Advanced Therapies: Immunotherapies, Cell Therapies and Gene Therapies Course Agenda

Advanced Therapies: Immunotherapies, Gene Therapies and Cell Therapies course focuses on the most innovative drugs currently in development or newly on the market. The inspiration for these emerging medicines is our own immune system, so we begin with a look at immunology. The rest of the day is spent learning about the science, development challenges and healthcare potential of immunotherapies, gene therapies and cell therapies.

Five Takeaways

1. The rationale behind cancer immunotherapies
2. The challenges and second-generation opportunities for immunotherapies
3. Differentiation between the types of DNA- and RNA- based therapies
4. Improved understanding of gene therapy and genome editing
5. Ability to discuss multiple applications of genome editing

Course Agenda

What Causes Disease *9:00-10:00*
Characteristics of healthy cells
How cells become cancerous
Characteristics of a cancer cell
Tumor formation and microenvironment

Break *10:00-10:15*

Immunology: How Our Bodies Fight Disease *10:15-11:30*
Immune system cells and tissues
Non-specific response
Specific response
T-cells and B-cells
Activation of the immune system
Regulation of the immune system
Cytokines, PD-1 and CLTA-4
How cancer cells evade the immune system
by regulating PD-1 and CLTA-4
Check Point Inhibitors

Cell Therapies *11:30-12:30*
How immune system cells are used for cell therapy
T-cell biology
Introduction to CAR-T therapy
CAR-T indications: blood cancers, solid tumors
CAR-T principles: what is a CAR-T? how are they made?
CAR-T: off-the-shelf and patient-specific
CAR-T safety: controlling activation
CAR variations: CAR-NK, CAR-MA, TCR therapies, bispecific CAR

Lunch *12:30-1:30*

Gene Therapies *1:30-2:30*
DNA's role in disease
How gene therapy works
Gene transfer and delivery methods
Viral vectors: choice of viral vector and why
Safety
Gene therapies in the clinic
Opportunities and risks

Break *2:30-2:45*

Genome Editing *2:45-3:30*
Zinc finger nucleases
How zinc finger nucleases work
Zinc finger nucleases in the clinic
CRISPR
How CRISPR works
CRISPR in the clinic

RNA-Based Therapeutics *3:30-4:15*
RNA's role in the cell
Antisense
siRNA
microRNA
mRNA

Wrap-Up *4:15-4:30*