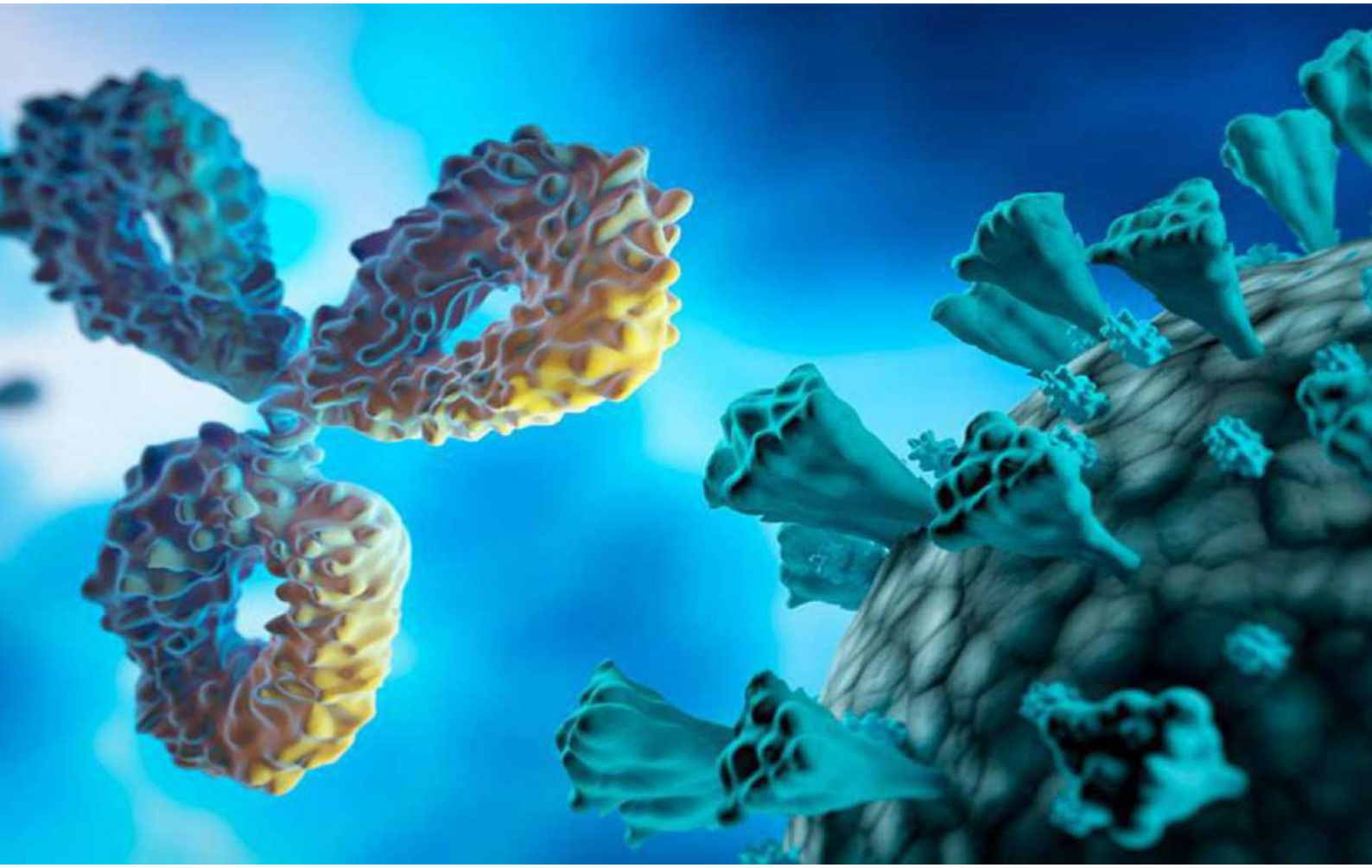
GeNei™
Since 1989

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

GeNei™

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.

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