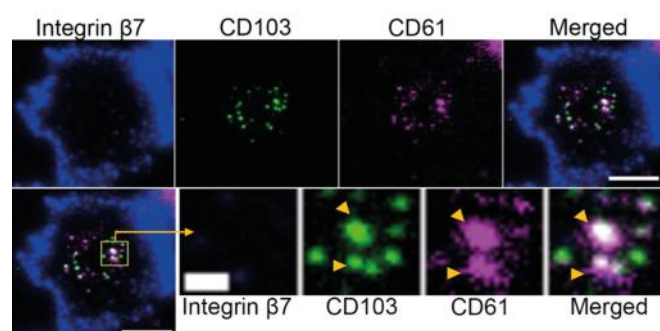


CD61-CD103 Immune synapse platform: unlocking potent, tumour-selective T-cell responses

Harnessing the newly discovered CD61-CD103 immune synapse to boost tumour-killing T-cells, improve patient outcomes, and expand opportunities for engineered therapies and biomarkers.

A CD61-CD103 immune-synapse mechanism recruits CD61 to the cSMAC with CD103 to potentiate TCR signalling and effector functions, yielding more cytotoxic, less-exhausted TILs and improved tumour control in preclinical models. IP covering engineered T-cell products (incl. CAR/TCR), agents (incl. antibodies) that modulate CD61-CD103, and diagnostic/predictive assays for CD61⁺CD103⁺ TILs.

Applications: Engineered T-cell therapies (CAR-T, TCR-T, TIL therapy), antibody therapeutics, combination immunotherapy, biomarker-based patient selection, companion diagnostics



Features	Benefits
CD61 (integrin $\beta 3$) transiently pairs with CD103 (integrin αE) at the immune synapse's central supramolecular activation cluster (cSMAC) and co-localizes with the T-cell receptor (TCR)	Focuses activation exactly where tumour recognition occurs supporting stronger, more selective anti-tumour responses

Features	Benefits
CD61 modulates proximal TCR signalling: Reducing CD61 lowers phosphorylation of ZAP70 and PLCγ1 via Lck	A defined control point to tune T-cell activation enabling deeper and more durable patient responses
CD61 ⁺ tumour-infiltrating lymphocytes (TILs) show higher cytolytic molecules (granulysin, granzyme B/M), stronger degranulation (CD107a), and increased cytokines/chemokines (interferon-γ, tumour necrosis factor, CCL5, XCL2); blocking CD61 reduces key read	Delivers a more potent anti-tumour state and provides measurable biomarkers for product
In vivo and clinical signal: adoptive transfer of CD61 ⁺ T cells slows xenograft tumour growth; a CD61 ^{hi} CD103 ⁺ CD8 ⁺ CD3 ⁺ signature correlates with improved overall survival in TCGA datasets	Preclinical efficacy plus human-dataset association supporting translational relevance and potential impact on patient outcomes
Tumour access and specificity: CD61 ⁺ CD103 ⁺ CD8 ⁺ cells are enriched within tumour islets and are more likely to carry the tumour-reactive CD103 ⁺ CD39 ⁺ phenotype	Better on-target localisation that may limit collateral damage while enhancing tumour killing

Patented and Available for

- Co-development
- Consulting
- Licensing

To find out more, contact enquiries@innovation.ox.ac.uk and quote the project number.

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