

BioImmersion is a three-day course for the non-scientist which delivers an understanding of both fundamental and advanced science and technology concepts. Focusing on the healthcare industry, participants learn what biologics are, as well as how they are discovered, developed and used as therapies.

Day One

Industry Overview 9:00–10:00

Biotechnology Defined
Industry Sectors: Healthcare, Agriculture, Industrial,
Environmental
Evolution of a Biotech Company
Structure of a Biotech Company

Biology Basics 10:00–11:00

Biotechnology Goals
Cell Types
Cell Structure & Function

Break 11:00–11:15

DNA 11:15–12:30

DNA Structure & Function
DNA Replication
Chromosomes & Genes
Inheritance
Lab: DNA Isolation & Extraction

Lunch 12:30–1:30

Genetic Variation 1:30–2:45

Types of Mutations
Causes of Mutations
Genetic Basis of Disease
Monogenic & Polygenic Pharmacogenomics
Personalized Medicine
Activity: Genetic Variation Taste Test

Break 2:45–3:00

Gene Expression 3:00–4:15

DNA to Proteins
RNA
Transcription & Translation
Protein Structure & Function
Measuring Gene Expression
Microarrays
RNA Interference

Q&A/Review 4:15–4:30

Day Two

Genomics 9:00–10:30

Genomics Defined
Restriction Enzymes
PCR
DNA Fingerprinting
DNA Sequencing
Microarrays
Activity: Microarray to Determine Drug Metabolism

Break 10:30–10:45

Genetic Engineering 10:45–12:30

Plasmids
Recombinant DNA
Genetically Engineered Cells
Recombinant Proteins (Biologics)
Transgenic Plants & Animals
Disease Models
Gene Therapy

Lunch 12:30–1:30

Proteomics 1:30–3:00

Proteomic Endeavors
Proteomics Defined
Chromatography
Immunodetection
ELISA
X-Ray Crystallography
Microarrays
Lab: Chromatography

Break 3:00–3:15

Stem Cells 3:15–4:15

Properties of Stem Cells
Types of Stem Cells
Stem Cells in the Lab
Promise of Stem Cells
Challenges

Q&A/Review 4:15–4:30

Day Three

Immune System 9:00–10:00

- Non-Specific Response
- Specific Response
- Inflammation
- Monoclonal Antibodies

Cell Signaling 10:00–10:30

- How Cells Communicate
- Types of Communication
- Signaling Pathways

Break 10:30–10:45

Drug Discovery 10:45–12:00

- Drug Discovery Timeline
- Target Identification
- Druggable Targets
- Target Validation
- Therapeutic Options
- Assay Development
- Biomarkers
- Hit to Lead

Lunch 12:00–1:00

Drug Development 1:00–2:15

- Regulatory Agencies
- Preclinical Trials
- Pharmacokinetics & Pharmacodynamics
- Clinical Trials
- Orphan Drugs
- Patents & Exclusivity
- Generics & BioSimilar

Break 2:15–2:30

BioManufacturing 2:30–3:45

- Biomanufacturing Overview
- Cell Banks
- Scale-Up
- Harvesting & Purification
- Formulation, Fill & Finish

Biotech Today & Tomorrow 3:45–4:15

- Personalized Medicine
- Future Therapies
- Nanomedicine

Q&A/Review 4:15–4:30