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## **Effects of mechanosensory feedback on swimming behaviour and stability of a flexible body**

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The lamprey is an eel-like organism used as a model for both neurophysiology and locomotion studies. Like other animals, the lamprey moves through the use of a neural network called a central pattern generator to generate a rhythmic signals down the body, inducing muscle contractions. This signal is adjusted through information using mechanosensors (edge cells) which detect changes to the body to improve performance. Here we present a computational swimming lamprey driven by a central pattern generator (CPG) modelled as a chain of coupled oscillators. The exact functional form of feedback from the edge cells to the CPG is not known. Using the CPG to drives muscle kinematics in fluid-structure interactions implemented in an immersed boundary framework to produce the emergent swimming mode, we can examine the effects of different proposed functional forms of sensory feedback information. Effects of feedback to the neural activation on swimming performance are estimated and examined.

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