MDTP Professional Development Plan

Purpose: To prepare MDTP students for microbiology related careers.

Background. In order to better train MDTP students for microbiology-related professions, the students need a chance to gain knowledge and experience not just in academic research, but also in other fields where their microbiology education may be put to good use. The Delta Program in teaching has been a great asset to MDTP students interested in teaching as a career, allowing students to take classes and gain experience in teaching. Successful students are granted a certificate from the Delta Program, and this achievement and experience likely make the students more attractive for teaching positions.

Professional Development Options. With this plan we are expanding professional development opportunities for MDTP students beyond academic research and teaching. Opportunities for professional development can consist of coursework, an internship, a summer workshop, outreach experiences, or a second teaching practicum experience.

Courses. The Graduate School has agreed to allow MDTP dissertator students to enroll in courses from a limited list of classes appropriate for professional development of MDTP students. Students would take one or two courses in an area of interest after they become dissertators. Additional courses may be added to this list if they are appropriate for MDTP students and are approved for this purpose by the Graduate School.

Teaching practicum. A second semester of teaching practicum may be the most appropriate training for students that seek a career in academic research and teaching. If students do not arrange for other professional development activities, the default professional development training would be a second semester of teaching in a teaching practicum.

Summer courses or workshops. For students most interested in continuing in academic research, one or more summer courses or workshops may be the most appropriate training. Examples of such courses are those that cover research areas or methods or scientific writing or grant preparation.

Internship. As an alternative to class work or a second semester of teaching practicum, MDTP students could participate in an internship with a business or other organization. Students doing internships would have to arrange to be paid through the organization, and they would not be paid by their advisors while away from their research.

Students are encouraged to work with their major professor while pursuing an internship. Any student who is a dissertator cannot have a break in registration for the fall and spring terms. Students should try and do their internships during the summer term.

Requirement. In order to ensure that MDTP students are allowed to participate in the Professional Development opportunities, their participation will be required. Students will be required to perform a second semester of teaching practicum, carry out an internship for as long as one semester, take at least 2 credits of coursework from the list of approved classes or through the Delta Program, or perform other professional development activities equivalent to 2 semester hours of coursework as judged by the thesis committee. The thesis committee must give approval for the student to participate in the chosen professional development activity. Thesis committees will also determine if each student has met the requirement. Students should complete the
professional development requirement by the end of the fourth year. This requirement will go into effect with the MDTP class entering in fall 2011.

List of UW course opportunities. Students could choose one or two courses from this list to fulfill the Professional Development requirement. More details on these courses and on the Delta Program are given on the following pages.

**School of Business:**
MHR 722 Entrepreneurial Management (3 cr).
MHR 765 Contemporary Topics (1-4 cr).

**Law School:**
Law 817: Business Organizations (3M 4 cr).

**Lafollette School of Public Policy:**
Public Affairs 866 Global Environmental Governance (3 cr).

**School of Medicine and Public Health – Population Health Sciences:**
PHS 375 Introduction to Public Health (1 cr).
PHS 640 Foundations in Global Health Practice (1 cr).
PHS 644 Interdisciplinary Perspectives on Global Health and Disease. (1 cr.)
PHS 780 Public Health: Principles and Practice (3 cr).
PHS 781: Intro to Public Health Seminar (1 cr).
PHS 785: Health Management Policy (3 cr).

**Integrated Science Special Topics: Service with Youth in STEM.**
Biol 375: Special Topics, sec 004(1-5 cr).

Two-semester series, 2 credits per semester, for undergraduates or graduate students; Part of the Adult Role Models in Science (ARMS) program
Engage children in ways that can be transformational—you could inspire someone to be a scientist!
Learn about the process of learning, the needs and learning styles of children, how to teach the process of science, and how to evaluate informal (non-classroom) learning experiences. Then practice what you learn by helping lead an after-school science club, reflecting on your learning and sharing with your peers along the way. This course helps you:

- Learn about mutually beneficial community partnerships
- Expand your cultural literacy by working with underserved groups
- Make use of what you’re learning in your science courses right now
- Expand your appreciation of science, particularly its impact on our daily lives
- Explore mentoring as a part of the scientific process
- Live the Wisconsin Idea
Format
This two-semester series begins in the fall and continues through spring. Each semester, students work with after-school program staff to co-lead an after-school science club in the community. Activities typically revolve around an annual theme, such as "Energy" or "Engineering." Ideas for lessons and activities around the theme are provided, but students can also find or develop activities based on their interests. Students continuing into the spring semester often work on developing new science activities. Instructors include UW–Madison faculty and staff as well as representatives of partner organizations in the community.

School of Business

Entrepreneurial Management at Wisconsin
Contact: Dan Olszewski, Director, Weinert Center for Entrepreneurship, 5-3959, dolszewski@bus.wisc.edu

Http://www.bus.wisc.edu/weinertcenter/mba/mba2.asp

Graduate Coursework in Entrepreneurship
http://www.bus.wisc.edu/weinertcenter/students/GraduateCourseworkinEntrepreneurship.asp

Specific Course Suggestions for MDTP Students:
MHR 722 Entrepreneurial Management
The goals of this course are to identify the role of entrepreneurial ventures in the US economy; identify the processes involved in starting a new venture, identify the processes involved in funding and investing in a new or growing entrepreneurial venture; understand methods of organizing and managing an entrepreneurial venture understand methods for advising owners/managers of entrepreneurial ventures; and suggest small business ownership, advising or financing as a possible career course.

MHR 765 Economics of Innovation and Technology
Ideas and innovation have become the most important resource in today's economy. Successful managers should know how to recognize, manage and generate technological innovation for sustained competitive advantage. This course uses economic concepts to illustrate the nature of technological innovation and how it transforms competition between firms and generates economic growth. Topics will include: historical and conceptual background of technology and innovation; economics of the intellectual property (IP) protection system; IP licensing, enforcement and litigation; the relationship between market structure and innovation; the diffusion of technological innovations; interaction between public and private sector innovation; current policy issues regarding the conflicts between IP rights, antitrust regulation, and consumer welfare; and globalization.

Wisconsin Entrepreneurial Bootcamp (WEB) http://www.bus.wisc.edu/WEB/default.asp
This one week summer program has been designed to provide graduate Physical/Life Science, Engineering or Law students with an introduction to entrepreneurship and the tools, skills and issues faced in technology entrepreneurship.

The program develops the student's ability to use practical tools, deepen the student's conceptual
ability to explore fundamental links between tech and business and broaden the student's factual knowledge about technology strategy and entrepreneurship

Law School
Contact: Kevin Kelly, Associate Dean for Student and Academic Affairs, 2-4041, kevinkelly@wisc.edu. You will need to contact Dean Kelly to request registration in law school courses.
Specific Course Suggestions for MDTP Students: http://www.law.wisc.edu/academics/courses/descriptions.php

Law 817: Business Organizations
This is an introductory course that covers basic issues relating to the law of principals and agents and surveys state laws governing the formation and operation of closely held business associations, including partnerships, limited liability companies, and closely held corporations. The course deals with choice of business entity, forming and financing business enterprises, and management rights within such enterprises.

Law 848: Introduction to Environmental Law
This course provides an overview of the major federal environmental statutes, regulations and cases, and their implementation by regulatory agencies, as well as currently applicable common M law doctrine. It surveys environmental impact analysis, water and ground water, solid and hazardous waste, hazardous substance management and remediation, clean air act, common law remedies, enforcement and administrative process. It will focus not only with litigation strategies, but also with the compliance and planning strategies involved with much of environmental law practice.

Law 905: Bioethics and the Law
This course is an introduction to the legal, ethical and public policy dimensions of modern medicine and biomedical research. The course deals with informed consent, human experimentation, death and dying, organ transplantation, and allocation of scarce resources.

Law 906: Law, Sciences and Biotechnology Seminar
This course will examine how law shapes the development and introduction of new biomedical technologies, and how complex social forces shape the law with respect to new technologies. We will study several new and emerging technologies including stem cells, gene therapy, genetic testing and new reproductive technologies. Several course sessions will focus on the regulation of human subjects research, and the evolution of this body of law in response to the changing nature of biomedical research. You do not need a science background to understand the material or to excel in the course.

Law 989: Environmental Law and Practice
This course presents environmental statutes, cases and regulations, and discusses their implementation. The focus of the course will be both law and practice. It will provide a survey of substantive environmental law and their application in permitting, commercial transactions and enforcement.

Law School courses are graded differently from the standard AM F scale. Law School students will be graded differently than graduate students enrolling in law school courses. They will be graded
on an A-F scale.

**Law School Minor**

Ph.D. Minor
Work in the Law School may be offered as a minor toward the Ph.D. degree. For a minor in law, Ph.D. candidates must complete 10 credits. The minimum grade requirement is a weighted average of 77. The same grading standards will be applied. Requests for applications for the Ph.D., indicating a major in another department and a minor in law, should be made to the Graduate School.

For more information: Law School Admissions, 6222 Law Building, 975 Bascom Mall, Madison, WI 53706; 608/262-0050; www.law.wisc.edu/academics/courses/.

**LaFollette School of Public Policy**

Contact: Mo O’Connor, mcoconnor@lafollette.wisc.edu, (608) 262-3582

You will need to contact individual professors to seek permission to register for the courses offered by the LaFollette School of Public Policy. There may be other courses that are of interest to you as well. We encourage you to peruse the website: [https://www.lafollette.wisc.edu/](https://www.lafollette.wisc.edu/)

Specific courses that may be of interest to MDTP students:

Public Affairs 818, Introduction to Qualitative Methods for Public Policy Analysis
[http://www.ssc.wisc.edu/%7Egwallace/PA_818/pa_818.htm](http://www.ssc.wisc.edu/%7Egwallace/PA_818/pa_818.htm)

Health Policy and Management
Public Affairs 819 Advanced Qualitative Methods for Public Policy Analysis
[http://www.lafollette.wisc.edu/Courses/PA819/PA819---syllabus---sp10.pdf](http://www.lafollette.wisc.edu/Courses/PA819/PA819---syllabus---sp10.pdf)

Public Affairs 864 Health Policy and Policy Design
[https://www.lafollette.wisc.edu/degree-programs/courses/pa-864-health-policy-and-policy-design](https://www.lafollette.wisc.edu/degree-programs/courses/pa-864-health-policy-and-policy-design)

Public Affairs 873 Introduction to Public Policy
[https://www.lafollette.wisc.edu/degree-programs/courses/pa-873-introduction-to-policy-analysis](https://www.lafollette.wisc.edu/degree-programs/courses/pa-873-introduction-to-policy-analysis)

Public Affairs 874 The Policy Making Process
[https://www.lafollette.wisc.edu/degree-programs/courses/pa-874-policy-making-process](https://www.lafollette.wisc.edu/degree-programs/courses/pa-874-policy-making-process)

Energy and Environmental Policy

Public Affairs 866 Global Environmental Governance
[https://www.lafollette.wisc.edu/degree-programs/courses/pa-866-global-environmental-governance](https://www.lafollette.wisc.edu/degree-programs/courses/pa-866-global-environmental-governance)

Public Health and Public Policy
Population Health Sciences Courses

375 Introduction to Public Health. 1 cr. Introduces concepts and methods of epidemiology, health services research, health policy and financing, disease prevention, and public health. Intended as an overview for undergraduates of all disciplines and who might consider graduate work in population health science. Prerequisite: Junior status or cons inst.

780 Public Health: Principles and Practice. 3 cr. An interdisciplinary graduate---level course addressing population---based approaches to community health improvement, and features problem---based learning. A focus on contemporary issues; opportunities to work with a public health mentor and lectures by local, state and national figures. Prerequisite: MPH student, graduate student, or cons inst.

781: Intro to Public Health Seminar. 1 cr. The purpose of this seminar is to introduce MPH students to various aspects in the field of public health. Students, Faculty, Staff, and Public Health specialists will contribute to the seminar through presentations, workshops, and discussion sessions. These seminars will serve to familiarize MPH students to the various opportunities the program provides and to facilitate frequent conversation and dialogue between faculty, staff, and students. In addition, various public health speakers will be invited to discuss their areas of expertise and to describe potential field placement sites. Prerequisite: MPH students.

WARF Ambassador Program

The Wisconsin Alumni Research Foundation (WARF) Ambassador Program enhance the vital connection between research on campus and technology transfer. Engaging students to serve as WARF ambassadors augments WARF’s visibly and presence among researchers on campus.

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WARF is seeking up to 15 graduate students or post-docs to assist with the following key objectives:

Aid in the development, planning, and execution of the annual WARF Discovery Challenge
Increase understanding and awareness of WARF’s role across campus
Help WARF become more proactive in anticipating and identifying innovative research and potential inventions
Enhance WARF’s engagement in the scientific enterprise on campus

Qualified applicants will be students who:

• Are graduate students or post-docs in scientific or technical disciplines
• Have substantially completed their coursework, ideally having achieved dissertator status or equivalent
• Obtain approval from their supervisor or major professor to participate in the program
• Are able to commit between 5-10 hours/month to the program
• Are able to participate in the 10 hour student ambassador training

Particularly strong applicants are energetic, effective at networking with students, faculty and staff on campus and have an interest in the process of moving discoveries from early concept to the
marketplace. Learn more about the current WARF Ambassadors.

WARF Ambassadors will receive a monthly stipend for each month of active service as well as semester-end bonuses in the form of travel allowances related to their graduate studies/post-doctoral work.

Apply online at the WARF Career Portal
Click on “view all open job positions” and once an online profile has been created, you will receive a survey application to complete.

Additional Outreach Opportunities

Many outreach opportunities are available through the UW Biotechnology Center and through the Center for Biology Education. These may involve participation in ongoing outreach activities or part-time internship. Contact Dr. Tom Zinnen, Biotechnology Policy & Outreach, The Biotechnology Center (265 2420).

Microbiology 305/875

Microbiology Teaching Fellows (MTF) Program for MDTP Students

Since 2008, Department of Bacteriology has been offering an excellent and unique opportunity for the development and acquisition of innovative and effective ways to teach microbiology and molecular genetics through “Microbiology Teaching Fellows (MTFs)” program. MTFs will work with Professor Jae-Hyuk Yu typically for two academic semesters.

In the first semester, MTFs will focus on developing “scientific teachable unit”. For an about 8 week period, MTFs will work with Professor Yu to develop curriculum and assessment materials for Microbiology 305 course, including activities, discussions, and mini-lectures to engage students in active learning in microbiology. Three MTFs will form a team that can work together as they develop instruction materials.In the second semester, MTFs will apply their curriculum while teaching one of three sessions of Microbiology 305 “Critical analyses in Microbiology, 1 credit”. This valuable opportunity allows MTFs to engage in and practice real classroom instruction. There are maximum of 16 students per session, enabling highly interactive discussion in each class. MTFs should register for the 1 credit course Microbiology 875 “Scientific Teaching in Microbiology”.

** IMPORTANT: Teaching Microbiology 305 for one semester fulfills the Teaching Practicum, and/or Professional Development Requirement for the MDTP students!

Benefits for MTFs!!

MTFs acquire useful skills and the practical teaching experience that they will need in their future faculty positions, and that will improve their competitiveness for such positions. In addition, former 305 fellow graduate students have indicated gaining significantly enhanced teaching abilities that helped prepare them for their future careers. MTFs will receive all teaching materials (over 60 units) developed.
Delta Program Mission and Ideas
The Delta Program is founded on 3 interrelated core ideas. The Teaching--as--Research approach is explored via learning community opportunities that are based on learning--through--diversity.

Teaching--as--Research
By applying research methods --- idea, experiment, observation, analysis, improvement --- to the challenge of teaching, Delta:

- brings the skills of research faculty to the ongoing investigation of student learning
- promotes innovation in teaching and measurement of student learning
- advances the role of instructors in the ongoing improvement of teaching practices
- Learning Community

Through collaborative activities and programs Delta will create a community of graduate students, post--docs, and faculty that will:

- support and validate growth in teaching and learning
- create a foundation for institutional change

Learning--through--Diversity
Recognizing the common challenges in teaching and learning and the strength in bringing together diverse views, Delta is:

- Interdisciplinary --- serving all science, engineering, and mathematics departments
- Cross---generational --- bringing together graduate students, post---docs, and both new and experienced faculty
- Comprehensive --- providing knowledge, practice, and community
- Responsive --- reflecting the broad range of responsibilities that face today's faculty
- Inclusive --- welcoming for a multifaceted and diverse group of people

How are these core ideas relevant to my teaching?
Activities hosted by the Delta Program addresses the questions that graduate students, post---docs, and faculty ask as they strive to become excellent professors.

I hope to teach for many years. Will I make a difference? Will my thousands of students/participants learn what I think is important?

Will I be a strong candidate for faculty jobs and NSF CAREER awards?

Why are there so few women and people of color in my classes/opportunities? Am I serving all of my students/participants well?

My funding agency is requiring broader impact of my research program. How can I respond successfully to these new demands?

Will my investments in technology increase student/participant learning?

I support the idea of outreach, but how can I do it well?

How can I balance my desire to be a better teacher with so many other demands on my time?

Summer Courses and Workshops
(These lists are meant to serve as examples. Many other workshops would also be appropriate.)

From Woods Hole Marine Biological Laboratory (http://www.mbl.edu)
Unique courses for advanced graduate students, postdocs, and independent investigators, who are seeking thorough training in modern approaches to the study of microbiology.

Physiology: Modern Cell Biology Using Microscopic, Biochemical and Computational Approaches
Jennifer Lippincott-Schwartz, HHMI
This intensive laboratory course has been revamped to meet the new challenges in biology by
providing a unique interdisciplinary training environment at the interface between cellular and computational biology.

Microbial Diversity
Directors: George O’Toole
An intensive 6.5 week course during the summer. The goal of the course is to teach professors, postdocs and advanced graduate students how to discover, cultivate, and isolate diverse microorganisms catalyzing a breadth of chemical transformations, as well as how to perform molecular and computational analyses relevant to their students.

Physiology: Modern Cell Biology Using Microscopic, Biochemical and Computational Approaches
Directors: Jennifer Lippincott-Schwartz, HHMI
An intensive laboratory course that provides a unique interdisciplinary training environment at the interface between cellular and computational biology. Students with backgrounds in both the biological and physical/computational sciences are encouraged to apply.

Special Topics Courses
These intensive educational programs, one to four weeks long, provide experience in specialized research techniques. Lecture and laboratory courses in topics of current interest are also available.

The Genome Access Course
Programming for Biology
X-Ray Methods in Structural Biology
Advanced Sequencing Technologies & Applications
Scientific Writing Retreat
Computational Genomics
High-Throughput Biology: From Sequence to Networks
Cryoelectron Microscopy
Workshop on Leadership in Bioscience
Cell & Developmental Biology of Xenopus
Expression, Purification & Analysis of Proteins & Protein Complexes
Quantitative Imaging: From Acquisition to Analysis
Advanced Bacterial Genetics
Ion Channels in Synaptic and Neural Circuit Physiology
Mouse Development, Stem Cells & Cancer
Metabolomics
Vision: Linking Circuits, Perception and Behavior
Statistical Methods for Functional Genomics
Advanced Techniques in Molecular Neuroscience
Single Cell Analysis
Drosophila Neurobiology: Genes, Circuits & Behavior
Frontiers & Techniques in Plant Science
ASM Kadner Institute

The goal of the Institute is to provide intensive and closely guided experience in five key topics important for choosing and succeeding in a microbiology career. These topics include:

- Opportunities and preparation for diverse careers in microbiology
- Preparations, review and critique of research proposals
- Scientific presentations and communication
- Effective teaching methods
- Development of professional standards in microbiology

- Participants will have an unique opportunity to enhance their skills in various areas of grant writing and scientific communication, to learn about the rewards and preparation for various careers in microbiology, to help their professional development as microbiologists, and to participate in a demanding and intensive, yet enjoyable and constructive experience with both peers and senior microbiologists from around the country.

ASM Scientific Writing and Publishing Institute

Institute Overview

The ASM seeks applications from senior-level graduate students and early-career postdoctoral scientists for the ASM Scientific Writing and Publishing Institute.

Format

The Institute will provide four days of hands-on intensive training in scientific writing and publishing under mentorship of ASM Journal editors and reviewers. Groups of four to six participants will be paired with one experienced mentor from their field to provide individual critique and resources. The Institute is limited to 24 participants.