Welcome to the 6th FICAN seminar

Thursday 25.05.2023 at 15-16

prof. Toni Seppälä
Tampere University, Tampere University Hospital

Topic: Molecular profiling and patient-derived cancer organoids – towards clinical applications

This time the seminar is organized by FICAN Mid. The seminar will be held online (Microsoft Teams) and is open to everyone interested in cancer research.

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Speaker

Toni Seppälä
Professor
Tampere University,
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Abstract

Novel tools to aid decision-making in challenging clinical decisions are required, and precision medicine holds great promise in delivering improvements to progressing cancers. Applications to steer oncological management have been largely based on genomic targeting of the drugs, but only less than third of patients benefit from genomically targeted approach, and the success is highly context-depending.

Functional precision oncology models such as patient-derived organoid technology enable individualized cell culture and personalized testing for each tumor. Organoids may serve as a clinical tool to guide traditional primary tumor NGS interpretation, and facilitate in vitro response prediction to therapy. Data-intensive models for tumor microenvironment co-culture and combination pharmacotyping are needed.

Relevant references for this talk:

- van Renterghem AWJ, van de Haar J, Voest EE. Functional precision oncology using patient-derived assays: bridging genotype and phenotype. Nat Rev Clin Oncol. Springer US; 2023; 54: 963–975.
- Seppälä TT, Zimmerman JW, Suri R, Zlomke H, Ivey GD, Szabolcs A, et al. Precision Medicine in Pancreatic Cancer: Patient-Derived Organoid Pharmacotyping Is a Predictive Biomarker of Clinical Treatment Response. Clin Cancer Res. 2022; 28: 3296–3307.
- Seppälä TT, Zimmerman JW, Burkhart RA. Solving for Chemotherapeutic Sensitivity: Adapting 'Black Box' Methods to Study Patient-Derived Tumor Organoids. Ann Surg Oncol. 2021.
- Seppälä TT, Zimmerman JW, Sereni E, Plenker D, Suri R, Rozich N, et al. Patient-derived Organoid Pharmacotyping is a Clinically Tractable Strategy for Precision Medicine in Pancreatic Cancer. Ann Surg. 2020; 272: 427–435.

Biography

Dr. Toni T. Seppälä graduated from medical school as licentiate of medicine in the University of Eastern Finland in 2010 and defended his PhD thesis on Alzheimer's disease in 2012. During surgery residency with professor Jukka-Pekka Mecklin's mentorship he became interested in cancer research.

He has worked as a colorectal surgeon since board certification in 2018, and was appointed as associate professor at Uni. Helsinki in 2019. In 2019–2021 Dr. Seppälä underwent a research fellowship at the department of Surgical Oncology in the Johns Hopkins University and Sidney Kimmel Comprehensive Cancer Center in Baltimore, MD, USA, under supervision of pancreatic surgeons Dr. Richard Burkhart and Dr. Christopher Wolfgang.

In 2022, he was appointed as a tenure track professor of cancer research in University of Tampere and leads laboratories and a research group in Tampere and Helsinki Universities. He serves on the boards of Directors of the European Hereditary Tumour Group, International Society for Hereditary Gastroinstestinal Cancer, and the Finnish Society of Surgery. He also has positions in the scientific committee of the Prospective Lynch Syndrome Database and several scientific advisory boards in societies and companies.

Dr. Seppälä has published over 100 articles, opinions, podcasts and interviews with >3700 citations, and raised over 2.2M euros of competed research funding. The majority of Dr. Seppälä's research have been from the field of hereditary cancer, colorectal cancer and pancreatic cancer, and he is appreciated as an expert especially in Lynch Syndrome.

His current interests in cancer research are in personalized medicine utilizing precision technologies in solid tumors, such as genomics, patient-derived organoids and cell-free DNA.

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