

■ BioBasics 101

The Biology of Biotech for the Non-Scientist

OVERVIEW

BioBasics 101: The Biology of Biotech for the Non-Scientist is an interactive course that explains the foundational science upon which all biopharma therapies are based. This course focuses on the function of DNA, RNA, proteins, and cell signaling and how each interacts in both healthy and diseased tissue. As the course progresses it builds on your new-found molecular biology knowledge to include a more in-depth look at genetic disease and how genetic engineering is used to create personalized medicine options for patients. The course ends with a survey of small and large molecule drugs and explains how each mitigates disease at the molecular level. BioBasics 101 will increase your scientific knowledge so you can converse more effectively with colleagues, clients, regulators, and scientists.

BioBasics 101 was developed for the non-science professional who works within or services the biopharma industry.

Five Takeaways:

1. Fluency in the essential terminology of the biopharma industry.
2. Improved ability to communicate more effectively with colleagues, clients, scientists, and regulators.
3. Increased scientific understanding of your company or client products.
4. Determination of how your employer or client organization “fits” in the healthcare landscape.
5. Integration of your business and science operations to empower staff to recognize new opportunities.

AGENDA

DAY ONE

Introductions 15 minutes

Industry Overview 60 minutes

- Healthcare industry sectors
- Industry hubs and associations
- FDA and industry
- NIH and industry
- Academia and industry
- Research support companies
- Funding

Break 10 minutes

Biology: Basis of Biopharma 65 minutes

- Process of biotechnology
- Molecules critical to life
- Cell structure
- Industry application: receptors and drug targets
- Industry application: mitochondria disease
- Cell functions: signaling, protein production
- Focus on cell signaling
- Industry application: cell signaling and cancer

Break 10 minutes

DNA: Biopharma's Blueprint 65 minutes

- History of DNA discovery
- DNA structure
- DNA organization: chromosomes and genes
- Industry application: chromosome abnormalities
- DNA function: coding for proteins
- Industry application: pharmacogenomics
- DNA replication
- Industry application: PCR

Wrap-Up 15 minutes

DAY TWO

Proteins: Biopharma's Workhorse

- 70 minutes
- How DNA codes for proteins
- Chaperone therapeutics
- Industry application: pharmacological chaperone
- Post-translational modifications (PTM)
- Industry application: PTM and biologics
- Industry application: drug discovery
- Gene expression
- Epigenetics
- Industry application: epigenetic medicines

Break 10 minutes

Genetic Engineering 60 minutes

- Plasmids
- Restriction enzymes
- Recombinant DNA/plasmid
- Recombinant proteins
- Making recombinant proteins
- Pharm animals and plants
- Recombinant proteins in healthcare

Break 10 minutes



Genetic Basis of Disease 75 minutes

Alleles
Phenotype and genotype
Dominant and recessive genes
Industry application: disease and genes
Mutations: source of genetic variation
Causes of mutations
Genetic basis of disease
Industry application: genome-wide studies
Monogenic and polygenic diseases
Industry application: sickle cell anemia
Industry application: cancer
Precision medicine
Companion diagnostics
Industry application: HER2+ and Herceptin

Wrap-Up 15 minutes

DAY THREE

Genomics: Understanding the Genetic Basis of Disease 115 minutes

Genomics defined
Non-coding DNA: the regulome
Identifying mutations that cause disease
Common genetic diseases
Rare genetic diseases
Industry application: identifying mutations
DNA microarrays (gene chips)
Microarrays uses
Third generation gene sequencing
Industry application: big data and rare disease
Personalized medicine: integrating the 'omics
Industry application: comparative genomics

Break 10 minutes

Drugs Mitigate Disease: An Overview

100 minutes
Categories and characteristics of drugs
Small molecule drugs
Antibiotics
Peptide drugs
Large molecule drugs (biologics)
Vaccines
Therapeutic antibodies
Stem cell therapies
Gene therapies
Cell therapies
RNA therapies

Wrap-Up 15 minutes

