Katedry genetiky a biochémie PriF UK
a občianskym združením *NATURA*

Vás pozývajú na 124. prednášku v rámci Kuželových seminárov:

Dr. Samantha Hughes

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the Vrije Universiteit Amsterdam

RESOLVING THE BLACK BOX OF PFAS TOXICTY: USING A WHOLE-BODY ORGANISM TO EXPLORE AND DEFINE TOXIC ENDPOINTS

ktorá sa uskutoční **16. marca 2023** (štvrtok) o **14:00**

v miestnosti B1-501, Prírodovedecká fakulta UK

http://www.naturaoz.org/seminare.html
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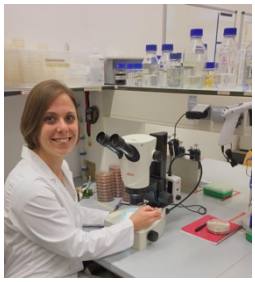
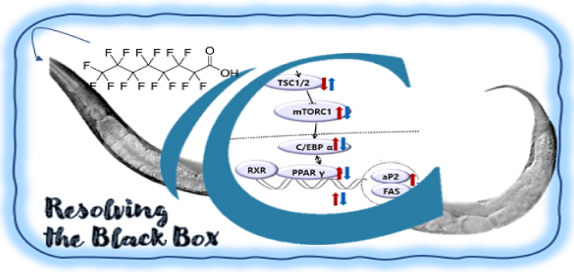


Samantha Hughes is an Assistant Professor at the Environmental Health & Toxicology Department at the Vrije Universiteit Amsterdam. Her research focus is on how we can live longer and healthier lives, and thus explores the impact of chemicals and diet on health outcomes using the nematode worm *Caenorhabditis elegans* as a model. Samantha teaches developmental biology, toxicology and genetics at undergraduate and graduate levels as well as supervises students for their internships in her lab. Before starting at the VUA in August 2021, Samantha was Principal Investigator at the HAN University of Applied Sciences, where she worked closely with colleagues in academia and industry to identify new healthy foods and drugs to treat neurodegenerative disease. Before moving to the Netherlands in 2016, Samantha did her postdoctoral research at the University of Oxford (UK) using roundworms and flatworms to explore cancer pathways. Before starting her postdoc, Samantha obtained her PhD at Cardiff University (Wales, UK) and King's College London (England, UK) and a BSc degree in Biochemistry at Cardiff University.

Synopsis of the talk:

In vitro cell-based assays lack the ability to quantitatively link whole-body adverse outcomes with human-relevant molecular events that have been perturbed by chemicals at a cellular level. To "*resolve the black box*" it is more informative to integrate a whole organism 3R approach with an *in vitro* toxicity testing approach. The nematode *Caenorhabditis elegans* is ideal for this, not least because it has high sequence similarity to humans with no ethical constraints.



In my talk, I will introduce the advantages of working with *C. elegans* and demonstrate its applicability to toxicological testing using a group of man-made chemicals, Per- and polyfluorinated alkylated substances (PFAS). Despite PFAS manufacture being banned in the EU, elevated levels of the chemicals are still detected in the environment and in the population, the health relevant effects of PFAS exposure in unclear and the specific mechanism(s) of PFAS toxicity has yet to be fully elucidated. We have therefore initiated a multi-disciplinary research line to explore how to firmly place *C. elegans* in the regulatory toxicity testing pipeline, making use of advances in molecular biology, computational modelling and analytical chemistry.

Selected publications:

- Dijkman *et al.* (2023) Exposure to silicone breast implant-infused media is detrimental to *C. elegans*. MicroPublication Biology 10.17912/micropub.biology.000732
- Hughes *et al.* (2022) Acute, sublethal and development toxicity of kratom (Mitragyna speciosa Korth.) leaf preparations on *Caenorhabditis elegans* as an invertebrate model for human exposure. Int J Env Res Public Health 19(10)
- Hughes *et al*. (2022) Using a *C. elegans* Parkinson's Disease model to assess disease progression and therapy efficiency. Pharmaceuticals 15(5)
- Hughes *et al* (2022) An extract of *Rosacae, Solanaceae* and *Zingiberacease* increases health span and mobility in *C. elegans.* BMC Nutrition 8
- Van de Klashorst et al. (2020) Montmorency tart cherry (Prunus cerasus L.) acts as a calorie restriction mimetic that increases intestinal fat and lifespan in *C. elegans*. J Functional Food 68:103890