



Presented by
Management Forum

Drug Discovery: A Step-by-Step Introduction

9-10 May 2024
+ 19-20 September 2024

This drug discovery training course takes you on a science-based drug discovery journey. You will travel from inception of a new project to the point of hand-over of the newly discovered molecule to the Drug Development Team for pre-clinical and clinical studies. The course breaks down the long, multi-faceted drug discovery process into individual steps which build towards this key goal. The focus is on how essential science, technology and infrastructure elements are constituted, deployed and integrated to maximise the likelihood of a successful drug discovery project.



Format:
Live online



CPD:
12 hours for your records



Certificate of completion

Overview

Drug discovery is a compelling mixture of established science and new, cutting-edge developments. It is powered by the know-how of its stakeholders and a long history which provide us with guidance on the scientific path for a successful project. The disciplines required include Biology, Biochemistry, Molecular Biology, Medicinal Chemistry and Informatics (and their sub-disciplines) with the support of major infrastructure and extensive non-scientific functions (Management, Financial, Commercial, Legal etc). All involved must work in harmony over a long timescale to successfully reach the final goal. This course has been designed to steer you through the process and focuses on small molecule drug discovery, making some reference to biologics.

Each company carries out drug discovery in a unique manner and the process continually evolves; however, there is a 'Classical Model' that is often followed and will be presented here. The programme describes how the project begins by selecting the disease to be treated, and then identifying a protein target whose modulation by a compound or biologic will have the required therapeutic effect based on the molecular mechanism of the disease. A large number of compounds or biologics are then generated and iteratively optimised for a wide range of key chemical, physical and biological attributes based on past experience. A lead (or lead series) of compounds is eventually selected which is further optimised to generate the clinical candidate. The science base and phasing of these activities will be covered together with the realities of the Pharma - Biotech environment in which they occur.

This is an excellent opportunity to engage with the drug discovery process and the elements involved with an expert in this field. The course will include a number of interactive exercises to aid the learning experience.

Benefits of Attending

Gain an understanding of the:

- most frequently employed scientific approaches
- key stages of drug discovery, their timelines and ordering
- major science and technology platforms and infrastructure requirements
- terminology commonly used by the drug discovery industry
- scientific, commercial and financial landscape shaping drug discovery

Who Should Attend

- Those who have recently transitioned into Pharma-Biotech from, for example, Academia and wish to get a global view of Drug Discovery.
- Those already established within Pharma-Biotech in a specialist role who wish to see the bigger picture.
- Those within companies providing services or collaboration with Pharma-Biotech who want to gain a better understanding of their customer or collaborator.
- Typical attendees have a science-based background and are often:
 - Biologists
 - Molecular Biologists
 - Chemists
 - Information Scientists
 - Project Managers
 - General Managers
 - Commercial Managers
 - Patent Attorneys
 - Lawyers
 - Technology Transfer Managers

Programme

Day 1

Welcome and Introduction

The Drug Discovery Landscape

Typical drug discovery considerations:

- Essential elements
- Typical Milestones, decision points and pipeline
- Drug Discovery strategies
- Drug Discovery costs and drug revenues
- Reducing attrition
- Nomenclature
- Scientific skills base required (Medicinal Chemistry, Biology, Molecular Biology, ADMET/DMPK, Informatics/Artificial Intelligence)
- Small Molecules v. Biologics as drugs

Project Initiation

Best practice:

- Generating a TPP (Target Product Profile)
- Selecting a viable Project

Target Protein Selection

How to select the right protein drug target for the disease:

- Target Validation/Hypothesis generation
- Genomics and Proteomics in Target selection
- Drug action at the cellular level

Target Protein Selection (continued)

- Target tractability.
- Major classes of Target proteins for existing small molecule drugs:
 - G-Protein-Coupled Receptors, Ion Channels, Nuclear Receptors, Kinases

Lead / Lead Series Identification

The path to obtaining a lead or lead series with the quality attributes to become a clinical candidate. An outline of the key scientific tools of drug discovery:

- Bioactivity assays of compounds, Low/Medium throughput screening, Bioactivity assay formats, Transformed cells, Stem cells, Organoids
- Potency quantification - key constants and parameters
- Targeted Protein Degradation
- Selectivity Analysis
- Biostructural Analysis of the compound–protein target structure (X-Ray diffraction, Cryo-electron Microscopy, Google AlphaFold).
- E-Docking

Programme

Day 2

Recap of Day One

Lead / Lead Series Identification (continued)

- High Throughput Screening (HTS)
- Company compound library
- Virtual company compound library and its e-screening

In vitro ADMET methodologies and their application:

- Compound absorption at the gut and blood-brain barrier, bioavailability
- Drug Metabolism: Cyp 450 / drug-drug interactions / Glucuronidation / P-glycoprotein / Metabolic stability measurement/ The Prodrug Strategy
- Protein binding of compounds

Lead / Lead Series Identification (continued)

Medicinal chemistry:

- Multidimensional Optimisation (MDO) of compounds
- Compound Synthesis and automation
- Chemical and physical properties of drug-like compounds
- Drug-Protein Target bonding chemistry
- Drug design physical/chemical parameters (e.g. Lipinski/Schultz 'rules')

Lead / Lead Series Identification (continued)

- Animal model studies
- Efficacy in animal models of disease, examples:
 - Inflammation
 - Cancer
 - HIV-AIDS
 - Essential attributes of a Lead Compound
 - Phasing of Scientific activities in Lead Identification for small molecules

Clinical Candidate Identification

Final 'polishing' of the lead with a view to its nomination to enter Pre-clinical and Preclinical Development:

- Essential attributes of a clinical candidate
- Manufacture
- Formulation
- Pharmacokinetics (PK) and Pharmacodynamics (PD)

Clinical Candidate Identification (continued)

- Toxicology and Toxicology Assays *in vitro* and *in vivo* / hERG.
- Allometric Scaling.
- Entry into Human Enabling Development stage.

Q & A

The course will include a number of interactive exercises throughout the two days

Presenter



Peter A. Lowe

After a Ph.D and postdoctoral positions in the UK and USA in protein biochemistry Peter joined Celltech (now part of UCB Pharma). There he was involved in biologics discovery. His next relevant position was with Roche where he became a senior manager in Biological Technology discovering small molecule antiviral drugs against HIV, Flu and Hepatitis C. Peter then went on to leadership positions in small/mid-sized Biotech companies in the UK and Switzerland before starting a Pharma-Biotech consultancy based near Cambridge, UK.

Course dates

9-10 May 2024

Live online

09:30-17:00 **UK (London)** (UTC+01)

Course code 13684

GBP **1,299**

EUR **1,859**

USD **2,098**

19-20 September 2024

Live online

09:30-17:00 **UK (London)** (UTC+01)

Course code 13905

GBP **1,099** ~~1,299~~

EUR **1,579** ~~1,859~~

USD **1,786** ~~2,098~~

Until 15 Aug

How to book



Online:

ipi.academy/2632

Alternatively contact us to book, or if you have any queries:



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Discounts

- Booking more than one delegate on any one date qualifies for a **15% discount** on the second and subsequent places.
- Most events qualify for an **early booking discount** prior to 6 weeks before the course date. Be sure to check on our website, where the latest discounts will be shown.

Further information

Fee

The fee includes all meals and refreshments for the duration of the course (for venue-based courses) and a complete set of course materials (provided electronically). If you have any particular requirements, please advise customer services when booking.

Please note

IPI Academy (and our training partners) reserve the right to change the content and timing of the programme, the speakers, the date and venue due to reasons beyond their control. In the unlikely event that the course is cancelled, we will refund the registration fee and disclaim any further liability.

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IPI
Academy

IPI Academy is a training initiative of Falconbury and Management Forum; leading providers of industry training for over 30 years, based in the UK.

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