Katedry biochémie a genetiky PriF UK
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Vás pozývajú na 136. prednášku v rámci Kuželových seminárov:

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FROM DATA TO INSIGHT: UNLOCKING THE POTENTIAL OF LARGE DATA TO DISCOVER NOVEL BIOLOGY

ktorá sa uskutoční **3. októbra 2025** (piatok) o **13:30**
v miestnosti **CH1-222** Prírodovedeckej fakulty UK

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Hostiteľka: Dominika Fričová

Maurits Roorda, PhD.

2025-present	Junior group leader at CFF, UMCG, Groningen, The Netherlands
2023-2025	Postdoctoral researcher cancer therapy resistance, University of Bern, Bern, Switzerland
2018-2023	PhD at medical oncology, UMCG, Groningen, The Netherlands
2012-2018	BSc & MSc biomedical sciences, University of Groningen, Groningen, The Netherlands

Synopsis of the talk

Since the synthesis of the first human genome in 2001 sequencing technologies have advanced drastically, making it accessible for most labs around the world. However, this revolution in -omics has led to a phenomenon some people call more data, less insight. Indeed, translating large-scale -omics data to causal relationships is no easy task. This is in part due to the mixed nature of biology: even single cells exhibit activity of multiple biological pathways that, in the case of transcriptomics, end up as a single measurement for a single gene. To transform more data into more biological insight, the biological sources that generate the signal must be extracted from this data. In our research, we apply independent component analysis (ICA), a matrix factorization technique, on ~800.000 publicly available transcriptomes to generate a compendium of transcriptional components (TCs), a catalogue of all distinct transcriptional processes. In this presentation, I will present a combination of dry and wet lab data showcasing the versatility and power of the TCs in allowing biologists – like me – to identify causal relationships from large scale data that would otherwise be obscured.

Selected publications:

Zimmerli D, Brambillasca CS, Talens F, Bhin J, Linstra R, Romanens L, Bhattacharya A, Joosten SEP, Da Silva AM, Padrao N, Wellenstein MD, Kersten K, de Boo M, **Roorda M**, Henneman L, de Bruijn R, Annunziato S, van der Burg E, Drenth AP, Lutz C, Endres T, van de Ven M, Eilers M, Wessels L, de Visser KE, Zwart W, Fehrmann RSN, van Vugt MATM, Jonkers J. (2022). MYC promotes immune-suppression in triple-negative breast cancer via inhibition of interferon signaling. *Nat Commun*. 13(1):6579.

Hong C, Schubert M, Tijhuis AE, Requesens M, **Roorda M**, van den Brink A, Ruiz LA, Bakker PL, van der Sluis T, Pieters W, Chen M, Wardenaar R, van der Vegt B, Spierings DCJ, de Bruyn M, van Vugt MATM, Foijer F. (2022). cGAS-STING drives the IL-6-dependent survival of chromosomally instable cancers *Nature* 607(7918):366-337.

Zhou L, Zheng S, Rosas Bringas FR, Bakker B, Simon JE, Bakker PL, Kazemier HG, Schubert M, **Roorda M**, van Vugt MATM, Chang M, Foijer F. (2021). A synthetic lethal screen identifies HDAC4 as a potential target in MELK overexpressing cancers. *G3* 11(12):jkab335.

Roorda M, Miljkovic JL, van Goor H, Henning RH, Bouma HR. (2021). Spatiotemporal regulation of hydrogen sulfide signaling in the kidney. *Redox Biol*. 43:101961.

Vogelaar PC, **Roorda M**, de Vrij EL, Houwertjes MC, Goris M, Bouma H, van der Graaf AC, Krenning G, Henning RH. (2018). The 6-hydroxychromanol derivative SUL-109 ameliorates renal injury after deep hypothermia and rewarming in rats. *Nephrol Dial Transplant*. 33(12):2128-2138.