Target Identification and Validation Strategies Training Course

Professional Development Training Course Outline

Category	Biotechnology and Pharmaceutical Development	**Duration**	10 Days
Base Fee	$4,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

The Target Identification and Validation (TIV) Strategies Training Course is a critical program for professionals seeking to master the foundational and advanced steps of early drug discovery. In the highly competitive and rapidly evolving biopharmaceutical landscape, the ability to confidently identify a novel, druggable target is the single most important factor for reducing clinical trial attrition and accelerating the path to market for a new therapeutic. Target Identification and Validation Strategies Training Course provides a data-driven approach to TIV, focusing on the latest breakthroughs in functional genomics, multi-omics data analysis, and computational drug discovery. Participants will gain the strategic framework and technical expertise needed to de-risk their pipelines, ensuring a clear line-of-sight to the clinic and enhancing the overall success rate of their translational medicine projects.

This hands-on, strategic program moves beyond theoretical overviews to equip participants with immediately applicable skills in cutting-edge technologies like CRISPR-based screening, chemoproteomics, and AI/Machine Learning for target prioritization. By mastering modern TIV workflows, you will learn to critically appraise potential targets, develop robust target validation plans, and effectively communicate a compelling therapeutic rationale to key stakeholders and investors. The focus is on integrating biological insights with pharmacological relevance to build an evidence-based pipeline that addresses significant unmet medical needs with high-potential therapeutic interventions.

Programme Curriculum

Target Identification and Validation Strategies Training Course

Introduction

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Course Objectives

Upon completion, participants will be able to:

1. Strategically prioritize novel druggable targets using a data-driven approach.
2. Apply functional genomics and CRISPR-based screening for high-confidence target validation.
3. Utilize advanced multi-omics data analysis and bioinformatics to uncover complex disease pathways.
4. Assess target druggability and ligandability across different therapeutic modalities
5. Develop and execute a de-risked target validation plan with clear go/no-go decision gates.
6. Critically appraise the pharmacological relevance of in vitro, ex vivo, and preclinical disease models.
7. Integrate AI and Machine Learning for predictive target identification and mechanistic insights.
8. Leverage spatial biology and single-cell sequencing for deep, context-specific biological insights.
9. Design and interpret complex high-throughput screening (HTS) and high-content screening (HCS) campaigns.
10. Navigate the complexities of protein-protein interaction networks (PPIs) and allosteric modulation.
11. Establish a robust translational research framework for reverse translation
12. Formulate and effectively communicate a compelling target rationale and IP strategy to investors.
13. Understand off-target effects and implement chemoproteomics for mechanism-of-action deconvolution.

Target Audience

1. Research Scientists/Associates in Pharma/Biotech (R&D, Discovery Biology).
2. Medicinal Chemists and Pharmacologists involved in early-stage project initiation.
3. Bioinformatics and Computational Biology specialists.
4. Principal Investigators and Academic Researchers.
5. R&D Project Managers.
6. Translational Medicine Specialists linking basic science to clinical outcomes.
7. Venture Capital Analysts and Business Development professionals.
8. Postdoctoral Fellows and Advanced Graduate Students.

Course Modules

Module 1: Foundations and Strategic Target Selection

- Identifying Unmet Medical Needs and Therapeutic Area Strategy.
- The TIV Funnel.
- Defining a Good Drug Target.
- Target Class Review.
- Case Study: Strategic selection of an immunooncology target based on patient stratification.

Module 2: Genetic and Functional Genomics Approaches

- Leveraging Human Genetics and GWAS for Target Identification.
- Principles of CRISPR/Cas9 Screening and Library Design.
- Systematic RNAi and siRNA for rapid functional knockdown.
- Identifying Synthetic Lethality in Cancer Models.
- Case Study: Using whole-genome CRISPR screen to validate a novel T-cell proliferation target.

Module 3: Multi-Omics and Bioinformatics

- Integrating Genomics, Transcriptomics, Proteomics, and Metabolomics.
- Bioinformatics Tools for Pathway and Network Analysis
- The role of Single-Cell Sequencing in identifying disease-driving cell populations.
- Data Mining Public and Proprietary Biological Databases.
- Case Study: Using bioinformatics to identify novel targets for neurodegenerative diseases.

Module 4: Target Druggability and Ligandability Assessment

- Defining Druggability and the Target Landscape.
- Structural Biology and Computational Approaches for Binding Pocket identification.
- Assessing the tractability for Small Molecules and Biologics
- Allosteric Modulation and targeting cryptic binding sites.
- Case Study: Druggability assessment of a historically 'undruggable' transcription factor.

Module 5: Target Engagement and Pharmacological Validation

- Developing and using Selective Tool Compounds for target modulation.
- Target Engagement Assays
- Dose-Response and Mechanistic Assay Development.
- Confirming on-target activity and minimizing off-target effects.
- Case Study: Validation of a kinase target using an in-house developed selective inhibitor.

Module 6: Advanced Cellular and Spatial Biology

- High-Content Imaging (HCI) and Phenotypic Screening.
- Spatial Transcriptomics and Proteomics for tissue-level validation.
- Developing Disease-Relevant Cell Models
- Flow Cytometry and Functional Cellular Assays.
- Case Study: Using organoids to model patient response and validate a target in cystic fibrosis.

Module 7: Chemoproteomics and Mechanism Deconvolution

- Introduction to Chemical Biology and Affinity-Based Protein Profiling

- Photo-Affinity Labeling for molecular target deconvolution.
- Using PROTACs and molecular glue degraders for target validation.
- Understanding the utility of thermal shift assays (TSA) and CETSA.
- Case Study: Deconvoluting the off-target effects of a phenotypic screening hit using chemoproteomics.

Module 8: AI and Machine Learning in Target Discovery

- Fundamentals of Machine Learning for biological data.
- Using AI for Predictive Target Identification and Prioritization.
- Image-based Deep Learning in High-Content Screening.
- Network Pharmacology and identifying synergistic target combinations.
- Case Study: AI-driven prediction of novel PPIs in a neurodegenerative disease pathway.

Module 9: Preclinical Models and Translational Relevance

- Criteria for Selecting the Right Preclinical Disease Model
- Assessing Target Knockdown/Out Phenotypes in In Vivo Models.
- Biomarker Strategy and Pharmacodynamics (PD) marker development.
- Ex Vivo and In Vitro Models of Human Tissue
- Case Study: Critical appraisal of a mouse model for Alzheimer's disease target validation.

Module 10: Quantitative Biology and HTS

- Principles of High-Throughput Screening (HTS) and uHTS.
- Assay Miniaturization and Quality Control Metrics
- Understanding and mitigating assay Artifacts and False Positives/Negatives.
- Label-Free Detection Technologies for kinetic analysis.
- Case Study: Designing a robust HTS campaign for a novel allosteric target.

Module 11: Risk Assessment and Go/No-Go Decisions

- Developing a Target Product Profile and Target Criteria.
- Structured Risk/Benefit Analysis for Target Prioritization.
- Implementing clear Go/No-Go Decision Gates in TIV.
- Competitive Landscape Analysis and Patent Strategy.
- Case Study: A deep dive into a historical target failure due to unmitigated toxicity risk.

Module 12: Regulatory and Commercial Considerations

- Integrating Safety Pharmacology and early ADMET into TIV.
- Understanding the Regulatory Expectations for Target Validation Data.
- Developing a strong Intellectual Property (IP) Strategy.
- Forecasting Clinical Risk based on Target Class and Mechanism.
- Case Study: Building a robust IP portfolio around a multi-target therapeutic approach.

Module 13: Kinetic and Affinity Characterization

- Detailed analysis of binding kinetics
- Using Surface Plasmon Resonance (SPR) and Biolayer Interferometry (BLI).
- Determining Thermodynamic Parameters (ITC).
- Relationship between kinetics, affinity, and in vivo efficacy.
- Case Study: Analyzing the binding kinetics of a monoclonal antibody to its target receptor.

Module 14: Translational Research and Reverse Translation

- Translating preclinical findings to the First-in-Human (FIH) study.
- Using Patient-Derived Data and Clinical Endpoints to Guide Validation.
- Reverse Translation: Utilizing Clinical Data to Inform TIV.
- Developing Companion Diagnostics based on target expression.
- Case Study: The role of reverse translation in validating a novel inflammation pathway.

Module 15: Scientific Communication and Pitching Strategy

- Crafting a compelling Target Rationale and Mechanism-of-Action (MOA) Story.
- Developing an Investor Pitch Deck for a validated target.
- Effective communication of complex biological data to non-experts.
- Navigating Interdisciplinary Collaboration.
- Case Study: Presentation of a target validation package to a mock-investor panel.

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call +254769199797

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

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