Characterising the molecular diversity of pancreatic cancer: Personalised medicine in action

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PANCREATIC CANCER

- Pancreatic cancer (PC) is the 4th leading cause of cancer death
- It has a 5 year survival rate of less than 8% post diagnosis
- 70% of patients will die in the first year of diagnosis
- PC has a poor response rate to the current standard of care treatment of Gemcitabine and Abraxane, and high rates of chemoresistance
- PC is a molecularly heterogeneous disease, with most aberrations occurring at a frequency of <5%

OVERALL OBJECTIVES

- Validate new drug targets and develop novel personalised medicine strategies for the treatment of pancreatic cancer.
- Better understand how anti-cancer drug resistance develops.
- Improve our understanding of the role the complex tumour microenvironment plays in cancer progression.

CUTTING EDGE TOOLS

- Drug Screen
- 3D Spheroid Cells
- Patient-derived xenografts
- Imaging

PRELIMINARY RESULTS

- A/Prof Marina Pajic
- Laboratory Head
- Personalised Cancer Therapeutics Laboratory

PROJECT AIMS

- AIM1: Transcriptomically define pro-metastatic and chemoresistant cell population(s) of highly aggressive pancreatic tumours.
- AIM2: Functionally validate key cellular subpopulations of interest, involving isolation of key fractions (flow cytometry) and 2D/3D in vitro/vivo validation, using our established methodologies.
- AIM3: Examine cellular and molecular drug responses of specific cancer cell and stromal cell populations, and identify novel/optimal tumour/stromal targeting therapies in established 2D/3D co-culture patient-derived and genetically-engineered models of PC.
- AIM4: Systematically examine individualised therapeutic strategies and characterise key biological mechanisms of efficacy in extensively characterised in vivo models of PC, in the context of the modulation of distinct cellular populations within the pancreatic TME, plus effects on: (i) stromal remodelling; (ii) tumour vasculature; (iii) immunosuppressive elements.

CONTACT DETAILS

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