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RESEARCH MENTORING

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The Office of Research Ethics and Standards

The Center for Ethics and Humanities in the Life Sciences

The Graduate School

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http://grad.msu.edu/integrity.htm





INTRODUCTION

This edition of the MSU Research Integrity Newsletter reprints the entirety of the Report of the Task Force on Research Mentoring. Chaired by Dr. Hans Kende, MSU Distinguished Faculty member and member of the National Academy of Sciences, the Task Force of seven faculty, including two members of University Graduate Council, and a graduate student deliberated for eight months on the important topic of the roles and responsibilities regarding research mentoring. The Charge to the Task Force from Vice President for Research and Graduate Studies, Robert Huggett and me is also included in this Newsletter, as are a follow-up interview with Dr. Kende and short bios for the faculty and student participants.

University Graduate Council members voted to endorse the report on February 2, 2004 and approved an additional four recommendations for consideration by Faculty Council. UGC Chairperson, Eric Crawford, presented the package to Faculty Council on March 30, 2004 where it was approved.

Implementation by the Graduate School includes the printing of this document for wide distribution among faculty and graduate students, a web version of the entire document (http://grad.msu.edu/staff/mentoring.htm), and inclusion of the Report's recommendations and guidelines as part of Graduate Handbooks in each graduate program. We are working with Graduate Assistant/Associate Deans and Graduate Program Directors to accomplish this by Fall 2005.

Karen & Klomparens

GRADUATE SCHOOL INTRODUCTION TO THE MSU COMMUNITY

Colleagues,

In April 2003, Vice President Huggett and Dean Karen Klomparens charged a task force of faculty from across the campus, chaired by Hans Kende, MSU Distinguished Faculty and member of the National Academy of Science, to assess and consider afresh the collective University commitment to mentoring of graduate students.

What follows is a copy of the charge to the task force as well as their report as presented to Huggett, Klomparens and Provost Simon in January 2004. The Report was discussed in the Graduate School and included in the upcoming revision of the Graduate Handbook Template.

On February 2, 2004, the members of the University Graduate Council (UGC) voted to fully endorse the principles and recommendations in the Research Mentoring Task Force Report as requested, the Graduate School prepared this document for distribution as paper copies, as well as providing a web site.

Graduate assistant and associate deans were asked for input in March and continue to provide thoughtful commentary.

In addition to endorsing the full report, the UGC passed the following recommendations, which will be forwarded to Provost Simon and Vice President Huggett:

1. All graduate degree-granting units must have a graduate handbook, which addresses at least those items in the Graduate School Handbook Template (date of new template). The graduate handbooks will be submitted to the lead college of each graduate degree-granting unit and to the Graduate School for review. Handbooks must be submitted for review at least every five years. New graduate programs must have a graduate handbook approved for their first entering

class of students. Existing programs must revise their current handbooks to include at least those items in the Graduate School Handbook Template by fall 2005.

- 2. All new graduate program proposals sent to UGC should include a section on how the degree-granting unit intends to implement and monitor the Guidelines for Graduate Student Advising and Mentoring Relationships and the Guidelines for Integrity in Research and Creative Activities.
- 3. By fall 2006, degree-granting units should develop plans for implementing and monitoring the Guidelines for Graduate Student Advising and Mentoring Relationships and the Guidelines for Integrity in Research and Creative Activities, to be submitted to their lead college and to the UGC.
- 4. As part of their annual faculty review, graduate program directors should be reviewed by the head of their degree-granting unit according to the responsibilities outlined in the Guidelines for Graduate Student Advising and Mentoring Relationships.

On March 30, 2004, UGC Chair Eric Crawford presented the Report and the UGC's additional recommendations to Faculty Council. These were approved.

Your continued input is welcome!

Please feel free to provide input to Dean Klomparens, Vice President Huggett, or any member of the University Graduate Council.

(http://grad.msu.edu/staff/ugcmembers.pdf).

CHARGE TO THE TASK FORCE

April 22, 2003

To: Ann Austin, Pam Fraker, Jack Harkema, Sam Howerton, Manoochehr Koochesfahani, Mary C. Martin, Jim Miller, Judith Stoddart, and Rose Zacks (see pp. 18 & 19 for short bios)

From: Robert J. Huggett, Vice President for Research & Graduate Studies Karen L. Klomparens, Dean and Assistant Provost, The Graduate School

Subject: Request to Participate on a Research Mentoring Task Force

We write to request your participation on a University Task Force on Research Mentoring of Graduate Students to be chaired by Dr. Hans Kende, University Distinguished Professor of Plant Biology and member of the U.S. National Academy of Sciences. This important topic is of national concern and one in which there is also considerable interest at Michigan State University. We believe it is important and timely to assess where we are and consider afresh our collective commitment to mentoring of graduate students.

The importance of guiding, advising, and mentoring of graduate students and the mutual responsibility of graduate students, major professors, and guidance committee members for the overall quality of research, as well as the integrity of scholarship, research and professional standards is addressed at MSU, in the Faculty Handbook, the *Graduate Student Rights and Responsibilities* document, and the *Academic Programs* catalog. At the doctoral level in particular, the disciplinary culture of a department, program or school, plays a fundamentally important role in providing an environment that fosters this sense of expectations for quality of research and a sense of individual and collective responsibility for scholarly integrity.

As a specific part of the integrity of scholarship, the responsible conduct of research is a University responsibility which is carried out through a covenant between faculty mentors and their students at all levels, and especially at the doctoral level. The incidence of research misconduct in graduate education is topic of concern nationally, and we believe that even one such incident is cause for reflection about our own practices of mentoring.

The Task Force, to be comprised of senior faculty and one senior graduate student representing MSU's broad

disciplinary cultures, will be expected to begin work during the Summer 2003 and transmit conclusions and recommendations by the end of Fall Semester 03. Therefore, we ask that you confirm your availability to serve throughout this period of time (meeting schedules to be set by the Task Force) by Monday, April 28, 2003, to enable us to schedule an initial meeting of the Task Force as soon as possible. At that meeting, Dr. David Wright, Assistant Vice President for Research Ethics & Standards, will lay out the MSU context, and we will provide additional commentary and answer questions on the charge that is as follows:

- Examine the current roles, responsibilities, expectations, and practices at MSU, at the Department/College/University level and at the individual faculty member-graduate student level for the quality of research and the responsible/ ethical conduct of research.
- Identify, assess, and recommend "best practices" to meet and set expectations and responsibilities at all levels to ensure quality research and the integrity of the graduate research process.
- Assess and recommend what tasks need to be developed and completed collectively or centrally to assist departments, programs and individuals in this process.

We look forward to assisting your deliberations in considering this important topic.

c: Provost Simon, Dr. Hans Kende, College Deans

COVER MEMO FROM THE TASK FORCE

December 05, 2003

To: Robert J. Huggett, Vice President for Research and Graduate Studies Karen L. Klomparens, Dean of the Graduate School and Assistant Provost for Graduate Education

From: University Task Force on Research Mentoring of Graduate Students Hans Kende (chair), Ann E. Austin, Pamela J. Fraker, Jack R. Harkema, Manoochehr Koochesfahani, Mary C. Martin, James R. Miller, Judith A. Stoddart, and Rose T. Zacks

Supported by: Diane Doberneck, Research Ethics Education Coordinator Terry A. May, Director of Research Support and Development Services, Office of the Vice President for Research and Graduate Studies

The University Task Force on Research Mentoring of Graduate Students is submitting to you the following four documents:

- Items Suggested for Inclusion in the Graduate Handbook Template
- Guidelines for Graduate Student Advising and Mentoring Relationships
- Guidelines for Integrity in Research and Creative Activities
- Recommendations to the University

We are suggesting items for inclusion into the Graduate Handbook Template of the Graduate School to ensure that the intents laid down in the *Guidelines for Graduate Student Advising and Mentoring Relationships* and in the *Guidelines for Integrity in Research and Creative Activities* will be included in the graduate handbooks of departments, schools, and other degree-granting units.

The document *Guidelines for Graduate Student Advising and Mentoring Relationships* complements the *Code of Teaching Responsibility**. Because advising and mentoring relationships encompass a broad range of responsibilities, we felt that it was more important to be descriptive of that range than to develop a code of minimal standards. The document *Guidelines for Integrity in Research and Creative Activities* addresses all faculty, staff, and students who are engaged in such endeavors. We recognize that breaches in professional ethics can occur at all these levels.

The document *Recommendations to the University* contains suggestions that would reinforce continued adherence to the two *Guidelines*. We also recommend that faculty performance in graduate student advising be considered in determining salary increases, tenure, and promotion, just as the performance in teaching is.

Last but not least, the Task Force gratefully acknowledges the invaluable support and help that it received from Terry May from the very onset of the Task Force's work and from Diane Doberneck, who joined our deliberations in Fall Semester.

We would be happy to meet with you to discuss adoption of the four above-mentioned documents by the University.

^{*}http://www.hr.msu.edu/HRsite/Documents/Faculty/Handbooks/Faculty/Instruction/v-codeofteaching.htm

RECOMMENDATIONS TO THE UNIVERSITY

- 1. <u>Items Suggested for Inclusion in the Graduate</u> <u>Handbook Template</u>
 - The Task Force suggests a series of items for inclusion in the revised Graduate Handbook Template of the Graduate School. A printed version of the revised Template should be distributed to all colleges and graduate degree-granting units of the University, besides being made available on the web site of the Graduate School.
 - The Task Force further recommends that all graduate degree-granting units be required to revise their graduate handbooks, incorporating the revisions of the Template as applicable. Graduate degree-granting units that do not have a graduate handbook should be required to prepare one. Copies of the revised and newly written graduate handbooks should be submitted to the lead college of each graduate degree-granting unit and to the Graduate School by a specified date.
- 2. <u>Guidelines for Graduate Student Advising and</u> <u>Mentoring Relationships</u>
 - This document addresses the responsibilities of graduate degree-granting and program units, of administrators of graduate degree-granting and program units, of faculty advisors, guidance committees, and graduate students with respect to graduate studies. It should be distributed to the above administrators and graduate students in printed version, it should be included as an appendix in graduate handbooks, and it should be made available on the appropriate University web site.
 - The Task Force recommends that the topic of graduate student advising and mentoring be included in the orientation program of new faculty.

- The Task Force recommends that the University consider the performance of faculty as graduate student advisors so important that such performance will be taken into consideration in determining salary increases, tenure, and promotion.
- 3. <u>Guidelines for Integrity in Research and Creative</u> <u>Activities</u>
 - This document addresses all members of the University engaged in research and creative activities, namely faculty, staff (postdoctoral fellows, postdoctoral research associates, specialists, and technicians), and students. Breaches in professional ethics ranging from questionable practices to misconduct are known to have occurred at all these levels.
 - The Task Force recommends that the topic of integrity in research and creative activities be included in the orientation program of new faculty as well as of staff and students who will be engaged in research and creative activities. The Guidelines should be distributed to faculty, staff, and students in printed version, they should be included as an appendix in graduate handbooks, and should be made available on the appropriate University web site.
 - The Task Force recommends that all new faculty, staff and students who will be engaged in research or creative activities sign a statement that they have read and understood the responsibilities explained in the *Guidelines for Integrity in Research and Creative Activities*. These signed statements are to be retained by the respective academic units.

ITEMS SUGGESTED FOR INCLUSIONS IN THE GRADUATE HANDBOOK TEMPLATE (GHT)

1. Advising incoming graduate students

<u>Intent</u>: Entry into graduate school can be a stressful experience for many students. They are presented with a large and concentrated amount of information and they have to find their way in a new academic and administrative environment. Therefore, graduate degree-granting and program units, referred to in the following as academic units, will develop procedures to ease entry of students into graduate school. (GSRR*, 2.3.3 and 2.3.4.)

Suggestions:

- Each academic unit will develop a graduate handbook containing the essential features of the Graduate Handbook Template (http://grad.msu.edu/staff/ght.htm), as well as information particular to the respective academic unit and/or college. The Graduate Handbook will inform graduate students on course and program requirements, on the timetable for the selection of a faculty advisor and the formation of a guidance committee, on examination schedules, and on graduation requirements. The Handbook will be given to all entering graduate students and will serve as their guide throughout their studies.
- All entering graduate students will be required to participate in orientation session(s) organized by the academic unit and/or the college.
- Each entering graduate student will be advised on program requirements and course work to be taken during the first semester or academic year. If the student has not selected a faculty advisor prior to entering the graduate program, a committee of the academic unit, or the director of graduate studies, or an assigned temporary faculty advisor will provide the initial advisory functions.

2. <u>Selection of thesis/dissertation advisor</u>

<u>Intent</u>: Initiation and successful completion of independent research or creative activity requires early and continued advice and oversight by a faculty advisor on behalf of the academic unit. Therefore, academic units will develop policies and procedures to ensure that the faculty advisor of each graduate student will be selected in a timely fashion and that the relationship between the graduate student and the faculty advisor will be conducive to a successful academic experience and training in research or creative activities.

Suggestions:

- The time line for the selection of a permanent faculty advisor will be specified.
- The academic unit will establish procedures to help incoming graduate students select a faculty advisor.
- The selection of the permanent faculty advisor will be submitted for approval to the chair/director of the academic unit, or the director of graduate studies, or a committee of the academic unit.
- The academic unit will establish guidelines and expectations for successful faculty advising consistent with the *Guidelines for Graduate Student Advising and Mentoring Relationships* (page 9).

3. <u>Resolution of conflicts</u>

<u>Intent</u>: The University has established a judicial structure and process for hearing and adjudicating alleged violations of recognized graduate student rights and responsibilities (GSRR, Article 5). The first venue to resolve such conflicts informally or formally rests with the academic unit. Because the faculty advisor-graduate student relationship is deemed so important, special attention should be given to the resolution of conflicts between a graduate student and his or her faculty advisor.

^{*} Graduate Students Rights and Responsibilities http://www.vps.msu.edu/SpLife/default.pdf

Suggestions:

- The academic unit will establish policies and procedures for the resolution of conflicts between a graduate student and his or her faculty advisor or guidance committee and will communicate these policies and procedures to each graduate student. The initial task of conflict resolution may rest with the chair/director of the academic unit, the director of graduate studies, or a committee (*GSRR 5.1.2*).
- The academic unit will establish procedures for the timely change of the faculty advisor when such a change would best serve the progress of the graduate student in his or her program.
- 4. Formation of the guidance committee

<u>Intent</u>: The guidance committee is expected to share responsibility for reviewing the graduate student's progress and guiding the student toward completion of course and program requirements. Therefore, academic units will develop policies to ensure that the guidance committee of each graduate student will be formed in a timely fashion and that its composition will ensure proper guidance of the graduate student and maintenance of high professional standards in the graduate student's studies and research or creative activity (GSRR 2.4.2; 2.4.2.1; 2.4.2.2).

Suggestions:

- The academic unit will establish a time line for forming a guidance committee.
- The academic unit will establish procedures to advise graduate students on how to choose the members of their guidance committee.
- The composition of the guidance committee will be submitted to the chair/director of the academic unit for approval. To ensure uniform standards across the academic unit, the chair/director may add one appropriate member to the guidance committee.

5. <u>Review of graduate student progress</u>

<u>Intent</u>: Graduate students have a right to periodic evaluation of their academic progress, performance, and professional potential (GSRR 2.4.8). Therefore, academic units will develop procedures to review the performance of each graduate student at least once a year. To ensure a comprehensive assessment of the student's performance as well as the student's satisfaction in the graduate program, academic units are advised to consider a two-tier review system, namely a review by the guidance committee and faculty advisor and a review by an independent third party, such as the chair/director of the academic unit, the director of graduate studies, or a committee.

Suggestions:

- The guidance committee will review at least once a year the graduate student's progress in his or her research or creative activity as well as plans for work in the coming year. A report on the results of this review will be signed by the members of the guidance committee and by the graduate student. This report will be filed with the chair/director of the academic unit and will be placed in the graduate student's file, together with any response that the graduate student may have attached to the report of the guidance committee.
- Once a year, preferably before the date of • reappointment, the faculty advisor and the graduate student will complete the appropriate portions of an annual progress report (GSRR 2.4.8). Examples prepared by the University Graduate Council (1999) and the Graduate School are available on the web (http://grad.msu.edu/progress.htm). The faculty advisor and graduate student will meet to discuss this evaluation and, if applicable, sources of funding. The faculty advisor and the graduate student will sign the completed annual progress report, which will be submitted to the chair/director of the academic unit or the director of graduate studies and will be placed into the graduate student's file. Graduate students who wish to appeal any part of the faculty advisor's evaluation may do so in writing to the chair/director of the

academic unit or the director of graduate studies, and this appeal will be filed together with the annual progress report.

- Academic units are advised to consider instituting a meeting of the unit chair/director, or the director of graduate studies, or a committee with each graduate student to review all aspects of the annual progress report. At this occasion, the graduate student has the opportunity to discuss with the chair/director of the academic unit, the director of graduate studies, or the committee any aspects of his or her studies that seem relevant for successful completion of the graduate program, including problems that may hinder progress, and any appeal of the faculty advisor's evaluation (see above). Recommendations based on this review will be communicated in writing to the faculty advisor and the graduate student and will be placed in the graduate student's file.
- 6. Thesis/dissertation defense and final oral examination

<u>Intent</u>: The final master's or doctoral examination is the culmination of a student's graduate education and training and reflects not only on the accomplishments of the graduate student but also on the quality of the graduate program. Therefore, academic units will develop policies and procedures that will ensure the maintenance of expected professional standards in fulfilling the requirements for the respective higher degree.

Suggestions:

- The graduate student will present the results of the thesis/dissertation in a seminar open to the community.
- To ensure fairness in the examination procedure and maintenance of academic standards, the dean of the college or the chair/director of the academic unit may appoint an outside member to the examining committee. The outside member of the committee will read and critique the thesis/ dissertation, will participate in the oral part of the exam, and will submit a report to the dean of the college and/or the chair/director of the academic unit.

7. Integrity in research and creative activities

Intent: Integrity in research and creative activities is based on sound disciplinary practice as well as on a commitment to basic values such as fairness, equity, honesty, and respect. Students learn to value professional integrity and high standards of ethical behavior through interaction with members of their academic unit and their faculty advisor and by emulating exemplary behavior.

Suggestions:

- Each faculty advisor and graduate student will be provided with the document *Guidelines for Integrity in Research and Creative Activities* (page 9).
- The academic unit will develop as part of its academic program mechanisms for communicating and discussing standards of professional integrity appropriate for the discipline.

Michigan State University

GUIDELINES FOR GRADUATE STUDENT ADVISING AND MENTORING RELATIONSHIPS

Graduate education, research, and creative activities take place within a community of scholars where constructive relationships between graduate students and their advisors and mentors are essential for the promotion of excellence in graduate education and for adherence to the highest standards of scholarship, ethics, and professional integrity. The effective advising and mentoring of graduate students is the joint responsibility of the graduate degree-granting and program units (henceforth referred to as academic units), the faculty advisors, and the students. The following guidelines are intended to foster faculty-graduate student relationships that are characterized by honesty, courtesy, and professionalism and that provide students with intellectual support and guidance. These guidelines recognize that good advising and mentoring of graduate students entail a considerable commitment of time and effort on the part of the faculty and the academic unit. The academic unit forms the community of scholars responsible for cultivating a stimulating intellectual environment and, through the joint efforts of all faculty members of the unit, for mentoring of graduate students.

The responsibilities of the academic unit include:

- Preparing and maintaining a graduate handbook that includes the information outlined in the Graduate Handbook Template¹, as well as academic unit and college requirements for degree completion
- Providing opportunities for graduate students to interact with a wide array of colleagues from within and outside the University through such activities as speaker series, colloquia, and other formal and informal events

- Creating opportunities for graduate students to become familiar with the various forms of scholarship in the field
- Sharing responsibility with guidance committees and faculty advisors in fostering the professional and career development of graduate students, for example, by providing venues for honing professional writing and presentation skills and organizing seminars on such issues as ethics, professional integrity and grantsmanship

The responsibilities of the chair or director of the academic unit and/or director of graduate studies include:

- Knowing University and academic unit rules, procedures and policies applicable to graduate study, research, and creative activities (including those in Academic Programs², Graduate Student Rights and Responsibilities³ or Medical Student Rights and Responsibilities⁴, and Academic Freedom for Students at Michigan State University⁵) and ensuring that they are followed in the academic unit
- Distributing to incoming graduate students the academic unit's Graduate Handbook
- Organizing orientation sessions for incoming graduate students
- Ensuring that required courses and examinations are scheduled on a regular basis, thereby enabling graduate students to make timely progress in their degree programs

¹ The Graduate School, "Graduate Handbook Template" (http://grad.msu.edu/staff/handbook.pdf)

² Michigan State University "Academic Programs" (http://www.reg.msu.edu/ucc/AcademicProgramsUpdated.asp)

³ Spartan Life: Student Handbook and Resource Guide, Part II Rights and Responsibilities, "Graduate Student Rights and Responsibilities" (http://www.vps.msu.edu/SpLife/default.pdf)

⁴ Spartan Life: Student Handbook and Resource Guide, Part II Rights and Responsibilities, "Medical Student Rights and Responsibilities" (http://www.vps.msu.edu/SpLife/default.pdf)

⁵ Spartan Life: Student Handbook and Resource Guide, Part II Rights and Responsibilities, "Academic Freedom for Students at Michigan State University" (http://www.vps.msu.edu/SpLife/default.pdf)

- Providing advice on matters such as course selection until a permanent faculty advisor and guidance committee are selected, or appointing a committee or temporary advisor to assume that role
- Facilitating selection of a faculty advisor and guidance committee and facilitating changes of faculty advisor and/or guidance committee should this become necessary
- Monitoring at least annually the progress of students in the graduate program and the quality of their research or creative activity, as well as the standards and fairness of examinations
- Monitoring the performance of faculty advisors and guidance committees to ensure that graduate students are receiving appropriate mentoring
- Working toward fair resolution of conflicts between graduate students and faculty

The responsibilities of the faculty advisor include:

- Ensuring that graduate students receive information about requirements and policies of the graduate program
- Advising graduate students on developing a program plan, including appropriate course work, research or creative activity, and on available resources
- Advising graduate students on the selection of a thesis or dissertation topic with realistic prospects for successful completion within an appropriate time frame and on the formation of a guidance committee
- Providing training and oversight in creative activities, research rigor, theoretical and technical aspects of the thesis or dissertation research, and in professional integrity
- Encouraging graduate students to stay abreast of the literature and cutting-edge ideas in the field
- Helping graduate students to develop professional skills in writing reports, papers, and grant

proposals, making professional presentations, establishing professional networks, interviewing, and evaluating manuscripts and papers

- Providing regular feedback on the progress of graduate students toward degree completion, including feedback on research or creative activities, course work, and teaching, and constructive criticism if the progress does not meet expectations
- Helping graduate students develop into successful professionals and colleagues, including encouraging students to participate and disseminate results of research or creative activities in the appropriate scholarly or public forums
- Facilitating career development, including advising graduate students on appropriate job and career options, as well as on the preparation of application materials for appropriate fellowship, scholarship, and other relevant opportunities
- Writing letters of reference for appropriate fellowship, scholarship, award, and job opportunities
- Providing for supervision and advising of graduate students when the faculty advisor is on leave or extended absence

The responsibilities of the guidance committee include:

- Advising graduate students on course work, research, or creative activities
- Providing at least annually feedback and guidance concerning progress toward the degree
- Administering exams in a fair and professional manner
- Reviewing the thesis or dissertation in a timely, constructive and critical manner

The responsibilities of the graduate student include:

- Learning and adhering to University and academic unit rules, procedures, and policies applicable to graduate study and research or creative activities, including those outlined in *Academic Programs*², *Graduate Student Rights and Responsibilities*³ or *Medical Student Rights and Responsibilities*⁴, and *Academic Freedom for Students at MSU*⁵
- Meeting University and academic unit requirements for degree completion
- Forming a guidance committee that meets University requirements^{2,3}, as well as requirements that are outlined in the Graduate Handbook of the academic unit
- Following disciplinary and scholarly codes of ethics in course work, thesis or dissertation research, and in creative activities
- Practicing uncompromising honesty and integrity according to University and federal guidelines in collecting and maintaining data
- Seeking regulatory approval for research in the early stages of thesis or dissertation work where applicable
- Keeping the faculty advisor and guidance committee apprised on a regular basis of the progress toward completion of the thesis or dissertation

RESOURCES

- "Adviser, Teacher, Role Model, Friend: On Being a Mentor to Students in Science and Engineering", National Academy Press, Washington, D.C., 1997, 84 pp (http://bob.nap.edu/ html/mentor/)
- "Integrity in Scientific Research: Creating an Environment that Promotes Responsible Conduct", National Academies Press, Washington, D.C., 2002, 216 pp (http:// www.nap.edu/books/0309084792/html/)
- "On Becoming a Scientist: Responsible Conduct in Research", Second Edition, National Academy Press, Washington, D.C., 1995, 27 pp (http://bob.nap.edu/html/obas/)
- "On the Right Track: A Manual for Research Mentors", M.F. King; D.D. Denecke (Ed.), Council of Graduate Schools, Washington, D.C., 2003, 26 pp (http://www.cgsnet.org/ pdf/RightTrackExSum.pdf)

GUIDELINES FOR INTEGRITY IN RESEARCH AND CREATIVE ACTIVITIES

The conduct of research and creative activities by faculty, staff, and students is central to the mission of Michigan State University⁶ and is an institutional priority. Faculty, staff, and students work in a rich and competitive environment for the common purpose of learning, creating new knowledge, and disseminating information and ideas for the benefit of their peers and the general public. The stature and reputation of MSU as a research university are based on the commitment of its faculty, staff, and students to excellence in scholarly and creative activities and to the highest standards of professional integrity. As a partner in scholarly endeavors, MSU is committed to creating an environment that promotes ethical conduct and integrity in research and creative activities.

Innovative ideas and advances in research and creative activities have the potential to generate professional and public recognition and, in some instances, commercial interest and financial gain. In rare cases, such benefits may become motivating factors to violate professional ethics. Pressures to publish, to obtain research grants, or to complete academic requirements may also lead to an erosion of professional integrity.

Breaches in professional ethics range from questionable research practices to misconduct.⁷ The primary responsibility for adhering to professional standards lies with the individual scholar. It is, however, also the responsibility of advisors and of the disciplinary community at large. Passive acceptance of improper practices lowers inhibitions to violate professional ethics.

Integrity in research and creative activities is based not only on sound disciplinary practice but also on a commitment to basic personal values such as fairness, equity, honesty, and respect. These guidelines are intended to promote high professional standards by everyone faculty, staff, and students alike.

Key Principles

Integrity in research and creative activities embodies a range of practices that includes:

- Honesty in proposing, performing, and reporting research
- Recognition of prior work
- Confidentiality in peer review
- Disclosure of potential conflicts of interest
- Compliance with institutional and sponsor requirements
- Protection of human subjects and humane care of animals in the conduct of research
- Collegiality in scholarly interactions and sharing of resources
- Adherence to fair and open relationships between senior scholars and their coworkers

<u>Honesty in proposing, performing, and reporting</u> <u>research</u>. The foundation underlying all research is uncompromising honesty in presenting one's own ideas in research proposals, in performing one's research, and in reporting one's data. Detailed and accurate records of primary data must be kept as unalterable documentation of one's research and must be available for scrutiny and critique. It is expected that researchers will always be truthful and explicit in disclosing what was done, how it was done, and what results were obtained. To this end, research aims, methods, and outcomes must be described in sufficient detail such that others can judge the quality

⁶Michigan State University "Mission Statement" approved by the Board of Trustees on June 24-25, 1982, (http://www.msu.edu/unit/provost/resources/mission.html)

⁷MSU Faculty Handbook, Chapter VI, "Research and Creative Endeavor—Procedures Concerning Allegations of Misconduct in Research and Creative Activities" (http://www.hr.msu.edu/HRsite/Documents/Faculty/Handbooks/Faculty/ResearchCreativeEndeavor/vi-miscon-toc.htm)

of what is reported and can reproduce the data. Results from valid observations and tests that run counter to expectations must be reported along with supportive data.

<u>Recognition of prior work</u>. Research proposals, original research, and creative endeavors often build on one's own work and also on the work of others. Both published and unpublished work must always be properly credited. Reporting the work of others as if it were one's own is plagiarism. Graduate advisors and members of guidance committees have a unique role in guiding the independent research and creative activities of students. Information learned through private discussions or committee meetings should be respected as proprietary and accorded the same protection granted to information obtained in any peer-review process.

Confidentiality in peer review. Critical and impartial review by respected disciplinary peers is the foundation for important decisions in the evaluation of internal and external funding requests, allocation of resources. publication of research results, granting of awards, and in other scholarly decisions. The peer-review process involves the sharing of information for scholarly assessment on behalf of the larger disciplinary community. The integrity of this process depends on confidentiality until the information is released to the public. Therefore, the contents of research proposals, of manuscripts submitted for publication, and of other scholarly documents under review should be considered privileged information not to be shared with others, including students and staff, without explicit permission by the authority requesting the review. Ideas and results learned through the peer-review process should not be made use of prior to their presentation in a public forum or their release through publication.

Disclosure of potential conflicts of interest. There is real or perceived conflict of interest when a researcher has material or personal interest that could compromise the integrity of the scholarship. It is, therefore, imperative that potential conflicts of interest be considered and acted upon appropriately by the researcher. Some federal sponsors require the University to implement formal conflict of interest policies. It is the responsibility of all researchers to be aware of and comply with such requirements. <u>Compliance with institutional and sponsor</u> requirements. Investigators are granted broad freedoms in making decisions concerning their research. These decisions are, however, still guided, and in some cases limited, by the laws, regulations, and procedures that have been established by the University and sponsors of research to protect the integrity of the research process and the uses of the information developed for the common good. Although the legal agreement underlying the funding of a sponsored project is a matter between the sponsor and the University, the primary responsibility for management of a sponsored project rests with the principal investigator and his or her academic unit.

Protection of human subjects and humane care of animals in the conduct of research. Research techniques should not violate established professional ethics or federal and state requirements pertaining to the health, safety, privacy, and protection of human beings, or to the welfare of animal subjects. Whereas it is the responsibility of faculty to assist students and staff in complying with such requirements, it is the responsibility of all researchers to be aware of and to comply with such requirements.

Collegiality in scholarly interactions and sharing of resources. Collegiality in scholarly interactions, including open communications and sharing of resources, facilitates progress in research and creative activities for the good of the community. At the same time, it has to be understood that scholars who first report important findings are both recognized for their discovery and afforded intellectual property rights that permit discretion in the use and sharing of their discoveries and inventions. Balancing openness and protecting the intellectual property rights of individuals and the institution will always be a challenge for the community. Once the results of research or creative activities have been published or otherwise communicated to the public, scholars are expected to share materials and information on methodologies with their colleagues according to the tradition of their discipline.

Faculty advisors have a particular responsibility to respect and protect the intellectual property rights of their advisees. A clear understanding must be reached during the course of the project on who will be entitled to continue what part of the overall research program after the advisee leaves for an independent position. Faculty advisors should also strive to protect junior scholars from abuses by others who have gained knowledge of the junior scholar's results during the mentoring process, for example, as members of guidance committees.

Adherence to fair and open relationships between senior scholars and their coworkers. The relationship between senior scholars and their coworkers should be based on mutual respect, trust, honesty, fairness in the assignment of effort and credit, open communications, and accountability. The principles that will be used to establish authorship and ordering of authors on presentations of results must be communicated early and clearly to all coworkers. These principles should be determined objectively according to the standards of the discipline, with the understanding that such standards may not be the same as those used to assign credit for contributions to intellectual property. It is the responsibility of the faculty to protect the freedom to publish results of research and creative activities. The University has affirmed the right of its scholars for first publication except for "exigencies of national defense".⁸ It is also the responsibility of the faculty to recognize and balance their dual roles as investigators and advisors in interacting with graduate students of their group, especially when a student's efforts do not contribute directly to the completion of his or her degree requirements.

Misconduct in Research and Creative Activities

Federal⁹ and University⁷ policies define misconduct to include *fabrication* (making up data and recording or reporting them), *falsification* (manipulating research materials, equipment or processes, or changing or omitting data such that the research is not accurately represented in the record), and *plagiarism* (appropriation of another person's ideas, processes, results, or words without giving appropriate credit). Serious or continuing non-compliance with government regulations pertaining to research may constitute misconduct as well. University policy also defines retaliation against whistle blowers as misconduct. Misconduct does not include honest errors or honest differences of opinion in the interpretation or judgment of data.

The University views misconduct to be the most egregious violation of standards of integrity and as grounds for disciplinary action, including the termination of employment of faculty and staff, dismissal of students, and revocation of degrees. It is the responsibility of faculty, staff, and students alike to understand the University's policy on misconduct in research and creative activities⁷, to report perceived acts of misconduct of which they have direct knowledge to the University Intellectual Integrity Officer, and to protect the rights and privacy of individuals making such reports in good faith.

RESOURCES

- "Guidelines on Authorship", Endorsed by the University Research Council, January 15, 1998 (http://www.msu.edu/ unit/vprgs/authorshipguidelines.htm)
- "Integrity in Scientific Research: Creating an Environment that Promotes Responsible Conduct", National Academies Press, Washington, D.C., 2002, 216 pp (http:// www.nap.edu/books/0309084792/html)
- "Research Data: Management, Control, and Access Guidelines", Endorsed by the University Research Council, February 7, 2001 (http://www.msu.edu/unit/ vprgs/research_data.htm)

⁸MSU Faculty Handbook, Chapter VI, "Research and Creative Endeavor—Sponsored Research and Creative Endeavor" (http:// www.hr.msu.edu/HRsite/Documents/Faculty/Handbooks/Faculty/ ResearchCreativeEndeavor/vi-sponsoredresearch.htm)

⁹ Office of Science and Technology Policy, "Notice of Final Policy", 65 CFR 76260.

INTERVIEW WITH HANS KENDE, PH.D.

UNIVERSITY DISTINGUISHED PROFESSOR OF PLANT BIOLOGY, MICHIGAN STATE UNIVERSITY CHAIR OF THE TASK FORCE ON RESEARCH MENTORING OF GRADUATE STUDENTS

Diane Doberneck (**DD**) Hans Kende (**HK**)

DD: What gave rise to the University Task Force on Research Mentoring of Graduate Students?

HK: The immediate reason was a professional misconduct case involving a graduate student. Misconduct cases are not necessarily restricted to graduate students, however; they can happen at any professional level. At the first meeting of the Task Force, Dr. Karen Klomparens, Dean of the Graduate School, and Dr. Robert Huggett, Vice President for Research and Graduate Studies, cited other cases of professional misconduct, both at MSU and at other institutions. The graduate student involved in the misconduct case that triggered the formation of the Task Force claimed not to have had adequate advising at MSU. The Task Force was charged with writing guidelines on research mentoring to address the problem of misconduct.

Originally, I concluded from the charge to the Task Force that we would write one report addressing the issues of both advising and misconduct. As the Task Force progressed in its deliberations, I realized, however, that research mentoring and misconduct had to be treated in different documents. Our recommendations contained in Guidelines for Graduate Student Advising and Mentoring Relationships would be written separately from the Guidelines for Integrity in Research and Creative Activities. In talking with Dr. Frank Rutledge, Acting Chair of the Departments of Theater and Art, and Dr. James Forger, Director of the School of Music, it became clear to me that our recommendations should also include fields where creative activities rather than research constituted the major part of scholarly endeavors.

Writing the two reports became the focus of two subcommittees of the Task Force. The recommendations of these subcommittees were then finalized by the entire Task Force. In addition, the Task Force also made recommendations for the revised Graduate Handbook Template of the Graduate School, which will serve as the sample for graduate handbooks of all higher degree-granting units. Lastly, we wrote a summary of our recommendations to the University to help facilitate implementation of the recommendations contained in our two main reports. The writing of these four documents greatly expanded the scope of the Task Force's work. Our recommendations deal, in a comprehensive manner, with problems encountered at all higher degreegranting and research institutions, namely advising and mentoring of graduate students and prevention of professional misconduct in research and creative activities.

DD: From your standpoint, what are the key points that the Task Force Reports address?

HK: Let's address the components of the reports separately. First, the mentoring and advising document and the recommendations for the Graduate Handbook Template are complementary to each other. Writing the mentoring and advising document posed major challenges because the culture and traditions in various disciplines are so different. We had to come to grips with these differences. There are two extremes in graduate student advising and mentoring. At one end of the spectrum—take my lab as an example— federal grants are used to support graduate assistants who work closely with their advisors. Principal investigators are often in

daily contact with their coworkers and conduct weekly research meetings. Papers and other communications, e.g., at professional meetings, are co-authored by students and the principal investigator. This results in a very close relationship because there is strong joint interest in the progress of the work. Grants won't be renewed without such progress. Such close professional relationships probably hold for all of the sciences, engineering, and medical research, where graduate students work as research assistants and are supported by a grant to the advisor or by a fellowship obtained for a specific piece of work. The same relationship also holds for junior scholars doing postdoctoral work

At the other end of the spectrum, advisor-graduate student relationships consist of arrangements where a student works on a project that is funded by a grant to the advisor but that is not part of the student's thesis or dissertation. In such instances, it is important to protect intellectual property as well as to insure the student's progress towards a higher degree. Yet in other instances, a graduate student convinces a faculty member to act as advisor, but the student's work is independent of the advisor's research or creative activity. Effective and timely advising and mentoring of such graduate students has to be assured as well.

In each of these cases, there are specific problems in the relationship between the advisor and student. Such differences in graduate student advising and mentoring required a broadly based approach in our recommendations and called for continuous awareness of potential problems under different circumstances.

The history of the Guidelines for Graduate Student Advising and Mentoring Relationships reflects an evolution in our understanding of the problems involved. At first, I argued for writing a Code of Graduate Student Advising parallel to the Code of Teaching Responsibility. As we wrote and discussed this document, Judith Stoddart, a member of the Task Force, pointed out that the Code of Teaching Responsibility spells out only minimum levels of responsibilities. However, we were writing a far more encompassing document. The Guidelines for Graduate Student Advising and Mentoring Relationships spell out the responsibilities of everyone concerned with graduate programming, namely of the degree-granting unit, the chair or director of the unit, the director of graduate studies, the faculty, the guidance committee, and the graduate student.

The Guidelines for Integrity in Research and Creative Activities has several key parts, including adherence to fair and open relationships between scholars and co-workers. I have never seen that relationship spelled out in this manner. The Integrity Guidelines also make recommendations on bread-and-butter issues. They are based on mutual respect, fairness, and respect for effort and creativity. For example, they state that it's important to establish the authorship and the order of the authors' names on publications early on and to communicate them to everyone involved in a joint project. This is important because problems concerning authorship often fuel tensions and bad feelings. The most contentious issues in assigning credit are sometimes not between principal investigators and coworkers, but between coworkers themselves. So much so, that some publications contain footnotes saying that "x" and "y" contributed equally to the work.

Again, one has to understand that the practices may be different in different fields. In some fields, the principal investigator is automatically listed as the first author. In other fields, the principal investigator is traditionally the last author. In biology, I am always listed as the last author, unless I perform the major part of work with my own hands. I served once on a University awards committee on which some members felt that the faculty member under consideration was not qualified for the award because he or she was listed last on all publications. In some fields, being listed last indicates that that author's contributions were insignificant. University committees have to be aware of cultural differences between fields, e.g., during the tenure review process. In all situations, it's important to have a clear understanding of the order of authorship and what it means.

I think it is most important that the Guidelines for Integrity in Research and Creative Activities be read by everyone engaged in such endeavors and that everyone sign a statement affirming that the principles outlined in this document have been read and understood. This will ensure that everybody in the community will have been told what the expectations and rules of ethical scholarship are.

DD: What were some of the challenges associated with the writing the Guidelines for Graduate Student Advising and Mentoring Relationships?

HK: The biggest challenge was to understand the differences in cultures of different fields. In situations where a graduate student is supported through a grant of his or her advisor and where the graduate students and advisors will be coauthors of publications, the student and advisor have usually a close professional relationship. In situations where there is no funding involved or where advisors and graduate students will not be co-authors, there may be a much looser relationship. The biggest challenge was finding common denominators for all such situations.

An important point of the Task Force's recommendation is the requirement that each degreegranting unit have a Graduate Handbook that is approved by the Graduate School and the lead college. We have provided general guidelines by spelling out the intent of each set of recommendations and we have given quite specific suggestions that degree-granting units may adopt in accordance with their needs and the culture of their discipline.

DD: The task force makes several recommendations. From your perspective, what will be some of the challenges in implementing them?

HK: Resistance may be generated by some of our suggestions for the Graduate Handbook Template on reviewing the progress of graduate students. Questions may be raised with respect to the independent, "third-party" review. We suggest three steps as optimal or best practices.

Step 1: We suggest that the Guidance Committee meet with each graduate student at least once a year to assess progress and plans for future work. The results of this review will be formalized in a written report for the file of the student. In most, if not all, fields of science, this procedure is routine, and I don't expect that our recommendation will generate much opposition. I hope that disciplines outside the sciences will find this a useful procedure also, if it is not already implemented.

Step 2: We suggest that the graduate student and the advisor meet at least once a year for a review of all aspects of the student's studies. The Graduate School has created a template form for such a review. This meeting of the graduate student with the advisor will include some of the same topics as the meeting with the Guidance Committee, such as progress toward degree. However, it will also deal with issues of funding, if applicable, with professional development and opportunities. This recommendation should not generate much opposition either.

Step 3: A more contested issue may be the recommendation for a third-party review. This step adds another layer of reviewing, which some may call too time consuming. The "third party" may be the unit chair or director, the director of graduate studies, or a committee. A third-party review would give the student the opportunity to discuss issues that he or she would find difficult to discuss with a guidance committee or with the advisor. Such matters may include complaints, e.g., about problems in getting adequate advice. A third-party review may uncover some minor problems that can be dealt with directly by the department chair or program coordinator. If minor problems are caught early, they may not become more serious ones with time. The "third party" will write a report or letter to the advisor and for the student's file. In my unit, the Plant Research Laboratory, I have found this procedure to be extremely useful and time well spent.

DD: Were there important issues that were not included in the report?

- **HK:** Everything thought to be important was included in the report. We did not mince words or refrain from making recommendations for political reasons.
- **DD:** Is there anything else you would like to add about the Task Force on Research Mentoring of Graduate Students?
- **HK:** It was probably a good idea to have the Task Forced chaired by someone who is not an administrative expert of the issues under discussion but who has 38 years of experience at MSU in research, teaching, and advising. The cooperative effort of a group of faculty with different disciplinary backgrounds was exciting and stimulating. I met wonderful colleagues whom I would never have had the occasion to meet otherwise. The different points of view were very interesting.

One cannot prevent all professional misconduct or occasional poor advising by outlining standard operating procedures. If that were the case, our laws would have established ideal societies. The recommendations of the Task Force spell out expectations, best practices, and some absolute rules in professional conduct, while establishing safeguards for the rights of everybody engaged in research and creative activities. I was extremely pleased with the reception of our recommendations by different entities of the University and by the resolve of the administration to implement them.

DD: Thank you, Dr. Kende.

MENTORING TASK FORCE MEMBERS

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Hans Kende is University Distinguished Professor of Plant Biology at Michigan State University. Dr. Kende holds a Ph.D. from the University of Zurich. His work at the DOE Plant Research Laboratory deals mainly with the biosynthesis and action of plant hormones and the hormonal regulation of growth. Dr. Kende was the recipient of the Distinguished Faculty Award in 1988 and the University Distinguished Professor Award in 1996. Dr. Kende is a member of both the U.S. National Academy of Sciences and the German Academy of Natural Scientists.

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