High-Throughput Screening (HTS) in Drug Discovery 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

High-Throughput Screening (HTS) is a pivotal technology in modern drug discovery, enabling rapid, large-scale testing of thousands to millions of compounds to identify potential drug candidates. The HTS process involves the use of automated systems, advanced robotics, and data analytics to screen vast compound libraries against specific biological targets. In the evolving landscape of pharmaceutical research, HTS is crucial for accelerating the drug development pipeline, improving lead discovery, and optimizing the selection of compounds for preclinical testing. High-Throughput Screening (HTS) in Drug Discovery Training Course is designed to provide professionals with an in-depth understanding of HTS processes, from basic principles to advanced methodologies, helping them leverage these techniques to drive innovations in drug discovery and development.

By enrolling in this course, participants will gain hands-on knowledge of HTS platforms, assay development, data analysis, and the application of HTS in hit identification. The course also covers key technologies such as miniaturization, assay optimization, and the integration of artificial intelligence (AI) and machine learning (ML) in HTS workflows. Designed for those involved in drug discovery, including researchers, scientists, and pharmaceutical professionals, this training will empower attendees with the tools necessary to enhance the efficacy of drug screening and contribute to the development of novel therapeutics. The comprehensive nature of this training ensures that professionals remain at the forefront of the rapidly advancing field of HTS.

Programme Curriculum

High-Throughput Screening (HTS) in Drug Discovery Training Course

Introduction

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Course Duration

10 days

Course Objectives

1. Understand the foundational principles of High-Throughput Screening (HTS) in drug discovery.
2. Explore various HTS technologies and platforms, including robotics and automation.
3. Learn how to develop and optimize assays for HTS applications.
4. Analyze the role of miniaturization and microplates in accelerating drug discovery.
5. Implement HTS in primary and secondary screening strategies for drug development.
6. Gain proficiency in data analysis techniques, including the use of advanced statistical tools.
7. Discover the application of Artificial Intelligence (AI) and Machine Learning (ML) in HTS data analysis.
8. Understand the integration of compound libraries and the management of chemical libraries.
9. Develop strategies for optimizing hit identification in drug discovery pipelines.
10. Learn the principles of assay validation and quality control in HTS workflows.
11. Explore case studies highlighting the successful use of HTS in drug discovery.
12. Understand regulatory requirements and guidelines for HTS in drug development.
13. Gain insight into future trends in HTS, including digitalization and real-time monitoring technologies.

Target Audience

1. Pharmaceutical Researchers and Scientists
2. Drug Discovery Professionals
3. Biotechnology Researchers and Practitioners
4. Assay Development Scientists
5. Computational Biologists and Bioinformaticians
6. Industry Professionals in Pharma and Biotech Companies
7. Regulatory Affairs Specialists
8. Medical Device and Diagnostics Experts

Course Modules

Module 1: Introduction to HTS in Drug Discovery

- Definition and purpose of HTS
- History and evolution of HTS technologies
- Key components of HTS systems
- Overview of compound libraries
- Case study: HTS in early drug discovery

Module 2: Technologies Behind HTS Platforms

- Robotics and automation in HTS
- Screening instruments and technologies
- Data acquisition systems
- Advances in HTS hardware and software
- Case study: Automation in high-throughput cancer screening

Module 3: Assay Development and Optimization

- Types of assays used in HTS (cell-based, biochemical)
- Optimizing assay conditions
- Assay miniaturization and multiplexing
- Validation techniques for HTS assays
- Case study: Optimization of a cell-based assay for drug screening

Module 4: Data Analysis in HTS

- Introduction to data analysis in HTS
- Statistical techniques for HTS data
- Identifying hits and false positives
- Normalization methods
- Case study: Data analysis in a large-scale screening project

Module 5: Artificial Intelligence and Machine Learning in HTS

- AI and ML techniques for data interpretation
- Predicting compound activity with ML
- Integrating AI with HTS platforms
- Improving hit-to-lead conversion using ML
- Case study: AI-driven drug discovery for novel antibiotics

Module 6: High-Content Screening (HCS)

- Principles of high-content screening
- Imaging and analysis in HCS
- Applications of HCS in drug discovery
- Advantages over traditional HTS
- Case study: HCS in identifying neuroprotective drugs

Module 7: Compound Library Management

- Building and managing compound libraries

- Quality control and validation of compounds
- Library screening strategies
- Managing large-scale libraries
- Case study: Compounds libraries in targeting cancer

Module 8: Screening Strategies and Workflow

- Primary vs. secondary screening
- Hit identification and validation
- Screening strategies for target identification
- Secondary assay development
- Case study: Screening for kinase inhibitors

Module 9: Assay Validation and Quality Control

- Ensuring reproducibility in HTS
- Techniques for assay validation
- Addressing false positives and negatives
- Optimizing assay conditions for better performance
- Case study: Quality control in screening for anti-inflammatory drugs

Module 10: Regulatory Guidelines and Ethical Considerations

- Regulatory requirements for HTS assays
- GxP (Good Practice) standards in HTS
- Ethical issues in drug screening
- Risk assessment in drug discovery
- Case study: Regulatory challenges in HTS for oncology

Module 11: Miniaturization and Microplates in HTS

- Advantages of miniaturized assays
- Types of microplates and their applications
- Benefits of scaling down assays
- Impact on cost and speed in drug screening
- Case study: Microplate use in high-throughput antiviral screening

Module 12: Future Trends in HTS

- Emerging technologies in HTS
- AI and automation trends in HTS
- Next-gene sequencing in drug discovery
- Real-time HTS monitoring
- Case study: The role of digitalization in HTS

Module 13: High-Throughput Screening in Personalized Medicine

- HTS applications in precision medicine
- Identifying patient-specific drug responses
- Biomarker discovery using HTS
- Tailoring drug treatments based on HTS data
- Case study: HTS in targeted therapy for cancer

Module 14: Screening for Complex Diseases

- HTS in neurodegenerative diseases
- Drug discovery for infectious diseases
- Screening for metabolic disorders
- Rare diseases and HTS
- Case study: Screening for Alzheimer?ÇÖs treatments

Module 15: Final Case Study and Review

- Real-world HTS project overview
- Key takeaways and lessons learned
- Group discussion on course content
- Hands-on exercise: Data analysis and hit identification
- Review of future directions in HTS and 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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