Katedry genetiky a biochémie PriF UK
a občianske združenie *NATURA*

Vás pozývajú na 117. prednášku v rámci Kuželových seminárov:

Dr. Roman Szabo

Proteases and Tissue Remodeling Section,
National Institute of Dental and Craniofacial Research, NIH
Bethesda, MD, USA

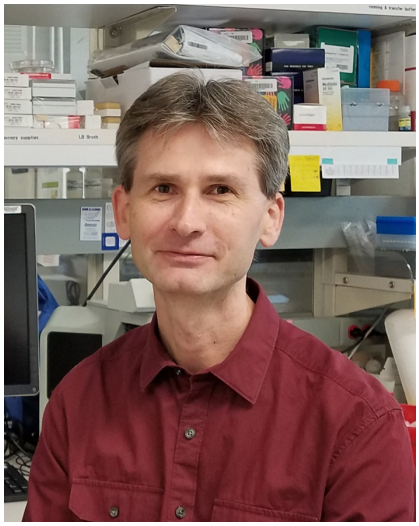
REGULATION OF EPITHELIAL DEVELOPMENT BY MEMBRANE-ANCHORED SERINE PROTEASES

ktorá sa uskutoční **19. mája 2020** (utorok) o **15:00**

ako webinár cez GoogleMeet:
https://meet.google.com/gtw-vgjz-xsc

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

Roman Szabo, Ph.D.



1992-1997	Faculty of Natural Sciences, Comenius University, Bratislava, Slovakia M.Sc. in Chemistry
1997-2001	Faculty of Natural Sciences, Comenius University, Bratislava, Slovakia Ph.D. in Biochemistry
2002-2006	Postdoctoral fellow, Proteases and Tissue Remodeling Section, National Institute of Dental and Craniofacial Research, NIH, Bethesda, MD, USA
2006-2020	Staff Scientist, Proteases and Tissue Remodeling Section, National Institute of Dental and Craniofacial Research, NIH, Bethesda, MD, USA

Abstract
Cleavage of proteins in the extracellular environment, including hormones, growth factors and their receptors, ion channels, and various cell adhesion and extracellular matrix molecules, plays a key role in regulation of cell behavior. Among more than 500 proteolytic enzymes encoded by mammalian genomes, membrane-anchored serine proteases (MASPs), which are expressed on the surface of epithelial cells of all major organs, are excellently suited to mediate signal transduction across the epithelia and are increasingly being recognized as important regulators of epithelial development, function, and disease. Using mouse genetics, our group has been able to uncover essential roles of several MASPs in development of mammalian tissues. This includes protease called matriptase that is critical for the establishment and maintenance of one of the defining features of epithelial layers - epithelial barrier function. Our recent work highlights the importance of proper regulation of matriptase activity in the development of intestinal tissues and implicates the protease as a major contributor to the etiology of congenital tufting enteropathy (CTE), a life-threatening recessive human genetic disorder that is characterized by severe intestinal dysfunction. These recent studies also provide new clues in the effort to identify the long-sought-after molecular substrate of matriptase.

Selected Publications:

1. **Szabo, R.** and Bugge, T.H. (2020). Membrane-anchored serine proteases as regulators of epithelial function. Biochem Soc Trans **48**(2); 517-528.
2. **Szabo, R.**, Callies, L.K., and Bugge, T.H. (2019). Intestinal activity of serine protease matriptase drives development of congenital tufting enterophathy in *Spint2*-deficient mice. Development **146** (22); dev183392.
3. **Szabo, R.** and Bugge, T.H. (2018). Loss of HAI-2 in mice with decreased prostasin activity leads to an early-onset intestinal failure resembling congenital tufting enteropathy. PLoS One **13**(4): e0194660.
4. **Szabo, R**. and Bugge, T.H. (2011). Membrane-anchored serine proteases in vertebrate cell and developmental biology. Ann Rev Cell Dev Biol **27**; 213-235.