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# HMX Pro Pharmacology - Drug Discovery

The field of drug discovery and development is multifaceted and evolving quickly, allowing researchers to continually expand their toolkit of therapeutic modalities to treat and manage diseases. This course offers a comprehensive exploration of various drug modalities, such as small molecules, protein and nucleic acid therapeutics, and cell therapies, providing learners with the tools to navigate the foundational and cutting-edge methodologies in developing novel therapeutics. This advanced course provides a unique opportunity to learn directly from leading Harvard Medical School faculty.

Participants will:

- Learn about the fundamental steps and considerations involved in the discovery process of various drug modalities
- Explore examples of discovery of various therapeutics
- Understand how the novel therapeutic approaches allow for improvement of existing treatments and expand the range of diseases that can be effectively treated

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## Topics Covered

### Overview of Drug Discovery

- The Promise of Drug Discovery

### Discovery of Small Molecule Drugs

- In Focus: How TPP and IND Guide and Frame Drug Discovery
- Hit Identification
- Hit Validation
- Structure–Activity Relationship Studies
- Parallel Medicinal Chemistry
- Lead Optimization
- Clinical Candidate Discovery
- In Focus: Spectroscopy Methods
- Clinical Linkage: Discovery of Small Molecule Protein Degraders

### Discovery of Biologics and Nucleic Acid Therapeutics

- Naturally Occurring Proteins
- Interactive: Protein Purification
- Discovery of Monoclonal Antibodies
- In Focus: Phage Display
- Pharmacokinetics of Protein Therapeutics
- Creative Proteins
- Overview of Nucleic Acid Therapeutics
- Discovery of siRNA Therapeutics
- Discovery of PMO Exon Skippers
- Discovery of mRNA Therapeutics
- Clinical Linkage: Discovery of Protein and Nucleic Acid Therapeutics

### Discovery of Cell Therapies

- Background
- Toolkit
- Cell Modifications
- Toxicology and Specifications Unique to Cell Therapies
- Measuring Bioactivity in a Pre-clinical Setting
- Ongoing Challenges
- Clinical Linkage: Cell Therapy Manufacturing

### Wrap-up

- The Future of Drug Discovery

The HMX Pro Series offers a new online learning experience designed to get busy professionals up to speed on the latest advances in medicine. Concepts are taught using whiteboard-style videos and animations and reinforced by interactive elements and true-to-life scenarios to enhance learning.