.3	3523390 G	A	51	74	60	20
gi			NC_000962.3	3523433 C	A	93	186	60	34
gi			NC_000962.3	3523462 C	A	70	70	60	34
gi			NC_000962.3	3523518 G	A	50	50	60	40
gi			NC_000962.3	3526228 G	A	70	70	60	40
gi			NC_000962.3	3529067 G	C	71	71	60	32
gi	448814763	ref	NC_000962.3	3540069 C	G	70	70	60	34
ģi	448814763	ref	NC_000962.3	3540132 C	G	40	40	60	31
ģi	448814763	ref	NC_000962.3	3540342 T	A	69	69	60	40
ği			NC_000962.3	3540353 G	A	69	69	60	40
ği			NC_000962.3	3542020 T	G	33	33	60	20
ği			NC_000962.3	3542021 C	Ā	33	33	60	20
gi			NC_000962.3	3542043 C	A	57	73	60	22
ği			NC_000962.3		ĉ	105	189	60	40
gi			NC_000962.3	3552198 G	Ä	12	19	60	7
gi			NC_000962.3	3552561 C	ŝ	29	29	60	6
gi			NC_000962.3	3552586 G	Ř	9	9	60	8
			NC_000962.3	3553681 G	Ā	15	24	60	7
gi					Ĝ	9	20	60	
gi			NC_000962.3						5
gi			NC_000962.3	3553983 G	A	9	14	60	4
<u>g</u> i			NC_000962.3	3554044 C	ş	34	37	60	3
gi	448814/63	rer	NC_000962.3	3554713 C	Ţ	40	40	60	40
gi			NC_000962.3	3556275 A	G	70	70	60	40
			NC_000962.3	3556607 G	т	69	69	60	40
			NC_000962.3	3581414 A	G	102	190	60	40
			NC_000962.3	3585943 C	G	69	69	60	39
gi	448814763	ref	NC_000962.3	3586011 T	C	18	32	60	7
gi	448814763	ref	NC_000962.3	3588571 G	A	69	69	60	40
			NC_000962.3	3590638 A	C	69	69	60	40
gi	448814763	ref	NC_000962.3	3590648 T	C	69	69	60	39
gi	448814763	ref	NC_000962.3	3591063 T	C	70	70	60	40
			NC_000962.3	3597737 C	т	70	70	60	40
			NC_000962.3	3598915 C	т	32	32	60	40
āi	448814763	ref	NC_000962.3	3600661 G	т	26	26	60	40
			NC_000962.3	3603355 G	Â	105	189	60	40
			NC_000962.3	3604821 G	ĉ	37	37	60	40
			NC_000962.3	3614586 C	Ť	44	44	60	21
			NC_000962.3		÷	12	45	60	6
3.		-							-

ai	448814763 ref	INC 000962.31	3614613 C	т	12	27	60	6
	448814763 ref		3614649 G	À	30	30	60	23
- ai	448814763 ref	NC 000962 3	3614663 C	Ť	30	44	60	13
	448814763 ref		3614705 C	Ť	3	6	60	8
	448814763 ref			÷				
					50	50	60	40
	448814763 ref		3614982 T	<u> </u>	105	189	60	40
gj	448814763 ref		3615440 C	Т	50	50	60	40
	448814763 ref		3621423 A	G	102	190	60	40
			3622441 A	C	69	69	60	40
gi	448814763 ref	NC_000962.3	3625065 T	G	105	190	60	40
gi	448814763 ref	NC_000962.3	3628118 T	A	15	51	60	8
gi	448814763 ref	NC_000962.3	3628201 C	т	6	16	60	5
qi	448814763 ref	NC_000962.3	3630490 C	т	69	69	60	40
ği			3642882 C	т	105	190	60	40
	448814763 ref		3678634 G	C	71	71	60	33
āi	448814763 ref	NC 000962.3	3678664 A	č	52	52	60	30
ği			3678773 G	č	70	70	60	34
ai	448814763 ref		3678803 T	č	71	71	60	34
			3683037 C	Ť	69	69	60	40
	448814763 ref		3683820 T	Ġ	52	52	60	29
91	440014763 FEI	INC_000962.3						
	448814763 ref		3689523 G	Ţ	70	70	60	40
			3690992 G	S	0	0	60	75
gj	448814763 ref	NC_000962.3	3690995 G	к	32	32	60	77
	448814763 ref		3704596 G	C	70	70	60	40
	448814763 ref		3711350 G	A	15	24	60	7
gi	448814763 ref	NC_000962.3	3711713 C	G	6	70	60	3
			3711727 G	A	1	1	60	2
gi	448814763 ref	NC_000962.3	3714108 G	A	69	69	60	40
ği	448814763 ref		3714211 G	т	69	69	60	40
	448814763 ref		3714757 A	C	37	37	60	40
ği	448814763 ref		3718357 C	т	52	52	60	40
	448814763 ref		3720457 C	À	70	70	60	40
ai	448814763 ref	NC 000962.3	3721806 G	ĉ	37	37	60	40
ği			3726726 G	Ă	105	189	60	40
31	448814763 ref		3730466 A	Ř	45	45	60	34
	448814763 ref		3731461 C	Ĝ	6	14	60	5
<u>g</u> 1	448814763 ref		3732194 A	R	13	13	60	31
91	440014763 ref	INC_000962.31						
	448814763 ref	INC_000962.3	3735081 C	G	69	69	60	40
gi	448814763 ref		3735749 A	R	30	30	60	30
	448814763 ref		3736628 T	G	102	190	60	40
gi			3739414 C	G	6	19	60	5
gi			3739421 C	G	18	27	60	7
			3739456 C	G	40	40	60	28
gi	448814763 ref	NC_000962.3	3739489 C	G	38	38	60	33
gi	448814763 ref	NC_000962.3	3740833 C	G	54	54	60	25
gi	448814763 ref	NC_000962.3	3741278 G	R	10	10	60	16
qi	448814763 ref	NC_000962.3	3741285 C	S	12	12	60	11
āi	448814763 ref	NC_000962.3	3741682 C	G	36	56	60	16
	448814763 ref		3741692 A	т	9	75	60	6
	448814763 ref		3742325 G	Ť	105	189	60	40
ai	448814763 ref	NC 000962.3	3742419 C	Ť	37	37	60	40
- ai	448814763 ref	NC 000962 3	3742658 C	Ġ	33	71	60	14
3	448814763 ref	NC 000962 2	3742775 T	Ă	69	69	60	40
3	448814763 ref	NC 000962 3	3742847 A	Ĝ	3	8	60	6
91	1440014763 mof	NC 000962.3			50	50	60	40
	448814763 ref		3744452 A	ç				
<u>g</u> i	448814763 ref	INC_000962.3	3746409 A	G	70	70	60	40
gi	448814763 ref	NC_000962.3	3752133 G	Ţ	105	189	60	40
	448814763 ref		3752207 A	G	51	74	60	20
<u>g</u> 1	448814763 ref	NC_000962.3	3752581 T	C.	63	73	60	24
	448814763 ref		3753116 C	Y	149	149	60	34
gi	448814763 ref	NC_000962.3	3753363 G	К	21	21	60	23

ai	448814763 re	ef   NC_000962.3	3753516 G	R	41	41	60	31
	14400147C2 m	ef NC_000962.3	3753781 C	ŝ	8	8	60	22
		ef NC_000962.3	3755066 C	Т	90	149	60	40
gi		ef NC_000962.3	3756992 T	C	78	187	60	29
gi	448814763 re	ef[NC_000962.3]	3765565 G	A	99	189	60	40
gi		ef NC_000962.3	3767034 C	Y	147	147	60	46
		ef NC_000962.3		Ť			60	32
gi			3775051 C		51	51		
gi		ef NC_000962.3	3775116 G	A	12	26	60	7
gi	448814763 re	ef NC_000962.3	3780198 A	т	15	51	60	8
gi	448814763 re	ef   NC_000962.3	3780206 C	т	36	41	60	16
ği		ef NC_000962.3	3780249 A	Ť	90	189	60	34
		ef NC_000962.3	3780274 C	Å	87	185	60	34
<u>g</u> 1								
gi		ef NC_000962.3	3780362 C	A	99	190	60	40
gi		ef NC_000962.3	3780538 G	A	70	70	60	40
gi	448814763 re	ef   NC_000962.3	3780708 C	A	45	74	60	19
ği	1448814763 re	ef NC_000962.3	3780712 G	A	45	57	60	23
ği		ef NC_000962.3	3783058 G	A	105	188	60	40
							60	
gi		ef NC_000962.3	3783885 G	ç	69	69		40
gi		ef[NC_000962.3]	3784090 G	A	51	56	60	20
gi		ef NC_000962.3	3798095 A	C	70	70	60	40
gi	448814763 re	ef   NC_000962.3	3798451 C	G	38	38	60	40
ği	1448814763 ire	ef[NC_000962.3]	3803892 G	A	51	56	60	20
gi		ef NC_000962.3	3812821 A	ĉ	25	25	60	40
		ef NC_000962.3		Ť				
gi					69	69	60	40
gi		ef   NC_000962.3	3817117 C	A	102	190	60	40
gi	448814763 re	ef NC_000962.3	3823159 A	т	69	69	60	40
gi	448814763 re	ef   NC_000962.3	3826684 C	т	70	70	60	40
ği		ef   NC_000962.3	3828828 G	A	105	189	60	40
ği		ef NC_000962.3	3829770 T	č	70	70	60	40
		ef NC_000962.3	3838871 A	Ğ	69	69	60	40
gi	440014/05110	ef [NC_000962.3]						
gi		ef NC_000962.3	3850043 G	c	31	31	60	40
gi	448814763 re	ef NC_000962.3	3852063 T	A	15	32	60	7
gi	448814763 re	ef NC_000962.3	3852080 G	A	18	58	60	7
gi	448814763 re	ef NC_000962.3	3852125 G	т	42	42	60	26
ği		ef NC_000962.3	3854174 G	A	105	190	60	40
gi		ef NC_000962.3	3854402 C	G	24	42	60	9
_		ef NC_000962.3	3854483 C	Ğ	30	69	60	13
gi	1440014/05110	er INC_000362.31						
gi		ef NC_000962.3	3854491 C	G	6	21	60	6
gi		ef NC_000962.3	3854542 G	т	69	69	60	40
gi	448814763 re	ef NC_000962.3	3859893 C	т	70	70	60	40
gi	448814763 re	ef   NC_000962.3	3860627 C	A	37	37	60	40
ği	<u> 448814763 re</u>	ef NC_000962.3	3862582 C	A	105	189	60	40
gi		ef NC_000962.3	3864995 T	č	50	50	60	40
		ef NC_000962.3	3866350 C	Ť	13	13	60	40
<u>g</u> 1				-				
		ef NC_000962.3	3873242 G	A	70	70	60	40
		ef NC_000962.3	3873587 G	C	50	50	60	40
gi	448814763 re	ef NC_000962.3	3877421 A	G	50	50	60	40
āi	448814763 re	ef[NC_000962.3]	3878897 A	G	105	183	60	40
		ef NC_000962.3	3881360 A	G	69	69	60	40
		ef NC_000962.3	3883845 T	Ŷ	153	153	60	76
	1448814/63 re	ef NC_000962.3	3883915 G	R	157	163	60	120
		ef NC_000962.3	3884734 G	S	86	86	60	57
		ef NC_000962.3	3884748 G	R	1	1	60	57
qi	448814763 re	ef[NC_000962.3]	3884906 A	G	36	56	60	23
ai	448814763 re	ef NC_000962.3	3885886 T	č	99	190	60	40
oi	448814763	ef NC_000962.3	3887921 A	Ğ	37	37	60	40
91	449914763	ef NC_000962.3	3890684 G		69	69	60	40
				A				
		ef NC_000962.3	3891747 G	A	12	20	60	6
		ef NC_000962.3	3892046 C	G	12	27	60	6
		ef NC_000962.3	3892049 G	A	12	20	60	6
		ef NC_000962.3	3892671 A	G	69	69	60	40
-						-	_	

0	i   448814763	Iref	NC_000962.3	3894476	c	Y	136	136	60	60
10	1 448814762	ref	NC_000962.3	3896340		Ġ	105	189	60	40
y y	1 440014/03	In of	NC_000962.3	3898408						
9	1 440014/05	I EI	NC_000962.3			G	69	69	60	40
g	1 448814/63	rer	NC_000962.3	3909795		Y	18	18	60	10
g	1 448814763	ret	NC_000962.3	3921904		A	24	65	60	12
g	1 448814763	ref	NC_000962.3	3922380		A	50	50	60	40
g	i 448814763	ref	NC_000962.3	3938134	G	A	70	70	60	40
ā	i 448814763	İref	NC_000962.3	3938410	C	т	38	38	60	40
			NC_000962.3	3938919	C	G	51	51	60	36
			NC_000962.3	3938937		G	41	41	60	36
	i 448814763	ref	NC_000962.3	3939683		č	69	69	60	40
			NC_000962.3	3939798		Ğ	21	30	60	10
- S	1 448814763	ref	NC_000962.3			Ă	69	69	60	40
			NC_000962.3	3958403		G	69	69	60	40
, ja			NC_000962.3	3959418		Ť	69	69	60	40
				3959506		Å	37	37	60	
			NC_000962.3							40
g	1 448814/63	rei	NC_000962.3	3970284		ç	37	37	60	40
g	1 448814/63	iret	NC_000962.3		_	A	70	70	60	40
g	1 448814763	ret	NC_000962.3	3978007		A	37	37	60	40
g			NC_000962.3	3988580		т	51	51	60	34
			NC_000962.3	3989749		A	51	51	60	34
g	i 448814763	ref	NC_000962.3	3989771	G	A	71	71	60	34
q	i 448814763	ref	NC_000962.3	4002899	C	т	69	69	60	40
q	i 448814763	ref	NC_000962.3	4003130	G	A	70	70	60	40
ā	ii   448814763	İref	NC_000962.3	4005607	т	C	70	70	60	40
			NC_000962.3	4007253		G	69	69	60	40
ō			NC_000962.3	4008734		G	33	72	60	14
			NC_000962.3	4008815		č	36	168	60	15
			NC_000962.3	4008823		č	54	74	60	23
- S	1 448814763	ref	NC_000962.3		Ğ	Ä	69	69	60	40
	i 448814763	ref	NC_000962.3	4008889		Â	37	37	60	40
, ja			NC_000962.3		Ť	ŝ	6	6	60	63
							37	37	60	
9	1 448814763	In of	NC_000962.3	4024273		C A				40
g	1 448814763	rei	INC_000962.3	4026899			69	69	60	40
			NC_000962.3	4031626		A	102	186	60	40
g			NC_000962.3	4032941		G	42	74	60	17
			NC_000962.3	4032981		A	50	50	60	40
			NC_000962.3	4034827		т	102	189	60	40
g	1 448814763	ref	NC_000962.3	4035030		т	42	57	60	18
			NC_000962.3	4037283	т	G	37	37	60	40
g			NC_000962.3	4039269	A	C	52	52	60	29
g	i 448814763	ref	NC_000962.3	4043037	G	т	105	189	60	40
g	i 448814763	ref	NC_000962.3	4043103	G	т	105	189	60	40
g	i 448814763	ref	NC_000962.3	4043375	G	C	37	37	60	40
ģ	i 448814763	ref	NC_000962.3	4048201	т	C	57	74	60	22
ā	ii 448814763	İref	NC_000962.3	4055801	G	A	52	52	60	40
ō	i 448814763	ref	NC_000962.3	4059904		G	70	70	60	40
ā	i 448814763	ref	NC_000962.3	4061807		č	37	37	60	40
ā	i 448814763	ref	NC_000962.3	4062115		č	14	14	60	40
ā	1 448814763	ref	NC_000962.3	4063682		Ť	105	186	60	40
l	1 448814763	ref	NC_000962.3	4063749		À	69	69	60	40
1 a	1 448814762	ref	NC_000962.3	4069292		Â	69	69	60	40
9	1 449214762	Iref	NC_000962.3	4086802		Â	32	32	60	40
9	1 449014763	Inof	NC_000962.3				69	69	60	
9	1 440014/03	in ei	NC_000962.3	4093273		A				40
g	1 448814/63	n er	NC_000962.3	4094466		G	69	69	60	40
g	448814/63	rer	NC_000962.3	4100975		ç	49	49	60	40
g	1 448814763	rer	NC_000962.3	4104329		A	69	69	60	40
g	1 448814763	ret	NC_000962.3	4111303		C .	102	190	60	40
g	1 448814763	ref	NC_000962.3	4120662		A	90	188	60	33
			NC_000962.3	4120690		C	48	48	60	33
g	1 448814763	ref	NC_000962.3	4120695	G	A	59	59	60	33

ai	448814763	Iref	NC_000962.3	4120926 A	R	22	22	60	38
			NC_000962.3	4120983 A	R	27	27	60	107
			NC_000962.3	4126835 G	Â	69	69	60	40
				4129420 C	Ĝ	69	69	60	40
<u>g</u> j			NC_000962.3						
gj	448814763	rer	NC_000962.3	4134663 G	C	42	45	60	17
gı			NC_000962.3	4134668 G	C	24	37	60	12
g٦			NC_000962.3	4135068 A	C	43	43	60	23
gi	448814763	ref	NC_000962.3	4135453 T	G	37	37	60	40
gi	448814763	ref	NC_000962.3	4135457 T	G	37	37	60	40
ģi	448814763	ref	NC_000962.3	4142689 G	т	99	187	60	40
ği		ref	NC_000962.3	4146314 G	т	69	69	60	40
ği			NC_000962.3	4151855 A	Ġ	50	50	60	40
			NC_000962.3	4155814 C	Ť	102	189	60	40
gi			NC_000962.3	4156099 C	Å	69	69	60	40
			NC_000962.3	4159195 T	ĉ	69	69	60	40
				4162339 A	Ğ	93		60	
<u>g</u> j			NC_000962.3				189		40
gj			NC_000962.3	4172219 G	Ţ	105	189	60	40
gi			NC_000962.3	4182695 G	A	105	189	60	40
_ g1			NC_000962.3	4187485 T	C	69	69	60	40
gi			NC_000962.3	4187817 A	G	69	69	60	40
gi			NC_000962.3	4192588 G	A	105	190	60	40
gi	448814763	ref	NC_000962.3	4199418 G	C	70	70	60	40
qi	448814763	ref	NC_000962.3	4199429 G	т	105	189	60	40
ği			NC_000962.3	4204441 A	G	50	50	60	40
			NC_000962.3	4205120 A	Ğ	50	50	60	40
gi			NC_000962.3	4210274 A	Ğ	51	51	60	40
ği			NC_000962.3	4221490 C	Ğ	70	70	60	40
			NC_000962.3	4222073 A	Ğ	105	189	60	40
_ <u>g</u> 1									
<u>g</u> 1			NC_000962.3	4222882 A	G	70	70	60	40
gj			NC_000962.3	4223172 T	<u> </u>	50	50	60	34
gj			NC_000962.3	4223205 C	Т	70	70	60	34
_g1			NC_000962.3	4226518 G	A	99	190	60	40
gi			NC_000962.3	4232863 G	C	105	189	60	40
gi	448814763	ref	NC_000962.3	4238927 C	т	50	50	60	40
gi	448814763	ref	NC_000962.3	4240134 C	т	69	69	60	40
ği	448814763	ref	NC_000962.3	4242643 C	т	99	189	60	40
			NC_000962.3	4242803 G	C	70	70	60	40
ği			NC_000962.3	4249408 G	A	105	188	60	40
			NC_000962.3	4254290 T	к	35	35	60	80
qi	448814763	ref	NC_000962.3	4255922 A	G	99	189	60	40
gi			NC_000962.3	4256067 G	Ă	69	69	60	40
ği			NC_000962.3	4257220 A	Ĝ	102	190	60	40
			NC_000962.3	4262271 G	Ť	102	188	60	40
<u>g</u> 1									
<u>g</u> 1			NC_000962.3	4263451 G	A	50	50	60	40
gj			NC_000962.3	4263494 G	A	69	69	60	40
<u>g</u> 1			NC_000962.3	4275386 G	ç	25	25	60	40
			NC_000962.3	4282709 C	G	26	26	60	40
			NC_000962.3	4296015 G	A	105	189	60	40
gi	448814763	ref	NC_000962.3	4297549 G	C	38	38	60	40
gi	448814763	ref	NC_000962.3	4302036 T	C	102	190	60	40
qi	448814763	ref	NC_000962.3	4304286 C	т	105	189	60	40
			NC_000962.3	4306155 C	т	37	37	60	40
			NC_000962.3	4306767 G	Á	69	69	60	40
			NC_000962.3	4306929 G	Ť	69	69	60	40
			NC_000962.3	4307179 G	Å	102	190	60	40
			NC_000962.3	4314645 A	Ĝ	70	70	60	40
			NC_000962.3	4314923 T	G	50	50	60	40
			NC_000962.3	4317894 C	G	37	37	60	40
			NC_000962.3	4318373 G	Ţ	14	14	60	25
			NC_000962.3	4318791 C	S	46	46	60	22
g٦	448814763	ret	NC_000962.3	4319542 A	G	25	25	60	40

	<b>.</b>							
	448814763 ref		4319608 G	A	69	69	60	40
gi	448814763 ref		4338732 G	A	50	50	60	40
gi	448814763 ref		4340006 A	C	50	50	60	40
gi	448814763 ref	NC_000962.3	4348496 G	A	37	37	60	40
gi	448814763 ref		4351039 G	т	105	189	60	40
gi	448814763 ref		4356110 G	C	105	189	60	40
gi	448814763 ref	NC_000962.3	4357123 C	A	69	69	60	40
gi	448814763 ref		4357597 C	G	69	69	60	40
gi	448814763 ref		4359138 G	A	7	7	60	27
ği	448814763 ref	NC_000962.3	4359147 G	R	11	11	60	22
ği	448814763 ref	NC_000962.3	4360512 C	т	51	51	60	34
ği	448814763 ref	NC_000962.3	4360536 T	G	70	70	60	34
ği	448814763 ref	NC_000962.3	4366195 T	C	37	37	60	40
āi	448814763 ref	NC_000962.3	4366272 G	C	37	37	60	40
ği	448814763 ref	NC_000962.3	4367580 C	G	96	189	60	40
ği	448814763 ref		4368253 C	т	102	189	60	40
ği	448814763 ref		4373300 G	C	70	70	60	40
ği	448814763 ref		4375480 C	т	102	189	60	40
ąi	448814763 ref		4375628 G	т	69	69	60	40
ği	448814763 ref		4379680 C	G	37	37	60	40
qi	448814763 ref		4381248 G	т	102	189	60	40
ği	448814763 ref		4382054 T	C	105	189	60	40
ği	448814763 ref		4382275 G	т	24	24	60	40
ąi	448814763 ref		4384417 C	т	105	188	60	40
ği	448814763 ref		4386228 T	C	105	190	60	40
ği	448814763 ref		4386709 C	т	102	189	60	40
ği	448814763 ref	NC_000962.3	4393178 A	G	96	189	60	40
ği	448814763 ref		4394215 G	C	50	50	60	40
qi	448814763 ref	NC_000962.3	4395698 G	A	24	65	60	11
ği	448814763 ref	NC_000962.3	4395777 G	A	9	36	60	6
ği	448814763 ref		4395782 G	A	24	66	60	11
qi	448814763 ref		4395841 G	A	42	74	60	18
ği	448814763 ref	NC_000962.3	4395851 G	A	53	53	60	28
qi	448814763 ref		4400246 G	A	69	69	60	40
qi	448814763 ref		4401202 C	т	37	37	60	40
qi	448814763 ref		4402022 C	Å	70	70	60	40
ği			4404240 G	A	18	44	60	9
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