

## Cyclostome workshop

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The cyclostome workshop was an informal workshop with five presentations devoted to four topics: endocrine control of metamorphosis in lampreys by John Youson and Jean Joss; pancreatic hormones in lampreys by Erika Plisetskaya; steroids in lampreys by Stacia A. Sower; and sexual differentiation in hagfish by Aubrey Gorbman. There were approximately fifteen participants in this workshop. Each of the speakers addressed the latest research effort in the selected topic including problems and questions followed by and identified needed directions of research. The presentations were informal with much discussion lasting two hours.

*John Youson* presented his view on metamorphosis in lampreys citing that lampreys undergo two metamorphoses from larval stage to juvenile and then from ammocoete to parasitic stage. Discussion followed on the actual definition of metamorphosis and on the actual initiation of metamorphosis. The internal criteria such as measurement of thyroid hormones have yet to be shown to be involved in metamorphosis of ammocoete to parasitic form. Thyroid hormones actually decrease during metamorphosis, at least during the identifiable stages of metamorphosis. A question was raised that perhaps the thyroid hormones increase before external characteristics are present denoting metamorphosis. One of the most critical problems in identifying hormonal control of metamorphosis is determining external signs that signal the initiation of metamorphosis. There are no obvious morphological char-

acteristics that correlate with the initiation of metamorphosis in lampreys, which makes it extremely difficult to determine the endocrine control of these processes.

*Jean Joss* discussed her research on the role of the pituitary in metamorphosis of lampreys. During early metamorphosis there is just one population of basophils; during stage 2 there is a second population of basophils; and by stage 3 the second population of basophils has disappeared. Basophils could possibly be GTH, TSH or even ACTH. Thus, there are changes in the pituitary that do correlate with stages of metamorphosis.

*Erika Plisetskaya* identified the hormones that she and her colleagues have purified from the pancreas of the lamprey and possible functions for these hormones.

*Stacia Sower* discussed the role of steroids in lampreys. In adult male and female lampreys, several researchers have identified estradiol as one of the major steroids present. However, there has not been a systematic steroidogenic profile on the possible presence of other steroids. There have been a few studies on the steroidogenic pathways but not extensive enough to identify the biologically active steroids.

*Aubrey Gorbman* discussed his recent research on sexual differentiation in hagfish.