Advanced Immunotherapy Mechanisms and Targets 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 field of immuno-oncology has fundamentally reshaped cancer treatment, moving beyond traditional methods to leverage the body's intrinsic defense system. This advanced training course is a deep dive into the molecular and cellular mechanisms that govern successful and resistant immune responses against cancer. We transition from foundational concepts to exploring the next-generation immunotherapies that are currently in clinical development and redefining the landscape of precision medicine. Participants will master complex topics such as tumor microenvironment (TME) reprogramming, the science of neoantigen identification, and the intricacies of bispecific and trispecific antibody technology. This course is critical for professionals looking to translate bench-to-bedside research, optimize current treatment protocols, and drive innovation in the face of ongoing challenges like primary and acquired resistance and the management of immune-related adverse events

Advanced Immunotherapy Mechanisms and Targets Training Course is structured to provide practitioners, researchers, and industry specialists with actionable knowledge in a rapidly evolving domain. The curriculum emphasizes a precision oncology approach, focusing on biomarker-driven patient selection, the clinical application of adoptive cell therapies (ACTs) like CAR-T and CAR-NK, and the strategic use of combination immunotherapies. By integrating real-world clinical trial data and advanced immunomonitoring techniques, this course will empower learners to become leaders in designing and implementing state-of-the-art cancer treatment regimens, ultimately accelerating the delivery of durable clinical responses for patients.

Programme Curriculum

Advanced Immunotherapy Mechanisms and Targets Training Course

Introduction

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Course Objectives

Participants will be able to:

1. Delineate the latest molecular mechanisms of both PD-1/PD-L1 and CTLA-4 immune checkpoint blockade (ICB) and resistance.
2. Evaluate the design and clinical application of next-generation CAR-T and CAR-NK therapies for solid tumors and hematologic malignancies.
3. Analyze the cellular and non-cellular components of the Tumor Microenvironment (TME) and strategies for its reprogramming.
4. Master the process of neoantigen identification and its application in developing personalized cancer vaccines
5. Interpret advanced immunomonitoring data, including single-cell RNA sequencing and multiplex imaging, to predict and monitor patient response.
6. Formulate rational combination immunotherapy strategies for synergistic anti-tumor effects
7. Identify and characterize emerging checkpoint targets beyond PD-1/CTLA-4, such as LAG-3, TIGIT, and VISTA.
8. Develop protocols for the effective recognition and management of severe immune-related adverse events, including CRS and ICANS.
9. Assess the therapeutic potential of oncolytic viruses and innate immune agonists in generating in situ vaccination effects.
10. Explain the development and function of bispecific and trispecific antibodies as novel T-cell and NK-cell engagers.
11. Apply principles of liquid biopsy and Tumor Mutational Burden (TMB) as predictive and prognostic biomarkers in precision immuno-oncology.

12. Discuss the ethical and logistical challenges of manufacturing and administering personalized cell therapies.
13. Translate ground-breaking translational research into practical, evidence-based clinical and regulatory strategies.

Target Audience

1. Clinical Oncologists and Hematologists
2. Immunology and Cancer Researchers
3. Advanced Practice Providers (PAs, NPs) in Oncology
4. Pharmacists specializing in Oncology/Infusion Services
5. Biotech and Pharmaceutical R&D Scientists
6. Clinical Trial Coordinators and Managers
7. Pathologists and Molecular Diagnostics Specialists
8. Regulatory and Medical Affairs Professionals in Immuno-Oncology

Course Modules

Module 1: Advanced Tumor Immunology & Immune Evasion Mechanisms

- Revisiting the Cancer-Immunity Cycle and the Immunoediting hypothesis.
- In-depth look at Antigen Presentation deficiencies and immune tolerance.
- The role of Regulatory T cells and Myeloid-Derived Suppressor Cells in immune suppression.
- Cytokine and chemokine networks within the TME.
- Case Study: Analyzing a patient's tumor biopsy for evidence of beta-2 microglobulin loss and its impact on ICB.

Module 2: Deep Dive into ICB Mechanisms and Resistance

- Comparing and contrasting the functional biology of PD-1 vs. CTLA-4 blockade.
- Understanding the mechanisms of Primary and Acquired Resistance to ICB.
- Exploring the Gut Microbiome's influence on ICB efficacy and toxicity.
- Pharmacodynamics and pharmacokinetics of key ICB agents
- Case Study: A patient with non-responsive melanoma after initial PD-1 blockade; strategizing a switch to an alternative or combination approach.

Module 3: Emerging Checkpoint Targets and Co-Stimulatory Molecules

- Mechanisms of T-cell exhaustion and the function of LAG-3 and TIGIT.
- The therapeutic potential of targeting inhibitory receptors like VISTA, TIM-3, and PVRIG.
- Utilizing agonistic antibodies against co-stimulatory receptors
- The science of Dual Checkpoint Blockade and its synergistic rationale.
- Case Study: Evaluating a clinical trial protocol for a novel TIGIT/PD-1 combination in a hard-to-treat cancer.

Module 4: Next-Generation CAR-T and Adoptive Cell Therapies (ACTs)

- Designing Third-Generation CARs
- Strategies to overcome the challenges of CAR-T in Solid Tumors
- The development and clinical progress of CAR-NK cells and TCR-T therapies.
- Focus on Allogeneic "Off-the-Shelf" Cell Therapies and their logistical advantages.

- Case Study: Selecting a patient with refractory GBM for a novel CAR-T trial targeting a shared tumor antigen.

Module 5: Logistics and Management of Cell Therapy Toxicities

- Pathophysiology and staging of Cytokine Release Syndrome
- Diagnosis and treatment protocols for Immune Effector Cell-Associated Neurotoxicity Syndrome
- The role of Tocilizumab and corticosteroids in toxicity management.
- Long-term sequelae and late-onset toxicities from ACTs.
- Case Study: Simulating the rapid clinical management of a Grade 3 CRS event post-CAR-T infusion in a critical care setting.

Module 6: Personalized Neoantigen Vaccines and Delivery Platforms

- Bioinformatics and sequencing pipelines for high-confidence neoantigen prediction.
- Comparing mRNA, DNA, and peptide vaccine platforms for clinical efficacy and immunogenicity.
- The use of adjuvants to amplify T-cell responses in vaccine strategies.
- Integrating vaccines into combination regimens
- Case Study: A multidisciplinary team reviews a patient's Whole Exome Sequencing (WES) data to select candidate neoantigens for a personalized mRNA vaccine.

Module 7: Reprogramming the Tumor Microenvironment (TME)

- Targeting the Tumor Stroma and its role as a physical and immune barrier.
- Modulating Tumor-Associated Macrophages and MDSCs to an anti-tumor phenotype.
- The use of Hypoxia-Activated Prodrugs and TME-targeting small molecules.
- Strategies to enhance immune cell trafficking and infiltration into "cold" tumors.
- Case Study: Preclinical data review on a novel agent designed to deplete CAFs to enhance ICB response.

Module 8: Bispecific and Trispecific Antibodies

- Mechanisms of action for Bispecific T-cell Engagers and their clinical spectrum.
- Engineering challenges and strategies for half-life extension and stability.
- The use of trispecific antibodies to target multiple receptors simultaneously.
- Applications in both hematologic and solid tumors.
- Case Study: Comparing the clinical profiles of Blinatumomab and a novel bispecific antibody for multiple myeloma.

Module 9: Oncolytic Virotherapy and Innate Immunity

- Mechanisms of selective tumor lysis and in situ vaccine effect of oncolytic viruses
- Engineering OVs to express payloads
- The synergy of OVs with systemic ICB and radiation therapy.
- Therapeutic application of STING pathway agonists and TLR ligands to engage innate immunity.
- Case Study: Designing a combination trial of an armed oncolytic HSV with PD-1 inhibition for a patient with liver metastases.

Module 10: Advanced Immunomonitoring and Predictive Biomarkers

- Interpretation of Tumor Mutational Burden and Microsatellite Instability data.
- Techniques in multiplex immunohistochemistry and In Situ Hybridization (ISH) for spatial profiling.

- Utilizing Single-Cell RNA Sequencing for deep immune profiling of the TME.
- The clinical utility of Liquid Biopsies for monitoring treatment response and resistance.
- Case Study: Correlating a patient's rising ctDNA levels with a decline in T-cell clonality post-therapy, indicating impending relapse.

Module 11: Combination Immunotherapy Rationales and Trials

- Scientific rationale for combining ICB with Chemotherapy, Radiation, and Targeted Agents.
- Designing clinical trials to minimize overlapping toxicities in combination regimens.
- Exploring the potential of Anti-Angiogenic Agents to normalize the tumor vasculature and aid T-cell infiltration.
- Strategies for sequencing immunotherapies in the metastatic and Neoadjuvant/Adjuvant settings.
- Case Study: Developing a Phase II trial protocol for the combination of an anti-VEGF agent and a dual checkpoint inhibitor.

Module 12: irAEs Management Beyond Corticosteroids

- Advanced mechanisms of specific irAEs and risk factors.
- The role of Infliximab, Mycophenolate Mofetil, and other immunosuppressants in refractory irAEs.
- Long-term follow-up and management of endocrine and rheumatic irAEs.
- Establishing a rapid-response, Multidisciplinary Toxicity Team.
- Case Study: Managing a complex, multi-organ overlap syndrome involving myositis, myocarditis, and myasthenia gravis, requiring high-dose IVIG.

Module 13: The Future: AI, Nanomedicine, and In Vivo Engineering

- The application of Artificial Intelligence in biomarker discovery and personalized treatment selection.
- Nanoparticle-based delivery systems for targeted immune cell payload delivery.
- In Vivo CAR-T and gene editing techniques to reduce manufacturing complexity.
- Epigenetic Modulators as novel targets to sensitize tumors to immunotherapy.
- Case Study: Debating the ethical and logistical challenges of a future where cell therapy is manufactured in vivo using a viral vector.

Module 14: Translational Science and Regulatory Hurdles

- Translating preclinical in vivo model data to human clinical trials.
- Key FDA/EMA guidelines for the development and approval of Advanced Therapy Medicinal Products.
- Optimizing the design of Phase I/II Basket and Umbrella Trials in immuno-oncology.
- Considerations for Global Health Equity and access to expensive immunotherapies.
- Case Study: Analyzing a recent FDA drug label and the accompanying correlative biomarker data used for accelerated approval.

Module 15: Precision Immuno-Oncology and Patient Selection

- Synthesizing all data points for personalized treatment selection.
- Addressing heterogeneity: managing patients with discordant biomarker results.
- The importance of patient-reported outcomes (PROs) and quality of life in long-term therapy.
- Building a comprehensive, patient-centric care pathway from diagnosis to survivorship.
- Case Study: A final capstone case requiring participants to present a complete, biomarker-driven, and toxicity-mitigated treatment plan for a patient with advanced non-small cell lung cancer.

Training Methodology

The course employs a Blended Learning Approach focusing on the translation of science into clinical practice:

- Interactive Lectures.
- Case-Based Learning.
- Journal Club/Problem-Solving.
- Lab-Based Simulation.
- Expert Panel Discussions.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call +254769199797

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

Start Date	End Date	Location	Price
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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