

**Degree Program  
Assessment of Student Learning Plan  
Kansas State University**

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- Check the box if your program's student learning outcomes have been modified since November 2003. If so, please email ([apr@ksu.edu](mailto:apr@ksu.edu)) or attach a hard copy to this document.

**A. College, Department, and Date**

College: Interdepartmental  
Program: Genetics  
Date: June 24, 2005

**B. Contact Person(s) for the Assessment Plans**

Barbara Valent, University Distinguished Professor

**C. Degree Program**

Genetics, Ph.D.

**D. Assessment of Student Learning Three-Year Plan**

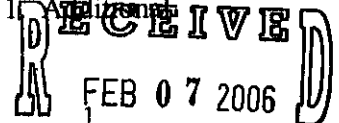
**1. Student Learning Outcome(s)**

*[Insert at least 2-5 learning outcomes that will be assessed by the unit over the next three years. Each unit will select which of its learning outcomes to assess.]*

1. Understand the basic processes of classical, molecular, developmental, population and evolutionary genetics and cytogenetics in prokaryotic and eukaryotic systems, including gene transmission, mutation, expression and regulation.
5. Become expert in an area of specialization, conceive and perform original genetic research in this area, and prepare results of the research for publication in a scientific journal.
7. Develop oral and written communication skills that include the ability to publish original research in a scientific journal and to communicate the importance and excitement of genetic research to others outside the field, including those with a limited scientific background.

**Special rationale for selecting these learning outcomes:**

The Genetics Program was reviewed by an External Review Team in 2003, and the program is still undergoing changes in response to this review. One major change has been implementation of core curriculum requirements to ensure that all Genetics Students with degrees from Kansas State University obtain a broad education in genetic sciences. This involved creation of a new course, Population Genetics, PLPTH 768, which was taught for the first time in Spring, 2005. The new core curriculum should have a major positive impact, especially on SLO 1, <sup>Additional</sup>



SLOs chosen are key concepts required for research degrees in Genetics for which some assessment tools are already in place. As a reasonable transition, we decided that only students entering the Genetics program in the Fall, 2004 or later, will be required to follow the new curriculum. Therefore, it will be of interest to assess learning outcomes separately for students entering before and after implementation of the new curriculum requirements in order to assess the effectiveness of these requirements.

**Relationship to K-State Student Learning Outcomes:**

Program SLOs	University-wide SLOs (Graduate Programs)			Program SLO is conceptually different from university SLOs
	Knowledge	Skills	Attitudes and Professional Conduct	
1. Understand the basic processes of classical, molecular, developmental, population and evolutionary genetics and cytogenetics in prokaryotic and eukaryotic systems, including gene transmission, mutation, expression and regulation.	X			NA
5. Become expert in an area of specialization, conceive and perform original genetic research in this area, and prepare results of the research for publication...		X		NA
7. Develop oral and written communication skills that include the ability to publish original research in a scientific journal and to communicate of the importance and excitement of genetic research to others....		X	X	NA

2. How will the learning outcomes be assessed? What groups will be included in the assessment?

Standards (Learning Outcomes)	Direct Measures	Indirect Measures	Who will be assessed?
1. Understand the basic processes of classical, molecular, developmental, population and evolutionary genetics and cytogenetics in prokaryotic and eukaryotic systems, including gene transmission, mutation, expression and regulation.	Final grade received in core courses: <b>BIOL 675</b> Genetics of Microorganisms  <b>BIOL 705</b> Eukaryotic Genetics  <b>PLPTH 768</b> Population Genetics  Preliminary exam	Student entrance and exit interviews by Genetics Program Chair	Students will be assessed in 2 groups depending on start date before or after Fall 2004
5. Become expert in an area of specialization, conceive and perform original genetic research in this area, and prepare results of the research for publication...	Thesis research  Thesis defense	Student entrance and exit interviews by Program Chair  Written comments from participating genetics faculty or audience using a standard form  Report from the exam chairs	All students
7. Develop oral and written communication skills that include the ability to publish original research in a scientific journal and to communicate the importance and excitement of genetic research to others.....	Seminars given (Audience assesses according to procedure in the home department)  Presentations at the annual Genetics Symposium	Entrance and exit interviews by Program Chair  Publication of thesis research (# of papers and where published)  Presentations at scientific meetings (#, type, meeting)	All students

**3 When will this outcome be assessed? When will the results of the assessment(s) be discussed?**

<b>Standards (Learning Outcomes)</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>Baseline Created?</b>
1. Understand the basic processes of classical, molecular, developmental, population and evolutionary genetics and cytogenetics in prokaryotic and eukaryotic systems....	Final grade in core courses: <b>BIOL 675</b> <b>BIOL 705</b> <b>PLPTH 768</b>  Develop rubric for entrance and exit interviews	Final grade received in core courses: <b>BIOL 675</b> <b>BIOL 705</b>  Begin student entrance and exit interviews	Final grade received in core courses: <b>BIOL 675</b> <b>BIOL 705</b> <b>PLPTH 768</b>  Continue entrance and exit interviews	Yes, each year beginning with 2005
5. Become expert in an area of specialization, conceive and perform original genetic research in this area, and prepare results of the research for publication...	Thesis research  Preliminary exam  Thesis defense	Thesis research  Preliminary exam  Thesis defense	Thesis research  Preliminary exam  Thesis defense	Yes, each year beginning with 2005
7. Develop oral and written communication skills that include the ability to publish original research in a scientific journal and to communicate the importance and excitement of genetic research to others....	Student Seminars (Audience assesses using procedure in the home department)  Collect details on manuscripts published and presentations made*	Student Seminars (Audience assesses using procedure in the home department)  Collect details on manuscripts published and presentations made*	Student Seminars (Audience assesses using procedure in the home department)  Collect details on manuscripts published and presentations made*	Yes, each year beginning with 2005

\* All genetics students will be asked to provide this information each year when they submit the abstract for their presentation in the Genetics Symposium.

**4. What is the unit's plan for improving students' learning?**

<b>Standards (Learning Outcomes)</b>	<b>Improvement plan</b>
1. Understand the basic processes of classical, molecular, developmental, population and evolutionary genetics and cytogenetics in prokaryotic and eukaryotic systems...	Data will be discussed annually by the Genetics Steering Committee. If weaknesses are discovered, the issues will be discussed by the entire Genetics faculty and changes will be implemented to address those weaknesses. Strengths will be noted and shared with Genetics faculty and students, including incoming students.
5. Become expert in an area of specialization, conceive and perform original genetic research in this area, and prepare results of the research for publication...	Particular emphasis will be given to assessment that is done by the student's Thesis Research Committee. For an individual student, it will be up to the Committee to recommend additional practice or courses that would improve the problem-solving skills of a student. If a general weakness is discovered among many students in the program, additional emphasis on improving skill will be incorporated into the required courses for the degree.
7. Develop oral and written communication skills that include the ability to publish original research in a scientific journal and to communicate the importance and excitement of genetic research to others ...	Different types of communication skills (scientific writing, poster development, presenting a scientific seminar, etc.) are taught in different courses. If a weakness is detected in any of those specific areas, additional emphasis will be given to help improve that area in the appropriate course(s).