

# Demystifying Reappointment as Assistant Professor

College of Agriculture and Natural Resources  
Michigan State University

Summer-Fall 2011

	Page
<b>University-level Policies and Programs</b>	
Faculty Guide for RTP @ MSU	1
RTP Toolkit (from ADAPP-ADVANCE)	8
<i>"Survive and Thrive in the MSU Tenure System"</i> (workshop offered annually by the MSU Office of Faculty and Organizational Development)	9
Books and manuals for pre-tenure faculty	10
<b>RTP Annual Schedule</b>	12
<b>Review by the CANR RTP Committee</b>	
Members	13
Principles for Faculty Evaluation	14
Points of Relevance for Junior Faculty	16
Elements of a Strong Reappointment Package	17
<b>Review at the Dean's Level</b>	
Strengthening Scholarship Across the Mission	18
What is an Assistant Professor?	20
<b>Faculty Mentoring: MSU and CANR</b>	21
<b>Reflective Essay</b>	
Reflective Essay: Perspectives and Guidelines	27
Reflective Essay example: Janet Lewis, CSS	31

# Faculty Guide for Reappointment, Promotion and Tenure Review

- [Overview of the Reappointment, Promotion and Tenure Process](#)
- [Criteria and Standards](#)
- [Time Table for 2010-11 Reappointment, Promotion and Tenure Actions](#)
- [Recommendation for Reappointment, Promotion or Tenure Action Form](#)
- [Annual Review](#)
- [Peer Review/College-Level Committee Review](#)
- [Joint Appointment](#)
- [External Letters of Reference](#)
- [Confidentiality of Letters of Reference](#)
- [University-Level Review](#)
- [Early Promotion/Tenure](#)
- [Visa Status/Foreign Nationals](#)
- [Stopping the Tenure Clock/Extension of the Probationary Appointment](#)
- [Delay in Reappointment Decision](#)
- [Effective Dates](#)
- [Promotional/Tenure Base Salary Increases](#)
- [Negative Decisions](#)
- [Survive and Thrive in the MSU Tenure System Workshop](#)
- [Data - 5-Year Summary of Promotion and Tenure Actions University-wide](#)
- [Tenure/Promotion Recognition Dinners](#)
- [Post-Tenure Review](#)
- [University-Level Policies/Forms Relevant to the Reappointment, Promotion and Tenure Process \(web links\)](#)

## Overview of the Reappointment, Promotion and Tenure Process<sup>1</sup>

MSU has a multi-level review process for reappointment, promotion and tenure (RPT) decisions. Recommendations for reappointment, promotion and tenure are made in the department according to unit, college and university bylaws, policies and procedures. Recommendations that do not involve the award of tenure are reviewed successively by the dean, the provost and the president, who makes the final decision. Recommendations that involve the award of tenure are reviewed successively by the dean, the provost, and the president, who makes the final recommendation to the Board of Trustees for action.

The RPT process includes the following steps:

1. Faculty member and department chairperson/school director complete their respective parts of the Recommendation for Reappointment, Promotion or Tenure Action form.
2. External peer evaluation (letters of reference), if required by unit procedures.
3. Faculty member has an opportunity to confer with the department/school peer review group before a decision is made.
4. Department/school peer review group provides advice to the chairperson/director regarding reappointment, promotion and tenure decisions.
5. Department chairperson/school director conducts an independent evaluation, taking into consideration peer evaluation, and forwards a recommendation to the dean.
6. College-level reappointment, promotion and tenure committee provides advice to the dean about department/school recommendations for reappointment, promotion and tenure.
7. Dean independently reviews each recommendation for reappointment, promotion and tenure and forwards a recommendation to the provost.
8. The Associate Provost and Associate Vice President for Academic Human Resources and the Senior Associate Provost consult with the provost on the dean's recommendations.
9. The Associate Provost and Associate Vice President for Academic Human Resources, the Senior Associate Provost, and the Vice President for Research and Graduate Studies jointly review each recommendation with the applicable dean and approve/disapprove the recommendation on behalf of the Office of the Provost. Approved actions that do not involve an award of tenure are forwarded to the president for final action.
10. Board of Trustees takes action on recommendations involving the award of tenure.

The RPT process is initiated by the provost each year in early November with a distribution of materials to be used for that year's review cycle, including a list of faculty for whom tenure action is required.

Decisions to promote and tenure faculty members are the most important made by the University, for they will determine MSU's reputation and prominence for many years to come. Departments, schools and colleges are expected to apply rigorous standards and to refrain from doubtful recommendations of reappointment, tenure or promotion.

Departments, schools and colleges are required to base decisions about reappointment, promotion and tenure on criteria and procedures that are clearly formulated, objective, relevant, and made known to all faculty members. These procedures are also required to include a means by which a probationary tenure system faculty member is evaluated and informed annually of his/her progress.

Faculty are reviewed according to the criteria and standards in department/school bylaws or other relevant documents, college bylaws or other relevant documents (if any), and the University's statement on "Appointment, Reappointment, Promotion and Tenure Recommendations." It is critical that faculty learn about the standards and criteria in their department/school and/or college. The department chairperson/school director should provide this information upon initial appointment in the tenure system or as soon as possible thereafter.

The University's statement requires that achievement and performance levels must be competitive with faculties of leading research-intensive, land grant universities of international scope. Expectations of excellence are embodied in the following standards for reappointment, promotion and tenure:

1. Reappointment with award of tenure: Each tenure recommendation should be based on a clear record of sustained, outstanding achievements in education and scholarship across the mission, consistent with performance levels expected at peer universities.
  - a. For the faculty member appointed initially as associate professor on a probationary basis in the tenure system who has established such a record, the tenure recommendation is effective upon reappointment after one probationary appointment period.
2. A recommendation for promotion from assistant professor to associate professor in the tenure system (with tenure) should be based on several years of sustained, outstanding achievements in education and scholarship across the mission, consistent with performance levels expected for promotion to associate professor at peer universities. A reasonably long period in rank before promotion is usually necessary to provide a basis in actual performance for predicting capacity to become an expert of national stature and long-term, high-quality professional achievement.

A recommendation for promotion from associate professor to professor in the tenure system should be based on several years of sustained, outstanding achievements in education and scholarship across the mission, consistent with performance levels expected at peer universities. A reasonably long period in rank before promotion is usually necessary to provide a basis in actual performance to permit endorsement of the individual as an expert of national stature and to predict continuous, long-term, high-quality professional achievement.

Recommendations for reappointment, promotion or tenure are based upon a faculty member's scholarly contributions. In particular, assessment of faculty performance should recognize the importance of both teaching and research and their extension beyond the borders of the campus as part of the outreach dimension, as appropriate to the particular responsibilities assigned to the faculty member and the missions of the unit.

**Time Table for 2010-11 Reappointment, Promotion and Tenure Actions**

This is the University schedule: departments/schools and colleges may have internal due dates.

**On or Before**

August 2, 2010	Office of the Provost sends advance copy of Timetable and list of faculty for whom tenure action is required, i.e., faculty whose probationary appointment ends on August 15, 2012.
November 10, 2010	Office of the Provost distributes materials electronically to initiate tenure system reappointment and promotion recommendations, including a list of faculty members for whom reappointment recommendations are required.
Date to be determined	Chairpersons and directors inform individual faculty members in a timely manner when their <b>completed</b> Form D "Recommendation for Reappointment, Promotion or Tenure Action" and supporting materials have been forwarded to the dean.
February 28, 2011	The following forms are sent from the Dean through the web application to Academic Human Resources:  Form A: "Tenure System Reappointment

Recommendations."

Form B: "Promotion List."

Form C: "Documentation of Annual, Written, Tenure

System Faculty Review."

Form D: "Recommendation for Reappointment,

Promotion or Tenure Action" and an

updated curriculum vitae for each

faculty member listed on Form A and Form B

Deans request chairpersons and directors to inform individual faculty in a timely manner of whether or not the dean has approved the department's recommended action and that the dean has forwarded a **completed** "Recommendation for Reappointment, Promotion, or Tenure Action" form to the provost. Even if the dean does not approve the department's recommended action, all review materials in support of such an action will be made available for review by the provost and her/his staff.

Mar 3-April 8, 2011	Deans' conferences with the Associate Provost/Associate Vice President for Academic Human Resources, Senior Associate Provost and the Vice President for Research and Graduate Studies to review individual recommendations
April 25, 2011	Provost notifies deans of recommendations accepted for recommendation to the president and the Board of Trustees.
May 2-6, 2011	Deans notify chairpersons and directors, who notify faculty members, of actions taken by the Office of the Provost and the president on recommendations not involving the award of tenure.
May 31, 2011	Final lists of reappointments and promotions involving the award of tenure are prepared and forwarded by the Office of the Provost for recommendation to the president and for the agenda for the Board of Trustees.
June 17, 2011	Meeting of the Board of Trustees.
June 20, 2011	Notification to deans of final approval for actions involving the award of tenure; deans notify chairpersons and directors, who notify faculty members.
October 14, 2011	Delayed actions due.
Date to be determined	Those with delayed reappointment, promotion, and/or tenure actions should be informed as soon as possible following final action by the president or Board of Trustees.
December 15, 2011	Deadline for notification to faculty who are not reappointed.

### Recommendation for Reappointment, Promotion or Tenure Action Form

This (required) form, referred to as Form D, outlines many of the activities that are relevant to decisions on promotion, tenure and reappointment. It provides the opportunity to document, provide evidence for and assess faculty scholarship in the functional areas of instruction, research and creative endeavors, and service within the academic and broader community, as well as in cross-mission initiatives.

Sections I, II and III of Form D are summary evaluations completed by the chairperson, director and/or dean. The following materials are completed and submitted by the faculty member:

1. Evidence of scholarly activities as requested in Section IV
2. A reflective essay about accomplishments over the reporting period (5 page maximum)
3. A curriculum vitae as a more complete listing of scholarly activities and works
4. Other evidence as required by the unit (such as letters from reviewers) or desired by the faculty member

### Annual Review

All tenure system faculty must be evaluated and informed annually, in writing, about their progress. The Faculty Review policy provides principles and guidelines for implementing these reviews.

## Peer Review/College-Level Committee Review

### Unit Level

Each department and school is required to establish procedures so that its faculty can provide advice to the chairperson/director regarding recommendations for reappointment, promotion and tenure. University guidelines for the composition of peer review committees are included in the statement on Peer Review Committee Composition and External Evaluations.

### College Level

Each departmentally organized college is required to establish a college-level reappointment, promotion and tenure committee that is charged to provide advice to the dean about department/school recommendations for reappointment, promotion and tenure. College-level committees are required to incorporate a set of principles that are included in the statement on College-Level Reappointment, Promotion and Tenure Committees.

### Joint Appointment

Only the primary unit will make a recommendation for reappointment, promotion or tenure for a faculty member with a joint appointment. However, the chairperson/director of the primary unit is obligated to consult with the chairperson/director of all joint units prior to submitting a recommendation.

### External Letters of Reference

External letters of reference are required for all reviews of tenure system faculty involving the granting of tenure or promotion. External letters of reference are required in order to ensure that individuals recommended have an achievement and performance level that is comparable with faculties of peer institutions. The statement on External Letters of Reference provides principles and procedures that must be applied uniformly to all faculty in the unit for soliciting external letters of reference.

### Confidentiality of Letters of Reference

Letters of reference, as part of an official review file, are held in confidence and will not be disclosed to a faculty member under consideration or to the public except as required by law or University policy. In all such instances, the information made available will be provided in a form that seeks to protect the identity, privacy, and confidentiality of the evaluator.

### University-level Review

All recommendations for reappointment, promotion and tenure are jointly reviewed by the Associate Provost and Associate Vice President for Academic Human Resources, the Senior Associate Provost, the Vice President for Research and Graduate Studies, and the applicable dean. In addition to reviewing recommendations against the standards and criteria of the department/school and/or college and the University, the Associate Provost, Senior Associate Provost and the Vice President assess the candidate's independent role in research and scholarship and the commitment to seek external funding, as appropriate to the discipline and assignment of the faculty member.

Additionally, the Associate Provost and Associate Vice President for Academic Human Resources and the Senior Associate Provost consult with the provost on the deans' recommendations.

### Early Promotion/Tenure

A promotion or tenure action is **not** considered "early" if justified by a record of performance at another university or during a fixed term appointment at MSU that is required by immigration regulations or other relevant reason, provided the performance meets MSU standards. Early promotion/tenure is based on an exceptional record of accomplishments at MSU that is based on department/school/college and University criteria. Early promotion/tenure is reserved for extraordinary cases.

### Visa Status/Foreign Nationals

Foreign nationals (those holding non-immigrant status) may be appointed within the tenure system, but may not be awarded tenure unless they have acquired permanent resident status or complete a Tenure Policy Exemption Agreement.

Alternatively, an extension of the probationary appointment is automatic if a tenure decision is required before permanent resident status is obtained and the candidate has been recommended for tenure.

### **Stopping the Tenure Clock/Extension of the Probationary Appointment**

#### **Automatic**

The tenure system probationary appointment is extended automatically for one year for the following reasons:

1. Leaves of absence with or without pay that are six to twelve months.
2. Changes in appointment to 50% time or less for one year.
3. Upon request from a faculty member on approved leave of absence (paid or unpaid) for twelve weeks or longer for reasons related to the birth or adoption of a child. Automatic extensions for this reason are limited to two separate one-year extensions.
4. Immigration/visa status that does not permit the award of tenure for candidates who have been recommended for tenure.
5. An extension recommended as an outcome of a hearing and/or appeal conducted pursuant to the Faculty Grievance Policy.

#### **Requests**

Extension of the probationary appointment may be requested from the University Committee on Faculty Tenure for reasons related to childbirth, adoption, the care of an ill and/or disabled child, spouse, or parent; personal illness, to receive prestigious awards, fellowships, and/or special assignment opportunities, or other such serious constraints.

The procedure for requesting an extension of the probationary tenure system appointment is included in the statement on Implementation Practices (Stopping the Tenure Clock).

#### **Delay in Reappointment Decision**

On an individual case basis, there may be justification to delay the final reappointment, promotion, or tenure decision until the fall (final recommendations are due on or before October 15). Upon the request of or after consultation with the faculty member, the department/school chairperson/director and dean may concur that another review will be held early in the fall for the purpose of reviewing additional information and making a final recommendation. The request for a delay must be approved by the Associate Provost and Associate Vice President for Academic Human Resources.

#### **Effective Dates**

The effective date for reappointment with tenure is the first of the month following final approval by the Board of Trustees. The effective date for reappointment without tenure is August 16 of the year following the recommendation, e.g., for recommendations made in April 2006, the effective date is August 16, 2007.

The effective date for promotion with or without the award of tenure is the first of the month following final approval by the Board of Trustees.

The effective date for non-reappointment is August 15 of the year following the recommendation, e.g., for recommendations made in April 2006, the effective date is August 15, 2007.

#### **Promotional/Tenure Base Salary Increases**

Central support for promotional increments for tenure system faculty is provided at \$2,000 per promotion from assistant to associate professor and at \$2,500 per promotion from associate to professor. For those appointed at the associate professor rank but without tenure, \$2,000 will be provided upon receipt of tenure. If unit promotional policy exceeds the above funding, units are responsible for the additional amount. Promotion/tenure salary increases are effective with the general increase, normally October 1, and are in addition to the annual merit increase.

#### **Negative Decisions**

The decision not to reappoint a non-tenured faculty member does not necessarily imply that the faculty member has failed to meet the standards of the University with respect to academic competence and/or professional integrity. This decision may be contingent, wholly or in part, upon the availability of salary funds and/or departmental needs.

A faculty member who is not recommended for reappointment must be notified in writing by the chairperson/director and/or dean as soon

as possible and no later than December 15 preceding the expiration of the appointment. Upon written request of the faculty member, the administrator of the basic administrative unit making the decision must transmit in writing the reasons for the decision.

### Appeal Procedures

The administrative review procedure is an informal process providing an avenue for faculty/ academic staff to request an independent assessment from their department chairperson/school director, dean, and Office of the Provost on personnel matters such as salary status, reappointment, promotion and tenure.

If a non-tenured faculty member believes that the decision not to reappoint was made in a manner that is at variance with the established evaluation procedures, he/she may, following efforts to reconcile the differences at the level of the basic administrative unit and the dean of the college, initiate an appeal in accordance with the **Faculty Grievance Policy**. The time frame for initiating a grievance begins upon receipt of notification of the negative decision from the dean or department chairperson/school director.

### Survive and Thrive in the MSU Tenure System Workshop

The Office of Faculty and Organizational Development in the Office of the Provost sponsors this workshop each fall. This workshop is for probationary tenure system faculty to provide assistance in functioning successfully within the tenure system at MSU.

The workshop has the following objectives:

1. To expand faculty members' understanding of key concepts, topics and issues within their department and about University reappointment, promotion and tenure procedures
2. To discuss approaches to documentation and record keeping for reappointment, promotion and tenure purposes
3. To provide practical information on making choices, balancing conflicting demands, managing departmental politics
4. To provide an opportunity for communication and problem-solving among faculty and academic administrators

### Data - 5-year Summary of Promotion and Tenure Actions University-wide

Over the five reappointment cycles from 2005 through 2009, there have been 25 associate professors reappointed with tenure; 290 assistant professors reappointed for a second three-year probationary appointment; 208 promotions to associate professor; 163 promotions to professor; and 32 individuals not reappointed. Additionally, extensions of the probationary appointment were approved for 6 associate professors and 31 assistant professors.

Generally, at Michigan State, the tenure rate for starting cohorts is about 70%, i.e., faculty members who have resigned or are no longer appointed in the tenure system are included in the base calculation. The tenure rate is approximately 90% for faculty who are reviewed in a given year.

### Tenure/Promotion Recognition Dinners

Each fall the Office of the Provost hosts a recognition dinner ceremony in honor of faculty members promoted to the rank of professor and for those awarded tenure.

### Post-Tenure Review

Post-tenure review is implemented through several existing policies and procedures (contained in the Faculty Handbook), including a clarifying interpretation by the University Committee on Faculty Tenure on the meaning of the term "incompetence" in the disciplinary and dismissal policies. Performance is monitored through the use of annual written performance evaluations as required by the policy on "Faculty Review." Work performance, as determined in such reviews, is to be reflected in annual merit salary adjustments and as a basis for advice and suggestions for improvement. Although not triggered by a fixed number of years of low performance, discipline in a variety of forms may be invoked under the "Policy and Procedure for Implementing Disciplinary Action where Dismissal is Not Sought." In more serious cases, the "Dismissal of Tenured Faculty for Cause Procedure" can be invoked.


### University-level policies/forms relevant to the reappointment, promotion and tenure process

- [Administrative Review](#)
- [Appointment, Reappointment, Tenure and Promotion Recommendations](#)
- [College-Level Reappointment, Promotion and Tenure Committees](#)
- [Conflict of Interest in Employment](#)
- [Disciplinary Action Where Dismissal is Not Sought, Policy and Procedure for Implementing](#)

- [Dismissal of Tenured Faculty for Cause](#)
- [External Letters of Reference](#)
- [Faculty Career Advancement and Professional Development: A Special Affirmative Action Responsibility](#)
- [Faculty Grievance Policy](#)
- [Faculty Review](#)
- [Granting Tenure](#)
- [Implementation Practices \(Stopping the Tenure Clock\)](#)
- ["Incompetence," Definition of the Term by the University Committee on Faculty Tenure](#)
- [Non-Reappointment](#)
- [Non-Tenured Faculty in the Tenure System](#)
- [Operating Principles of the Tenure System](#)
- [Peer Review Committee Composition](#)
- [Post-Tenure Review](#)
- [Promotion of Tenured Faculty](#)
- [Recommendation for Reappointment, Promotion or Tenure Action Form](#)
- [Reference Letters for Reappointment, Promotion and Tenure Recommendations. Confidentiality of](#)
- [Salary Adjustment Guidelines. Academic](#)
- [Survive and Thrive Workshop](#)
- [Tenure Action and Promotion](#)

Footnote:

<sup>1</sup> Web links to all relevant policy statements and forms are listed at the end of this document.

Print 

[Back](#)

**MICHIGAN STATE**  
UNIVERSITY

© 2011 Michigan State University [Board of Trustees](#), East Lansing, MI 48824.

- [MSU Homepage](#)
- [Contact Human Resources](#)
- [eMail HR Webmaster](#) Last Updated: August 20, 2010



About ADAPP-ADVANCE

Frequently Asked Questions

Resources for...

e-Newsletter

Helpful Links

## Reappointment, Promotion, And Tenure Toolkit

Home » Reappointment, Promotion, And Tenure Toolkit

Reappointment, Promotion and Tenure Policies and Procedures in the MSU Faculty Handbook

Workshops, Programs and Resources on Reappointment, Promotion and Tenure

- Resources for Faculty
- Resources for Administrators

Check List of Required Practices in RP&T – Unit Guidelines

- Printer Friendly Document

Check List of Required Practices in RP&T – College Guidelines

- Printer Friendly Document

### Reappointment, Promotion and Tenure Policies and Procedures in the MSU Faculty Handbook

#### Operating Principles of the Tenure System

<http://www.hr.msu.edu/documents/facacadhandbooks/facultyhandbook/TenurePrinc.htm>

##### Summary:

Provides principles regarding the start dates for probationary appointments, leaves of absence, notification of non-reappointment, appointments of foreign nationals, interpretation of the tenure rules and where tenure resides.

#### Granting Tenure

<http://www.hr.msu.edu/documents/facacadhandbooks/facultyhandbook/granttenure.htm>

Summary: Faculty members with the Rank of Professor in the tenure system are granted tenure from the date of appointment

Faculty members appointed as Associate Professors without tenure and who have served previously at MSU are appointed in the tenure system for a probationary period of, generally, two to five (2-5) years.

A newly appointed Associate Professor can be granted tenure from the date of appointment.

Faculty members appointed as an Assistant Professor are appointed for an initial probationary period of four years and may be reappointed for an additional probationary period of three years.

#### Reassigning Tenured Faculty

<http://hr.msu.edu/documents/facacadhandbooks/facultyhandbook/facultyreassign.htm>

##### Summary:

Tenure at MSU resides in the University. Thus, if a unit is discontinued, reassignment of the faculty is normally in another academic unit and is negotiated with the faculty member and the receiving unit.

#### Stopping the Tenure Clock

Implementation Practices

<http://www.hr.msu.edu/documents/facacadhandbooks/facultyhandbook/implementation.htm>

##### Summary:



Office of  
Faculty &  
Organizational  
Development

Office of the Provost

MICHIGAN STATE  
UNIVERSITY

[Home](#) | [Mission & Policies](#) | [Opportunities & Intended Participants](#) | [Contact Us](#)

## Survive and Thrive in the MSU Tenure System

[About](#) | [Register](#)

### Survive and Thrive in the MSU Tenure System (For Probationary Tenure-System Faculty)

Thursday, December 2, 8:30 a.m. - 2:30 p.m., MSU Union, Parlors B&C  
8:30 a.m.-12:00 p.m., (Part I) Overview of Process and Expectations  
12:00 p.m.-12:45 p.m., Lunch (Available for those attending both Part I and Part II)  
12:45 p.m.-2:30 p.m., (Part II) Writing Reflective Essays for Reappointment, Promotion and Tenure Dossiers

#### (Part I) Overview of Process and Expectations

*June Youatt*, Senior Associate Provost; *Theodore H. Curry II*, Associate Provost & Associate Vice President for Academic Human Resources; *J. Ian Gray*, Vice President for Research & Graduate Studies; and a **Panel** of MSU Deans, Department Chairs, College Advisory Committee members and recently tenured faculty

**Thursday, December 2, 8:30 a.m. to 12:00 p.m., MSU Union, Parlors BC**  
(Registration at 8:30 a.m.; program begins at 9:00 a.m.)

This workshop is designed for probationary tenure system faculty to provide assistance in functioning successfully within the tenure system at MSU. Workshop objectives include: 1) to expand faculty members' understanding of department and University reappointment, promotion and tenure procedures; 2) to discuss approaches to documentation and record keeping for reappointment, promotion and tenure purposes; 3) to provide practical information on making choices, balancing conflicting demands, and managing departmental politics; 4) to provide an opportunity for communication and problem solving among faculty and academic administrators; and 5) to provide a venue for questions and answers. Many faculty members find it helpful to attend this program more than once, finding different elements useful at different stages of their pre-tenure experience.

#### (Part II) Writing Reflective Essays for Reappointment, Promotion and Tenure Dossiers **NEW!**

*June Youatt*, Senior Associate Provost; and *Theodore H. Curry II*, Associate Provost & Associate Vice President for Academic Human Resources

**Thursday, December 2, 12:45 p.m. - 2:30 p.m., MSU Union, Parlors BC**  
(Registration at 12:45 p.m.; program begins at 1:00 p.m.)

The afternoon portion of Survive and Thrive in the Tenure System has the following

## LAB MANAGEMENT

LABORATORY

MAKING THE RIGHT MOVES

LABORATORY

LABORATORY

## LAB MANAGEMENT

### *Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty*

Based on courses held in 2002 and 2005 by the Burroughs Wellcome Fund and HHMI, this book is a collection of practical advice and experiences from seasoned biomedical investigators. The second edition contains three new chapters on laboratory leadership, project management, and teaching and course design.

© 2006 by the Howard Hughes Medical Institute and the Burroughs Wellcome Fund.

Download the second edition

#### New chapters (online only)

- Writing a Letter of Recommendation
- How to Be a Member of an R01 NIH Study Section

#### HHMI MEDIA



"Starting a Research Group in 1978: Are the Lessons Still Relevant?"  
2002 course keynote by HHMI President and Nobel laureate Thomas R. Cech. Advice on obtaining a faculty position and achieving tenure, leading a research team, mentoring students, balancing research and teaching, and more. [View Video](#)

You may use, copy, or distribute *Making the Right Moves* and this video or any excerpts provided that use is for noncommercial educational purposes. Requests beyond that scope should be directed to [labmgmt@hhmi.org](mailto:labmgmt@hhmi.org).

[Back to Top](#)



#### RELATED LINKS

##### AT HHMI

- Entering Mentoring (PDF, 954KB)
- Starting a Research Group: Advice from HHMI President Thomas R. Cech

##### ON THE WEB

- Inside the NIH Grant Review Process
- Science Careers

##### CONTACT

- [labmgmt@hhmi.org](mailto:labmgmt@hhmi.org)

## AT THE HELM: LEADING YOUR LABORATORY (2<sup>nd</sup> edition)

By Kathy Barker

Cold Spring Harbor Laboratory Press, 2010

### Editorial Reviews

#### Product Description

Since 2002, the first edition of this best-selling book has helped thousands of newly appointed principal investigators successfully transition to running their own labs. But changes in technology continue to transform the way science is done, affecting ways in which labs communicate and collaborate, organize data and supplies, and keep current on the latest developments. The culture of science has also evolved, as more scientists explore non-academic career paths, seek new ways to communicate information and ideas, and acquire skills and knowledge outside of their field. In the second edition of this book, Kathy Barker has substantially revised the text, offering PIs advice on adapting to the changes and challenges that the years have brought. New topics include collaboration contracts, performance evaluations, communicating with non-scientists, tips for succeeding on the tenure track, and professional development. With this book as a guide, any new or aspiring PI will be well-equipped to manage personnel, time, and institutional responsibilities with confidence. Related Titles from the Publishers: *Lab Dynamics: Management Skills for Scientists* (Paperback). *At the Bench: A Laboratory Navigator, Updated Edition* [Concealed wire binding]

#### About the Author

Kathy Barker received her B.A. in Biology and English, and her M.A. and Ph.D. in Microbiology, from various branches of the University of Massachusetts. She did her postdoctoral work in the laboratory of Viral Oncology at Rockefeller University and was an Assistant Professor in the Laboratory of Cell Physiology and Immunology at Rockefeller University. She is now based in Seattle, where she writes and gives workshops on various aspects of running a lab.

## Annual Schedule of RTP Reviews

## DEPARTMENT-SCHOOL LEVEL

RTP discussions with chair and department-school review committee	Spring-Summer
Organizing RTP dossiers	Summer-early Fall
Solicitation of external reviews (only for 2 <sup>nd</sup> reappt and prof reviews)	Summer-early Fall
Department- and school-level review of RTP candidates	Middle-late Fall
Submission of RTP dossiers to College	2 <sup>nd</sup> Fri in December

## COLLEGE LEVEL

*(To go into effect Fall 2011: Preliminary presentation of RTP candidates by CANR chairs and directors to Dean and Directors , Early Fall)*

CANR RTP Committee reviews	Very early January
College-level Dean and Director reviews	Late Jan-early Feb
<b>***Initial feedback to candidates re status from chairs-directors to candidates</b>	<b>Early -mid Feb</b>
Revision of dossiers, if needed, with resubmission to College	Mid-late Feb
Submission of dossiers, including Dean's recommendation, to University Committee (Gray, Youatt, Curry)	Late Feb

## UNIVERSITY LEVEL

Dean's meeting with University Committee to review dossiers	Mar-Apr
<b>***Preliminary decision from Univ review communicated to candidates by chairs-directors</b>	<b>Mar-Apr</b>
Review of Univ-level decisions by provost, then, president	Apr-mid May
<b>***Final decision communicated to candidates by chairs-directors</b>	<b>late May-early June</b>
Tenure actions taken by MSU Board of Directors	June board meeting

(RTP decisions go into effect July 1 of that year; declinations of first and second reappointments result in position terminations on August 15 of the following year)

Members of the CANR RPT Committee

(Reappointment, Tenure, and Promotion)

2011-12

<u>Representative</u>	<u>Department/ School</u>	<u>Term Expires August 15<sup>th</sup></u>
Roy Black (immediate past chair)	AFRE	2012
To be named	ANS	2014
To be named	BAE	2014
Pete Kakela	CARRS	2013
Brian Teppen	CSS	2013
Rufus Isaacs	ENT	2013
Karen Potter-Witter	FOR	2012
Sharon Hoerr	FSHN	2013
Bill Taylor	FW	2014
Rand Beaudry	HRT	2014
Pascal Kamdem	PKG	2012
George Sundin (chair)	PLP	2013
Eric Strauss	SPDC	2012

## PRINCIPLES FOR FACULTY EVALUATION

### CANR Promotion and Tenure Committee

1. To effectively evaluate a faculty member, the Committee must consider and evaluate three major categories for excellence:
  - a. an assessment of the faculty member's performance of **assigned duties**;
  - b. an assessment of the person's **scholarly achievements**; and,
  - c. an assessment of the person's **service activities**.

In conducting assessments, the Committee operates on the premise that faculty excellence is a matter to be judged, not measured.

2. **Assigned duties** for a faculty member can include research, teaching, extension/outreach and/or administration. Because the college is a collaborative effort, contributions to collaborative works are included in the assessment of performance of assigned duties. Furthermore, it is expected that a faculty member will demonstrate a commitment to standards of intellectual and professional integrity in all aspects of faculty responsibilities. The Committee acknowledges that some faculty positions will be more disciplinary oriented with few additional responsibilities, whereas others may have extensive assigned duties in teaching, extension/outreach, advising, or administration. However, some scholarly activities are expected of all tenure-track faculty members regardless of assigned duties. The Committee assesses performance according to assigned duties, not in relation to the budgetary appointment.

3. In order to evaluate a faculty member, the Committee --- following Boyer (1990) and Weiser (1999) --- defines **scholarly achievements** as a creative work that is peer-reviewed and publicly disseminated. As such there are six forms of scholarship:

- a. discovery of knowledge;
- b. multidisciplinary integration of knowledge;
- c. development of new technologies, methods, materials or uses;
- d. application of knowledge to problems;
- e. dissemination of knowledge; and,
- f. interpretation in the arts.

This definition can be applied to teaching, research, extension/outreach, service and administration duties. The Committee is interested not only in how faculty invest their time, the activities in which they participate, and who they reach, but also in the short, medium and long term results and impacts of the faculty's scholarly efforts.

4. **Service activities** are implicit in the appointment of all faculty members. A faculty member is expected to demonstrate excellence in service through a continuing commitment to academic professional and public service activities.

5. A faculty member is expected to demonstrate **continual improvement** in his or her intellectual and performance capabilities by improving his or her effectiveness in teaching, research, extension/outreach, service and/or administration. A faculty member also is expected to make contributions to the collegial environment of his or her academic unit.

### References

- Boyer, Ernest L. 1990. *Scholarship Reconsidered---Priorities of the Professorate*. Princeton: The Carnegie Foundation for the Advancement of Teaching.
- College of Agriculture and Natural Resources. *Guidelines for Tenure and Promotion*. Michigan State University, East Lansing, Mi. November 2, 1995.
- Committee of the College of Agriculture and Life Sciences. *Faculty Evaluation Principles, Scholarly Activity Definition*. Virginia Polytechnic Institute and State University. October 25, 2004.
- Department of Agricultural Economics. *Bylaws Annex II: Guidelines for Performance Evaluation of New Tenure System Faculty for Reappointment, Tenure and Promotion*. (Approved December 6, 1993; Effective July 1, 1994.) Michigan State University. East Lansing, Mi.
- Glassick, Charles E., Mary Taylor Hubers, and Gene I. Maeroff. 1997. *Scholarship Assessed-Evaluation of the Professorate*. San Francisco; Josey-Bass Publishers.
- Weiser, Conrad J. 1999. *Final Report to the Kellogg Foundation*, October 1998. Oregon State University Workshop. *Scholarship Unbound: Reframing Faculty Evaluation and Rewards*. Oregon State University, Corvallis, Oregon.



## POINTS OF RELEVANCE FOR JUNIOR FACULTY CANR Promotion and Tenure Committee

1. Review the Principles for Faculty Evaluation that the CANR P&T Committee uses.
2. Quality not quantity. The committee emphasizes quality, impact, and that the tendency to list everything is not helpful and tends to obscure the more significant.
3. Top journals in your field. A part of quality is to publish at least some work in the top journals in your subject area. The Committee looks for that evidence, especially at tenure decision time.
4. Reflective essay. This is your opportunity to show the quality of your thinking, your vision and the logic for your program, your strategy and implementation, including weaving in what you have achieved to date, your trajectory and where you plan to be in 10 years. The essay should emphasize the intellectual foundation of your work and plan in contrast to reporting or listing what you have done; the later should be well covered in the university forms and your vitae.
5. Early Promotion. The Committee looks for compelling reasons for this award, a truly an extraordinary record of scholarship. A significantly higher standard of achievement is expected than for promotion in the normal time period for the rank. Life is long and there is no great benefit to the individual and institution to rush its major stages, except for the very exceptional case.
6. Your area of scholarly excellence. Begin early to think about and develop your topic of excellence, what you will be known for, and articulate this expertise in your documents. For example, your goal is for anyone in your national or international field, if asked, to identify you as a world authority on the subject (modified of course for the culture of excellence in your discipline/assignment area).

Guidelines were prepared by Professor Doug Landis, CANR RTP Committee, Entomology. These recommendations have been adopted by the CANR RTP Committee and are used in portfolio reviews.

### Reappointment to Assistant Professor

**Bottom line:** clear evidence that the candidate is establishing a program that can achieve excellence in the area(s) of major appointment. The candidate does not need to be there yet, but there should be clear signs that they are on their way.

Some benchmarks include:

- In Research
  - Obtains sufficient funding to initiate a program
  - Increasingly, some funding should be sought from competitive national sources (USDA, NSF, NIH etc.)
  - Attract students and/or post-docs
  - Finishes publishing prior work (PhD, post-doc) and ideally has MSU work published or in press
  
- In Teaching
  - Is recognized as a solid teacher by colleagues and students
  - Shows true interest in teaching, evidence of innovation
  - Obtains very good SIRS summary scores (1's and 2's) and/or is showing evidence of improvement
  
- In Outreach
  - Obtains sufficient funding to initiate a program
  - Is recognized by clientele and colleagues as interested and dedicated to outreach
  - Shows initiative/innovation in outreach
  
- In Service
  - Contributes to Departmental activities when asked
  - Evidence of potential for contributions at national level e.g.
    - Journal peer reviewer
    - Membership in state/regional committees

## CANR INITIATIVE

### Strengthening faculty scholarship across the mission

#### Background

During Fall Semester 2007 there was a robust discussion of scholarship—what it is and how it might be evaluated—in our College. This discussion was prompted by a call from the Dean's Office: the need to sharpen our ability to fulfill mission-related obligations as we do a better job of acknowledging and rewarding faculty for the work they do.

While faculty at MSU and CANR are expected to make contributions through research that move the frontiers of knowledge in their respective fields, they also undertake a variety of other work—undergraduate education, graduate education, and an array of Extension-outreach-engagement responsibilities, on campus, around the state, across the nation, and all over the world—that often falls outside of the conventional way that we acknowledge and reward faculty for work in the research domain. It appears to some that research has become (or is becoming) the primary frame of reference for evaluating and rewarding faculty work. At issue, then, is how do we judge the quality of work undertaken across the mission (not just in research)? And, what does scholarship look like when it is expressed outside of research?

While these are important questions, it became apparent quickly that there are differences of opinion about what scholarship is and how it might be evaluated across the mission. For example, some saw virtually any work undertaken by faculty members—when that work is prepared and deployed thoughtfully (e.g., teaching an undergraduate class)—as scholarship. Others saw teaching classes as an important scholarly activity, but not as scholarship, which they saw as creating something new for a body of knowledge through peer-validation.

In addition, two primary concerns were expressed about the discussion of scholarship, generally. First, there were concerns that these discussions might lead to “one size fits all” metrics across CANR—applied to everyone, everywhere irrespective of potential differences in the work they do (e.g., teaching a study abroad course vis-à-vis involving students in an engagement experience overseas). In other words, while there is not likely to one answer to any core question (e.g., What is quality of Extension work), there probably are multiple answers to any question, with each answer fitting the nature of the work undertaken and/or the academic context in which it is being exercised. Second, concerns were expressed that emphasizing scholarship across the mission might diminish the value of work associated with teaching classes, doing Extension, and undertaking other non-research roles. If we were to emphasize work associated with scholarship in teaching, for instance, would that emphasis diminish the value of teaching classes? If so, then it might be better not to have these discussions at all.

#### Points of Agreement

Interestingly, while no consensus emerged about how to frame the discussion, including how to define basic terms, there was general agreement about a framework—advanced in first form in September that stayed in tact as the semester-long discussion unfolded: 1) for **evaluating the quality and impact of teaching, research, and Extension-outreach-engagement activities**; and 2) for **defining and evaluating the quality and impact of scholarship associated with teaching, research, and Extension-outreach-engagement**. Both outcomes seemed to be worthy in intent and outcome. The dual focus is expressed in the boxed-contained text that follows.

In all activities associated with teaching, research, and Extension-outreach-engagement, faculty members undertake work that is informed by an academically recognized body of knowledge, undertaken in a scholarly manner, and evaluated as having quality with impact.

**Scholarship** across the mission—irrespective of whether it is associated with teaching, research, or Extension-outreach-engagement— involves creating something new and valuable (that is, makes a contribution) in a disciplinary, professional, multidisciplinary, or interdisciplinary field; having the work validated as such by peers; and making the work “public,” that is, is available in an academically legitimate location for use in teaching, research, or Extension-outreach-engagement work.

Undergirding this two-pronged framework—again without much disagreement, although with interpretive differences—were statements authored at various times by faculty committees at the University and CANR levels, respectively.

From MSU policy:

<http://www.hr.msu.edu/HRsite/Documents/Faculty/Handbooks/Faculty/AcademicPersonnelPolicies/iv-recommendations> *Through its faculty, MSU will create knowledge and find new and innovative ways to extend its applications, to serve Michigan, the nation, and the international community. The faculty must infuse cutting-edge scholarship into the full range of our teaching programs. At MSU, faculty are expected to be both active scholars and student-focused, demonstrating substantial scholarship and ability to promote learning through our on-campus and off-campus education and research programs. The essence of scholarship is the thoughtful discovery, transmission, and application of knowledge, including creative activities, that is based in the ideas and methods of recognized disciplines, professions, and interdisciplinary fields. What qualifies an activity as scholarship is that it be deeply informed by the most recent knowledge in the field, that the knowledge is skillfully interpreted and deployed, and that the activity is carried out with intelligent openness to new information, debate, and criticism.*

From CANR Promotion and Tenure Committee policy:

<http://www.canr.msu.edu/canrhome/files/documents/CANR%20PROMOTION%20AND%20TENURE%20PACKAGE3.pdf> *In order to evaluate a faculty member, the Committee defines scholarly achievements as a creative work that is peer-reviewed and publicly disseminated. As such there are six forms of scholarship: discovery of knowledge; multidisciplinary integration of knowledge; development of new technologies, methods, materials or uses; application of knowledge to problems; dissemination of knowledge; and interpretation in the arts. This definition can be applied to teaching, research, extension/outreach, service and administration duties. The Committee is interested not only in how faculty invest their time, the activities in which they participate, and who they reach, but also in the short, medium and long term results and impacts of the faculty's scholarly efforts.*

Dean's-Level Expectations:**What is an Assistant Professor?**

(with specific reference to MSU as a research-intensive, Land Grant institution, with international obligations)

There is clear and abundant evidence that the assistant professor is **confirming the potential seen in her or him at the time of initial appointment.**

1. **Establishing focus in one's work—one's "headline"—is critical.** Focus represents a targeted area of scholarship for which one is known, a domain in which a scholarly reputation is built. There must be evidence that the declaration of focus is substantiated by high-quality, nationally (and/or internationally) competitive work in at least one dimension of the academic mission.
2. **There is abundant evidence that all assignments are being undertaken with attention to scholarly quality and with work completed on a timely basis.** Put another way, there are no apparent weaknesses in any of the primary areas of responsibility. The faculty member is perceived to be competent and has her or his "act together."
3. **There is widespread recognition of collegial engagement and contributions.** The faculty member works collaboratively with peer and takes on and completes (with quality) assignments in teams. This includes project work, team-teaching, and governance and related assignments at the unit level and beyond.
4. **There is evidence of contributions being made to students—undergraduate and/or graduate.** These contributions include guest lecturing, teaching courses, serving as a club advisor, and mentoring-advising graduate students.
5. **There is a strong conviction that the faculty member "is on the right track" with a high probability of experiencing a positive review at time of promotion to associate professor with tenure.** Weaknesses in 1-4 are noted at the first reappointment ... unless it is felt that the burden of evidence suggests against a reasonable chance of success at the time of the next review.

---

When submitting dossiers for reappointment there is **documentation of evidence and alignment of commentary**—with what the candidate says about himself/ herself and what the unit administrator and MSU peers say about the candidate's work. A point of comparison is the candidate's performance relative to what would be expected at MSU's peer institutions.

## Faculty Mentoring Policy

*This policy was issued by the Office of the Provost on March 1, 2011 (to be effective Fall semester 2011); it reflects advice by the Faculty Council and the University Committee on Faculty Affairs*

### Academic Human Resources Policy

Each college shall implement a formal mentoring program by August 16, 2011. As a part of the college program, colleges may also require that each department or school develop its own unit level- mentoring program. Effective mentoring is important to enhancing academic excellence and building a progressively stronger faculty composed of members who meet continuously higher standards and are competitive nationally and internationally. Mentoring programs will help the University achieve its goals for a high-quality faculty, diversity, inclusive excellence, and a respectful, positive work environment in which all members of the University community can thrive. While the responsibility for career development and success is ultimately that of the individual faculty member, opportunity, mentoring and the degree of environmental support that is available can affect success.

There are many forms of mentoring programs and no single model will meet the needs of all units or individuals. Each college (and/or unit) should develop a program that is most relevant to its needs based upon evidence based best practices. The practices and procedures in colleges may vary; however, all college mentoring programs must incorporate, at a minimum, the principles included below.

### Principles

1. For faculty members with joint appointments, there should be one mentoring plan for the faculty member, coordinated among the units, with leadership from the faculty member's lead unit.
2. Faculty members need different kinds of mentoring at different stages of their career. Initially, at minimum, colleges are expected to provide a mentoring program for pre-tenure, tenure system faculty, and build upon the program as capacity allows. This might include, for example, the addition of associate professors, HP faculty, or fixed term faculty for whom there is a long-term commitment.
3. Colleges, units and mentors should demonstrate sensitivity to potentially different challenges faced by diverse faculty including women, persons of color, and other facets of identity.
4. Conflicts of interest should be minimized, confidentiality protected, and all faculty members provided an environment in which they can address concerns without fear of retribution.
5. A faculty member may choose not to have a mentor.
6. Mentoring policies should be clearly communicated to all faculty members, and efforts must be made to ensure that there is clarity of both expectations and roles for all parties.

7. Mentoring excellence will be considered in the annual review of faculty.
8. Formative evaluation shall be incorporated into the design of the mentoring program to maximize benefit to each individual being mentored.
9. Colleges shall assess the effectiveness of their mentoring program on a cycle not to exceed five years.

### Frequently asked questions about the MSU Mentoring Policy:

1. ***What constitutes a formal, college-level mentoring program?*** A formal mentoring program intentionally ensures that every faculty member has access to formal mentoring relationships and resources. It is written, based on best practices, incorporates the principles of the MSU policy, and is explicitly communicated to all faculty.
2. ***Will every department now be required to have a formal policy and/or program?*** This will be up to each college. Each college will be required to implement a formal program that ensures that all faculty members have access to formal mentoring. Colleges may opt to administer formal mentoring at the college-level or require that each department or school develop a program, with college oversight.
3. ***Will the Office of the Provost mandate specific mentoring models for colleges, department, units, or individuals?*** There will not be a requirement that specific models be adopted, either at the unit or mentor/mentee levels. The intent is that colleges and departments choose models that provide the highest likelihood for individual career development. Resources are available to assist in determining which models best meet a college's needs including consultations with college appointed Faculty Excellence Advocates, ADAPP-ADVANCE team members and the Office of Faculty and Organizational Development.
4. ***Will every faculty member be required to have a mentor?*** The policy explicitly states that a faculty member may choose not to participate in the formal mentoring program. Programs should, therefore, include explicit language that specifies both no penalty to the faculty member for opting out, as well as the option to rejoin the program.
5. ***How will the confidentiality of mentoring conversations be safeguarded?*** This is not a question that can be answered a priori. However, each college is required to address the protection of confidentiality in its program.
6. ***Does a mentor have to be a senior faculty member from within the college or department? Can he or she be a senior leader in the field?*** Many mentoring models now exist in addition to the traditional single mentor/mentee dyad. The Policy does not require that specific models be adopted, either at the unit or mentor/mentee levels, but is interested in colleges and departments choosing models that provide the highest likelihood for individual career success. Resources are available to assist in determining which models best meet college and individual needs including consultations with college appointed Faculty Excellence Advocates, ADAPP-ADVANCE team members and the Office of Faculty and Organizational Development.



7. ***How will mentoring programs be evaluated or assessed for effectiveness?*** As the policy indicates, formative evaluation measures should be incorporated into the design of college- and/or unit-level program, in order to be responsive to needs of and maximize benefits to each individual being mentored. More broadly, the college should formally and regularly assess the mentoring program(s) in five-year cycles, at minimum. ADAPP-ADVANCE resources are available to help colleges and departments decide on assessment strategies that are relevant to their program.
  
8. ***What resources are available to assist colleges and departments in developing formal mentor programs?*** The Office of the Provost is committed to assisting colleges and departments as they implement improved or new mentor programs. For more information about the mentor policy, current or planned resources, assistance with getting started, or about the ADAPP-ADVANCE Institutional Transformation Initiative at MSU, please contact your FEA, or call the ADAPP-ADVANCE office at 353-8818, or visit [www.adapp-advance.msu.edu](http://www.adapp-advance.msu.edu).

\*\*\***DRAFT**\*\*\* (4/20/11)

**Faculty Mentoring Policy**  
**College of Agriculture and Natural Resources (CANR)**

CANR is committed to the professional development and successful advancement of its faculty members. Effective mentoring is an important component contributing to successful professional development and involves activities at the university, college and unit level. University policy requires that all colleges must have a formal and substantive mentoring program for pre-tenure, tenure stream faculty. CANR recognizes both the central role that academic units play in facilitating faculty development and the broad variation in disciplines and missions among units. Therefore, to best serve our faculty, the academic units, with assistance from the college and university, should play the primary role in establishing formal and substantive mentoring programs for pre-tenure, tenure stream faculty. Support of mentoring of all faculty members in the college is provided under the direction of the CANR Director of Faculty Development.

The goals of a department mentoring program may vary by academic unit, but at a minimum should include guidance concerning:

- establishing and sustaining a leading research program
- effective teaching and engagement of undergraduate and graduate students
- establishing effective and high impact extension and outreach programs
- building institutional and disciplinary leadership skills and contributions.
- progress toward reappointment, tenure and promotion

The structure of mentoring programs may also vary among academic units but must include the following elements:

1. A written document incorporated into the unit bylaws and actively implemented, that clearly identifies and communicates program policies, goals and expectations for both the mentor(s) and junior faculty members. These must include at least the following:

- a. A description of the mentor selection process, a mechanism for ease of changes in assignment of mentors as appropriate for the junior faculty's needs, and an alternative provision for faculty members to choose not to have mentors. One or more senior? tenured? faculty members (not the including the academic unit administrator) should be assigned for each junior faculty. Selection of mentors is not limited to the academic home of the junior faculty.
- b. For faculty members with joint appointments, there should be one mentoring plan coordinated among the units, with leadership from the primary unit.
- c. A description of expected mentoring activities with elements addressing research, teaching, extension and outreach, engagement, and leadership development.
- d. Clarity relative to the roles of both the mentor(s) and the junior faculty.

- e. Clarity relative to expectations for confidentiality
  - f. Clarity about the role of mentor(s) in the annual evaluation, reappointment, tenure and promotions processes. Who (including the mentee) does/does not see reports should be specified.
  - g. A description of how mentoring activities will be reported and evaluated as a portion of an individual's service to the unit.
2. Support and leadership from the chair in integrating mentoring into departmental activities. Recognition of mentoring as a formal component of faculty service to the department and college should be incorporated into annual faculty evaluations for individuals who serve as mentors.
3. Sensitivity by units and mentors to potentially different challenges faced by diverse faculty.

The College will provide leadership and support for the unit mentoring programs through its faculty development program and resources including:

- 1. Provision of sources of information/link to available university resources concerning good mentoring practices
- 2. Organization of workshops and programs (either by the college or in conjunction with other University units such as the Office of Faculty and Organizational Development)
- 3. Establishment of a central location for information about mentoring policies for each unit
- 4. Provision of information to prepare new faculty (e.g., resources, expectations) as part of annual college orientation
- 5. Establishment of a confidential college mentor facilitator available to all CANR faculty. This individual will serve as a resource to identify appropriate individuals with relevant expertise for advice/consultation for professional development and/or discussion of sensitive issues.

The effectiveness of the college and unit mentoring programs will be assessed at an interval not to exceed five years.

**THE REFLECTIVE ESSAY:  
PERSPECTIVES AND GUIDELINES**

College of Agriculture and Natural Resources  
Michigan State University

### Introduction

The Reflective Essay is an integral part of the reappointment, tenure and promotion process at virtually all universities. The reason for its universal importance is that "a capacity for reflection and self-evaluation...is a critical ingredient in a professor's life" (McGovern, p. 96).

As such, the Reflective Essay holds a unique position in the candidate's dossier of supporting evidence. The CV (curriculum vitae) and Form D—no matter what the length—will be read and discussed by reviewers. Consequently, the Reflective Essay should *not* be a summary of evidence presented in those documents. Instead, the Reflective Essay is "an opportunity to weave a tapestry of understanding of [your] scholarly pursuits" (Smith, p. ii).

### Intent and Use

The Reflective Essay serves as the "key orienting and organizing element of the [dossier]" (Froh, et. al. p. 108) with the purpose of "providing a frame of reference or context for the items submitted to the committee" (Diamond, p. 24). Consequently, the Reflective Essay is the primary opportunity the candidate will have to convey the nature and meaning of her/his scholarly work and philosophy to those reviewers from his/her and other disciplines (Millis, p. 69).

Above all, the Reflective Essay should (a) convey the candidate's vision

of herself/himself as a maturing or mature scholar (including describing one's scholarly niche); (b) communicate the contributions made during the reporting period in advancing toward that vision; (c) provide an indication (evidence) of the impact of the candidate's scholarly efforts; and (d) show development-evolution of the candidate's scholarship.

The objective of the Reflective Essay "is to convey as much depth and richness as possible by [employing] selective evidence of [scholarly] accomplishments" (Froh, et. al., p. 106). Above all, candidates should remember that the Reflective Essay is "a reflection of the care [the candidate] take(s) in communicating scholarship" (Smith, p. ii).

### Preparation Guidelines

The preparation of the Reflective Essay should begin early in one's MSU-CANR career, and should be updated on a periodic basis throughout the reporting period (e.g., during the annual evaluation process). Approaching it this manner will enable the candidate to prepare a document that represents a more accurate and convincing expression of the evolution of one's scholarly development.

With all of this in mind, here are 8 guidelines for the development of a Reflective Essay:

1. Because the Reflective Essay is just that—a personal reflection written in

essay format—it is important that it be *crafted as an intellectual piece, an academic contribution in its own right, rather than as a document that reports academic accomplishments*. Most of all, the essay should “demonstrate a capacity to be reflective and self-critical; hence, capable of continued growth and change” as a scholar (Diamond, p. 24).

2. The Reflective Essay should *convey the candidate's vision of himself/herself as a maturing or mature scholar*. It is an opportunity to convey one's scholarly philosophy and vision; to describe how scholarly priorities were established; to share the logic of one's program of scholarship (and its development); to make explicit the strategy (choice making) used over the years; and to be clear about one's future trajectory.
3. The Reflective Essay should be *expressed in a manner that is consistent with CANR's interpretation of scholarly activities and scholarship*. Scholarly activities cut across the mission of teaching, research, and outreach / Extension / engagement. Activities are “things scholars do” (e.g., designing and offering an undergraduate class). While scholarship also applies to all mission dimensions, it is an outcome, not an activity. Scholarship involves creating something new; and it is designed to advance understanding by contributing something new to a body of knowledge. “Newness” is peer reviewed or validated; and products of scholarship are made available in publicly accessible forms and in publicly available locations. The worth of both scholarly activities and scholarship is evaluated in multiple ways: in terms of intellectual quality (substance-content); quality of expression (how the work is constructed and presented, particularly in terms of its relevance to intended audiences); and its impact on and/or use by intended audiences.
4. Because each candidate's mix of assigned duties is unique, *the essay should address all aspects of the candidate's assigned duties—activities and scholarship—in a manner roughly proportionate to those duties—teaching, research, outreach / Extension/ engagement, and service to MSU and profession* (Froh, et. al., p. 107). It is understood that scholarly activities and scholarship influence a wide range of audiences (e.g., disciplinary peers, scholars in other disciplines, students, public officials, industry members, members of non-governmental organizations). Consequently, just as each candidate's assigned duties is unique, the impact of each candidate's activities and scholarship is also likely to be unique (at the very least distinctive in nature and contribution).
5. Because the hallmark of the scholarly life is integration and connections across the mission, the Reflective Essay should *demonstrate the candidate's integration of work across her/his assigned duties* (e.g., how research influences teaching; how Extension influences research).

6. The Reflective Essay “provides a vehicle for discussion of special circumstances that have affected your work to-date” (Diamond, p. 24). There are always critical times or points in an academic’s life, when an academic decides to move in one way or another. Sometimes these times or points are products of one’s own doing—a outcome of intent. At other times, they are either a result of opportunity (“being in the right place at the right time”) or unexpected circumstance (e.g., departure of a senior collaborator from MSU).
7. The Reflective Essay also provides an opportunity for the candidate to explain “any contradictory or unclear materials in the [dossier]” (Seldin, p. 10). However, explanations should be reserved for unique events; and, when included in the essay, the description should not consume an undue portion of the essay.
8. A useful means of developing a Reflective Essay may be to periodically consider a series of “reflective prompts” that will induce reflection about “why we teach; why we work as we do; why we choose certain priorities in ...scholarship; why we publish in this or that field or particular topic;...[thereby leading to] meaningful inquiry into what we do and how we do it” (Zubizarreta, p. 208, italics in original; for additional useful prompts, see McGovern, pp. 103-08).

#### Final Comments

Remember...the Reflective Essay is the candidate’s opportunity to communicate the quality of thinking, vision and logic of the program, strategy and implementation—incorporating what has been achieved to date; the trajectory of the program; and the targets and milestones anticipated in the next 10 years. The Essay must emphasize the intellectual foundation of the work and plans for the future. The Essay must *not* be a reporting or listing of what has been done in the past; this is well covered in Form D and the CV.

#### REFERENCES

- Border, Laura L.B. “The Socratic Portfolio: A Guide for Future Faculty.” *PSOnline*. 35(4): 739-742.
- Diamond, Robert M. *Preparing for Promotion and Tenure Review: A Faculty Guide*. Bolton, MA: Anker Publishing, 1995.
- Froh, Robert C., Peter J. Gray, and Leo M. Lambert. “Representing Faculty Work: The Professional Portfolio.” In *New Directions in Higher Education: Recognizing Faculty Work -- Reward Systems for the Year 2000*, edited by Robert M. Diamond and Bronwyn E. Adam. Number 81, Spring 1993, pp. 97-110.
- McGovern, Thomas V. “Self-Evaluation: Composing an Academic Life Narrative.” In *Evaluating Faculty Performance: A Practical Guide to Assessing Teaching*,

- Research, and Service*, edited by Peter Seldin. Bolton, MA: Anker Publishing, 2006, pp. 96-110.
- Millis, Barbara J. "Shaping the Reflective Portfolio: A Philosophical Look at the Mentoring Role." *Journal of Excellence in College Teaching*. 6(1): 1995, 65-73.
- Seldin, Peter. *The Teaching Portfolio: A Practical Guide to Improved Performance and Promotion/Tenure Decisions*. Bolton, MA: Anker Publishing, 1991.
- Smith, Terra L. "Documenting the New American Scholarship: Tenure and Promotion Dossier Narratives." Higher Education Clearinghouse, Education Resources Information Clearinghouse, U.S. Department of Education, 2003.
- Zubizarreta, John. "The Professional Portfolio: Expanding the Value of Portfolio Development." In *Evaluating Faculty Performance: A Practical Guide to Assessing Teaching, Research, and Service*, edited by Peter Seldin. Bolton, MA: Anker Publishing, 2006, pp. 201-216.

**Why Breeding?** I distinctly remember the day I decided to pursue a career in agriculture – it was in August, 1995, in Guatemala. The foundational role of agriculture in the health, stability, and sustainability of society became acutely apparent to me. I decided that improvements in agriculture would benefit mankind. As I begin my wheat breeding and genetics career at Michigan State University, I view my work in wheat breeding and genetics in the context of benefitting Michigan, firstly, as well as the region, nation and the international community. In addition, teaching is an important component of how I serve.

**Wheat in Michigan:** The Michigan wheat industry, with its associated farmers (for whom wheat is used in rotation and contributes to soil health and management), millers (such as Star of the West Milling Co., and Chelsea Milling Co. – the makers of “JIFFY” mixes), cereal companies (such as Kellogg ® and Post ®), bakers and other end users has a major contribution to the agro-food industry in Michigan. The soft white wheat industry in Michigan (Michigan grows both soft red and soft white wheat) is especially valuable as soft white wheat production has dramatically declined in both Ontario, Canada, and New York over the past decade, and there is a great demand for soft white wheat. It was reported that as of 2002, the total value of breakfast cereal, breads, bakery, cookies crackers and pasta manufacturing to Michigan was greater than 3.9 billion per year (Peterson et al., 2006). Positive or negative changes in wheat production in the state, therefore, have an important impact on the health of the Michigan economy.

As a wheat breeder and geneticist, my objective for Michigan is to develop improved varieties of wheat that enable better return on investment (e.g. higher yield, more competitive with other crops), more sustainable and predictable performance (e.g. fewer susceptibilities to biotic and abiotic stresses), and qualities that are necessary for post-harvest industries (e.g. desirable grain quality for wheat millers and end users). The fact that very little soft white wheat is grown regionally (perhaps 10% of wheat acreage in Ontario, Canada and New York, while as much as 40-50% wheat acreage in Michigan, and very little else in the Eastern U.S.), and few wheat breeders are working on developing improved soft white winter wheat varieties for the Eastern U.S. (Mark Sorrells at Cornell, Mark Etienne at Hyland Seeds, and Greg Marshall at Pioneer Hi-Bred are notable), makes the soft white wheat breeding in Michigan all the more necessary.

**Problems to Overcome:** Two problems that actively threaten Michigan’s wheat industry are Fusarium head blight (FHB) and Pre-harvest sprouting (PHS). Not only are both of these problems detrimental to the wheat industry as a whole, but they are especially damaging to the soft white wheat industry. White wheat accumulates more mycotoxin (deoxynivalenol, DON) from FHB infection than does red wheat (Knott et al., 2008, Lewis et al., 2008). In addition, the great value of white wheat as a class is the white bran, and wheat bran has shown to accumulate higher levels of DON than flour (Hazel and Patel, 2004). Michigan annually experiences varying levels of FHB, and there were severe epidemics in 1996 and 2004. U.S. federal advisory limits DON in wheat for human consumption not only emphasizes the concern of FHB as a human health risk, but results in farmers having few options to sell their contaminated seed (e.g. for feed or other purposes), and only at a much reduced price. Concerns about DON contamination in wheat are a deterrent for farmer production of wheat, and white wheat contamination is more problematic for farmers, millers and end users. Soft white wheat is also more susceptible to PHS



than is red wheat. In 2008 and 2009 Michigan experienced severe problems with PHS in white wheat growing areas in the state. In 2008 the damage was primarily in the thumb, while in 2009 the damage to PHS was widespread around Michigan. One of the largest problems that Michigan is currently facing with respect to PHS is the change in the rating system used at the mills and the elevators. Farmers are historically familiar with “sprout count” – a visual estimate of germinated seeds. In 2008, the use of “falling number” – a different scale, which tests the functionality of the grain – was used extensively in Michigan to the great distress of farmers. Farmers were neither familiar with the falling number test, nor were they being insured for their grain being rejected based on falling number. I received a personal voicemail message from a Michigan farmer who, because of the falling number problem, decided to stop growing wheat. Furthermore, little screening has been done to identify PHS resistance based on falling number. This opens up a whole new arena for identifying resistance and conducting research to hasten variety development. As FHB and PHS continue to loom large, these are the main areas of my research at MSU.

**Breeding:** The steps that I have taken so far to combat FHB and PHS in Michigan span breeding, research and outreach/extension. The breeding program has been actively involved in phenotypic screening for resistance to FHB using inoculated nurseries for many years prior to the start of my position. I modified my approach to screening in the past two years by working to select FHB resistant breeding lines earlier. Early identification of resistance will give a higher chance of identifying lines with resistance as well as other necessary traits (such as yield), and also prevents us from wasting of resources on breeding lines that are not resistant. In addition to traditional phenotypic selection, in 2009 I began using Marker Assisted Selection (MAS) to enrich populations for Quantitative Trait Loci (QTL) associated with resistance. To date, much FHB breeding in the program has been conducted using Asian sources of resistance, for which QTL have been mapped (and thus, MAS is possible). Unfortunately, it is rare for our crosses with Asian sources of FHB resistance to have outstanding yield. More native sources of resistance have been identified in the Eastern US. I am beginning to focus more heavily on native resistance than we have in the past, with the hope that such sources of resistance may be more likely to have less genetic “drag” for yield. Several varieties have been developed by other breeders in the Eastern soft wheat region that have native sources of resistance, and several efforts are underway to map QTL from these sources. Thus, I anticipate that we will also be able to use MAS on progeny of crosses with several native sources of resistance in the near future. Once both sources (Asian and native) are identified, MAS can be used to help pyramid these QTL for more effective resistance to FHB.

My breeding for PHS has, to date, been limited to a single source of resistance – ‘Cayuga’. This source of resistance is derived from ‘Clark’s Cream’, and has proven to be the best source of resistance for Mark Sorrells (Cornell) who has studied PHS extensively and is also breeding soft white wheat. Mark Sorrells has collected additional germplasm with varying levels of PHS resistance, which he will be sending to MSU for us to investigate under our conditions. In 2009, early generation selection for PHS was begun using MAS of the QTL mapped from Cayuga. In contrast to FHB, phenotypic screening is not effective with PHS until later generations (Mark Sorrells, pers. comm.). However, with respect to phenotypic screening, in 2008 and 2009 we have been actively working to modify our phenotypic screening protocol so that it is more relevant. In 2008, we ran preliminary tests of sampling times for PHS at physiological maturity

vs. at harvest. In 2009, we conducted planned and opportunistic studies of PHS before and during the time of the PHS conditions in Michigan, respectively. In these studies we examined the association of falling number and alpha amylase (planned study) as well as visual sprouting and falling number (opportunistic study).

**Student Research:** It is my philosophy that the research being conducted in the program should speed our progress towards the development of improved wheat varieties. I have recruited three graduate students – Swasti Mishra, Yuanjie Su and Neil Yu. Swasti Mishra is working on FHB and is focusing on the genetics of resistance to toxin accumulation in the bran. She has completed one cycle of greenhouse testing as well as one cycle of field testing in two locations. She will repeat her field testing in two locations next year as well. Within her work to examine toxin accumulation in the bran, she has also successfully adapted an inoculation method that is effective in the field without the use a misting system (which we use in our large FHB screening trial). She has compiled some of her data, and is analyzing these data this fall. Yuanjie Su (a Monsanto Fellow who completed his M.S. at North Dakota State University) and Neil Yu are both working on PHS. Neil Yu's initial experiment will be to characterize Michigan germplasm for the accumulation of alpha amylase (an enzyme closely associated with PHS) during the natural maturation of the seed. As a small component of his PhD work, Yuanjie Su will expand the work being conducted by Neil to also look at the association of visual sprouting symptoms with alpha amylase and falling number. For all projects (FHB and PHS), future research will incorporate methods such as QTL mapping, transformation, and genomics. I have been gathering resources (both germplasm and human networking) for such studies. This fall we are receiving a red x white wheat mapping population from Jamie Sherman (Montana State University) that has been genotyped. This population will be useful for both FHB and PHS studies, as red and white wheat behave differently for both traits. In addition, we have received lines of *Brachypodium distachyon* from David Garvin, USDA-ARS at the University of Minnesota. Sam Hazen, (University of Massachusetts, and a former PhD student of the MSU Wheat Breeding Program), has also expressed interest in collaborative work with MSU using *B. distachyon*. *B. distachyon* is closely related to wheat and is a good model system for functional genomics relevant to wheat. *B. distachyon* has a shorter generation time than wheat, has been sequenced, is being used to create several mapping populations, and has been effectively transformed using *Agrobacterium*. As the sequencing of wheat is still far off, I anticipate *B. distachyon* will be a useful tool for us to help us identify genes involved in PHS and FHB, and so use this knowledge to help us select and potentially modify wheat. Other genomic resources, such as 454 sequencing, are available on campus and I am considering the possibility of doing research on transcriptomics related to PHS and FHB.

**Outreach/Extension:** Outreach/extension opportunities are critical for me to stay in touch with the practical problems being faced in Michigan and remain relevant. I have spoken at several extension meetings in Michigan in 2008 and 2009, where the subject of FHB was a major focus, and I was able to communicate with farmers about the risks of FHB as well as the progress we are making at MSU to develop varieties. In addition, I have spoken regularly with Michigan companies regarding their concerns about FHB and their interest in related research. The PHS problems of 2008 and 2009 have brought an immediate focus on PHS in Michigan. I have been in frequent communication with researchers and industry to strategize ways to identify and develop PHS resistant varieties. In November, 2008, I spoke at a meeting between farmers,

industry and researchers hosted by Michigan Farm Bureau. In June, 2009, I participated in a workshop, hosted at MSU and attended by industry and researchers, to discuss the falling number characteristic. In September, 2009, I presented at and facilitated a discussion on breeding for PHS in a meeting between researchers, industry and farmers.

**Beyond Michigan:** Beyond Michigan, I consider myself to have an important role in wheat breeding work regionally, and will continue to develop my role nationally and internationally. Regionally, I annually collaborate with numerous wheat breeders in the Eastern U.S. – sharing FHB nurseries for evaluation, sharing germplasm for breeding and yield trials, and collaborating on grant proposals. In 2008 I began to coordinate the Uniform Eastern Soft White Winter Wheat Nursery – a collaborative nursery that is evaluated by twelve cooperators (three of which are laboratories). Upon beginning coordination of this nursery, I expanded the nursery to include rust screening, and took the suggestion of a colleague to also consider Hessian fly screening. In addition, approximately three other scientists/breeders joined the group to share and screen the best soft white wheat varieties. Such nurseries are essential to identify potential markets for new varieties, identify the strengths and weaknesses of a line, and find new parents to cross with. Furthermore, MSU submits and receives entries for two regional FHB nurseries, as well as the Uniform Eastern Soft Red Winter Wheat Nursery. Nationally, I was invited to serve on a committee to help organize the National Wheat Genomics Conference in Indianapolis, 2008. I also annually participate in the National Fusarium Head Blight Forum, and in 2008 I participated in the 3<sup>rd</sup> International Fusarium Head Blight Symposium, Hungary. I collaborated on a Plant Breeding and Education grant (Jamie Sherman et al.) which will help coordinate the student training efforts of fifteen wheat breeders in the U.S. My interactions with Canada could be considered both regional and international. In 2008, I attended and presented in the first Great Lakes Wheat Workers meeting in London, Ontario. In 2009, I helped to host this meeting at MSU.

**Teaching:** Teaching is another important component of my position at MSU. My teaching involves both graduate student guidance and teaching CSS 350, Introduction to Plant Genetics (an undergraduate course, approximately 50 students per year). I am enthusiastic about my role as a graduate student advisor. As a research advisor/committee member I am eager to help students achieve success. I have been helping graduate students develop their research ideas and goals, as well as guide them towards taking appropriate courses. I am happy to make time to meet with graduate students to talk over various questions they are facing with their research, and help them think through these questions. Also, it is my personal goal as an advisor/mentor to help the students see their work now and/or their future career in the context of the work of other scientists and the place their work has in benefitting society overall. I am serving as a committee member to four graduate students (one of which, Perry Ng would be happy for me to consider myself a “co-advisor”) in addition to being the advisor of three graduate students that I mentioned above.

I have taught Introduction to Plant Genetics (CSS 350) for two years (Spring 2008 and 2009). Many comments that I received from the 2008 teaching, as well as suggestions from other faculty (Karen Renner, Taylor Johnson) and a professional reviewer that I requested from MSU, have been effective in helping me to improve the course (as is reflected in the improvement in my SIRS scores and comments from the students). Changes that I think were especially helpful

included the use of iClickers to engage students in questions during class, and emphasizing more plant examples in class (a request made by several students in 2008). A comment that I received from several students in 2009 that I will use in modifying the course in 2010 is to give even more weight to the homework assignments that was given in 2009 (which was an increase from 2008). In 2009, many students remarked that the homework assignments were especially helpful in their understanding of the material. In both 2008 and 2009 (though more in 2009) I incorporated many guest lecturers from scientists in CSS and related departments so that students could see the application of the genetics concepts beyond their textbook. I received very positive feedback both years about the guest lecturers, in general, and plan to continue incorporating guest lecturers in 2010. In addition, I am going to continue to search for examples that I can use outside of the PowerPoint presentation to help students approach the subject in new ways (physical models, viewing segregating plants themselves, etc.). Through the class I not only try to ensure that students understand the material well, but that they are improving their thinking skills towards genetic concepts. I want students to learn how to learn – how to ask and answer their own questions regarding genetics. I think this approach (helping them to work through the answers, rather than just giving them the answers) helps them to see that genetics is an approachable subject, and one they can truly begin to understand. One student, specifically, came to my office after the final exam in 2009 and expressed to me that although she had “learned” several of these topics before, this was the first time that she felt she had truly understood them.

**Future:** Junior faculty are often advised to think of how they want to be “known” in the future. My ideas of the future have been growing and becoming clearer over the past two years. I can answer this question on several levels – 1) research topic, 2) research tools 3) practical impact, 4) scientific community engagement. When I came to MSU, I was already becoming known on an international level as an FHB researcher. It is the area in which I did my PhD and two postdocs (one of which was at CIMMYT – the International Maize and Wheat Improvement Center, in Mexico). Thus, as FHB is a serious problem in Michigan and I am actively engaged in FHB research, I expect that I will be increasingly known for the work I am doing in FHB. As PHS is also a major problem in Michigan, and I am now beginning research projects in this area, I expect that I will also be known in the area of PHS. Research tools can span many research topics. I have always loved the phenotypic field aspect of breeding, and it is what I consider to be one of my strengths. In addition to this, MSU is an outstanding place for genetic/genomic research, and as molecular tools can greatly our ability to overcome FHB and PHS, I am eager to use these tools to our advantage. It seems that the research community already associates me, to a degree, with molecular abilities. Part of this may be because of my postdoc in Gary Muehlbauer’ laboratory (University of Minnesota) where I worked in the area of transformation, and part may be because of the mapping work I conducted in my PhD. In addition to being invited to help organize the National Wheat Genomics Conference in 2008 (mentioned above), I have been invited to be the presiding officer over the Wheat Coordinated Agricultural Project ASA-CSSA-SSA meeting session in October 2009. Beyond the specific research topics and tools, I want to be known for having a practical impact in Michigan. Thus, I want varieties that varieties that I develop to help meet the needs of the farmers and industry, and therefore be known for being a benefit to the wheat industry in Michigan. Beyond Michigan, I want to be known as a person who is actively engaged in the broader scientific community – one who is a useful collaborator and is happy to see a rising tide lift all the boats. I am eager for us to help each other achieve our goals and be a productive member of the scientific community.

**References:**

- Hazel and Patel (2004) Influence of processing on trichothecene levels. *Toxicology Letters* 153:51-59.
- Knott CA, Van Sanford DA, and Souza EJ (2008) Comparison of selection methods for the development of white-seeded lines from red x white soft winter wheat crosses. *Crop Science* 48: 1807-1816.
- Lewis JL, Siler L, Jiang GL, Ward RW (2008) History of FHB Resistance Evaluation in Michigan State Performance Trial, Red vs. White. In: Canty SM, Clark A, Walton E, Ellis D, Mundell J, Van Sanford D (Eds.), *Proceedings of the National Fusarium Head Blight Forum; 2008 Dec 2-4 Indianapolis, IN*. Lexington, KY: University of Kentucky, p. 174. Abstract and poster presentation.
- Peterson, H.C., Knudson, W.A. Abate, G. (2006). The economic impact and potential of Michigan's Agri-food system. The Strategic Marketing Institute Working Paper, Department of Ag. Economics, Michigan State University.