FORM D - IV A INSTRUCTION

The faculty member is encouraged to use a range of evidence demonstrating instructional accomplishment, which can be included in portfolios or compendia of relevant materials.

1. **Undergraduate and Graduate Credit Instruction:**
   Record of instructional activities for at least the past six semesters. Include only actual participation in credit courses (on- or off-campus instruction) or virtual university on-line courses. In determining the "past six semesters," the faculty member may elect to exclude any semesters during which s/he was on leave; additional semesters may be included on an additional page. Fill in or, as appropriate, attach relevant print screens from CLIFMS*.

Semester and Year	Course Number	Credits (Number or Var)	Number of Sections Taught Lec Rec Lab	Number of Students	Number Of Assistants**	Notes
Fall 2009	PLB 806	3	1	16	0	
Fall 2008	ZOL 341	4	11	326	11	
Fall 2010	PLB 812	3	1	7	0	

2. **Non-Credit Instruction:**
   List other instructional activities including non-credit courses/certificate programs, licensure programs, conferences, seminars, workshops, etc. Include non-credit instruction that involves international, comparative, or global content delivered either to domestic or international groups, either here or abroad.

   Workshops:
   I sponsored (through USDA funding), organized, and participated in three workshops to train plant pathologists and diagnosticians on the use of genomics and bioinformatics to develop DNA-based diagnostic markers.

*Consult departmental staff who are authorized to enter data on the web-based CLIFMS (Course Load, Instruction, Funding and Modeling System) system and can search for course sections and enrollments by faculty name, per semester.

**May include graduate and undergraduate assistants, graders, and other support personnel.

FORM D - IV A INSTRUCTION

-Colorado State University, Ft Collins, CO; February 2008
-American Phytopathological Society, Minneapolis, MN; July 2008
-Michigan State University, East Lansing, MI; February 2009

I participated in two workshops funded through my [redacted] project (PI [redacted] Crops and Soil Sciences) to educate potato breeders in the use of genomics and bioinformatics.
-Fredericton, Canada; August 2009
-Corvallis, Oregon; August 2010

Guest Lectures at MSU:
Statistical Genetics and Genomics Workshop, Center for Statistical Training and Consulting, MSU, May 2008, "Structural and Functional Annotation Issues with Large Eukaryotic Genomes"

PLB499, MSU, February 2009, "Rice: An example of how genomics can change approaches to science"

CSS350, MSU, April 2009, "Rice: An example of how genomics can change approaches to science"

MSU Plant Breeding, Genetics & Biotechnology Program's Molecular Plant Breeding Short Course, September 2009, "Applied genomics and bioinformatics – opportunities and challenges for plant breeding"

*Consult departmental staff who are authorized to enter data on the web-based CLIFMS (Course Load, Instruction, Funding and Modeling System) system and can search for course sections and enrollments by faculty name, per semester.

**May include graduate and undergraduate assistants, graders, and other support personnel.

FORM D – IV A INSTRUCTION, continued

3. Academic Advising:

a. Faculty member's activity in the area of academic advising. The statement may include commentary on supplementary materials such as recruitment activities, international student advising, evidence of peer recognition, and evidence of student recognition.

Undergraduate: I advised Plant Biology undergraduates (assigned 6-8 students) on course selections and graduation requirements as an official Plant Biology undergraduate advisor.

As an instructor in Genetics, I advised on an ad hoc basis a number of pre-med students on resume preparation and applications for post-graduate studies. I made reccommendations on their curriculum, post-graduate school applications, and resumes.

I advise several undergraduate students within my lab on their undergraduate curricula and post-graduate plans. In the reporting period, I have had nine undergraduate and one high school students working in my lab. For the three undergraduate students that have graduated, one is employed as a Research Associate in my lab, another is in medical school, and the third is in graduate school.

Graduate: I advised one Ph. D. student ([redacted] Ph. D. 2009 from Iowa State University; currently Research Associate - MSU) and one rotational graduate student. I am a co-advisor fo[redacted] in the QBI program.

Graduate/Professional:

Other: A large number of my staff are postdoctoral fellows (7 total since at MSU). One of these is supported through a NSF Postdoctoral Fellowship [redacted]. Another [redacted] is now a Visiting Professor at MSU. Dr.[redacted] is now Director for the Genomics Facility Center at the National Center for Biological Sciences in Bangalore, India.

b. Candidate's undergraduate advisees (if applicable to individual under review):

	Freshman	Sophomore	Junior	Senior
Number of current undergraduate advisees				

c. Candidate's graduate/graduate-professional advisees (limit to principal advisor or committee chairpersonship status):

	Masters	Doctoral	Professional
Number of students currently enrolled or active		1	
Number of graduate committees during the reporting period	1		[redacted]
Degrees awarded during the reporting period		1	
Degrees awarded during career		1	

FORM D – IV A INSTRUCTION, continued

4. **List of Instructional Works:**
List publications, presentations, papers, grants received (refer to Form D-IVE), and other works that are primarily in support of or emanating from instructional activity.

Workshop Presentations:
"Bioinformatics and Sequencing Relevant to SolCAP", Potato Association of America, Fredericton, Canada; August 2009

"Using the potato genome sequence", Potato Association of America, Corvallis, Oregon; August 2010

In the three workshops in which I trained plant pathologists and diagnosticians on the use of genomics and bioinformatics to develop DNA-based diagnostic markers, I presented lectures on genome sequencing methods, genome annotation, and types of DNA-based markers.

Bulletin:
[redacted]2009. A guide to growing potatoes in your home garden. MSU Potato Breeding and Genetics Program.

5. **Other Evidence of Instructional Activity:**
Cite other evidence of instructional productivity such as works/grants in progress or under review (refer to Form D-IVE). Address instructional goals and approaches; innovative methods or curricular development; significant effects of instruction; and curatorial and patient care activities, etc. Include evidence of instructional awards and peer recognition (within and outside the university).

Communication methods have evolved in the last decade from soley print-based media to electronic media including the internet. In one of my USDA funded projects, one component of our education and outreach is training students in internet-based dissemination of science. In Spring 2011, I will be offering a 1 credit graduate student seminar (co-taught [redacted] Plant Pathology) on internet based communication for science in the 21st century. Topics to be covered will include the value of the internet in communication to scientific and lay audiences, successful and unsuccessful methods of internet communication, and dissemination of scientific information via a WikiPedia page to be constructed by the students.

Rate Your Class SIRS-SOCT

Student Instructional Rating System
Student Opinion of Courses and Teaching

LOGOUT

Departments SIRS Results Reports

SIRS Administrator Page

[redacted] (SIRS Dept Administrator) 1/27/2010 9:54:42 AM

SIRS summary report for:

PLB 806 001 (Term: FS09)

Instructor: [redacted]

Date generated: 1/27/2010 9:54:42 AM
Number of students enrolled: 16
Number of replies: 12

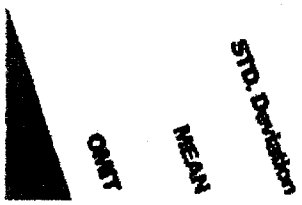
Show Form Questions

INSTRUCTION	1 Superior	2 Above Average	3 Average	4 Below Average	5 Inferior	6 OMIT	7 MEAN	8 STD. Deviation
(Instructor: [redacted]) 1. The instructor's enthusiasm when presenting course material.	58.3%	33.3%	8.33%	0%	0%	0%	1.5	0.64
(Instructor: [redacted]) 2. The instructor's interest in teaching.	58.3%	33.3%	8.33%	0%	0%	0%	1.5	0.64
(Instructor: [redacted]) 3. The instructor's use of examples or personal experiences to help get points across in class.	83.3%	16.6%	0%	0%	0%	0%	1.16	0.37
(Instructor: [redacted]) 4. The instructor's concern with whether the students learned the material.	72.7%	18.1%	9.09%	0%	0%	8.33%	1.36	0.64
5. Your interest in learning the course materials.	33.3%	50%	16.6%	0%	0%	0%	1.83	0.68
6. Your general attentiveness in class.	41.6%	58.3%	0%	0%	0%	0%	1.58	0.49
7. The course as an intellectual challenge.	58.3%	33.3%	8.33%	0%	0%	0%	1.5	0.64
8. Improvement in your competence in this area due to this course.	58.3%	16.6%	25%	0%	0%	0%	1.66	0.84
(Instructor: [redacted]) 9. The instructor's encouragement to students to express opinions.	80%	10%	10%	0%	0%	16.6%	1.3	0.64

(Instructor: [redacted]								
10. The instructor's receptiveness to new ideas and others' viewpoints.	50%	25%	25%	0%	0%	0%	1.75	0.82
(Instructor: [redacted]								
11. The student's opportunity to ask questions.	66.6%	25%	8.33%	0%	0%	0%	1.41	0.64
(Instructor: [redacted]								
12. The instructor's stimulation of class discussion.	58.3%	33.3%	8.33%	0%	0%	0%	1.5	0.64
13. The appropriateness of the amount of material the instructor attempted to cover.	33.3%	33.3%	16.6%	16.6%	0%	0%	2.16	1.06
(Instructor: [redacted]								
14. The appropriateness of the pace at which the instructor attempted to cover the material.	33.3%	33.3%	16.6%	16.6%	0%	0%	2.16	1.06
15. The contribution of homework assignments to your understanding of the course materials relative to t	33.3%	25%	33.3%	8.33%	0%	0%	2.16	0.98
16. The appropriateness of the difficulty of assigned reading topics.	25%	41.6%	16.6%	16.6%	0%	0%	2.25	1.01
(Instructor: [redacted]								
17. The instructor's ability to relate the course concepts in a systematic manner.	33.3%	41.6%	25%	0%	0%	0%	1.91	0.75
18. The course organization.	33.3%	41.6%	25%	0%	0%	0%	1.91	0.75
(Instructor: [redacted]								
19. The ease of taking notes on the instructor's presentation.	41.6%	25%	33.3%	0%	0%	0%	1.91	0.86
20. The adequacy of the outlined direction of the course.	41.6%	33.3%	25%	0%	0%	0%	1.83	0.79
21. Your general enjoyment of the course.	33.3%	33.3%	33.3%	0%	0%	0%	2	0.81

COMPOSITE PROFILE FACTORS

Category	Items	Mean	Standard Deviation
Instructor Involvement [redacted]	Items 1-4	1.38	0.60
Student Interest [redacted]	Items 5-8	1.64	0.69
Student Instructor Interaction [redacted]	Items 9-12	1.5	0.71
Course Demands (Non-Instructor)	Items 13-16	2.19	1.02
Course Demands [redacted]	Items 13-16	2.16	1.06
Course Organization (Non-Instructor)	Items 17-20	1.87	0.78
Course Organization [redacted]	Items 17-20	1.91	0.81



STUDENT BACKGROUND

	Yes	No						
22. Was this course required in your degree program?	33.3%	66.6%				0%	1.66	0.47
	M	F						
23. What is your sex?	41.6%	58.3%				0%	1.58	0.49
	1.9	2.2	2.7	3.3	4.0			
24. What is your overall GPA?	0%	0%	0%	9.09%	90.9%	8.33%	4.90	0.28
	F	S	J	S	O			
25. What is your class level?	0%	0%	0%	0%	100%	0%	5	0

RESPONDERS' COMMENTS FOR PLB 806 001 (FS09)

[1]
The course can have lab sessions - where some of the tools used for genomics can be studied

[2]
WAY too many papers to read. The most helpful ones are the review papers, stick with those. The beginning of the course needed to go slower, the professor seemed to think that students had more knowledge coming into the class than they did.

[3]
I thought this was a great introductory course in Bioinformatics and helped give an inside view as to how databases, gene ontology, etc. are created/discovered.

[4]
It would be really helpful to present the lecture on a particular topic prior to assigned reading. That way students have some background on the topic before they start reading a technical paper regarding it, especially for students new to the topic of genomics.

FORM D - IV B RESEARCH AND CREATIVE ACTIVITIES

1. **List of Research/Creative Works:**
Attach a separate list of publications, presentations, papers, and other works that are primarily in support of or emanating from Research and Creative Activities. Indicate how the primary or lead author of a multi-authored work can be identified. The list should provide dates and, in particular, accurately indicate activity from the reporting period. Items to be identified:
   1) Books
   2) Book chapters
   3) Bulletins or monographs
   4) Articles
   5) Reviews
   6) Papers and presentations for learned professional organizations and societies
   7) Artistic and creative endeavors (exhibits, showings, scores, performances, recordings, etc.)
   8) Reports or studies

   Indicate peer-reviewed or refereed items with a "*".

   Indicate items with a significant outreach component with a "**" (determined by the faculty member)

2. **Quantity of Research/Creative Works Produced:**
For each of the categories listed in question one above, list the number of research and creative works produced.

	1	2	3	4	5	6	7	8
During the reporting period	0	3	1	20	2	0	0	2
During career	0	13	1	73	7	0	0	6

3. **Number of Grants Received** (primarily in support of research and creative activities; refer to Form D-IVE):
During the reporting period: 17 During career: 44

4. **Other Evidence of Research/Creative Activity:**
Cite other evidence of research and creative productivity such as: seminars, colloquia, invited papers; works/grants in progress or under review (refer to Form D-IVE); patents; formation of research-related partnerships with organizations, industries, or communities; curatorial and patient care activities, etc. Include evidence of peer recognition (within and outside the university).

1. List of Research/Creative Works:

Publications:

[redacted] 2010. Twenty-First Century Plant Biology: Impacts of the Arabidopsis genome on plant biology and agriculture. Plant Physiology 154: 497-500.

* [redacted], and [redacted], J. 2010. Suppression of the vacuolar invertase gene prevents cold-induced sweetening in potato. Plant Physiology 154:939-948.

International Arabidopsis Informatics Consortium [redacted] is a secondary contributor). 2010. An international bioinformatics infrastructure to underpin the Arabidopsis community. The Plant Cell 22: 2530–2536.

* [redacted]

FORM D - IV B RESEARCH AND CREATIVE ACTIVITIES

[redacted]. 2010. Genome sequence of the necrotrophic plant pathogen, Pythium ultimum, reveals original pathogenicity mechanisms and effector repertoire. Genome Biology 11:R73. [This is listed as a highly accessed article at Genome Biology.]

*[redacted]2010. Evolution of chromosome 6 of Solanum species revealed by comparative fluorescence in situ hybridization mapping. Chromosoma 119:435-442.

*[redacted]. 2010. Comparative analyses reveal distinct sets of lineage-specific genes within Arabidopsis thaliana. BMC Evol. Biol. 10:41.

[redacted], [redacted]. 2010. Genomics-based diagnostic marker development for Xanthomonas oryzae [redacted] Plant Disease 94: 311-319.

[redacted]. 2009. A c2 allele of maize identified in regenerant-derived progeny from tissue culture results from insertion of a novel transposon [redacted]54:429-437.

[redacted] Evolutionary and expression signatures of pseudogenes in Arabidopsis thaliana and rice. 2009. Plant Physiology 151:3-15.

[redacted] 2009. Genome-wide SNP variation reveals relationships among landraces and modern varieties of rice. PNAS 106: 12273-12278.

[redacted]. 2009. Identification and characterization of pseudogenes in the rice gene complement. BMC Genomics 10:317.

[redacted]2009. Poaceae Genomes: Going from unattainable to becoming a model clade for comparative plant genomics. Plant Physiology 149:111-116.

[redacted] 2009. Identification of miniature inverted-repeat transposable elements (MITEs) and biogenesis of their siRNAs in the Solanaceae: new functional implications for MITEs. Genome Research 19:42-56.

[redacted]. 2009. Splendor in the grasses. Plant Physiology 149:1-3.

[redacted]2009. A recommendation for naming transcription factor proteins in the grasses. Plant Physiol. 149:4-6.

[redacted]2009. Gene and Repetitive Sequence Annotation in the Triticeae. In: Genetics and Genomics of the Triticeae. Plant Genetics and Genomics: Crops and Models 7. [redacted] Springer Science Business Media.

[redacted]. 2009. Plant Genome Annotation Methods. In Methods in Molecular Biology, Plant Genomics, vol 513, [redacted]

[redacted]2009. A guide to growing potatoes in your home garden. MSU Potato Breeding and Genetics Program.

[redacted]

FORM D - IV B RESEARCH AND CREATIVE ACTIVITIES

[redacted] 2008. Analysis of the Pythium ultimum transcriptome using Sanger and Pyrosequencing approaches. BMC Genomics 9:542. [This is listed as a highly accessed article at BMC Genomics.]

[redacted] 2008. Refinement of light-responsive gene lists using rice oligonucleotide arrays: Evaluation of gene-redundancy. PLoS One 3:e3337.

[redacted] 2008. Chromatin structure and physical mapping of chromosome 6 of potato and comparative analyses with tomato. Genetics 180:1307-1317.

[redacted] 2008. Analysis of 90 Mb of the potato genome reveals conservation of gene structures and order with tomato but divergence in repetitive sequence composition. BMC Genomics 9:286. [This is listed as a highly accessed article at BMC Genomics.]

[redacted] 2008. Characterization of paralogous protein families in rice. BMC Plant Biology 8:18.

[redacted] 2008. Automated eukaryotic gene structure annotation using EVidenceModeler and the Program to Assemble Spliced Alignments. Genome Biology 9(1):R7. [This is listed as a highly accessed article at Genome Biology.]

[redacted] W. 2008. Structural, functional, and comparative annotation of plant genomes. The Handbook of Plant Functional Genomics- Concepts and Protocols, [redacted]

* [redacted] 2007. Diversity in conserved genes in tomato. BMC Genomics 8:465. [This is listed as a highly accessed article at BMC Genomics.]

* [redacted] 2007. Identification and characterization of lineage-specific genes within the Poaceae. Plant Physiology 145:1311-1322.

* [redacted] 2007. EuCAP, a Eukaryotic Community Annotation Package, and its application to the rice genome. BMC Genomics 8:388.

4: Other Evidence of Research/Creative Activity:

Invited Presentations:

SOL2010, "Sequencing the Potato Genome: Are we there yet?", Dundee, Scotland, September 2010

International Symposium on Genetic Resources for Potato, "Developing genome resources to assess diversity in potato: Applications in potato breeding", Latin America Potato Association Congress, Cusco, Peru, May 2010

Plant and Animal Genome Meeting, "Genome analysis reveals significant differences in pathogenesis mechanisms between Pythium and Phytopthoras", San Diego, CA, January 2010

Bowling Green State University, "High throughput sequencing, functional genomics, comparative genomics, and bioinformatics of plants [and plant pathogens]", Bowling Green, OH, April 2009

FORM D - IV B RESEARCH AND CREATIVE ACTIVITIES

Central Michigan University, "Gaining insight into the rice genome through whole genome analyses", Mt Pleasant, MI, April 2009

Iowa State University, "Gaining insight into the rice genome through whole genome analyses", Ames, IA, February 2009

Plant and Animal Genome Meeting, "Whole Genome (and Transcriptome) Sequencing of Pythium ultimum", San Diego, CA, January 2009

Plant Gene Expression Center, "Gaining insight into the rice genome through whole genome analyses", Albany CA, December, 2008

Biomass for Bioenergy, University of Sao Paulo, "Gaining insight into the rice genome through whole genome analyses", Sao Paulo, Brazil, August 2008

FAPESP, Revolucao Genomica Seminar Series, "Rice: An example of how genomics can change approaches to science", Sao Paulo, Brazil, June 2008

Imperial College, UK-SOL Meeting, "Development of Comparative genomics resources for the Solanaceae (and Potato Genome Sequencing)", London, UK, December 2007

Scottish Crop Research Institute, "Insights into the Rice Genome Revealed through Structural, Functional, and Comparative Annotation Efforts", Dundee, Scotland, December 2007

University of Helsinki, "Improving our understanding of rice, a model grass genome", Helsinki, Finland, December 2007

Colorado State University, "A Comprehensive Genome-based Diagnostics Resource and Pipeline for Identification of Threatening Plant Pathogens", Fort Collins, CO, November 2007

Patents:

"A Diagnostic Test to Distinguish Xanthomonas oryzae pv. oryzicola, the Bacterial Leaf Streak Pathogen of Rice and a Select Agent, from Other Bacteria" (Provisional Patent Filed)

COLLEGE OF **NATURAL SCIENCE**

Funded Grants Only

Title	Principal Investigator	Co-Principal Investigators	Awarding Agency	Effective Dates	Total Amount Awarded Including Indirect Costs	Total Amount Awarded to Candidate Including Indirect Costs	Indirect Cost Rate	Nature of Candidate's Participation (if not P.I.)
Enable genomics based discovery of biosynthetic enzymes for medicinal plants using transcriptomics and metabolomics	[redacted]	[redacted]	[redacted]	6/15/10 – 5/31/10	[redacted]	[redacted]	52%	CO-PI
Annotation of the rice genome. This project involves structural and functional annotation of the rice genome and dissemination of the results via a web-based interface	[redacted]		[redacted]	9/28/07 – 8/31/11	[redacted]	[redacted]	51%	
Generation of potato genome sequence and annotation resources. This project is focused on sequencing the potato genome as part of the international potato genome sequencing consortium. We have also characterized the potato transcriptome and	[redacted]		[redacted]	9/8/07 – 9/30/11	[redacted]	[redacted]	52%	

performed cytogenetic analysis of potato								
Development of a portal to genomics data for biofuel feedstock species. [redacted]	[redacted]		[redacted]	8/15/08 – 8/14/11	[redacted]	[redacted]	52%	
Sequence, annotation and characterization of Pythium species, an important plant pathogen	[redacted]			1/15/08 – 10/14/10	[redacted]	[redacted]	25%	
Develop a comparative genomics resource for the Solanaceae	[redacted]			11/30/07 – 12/31/11	[redacted]	[redacted]	25%	
Coordinated Agriculture Project to translate genomics data into tools for potato and tomato breeders (Years 2-4 funding)	[redacted]	[redacted]		9/1/09 – 8/31/11	[redacted]	[redacted]	52%	[redacted]
Development of a portal to genomics data for biofuel feedstock species. [redacted]	[redacted]			9/1/09 – 8/14/10	[redacted]	[redacted]	25%	
Develop a comprehensive web-based portal for accessing plant pathogen genome sequence/annotation data; develop diagnostic DNA-based markers for plant pathogens	[redacted]			10/1/07 – 2/28/11	[redacted]	[redacted]	25%	
Develop a comprehensive web-based portal for accessing plant pathogen genome sequence/annotation data	[redacted]	Perna		9/1/09 – 8/31/12	[redacted]	[redacted]	52%	

(renewal); incorporate curated annotation and comparative genomics data for improved annotation								
Functionally characterize lineage specific genes in the Poaceae	[redacted]	[redacted]	[redacted]	9/1/09 – 8/31/12	[redacted]	[redacted]	28.2%	
Coordinated Agriculture Project to translate genomics data into tools for potato and tomato breeders (Year 1 funding)	[redacted]	[redacted]		9/1/09 – 8/31/11		[redacted]	51%	CO-PI
Enable genomics based discovery of biosynthesis enzymes for medicinal plants using transcriptiomics and metabolomics	[redacted]	[redacted]		10/4/09 – 8/31/11		[redacted]	52%	CO-PI
GLBRC: Traits relevant to biofuel feedstock production in maize and [redacted]	[redacted]	[redacted]		12/1/08		[redacted]	51%	CO-PI
Use of transcriptomics, metabolomics, and comparative genomics to identify genes relevant to pharmaceutical and human health related compounds in the Solanaceae	[redacted]	[redacted]		07/2008		[redacted]	not available	CO-PI
Improvement of information technology capabilities for the Plant Biology department	[redacted]			07/2010		[redacted]	0%	

International – Education and Public Service; Workshop in Lima, Peru on use of cyber-infrastructure in biological research	[redacted]		NSF	1/1/08 – 12/31/08	[redacted]	[redacted]	10%	

[To add another row to the table, push the tab key in the very last cell.]

From the *CNS P&T Guidelines* adopted September, 2009:
10. A list of all the candidate's funded grants including the following in order: title, principal investigator, all co-principal investigators (unless prohibitively many), awarding agency, effective dates, total amount awarded, total amount awarded to the candidate, whether these amounts include indirect costs or not, and the nature of the candidate's participation in the grant if not P.I. For promotion to professor, this list substitutes for Form D-IVB 3 and Form D-IVE. For reappointment or promotion to associate professor, Form D-IVE should contain all funded and non-funded grants and proposals.

FORM D - IV C SERVICE WITHIN THE ACADEMIC AND BROADER COMMUNITY

1. Service within the Academic Community

a. Service to Scholarly and Professional Organizations:

List significant committee/administrative responsibilities in support of scholarly and professional organizations (at the local, state, national, and international levels) including: elected and appointed offices held; committee memberships and memberships on review or accreditation teams; reports written and submitted; grants received in support of the organization (refer to Form D-IVE); editorial positions, review boards and ad hoc review requests; and programs and conferences planned and coordinated, coordinated or served on a panel or chaired a session. Include evidence of contributions (e.g., evaluations by affected groups or peers).

Ad hoc manuscript reviews: 16 total
Ad hoc grant proposal reviews: 14 total
Associate Editor, Plant Physiology, 2008-present
Associate Editor, Crop Science, 2007-2008
Committee Member, [redacted], 2008-2009
Committee Member, Wheat Improvement Committee's Subcommittee on Wheat Genomics, 2007-2008
Federal granting agency review panel: 1 (NSF)
Member, Coordinating Committee, International Wheat Genome Sequencing Consortium, 2005-2008
Member, Site visit review at North Carolina State University, 2009
Monitoring Editor, Plant Physiology, 2001-2007
Participant, DOE Genomics Genomes To Life Program Systems Biology KnowledgeBase Workshop, 2008, 2010
Participant, Future of Arabidopsis Bioinformatics Workshop (NSF funded), 2010

b. Service within the University:

List significant committee/administrative responsibilities and contributions within the University. Include service that advances the University's equal opportunity/affirmative action commitment. Committee service includes: appointed and elected university, college, and department ad hoc or standing committees, grievance panels, councils, task forces, boards, or graduate committees. Administrative responsibilities include: the direction/coordination of programs or offices; admissions; participation in special studies or projects; collection development, care and use; grants received in support of the institution (refer to Form D-IVE), etc. Describe roles in any major reports issued, policy changes recommended and implemented, and administrative units restructured. Include evidence of contributions (e.g., evaluations by peers and affected groups).

2010-present Plant Biology Dept. Long Term Planning Committee
2009-present iCER Steering Committee
2008-present CNS Faculty Excellence Committee
2008-present Quantitative Biology Initiative Program Exec. Comm. (3 year term)
2008-2010 Dept. Plant Biology Undergraduate Advisor
2008-2010 Departmental Advisory Committee, Plant Biology
2008 VPR Visioning Committee for Cyber-Enabled Discovery
2008 BMB Faculty Candidate Screening Committee
2008 Dept. Plant Biology Retreat Organization Committee

FORM D - IV C SERVICE WITHIN THE ACADEMIC AND BROADER COMMUNITY, continued

2. Service within the Broader Community:

As a representative of the University, list significant contributions to local, national, or international communities that have not been listed elsewhere. This can include (but is not restricted to) outreach, MSU Extension, Professional and Clinical Programs, International Studies and Programs, and Urban Affairs Programs. Appropriate contributions or activities may include technical assistance, consulting arrangements, and information sharing; targeted publications and presentations; assistance with building of external capacity or assessment; cultural and civic programs; and efforts to build international competence (e.g., acquisition of language skills). Describe affected groups and evidence of contributions (e.g., evaluations by affected groups; development of innovative approaches, strategies, technologies, systems of delivery; patient care; awards). List evidence, such as grants (refer to Form D-IVE), of activity that is primarily in support of or emanating from service within the broader community.

I have been involved in the last three years in outreach to Latin American scientists. In 2008, I co-organized a NSF-funded workshop in Lima, Peru focused on international collaborations involving cyber-infrastructure enabled genomics research. The aim of the workshop was to identify bottlenecks in initiating and sustaining successful collaborations in genomics research between U.S. and Latin American scientists. Subsequently, I have continued my outreach to Latin America through training of Latin American scientists in genomics and bioinformatics. I have hosted two Peruvian scientists in my lab to provide training in experimental genomics techniques and bioinformatics and will host a third later this year. I was invited to and presented a seminar entitled "Developing genome resources to assess diversity in potato: Applications in potato breeding" at the Latin America Potato Association Congress in Cusco, Peru, in May 2010 to further expand on my collaborations in Latin America. In the coming months, I will be working with my potato colleagues in Latin America (Peru, Colombia, and Ecuador) to develop a "starter" proposal for agencies such as USAID or the Gates Foundation to examine genetic diversity in Andean potatoes which will include a significant training and outreach component with these three Latin American countries.

With funding from the NSF, I collaborated with the staff at the U.S. Botanic Gardens in Washington DC to mount an exhibit ("Spuds Unearthed") on the history of potato, its production, and science, including research on the potato genome. The U.S. Botanic Gardens is located on the National Mall in Washington DC thereby providing an opportunity to reach a large number of public visitors. In conjunction with this exhibit, I sponsored and organized a lecture series on potato research for the lay public and presented a seminar entitled "The Potato Genome: A Blueprint for Making Potato Chips" in July 2010. While this collaboration was initiated as part of my NSF-funded potato genomics project,the scope of the exhibit was expanded and included research from [redacted] (Crop and Soil Sciences/CANR) on engineering resistance in potato to Colorado potato beetle and an aeroponics demonstration unit that shows where/how tubers develop from potato plants. This exhibit, which was seen by more than 280,000 people, ran from May through October, 2010 and provided an opportunity to highlight scientific research on-going at MSU to the lay public.

I have given a lecture to Okemos High School Biology students (Jan 2009) on how genomics can be used to improve agriculture.

FORM D - IV D ADDITIONAL REPORTING

1. **Evidence of Other Scholarship:**
Cite evidence of "other" scholarship as specified on p. 2 in the "summary rating" table (i.e., functions outside of instruction, research and creative activity, and service within the academic and broader community). Address the scholarship, significance, impact, and attention to context of these accomplishments.

In January 2009, I was co-Editor[redacted]) of a focus issue of Plant Physiology. This issue, focused on "The Grasses", is a collation of solicited update articles, letters, and research articles. This was a highly successful issue as shown by the 2-6X more access hits for articles in this issue compared to subsequent issues.

2. **Integration across Multiple Mission Functions:**
Discuss ways that your work demonstrates the integration of scholarship across the mission functions of the university—instruction, research and creative activities, and service within the academic and broader community.

A large number of my research projects here at MSU have been inter-disciplinary, inter-departmental, and across colleges in which I bring expertise in genomics and bioinformatics to address questions in plant sciences. A majority of these projects have an outreach and/or education/training component that is included in the project aims.

-Collaboration with[redacted](Crop and Soil Sciences/CANR): This project, funded by USDA, is focused on translating genomics data into applications in potato and tomato breeding[redacted] I contribute my expertise in genomics and bioinformatics to enable development and application of high throughput molecular marker technology to breeding of improved potato and tomato cultivars in the U.S. I also participate in workshops to train potato breeders in genomics and bioinformatics.

-An integral part of my USDA-funded Comprehensive Phytopathogen Genome Resource project[redacted] is the training of diagnosticians and plant pathologists in the fundamentals of genomics to enable the use of genomics in diagnostic markers for plant pathogens. During the reporting period, I have sponsored, organized, and participated in three separate workshops. In the renewal of this project, we will train undergraduates and graduate students in internet-based communication methods for science in the 21st century.

-Collaboration with[redacted](BMB/CNS): This project, funded through NSF, is focused on determining the genetic components of vitamin biosynthesis in maize and Arabidopsis[redacted] One component of this project is outreach in which the research focus (nutrition in maize seed) is integrated into the activities of the MSU Children's 4-H Garden thereby educating the lay public in agriculture and research relevant to nutrition. A training component of the project includes training Hispanic undergraduates in computational biology to increase the representation of under-represented groups in science.

-Collaboration with[redacted](Horticulture/CANR): This project, funded by USDA, builds on expertise in rice biology, transposable elements, and genomics between[redacted] to determine the function of lineage specific genes in the grasses.

-Collaboration with[redacted](BMB/CNS);[redacted](BMB/CNS), and[redacted](Horticulture/CANR): This project, funded by NIH, brings expertise in plant biology, biochemistry, genomics, and bioinformatics to discover genes associated with medicinal plants[redacted]

-Collaboration with[redacted]Horticulture/CANR) and[redacted]his project, funded through the MSU SPG program, brings expertise in the Solanaceae, biochemistry, genomics and bioinformatics to discovery genes from the Solanaceae important for pharmaceutical and human health related compounds.

-Collaboration with[redacted](Plant Pathology, CANR): This project is focused on genome sequencing and annotation of Pseudoperonospora cubensis (Day is funded by Pickle Packers Intl; proposal pending at USDA) and brings my expertise in oomycete genomics to the overall effort at MSU to investigate this emerging cucumber pathogen. Our pending proposal[redacted] if funded, will include recruitment of at-risk high school and undergraduates into the research thrusts of the project.

3. **Other Awards/Evidence:**

FORM D - IV D ADDITIONAL REPORTING

Cite other distinctive awards, accomplishments of sabbatical or other leaves, professional development activities, and any other evidence not covered in the preceding pages. (If the reporting period differs from the usual review period, then justify and support that period here.)

2008 Fellow, American Association for the Advancement of Science

FORM D - IV E GRANT PROPOSALS

List grant proposals submitted during reporting period relating to teaching, research and creative activities, or service within the academic and broader community. Include grants in support of outreach, international, urban, and extension activities.*

	Name of Granting Agency (Grantor:) Focus of Grant (Focus:)	Date Submitted	$ Amount Requested	Status: Pending	Status: $ Amt Funded	Status: Not Funded	$ Amount Assigned to Faculty Candidate (if Applicable)	Principal/Co-Investigators (if not faculty candidate)
I.	**Instruction**							
	Grantor:			☐		☐		
	Focus:							
	Grantor:			☐		☐		
	Focus:							
II.	**Research/Creative Activity**							
	Grantor: SEE ATTACHED LIST			☐		☐		
	Focus:							
	Grantor:			☐		☐		
	Focus:							
	Grantor:			☐		☐		
	Focus:							
	Grantor:			☐		☐		
	Focus:							
III.	**a. Service – Academic Community**							

*Anyone with an MSU Net username and password can log onto the web-based Information Reference database, maintained by the Office of Contract and Grant Administration, to search for records of proposals and grant awards by principal investigator. Printouts may be attached to this page.

FORM D - IV E GRANT PROPOSALS

	Name of Granting Agency (Grantor:) Focus of Grant (Focus:)	Date Submitted	$ Amount Requested	Status: Pending	Status: $ Amt Funded	Status: Not Funded	$ Amount Assigned to Faculty Candidate (if Applicable)	Principal/Co-Investigators (if not faculty candidate)
	Grantor:			☐		☐		
	Focus:							
III.	**b Service – Broader Community**							
	i. MSU Extension							
	Grantor:			☐		☐		
	Focus:							
	ii. Professional/Patient Care Activities							
	Grantor:			☐		☐		
	Focus:							
	iii. International Studies and Programs							
	[redacted]	3/24/2009	[redacted]	☐	[redacted]	☐		
	Focus: International - Education and Public Service; Workshop in Lima, Peru on use of cyber-infrastructure in biological research.							
	vi. Urban Affairs Programs							
	Grantor:			☐		☐		
	Focus:							
	v. Other							
	Grantor:			☐		☐		
	Focus:							

*Anyone with an MSU Net username and password can log onto the web-based Information Reference database, maintained by the Office of Contract and Grant Administration, to search for records of proposals and grant awards by principal investigator. Printouts may be attached to this page.

[redacted]

Granting Agency	Focus of Grant	Date Submitted	$ Amount Requested	Pending	$ Amt Funded	Not funded	$ Amt Assigned to Faculty Candidate (If Applicable)	Principle/Co-Investigators (If not faculty candidate)	Acct
[redacted]	Enable genomics based discovery of biosynthetic enzymes for medicinal plants using transcriptomics and metabolomics	1/20/2009	$ [redacted]		[redacted]		$ [redacted]	[redacted]	[redacted]
	Annotation of the rice genome. This project involves structural and functional annotation of the rice genome and dissemination of the results via a web-based interface.	3/24/2009	$						
	Generation of potato genome sequence and annotation resources. This project is focused on sequencing the potato genome as part of the international potato genome sequencing consortium. We have also characterized the potato transcriptome and performed cytogenetic analysis of potato.	3/24/2009	$						
	Development of a portal to genomics data for biofuel feedstock species. (Funded jointly with USDA)	3/11/2009	$						
	Sequence, annotation and characterization of Pythium species, an important plant pathogen.	2/26/2009	$						
	Develop a comparative genomics resource for the Solanaceae.	3/23/2009	$						
	Coordinated Agriculture Project to translate genomics data into tools for potato and tomato breeders. (Years 2-4 funding)	11/3/2009	$				$		
	Development of a portal to genomics data for biofuel feedstock species. [redacted]	2/26/2009	$						
	Develop a comprehensive web-based portal for accessing plant pathogen genome sequence/annotation data; develop diagnostic DNA-based markers for plant pathogens	2/16/2009	$						
	Develop a comprehensive web-based portal for accessing plant pathogen genome sequence/annotation data (renewal); incorporate curated annotation and comparative genomics data for improved annotation	3/9/2009	$				$		
	Functionally characterize lineage specific genes in the Poaceae.	4/20/2009	$				$		
	Coordinated Agriculture Project to translate genomics data into tools for potato and tomato breeders. (Year1 funding)	2/12/2008	$				$		
	Enable genomics based discovery of biosynthetic enzymes for medicinal plants using transcriptomics and metabolomics	10/1/2009	$				$		
	GLBRC:Traits relevant to biofuel feedstock production in maize and switchgrass (Collaboration: [redacted] Univ. Wisconsin)	12/1/2008	$				$		
	Use of transcriptomics, metabolomics, and comparative genomics to identify genes relevant to pharmaceutical and human health related compounds in the Solanaceae	7/08 (started)	$				$		

Granting Agency	Focus of Grant	Date Submitted	$ Amount Requested	Pending	$ Amt Funded	Not funded	$ Amt Assigned to Faculty Candidate (if Applicable)	Principal/Co-Investigators (if not faculty candidate)	Acct
[redacted]	Improvment of information technology capabilities for the Plant Biology department	7/10/2010	$ [redacted]				[redacted]		
	Comparative genomics of Ca. Liberibacter species, causal agent of citrus greening disease	6/1/2007	$			X			
	International- Educ & Public Service; Workshop in Lima, Peru on use of cyber-infrastructure in biological research.	1/22/2008	$			X			
	Improving functional annotation of plant pathogen genomes through multiple, integrated approaches	2/15/2008	$			X			
	Sequencing of the apple scab pathogen	3/13/2009	$			X		[redacted]	
	Improvement of biofuel feedstock species through evolutionary and quantitative approaches	1/13/2010	$			X			
	Examination of epigenetic phenomena in potato	1/22/2010	$			X			
	Use of comparative systems biology approaches to annotate gene and metabolite networks in the Poaceae.	2/11/2010	$			X		[redacted]	
	Management of cucurbit downy mildew using field-based agricultural practices with breeding, genetics, and state-of-the-art genomic technologies to develop solutions	7/28/2010	$						