GeNei™
Since 1989

# GeNei Custom Services

| Oligonucleotide Synthesis and Modification Platform | | Gene Synthesis Platform | Gene Expression and Protein Purification Service |
|---|---|---|---|
| **DNA** | **RNA** | | |
| **Research Grade:**<br>• qPCR probes<br>• Capture probes<br>• Fluorescence in situ Hybridization probes<br>**Industrial Grade:**<br>• qPCR probes<br>• NGS primers/probes<br>• Modified oligos for forensic diagnostic | • siRNA<br>• miRNA<br>• sgRNA<br>• ASO<br>• Aptamer<br>• Modified/Labeled RNA<br>• Delivery system customization and coupling | • Gene Synthesis Codon Optimization<br>• PCR Cloning & Subcloning<br>• Site-Directed Mutagenesis<br>• Plasmid Preparation<br>• Synthetic DNA Libraries | Bacterial Expression system<br>Yeast Expression System<br>Mammalian Cell System<br>Antibody (IgG) Production<br>Baculovirus / Insect Cell System<br>**One Stop Platform:**<br>• Recombinant Protein<br>• Expression<br>• Antibody Expression Assay Development |

**Detection Platform: Biological Evaluation of Oligonucleotide**

## About GeNei

Genei Laboratories is a Life Science division established in Bangalore, India in 1989. The company offers broad range of innovative performance products, services, business relationships and educational products that enables the customer's success in research, development and production of biotech products. The company focuses on advanced technology development, large-scale production, and applications of DNA, RNA, and gene synthesis

Genei Educational Products are better platform to learn Bio-techniques from handling of microbes to unraveling the DNA sequences, amplification by PCR to in-vitro expression of genes. The Products are designed to integrate the needs of academia and research to synchronize themselves with the Industry level expertise. Our association and experience with products for Biological Research is over three decades old. Therefore, we take pleasure in extending this service/ experience to the research and teaching fraternity.

## Technology Platforms

| Platforms | Capacity & Capability | Advantages |
|---|---|---|
| Oligonucleotide Synthesis and Modification | Provide customized synthesis and modification services for various types of DNA and RNA primers/probes supplied in OD, mg, gram, to hundreds of grams level | Good batch-to-batch stability and high product purity; strict quality standards, and customized items can be provided for various applications such as molecular diagnosis and drug research and development |
| Gene & Plasmid | Complete gene synthesis and plasmid preparation platform | With rich experience, we can synthesize ultra-long sequences, difficult sequences, etc., and clone genes into any designated vector. 100% sequence accuracy is guaranteed. |
| Protein Expression | Integrated technology platform for R&D and production, providing customized protein expression and purification services | We have accumulated a large number of successful cases and can provide overall solutions for difficult proteins. |

## Citations


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- Angle and locus of the bend induced by the MspI DNA methyltransferase in a sequence-specific complex with DNA Ashok K. Dubey* and Sanjoy K. Bhattacharya Department of Biochemical Engineering and Biotechnology, Indian Institute of Technology-Delhi, Hauz Khas, New Delhi-110016, India.
- Hairpin duplex equilibrium reacted in the A®B transition in an undecamer quasi-palindrome present in the locus control region of the human b-globin gene cluster Mahima Kaushik, Ritushree Kukreti1, Deepak Grover1, Samir K. Brahmachari1 and Shrikant Kukreti* Department of Chemistry, University of Delhi (North Campus), Delhi 110007, India and 1 Institute of Genomics and Integrative Biology (CSIR), Delhi University Campus, Delhi 110007, India.
- Optimization of PCR reagents for amplification of microsatellites in oil palm M. Jayanthi*, G. Sujatha and P.K. Mandal National Research Centre for Oil Palm Pedavegi, West Godavari District, Andhra Pradesh 534 450.
- Multi-loci Molecular Characterisation of Endophytic Fungi Isolated from Five Medicinal Plants of Meghalaya, India Ranjan Kumar Bhagobaty# and S. R. Joshi*

- Complication of Salmonella Bacteraemia in a Case of Treated Fungal Endophthalmitis J. Malathi,1 M. Sowmiya,1 Vikas Khetan,2 K. Lily Therese,1 and H. N. Madhavan1
- Indian Journal of Clinical Biochemistry, 2008 / 23 (2) 123-129 HIGHER ALLELES OF APOLIPOPROTEIN B GENE 3' VNTR: RISK FOR GALLSTONE DISEASE Manjusha Dixit, Anvesha Srivastava* , Gourdas Choudhuri* and Balraj Mittal Departments of Genetics and *Gastroenterology, Sanjay Gandhi PostgraduateInstitute of Medical Sciences, Lucknow (India)
- Detection of I1 cam mutation in a male child with mental retardation M. Swarna, M. Sujatha, P. Usha Rani and P.P. Reddy Institute of Genetics and Hospital for Genetic Diseases, Begumpet, Hyderabad-500 016, A.P., India.

## Oligonucleotide Synthesis and Modification

Genei provides high-quality oligonucleotide synthesis and modification services, including standard primers, RNA, qPCR primers and probes, NGS primers, etc. We have established corresponding production processes and quality control standards for different applications, such as scientific research, small nucleic acid drug development, and in vitro diagnostics.

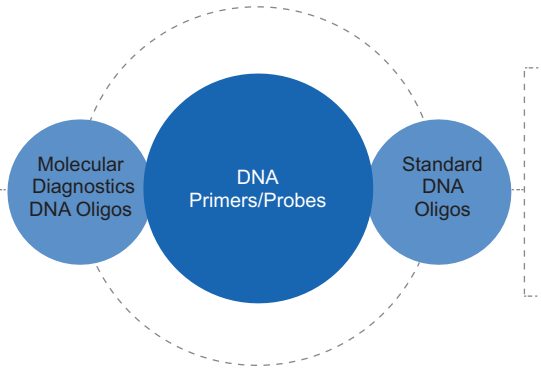
## Service features

- Experienced R&D and production teams, providing up to 100-gram scale oligonucleotide synthesis with batch-to-batch consistency; Professional technical support, standardized project management, and comprehensive pre-sales and after-sales services;
- Customized services: over 100 chemical modifications with different functions, multiple purification methods, and various items for different applications;
- Strict Quality Control standards, ISO 9001: 2015 Quality Management system.

| Purification Method | Modification | | QC Items |
|---|---|---|---|
| | Positions | Groups | |
| RPC<br>MoP<br>PAGE,<br>HPLC, etc, | 5' - end Modifications<br>3' -end Modifications<br>Intermedia Modifications<br>Dual/Multiple Modifications | Rare bases, Biotin, Digoxingein, Phosphorylation, Phosphorothioates, Amino Likers, Thiol, Quenchers, Internal Modification, Fluorescence, etc. | Standard detection items<br>Custom detection items: Purity, fluorescent value, Ct value, human genomic DNA contamination, NTC amplification, cross contamination rate, batch-to-batch consistency, etc. |

## DNA Primers/Probes

- **qPCR Primers/Probes**
  IVD qPCR primers IVD qPCR probes
- **Forensic Diagnosis**
  STR fluorescent-labeled primers
- **NGS Primers**
  NGS adapter primers NGS capture probe
  NGS multiplex PCR primers NGS
  blocking primers




High-purity primer synthesis Modified primer synthesis

Custom DNA Primer/Probe Synthesis, Large-scale DNA Primer/Probe Synthesis

## RNA Synthesis and Modification

| Synthesis | Modification |
| --- | --- |
| • **siRNA：** siRNA Synthesis, Guaranteed siRNA Package, siRNA Library<br>• **miRNA：** miRNA mimic, miRNA inhibitor, miRNA agomir, miRNA antagomir, miRNA Library<br>• **sgRNA：** sgRNA Synthesis, sgRNA Library ASO, Aptamer | • **Sugar Modification:** 2'-OMe, 2'-MOE, 2'-F etc.<br>• **Base Modification:** methylated cytosine (5-Me-dC), etc.<br>• **Backbone Modification:** PS, PO, phosphoramide modification, etc.<br>• **End Modification:** Chol, Biotin, Thiol, NH2, Fluorescent dyes, etc.<br>• **Delivery System:** LNA, GalNAc, PMO, PNA, etc. |

## Gene Synthesis and Related Services

Genei's experienced R&D and production team has established an advanced gene synthesis technology platform, standardized operating procedures, and a strict Quality Control system. We provide high-quality customized services including gene synthesis, codon optimization, PCR cloning, sub-cloning, plasmid preparation, site-directed mutagenesis, and mutation library construction.

Just submit the gene sequence you need, and Genei will deliver the desired plasmid on time!

## Service Features

- Advanced technology platform: Our team has successfully synthesized various types of difficult sequences, such as repetitive sequences, GC/AT-rich sequences, etc., and delivered the plasmids according to customer-specific requirements.
- Professional technical support: Considerate pre-sales and after-sales services, free codon optimization and project design, timely project updates, and free technical consulting
- On-time delivery: Experienced production and R&D teams ensure the on-time delivery rate of over 95%.
- Intellectual property protection: The nucleic acid/amino acid sequence provided by the customer is kept strictly confidential and will not be distributed to third-party in any form.

## Service Types

| | |
|---|---|
| **Gene Synthesis** | On-time delivery rate >95%, successfully synthesized and delivered various difficult gene sequences |
| **Codon Optimization** | Free codon optimization, proven to significantly improve protein expression |
| **PCR Cloning and Sub-cloning** | Clone the gene of interest into any position of the designated vector; free vector storage for 3 years |
| **Plasmid Preparation** | Microgram to gram level, good stability between batches; the endotoxin level of transfection grade plasmid can reach 0.005 EU/μg and below upon request |
| **Synthetic DNA Libraries** | Design and construction of point mutation libraries, random mutation libraries, degenerate libraries, controlled libraries, sgRNA and other libraries |

## Gene Expression and Protein Purification Services

Avail our expertise and facility to express your gene and gel purified protein for further studies including raising polyclonal or monoclonal antibody, assay development, etc. Starting from fill-length cDNA clone, the gene would be cloned into an expression vector, sequence confirmed, protein expressed and purified. The services offered would include:

- Sub-cloning of the full-length cDNA into an expression vector
- Sequence confirmation of the gene by bi-directional sequencing.
- Optimization of protein expression.
- Purification (5-10 mg) of expressed protein, up to 90% purity.

## Service Features

- Sequencing of the gene after cloning into expression vector would be undertaken if PCR based cloning techniques are employed.
- Protein expressed may or may not be biologically active.
- Bacterial & Yeast based expression system available.
- GST and (His) 6 tags available for easy purification of the recombinant protein.
- N-terminal GST-tagged, N-terminal, C-terminal, N- and C-terminal (His) 6 tags together as well as no tag expression systems available.
- Level of expression of recombinant protein may vary (very high to no expression at all) depending on toxicity of the protein to the Bacteria or Yeast host.
- Facility for >90% purity available, please enquire.
- Subsequent raising of Monoclonal and Polyclonal antibody from the purified proteins, available.

## Selection guide

Experimental success depends on many factors such as the source of target protein, protein function, yield, cost, and the application of the purified protein. For successful recombinant protein expression, it is important to choose the appropriate system for a specific application. Please review the guide below.

| Expression Systems | *E. coli*<br>Prokaryotic | Baculovirus-insect<br>Eukaryotic | Mammalian<br>Eukaryotic |
|---|---|---|---|
| **Most Common Applications** | • Bacterial proteins<br>• Antigen proteins<br>• Cytokines<br>• Enzymes | • Cytoplasmic and Nucleus proteins<br>• Secretory proteins<br>• Transmembrane proteins<br>• Viral proteins<br>• Kinases<br>• Toxic proteins | • Secretory proteins<br>• Extracellular domain of transmembrane proteins<br>• Transmembrane proteins<br>• Recombinant antibodies<br>• Antibody fragments |
| **Advantages** | • Low cost<br>• Rapid expression<br>• Easy to scale up<br>• Most widely used system for recombinant protein production | • High capacity genes<br>• Suitable for toxic proteins<br>• Post-translational modifications similar to those of mammalian systems | • Low endotoxicity<br>• High bioactivity<br>• Comprehensive post translational modifications<br>• Transient and stable expression |
| **Challenges** | • Inclusion bodies<br>• Lack of post-translational modifications | • Demanding culture conditions<br>• Lack of partial glycosylation | • Demanding culture conditions |

## Gene-to-Protein Solutions

Sequence analysis And codon optimization → Gene synthesis and sub-cloning → Protein Expression → Protein purification and QC

## Nucleic Acid Purification Service

Genei, offers nucleic acid isolation and purification services from various sample sources. Opting our service not only saves time and effort but can also provide benefits to our customers from technical expertise.

The purified DNA and RNA are suitable for various downstream applications like cloning, qPCR and NGS etc.,

Our services enhanced the young researchers and scholars with the advantages of a complete workflow that yield high quality DNA or RNA, even from difficult sources.

In deciding on a service, considering the factors that include the desired scale and throughput, as well as the nucleic acid type, such as Genomic DNA, total RNA or mRNA.

We offer isolation of nucleic acids from multiple sample source types like,

- Mammalian Cells
- Blood or Blood Components
- Blood Cards
- Tissue
- Paraffin-Embedded Tissue
- Formalin-Fixed Tissue
- Gram Negative and Positive Bacteria
- Saliva/Sputum
- Urine
- Stool
- Any Plant Material (Including seed, leaf, root etc.)
- Fungi
- Yeast
- Insects etc.

## Service Features

- Isolation and purification of Nucleic acid from a variety of sample sources.
- High quality directly suitable for different downstream applications.
- Flexibility in choosing the scale

## Deliverables

- Quantification of the extracted RNA by OD measurement, RiboGreen or RT - PCR.
- Quality control of RNA extraction via Bioanalyzer (RIN values).
- High quality DNA and/or RNA in desired concentration and aliquots.

## Custom Amplification Service

Our expert team can be of your support in highly complex and multiplex PCR amplification, gene expression (Relative and Absolute quantification) studies and copy number studies by using PCR and real-time PCR (qPCR).

## End-point PCR:

Optimization of PCR usually take time and efforts especially in dealing with issues such as optimization of PCR components, poor or no amplification, mis-priming and primer dimer formation etc., We at Genei with over three decades of experience are capable to provide solutions and deliver you a well-optimized, robust and reproducible PCR assay.

## Real-time PCR:

We offer a wide range of Real-time PCR amplification services which includes,

- Gene expression studies (Relative and absolute quantification) of any pathogen/gene/target
- Qualitative detection
- MicroRNA analysis
- SNP genotyping etc.,

## Sanger Sequencing Service

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 ≥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.

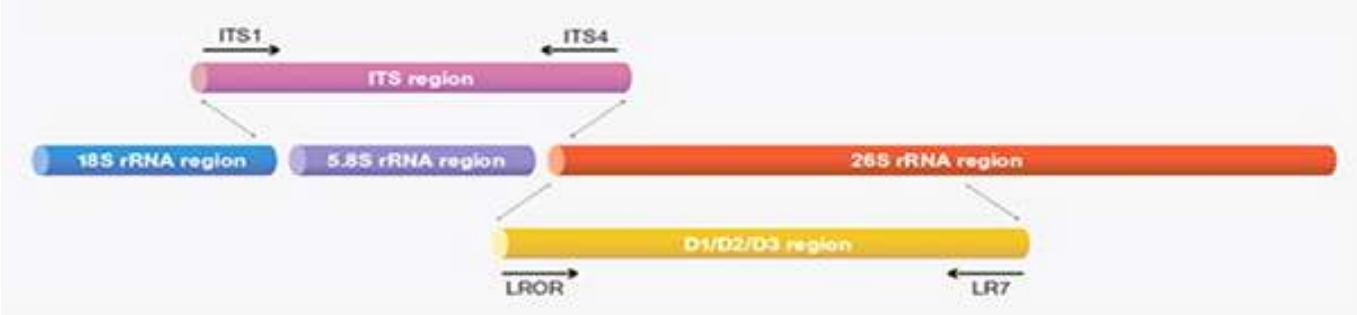
BLAST analysis of contig sequence is performed with the database of NCBI GenBank. Based on maximum identity score, top ten sequences are selected and aligned using multiple sequence alignment software (MAS), such as “CLUSTALW.” Distance matrix is generated, and the Phylogenetic tree is constructed using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

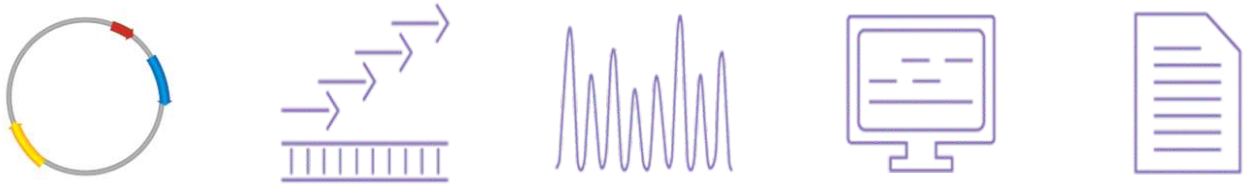
**High Quality:** A guaranteed final data accuracy of ≥ 99.90%

**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.

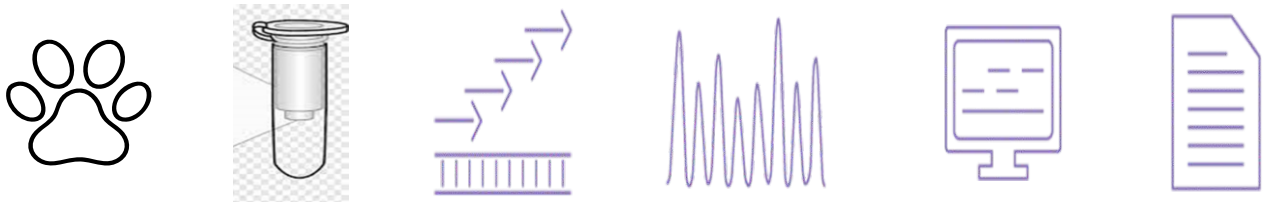
We identify,

- 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.

## Other services

**Seed and plant health testing.**

- Genetic and trait purity
- Fingerprinting
- Pathogen testing
- Research and consultancy
- A comprehensive list of approved ISTA, ISHA and NSHS Seed Health Testing Methods are examined for plant pathogens in seeds, vegetables and fruits.

**Methods and Quarantine services.**

- Seed Visual Inspection
- Phytosanitary Field inspection
- Sampling for seed health testing
- Seedling emergency test
- Seed and seedling phenotyping
- Seedling quality assessment
- Paper- based germination assays.

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GeNei™
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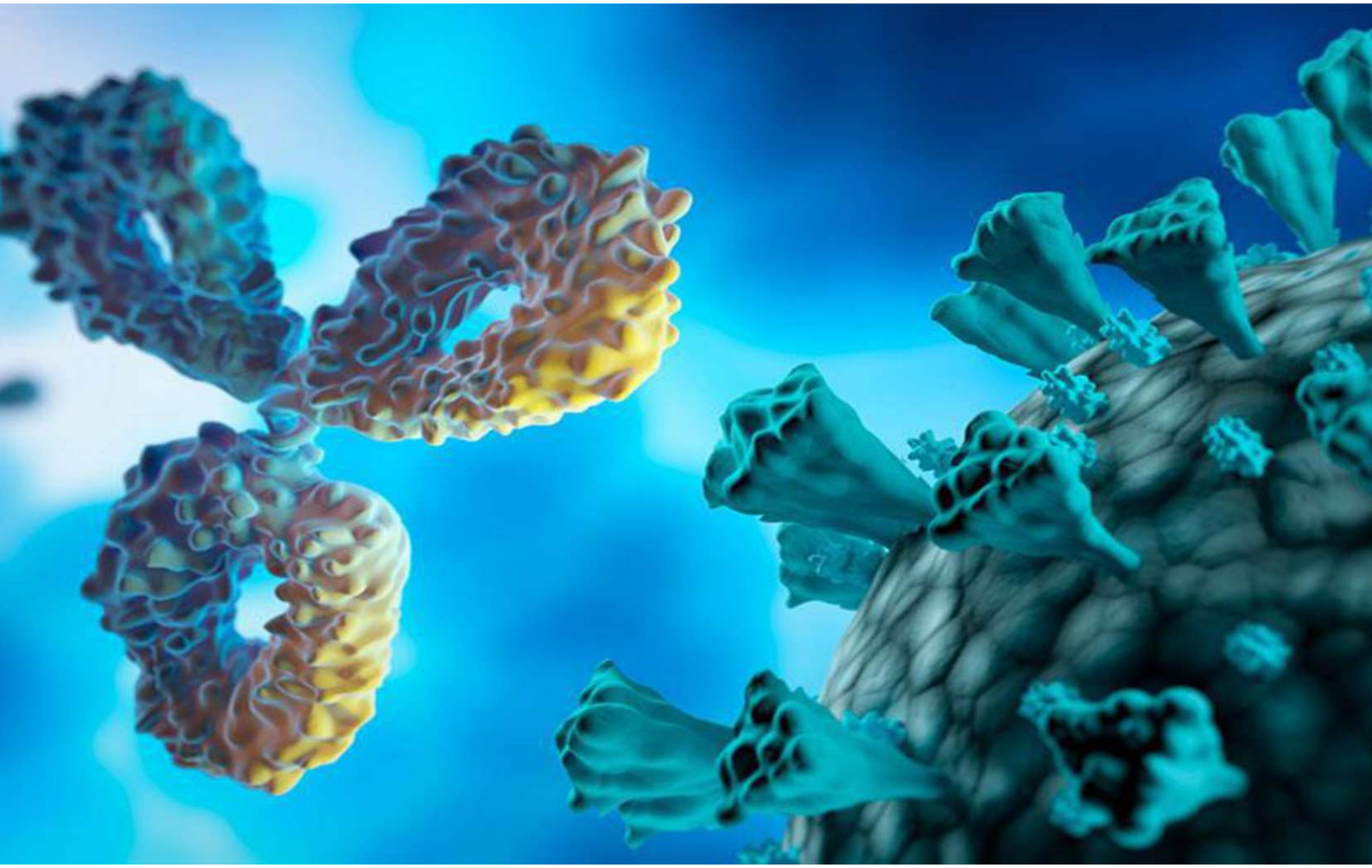
# Proteomics Custom Services



## Monoclonal Antibody Development

**Phase I**
Immunogen Design and Preparation

**Phase II**
Immunisation to achieve optimum titre prior to cloning

**Phase III**
Hybridoma Development

Phase IV
Sub-Cloning and Isotype Determination

Phase V
Scaleup and Purification

- The antibody generated is available in perpetuity due to the immortal nature of the cell line
- Monoclonal antibodies have a defined specificity and a low non-specific activity
- They are ideal for low abundance antibodies, such as IgM
- Positive & negative screens can be performed to improve the specificity of the antibody
- Multiple cell lines can be purchased by the customer
- Monoclonal antibodies offer reproducibility and traceability

## Liquid Chromatography (LC) and Mass Spectrometry (MS)

- LC (both Reverse and Normal phase) affords great range of chromatographic separation options
- Provides both identification and quantitative information
- Enhanced mass resolution (QE and Q-TOF) allowing for structural elucidation
- Ability to monitor both positive and negative ions during a single run (IT)
- High specificity of detector. No need for confirmatory detection method (MS/MS)
- High sensitivity, can detect some compounds in the parts-per-billion and trillion ranges (MS/MS)
- Excellent reproducibility when stable labeled internal standards are available (MS/MS)

## Standard Peptide Synthesis

- Branched Peptides
- Cyclized Peptides
- Disulfide Bonding
- Glycopeptides
- High Throughput Synthesis
- N-Methyl Peptides
- Peptide Thioesters
- Peptoids
- Phospho-peptides
- PNA

## About Genei Services

We are the leading traditional Monoclonal and Polyclonal antibody service provider. Our expert scientists have optimized methodologies to maximize the probability of success when developing antibodies. However, if your project requires something different, our range of services and technologies can help you, from custom antibody generation to downstream assay development. Our experts have successfully concluded more than 1,000 custom projects, giving you the confidence that they will be able to generate the right antibody for your application.

### Get the antibody you need – no matter how challenging

With the broadest range of technologies on the market, our Custom Antibody development services will help you get the antibody you need – no matter how challenging your application may be.

### Full support from project planning to completion

Our expert team is ready to guide you every step of the way, ensuring you end up with the optimal antibody for your application. Each custom project is assigned a project manager, who gives you access to a team of experts to help you with every aspect of your project from selecting the right immunogen to downstream manufacturing, assay development, intellectual property management, and commercial licensing.

### Ensuring quality

We manufacture highest quality antibodies in compliance with ISO 9001:2015 certified Quality Management system for all mice monoclonal antibodies, guaranteeing lot-to-lot consistency and security of supply.

### A defined process to deliver custom solutions

Saving your time and resources are the foundation of our custom antibody services. A successful project is dependent on expediting your research by leveraging our expertise. As an established leader in the provision of custom services, R&D Systems has developed a simple, efficient procedure to ensure we capture each customer's needs and maximize the probability of success in an efficient manner. Importantly, we listen to your scientific needs to understand your immediate and long-term goals. A dedicated custom service project manager will then align the appropriate expert scientists from both parties. To ensure mutual success, all performance specifications, milestones, timelines, and deliverables are agreed upon and formally documented in a Statement of Work. Following project initiation, the project manager provides frequent updates to keep the customer fully informed regarding project progression.

GeNei™

# Monoclonal Antibody Service

At Genei, we offer a comprehensive Monoclonal antibody service which follows our successful five-phase project outline:

**Exclusivity:**

- Customer retains all I.P. for clones purchased
- Client confidentiality ensured

**Premium service includes:**

- Close involvement with the project
- Technical support at every stage
- Expert advice on antibody progression upon completion:

1. 2 stable cell lines
2. 10ml supernatant of each antibody

**Additional services:**

- Multi-screening is available at all phases upon request
- Supernatant samples are available to purchase at phases III and IV for testing purposes
- Option to purchase additional stable clones
- Back-up storage available for phase III (cultures) and phase IV (clones)

**Phase V (optional):**

- Scale-up & purification if requested

Phase I
**Pre-immunisation (2-4 Weeks)**
- Peptide selection
- Peptide synthesis / Immunogen provided
- Hapten conjugation

Phase II
**Typical Immunisation Protocol**
- 4-5 Balb/c female mice immunized for suitable titer
- Analysis of sera to evaluate best immune response
- Best responding spleen taken forward to phase III

Phase III
**Fusion**
- Spleen cells showing highest specific antibody titer fused to immortalised cell line
- Cultured screened by ELISA or western blot analysis
- Selection of cultures displaying desired specificity
- Report to client

Phase IV
**Sub-cloning**
- Positive clones are expanded and frozen
- Frozen clones transferred to client
- Supply of 10ml supernatant
- Report to client

Phase V
**Purification**
- Purification of antibody by Protein A / G affinity chromatography
- Scaleup upto 500mg

10 - 12 weeks
4 - 6 weeks
4 - 6 weeks
5 - 6 months

# Liquid Chromatography and Mass Spectrometry

**Liquid chromatography-UV-mass spectrometry (LC-UV-MS) is an analytical chemistry technique for identification, quantitation, and mass analysis of materials.**

Liquid chromatography is often referred to as HPLC (High Performance Liquid Chromatography). A pump is used to provide a continuous flow of a solvent into which a dissolved sample is introduced. Analytes within the dissolved sample are then separated based upon their intrinsic affinities for both a "mobile phase" and a "stationary phase". After the analytes are separated on the column, they pass through a UV detector and into a mass detector. For both UV and MS responses, the measured peak area or height is concentration-dependent and may be used to quantify the component.

## Mass Spectrometry Technical Specifications

### Mass Ranges

- m/z 50 – 2000
- m/z 200 – 4000
- Larger molecules (> 4000 Da) may be observed as multi-charged ions below m/z 4000

### Resolution

- Down to 0.05 FWHM (full width half maximum) with Ultra ZoomScan
- 140,000 resolution at m/z 200 and < 1 ppm mass accuracy provides enhanced ID confidence (QE Orbitrap)
- 60,000 resolution and < 2 ppm mass accuracy (Q-TOF)

### LCMS facility sample submission instruction

Before you submit your valuable sample, please ensure the following things. This helps us minimize the time needed to analyse your sample.

- Purify your sample: The mass spectrometer is a very sensitive as well as expensive instrument. We do our best to prevent any kind of contaminants entering the machine. Therefore, we request all the users to perform a thorough purification of your samples before submission.
- Talk to us: Please E-mail or call us before you prepare to send your sample. This prevents wastage of sample and delay in case any modification is necessary before the analysis. Ensure that your sample will be stable throughout the storage period. Mention sample storage temperature in the form.

### Ideal Uses of LC-MS

- In-line UV detection allows for the same or similar capabilities as HPLC and UPLC
- Analysis of ionizable compounds (usually polar) lacking UV-chromophores
- Structural information and confirmation, using MS/MS to produce product ions from precursor ion (analyte of interest)
- Qualitative and quantitative analysis of the following example analytes:
- Surfactants/emulsifiers
  - Polyethylene Glycol (PEG)
  - Polypropylene Glycol (PPG)
  - Ethoxylated and propoxylated analytes containing fatty alcohol, fatty acid, and other headgroups
  - Sodium lauryl/laureth sulfate
  - Alkyl benzene sulfonates
  - Trade name Materials: Brij, Span, Tween
- Biocides/preservatives
  - Quaternary ammonium chloride compounds (QACs)
  - Benzalkonium chloride (BZK)
  - Polyquats
- Polymer extractable/leachables
  - Stabilizers/Antioxidants (e.g. Irganox)
  - Irritants/Sensitizers
  - Plasticizers

# Peptide Synthesis

**Peptide synthesis is the synthesis process of peptides in organic chemistry. Peptides are organic compounds connected by multiple amino acids through peptide bonds. The chemical synthesis methods of peptides can be divided into two types: liquid-phase peptide synthesis and solid-phase peptide synthesis**

## Features

- High Purity: Purities from desalting to >98%
- Various Modifications: 400+ modifications are available, including Phosphorylation/Biotin-labeled peptides, cyclic peptides, KLH/BSA Conjugation, MAP peptides, etc.
- Long Peptide Synthesis: The maximum length of peptide synthesis can reach 180 amino acids with our long peptide synthesis technology and various difficult and complex peptides can be synthesized.
- High Success Rate: The success rate exceeds 99%.
- Turn-around Time: For desalting peptides, the turnaround time is about 7 working days. For HPLC purified peptides, the turnaround time is about 15 working days. Analytical HPLC chromatograms, MS data, and synthesis reports are provided.
- Guarantee: If the synthesis fails due to our reason, no fee will be charged.

## Peptide Modifications and Labels:

| D- Amino Acids | D- Amino Acids |
|---|---|
| Usual Amino Acids | Aminobutyric acid [Abu] |
| | Aminohexanoic acid [Ahx] |
| | Aminoisobutyric acid [Aib] |
| | 2-Aminoindane-2-carboxylic acid [Aic] |
| | Citrulline [Cit] |
| | Diaminopropionic acid [Dpr] |
| | Hydroxyproline [Hyp] |
| | Methionine Sulphoxide [Met(O)] |
| | 2-Naphthyl Alanine [2-Nal] |
| | Norleucine [Nle] |
| | Ornithine [Orn] |
| | Penicillamine [Pen] |
| Modifications at C-Terminus | Amidation |
| | Lys(Biotin) |
| | Lys(FAM) |
| Modifications at N-Terminus | Acetylation |
| | Myristic acid (Myristoyl) |
| | Palmityric acid (Palmoitoyl) |
| | Formic acid (Formyl) |
| | Biotin |
| Fluorescence Labelling at – Terminus | FAM |
| | FITC |
| | TAMRA |
| Modifications at Lys Side Chain | Lys(Ac) |
| | Lys(Biotin) |
| Phosphorylation | Phosphorylation-Ser |
| | Phosphorylation-Thr |
| | Phosphorylation-Tyr |
| Cyclization | Disulfide Bridge 1st |
| | Disulfide Bridge 2nd |
| | Head-to-tail Cyclization |
| Protein Carrier Conjugation | KLH |
| | BSA |
| Multiple Antigen Peptide (MAP) | 4 branches |
| | 8 branches |

## Epitope Mapping

**GeNei selects the antigenic peptides from gene/protein sequences supplied by researchers. We consider any requirement to target antibodies to a sequence during BLAST search and avoid conserved regions. Epitope mapping is the process of identifying the binding sites, or 'epitopes', of antibodies on their target antigens**

- Epitope mapping is an important tool in the selection and characterization of antibodies, particularly where epitope similarity or dissimilarity issues are involved.
- Epitope mapping involves the precise definition of the binding site of an antibody to its target protein.

We consider the following analyses on a protein sequence.

1. Identification of specific antigenic peptides. Analyze and find antigenic peptides based upon antigenicity, hydrophilicity, and accessibility parameters. We try to find peptide regions (10-25 aa) that are antigenic, hydrophilic, and accessible.
2. BLAST searches. All recommended antigenic peptides are then subjected to BLAST to confirm specificity of antigenic peptides.
3. Proteins Secondary Structure Analyses for the presence of following motifs.
   - Signal peptide.
   - Transmembrane domains
   - Mitochondrial targeting sequence
   - Nuclear localization signals
   - Transport motif from cell surface to Golgi.

How to submit sequence data:

- Name of the protein, gene accession number, and amino acid sequence.
- Sequence alignment of all related proteins. This will help us in avoiding regions that are conserved.
- Preferred domains or regions (N or C-terminal) or regions to avoid.
- Any peptides that have already been selected.

**Genei Laboratories Pvt Ltd**

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## Types of labeling services

We offer several types of antibody labeling protocols, depending on your needs:

- **Biotin**, is an ideal antibody labeling process when sensitive assays are needed
- **Horseradish Peroxidase, or HRP**, is commonly used to conjugate proteins in Western blots, immunohistochemistry and ELISA protocols
- **Fluorescein isothiocyanate or FITC**, is a type of fluorescein that is used for biological research for bioconjugate, Primary antibody, and Secondary antibody labeling
- **Tetramethylrhodamine or TRITC** is a bright orange fluorescent dye with excitation ideally suited to the 532 nm laser line
- **Antibody conjugated with different probes and with Colloidal Gold**


**CONTACT US**
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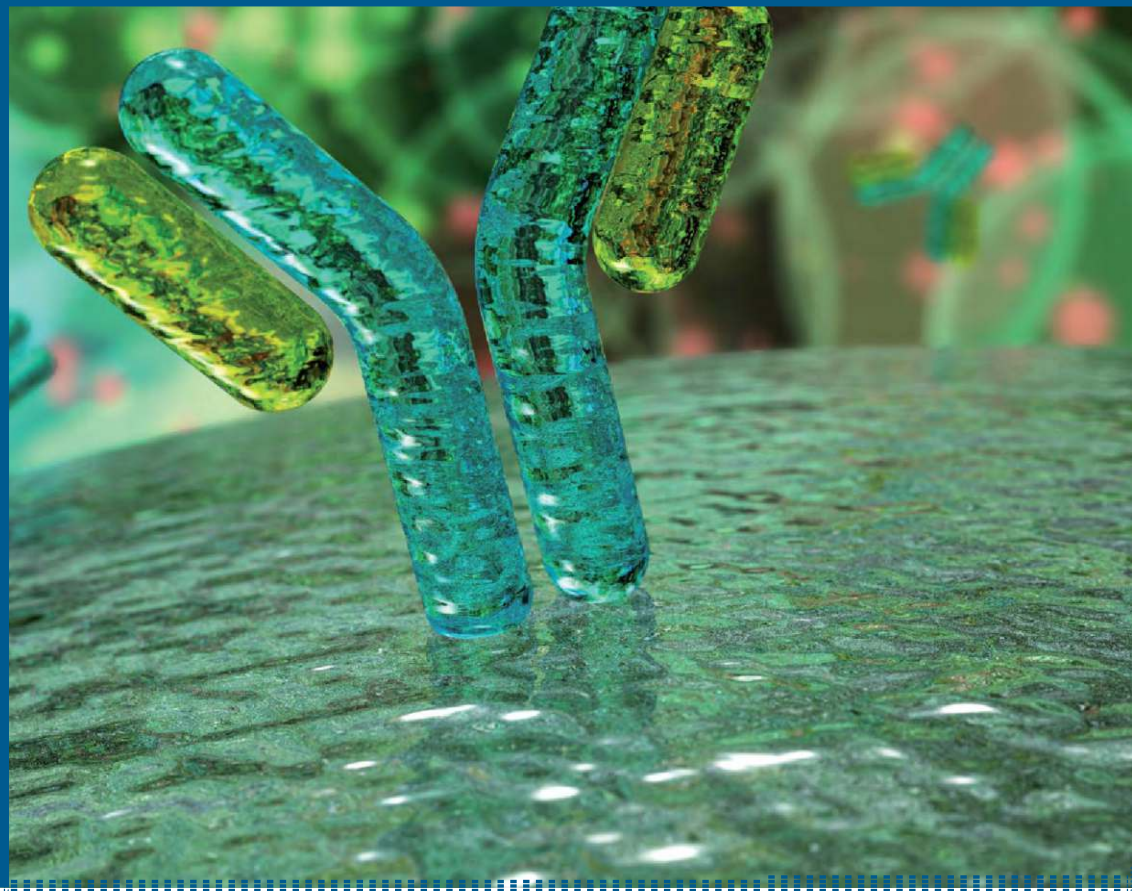
# Custom Polyclonal Antibody Services



GeNei™
Since 1989


# 6, 6th Main, BDA Industrial Suburb, Near SRS Road, Peenya, Bengaluru - 560058

# Custom Polyclonal Antibody Service Packages

| Custom Polyclonal Antibody Package | Service Contents | Deliverables | Guarantee / Estimated Delivery Time |
|---|---|---|---|
| **ELISA Guaranteed Peptide pAb Package**<br>(From peptide synthesis to anti-serum)<br>Antigen: Peptide synthesized | 1) Peptide synthesis and KLH conjugation<br>2) Standard immunization with 1 Rabbit<br>3) ELISA identification. | **25ml Anti-serum**<br>Pre-immune serum<br>0.5ml 10mg peptide<br>>85% pure Antibody<br>Project report with ELISA data | **Quality Guarantee:**<br>Optimal ELISA titer<br><br>Estimated Time: 3-4 months |
| **Western Blot Guaranteed Protein pAb Package**<br>(From protein antigen to protein A/G purification)<br>Antigen: 3mg protein, >90% pure<br>**Customer to supply 3-5mg protein, >90% pure in lyophilized powder or neutral buffer ≥1mg/ml.* | 1) Protein identification by SDS-PAGE<br>2) Standard immunization with 1 Rabbit<br>3) ELISA identification<br>4) Protein A/G purification | **25ml Anti-serum**<br>**&**<br>**10mg Antibody**<br>Pre-immune serum, 0.5ml<br>Project report with ELISA data | **Quality Guarantee:**<br>WB positive (for target antigen)<br>Optimal ELISA titer<br><br>Estimated Time: 3 months |
| **Western Blot Guaranteed Protein pAb Package**<br>(From protein production to Antibody purification)<br>Antigen: Protein produced by Genei | 1) Gene synthesis & sub-cloning<br>2) Protein expression & purification from *E.coli*<br>3) Standard immunization with 1 Rabbit<br>4) ELISA identification<br>5) Protein A/G purification | **25ml Anti-serum**<br>**&**<br>**10mg Antibody**<br>0.1mg protein (from *E.coli*) of >90% purity<br>Project report with WB & ELISA data | **Quality Guarantee:**<br>WB positive (for target antigen)<br>Optimal ELISA titer<br><br>Estimated Time: 4-5 months |

## Polyclonal Antibody Production Protocol

**Antigen Preparation**

- Protein antigen: Either supplied by the customer or produced by Genei. 3 mg protein is required, >90% purity.
- Peptide antigen: Either supplied by the customer or produced by Genei.

**Phase 1: Immunization**

- Animals: 1 Rabbit. Please inquire if different animal is required.

**Standard Immunization Protocol (80 days):**

| Date | Process |
|---|---|
| Day 0 | 1-2ml Pre-immune sera and primary immunization with CFA |
| Day 14 | Booster 1 with IFA |
| Day 28 | Booster 2 with IFA |
| Day 43 | Booster 3 with IFA |
| Day 50 | Test Bleed |
| Day 57 | Booster 4 with IFA |
| Day 72 | Booster 5 with IFA & serum collected for ELISA testing |
| Day 80 | Bulk Bleed |

**Phase 2: ELISA Identification**

**Phase 3: Protein A Affinity Purification (1-2 weeks)**

- At least 10mg Antibody by Affinity Purification.

**Estimated Turnaround Time:**

- 3-4 months by using standard immunization protocol.