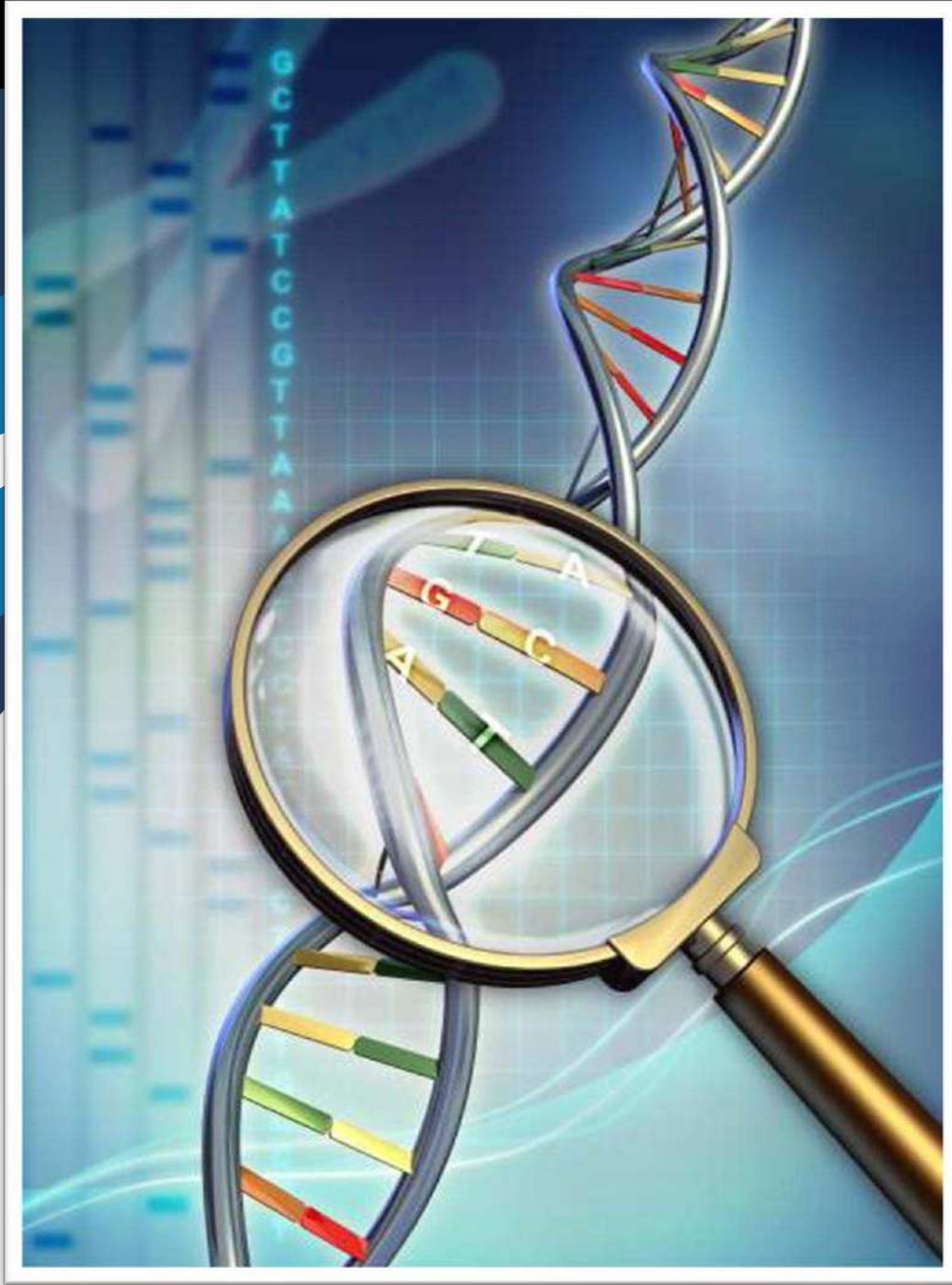


Sanger Sequencing Services



...adding value to your research

Sanger sequencing (also known as dideoxy or capillary electrophoresis sequencing) is an excellent choice when a small region of DNA to be analysed and looking for a fast and cost-effective sequencing.

Our lab is fully equipped with the Applied Biosystems 3500xL Genetic Analyzer and expert staff to handle DNA sequencing projects of various complexities including PCR product sequencing, plasmid DNA sequencing, Sequencing of other DNA constructs, direct Bacteria colony sequencing, Sequencing of glycerol stock, GLP DNA sequencing.

Our specialty is to provide cutting-edge MDx grade Sanger sequencing and data analysis services with high quality and accuracy to Molecular Diagnostic labs (MDx labs).

We offer DNA sequencing read lengths of up to ~900-1100 bases (Phred20 score).

Our Comprehensive Sanger sequencing Portfolio:

- Routine single or bidirectional sequencing on PCR products and plasmid DNA of single samples or plates
- Molecular identification services of Bacteria (16SrRNA gene) and Fungi (18S/ITS/26S rRNA)
- Primer walking services with a guaranteed final data accuracy of $\geq 99.90\%$
- DNA Barcoding services for Insect, Animal, and plants (COI/COII/matK etc.)
- Single nucleotide polymorphism (SNP) Genotyping services through PCR and Sanger sequencing
- Targeted re-sequencing of defined genomic regions after Next Generation Sequencing (NGS)
- Cloning of PCR products and subsequent sequencing

Molecular Identification Service

Molecular identification service is used to identify various isolates of microbes (Bacteria and Fungi). It is not only an alternative to traditional phenotypic detection methods whilst it offers highly sensitive, specific, and fast in detecting slow growing and non-culturable organisms.

Genei, provides fast and accurate identification of Bacteria (16S rRNA gene) and Fungi (18S/ITS/26S rRNA) by DNA sanger sequencing method.

We provide complete service which includes Nucleic acid isolation, PCR Amplification, Sanger sequencing, Contig generation and Report.

BLAST analysis of contig sequence is performed with the database of NCBI GenBank. Based on maximum identity score, top ten sequences are selected and aligned using multiple sequence alignment software (MAS), such as "CLUSTALW." Distance matrix is generated, and the Phylogenetic tree is constructed using bioinformatics tools.

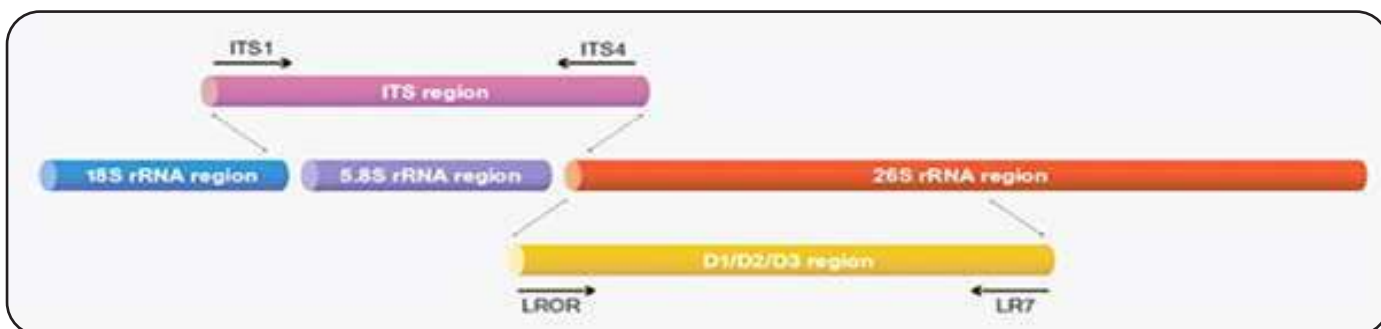
We accept the below mentioned starting materials for this:

- Bacterial and Fungal colonies
- Extracted gDNA
- Glycerol stocks
- Cell pellets

Bacteria:



Fungi / Yeast:



Deliverables

This service includes sequencing of ribosomal genes and/or other conserved regions and its comprehensive report which includes genus and species level identification (if possible) along with phylogenetic tree.

Primer Walking Service

Primer Walking is used to fill in the gaps and give a full sequence or additional coverage as needed. Genei's Primer walking services offers an option to choose single-stranded (SS) and double-stranded (DS) sequencing for DNA templates that are longer than 1400 bases. Our Primer walking services offer to discover unknown regions.

Service Features

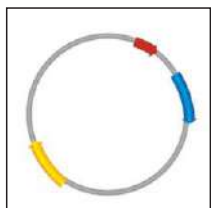
High Quality: A guaranteed final data accuracy of $\geq 99.90\%$

Fast: Up to 1600 base pairs per day (even faster when a reference sequence is available)

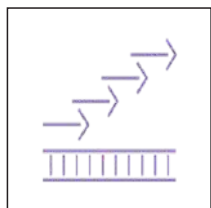
Deliverables

Delivery of electronic files such as project data sheet including sequencing strategy, text files and chromatograms (ab1 and .pdf format) for all the reactions. Consensus sequence as FASTA file.

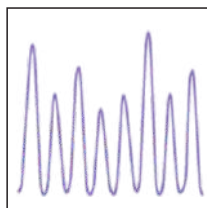
Primer Walking Workflow



1. Submit Samples



2. Primer Design



3. Sanger Sequencing



4. Contig Generation



5. Report

Barcoding Service

DNA Barcoding is a method for species identification that uses a short DNA sequence in a specific gene or genes of an organism.

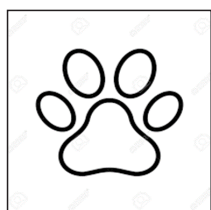
We identify,

- Bacteria, Actinomycetes, Fungi and Algae.
- Land vertebrates, Fishes, and seafood.
- Plant Barcoding.
- Insect Barcoding (termites, mites, ticks, spiders, millipedes etc.).

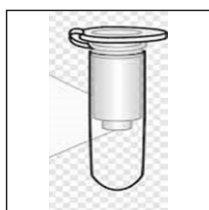
Deliverables

Delivery of electronic files such as project data sheet including sequencing strategy, text files and chromatograms (ab1 and .pdf format) for all the reactions. Consensus sequence as FASTA file. Comprehensive report which includes genus and species level identification (if possible) along with phylogenetic tree.

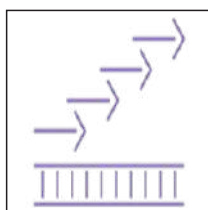
DNA Barcoding Workflow



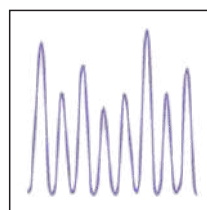
Unknown species



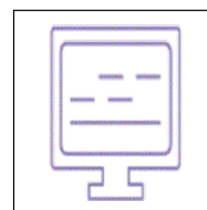
DNA Extraction



DNA Amplification



Sanger Sequencing



Matching Sequence



Report

SNP Genotyping Service

Genotyping is a method of determining differences in the genetic make-up (genotype) of an organism. This method does this by comparing the individual's DNA sequence against a reference sequence.

SNPs (Single Nucleotide Polymorphisms) or point mutations are the most common types of genetic aberrations among all the other types of aberrations.

Genei's, SNP Genotyping service is a PCR and Sanger sequencing-based solution that is used to SNP screening assays and validate SNPs of interest with speed and accuracy.

Deliverables

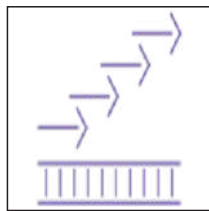
SNP Genotyping projects will receive a chromatogram file (ab1 and .pdf) along with a final report identifying SNPs compared to the provided reference sequence.

➤ Custom reports are also available upon request

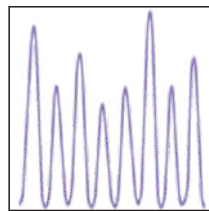
SNP Genotyping Workflow



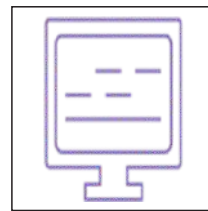
DNA Extraction



DNA Amplification



Sanger Sequencing



Identification of Mutation



Report

Assay Development Service

We have expertise, experience, and complete knowledge to design, develop, validate, and assist with regulatory requirements for your customized Molecular Diagnostic (MDx) assays.

We develop PCR, Real-time PCR, Sanger sequencing and point-of-care assays for the detection and quantification of various pathogens and genes.

We develop assays for,

- Human Molecular Diagnostics
- Veterinary Molecular Diagnostics
- Aqua Molecular Diagnostics
- Plant Molecular Diagnostics

Why we?

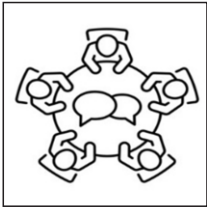
Our expertise team comprises of over three decades of experience in design, development, and manufacturing of Molecular diagnostic (MDx) assays. Our strength is to develop robust, rapid, highly sensitive, and specific Multiplex PCR and Real-time PCR assays.

Our team has experience in developing and manufacturing kits that are in use by various reputable diagnostic centers across the globe.

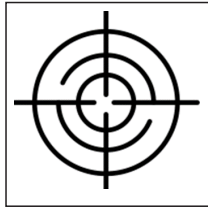
Flexible and custom-made approaches are an important aspect of our service, with a prime focus on complete fulfillment and customer satisfaction.

Our reliable partnership helps you to innovate in any of your assay development requirements.

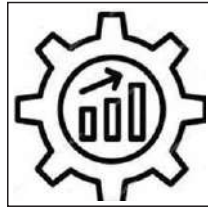
Our Assay Development Process



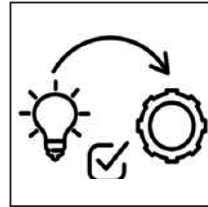
Definition



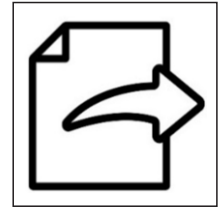
Feasibility



Optimization



Verification and Validation



Technology transfer

We also offer Add-on services such as,

- Flexible Design and development: We can design, develop, verify, and validate any part of your assay development such as sample selection, sample collection, sample transportation, sample storage, extraction, Amplification and Data analysis.
- Pre-clinical trials: We are associated with leading service labs in India through whom we can provide pre-clinical trial studies for your developed assays.
- Quality & Regulatory: We are associated with Expert organizations to support your Quality and Regulatory needs for meeting the compliances of Indian Regulatory, CE certification and US-FDA.



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