BSC 307 Cognitive Adaptation Plan Form

Title: "The Mystery of Reebop Genetics"	**Grade Level:** 11-12

Objectives:

1. Analyze patterns of inheritance and recognize exceptions to Mendel's Principles of Inheritance.
2. Describe the types of exceptions demonstrated in patterns of inheritance and determine which principle is being "broken".
3. Identify the proper terminology associated with each inheritance exception.

Background Information/Skills Needed: Students need to know how to construct monohybrid crosses using Punnett squares. They should also understand that genes are represented by letters (uppercase = dominant; lowercase = recessive) and should be able to articulate Mendel's Principles of Inheritance.

Illinois State Learning Standards:

ILS Stage J 12 A 3: Apply scientific inquiries or technological designs to synthesize the principles of genetic studies, examining phenotypic and genotypic displays, modeling predictable dominance outcomes and probabilities, or making connections to early and current research in agriculture, forensics, medicine, etc.

Activity Description:

After a brief review of Mendel's Principles of Inheritance, students are introduced to the Reebops by the instructor. A few minutes are spent looking at the Reebops' physical characteristics. Students are then given a copy of the activity and envelopes containing chromosomes from both the male and female Reebop. They "mate" the Reebops by selecting one chromosome from each homologous pair and then create one offspring. They are then charged with determining which Reebop traits do not follow traditional Mendelian inheritance patterns and what those exceptions are called.

Academic Language Needs: Students will need to have a working knowledge of the terms genetics, inheritance, chromosomes, genotype, phenotype, traits, exceptions, principles, Mendel, dominance (dominant), recessiveness (recessive), segregation, and independent assortment.

Rationale:

Students struggle with the concepts that fall outside of the traditional Mendelian genetics patterns. The Reebops provide a physical, hands-on experience of multiple exceptions. This activity also directly reflects ILS Stage J 12 A 3 as it both examines genotypic and phenotypic displays as well as modeling the genetic outcomes of crossing individuals.

Resources:

Illinois State Board of Education. (1997). Illinois State Learning Standards. [On-line]. Retrieved on August 14, 2008. Available: http://www.isbe.net/ils/Default.htm.

Soderberg, P. (1991). *Reebops: A model "organism" for teaching genetics concepts.* [On-line]. Retrieved on August 14, 2008. Available: http://www.wisc.edu/cbe/assets/docs/pdf/reebops/reebops.pdf