SESSION TITLE: Fish sexual development and reproduction

THE INDUCTION OF OOCYTE MATURATION AND OVULATION IN EUROPEAN EEL (*ANGUILLA ANGUILLA*): *IN VITRO* AND *IN VIVO* COMPARISON OF PROGESTERONE WITH 17α,20β-DIHYDROXY-4-PREGNEN-3-ONE

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Artificially matured female European eels are injected with 17α,20β-dihydroxy-4-pregnen-3-one (DHP at 2 mg.kg^{-1}) to induce oocyte maturation and ovulation. This study compared treatment of DHP with progesterone (P), as upstream precursor in the steroidogenic pathway: *in vitro*, to finetune dose effects, and *in vivo*, to validate the *in vitro* findings. For the *in vitro* trial, oocyte biopsies were incubated in culture plate wells containing hormone-free medium and medium supplemented with the treatment (P: 10, 100, 1000 ng.mL^{-1}; DHP: 1, 10 and 100 ng.mL^{-1}). Before and after incubation for 12 and 18 h, oocytes were sampled for microscopy and qPCR analysis. For the *in vivo* validation, females were either injected with P or DHP at a dose of 2 mg.kg^{-1} to assess their effects on reproductive success. At the moment of stripping, eggs were sampled for RNA-sequencing to compare differentially expressed genes involved in gamete quality aspects. Both P and DHP induced germinal vesicle breakdown *in vitro* (DHP: 100; P: 100 and 1,000 ng.mL^{-1}). The expression of marker genes involved in oocyte maturation and ovulation was similar for both P and DHP treatment. RNAseq results reflected similar P and DHP effects on egg quality aspects. Females injected with either P or DHP were equally competent to produce larvae. In conclusion, P and DHP effects are identical, but using P is 5,000 times cheaper than using DHP.

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