Polyclonal Antibody Production Training Program

Gain end-to-end practical skills for producing high-quality polyclonal antibodies (pAbs) for research and diagnostic applications. Learn antigen design, animal immunization, serum processing, IgG enrichment, purification and polishing, antigen-specific affinity capture, conjugation, QC, stabilization and documentation for tech transfer.

Back to Immunology or Immuno-Technology Training Programs

Module 1 – Fundamentals of Polyclonal Antibodies (Theory - Online)

Fees: Rs 7000/-

1. Antibody structure essentials; affinity vs avidity; polyclonal vs monoclonal use-cases.
2. Host species selection (rabbit, goat, sheep, chicken) and antigen considerations.
3. Antigen types: peptide, recombinant protein, conjugates; carrier and linker choices.
4. Adjuvant overview; scheduling strategies; humane and ethical practices.
5. Titer development principles; screening assay options and controls.
6. Serum collection, handling, biosafety and cold chain essentials.
7. IgG enrichment strategies and common pitfalls.
8. Purification routes: ammonium sulfate, caprylic acid, Protein A/G and combinations.
9. QC overview: purity, specificity, cross-reactivity, endotoxin and stability signals.
10. Documentation, SOP mindset and data integrity basics.

Module 2 – Antigen Design & Preparation (Practical)

Fees: Rs 80000/-

1. Epitope and peptide selection logic; terminal additions and spacer design.
2. Carrier conjugation (e.g., KLH, BSA) for small antigens; coupling chemistries.
3. Recombinant antigen expression and basic purification overview.
4. Analytical QC: SDS-PAGE, Western, concentration and storage optimization.
5. Endotoxin awareness and reduction workflow outlines.
6. Plate-coating optimization for ELISA screening readiness.
7. Aliquoting, freeze-thaw policy and chain-of-custody records.
8. Stability checks and acceptance criteria to proceed to immunization.

9. Documentation templates for antigen lots.
10. Risk registry setup for the project.

Module 3 – Immunization & Titer Monitoring (Practical)

Fees: Rs 85000/-

1. Host selection and cohort planning; randomization and records.
2. Adjuvant emulsions, injection routes and schedule planning.
3. Bleed schedule, serum separation and storage.
4. Indirect ELISA titering; serial dilution curves; cutoff definition.
5. Specificity panels and cross-reactivity checks vs homologs.
6. Boost decisions based on titer kinetics and quality of response.
7. Animal welfare, biosafety and waste handling practices.
8. Pre-harvest readiness checklist and documentation.
9. Logistics for sample shipment/transfer when applicable.
10. Deviation notes and corrective actions.

Module 4 – Serum Collection, Clarification & IgG Enrichment (Practical)

Fees: Rs 60000/-

1. Bulk serum pooling; anticoagulant awareness and labeling standards.
2. Clarification by centrifugation and depth filtration.
3. Preservatives and bioburden control options.
4. Caprylic acid precipitation for IgG enrichment: setup and parameters.
5. Ammonium sulfate fractionation: cut selections and redissolution.
6. Dialysis/buffer exchange to target formulation.
7. Quick QC: UV280, SDS-PAGE and basic activity checks.
8. Yield tracking, mass balance and recovery logs.
9. Hold conditions and cold chain for intermediates.
10. Safety and aseptic technique reinforcement.

Module 5 – Protein A/G-Based Purification (Practical)

Fees: Rs 65000/-

1. Resin selection by host species and isotype; capacity awareness.
2. Binding buffer, load, wash and elution optimization; neutralization strategy.
3. Column packing basics and reuse policies for lab scale.
4. Capture plus polishing concepts and sequence.
5. Diafiltration to desired buffer; concentration targets.
6. Analytical QC: purity and recovery; run log creation.
7. Endotoxin awareness steps and reduction approaches.
8. Sterile filtration and container closure notes.

9. Stability holds and storage conditions.
10. Troubleshooting common issues (low binding, breakthrough).

Module 6 – Polishing, SEC & Formulation (Practical)

Fees: Rs 80000/-

1. Size-exclusion chromatography for aggregate reduction.
2. Ion-exchange awareness for charge variants (workflow overview).
3. Buffer and excipient screening for stability.
4. Viscosity and concentration handling tips.
5. Accelerated stress checks: heat, agitation and freeze-thaw.
6. Sterility assurance steps for final bulk.
7. Labeling content and storage configuration.
8. Acceptance criteria and trending basics.
9. Fill-finish considerations at lab scale.
10. Documentation of formulation decisions.

Module 7 – Antigen-Specific Affinity Purification (Practical)

Fees: Rs 90000/-

1. Affinity matrix preparation (e.g., CNBr-activated resin) and coupling.
2. Blocking, wash and storage of affinity resin.
3. Binding strategies and flow rates for activity retention.
4. Elution conditions optimization; neutralization and recovery.
5. Regeneration and reuse policies for affinity columns.
6. Comparing total IgG vs antigen-specific fractions.
7. QC: specificity gain, background reduction and potency.
8. Yield/cost trade-offs and decision framework.
9. Stability and storage of affinity-purified lots.
10. Column life tracking and records.

Module 8 – Labeling & Conjugation (Biotin/HRP/FITC) (Practical)

Fees: Rs 65000/-

1. Conjugation chemistry selection; degree-of-labeling targets.
2. Biotinylation workflow and post-reaction cleanup.
3. HRP conjugation outlines and activity verification.
4. FITC labeling and fluorescence QC basics.
5. Buffer compatibility and stabilizer choices.
6. Functional verification in ELISA or blot formats.
7. Storage and light-protection guidelines.
8. Comparative performance vs unconjugated controls.

9. Documentation and labeling content for conjugates.
10. Troubleshooting low activity or over-labeling.

Module 9 – Quality Control & Release (Practical)

Fees: Rs 60000/-

1. Identity and purity by SDS-PAGE and basic densitometry.
2. Titer and potency by ELISA; minimal acceptance criteria.
3. Specificity and cross-reactivity assessment panels.
4. Endotoxin awareness testing outlines.
5. Stability-indicating checks and retain sample policy.
6. Label review and certificate of analysis templates.
7. Deviation handling, CAPA notes and change control.
8. Data integrity and raw data archiving.
9. Release decision and record closure.
10. Customer use guidance summary.

Module 10 – Documentation, Packaging & Tech Transfer (Practical)

Fees: Rs 50000/-

1. SOP and batch record assembly; acceptance criteria and logs.
2. Packaging options, vialing and labeling for shipment.
3. Storage and transport guidance; cold chain notes.
4. Basic compliance and ethics touchpoints for pAb projects.
5. Tech transfer dossier and receiving-lab checklist.
6. Costing, timelines and resource planning for repeat lots.
7. Troubleshooting playbook for common issues.
8. Risk registry update and mitigation planning.
9. Capstone mini-project presentation with data pack.
10. Career portfolio curation and next steps.