IMMUNOBIOLOGY

Immunobiology Interdepartmental Graduate Program

Work is offered for the master of science and doctor of philosophy degrees with a major in Immunobiology. Faculty are drawn from twelve university departments along with researchers from the National Animal Disease Center. Participating departments include: Animal Science; Biochemistry, Biophysics, and Molecular Biology; Biomedical Sciences; Chemical & Biological Engineering; Entomology; Food Science and Human Nutrition; Kinesiology and Health; Natural Resource Ecology & Management; Veterinary Clinical Sciences; Veterinary Diagnostic & Production Animal Medicine; Veterinary Microbiology & Preventative Medicine; and Veterinary Pathology. The diversity of faculty expertise ensures a broad education while offering flexibility in choice of specialization. Ongoing research projects include areas such as: antibody and cell-mediated immunity, gene expression, immunochemistry, immunogenetics, immunomodulation, immunophysiology, mucosal immunity and nutritional immunology. Additional information about program faculty members is available at: www.immunobiology.iastate.edu (http://www.immunobiology.iastate.edu/).

Students may enter the Immunobiology program in one of two ways; prospective students may apply directly to the major, or current ISU graduate students may be admitted as a co-major or minor in Immunobiology. Ph.D. students admitted into the Interdepartmental Immunobiology major will take IMBIO 6970 Graduate Research Rotation during their first two semesters. From these rotations the student will select a major professor and join a home department. Affiliating with a major professor is done by the end of the second semester.

Before entering the Immunobiology program, prospective students should have a strong background in the biological sciences; typically including work in immunology, genetics and biochemistry. Prior research experience is highly encouraged.

Immunobiology students should include in their program of study a core of courses which will provide a broad coverage of the basic program in immunobiology. Formal courses should include immunology, biochemistry, and statistics. Additional coursework may be selected to satisfy individual interests or departmental requirements.

Graduates of the Immunobiology program will have a broad understanding of the interdisciplinary field of immunobiology and will be able to effectively integrate the principles of immunology with related disciplines. They are able to effectively communicate with scientific colleagues and the general public in both formal and informal settings. Graduates are able to integrate theory and research to address complex problems facing scientific professionals studying animal and human health, taking into account related ethical, social, legal and environmental issues. They are skilled at carrying out research, communicating research results, and writing persuasive grant proposals.

GRADUATE STUDY IN IMMUNOBIOLOGY

Curriculum Requirements for Immunobiology Doctoral Students

Ph.D. candidates majoring in Immunobiology must take at least 72 graduate credits. This 72 credits includes the below core course requirements and applicable research credits earned. Credits taken during a student's M.S. program in Immunobiology at Iowa State University will count towards their Ph.D. in Immunobiology.

Ph.D. students should take each of the following:

BBMB 4050	Biochemistry II	3
IMBIO 6020	Current Topics Workshop in Immunology Repeated each Fall	1
IMBIO 6040	Seminar in Immunobiology Repeated each Spring	1
IMBIO 6990	Research	
STAT 5101	Statistical Methods for Data Analysis	4
VMPM 6150	Molecular Immunology	3
GRST 5650	Responsible Conduct of Research in Science and Engineering	1

Take one of the following two:

VMPM 5200	Principles of Immunology	3
VMPM 5750	Immunology	3

Take at least two courses from the following approved electives:

BBMB 5450	Molecular Cell Signaling	2
IMBIO 6610	Comparative Immunology and Infectious Disease	2
GDCB 5280	Advances in Molecular Cell Biology	3
VMPM 5400	Livestock Immunogenetics	2
VMPM 6080	Molecular Virology	3
VMPM 6250	Mechanisms of Bacterial Pathogenesis	3
VMPM 6290	Advanced Topics in Cellular Immunology	2
VPTH 6610	Comparative Immunology and Infectious Disease	2

Curriculum Requirements for Immunobiology Master's Students

All M.S. students majoring in Immunobiology are required to complete a minimum of 30 graduate credits. These 30 credits includes core course requirements and applicable research credits earned. The requirements for M.S. students are the same as that for Ph.D. students with the exception of the elective credits. M.S. students are required to take **at**

least one course from the list of electives as opposed to the two course minimum for Ph.D. students.

Curriculum Requirements for a Minor in Immunobiology at the PhD Level

Graduate students studying at Iowa State University with an interest in completing an Immunobiology minor for their Ph.D. studies are required to take a total of 12 credit hours of coursework including core courses and approved electives.

Students must be approved for the minor by the Immunobiology program and must follow Graduate College guidelines for POS Committee membership.

Graduate students wishing to seek a minor in Immunobiology are encouraged to contact the Immunobiology Interdepartmental Graduate Program Coordinator for further information. Inquiries can be submitted to: idgp@iastate.edu.

Immunobiology Minor Curriculum at the Ph.D. Level Includes:

One course from each of the following two categories:

Category A:

VMPM 5200	Principles of Immunology	3
VMPM 5750	Immunology	3

Category B:

VMPM 6150	Molecular Immunology	3
VMPM 6290	Advanced Topics in Cellular Immunology	2

One enrollment in the following:

IMBIO 6020	Current Topics Workshop in Immunology	1

Minimum of 2 courses from any of the following approved electives:

BBMB 5450	Molecular Cell Signaling	2
GDCB 5280	Advances in Molecular Cell Biology	3
IMBIO 6610	Comparative Immunology and Infectious Disease	2
MICRO 4080	Virology	3
MICRO 5540	Virology	1
VMPM 5400	Livestock Immunogenetics	2
VMPM 6080	Molecular Virology	3
VMPM 6250	Mechanisms of Bacterial Pathogenesis	3
VMPM 6290	Advanced Topics in Cellular Immunology	2
VPTH 6610	Comparative Immunology and Infectious Disease	2