

Drug Discovery - Background of the Course:

Almost half the massive effort and cost of bringing a new drug to market is incurred during the first phase - 'Discovery'.

The course takes you on a Discovery journey from the blank sheet of paper - inception of a new project - to the point of transfer of the newly discovered molecule to the Development team for Pre-Clinical and Clinical studies.

How is Discovery carried out?

Each Pharma - Biotech company has evolved their own unique Discovery pathway moulded by factors including: their history, choice of disease area, expertise and capabilities. However, versions of this 'Classical' route containing the key elements operate in many companies and is described in this course.

The 'Classical' process involves sequential:

Selection of a disease > Identification of a target protein whose inhibition/activation will bring about a therapeutic effect (as predicted by a disease hypothesis of the disease mechanism at a molecular level) > Selection of a small molecule or biologic that modulates the target in an animal model of the disease in the required way. Discovery timescales vary wildly depending on many factors including the scientific challenge and the level of financial support resourcing the project; but 5+ years is typical. The chosen molecule must exhibit a set of key characteristics which make it worthy of entering Development and justifying the subsequent massive investment and risks entailed. The scientific content, phasing, and execution of Discovery, focussing on small molecules and referencing biologics, forms the basis of the course.

Impact of the New

Evolution of many elements of the science base underpinning drug discovery is occurring at breakneck speed. These include human genome science, automation, miniaturisation of bioassays, Informatics-AI and stem cell biology. All are enhancing the depth and capability of current process as well as promoting new approaches to drug discovery.

Learning from the Past

Drug discovery dates back to the 19th Century and beyond. For recent times some of the detailed data and knowledge gained from a number of drug discovery projects has been captured and analysed. This provides predictive guidelines on the biochemical, chemical, and physical attributes of a successful drug- an invaluable resource for any new drug discovery project.

Creativity and Motivation

Finally, Drug Discovery is not just about process, science, technology and resources. It is also about the creativity of a large number of people from many scientific and non-scientific disciplines working together and profoundly motivated by discovering life-enhancing and possibly life-saving medicines for patients.

Dr. Peter A. Lowe has carried out academic biochemical research and led research teams in medium-sized and large Pharma and Biotech companies for over 40 years. The course, now in its 18th year with One Nucleus, builds on direct, hands-on experience.