

Appendix: Implementing Teaching Standards

Standards for IB Biology Higher Level

2.1.8 Explain that cells in multicellular organisms differentiate to carry out specialized functions by expressing some of their genes but not others.—This unit will address this standard directly as students learn about how hormones will affect genes in certain cells but only at certain times in the development of insects.

2.1.9 State that stem cells retain the capacity to divide and have the ability to differentiate along different pathways.—The imaginal discs provide a very good example of stem cells that are retained in the larvae of insects until they are activated to begin dividing and forming adult cells.

5.4.7 Explain how natural selection leads to evolution—Students will consider how natural selection has resulted in the evolution of complete metamorphosis.

5.4.8 Explain two examples of evolution in response to environmental change; one must be antibiotic resistance.—the example of insect metamorphosis and how it is affected by endocrine disruptors provides students with another example they can use for a response to environmental change.

6.5.7 State that the endocrine system consists of glands that release hormones that are transported in the blood.—Students will learn about the glands and hormones involved in insect metamorphosis and well as some in the human body that affect obesity.

E.1.4 Explain how animal responses can be affected by natural selection, using two examples.—Students will design experiments to test the effects of an environmental condition on the behavior of superworm larvae.

E.3.2 Analyse data from invertebrate behavior experiments in terms of the effect on chances of survival and reproduction—Students will analyse the data from the experiments they perform.

G.5.1 Distinguish between r-strategies and K-strategies—Students will use insects and their method of reproduction as an example of r-strategy.

G5.2 Discuss the environmental conditions that favor either r-strategies or K-strategies—Students will use insects as an example of an r-strategy organism and how it is affected by environmental conditions.