**Active Learning Exercise 2.1**

to accompany

*Vertebrate Life*, Tenth Edition

Pough • Janis

**Which One’s the Vertebrate?**

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**Level of Difficulty:** Medium

**Relevant Terminology:** cephalization, branchial region, pharyngeal structures, notochord, dorsal hollow nerve cord

**Preparation**

This exercise can be done in a lab or lecture.

* Lab: use microscopes to look at the slides
* Lecture: use hand lenses or project pictures of the slides for students to look at

You need a standard whole-mount slide of Amphioxus (old ones are labeled “Branchiostoma”) and of a larval lamprey (typically labeled “Ammocetes larva”).

Any name labels should be hidden such that the slides are labeled “A” and “B.”

Tell the students that one organism is a vertebrate and the other is not. Their task is to determine which is which, and explain their answer.

**Activity**

Students can work individually or in pairs. Have them use Chapter 2 as a guide so they don’t get hung up on species-specific differences. They should note themes emphasized in the chapter: cephalization, muscle development (related to activity), and supporting structures of the branchial region. They can also see the hallmarks of chordates and/or craniata: pharyngeal structures, notochord, dorsal hollow nerve cord, post-anal tail, etc.

This activity lends itself to the “think-pair-share” approach where students write down their ideas individually, pair up to compare notes, and then you can do a class discussion.

**Additional Resources/Links**

The following list of references for further information on “think-pair-share” comes from the teaching resources available on the the Teaching Issues and Experiments in Ecology (TIEE) website: [<http://www.esa.org/tiee/teach/teach_glossary.html>]

* <http://www.wcer.wisc.edu/nise/cl1/CL/doingcl/thinkps.htm>
* <http://carbon.cudenver.edu/public/OTE/nn/vol1/1_9.htm>
* <http://curry.edschool.virginia.edu/go/edis771/notes/THNKPRSH.html>
* <http://clte.asu.edu/active/usingtps.pdf>

Photos of a lancelet and an ammocetes larva:

* <http://comenius.susqu.edu/biol/202/animals/deuterostomes/craniata/petromyzontomorphi/ammocetes-larva.jpg>