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Modelling the role of cytotoxic T lymphocytes in tumour regression

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Propositions
For the thesis
Modelling the role of cytotoxic T lymphocytes in tumour regression
Richard J Beck

- The rate at which CTLs kill tumour cells can be characterised by applying survival analysis to two photon imaging data (this thesis).
- The rate at which CTLs kill tumour cells is low, and contributes little to tumour control following adoptive transfer of tumour infiltrating CTLs (this thesis).
- Tumour infiltrating CTLs exert an antiproliferative effect on tumour cells, which can play an important role in tumour control (this thesis).
- Tumour infiltrating CTLs have a limited window of efficacy in B16F10 melanoma. Declining function is marked by a reduction in IFN- γ production, a reduced antiproliferative effect exerted upon tumour cells, and an upregulation of T cell exhaustion markers (this thesis).
- Immunotherapies are an increasingly important pillar of cancer treatment, but further insights into the tumour-immune interaction are required in order to optimise these therapies (Sambi et al, 2019, Journal of oncology).
- Computational models can offer insight into many important challenges in the field of cancer immunotherapy (Konstorum et al, 2017, Journal of The Royal Society Interface).
- Multifactorial immunosuppressive mechanisms limit the efficacy of antitumour T cells within solid tumours (Newick et al, 2017, Annual review of medicine).
- Utilising engineered chimeric antigen receptor T Cells is a promising method to overcome immunosuppression within solid tumours (Larson & Maus, 2021, Nature Reviews Cancer).
- Nobody really knows anything