RECORDED MASTER COURSE | LEVEL ONE

SUGGESTED PREREQUISITE: NONE

biotechPrimer
Life Science Training From Industry Experts

BioBasics 101

The Biology of Biotech for the Non-Scientist

OVERVIEW

This is the recorded BioBasics 101 course with the same content, interactive exercises, and course materials that are given in the live version. You have 3 months to view this course.

BioBasics 101: The Biology of Biotech for the Non-Scientist is an intensive eight-hour course that explains the foundational science upon which all biopharma therapies are based. Day one focuses on the function of DNA, RNA, proteins, and cell signaling and how each interacts in both healthy and diseased tissue. Day two builds on your new-found molecular biology knowledge. This includes 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 molecule drugs, biologics, and vaccines and explains how each mitigates disease at the molecular level. BioBasics 101 will increase your scientific knowledge so that 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

WEEK ONE

Industry Overview 45 minutes

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

WEEK TWO

Biology: Basis of Biopharma 60 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

WEEK THREE

DNA: Biopharma's Blueprint 45 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

WEEK FOUR

Proteins: Biopharma's Workhorse 40 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

WEEK FIVE

Genetic Engineering 55 minutes

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

WEEK SIX

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

WEEK SEVEN

Genomics: Understanding the Genetic Basis of Disease 45 minutes

Genomics defined
Non-coding DNA: the regulome
Identifying mutations that cause disease
Common genetic diseases
Rare genetic disease
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

WEEK EIGHT

Drugs Mitigate Disease: An Overview 90 minutes

Categories and characteristics of drugs
Small molecule drugs
- Antibiotics
- Peptide drugs

Large molecule drugs (biologics)
- Vaccines
- Therapeutic antibodies
- Immunotherapies
- Gene therapies
- Cell therapies
- Stem therapies

Course Evaluation 20 minutes