

# Biology Seminar



12:30 - 1:30 pm  
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BGS 0153



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## Double stranded RNA: an understudied nucleic acid with a big punch

Long double-stranded (ds)RNA molecules are not present in a healthy cell and but produced during virus replication. The host cell senses this dsRNA and mounts a potent, antiviral innate immune response to protect itself and neighbouring, uninfected cells. This response is broad spectrum and total in its effect, very few viruses can break an 'antiviral state' established by dsRNA within an uninfected cell, and viruses have many mechanisms of evading or degrading dsRNA-mediated immune responses. It is surprising, given how central dsRNA is to the immune response, how little about it we understand. My group studies dsRNA responses in aquatic vertebrates. We have shown that aquatic viruses make dsRNA when replicating in fish cells. We have identified sensors on the surface of the cell that bind dsRNA and facilitate its entry into the cell, and are studying the effects of this dsRNA once inside the cell. Additionally, we have been working towards developing in vitro transcribed molecules with virus genome sequences that are effective inducers of innate antiviral immunity. The power of dsRNA is in its potency and broad-spectrum protection, and our findings provide the groundwork for novel antiviral drugs and vaccine adjuvants in fish.

