biotechPrimer
Life Science Training From Industry Experts

BioBasics 201

Targeted Biologics for the Non-Scientist

Vaccines, Cell, Gene, Antibody, and RNA Therapies

LIVE, ONLINE | LEVEL TWO | SUGGESTED PREREQUISITE **BIOBASICS 101**

OVERVIEW

BioBasics 201: Targeted Biologics for the Non-Scientist is an intensive, two-day course focused on vaccines, cell therapies, gene therapies, therapeutic antibodies, and RNA-based drugs. Biopharma's inspiration for the development of targeted biologics is our own human immune system, so we begin with an in-depth explanation of immunology. The course then focuses on the science, challenges, and medical promise of next generation targeted biologics. BioBasics 201 is designed for the non-scientist who has taken BioBasics 101 or for those who understand the basics of DNA, RNA, proteins, and cell signaling. Taught by industry experts who explain how these complex drugs work in a simple, engaging manner.

Five Takeaways:

1. Understand the mechanisms used by the human body to protect itself against disease.
2. Fluency in vaccine platforms, how each protects against disease including Covid-19.
3. Rational of therapeutic antibody mechanisms of action, including monoclonal antibodies, antibody-drug conjugates, bispecific antibodies, checkpoint inhibitors.
4. Compare and contrast types of DNA- and RNA-based therapies and how each cures disease.
5. Increased knowledge of cell therapies, including all variations of CAR-based therapies

AGENDA

DAY ONE

Immunology: Intro to the Human Immune System 9:00-10:00
Tissues of the immune system
Non-specific and specific immunity
Key immune cell roles
Immune signaling: cytokines
Industry application: cytokine storm

Break 10:00-10:15

Immunology: How Our Body Fights Disease 10:15-11:30
Non-specific immune response
Industry application: inflammation
Specific immune response
Activation of the immune system
B-cells
Antibodies: structure and function
Industry application: monoclonal antibodies
Complement response
T-cells
Regulation of the immune system
PD-1 and CLTA-4
Industry application: tumor suppression of T-cells

Break 11:30-11:45

Immunotherapies: An Overview 11:45-12:15
immuotherapy defined
Immunotherapies review
Therapeutic antibodies
Oncolytic virus therapy
Vaccines
Cell therapy (CAR-T)

Lunch 12:15-1:00

Targeted Biologics: Vaccines 1:00-1:30
Immunological memory
How vaccines work
Vaccine platforms
DNA and RNA vaccines
Industry application: universal flu vaccine

Focus On: Covid-19 1:30-2:15
Morphology and virus activity
Covid-19 vaccines
How does an RNA vaccine work?
Antivirals and therapeutic antibody drugs

Break 2:15-2:30

Focus On: Oncology 2:30-3:15
Cancer
Growth factor signaling
Industry application: Gleevec
Immunosuppressive tumor microenvironment
Cancer immunotherapy

Wrap-Up 3:15-3:30

DAY TWO

Targeted Biologics: Therapeutic Antibodies 9:00-10:00

Therapeutic antibodies
Industry application: polyclonal vs monoclonal antibodies
Therapeutic antibody mechanisms of action
Antibody-drug conjugates
Bispecific antibodies
Checkpoint inhibitors
Industry application: PD-1 and PD-L1
Industry application: CTLA-4
Next generation checkpoint inhibitors

Break 10:00-10:15

Targeted Biologics: Cell Therapies 10:15-11:15

How immune cells are used for cell therapy
CAR structure and function
Selected CAR therapies
CAR variations: CAR-NK, CAR-MA TCR
Industry application: targeting solid tumors
Autologous vs allogeneic cell therapies
How are CARs made?
CAR-T safety: controlling activation
Industry application: CAR treatment for autoimmunity

Break 11:15-11:30

Targeted Biologics: RNA-Based Therapies 11:30-12:30

RNA's role in the cell
RNA's role in disease
Therapeutic areas
Types of RNA-based therapeutics
- Antisense
- Industry application: Kynamro
- Exon-inclusion and exon-skipping
- Industry application: Spinraza
- siRNA therapies

Lunch 12:30-1:15

Targeted Biologics: Gene Therapy 1:15-2:15

Gene therapy: in vivo and ex vivo
DNA deliver via viral vectors
Viral vector platforms
Gene therapy composition
AAV and lentivirus characteristics
Industry application: Luxtuma
Industry application: Zolgensa
AAV neutralizing antibodies
Gene therapy and biomarkers
Durability of effect
RMAT designation
Risks and challenges

Targeted Biologics: Genome Editing 2:15-3:15

Gene therapy vs genome editing
Zinc finger nucleases (ZFN)
- ZFN therapeutic areas
- How ZFN work
- ZFN in the clinic
- ZFN Safety

CRISPR
- CRISPR therapeutic areas
- How CRISPR works
- CRISPR Safety
- CRISPR in the clinic
- Industry application: PD-1 knockouts
- CRISPR Babies activity
- CRISPR as RNA editor
- CRISPR diagnostics
- Industry application: SHERLOCK and DETECTR

Wrap-Up 3:15-3:30