

Drug Discovery - Background of the Course:

The course is designed with you in mind by immersing you in the real world of Pharma - Biotech Drug Discovery. This world has its own language, processes, technology and culture. You are taken on a science-based step-by-step Discovery journey from the blank sheet of paper (start of a new Drug Discovery project) to the point of transfer of the newly discovered drug to the Development team for Pre-Clinical and Clinical studies. Key commercial, legal and ethical elements are also addressed. Almost half the massive effort and cost of bringing a new drug to market is incurred during this first crucial phase - 'Drug Discovery'.

How is Drug Discovery carried out?

Each Pharma - Biotech company has evolved their own unique Discovery pathway moulded by factors including: their history, resources, choice of disease area and expertise. However, versions of the 'Classical' route containing the key elements and technologies operate in many companies and is described in this course. 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 drug discovered must exhibit a set of key safety and efficacy characteristics which make it worthy of entering Development for preclinical and human clinical trials and justifying the subsequent massive financial investment and risks entailed. The content, phasing, derisking and execution of Discovery, focussing on small molecules and referencing biologics, forms the basis of the course, together with consideration of commercial, patenting and ethical imperatives.

Impact of the New:

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

Learning from the Past:

For the last several decades, some of the detailed data and knowledge gained from a number of successful (and failed) drug discovery projects has been systematically captured and analysed. This provides invaluable predictive guidelines on the biochemical, medicinal chemical, and physical attributes of a successful drug - a critical resource for any new drug discovery project. These predictive guidelines will be listed.

Creativity and Motivation:

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

Dr. Peter A. Lowe has carried out academic biochemical research and led research in medium-sized and Big Pharma and Biotech companies for over 40 years. The course, now in its 20th year with One Nucleus, builds on this direct, hands-on experience.