

LIFE SCIENCES

seminar series

Mary O'Connell

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RNA and immunity: how does the cell discriminate self from non-self RNA?

February 19, 2015

Thursday, 15:00 – 16:00

Seminar room 114, pavilion A11
University campus Bohunice

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Modification of nucleic acids is often employed in innate immunity to help discriminate 'self' from 'non self', one example being the use of restriction enzymes in bacteria. However the role of RNA modification in innate immunity is poorly understood. We have found that mutation in the human RNA editing/RNA modifying enzyme *ADAR1* can cause Aicardi-Goutieres Syndrome (AGS) ¹ which is an autoimmune disorder. Recently we have rescued the embryonic lethality to birth by generating a double homozygous mutant with *Adar1* and another mutant in the innate immune pathway ². We propose that *ADAR1* plays a major role in the regulation of endogenous cellular dsRNAs and in the absence of *ADAR1*, cellular RNAs aberrantly stimulate an innate immune response which leads to autoimmune disease phenotypes.

1. Rice, G.I. *et al.* Mutations in ADAR1 cause Aicardi-Goutieres syndrome associated with a type I interferon signature. *Nat Genet* 44, 1243-8 (2012).

2. Mannion N. *et al.* The RNA editing enzyme ADAR1 is a key component of innate immune responses to RNA. *Cell Reports* 9, 1482-9 (2014).