Peptide Therapeutics - Discovery and Optimization 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

- Peptide therapeutics have emerged as one of the most innovative and promising fields in drug discovery and development. With their ability to selectively target specific molecular pathways, peptides offer substantial advantages over traditional small molecule drugs and biologics, especially in areas such as cancer, autoimmune diseases, and metabolic disorders. Peptide Therapeutics - Discovery and Optimization Training Course provides an in-depth exploration of the latest strategies and technologies involved in peptide drug discovery, synthesis, and optimization. Whether you're an early-career researcher or a seasoned pharmaceutical professional, this course offers valuable insights into the full lifecycle of peptide therapeutics, from initial design to clinical application.

Our comprehensive curriculum equips participants with the knowledge and tools necessary to excel in the peptide drug development process. With a strong focus on peptide optimization techniques, bioinformatics tools, ADMET properties, and preclinical strategies, this training will empower you to enhance the therapeutic potential of peptides while overcoming challenges such as stability, bioavailability, and immunogenicity. The course integrates cutting-edge industry practices and case studies to ensure that participants gain practical, hands-on experience in peptide therapeutics.

Programme Curriculum

Peptide Therapeutics - Discovery and Optimization Training Course

Introduction

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Course Duration

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Course Objectives

1. Understand the fundamentals of peptide drug discovery and its role in modern pharmaceutical development.
2. Explore peptide synthesis techniques and technologies for optimizing peptide stability.
3. Gain expertise in bioinformatics tools used for peptide sequence prediction and analysis.
4. Master structure-activity relationship (SAR) analysis to enhance peptide potency.
5. Learn about peptide-based biologics and their application in targeted therapies.
6. Dive into the optimization of ADMET properties (Absorption, Distribution, Metabolism, Excretion, and Toxicity) in peptide therapeutics.
7. Understand the significance of peptide receptors and their role in drug efficacy.
8. Investigate peptide formulations for improving bioavailability and tissue targeting.
9. Learn about peptide stability in physiological environments and methods for enhancement.
10. Explore strategies for overcoming immunogenicity and improving the safety profile of peptide drugs.
11. Analyze the challenges in peptide scale-up production and industrial synthesis.
12. Apply knowledge of preclinical studies and animal models in peptide drug development.
13. Understand the regulatory landscape for peptide therapeutics and clinical trial design.

Target Audience

1. Pharmaceutical researchers working in drug discovery
2. Biotechnology professionals involved in peptide therapeutics
3. Medical scientists focusing on peptide-based treatments
4. Professionals in preclinical and clinical research
5. Regulatory affairs specialists in the pharma industry
6. Bioinformaticians specializing in peptide sequence analysis
7. R&D teams in academic institutions and research organizations
8. Senior decision-makers in pharmaceutical companies

Course Modules

Introduction to Peptide Therapeutics

- Overview of peptide therapeutics and their advantages
- The rise of peptides in targeted therapy
- Key peptide drug classes and their applications
- Case study: Peptide-based cancer therapies
- Industry trends and emerging peptide therapeutics

Peptide Synthesis and Production

- Solid-phase peptide synthesis (SPPS) vs. liquid-phase synthesis
- Techniques for optimizing peptide purity
- Challenges in peptide synthesis
- Case study: Large-scale peptide synthesis for clinical trials
- The role of automation in peptide production

Bioinformatics Tools for Peptide Discovery

- Sequence-based peptide design
- Computational methods for peptide prediction
- Peptide docking studies and molecular simulations
- Case study: Bioinformatics in peptide drug optimization
- Integrating AI and machine learning in peptide drug design

Peptide Drug Optimization Strategies

- Structure-activity relationship (SAR) studies
- Modifications for improving peptide stability
- Peptide modifications for enhanced receptor binding
- Case study: Optimizing peptides for metabolic disorders
- Balancing efficacy and safety in peptide optimization

ADMET Properties of Peptides

- Absorption, distribution, metabolism, excretion, and toxicity
- Improving peptide bioavailability
- Strategies for overcoming peptide degradation
- Case study: Peptide drug with optimized ADMET properties
- The role of in vitro and in vivo ADMET testing

Peptide Formulations and Delivery Systems

- Enhancing peptide solubility and stability
- Delivery methods: oral, intravenous, and transdermal
- Peptide formulation for targeted drug delivery
- Case study: Peptide nanocarriers for tissue-specific targeting
- Technologies for improving peptide half-life

Immunogenicity in Peptide Therapeutics

- Understanding immune responses to peptides
- Methods for reducing immunogenicity
- Case study: Immunogenic peptides in clinical trials
- Risk assessment and mitigation strategies

- Regulatory considerations for immunogenicity

Peptide Preclinical and Clinical Development

- Preclinical testing for peptide drugs
- Animal models for peptide efficacy and safety
- Clinical trial design for peptide therapeutics
- Case study: Peptide drug development through clinical trials
- Regulatory requirements for peptide-based biologics

Regulatory Landscape for Peptide Therapeutics

- FDA and EMA guidelines for peptide drugs
- Challenges in peptide regulatory approvals
- Case study: Navigating regulatory hurdles for peptide-based drugs
- GMP and GLP standards for peptide manufacturing
- Documentation requirements for peptide clinical trials

Peptide Drug Delivery and Targeting

- Strategies for targeted peptide drug delivery
- Using peptide conjugates for site-specific delivery
- Nanotechnology in peptide therapeutics
- Case study: Targeted peptide therapies in cancer
- Improving peptide penetration through biological barriers

Peptides in Oncology

- Mechanisms of action of peptide-based cancer drugs
- Strategies for designing peptides for cancer therapy
- Peptide immunotherapy and checkpoint inhibitors
- Case study: Peptides targeting tumor-specific antigens
- Challenges and opportunities in peptide cancer therapies

Peptides in Autoimmune and Metabolic Disorders

- Peptide therapies for autoimmune diseases
- Peptides as modulators of metabolic pathways
- Case study: Peptide-based insulin therapy
- Peptide targeting of inflammatory pathways
- Emerging peptide therapies for chronic diseases

Emerging Trends in Peptide Therapeutics

- The role of peptides in personalized medicine
- Peptide gene therapies and CRISPR technologies
- Biophysical methods for peptide characterization
- Case study: Peptides in gene silencing applications
- Future prospects of peptide-based drugs

Scaling Peptide Therapeutics

- Challenges in scaling peptide production

- Cost-effective manufacturing strategies
- Case study: Scaling peptide production for clinical trials
- Ensuring consistency in peptide quality at scale
- Commercialization strategies for peptide therapeutics

Case Studies and Industry Applications

- Overview of successful peptide drugs
- Lessons from peptide drug development failures
- Peptide-based drugs in clinical practice
- Case study: Peptide therapeutics in rare diseases
- Future outlook for peptide drug discovery

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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