

## Onco-Immunology Signatures & Biomarker Panels — Hands-on

Gain a conceptual understanding of onco immunology signatures and biomarker panels. This module explains tumour immune microenvironment readouts, composite signature ideas and panel level thinking so you can frame immunotherapy, trial and translational oncology questions in biomarker language without needing to write code.

# Onco-Immunology Signatures & Biomarker Panels

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### Session 1

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## Tumour–Immune Microenvironment Foundations

Tumour, immune and stromal compartments in plain language

**cancer cells, infiltrating immune cells and stroma**

**overview** **inflamed, immune excluded and cold**

**tumours as concepts** **how microenvironment patterns**

**relate to therapy response ideas**

Common readouts used to describe the tumour immune contexture

**T cell, myeloid and stromal infiltration notions**  
**checkpoint and activation marker expression ideas**  
**simple sketches of inflamed and suppressive scenarios**

Data types feeding onco immunology signatures (orientation only)

**bulk gene expression and protein staining concepts**  
**circulating markers and peripheral blood profiles**  
**links to repertoire, neoantigen and immunopeptidomics modules**

## **Session 2**

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### **Onco-Immunology Signatures & Scores**

What a signature or score means in this context (conceptual)

**multi marker patterns summarised into a single number** **examples such as cytolytic, interferon like and inflamed style scores** **separation between prognostic and predictive signatures ideas**

Inputs that typically feed onco immunology signatures (orientation)

**expression levels of immune genes and pathways**  
**simple cell proportion or enrichment style concepts**  
**combining immune, tumour and genomic context conceptually**

Interpreting signature values in a trial or cohort narrative

**high versus low categories as simple strata**  
**associations with response, survival or toxicity outcomes** **cautions around cutoffs, context and generalisability**

## **Session 3**

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## Biomarker Panels for Immunotherapy & Trials

Thinking in terms of panels rather than single markers  
(conceptual)

**combinations of tissue, blood and genomic markers**  
**balancing feasibility, cost and information content**  
**panels for selection, monitoring and mechanism**  
**exploration**

Examples of onco immunology biomarker dimensions (high level)

**checkpoint and immune activation markers in tissue**  
**simple circulating immune and inflammatory**  
**readouts** **genomic context such as mutation and**  
**antigenicity features**

Longitudinal and response monitoring concepts for panels

**baseline versus on treatment biomarker views**  
**patterns in responders and non responders as**  
**stories** **early change markers and durability signals**  
**in principle**

### **Session 4**

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## Design Brief: Onco-Immunology Biomarker Plan

Framing study and therapy questions in biomarker terms

**what decision the biomarker information should**  
**support** **choosing core and optional markers**  
**conceptually** **noting timing and sample type for each**  
**readout**

Sketching a practical biomarker panel for a trial or cohort  
(conceptual)

**simple table with markers, rationale and logistics**  
**notes** **alignment with available assays and sample**  
**flows** **integration with existing signatures and scores**

Communicating biomarker plans and limitations clearly to teams

slide ready summary figures and timelines	explicit
assumptions, risks and contingency notes	handoff to
clinical, lab and regulatory colleagues	