Welcome to the 4th FICAN seminar

Thursday 09.02.2023 at 15-16

Topic: Deciphering molecular and tissue mechanisms of prostate cancer

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

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Speaker

Leena Latonen

Ph.D., FCI K. Albin Johansson Cancer Research Fellow, Adj.prof in Cancer Biology & Vice Director, Institute of Biomedicine.

Get to know the Speaker: Latonen Cancer Stress Biology (uef.fi)

Abstract

Our research focuses on molecular, cellular, and tissue mechanisms of cancer with aims to understand how cancer forms drug resistance and to develop future clinical tools. We have dissected the molecular alterations that occur in prostate cancer patient tumors during development of cancer and during formation of treatment resistance. Utilizing integrative analyses of multiple genome-wide methods we have identified previously unrecognized disease mechanisms, now studying them further with cellular and in vivo models. We are interested to understand how RNA regulatory pathways contribute to cancer, especially focusing on roles of different species of non-coding RNAs and RNA binding proteins (RBPs). For example, we recently showed that miR-32 promotes prostate cancer in vivo. While many RBPs have a recognized role in several other types of diseases, such as neurodegenerative diseases, their roles in cancer are mostly unexplored and they pose a potential group of novel cancer drug targets. In our unpublished work we have found that certain stress-responsive RBPs contribute to gene expression in cancer, and that they also have roles in nuclear stress response pathways during cancer drug responses involving the nucleolus and Cajal bodies. While studying how cancer grows in tissue, we aim at quantitative understanding of tissue alterations already from early cancerous lesions and taking the spatial and 3D environment into account. We develop innovative ways to image, visualize, and quantitatively analyze cells and tissues, utilizing novel and multimodal imaging methods, digital pathology, machine learning, and AI tools.

Relevant references for this talk:

- Scaravilli M, Koivukoski S, Gillen A, Bouazza A, Ruusuvuori P, Visakorpi T, Latonen L. *miR-32 promotes MYC-driven prostate cancer.* Oncogenesis. 2022 Mar 1;11(1):11. doi: 10.1038/s41389-022-00385-8.
- Ruusuvuori P, Valkonen M, Kartasalo K, Valkonen M, Visakorpi T, Nykter M, Latonen L. *Spatial analysis of histology in 3D: quantification and visualization of organ and tumor level tissue environment.* Heliyon. 2022 Jan 14;8(1):e08762. doi: 10.1016/j.heliyon.2022.e08762.
- Latonen L, Afyounian E, Jylhä A, Nättinen J, Aapola U, Annala M, Kivinummi KK, Tammela TTL, Beuerman RW, Uusitalo H, Nykter M, Visakorpi T. *Integrative proteomics in prostate cancer uncovers robustness against genomic and transcriptomic aberrations during disease progression*. Nature Communications 2018 Mar 21;9(1):1176. doi: 10.1038/s41467-018-03573-6.

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