

ANIMAL SCIENCE (GRADUATE FIELD)

Program Website (<https://cals.cornell.edu/education/degrees-programs/graduate-field-animal-science/>)

Field Description

Expertise of faculty in the field of animal science spans a broad range of topics related to the physiology and management of domestic animals for enhanced health and productivity. Areas of research emphasis include animal nutrition and metabolism, growth, reproduction, genetics, immunology and infectious disease and systems analysis. Additionally, there is a focus on the development of modern technologies to monitor animal behavior and physiology to increase productivity and ensure animal welfare, factors which will contribute to the sustainability of animal industries and food production. In concert with this, students have the opportunity to train with teams of scientists focusing on the sustainability of animal production and opportunities to both mitigate and adapt to environmental challenges such as climate change.

Students training towards MS and PhD degrees in the field develop a unique program applicable to their particular goals under the mentorship of a special committee composed of faculty with the relevant expertise. In addition to doing research, students are encouraged to gain experience in teaching, extension and public outreach.

The Master of Professional Studies (Agriculture) degree is intended primarily for applicants who want to further their academic training in animal science but whose interests may not be oriented toward research. It's a special non-thesis degree program requiring a minimum of two residence units and the satisfactory completion of 30 hours of coursework related to the professional interests of the candidate. Approval of the report of a problem-solving project is also required.

In addition, the M.P.S. (Agriculture and Life Sciences) program has a Peace Corps option in which the student undertakes two semesters of academic work at Cornell and a Peace Corps assignment. For information and instructions on how to apply, visit the M.P.S. (Agriculture and Life Sciences)/Peace Corps Web site, or contact International Programs, 33 Warren Hall, Ithaca, NY 14853; phone 607-255-3037; email mpsag_peacecorps@cornell.edu. (mpsag_peacecorps@cornell.edu)

Data and Statistics

- Professional Master's Program Statistics (<https://gradschool.cornell.edu/about/program-metrics-assessments-and-outcomes/professional-masters-program-statistics/?SelectGradField=42>)
- Research Master's Program Statistics (<https://gradschool.cornell.edu/about/program-metrics-assessments-and-outcomes/research-masters-program-statistics/?SelectGradField=42>)
- Doctoral Program Statistics (<https://gradschool.cornell.edu/about/program-metrics-assessments-and-outcomes/doctoral-program-statistics/?SelectGradField=42>)

Field Manual

- Manual (https://cornell.account.box.com/login?redirect_url=https%3A%2F%2Fcornell.app.box.com%2F%2F6wnpezbwvg1urvgr3f4jmnq7q1yvjac6)

Subject and Degrees

Animal Science

- Animal Science (MPS) (<https://catalog.cornell.edu/programs/animal-science-mps/>)
- Animal Science (MS) (<https://catalog.cornell.edu/programs/animal-science-ms/>)
- Animal Science (PhD) (<https://catalog.cornell.edu/programs/animal-science-phd/>)

Concentrations by Subject

Animal Science

- animal genetics (M.S., M.S./Ph.D., Ph.D. only)
- animal genomics (M.S., M.S./Ph.D., Ph.D. only)
- animal health (M.P.S. only)
- animal nutrition (M.P.S. only)
- animal nutrition (M.S., M.S./Ph.D., Ph.D.)
- animal production sustainability (M.P.S. only)
- animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- dairy business management (M.P.S. only)
- physiology of reproduction (M.S., M.S./Ph.D., Ph.D. only)

Faculty

Yves R Boisclair (<https://cals.cornell.edu/yves-r-boisclair/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal nutrition (M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** hormonal regulation of metabolism, growth and development; molecular endocrinology; nutritional physiology

Yung-Fu Chang (<https://catalog.cornell.edu/graduate-school/animal-science/www2.vet.cornell.edu/research/faculty/yung-fu-chang/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal genomics (M.S., M.S./Ph.D., Ph.D. only); animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** molecular biology of infectious disease; DNA, recombinant subunit and attenuated mutant vaccine development; molecular basis of bacterial pathogenesis; immunopathology of infectious disease; host defense mechanisms; functional genomics and proteomics; molecular diagnosis of infectious diseases

Soon Hon Cheong (<https://www.vet.cornell.edu/research/yung-fu-chang/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal genomics (M.S., M.S./Ph.D., Ph.D. only); animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.); physiology of reproduction (M.S., M.S./Ph.D., Ph.D. only)
- **Research Interests:** Animal genetics, disease and reproduction

Debbie J. Cherney (<https://cals.cornell.edu/debbie-jeannine-cherney/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal nutrition (M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** rumen nutrition; forage utilization and quality

Kevin J. Cummings (<https://catalog.cornell.edu/graduate-school/animal-science/www2.vet.cornell.edu/research/faculty/kevin-cummings-dvm-phd/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** epidemiology of foodborne pathogens, antimicrobial resistance, Salmonella in dairy cattle

Diego G. Diel (<https://catalog.cornell.edu/graduate-school/animal-science/www.vet.cornell.edu/research/faculty/diego-diel-dvm-ms-phd/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** Animal health, infectious diseases of animals, vaccinology and immunology

Ellie Duan (<https://blogs.cornell.edu/duanlab/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal genetics (M.S., M.S./Ph.D., Ph.D. only); animal genomics (M.S., M.S./Ph.D., Ph.D. only); animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** Functional genetics of domestic animals; To understand the key molecular mechanisms regulators that drive embryonic development and fertility using the bovine model; How the environment regulates genomes and epigenomes in bovine preimplantation embryos

Maria Julia Bevilacqua Felipe (<https://www.vet.cornell.edu/research/faculty/julia-felippe-medvet-ms-phd/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** basic and clinical immunology, vaccinology, immune response to infections

Julio O. Giordano (<https://cals.cornell.edu/julio-giordano/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.); physiology of reproduction (M.S., M.S./Ph.D., Ph.D. only)
- **Research Interests:** Dairy Cattle productive physiology/performance and dairy cattle management

Lindsay Goodale (<https://cals.cornell.edu/lindsay-goodale/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)

Yrjo Tapio Grohn (<https://catalog.cornell.edu/graduate-school/animal-science/www2.vet.cornell.edu/research/faculty/yrj-gr-hn/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** veterinary epidemiology; production medicine; public health; epidemiological and economic methods

Galina M. Hayes (<https://catalog.cornell.edu/graduate-school/animal-science/www.vet.cornell.edu/research/faculty/galina-m-hayes-bvsc-mrcvs-phd/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** small animal surgery and emergency medicine

Brandon P. Hedrick (<http://www.vet.cornell.edu/brandon-p-hedrick-phd/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** The evolution of mammalian limb shape and locomotor mode, Bat cranial and sensory system evolution in the context of dietary radiations, Avian lung evolution and respiratory physiology, Genital morphology, copulatory fit, and sexual selection, Urbanization and its effects on morphological development

Miel Hostens (<https://bovi-analytics.com/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** Creation of data-driven methodologies using precision dairy farming to monitor sustainable food production systems from a global perspective.

Heather J. Huson (<https://cals.cornell.edu/heather-j-huson/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal genetics (M.S., M.S./Ph.D., Ph.D. only); animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)

Renata Ivanek Miojevic (<https://catalog.cornell.edu/graduate-school/animal-science/www2.vet.cornell.edu/research/faculty/renata-ivanek/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** veterinary epidemiology; modeling; public health; infectious diseases; food safety; food systems

Patricia A. Johnson (<https://cals.cornell.edu/patricia-johnson/>)

- **Campus:** Ithaca - (Graduate School Professor)
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.); physiology of reproduction (M.S., M.S./Ph.D., Ph.D. only)
- **Research Interests:** animal science and physiology; endocrinology and reproductive physiology

Quirine M. Ketterings (<https://cals.cornell.edu/quirine-m-ketterings/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** nutrient management for field crops; soil fertility; agricultural environmental management

Quinn Kathleen Kolar (<https://cals.cornell.edu/quinn-kolar/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** Animal health, microbiology and immunology, dairy cattle management, mastitis and milk quality.

Francisco A. Leal-Yepes (<http://www.vet.cornell.edu/research/faculty/francisco-leal-yepes-dvm-phd/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal nutrition (M.S., M.S./Ph.D., Ph.D.); animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** Animal nutrition, metabolism, and growth. Technologies to monitor livestock and the development and validation of point-of-care (POC) for cattle.

Xingen Lei (<https://cals.cornell.edu/xingen-lei/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal nutrition (M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** molecular nutrition of minerals; selenium antioxidant function; phytase gene expression

Sabine Mann (<https://www.vet.cornell.edu/research/faculty/sabine-mann/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal nutrition (M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** nutrition; metabolism; inflammation; transition period

Jessica McArt (<https://catalog.cornell.edu/graduate-school/animal-science/www2.vet.cornell.edu/research/faculty/jessica-mcart-dvm-phd/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** transition period health; metabolism; milk analysis; dairy production epidemiology

Joseph W. McFadden (<https://cals.cornell.edu/joseph-mcfadden/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal nutrition (M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** lipidomics, insulin resistance, fatty liver

Hussni Omar Mohammed (<https://www.vet.cornell.edu/research/hussni-o-mohammed/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal nutrition (M.S., M.S./Ph.D., Ph.D.); animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)

- **Research Interests:** production medicine; risk assessment; epidemiology and infectious diseases; zoonotic diseases and public health; quantitative and analytical epidemiology

Daryl Van Nydam (<https://catalog.cornell.edu/graduate-school/animal-science/www2.vet.cornell.edu/research/faculty/daryl-nydam/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** dairy production medicine; epidemiology; public health

Jason Paul Oliver (<https://cals.cornell.edu/jason-oliver/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** Dairy environmental management, agricultural engineering, biological treatment systems, climate change and resiliency.

Thomas R Overton (<https://cals.cornell.edu/thomas-r-overton/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal nutrition (M.S., M.S./Ph.D., Ph.D.); animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** nutritional physiology; dairy cattle management

Kristan Foster Reed (<https://cals.cornell.edu/kristan-foster-reed/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal nutrition (M.S., M.S./Ph.D., Ph.D.); animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** dairy cattle nutrition, nutrition and biological modeling

Yi Athena Ren (<https://cals.cornell.edu/yi-athena-ren/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.); physiology of reproduction (M.S., M.S./Ph.D., Ph.D. only)
- **Research Interests:** reproductive biology and endocrinology

Vimal Selvaraj (<https://cals.cornell.edu/vimal-selvaraj/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** pluripotency and stem cells; regenerative medicine; animal biotechnology; technologies for wildlife conservation

Glenn E Simmons (<https://catalog.cornell.edu/graduate-school/animal-science/www.vet.cornell.edu/research/faculty/glenn-e-simmons-jr-phd/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal nutrition (M.S., M.S./Ph.D., Ph.D.); animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** Our lab utilizes many molecular biology and bioprinting techniques to answer questions across animal and human disease models. Our research areas of interest include 1) defining

the mechanistic role of lipid metabolism in regulating the immune response, 2) developing novel nutrient-based approaches to improve treatment for infectious and malignant diseases, and 3) developing novel in vitro model systems for biological investigation. In collaboration with others, our lab also explores how diet contributes to disparate health outcomes in populations across geographic, ethnic, and economic borders.

Alexander J.A. Travis (<https://catalog.cornell.edu/graduate-school/animal-science/www.vet.cornell.edu/research/faculty/alexander-j-travis-vmd-phd/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.); physiology of reproduction (M.S., M.S./Ph.D., Ph.D. only)
- **Research Interests:** male germ cells and sperm; fertilization; assisted reproduction; biotechnology; rural food animal production in developing nations

Nathalie Lucie Trottier (<https://cals.cornell.edu/nathalie-trottier/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal nutrition (M.S., M.S./Ph.D., Ph.D.); animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** animal nutrition, monogastrics

Michael E Van Amburgh (<https://cals.cornell.edu/michael-e-van-amburgh/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal nutrition (M.S., M.S./Ph.D., Ph.D.); animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** ruminant nutrition and dairy management

Taika von Konigslow (<https://www.vet.cornell.edu/research/faculty/taika-von-konigslow-bsch-msc-dvm-dvsc/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** neonatal calf health, antimicrobial stewardship strategies, biomarker predictors of disease risk, and precision livestock technologies

Joseph Wakshlag (<https://www.vet.cornell.edu/research/faculty/joseph-j-wakshlag-dvm-phd/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal nutrition (M.S., M.S./Ph.D., Ph.D.); animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** Companion animal nutrition and nutraceutical use, sporting dog nutrition and physiology, cannabinoid use and metabolism

Martin Wiedmann (<https://cals.cornell.edu/martin-wiedmann/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal genomics (M.S., M.S./Ph.D., Ph.D. only)
- **Research Interests:** farm to table transmission and ecology of foodborne pathogens and spoilage organisms; listeria

monocytogenes; salmonella; genomics and molecular biology of food associated microbes

Eugene Thome Won (<https://cals.cornell.edu/eugene-won/>)

- **Campus:** Ithaca
- **Concentrations:** Animal Science: animal genetics (M.S., M.S./Ph.D., Ph.D. only); animal nutrition (M.S., M.S./Ph.D., Ph.D.); animal science (general) (M.P.S., M.S., M.S./Ph.D., Ph.D.)
- **Research Interests:** • Sustainable feed development for aquaculture • Fish growth physiology • Recirculating Aquaculture System (RAS) technology development • Aquaponics