

THE DEPARTMENT TODAY

Overview of the Department of Biological Sciences

Biology is one of the most rapidly evolving and highly diverse sciences; and the range of exploration in biology encompasses all aspects of life, from molecules and organisms to populations and ecosystems. Biology is the science that deals with all forms of life, including life in one place (the forms of life in a particular environment, and their behaviour, development and history) and the physical make-up and functioning of a particular organism. This fertile expanse is captured by members of the Department of Biological Sciences, recently conceived as the unification of two departments with excellence in traditional botanical and zoological sciences and a strong teaching program. Much as organisms are conceived and develop, the Department of Biological Sciences is now formulating a vision of its development, growth and life within the institutional environment of the Faculty of Science and the broader University of Manitoba community. Moreover, the department is also realizing new niches for vibrant explorations, education and services; this discovery, metaphorically, is that of a newly independent organism that sees the world revealed around it, identifies essential and exciting paths to open toward its future, and actively shapes its environment to strengthen its own advantage.

The Department of Biological Sciences is comprised of faculty members who have rightful pride in their contributions as researchers and educators in the broader communities of their individual disciplines and passions. Of course, these passions and disciplines evolve over time as careers develop, flourish and contribute to the world by creating new knowledge and shaping the next generations of researchers, educators and science-aware citizens in the workplace. The evolution of research ‘lives’ enables new connections as world and local issues and the earth itself changes, and also makes bridges to new avenues of education that students need in preparing for their own careers. Additionally, the faculty and graduate students take very seriously, their individual and discipline-based commitments to teaching in current programs and to refreshing and renewing educational programs at undergraduate and graduate levels. This duality imposes a full spectrum of healthy tensions that now engage the individual visions of departmental members as we engage parallel and serial processes to integrate and advance a shared vision of Biological Sciences as a new ecosystem, community and environment for professional and personal lives.

At the forefront of developing a vision, department members strive to advance our understanding of fundamental principles of biological function and to develop new tools and technologies that can address current and emerging problems facing all living organisms on the planet. The interface of living and inanimate structures in the earth’s environments also holds fascination for studies at the bench, in the field and by computer modeling. We aim to integrate our strengths and new synergies from the merged and coalesced initiatives of members of founding departments, and provide heritable excellence in research and educator roles as the department writes its own history. Based on fundamental principles from the full scope of “biology” broadly defined, ongoing and new programs will explore diverse themes such as genetics, gene and metabolic regulation, cell biology and development, integrative and comparative physiology, ecology, environmental impact, organism behaviour, systematics and evolution. We strongly advocate using the lever of high standards and integrity in integrating excellence in and a balance between research and teaching. Excellence in research requires the breadth of understanding and ability to communicate to an audience, the knowledge acquired through scholarship and from educators. Similarly excellence in teaching requires continuous updating to maintain currency with changes in disciplines and methods, and the presentation of

contrasting theories and ideas provided by an active research program. The balance between research and teaching is therefore essential for creating unique opportunities and novel synergies for future growth, identify emerging sciences such as genomics and conservation biology and interdisciplinary sciences, and train future leaders in biological sciences, education, the academy and society.

The Department of Biological Sciences is, just now, formed from the merging of two founding departments in the Faculty of Science – one could say the department is newly “fertilized” into life by “heterogametic” processes, to use a biological metaphor. We aim to capture the nascent opportunities of a “new department”. We have a solid mandate, a new external head, and the commitment to bring the energies of internal evolution to manifest our potential by finding new openings into the vistas of biological sciences. Since students are the stem cells of our future, they need a good “niche” within the Department of Biological Sciences, in which to grow, differentiate and meet phenotypic challenges. The Department of Biological Sciences has entered the first dynamic stages of independent life, and expects to realize a stronger competitive advantage on the national and international arenas for funding, researchers and students.

Department Mission

As part of developing a mission statement for the new Department of Biological Sciences, membership has begun the process of writing integrated bylaws, based on ongoing discussion of the breadth, scope and challenges of research, education and service. While aiming to eliminate obsolescence and duplication, we want to avoid any diminishment of the foundations, expertise, collaborations, professional accomplishments and indeed the traditional pride-of-place that have developed for individuals, groups and the founding departments and programs. This approach, engaged integration on a foundation of strengths, will bring growth and enrichment of individual and trans-disciplinary fields within the milieu of biological sciences. The fresh outlook and perspective of the new head, reorganization of the departmental administration, and work on renewal and integration will reveal and build new strengths to enhance our reputation in teaching and research and enrich our interactions within society.

While the Department of Biological Sciences strives to integrate and create a forward-looking department with activities in research and education that span the sub-cellular, cellular, organism, community and ecosystem levels of the biological world, our mission is in development. Our mission and vision are stated as follows, and recognized to be evolving as the integration of programs in research and teaching proceeds.

The mission of the Department of Biological Sciences is to promote, foster, create, preserve, disseminate, translate and exchange knowledge and world-class research in broad areas that are central to modern biological sciences, broadly defined, for the betterment of the university, Manitoba, Canada and the world.

The vision of the Department of Biological Sciences is to be recognized as a creative leader, rich resource and innovative collaborator in biological-sciences education, research and service. We will advance knowledge by: striving for the highest scientific, ethical and pedagogical standards; valuing contributions from everyone; translating knowledge through scholarly exchange and scholarship; providing innovative applications of knowledge that benefit our

students and the public; building strong and vibrant research platforms that are sustainable and attractive; fostering a welcoming environment that respects diversity, individuality and teamwork and celebrates learning and success; and contributing as full citizens to the University of Manitoba, the Province of Manitoba and broader communities.

Current Academic Programs

The large over-arching programs identified here are those in effect at the time of the formation of the new Department of Biological Sciences.

Program (alphabetically)	Options (Undergraduate Baccalaureate)	Options (Graduate)
Biology	Major	--
Biotechnology	Interdisciplinary (under review)	--
Botany	General (3-year) Major Honors	MSc PhD
Genetics	Interdisciplinary (under review)	--
Joint Ecology	Honors Major Major Cooperative	MSc PhD
Zoology	Minor, General (3-year) Major Major Cooperative Honors Honors Cooperative	MSc PhD

The department envisions that the undergraduate program offerings will be integrated under the Biological Sciences rubric in the next 1-2 years, at both undergraduate and graduate levels. The goal of this merger is to provide flexibility of learning and research that will enable future citizens (educated through such programs) to meet challenges in the changing world. Integrated programs for graduate and undergraduate studies in the Department of Biological Sciences are now submitted for review at appropriate levels, with the aim of launching the BSc, MSc and PhD programs in Biological Sciences in September 2009.