## Introduction

Indiana students enrolled in Biology I participated in the *ISTEP+: Biology I Graduation Examination* End-of-Course Assessment (ECA) during the 2010-2011 test administration windows. The Biology I ECA consists of two item types which contribute to a student's scale score: multiple-choice and constructed-response. It is important to keep in mind that a significant portion of a student's score is calculated from the multiple-choice items on the assessment, which are not addressed within this document.

This document consists of open-ended items from the Spring 2011 administration and includes:

- Sample released open-ended questions
- Rubrics used by trained evaluators to score student responses
- Sample papers used by trained evaluators to distinguish between rubric score point values
- Annotations describing the rationale for scoring student responses

The purpose of this guide is to provide additional Biology I ECA sample items and kmodel the types of items that are scored using rubrics.

## **Question 3, Sample B – 1 point**

**Describe a potential cause of this growth and what happens within the cells.** some kind of radioactive substance must have been put in the pond causing the cell to form mutations

Is it likely that this trait will be inherited by the next generation? Explain why or why not. it will not be passed on unless the sex chromosomes are harmed

Notes: The student identifies a potential cause of the growth, but incorrectly refers to "sex chromosomes" in Part Two, rather than gametes, or sex cell (one key element).

Please note that student responses are scored for science content <u>only</u>, not for accurate spelling, grammar, or punctuation.



# **Question 4**

## **Key Elements**

Explanation must include 2 of the following:

- Organisms can have different alleles for (some) single traits. •
- Alleles are independently assorted during reproduction. •
- Alleles are segregated during reproduction.
- Alleles are passed on to offspring.
- Alleles can be dominant/co-dominant or recessive.
- Alleles determine individual's genotype and phenotype. ٠
- Similar phenotypes can have different genotypes (homozygous and heterozygous). ٠

### AND

Assortment of and changes in alleles can lead to variation within a species, which may lead to better survival and reproduction (evolution).

OR Assortment of and changes in alleles can lease over the within a species, which may lead to differential survival and reproduction. 15 of 20

#### OR

Other plausible description of the connection between alleles and evolution

# **RUBRIC:**

- **3** points Three key elements
- 2 points Two key elements
- 1 point **One key element**

Other

0 points