

## PhD Interdisciplinary Concentration in Domestic Animal Genomics

Advances in modern genome analysis hold exciting possibilities for a transition into the new era of systems biology, which will bring together genomic, transcriptomic, proteomic and metabolomic data using state-of-the-art statistical, biological, computational, and bioinformatics tools. Capitalization of the opportunities livestock genomics offers to society will require implementation of hands-on education programs grounded in sound scientific methods coupled with deep understanding of modern animal production systems to equip a new generation of students with critically needed knowledge and skills. Developing this expertise requires mastering quantitative genetics, computational and molecular biology, and statistics. Creation of a formal Domestic Animal Genomics Interdisciplinary Concentration in the Animal Sciences Department at the University of Florida will address this critical shortage by educating doctoral students with the skills required to excel in technologically advanced food and agricultural industries. Moreover, creation of the concentration will fulfill one of the objectives of a funded USDA National Needs Fellowship Program grant. It is expected that up to 4 students receiving funding through this grant will be among the first students to enter the interdisciplinary concentration.

### *Requirements for entry*

Enrollment in a doctoral program in any of the graduate programs offering the concentration. These programs are Animal Sciences, Animal Molecular and Cellular Biology, Genetics and Genomics, Biomedical Sciences, and Veterinary Medical Sciences.

### *Requirements for completion*

Requirements for the PhD concentration will include 12 credits, including 6 credits of core courses and 6 other credits from a group of elective courses. In addition to the requisite credits in the core and elective courses, it is expected that students will also successfully complete courses chosen in consultation with the supervisory committee in topics such as statistics, biochemistry, cell biology, reproduction, nutrition, and research ethics.

### **Core courses (9 credits)**

<b>Course Number</b>	<b>Title</b>	<b>Department</b>	<b>Credit hours</b>	<b>Term Offered</b>	<b>Description</b>
ANS 6389L	Techniques in Molecular Genetics Lab	Animal Sciences	2	Spring	Laboratory molecular biology techniques used in animal genetics.
ANS 6387	Genetic Analysis of Complex Traits in Livestock	Animal Sciences	3	Spring	Fundamental principles of genetic analyses of complex traits
ANS 6932	Animal Genetics and Genomics Seminar and Research Studies	Animal Sciences	1	Spring/Fall	Animal Genetics and Genomics Seminar and Research Studies

**Elective courses**

- ANS 6745 Introduction to Statistical Genetics, 3 credits
- ANS 6932 Special topics - Statistics for Animal Genomics Data, 3 credits
- GMS 6231 Genomics and Bioinformatics, 3 credits
- PCB 5065 Advanced Genetics, 4 credits
- BCH 5413 Mammalian Molecular Biology and Genetics, 3 credits
- BCH 6415 Advanced Molecular and Cell Biology, 3 credits
- BSC 6438 R for Functional Genomics, 3 credits
- BSC 6459 Fundamentals of Bioinformatics, 3 credits
- VME 6934 Seminar in Reproduction and Medicine, 1 credit