Rosemary Thwaite is a PhD student in immunology at the Universitat Autònoma de Barcelona (UAB) working on the development of recombinant protein nanoparticles as a vaccine strategy against viral diseases in aquaculture. She studied molecular biology at the University of Sydney, Australia and then worked in the leukaemia and viral pathology unit of the Children's Medical Research Institute, Royal Alexandra Hospital for Children, Sydney, on an anti-retroviral strategy using engineered ribozymes. She also trained in language teaching, obtaining a Cert TESOL (Teacher of English to Speakers of Other Languages) from the University of New South Wales, Australia. In Spain she spent many years teaching scientific and academic English in the UAB and the International University of Catalunya to students and research staff. She returned to the lab in 2014, completing a master's degree at the UAB on the immunogenicity of adeno-associated viral vectors (AAVs) in the human population, and publishing in *Gene Therapy*. During her PhD, she continues teaching scientific writing and communication skills in the biochemistry department of the UAB.

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Seminar: Nanopellets of recombinant viral antigens as a new approach to orally delivered fish prophylactics

Summary: In the search for an eminently practical vaccine strategy for farmed fish, we have devised recombinant viral antigens presented as "nanopellets". These are inclusion bodies of fish viral antigenic proteins produced in *Escherichia. coli*. Soluble recombinant proteins are too labile to endure the *in vivo* environment and maintain full functionality, and therefore require encapsulation strategies. Yet when they are produced as nanostructures, they can withstand high temperatures, gastrointestinal pH and lyophilization. Moreover, these nanomaterials are biologically active, non-toxic to fish, cost effective regarding production and suitable for oral administration. Here we present three versions of nanopellets formed by antigenic proteins from relevant viruses affecting farmed fish: the VNNV coat protein, IPNV viral protein 2 and a VHSV G glycoprotein fragment. We demonstrate that the nanoparticles are taken up *in vitro* by zebrafish ZFL cells and *in vivo* by intubating zebrafish as a proof of concept for oral delivery. Encouragingly, analysis of gene expression shows these nanopellets evoke an anti-viral innate immune response in ZFL cells and in rainbow trout head kidney macrophages.