Advanced Personalized Cancer Immunotherapy Training Course

Professional Development Training Course Outline

Category	Biotechnology and Pharmaceutical Development	**Duration**	10 Days
Base Fee	$4,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

The Advanced Personalized Cancer Immunotherapy course offers a critical deep dive into the Precision Oncology revolution, moving decisively beyond one-size-fits-all treatments toward highly targeted and hyper-personalized therapies. Immunotherapy, the strategy of harnessing the patient's own immune system, represents the gold standard in modern cancer care. However, maximizing its efficacy requires a sophisticated understanding of complex interactions within the Tumor Microenvironment (TME) and mastery of cutting-edge technologies like Next-Generation Sequencing (NGS), mRNA Technology, and Artificial Intelligence (AI) in Diagnostics. Advanced Personalized Cancer Immunotherapy Training Course is designed for clinical and scientific professionals seeking to bridge the gap between bench research and bedside practice, focusing on actionable genomics and the nuanced application of next-generation modalities like Personalized Cancer Vaccines and Dual-Targeting CAR T-Cells.

This advanced curriculum is structured to equip participants with the essential translational research skills and clinical judgment needed to navigate the challenges of immuno-resistance and toxicity management. Learners will gain expertise in identifying predictive biomarkers, formulating rational combination strategies, and interpreting complex real-world data from pivotal clinical trials. By integrating bioinformatics tools and deep molecular understanding, the course promotes a proactive health management approach, ensuring the delivery of truly individualized treatment strategies that minimize adverse events and significantly improve patient outcomes in both hematologic and refractory solid tumors. The goal is to cultivate leaders in the field ready to implement the latest advancements in Immunotherapy 2.0.

Programme Curriculum

Advanced Personalized Cancer Immunotherapy Training Course

Introduction

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Course Duration

10 days

Course Objectives

1. Analyze the molecular mechanisms of Immune Checkpoint Blockade non-response, focusing on pathways of Immuno-Evasion within the Tumor Microenvironment
2. Evaluate the clinical utility and latest trial data for Next-Generation CAR T-Cell Therapy targeting challenging Solid Tumors and managing related toxicities like CRS and ICANS.
3. Design a workflow for identifying and validating Neoantigens for use in patient-specific mRNA Personalized Cancer Vaccines.
4. Master the interpretation of Actionable Genomics data to select appropriate Targeted Immunotherapy combinations.
5. Formulate Rational Combination Strategies integrating ICB with Nanomedicine, Oncolytic Viruses, or Tumor-Targeted ADCs
6. Identify and utilize Predictive Biomarkers to stratify patient risk and predict therapy response in Precision Oncology.
7. Develop proactive and protocol-driven management plans for Immune-Related Adverse Events across multiple organ systems.
8. Appraise the evolving role of Artificial Intelligence and Machine Learning in optimizing treatment selection and predicting immunotherapy toxicity.
9. Differentiate between various Adoptive Cell Transfer modalities beyond CAR-T and their application landscape.
10. Assess the clinical benefit and mechanisms of the Abscopal Effect and the synergy between Immuno-Radiation and systemic immunotherapy.
11. Interpret complex translational research and Phase I/II Clinical Trial results to guide clinical decision-making.

12. Apply principles of Pharmacogenomics to personalize drug dosing and minimize off-target effects of novel agents.
13. Construct a comprehensive Multidisciplinary Care plan that integrates surgical, radiation, and systemic immunotherapy approaches from diagnosis to survivorship.

Target Audience

1. Oncologists.
2. Hematologists.
3. Immunologists & Cancer Biologists.
4. Advanced Practice Nurses (APNs) & Physician Assistants (PAs) in Oncology.
5. Pathologists & Molecular Scientists.
6. Pharmacists.
7. Biotech & Pharmaceutical Scientists.
8. Bioinformaticians & Data Scientists.

Course Modules

Module 1: The Complex Tumor-Immune Microenvironment (TME)

- Immuno-Editing & Immuno-Evasion mechanisms.
- Tumor-Infiltrating Lymphocytes density and their functional status.
- Tregs and Myeloid-Derived Suppressor Cells in generating an immunosuppressive milieu.
- TME Modulation Strategies.
- Case Study: A patient with refractory pancreatic adenocarcinoma showing a 'cold' TME and high MDSC infiltration; discussion of combination therapy to turn the tumor 'hot'.

Module 2: Advanced Immune Checkpoint Blockade (ICB)

- Targeting new checkpoints like LAG-3, TIGIT, and VISTA
- Mechanisms of Primary and Acquired Resistance to ICB in melanoma and NSCLC.
- Moving beyond TMB and PD-L1 to Gene Signature Expression and inflammatory markers.
- Dosing and Scheduling.
- Case Study: A patient with high TMB colorectal cancer who initially responded to anti-PD-1 but progressed due to acquired JAK2 mutation leading to ???2?Çï-microglobulin loss; discussion on salvage therapy.

Module 3: Next-Generation CAR T-Cell Therapy for Solid Tumors

- Dual-Targeting and Armored CAR T-Cells.
- Addressing Trafficking and Persistence.
- Non-viral Transduction methods and cost-effective manufacturing logistics.
- TCR-T Cells and TIL Therapy protocols and clinical results.
- Case Study: A glioblastoma patient receiving Dual-Targeting CAR-T cells; detailed protocol review, monitoring for CNS-specific toxicity, and assessing on-target/off-tumor effects.

Module 4: Personalized Cancer Vaccines and mRNA Technology

- Neoantigen Identification Pipeline
- Design, formulation, and delivery mechanisms for high immunogenicity.
- Clinical Efficacy and Trial Landscape.
- Adjuvants and Combination.

- Case Study: Designing an mRNA personalized vaccine protocol for a patient with newly resected Stage III melanoma using their genomic and RNA-seq data to select optimal neoantigens.

Module 5: Actionable Genomics and Molecular Profiling

- Advanced Next-Generation Sequencing.
- Liquid Biopsy (ctDNA).
- Microsatellite Instability and Tumor Mutational Burden (TMB) as predictive markers.
- RNA-Sequencing for Gene Expression Profiling and identifying immune signatures
- Case Study: A patient with advanced lung cancer initially undergoing ctDNA monitoring who shows a rising variant allele frequency of a known resistance mutation, prompting a shift in treatment strategy.

Module 6: Managing Immune-Related Adverse Events

- Understanding the cross-reactivity and cytokine storm mechanisms.
- Protocol-driven algorithms for Colitis, Pneumonitis, and Endocrinopathies.
- Recognition and treatment of Myocarditis and Neurological irAEs
- Use of second-line immunosuppressive agents
- Case Study: A patient presenting with Grade 3 immune-related Colitis following anti-PD-1/anti-CTLA-4 combination therapy; step-by-step review of the diagnostic workup and escalating immunosuppressive therapy.

Module 7: Oncolytic Viruses and Nanomedicine Delivery

- Mechanism of action and key agents
- Nanoparticle-Based Drug Delivery.
- Immuno-Engineering
- Clinical Trials and Manufacturing Challenges for viral and nanomedicine platforms.
- Case Study: Discussion of a trial patient with a head and neck squamous cell carcinoma receiving localized Oncolytic Virotherapy with subsequent systemic anti-PD-1 to leverage the in situ vaccination effect.

Module 8: Combinatorial Immunotherapy Strategies

- Immuno-Chemotherapy Synergy
- Immuno-Targeted Therapy.
- Immuno-Radiation.
- Sequencing of Modalities
- Case Study: An NSCLC patient with an EGFR mutation whose disease progresses on targeted therapy; discussion on the transition to and sequencing of Immuno-Chemotherapy vs. a rational Immuno-Targeted combination.

Module 9: Artificial Intelligence (AI) and Machine Learning in IO

- AI in Biomarker Discovery.
- Deep Learning for Imaging.
- Predictive Models.
- Clinical Decision Support.
- Case Study: Analyzing a de-identified dataset where an AI model predicted low TMB but a strong response to ICB due to a specific Inflammatory Gene Signature, challenging the reliance on a single biomarker.

Module 10: Regulatory Landscape and Clinical Trial Design

- FDA/EMA Approval Pathways for Cell Therapies and Personalized Vaccines.
- Basket Trials and Umbrella Trials in the precision oncology setting.
- Endpoints in Immunotherapy
- Ethical Considerations and Patient Selection in first-in-human Phase I Trials for novel agents.
- Case Study: Reviewing the methodology and key findings of a pivotal Phase III trial for an anti-TIGIT antibody, critically evaluating its design, statistical power, and generalizability to diverse populations.

Module 11: Special Populations and Cancer Types

- Immunotherapy in Pediatric Cancers.
- Geriatric Oncology.
- Immunotherapy for Gastrointestinal Cancers.
- Autoimmune Comorbidity.
- Case Study: A patient with metastatic, non-MSI-H colorectal cancer; discussion on the lack of standard ICB benefit and the rationale for enrolling them in a trial combining ICB with a novel STING agonist for TME activation.

Module 12: Pharmacogenomics and Drug Development

- Role of Germline Genetics in predicting patient susceptibility to specific irAEs.
- Absorption, Distribution, Metabolism, Excretion variations influencing drug exposure and toxicity.
- Biomarker-Driven Drug Development.
- Strategies to Overcome the Systemic and Local Delivery Challenge
- Case Study: A patient experiencing unusual or severe irAEs; detailed pharmacogenomic analysis reveals a specific polymorphism influencing the metabolism of their checkpoint inhibitor, leading to dose modification.

Module 13: High-Resolution Immune Monitoring Techniques

- Mass Cytometry and High-Dimensional Flow Cytometry for deep immune cell profiling.
- T-cell Receptor Sequencing and B-cell Receptor (BCR) Clonality.
- Single-Cell RNA Sequencing of the TME.
- Multiplex Immunofluorescence and Spatial Transcriptomics to map immune cell locations and interactions.
- Case Study: Interpreting TCR sequencing data from a patient's peripheral blood and tumor biopsy before and after ICB to determine if a novel T-cell clone expansion correlates with clinical response.

Module 14: Integrating Multidisciplinary Care

- The Tumor Board in the Immunotherapy Era.
- Surgical Oncology.
- Palliative Care and Symptom Management in advanced immunotherapy-treated patients.
- Patient Education and Empowerment.
- Case Study: A multidisciplinary team discussion on a patient with borderline resectable head and neck cancer

Module 1 5: Capstone Project: Comprehensive Personalized Strategy

- Interpreting a complete mock patient file.
- Treatment Plan Construction

- Proactively anticipating and planning management for potential organ-specific irAEs based on patient factors.
- Monitoring Strategy.
- Case Study: Participants present and defend their developed Comprehensive Personalized Treatment Strategy to a panel of expert "reviewers"

Training Methodology

The course employs a Blended Learning and Capstone Approach designed for advanced scientific and clinical professionals:

- Case-Based Learning
- Didactic Lectures & Interactive Workshops
- Virtual Lab/Bioinformatics Simulation.
- Expert Panel Discussions.
- Capstone Project.

Register as a group from 3 participants for a Discount

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Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price

23 Nov 2026	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

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