

MSCI

MASTER OF SCIENCE IN
CLINICAL INVESTIGATION PROGRAM

TRAINING in
CLINICAL AND
TRANSLATIONAL
RESEARCH



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Vanderbilt
MSCI

Course
Catalog

MSCI Course Descriptions

2016-2018

MSCI Coursework

Coursework in the MSCI program facilitates the learner's mastery of content knowledge essential to research in clinical and translational science. In addition, MSCI coursework focuses on the practical application of theoretical concepts, in particular, application to the MSCI final project.

Requirements for the MSCI Degree

DIDACTIC WORK: Trainees must complete 35 credit hours of courses covering the essentials of study design, biostatistics, ethics, drug development and data analysis. It is expected that course work will comprise 20% of the trainee's time commitment. The course schedule is designed to maximize protected time for clinical and translational research.

MENTORED RESEARCH APPRENTICESHIP: The core of the MSCI Program will be the completion of a mentored research project. The research must be patient-oriented and involve direct measurements on patient-derived samples or the use of investigational therapeutic or diagnostic techniques. The mentor must be an established physician-scientist with experience in clinical and translational research. Use of the Vanderbilt University Clinical Research Center will be encouraged. The research project will account for 80% of the trainee's commitment to the program.

CAREER PATH DEVELOPMENT: A monthly seminar series, Clinical Scientist Career Seminars, permits trainees to meet successful clinical and translational researchers. Topics of discussion will include academic "rules of the road," time management, promotion/tenure issues, grants management, and overall program evaluation. Trainees will also hone their scientific communication skills.

FINAL PROJECT SUBMISSION: The trainee will submit a manuscript to a peer-reviewed journal, provide a completed proposal for a federal or major foundation grant, or develop a Master's thesis based on their research project. Completion of the thesis requirement will be evaluated by the MSCI Promotions Committee.

Core courses comprise 35 credit hours; a minimum of 35 credit hours are required for graduation. Trainees may elect to enroll in one or more of the selected elective courses to further support their research project.

Biostatistics I

CORE COURSE

Course Director: Daniel Byrne, MS
Fall [4 hours credit] Byrne

This course will teach practical, modern biostatistical skills and help the student to become multilingual regarding statistical software. Students will use several statistical software packages to learn data analysis methods for reproducible research using actual clinical research data sets. Students will also learn about statistical power and sample size calculations using the software PS and nQuery Advisor. An emphasis will be placed on performing statistical analyses and interpreting output. Commonly used statistical methods will be explained as well as the techniques that experienced biostatisticians use to analyze data.

Texts & Readings:

- An Introduction to Stata for Health Researchers. 4th edition. Svend Juul and Morten Frydenberg. 2014 Stata Press
ISBN-10: 1597181358 ISBN-13: 978-1597181358
- Basic Statistics for the Health Sciences. 5th edition. Jan Kuzma and Steve Bohnenblust. 2004 McGraw-Hill
ISBN-10: 0072844035 ISBN-13: 978-0072844030
- Publishing Your Medical Research. 2nd edition. Daniel Byrne. 2016 Wolters Kluwer
ISBN-10: 1496353862 ISBN-13: 978-1496353863

Software:

R
SPSS
STATA
PS
nQuery
Advisor

Biostatistics II

CORE COURSE

Course Director: Frank Harrell, PhD and Thomas Stewart, PhD
Spring [4 hours credit] Harrell, Stewart

The primary focus of Biostatistics II is the multivariable regression model which is the fundamental tool that researchers use for prediction, effect estimation, and hypothesis testing. This course covers the most commonly used regression models (linear, logistic, ordinal, time-to-event, and serial) plus general methods applicable to all regression models such as restricted cubic splines, bootstrapping, multiple imputation for missing data, model diagnostics, and validation. There is an emphasis on aspects related to clinical and translational study design.

Texts & Readings:

- The Analysis of Biological Data, 2nd Edition by MC Whitlock and Dolph Schluter *Required text*
- Harrell FE: Regression Modeling Strategies, 2nd edition, 2015 (available at the VU bookstore at 2525 West End Ave. and at Amazon) *Required text*
- Dupont WD: Statistical Modeling for Biomedical Researchers, 2nd edition, 2009 *Recommended text (excellent STATA resources)*

Prerequisite, MSCI Biostatistics I 524-5009 and Epidemiology I.

Case Studies in Clinical Investigation I

CORE COURSE

Course Directors: T. Alp Ikizler, MD and Eric D. Austin, MD, MSCI
Fall [1 hour credit] Ikizler, Austin

The Case Studies I course is designed to utilize a studio process to enrich trainee research. Studios are structured, dynamic sessions which bring together relevant research experts with the purpose of enhancing research quality, improving funding success, fostering advances in clinical practice and improvements in patient health, increasing publications and generating new hypotheses. Participants include 2-6 experienced faculty, your mentor, your MSCI peers, and the MSCI program directors.

You choose the most appropriate studio depending on the stage of your research: hypothesis generation, aims, study design, implementation, analysis and interpretation, translation, manuscript development, or grant development. Presentations should be conducted as if presenting at a research conference.

Attendance at peers' studios is expected as it will foster critical thinking from an interdisciplinary approach, collegiality, and collaboration.

Case Studies in Clinical Investigation II

CORE COURSE

Course Directors: T. Alp Ikizler, MD and Eric D. Austin, MD, MSCI
Spring [1 hour credit] Ikizler, Austin

The Case Studies II course provides an opportunity to present and discuss the progress and results of the trainees' primary MSCI project. In accomplishing this goal, the course utilizes a studio process and/or presentation format.

You choose the most appropriate format depending on the stage of your research: presentation, manuscript studio, data analysis studio, or grant review studio. Studios will be conducted in the same manner as in Case Studies I. Presentations should be conducted as if presenting at a research conference.

Attendance at peers' studios is expected as it will foster critical thinking from an interdisciplinary approach, collegiality, and collaboration.

Clinical Scientist Career Seminars

CORE COURSE

Course Directors: T. Alp Ikizler, MD and Eric D. Austin, MD, MSCI
Fall and Spring [1 hour credit] Ikizler, Austin

This seminar series, conducted in conjunction with the office of Clinical and Translational Scientist Development, features two pathways based on the trainee's current career stage:

Translational Bridge

Post-doctoral MD and PhD investigators completing training and establishing careers in clinical and translational research;

Newman Society

Junior faculty members pursuing a career as a physician-scientist or as a clinical educator with significant clinical research involvement.

Topics of discussion will include academic "rules of the road," time management, promotion/tenure issues, publication compliance, independence, scientific branding, grants management, and overall program evaluation.

Trainees will also submit a poster abstract to the annual Clinical and Translational Research Forum hosted in the fall.

The seminars occur throughout the MSCI matriculation.

Clinical Trials

CORE COURSE

Course Director: Yu Shyr, PhD
Fall [3 hours credit] Shyr

This course will cover design and data analysis for clinical trials in biomedical research. Primary topics include specification of study objectives, design options, ethical guidelines, randomization, blinding, sample size determination and power analysis, interim monitoring and data analysis appropriate for parallel, crossover, nested, factorial and group allocation designs. Other topics include role of FDA in the drug approval process, adaptive trial designs, non-inferiority trials and bio-equivalence trials. Emphasis is on practical use of methods rather than formal statistical theory.

Texts & Reading:

- Friedman, Furberg, Demets, Reboussin, and Granger. Fundamentals of Clinical Trials. 5th ed. ISBN 978-3-319-18539-2 (e-book)
ISBN 978-3-319-18538-5 (hardcopy)

Drug and Device Development

CORE COURSE

Course Director: J. Matthew Luther, MD, MSCI
Summer [3 hours credit] Luther

This seminar styled course is designed to provide an overview of the drug and device development process and will include issues of drug discovery, pre-clinical drug development, Phase I through IV human testing, device development, and the role of the FDA in regulatory affairs. Learning objectives will include:

1. To provide an overview of the drug development process from initial compound discovery, through clinical trials, to post-marketing issues;
2. To provide an overview of device development, and to contrast this to the process of drug development;
3. To provide some insight into the function of the Food & Drug Administration (FDA);
4. To discuss topical issues related to drugs, devices, and the FDA by using current events in the news.

Genetics, Genomics, and Molecular Medicine

CORE COURSE

Course Director: Rizwan Hamid, MD, PhD
Spring [4 hours credit] Hamid

The main goal of this course is to provide an up-to-date perspective in genomics as it applies to clinical practice and medical research and thus to enhance knowledge and skills in this rapidly evolving field. This course is designed to give physicians and life-scientist trainees an overview of genomic medicine and how best to utilize it in both clinical practice and research projects. The course will introduce students to key concepts in genetics and how these concepts affect genomic data interpretation and study design. Students will learn about a number of approaches that can be used to biologically test these data. The course format will be a mix of interconnected lectures, hands-on workshops, supplemented by online training modules.

Texts & Readings:

- Recommended: *Thompson & Thompson Genetics in Medicine*, (Robert L. Nussbaum MD FACP FACMG (Author), Roderick R. McInnes CM MD PhD FRS(C) FCAHS FCCMG (Author), Huntington F Willard PhD (Author))

Grant Writing

CORE COURSE

Course Director: Sunil Kripalani, MD, MSc, SFHM
Summer [1 hour credit] Kripalani

This course provides a foundation in grant writing for the early career scientist. Core topics include an overview of funding agencies and award mechanisms, as well as how to identify funding opportunities, plan an application, construct an impactful research plan, develop a budget, and succeed at grantsmanship. Optional sessions discuss career development awards, research mentorship, VUMC institutional awards and resources, VA grants, NIH biosketch development, and training in the responsible conduct of research. Students will also learn how grants are reviewed and scored, complete a grant review, and participate in a mock study section.

Master's Research

CORE COURSE

Course Directors: T. Alp Ikizler, MD and Eric D. Austin, MD, MSCI

Summer [1 hour credit] Ikizler, Austin

Fall [3 hours credit] Ikizler, Austin

Spring [3 hours credit] Ikizler, Austin

Trainees will participate in this course throughout the first and second years of the MSCI program. The Master's Research course, along with the Case Studies series, is designed to guide trainees to the successful completion of the Master's Final project.

All trainees are required to spend a minimum of 80% time in research activities, which include didactic coursework and activities within the mentor's lab.

Medical Writing for Clinical Investigators

CORE COURSE

Course Director: Daniel Byrne, MS
Spring [2 hours credit] Byrne

This course is designed to teach clinical investigators medical writing skills required to publish scientific articles in a peer-reviewed medical journal. Since trainees in the MSCI program are expected to complete their Master's thesis based on their research project in the Spring of year 2, this course is scheduled prior to this deadline to assist students in writing their thesis/manuscript. Teaching will consist of demonstrations and discussions of how to improve the writing quality using each student's thesis-in-progress as an example. Students will be expected to write and revise their Master's thesis as course-work, no additional written assignments will be required.

Texts & Readings:

- Publishing Your Medical Research. 2nd edition. Daniel Byrne. 2016
Wolters Kluwer. ISBN-10: 1496353862 ISBN-13: 978-1496353863

Research Ethics and Scientific Integrity

CORE COURSE

Course Director: TBA
Summer [1 hour credit]

This course is a systematic examination of the ethical concepts and standards of responsible conduct of research in biomedical science and clinical investigation. Its aim is to provide post-doctoral and graduate trainees in clinical research a framework in which to recognize, examine, resolve, and prevent ethical questions and conflicts in their professional work.

Objectives:

Upon successfully completing this class, students will be able to:

1. Trace the historical development and critique concepts of scientific integrity and research ethics – including legal and socio-religious influences – in biomedical science and clinical investigation;
2. Recognize, identify, and analyze questions central to the ethical problems in biomedical science and clinical research using relevant professional and regulatory standards;
3. Formulate recommendations for preventing and/or resolving ethical conflict in biomedical science and clinical research and promoting responsible conduct of research; and
4. Identify the appropriate institutional resources for addressing questions related to ethics and integrity in biomedical science and clinical research in academic and nonacademic settings.

Vanderbilt MSCI | Policies

MSCI Academic Policies

2016-2018

MSCI Policies

The following section includes policies that govern the MSCI program. Policies not covered in the MSCI Course Catalog may be found in *Vanderbilt University School of Medicine Catalog*.

Acceptance of Transfer Credits

The MSCI Program allows matriculated students to transfer equivalent graduate level courses taken up to two years' prior to admission into the Vanderbilt MSCI program. The procedure for an applicant to have credit considered for transfer is to send a letter requesting approval for transfer of the course(s), along with the student's transcript(s) and the course syllabi. Only courses taken at accredited institutions will be considered; a maximum of 9 credit hours are allowed for transfer into the MSCI program. Determination of equivalency will be made by the Program Directors in consultation with the Course Director.

If courses taken prior to admission into the Vanderbilt MSCI program are determined to meet graduation requirements, tuition will be reduced at the per-credit hour rate of the requirement that is met by the transfer.

Admission Requirements

Eligible candidates for the MSCI Program include:

- Board-eligible physicians enrolled in a fellowship program at Vanderbilt or Meharry Medical College,
- Residents with protected time for research,
- Vanderbilt faculty members with the consent of their Department Chair,
- Medical students with protected time for research,
- Post-Doctoral PhDs anticipating a career in clinical and translational research, and
- PhD candidates in the Nursing School anticipating a career in clinical and translational research.
- Scholars external to Vanderbilt/Meharry will be considered based on the availability of a suitable mentor within Vanderbilt and secured funding.

Applications will be judged on the quality of the science proposed, on the commitment of the mentor to the career development of the candidate, and on the overall impact of the training program on the applicant's career development.

Admission to Individual Classes

Individual classes in the MSCI Program may be taken for credit by students not enrolled in the MSCI Program at the individual course tuition rate established by the Vanderbilt Board of Trust. Students admitted to individual courses must be eligible to apply for admission to the MSCI program. Exceptions may be made by the Program Directors in consultation with the Course Director for classes in which certain admission requirements (such as clinical experience) are not necessary for participation in the course. Admission to individual classes is also contingent upon availability of space in the course. (See also: Auditing Classes)

Auditing

Auditing is at the discretion of the Course Director. In general, auditing of MSCI classes may only be allowed if the class has less than ten registered participants. Any class with over ten registered participants will not allow audits. This policy is applicable to all courses administered by the MSCI program.

Grading Policy

Students in the Master of Science in Clinical Investigation Program will be evaluated in each course. Letter grades will be given by the course director, based on attendance, class work, homework, test results, and final exams.

Letter grades will be awarded as follows:

A+ = 4.0

A = 4.0

A- = 3.7

B+ = 3.3

B = 3.0

B- = 2.7

C+ = 2.3

C = 2.0

C- = 1.7

D+ = 1.3

D = 1.0

D- = 0.7

F = 0.0

Only courses with a grade of B- or better will count towards the MSCI Program requirements. Courses for which a grade of C+ or lower is awarded will need to be retaken.

Master's Research, Clinical Scientist Career Seminar, Case Studies, and Research Extension, courses are graded on a pass/fail scale and are not considered in the calculation of GPA.

Grievance Procedures

Students who believe their academic performance has not been judged reasonably or fairly, or who believe their intellectual contributions have not been fairly acknowledged, should consult the Program Directors. The MSCI program follows procedures described in the School of Medicine handbook, which include encouraging the student to seek redress of a problem soon after receiving the grade and or no later than six months after the event.

A Director of the MSCI Program will serve as liaison and counselor for issues that arise between mentor and trainee. For a situation that cannot be resolved with the assistance of an MSCI Director or a grievance that may arise between a trainee and the MSCI program, a grievance committee will be assembled. The grievance committee will consist of the Senior Associate Dean for Faculty and Administrative Affairs or designate, two MSCI mentors unaffiliated with the involved parties, and the MSCI Student Representative.

The grievance committee will assemble the details of the situation and make a written recommendation that is presented to the Directors of the MSCI program and to the grievant, who may provide written comment on the recommendations.

The Directors of the MSCI program will review all of the relevant materials, reach a conclusion on the resolution of the grievance, and send a written copy of the final recommendation to the grievant. The grievant may appeal this decision to the Dean of the School of Medicine.

Honor Code

All MSCI students are bound to the University Honor Code as stated below:

FROM THE STUDENTS OF VANDERBILT UNIVERSITY SCHOOL OF MEDICINE

THE VANDERBILT UNIVERSITY STATEMENT OF THE HONOR CODE

Vanderbilt University students pursue all academic endeavors with integrity. They conduct themselves honorably, professionally, and respectfully in all realms of their studies in order to promote and secure an atmosphere of dignity and trust. The keystone of our honor system is self-regulation, which requires cooperation and support from each member of the University community.

THE SCHOOL OF MEDICINE HONOR SYSTEM

The Honor System at Vanderbilt University School of Medicine is conducted by students for the benefit of students, faculty, staff, and patients. The Honor System, as delineated by the Honor Code, requires students to conduct themselves with honor in all aspects of their lives as physicians-in-training. By demanding great responsibility, the Honor System fosters an environment of freedom and trust that benefits the entire Medical School. In signing this statement upon enrollment, each student agrees to participate in the Honor System and abide by its code.

As representatives of the Vanderbilt University School of Medicine and the medical professions, students pledge to conduct themselves with honor and integrity at all times. The Promotions Committees and the Honor Council serve to protect the environment of trust created by this Honor System. The Promotions Committees periodically evaluate each student's performance with special attention to work and conduct appropriate for professional practice. The Honor Council serves to educate members of the student body about their responsibilities as outlined in the written code; to conduct investigations and hearings regarding reported violations of the code; and to decide the nature of penalties deemed appropriate for such violations. Decisions reached by the Honor Council do not preclude the discussion of reported violations by the Promotions Committee, as the Committee may examine these incidents in the larger context of a student's general performance.

THE SCHOOL OF MEDICINE HONOR CODE

All students pledge to conduct themselves honorably, professionally, and respectfully in all realms of the Medical Center and in all aspects of medical education and patient care. Under the Honor System, the student pledges that he or she neither gives nor receives unauthorized aid nor leaves unreported any knowledge of such aid given or received by any other student. Unauthorized aid includes the use of any examinations from previous semesters that have not been pre-approved by the course director and made readily available to all other students taking the course. This pledge applies to all coursework, examinations, presentations, or any other activities required for the awarding of any of the graduate degrees offered by the School. This pledge encompasses all clinical work involving patient care and representations of patient care information. Any student taking a course in the School of Medicine, regardless of where registered, is under the jurisdiction of the Honor Council of Vanderbilt University School of Medicine (VUSM) and subject to the penalties it may impose.

CONSTITUTION

Article I – Name

The name of the council shall be the Honor Council of Vanderbilt University School of Medicine.

Article II – Purpose

1. To receive and evaluate evidence of Honor Code violations and to assure against false accusations.
2. To determine guilt or innocence.
3. To forward to the Dean of the School of Medicine appropriate penalties for the guilty.

Article III – Membership and Officers

1. A faculty member shall be appointed by the Dean of the School of Medicine as the Honor Council advisor. His/her roles include ensuring that all the rules are followed. In the case

of an accusation, he/she will decide with the Co-chairs of the Honor Council whether there is sufficient evidence to proceed with a trial after a formal investigation has been carried out.

2. The Honor Council of the School of Medicine shall be composed of representation from all degree-granting graduate programs under the administrative charge of the School. Currently this includes the Doctor of Audiology (Au.D.), Master in Education of the Deaf (M.D.E.), Master of Science Speech-Language Pathology (M.S.-S.L.P.), Doctor of Medical Physics (D.M.P.), Master of Science in Medical Physics (M.M.P.), Master of Laboratory Investigation (M.L.I.), Master of Public Health (M.P.H.), Master of Science in Clinical Investigation (M.S.C.I.), Master of Health Professions Education* (M.H.P.E.), and the Doctor of Medicine (M.D.). Any new graduate degree programs created within the School will become eligible by sufficient enrollment, as stipulated below.

3. The minimum student enrollment limit for a single graduate degree program to be eligible to elect an Honor Council representative is 10. If a program falls below that number, it will not be eligible to have a representative. It will regain eligibility when its enrollment again reaches a minimum of 10 students. However, some of the programs are closely affiliated; if, in the judgment of the Program Directors(s) of these programs, there is sufficient overlap in required courses, these programs may be thought of as a unit (a.k.a., "affiliated degree programs") for purposes of Honor Council representation. In these cases the degree programs will be grouped for representation purposes, and allowed to elect an Honor Council representative on behalf of the affiliated degree programs. Current affiliated degree programs are the Au.D., M.D.E. and M.S.-S.L.P. programs, which will elect two representatives from their combined student cohorts, and the M.P.D. and M.M.P. programs, which will elect one representative from their combined student cohorts. All other non-M.D. programs will elect 1 representative. The M.D. program will follow its traditional practice of electing 2 representatives from each of the four classes.

4. In the non-M.D. programs, students will vote for Honor Council candidates within their own graduate program or affiliated degree programs. In the M.D. program, students will vote for Honor Council representatives within their own medical student class. Honor Council representatives are elected for 1-year terms.

5. Honor Council members will select their own Co-Chairs. One Co-Chair will be elected from the senior class M.D. program Honor Council representatives, for which all Honor Council representatives will vote; and one Co-Chair will be elected from the non-M.D. Honor Council representatives, for which all Honor Council representatives will vote. In both cases Co-Chairs will be elected by simple majority. Co-Chairs are elected for 1-year terms.

6. Voting for Honor Council representatives will be completed no later than April 1 of each year. The new Honor Council will convene to elect its Co-Chairs no later than April 30. It is the duty of the outgoing Honor Council Co-Chairs to assure a successful transition. The exception for the April 1 deadline for election of representatives is for incoming medical students who will elect their representatives in September, and for the entering cohort of students in any one-year degree programs, as long as there are at least 10 enrolled students in that program.

Article IV – Duties of Officers

1. It shall be the duty of the Co- chairs to preside at all meetings of the Honor council, to arrange for the hearing of any student accused, and to perform all duties common to their office.
2. The secretary shall keep full minutes of all meetings and full proceedings of all hearings, which must be kept in permanent files. The secretary shall notify all members of all hearings, meetings, and retreats and shall perform any other related duties.
3. Honor Council representatives for each program, together with the Co-Chairs, will have primary responsibility for conducting an annual program to educate their fellow students about the Honor Council and its processes, and for assuring the timeliness of elections. Program Directors and the Honor Council Faculty Advisor will act in a supportive and advisory capacity.

Article V – Meetings

1. One regular meeting shall be held within four weeks of the start of the school year. At this meeting, the Co-chairs of the Honor Council and the faculty advisor will explain the duties and procedures of the Honor Council to the members.
2. Special meetings may be called by the Co-chairs at any time and must be called within ten working days when requested by two or more members of the Honor Council.
3. All meetings shall be conducted according to Roberts Rules of Order, Newly Revised.
4. A meeting by the Honor Council to re-evaluate and review the Honor Code should be convened a minimum of every four years.

Article VI – Quorum

A quorum for an Honor Council hearing concerning a violation of the Honor Code is nine. This quorum may be adjusted by the Co-chairs in circumstances in which students recuse themselves because the hearing concerns a faculty member who is, or will be, in a supervisory position over them. The absolute minimum for an Honor Council quorum shall be seven. In rare circumstances when a quorum is otherwise unavailable, the Senior Associate Dean for Health Sciences Education will appoint a temporary student member or members to assure a quorum is present to meet the timeline requirements for due process.

Article VII – Hearings

1. A hearing shall be called by the Co-chairs of the Honor Council, if appropriate.
2. The accuser and the accused must be present at all hearings during the presentation of evidence, and the accused has a right to question the accuser and any witnesses and make a statement to the Council.
3. Legal counsel will not be allowed for any party at a hearing, but the accused may have present a character witness or non-legally trained faculty advisor if he or she so chooses.
4. Any member of the Honor Council related by birth or marriage to the accused or the accuser or has any other personal interest in the hearing shall relieve himself/herself from participation in that hearing.
6. The proceedings of the hearing are confidential. Any member present at a hearing is not at liberty to discuss its proceedings with anyone other than the members of the Honor Council

present at the hearing or other persons with a legitimate need to know, e.g. law enforcement agents.

7. In the event a hearing concerns a charge against a graduate student, a medical student or a faculty member who is in a supervisory role for any Honor Council members, those members shall recuse themselves from participation in the hearing.

8. Upon completion of the review of evidence, the Honor Council in closed executive session shall reach a decision of "guilty" or "not guilty" of violation of the Honor Code by simple majority vote. The Honor Council shall make its determination using an evidentiary standard of "clear and convincing." The Co-chairs have a vote in all decisions unless contraindicated by Roberts Rules of Order.

9. Written notice of the Honor Council decision will be sent to the accused and to the Dean of the School of Medicine. The Dean will also receive the vote count, a written summary of the case, and an oral report of the case from the Co-chairs. The Promotions Committee will not be notified unless a verdict of "guilty" has been found. In the case of a "guilty" verdict, the Promotions Committee will receive a written summary of the proceedings.

The written summary also will be kept in the permanent records of the Honor Council.

10. When the Honor Council reaches a decision of "guilty," the penalty, representing the majority opinion of the Honor Council, shall be sent to the Dean of the School of Medicine. The recommended penalties should conform to the severity of offenses and may include expulsion from the School of Medicine, and may also include lesser penalties such as failure of a course, or suspension for a designated period of time.

Article VIII – Publicity

1. Each new student entering the School of Medicine will be informed by the Honor Council as to the functions of the Honor System and his or her obligations to the Honor Code. Each student will be provided a copy of the Constitution and Bylaws of the Honor System and the Honor Code.

2. At the commencement of each academic year, all students shall reaffirm their commitment to the honor system by signing the Honor Code.

3. Names of the members of the Honor Council will be made known to all students upon commencement of each academic year. The Honor Council members will be accessible to any student to address concerns or questions regarding protocol, violations, or other Honor Council issues.

4. All written examinations will include a blank space where students will be required to freehand write the statement, "I continue to abide by the Honor Code." The student must sign below the statement. All written examinations must contain the student's written statement and signature to be considered complete.

Article IX- Miscellaneous

In case a student withdraws from the School after a charge has been made against him/her and before the hearing, the Honor Council shall record the facts and the accused shall not be allowed to re-enter until he or she has had a hearing before the Honor Council.

Article X – Amendments

Amendments to this Constitution shall require for their adoption the approval of a majority of the total membership of the Honor Council and ratification by a majority of the voting student body. These amendments must be approved by the Dean of the School of Medicine and the faculty advisor before becoming final.

BYLAWS

Article I – Reporting an Incident

1. If a student or instructor has reason to believe that a breach of the Honor Code has been committed he/ she must, within seven class days, report the incident in signed written form in one of the following ways:

- a. Directly to one or both of the co-chairs of the Honor Council, or
- b. By way of the faculty advisor who will notify the Co-chairs of the Honor Council, or
- c. To any member of the Honor Council, who will report directly and only to either the Co-chairs or the faculty advisor.

2. Failure to take action on an incident is a breach of the Honor Code. Students are required to report in writing any suspected violations of the Honor Code.

3. Once an incident is reported, it shall be the responsibility of the Honor Council, not the student or instructor, to investigate the incident and determine the next course of action. The student or instructor who reports a violation is charged with maintaining confidence of his or her accusation; the accused is also required to maintain the confidence of the accusation and the hearing. Such confidence can be broken only as required in response to law enforcement agencies and to assure access to appropriate advice.

4. Perjury before the Dean or any Honor Council member regarding the reporting of or investigation into an incident is a breach of the Honor Code and is subject to punishment.

5. Once an incident has been reported, the Co-chairs and the faculty advisor will meet to discuss the incident. The Co-chairs shall appoint a committee of two members from the Honor Council to investigate the case and report their findings to the faculty advisor and the Co-chairs. These two members shall be ineligible to vote, in the event the Honor Council is convened. At the conclusion of the investigation, the Co-chairs and faculty advisor will then decide whether to convene the Honor Council. If the decision is made to convene the Honor Council, the student in question will be notified that he/she has been formally accused of a violation of the Honor Code. The Honor Council should be convened within ten class days from the initial reporting of the incident. Both the accuser and the accused will be notified of the nature of the charge as well as the time and place of the assembly of the Honor Council.

6. Once the Honor Council is assembled, the accusation will be presented by the Co-chairs, and a hearing will be held by the Honor Council.
7. A student who reports his or her own Honor Code violation will be given consideration for his or her initiative in self-reporting the transgression. The Co-chairs, with advice of the faculty advisor, will decide if an investigation is warranted.

Article II – Penalties

1. Penalties given to those declared “guilty” will be recommended by the Honor Council and enforced by the Dean of the School of Medicine as he/she sees fit. The final decision and penalty will be reported by the Dean to the student involved, to the reporting individual, and to the Honor Council.
2. Penalties may range from the minimum of failure of the assignment to the maximum of expulsion from Vanderbilt University School of Medicine.
3. If the violation was committed under extenuating circumstances, the Honor Council may, by a majority vote, recommend a suspension of the sentence. However, suspension of the sentence shall in no way alter the findings of “guilt” under the Code.

Article III – Appeals

Appeals to any final actions that result from Honor Council hearings can be made with a petition to the Vanderbilt University Appellate Review Board as follows:

- a. The appeal petition must be in writing
- b. It must specify the grounds for appeal.
- c. It must be filed within seven class days of the original notification of the verdict or within two weeks if school is not in session for seven days following the notification.

Article IV – Summer Honor Council

1. The Summer Council will have official functions from the day following University Commencement exercises until the day class registration begins for the fall semester.
2. In the event that a designated member will not be in Nashville during the summer, the respective class president should appoint a member of his/her class who will be in Nashville, to be approved by the Honor Council.
3. In the event that both Co-chairs will not be in Nashville during the summer, then the faculty advisor should recommend a Chair from the members of the Council, subject to Council approval.

Revision Date: 9/17/2014

Requirements for Graduation

To meet graduation requirements for the MSCI, student must have completed 35 hours of coursework with grades approved by the MSCI program and submission of a final project in the form of one of the following:

- a submission ready extramural grant, or
- a submitted or submission-ready original article to a peer-reviewed journal

Thesis Option: In the case that one of the two items cannot be completed, a thesis can be submitted. The thesis should include a brief introduction explaining why a grant or manuscript could not be prepared and submitted on a timely basis. Thesis submission is subject to preliminary approval by the MSCI directors.

It is recommended that a thesis include:

- A brief statement of the student's role in the work to be described in the research report
- A 10-15 page research report outlining the hypothesis tested, background and significance of the work, the experimental approach and methods, data analysis/sample size calculations, anticipated results and pitfalls, results to date, interpretation of results, discussion of results, and future plans.

Please note that no oral presentation is required.

The subsequent step in the graduation process is a review and approval of the student's thesis by our Promotions Committee.

It is anticipated all the students will complete the graduation requirements by the end of the fifth semester of enrollment. In the case of any potential delays, the student is allowed to extend the graduation date six months twice (total of one year). In unusual circumstances (including, but not limited to health problems, change of jobs, move to another institution) an additional extension up to one year will be granted. During a period of extension, the student will be enrolled in the Research Extension course, a status that incurs no tuition costs.

Student Status: Full-time or Part-Time

For students who are taking MSCI courses but are not full-time MSCI students, here is a reference chart for enrollment status at the university. Master's Research and Research Extension automatically trigger full-time status.

Semester	Fall and Spring Terms			Summer Term		
	Full Time	Half Time	Less Than Half Time	Full Time	Half Time	Less Than Half Time
Number of Hours Registered For	8+	4-7	1-4	6+	3-5	1-3

Vanderbilt
MSCI

Mentoring

MSCI Expectations and Resources

2016-2018

The MSCI Mentoring Relationship

The Mentoring Relationship is a fundamental element to the success of the MSCI program. The resources outlined in this Mentoring Guide are designed to facilitate positive mentor-mentee interactions and to assist you in addressing issues that arise. The expectations outlined in this guide help to alert MSCI leadership to areas where additional assistance is needed.

The MSCI Program Director and other program staff are available to assist both mentors and mentees with issues related to the mentoring relationship. Please do not hesitate to contact us for assistance.

Mentoring

Seven Roles and Some Specifics

Martin J. Tobin

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In Homer's legend, when Ulysses, the king of Ithaca, went away to make war on the Trojans, he left his infant son, Telemachus, in the hands of Mentor (1). Ulysses was gone for twenty years, and Mentor guided Telemachus in practical skills, such as archery and wrestling, and also provided advice on moral matters. Giving advice, however, is naive and presumptuous (2). Naive, because experience cannot be transmitted; instead, each generation has to acquire it for itself. Presumptuous, because no one has a monopoly on wisdom; and those imagining themselves well endowed are the least wise (3).

Books containing advice for young professionals come in two forms: compendia of tedious pieties, and amoral manuals of dodges and shady practices for getting on in the world (4). An attempt to provide a noncynical description of the good mentor inevitably falls into the former category and exposes an author to accusations of moralizing oversimplification. Yet fear of being labeled a self-righteous moralizer is insufficient defense for shying away from the challenge.

A mentor can be defined as an older academician who takes a special interest in a younger person—a fellow or a junior member of faculty (1). The older person is called the mentor, but there is no good term for the younger person (5). The lack of a self-evident term to describe the object of the mentor's interest bespeaks of much confusion on the subject. I focus solely on the mentoring of a fellow who wants to become a physician-researcher. I make liberal use of quotations, not simply for calling on authority to buttress my case but for the illumination they provide.

SEVEN ROLES

The physician-researcher as mentor has at least seven roles to fill: teacher, sponsor, advisor, agent, role model, coach, and confidante (1, 6, 7). The mentor needs to customize each role to match the characteristics of the fellow. The following description is an ideal after which mentors strive. It is also an ideal that perhaps no mentor can fully attain.

Teacher

The mentor and laboratory assistants teach the fellow the technical skills unique to their field of research. The mentor guides the fellow in how to read in an efficient manner and how to reason from first principles. The fellow learns to write scientific manuscripts by getting back drafts covered in red ink. The men-

tor teaches the fellow how to apply for grants, and how to review manuscripts (8). The mentor knows that education is not just the imparting of facts—after all, these can be obtained in a book (9). Instead, the ultimate goal of education is the formation of character (the aggregate of qualities that constitute the moral backbone of an individual) (10, 11). Henry Adams encapsulated the legacy of teaching: "A teacher affects eternity; he can never tell where his influence stops."

Sponsor

As sponsor, the mentor introduces the fellow to a new social world (6). Up to now, the fellow's world has been parochial. To succeed in research, the fellow needs to learn who's who among the cast of characters in a subdiscipline. When the fellow first presents a research poster, the mentor lists researchers who have a reputation for helping young people. When these individuals come by the poster, the mentor tells the fellow to be very open in discussing limitations of the study because they will help fix them. The mentor also names another set of individuals who get pleasure out of belittling a fellow, warning the fellow to be on guard when interacting with them. Over time, the mentor instills in the fellow the values and customs that make up the norms of science.

Advisor

The mentor serves as advisor and counselor (1, 7). The fellow needs a sounding board and reality check to help refine ideas and gain clarity of thought. Being older, the mentor supplies the missing experience—been there, done that. The fellow doesn't need someone to pave the road, but needs help in becoming a better navigator. The mentor doesn't try to personally solve the fellow's problems, but helps the fellow craft his or her own solution—to become self-reliant. The mentor is not a nursemaid or escort, but a catalyst for growth (5). A good mentor is an amateur psychoanalyst, understanding what makes people tick. The mentor's greatest contribution may be in listening, saying little. As Rousseau told us, people who know a lot tend to say very little, whereas people who know little speak a lot. A good mentor understands that it is best to give advice only when it is requested (12).

Mentoring should not be confused with being a faculty advisor (7, 13). With the latter, the exchange is relatively formal, largely unidirectional, with little if any personal bonding. The exchange may occur only once, whereas mentoring involves years of repeated back and forth, eyeball to eyeball. A student may not view the faculty advisor as a role model, whereas a mentor is always seen as a role model.

Agent

The mentor acts as an agent (7). The fellow knows the mentor will go to bat for him or her. The mentor removes obstacles, but only after the fellow has made a convincing attempt. And the mentor is careful to avoid spoonfeeding, which stunts the development of independence.

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Role Model

The fellow views the mentor as a role model and wants to emulate his or her approach to academic life (14). Young people do not assimilate values by listing attributes they wish to develop (truth, caring, judgment) and looking up their definitions (15). Instead, they identify with people who appear to have these attributes, and emulate their behavior. Fellows do not learn values from having them preached at them, but from seeing values enacted in the routine of daily life. Values are best transmitted through deeds, not words—a *how*, not a *what*. And that is why role models are so important in medicine.

The fellow observes the mentor's professional priorities. The time devoted to helping colleagues, such as volunteer work in reviewing manuscripts that goes uncredited by promotion committees (16). The mentor's intellectual and scholarship style: it must be unmistakable that he or she enjoys learning. The approach to thoroughness and truth telling. The mentor's ability to make work appear more fun than fun, and make drudgery appear worthwhile. Success in research can lead to arrogance, although Claude Bernard believed true scientific prowess leads to a proportional decrease in pride (17). The fellow sees how the mentor interacts with peers: the exercise of restraint, and the instinct for maneuvering between behavior that might be uncomfortably allowed and behavior that is impermissible. The fellow sees the moral element in the mentor's identity: how the mentor defines *what* lines will not be crossed, and *why* (18). The bulk of the fellow-mentor interaction is in the research setting, but the mentor's behavior as a clinician—irrespective of whether his or her research is basic or patient oriented—will determine how well the mentor transmits the values of academic medicine. It must be crystal clear that the patient is always first priority. The core values articulated by the mentor must be evident in actions: he or she must walk the talk. When a mentor fails to practice what is being preached, the hypocrisy mutes the effectiveness of the advice (19).

Role models and mentors are often confused (5). Most people who serve as role models do not act as mentors. Michael Jordan is a role model for thousands. If he is to become a mentor, it will only be for a handful of people. Likewise, William Osler was a role model for thousands of physicians, but mentored only a few. Many role models are like bright shining stars: as you get closer, they seem too hot to touch (5). Most physician trainees never have a true mentor—there are not enough to go around (5, 6, 13). They have role models and faculty advisors. Having a real mentor will always be a privilege of only a few.

Coach

A good coach motivates the players to win. Knowing when to offer encouragement. When to push. And when to pause and take a break. A mentor has to push for action while tolerating inaction—a cause of considerable tension in the mentor (12). A basketball coach is judged by the success of the players, not by his or her own skill at shooting baskets. Likewise, a mentor recognizes that it is far easier to give a lecture than to guide a fellow in how to do it.

Motivating is the fulcrum around which coaching revolves. The mentor conveys the sense of awe about the workings of the body: the excitement in helping to unravel its complexity. He or she imbues the fellow with the power of science, the best hope for achieving progress (20). Science doesn't prevent any of us from making mistakes. But through the criticism of colleagues, errors are gradually corrected and we approach truth. The mentor communicates the thrill of discovery—no drug is more addictive (21). The mentor relates to the fellow the comfort derived

from knowing that the research of today is connected to a much greater process: contributing to the increase in scientific knowledge and improved care of patients—work of everlasting value. This thought helps one realize how trivial are the slings and arrows of everyday life. But comfort of mind must not spill over into complacency. Jacques Monod, one of the founders of molecular biology, warned, "Personal self-satisfaction is the death of the scientist. Collective self-satisfaction is the death of research. It is restlessness, anxiety, dissatisfaction, agony of mind that nourish science" (22). Proper balancing of anxiety and comfort of mind achieves equanimity.

The most creative individuals are driven by curiosity, getting their reward directly from their work (causing colleagues to think them odd) (18). The best people in an organization want to work for reasons beyond salary or title, as if volunteers (23). The mentor relates the sense of fulfillment from working in public service (adding that thanks is rarely vocalized, and is communicated least when the responsibility is greatest). Addressing young people, Albert Schweitzer said, "I don't know what your destiny will be, but one thing I know: the only ones among you who will be really happy are those who will have sought and found how to serve." There is no smaller package than an individual wrapped up in him or herself.

The mentor raises the bar and sets high standards. The fellow is encouraged to achieve full potential: to reach for, and achieve, more than he or she thought possible (24). People are not motivated by small challenges. "Make no little plans. They have no magic to stir men's blood," mused Daniel Burnham, the Chicago architect. The mentor helps the fellow to take risks, to move outside a zone of comfort. Expectations are lofty, yet realistic (7). The idea is to distend, but not perforate.

Confidante

The mentor serves as a confidante: someone the fellow can talk to, knowing the discussions are kept in strict confidence. Mentoring is more an affair of the heart than of the head (7, 25). It is a two-way relationship based on trust—the glue that prevents the units of daily living from falling asunder. The mentor wins and sustains the fellow's trust through constancy (staying the course), reliability (being there when it counts), integrity (honoring commitments and promises), and congruity (walking the talk) (26).

For the fellow's development, the mentor's most critical function is to help the fellow live out a dream (1, 6). A young person's dream is a personal myth, an imagined drama in which he or she is the central character—a role widely portrayed in literature. The mentor helps the fellow realize this dream through affirmation and by helping the fellow emerge in a new world. Mentoring involves an elemental form of the parental impulse, yet is quite different (6). Unlike a parent, the mentor must also be part peer. Excessive paternalism in a mentor will interfere with the primary function as a transitional figure. The mentor's task is to liberate the fellow, and not be overly protective. An actual parent can provide some of the functions of a mentor. But he or she cannot be the primary mentor figure because a parent is too closely connected to the offspring's pre-adult development (in both their minds) (6).

Objectivity must be maintained: the relationship must not be seen as favoritism. The mentor not only conveys compliments, but also points out weaknesses (6, 7). When criticizing, the mentor focuses on behavior, not the person. Specificity is especially important: not much can be learned from vague criticism (or vague praise) (25). A hundred-year-old letter from William Osler, mentor to Harvey Cushing, can be seen in the online supplement (1). Osler points out that specific aspects of Cush-

ing's behavior will be fatal to his success. Osler specifies why this behavior is a problem, and ends by saying he knows that Cushing will not mind the criticism because he understands that Osler has his interest at heart. There is no fellow that does not need to have aspects of behavior criticized. But the task requires considerable tact: inept criticism surpasses mistrust, personality struggles, pay disputes, and power struggles as a source of conflict on the job (25). By holding up a mirror, the mentor enables the fellow to see how his or her character is developing (5).

The fellow has feelings of respect, admiration, and appreciation for the mentor, but also feelings of inferiority, intimidation, envy, and resentment (6). The fellow oscillates between beliefs of being an inept novice, fraudulent imposter, and a rising star that will outshine the mentor. Starting out in a subservient position, the fellow matures to become an equal over time and the relationship evolves into a meaningful friendship. But the relationship can also dissolve into bitterness (6). This may occur because the mentor is bad. Or because of arrogant ingratitude on the part of the fellow. Tacitus grumbled that man is more willing to repay an injury than repay a benefit, because gratitude is a burden whereas revenge is a pleasure.

AND SOME SPECIFICS

Handling Failure

Because it is disheartening, we think of failure as all negative. But it's not (15, 27). Failure tells the size of the challenge taken on. A research project that appears a totally safe investment has a much smaller chance of making a substantial advance than a project carrying a distinct chance of failure. Fear of failure is the death of progress. A fellow can learn more from failure than from success, because one has to ask oneself why one failed. With success, a fellow may get rewarded for the wrong reasons, which encourages bad habits. Major achievers are rarely satisfied by success, and are instead spurred on—rather than deterred—by setbacks (11). “I regard every defeat as an opportunity,” affirmed Jean Monnet, founding father of the European Community (19). But failure is bruising, and the fellow has to learn not to show it. When the fellow encounters failure, the mentor is there to provide reassurance and to caution that dwelling too much on the past can rob one of the future.

Steps to Success

Along the way, the mentor shows the fellow what is needed for success. Success is not achieved by short cuts and gimmickry, but by hard work and persistence (5). “Nothing in the world can take the place of persistence. Talent will not; nothing is more common than unsuccessful men with talent. Genius will not; unrewarded genius is almost a proverb. Education will not; the world is full of educated derelicts. Persistence, determination alone are omnipotent,” counseled Calvin Coolidge (28). Persistence is the hard work you do after you get tired of doing the hard work you have already done (14). The fellow needs to think of a task as beyond the whole. When running a 100-yard dash, serious runners aim for 110 yards, so no one will beat them in the last few yards. If they run fast for only 95 yards, the lack of those final 5 yards makes the first 95 pointless (23).

The second requirement is focus, the principle most often violated. Focus needs mental discipline, which is unpopular. Without focus, the fellow ends up with numerous unfinished projects.

Time management is third. Time is the most scarce resource in academic life. Yet it's treated as having no value. Time is inelastic. “Work expands so as to fill the time available for its completion,” says Parkinson's Law (17). Academicians who complain the most about being extremely busy are often the

lowest achievers. The mentor teaches the fellow to document for him or herself where the time goes, to spot time wasters and be ruthless in eliminating them. And the fellow learns that wasting time that leads to innovation is good, and dumping bad work is efficient.

The fourth requirement for success is learning how to handle the natural desire for credit (29). Originality, and its corollary priority, are major driving forces in science—aggravated by the tendency for discoveries to be made simultaneously in more than one laboratory. Attaining priority requires ambition, a word with many meanings and wide variation in moral implications (30). Ambition is healthy when it connotes persistence, resolution, and discipline. But vaulting ambition that includes corner cutting and self-promotion is a disfigurement. The best way to get research done, and succeed in academia, is not to mind who gets credit for it (29). Lots of praise early in a career—even when deserved—can make it more difficult to cope with subsequent setbacks (29). This thought is communicated in the saying, “I have been told of so many coming men. But where do they all go?” And in, “Whom the gods wish to destroy they first call promising.”

Picking a Mentor

When scouting for a mentor, what should the fellow look for? Fellows in their late twenties should seek mentors in their late thirties or forties—a half-generation older (6). Forty-year-old faculty members have usually shed some of their earlier envies, animosities, and petty vanities, enabling them to be more understanding mentors. Enthusiasm is the most important quality: the mentor believes his or her research area is the most exciting in the world. Time: the good mentor makes time to see the fellow, even though he or she may be the busiest person on campus. Leadership always comes down to a question of character: an inner set of values directing a person to what is virtuous or right (18, 31). The world loves talent but pays off on character (27). Next come commitment, common sense, competence, responsibility, and conscience (the inner voice that says somebody may be looking). Because the fellow will need advice about future career, he or she needs a mentor who has good judgment. The good and bad are never neatly separated and most of life is spent making discriminate judgments at the margins (30). In truth, the challenge is more complicated: the choice is rarely between straight bad and good, but in picking the best trade-off among several good options (32). Judgment is the ability to combine hard data, questionable data, and intuitive guesses to arrive at a conclusion that events prove to be correct (33). And lastly the fellow looks for maturity, self-confidence, vision, and a mentor with awareness of what's happening in the academic world outside his or her own institution.

A bad mentor sounds like a contradiction in terms, but some fellows get stuck with a faculty supervisor who lacks mentoring skills (6). The bad mentor is selfish with time. (Time given by a good mentor is immeasurable—and the part least recognized by people who are not mentors.) A bad mentor wants all the glory—it's not enough to see the fellow shine—and may even envy the attention the fellow attracts. Instead of nurturing academic development, the mentor exploits the fellow as a technician. A mentor may also act like Professor Higgins in *My Fair Lady* and try to make the fellow into an image of his or her own choosing, rather than fostering individuality and independence. An overprotective mentor, though meaning well, is also bad for the fellow's development.

Mentoring at a Distance

When fellows find no faculty member to serve as a mentor, they must take responsibility for aspects of their own education. Some

giants in history—Shakespeare and Beethoven—had no personal mentors (34). Einstein received his mentoring at a distance through reading Mach, Poincaré, and Maxwell (34). Churchill never attended university, and educated himself by studying the works of Gibbon, Macaulay, and others (35); the permanent effect of the former two is evident in Churchill's oratory and writing. The total aggregate of Lincoln's schooling amounted to less than a year (30). But he was a bookworm, and over time Lincoln's intellectual self-confidence surpassed that of graduates of the best universities. Books enable a person in isolated circumstances to communicate across years and oceans with the greatest of minds (30). Many leaders have found their principal mentors and models entirely in books (26). For example, Nelson Mandela was hugely inspired by General Kutuzov in Tolstoy's *War and Peace* (36). Researchers of any age can benefit from the insights and maxims contained in the books of Peter Medawar, Michael Polanyi, Richard Feynman, and John Ziman.

Not Pure Altruism

Mentoring is a two-way street, with mentors needing fellows as much as the latter need a mentor (6). As with all teaching, mentors learn more from pupils than they teach them. A researcher gets more done by involving bright young people on projects than working as a lone wolf. The mentor benefits from the reflected glory of the fellow who does well. But the major benefit is the fun of interacting with young people. The interchange liberates forces of youthful energy within the mentor, and he or she gets rejuvenated (6). Osler warned that the physician “who wraps himself in the cloak of his researches, and lives apart from the bright spirits of the coming generation, is very apt to find his garment the shirt of Nessus” —and he will also miss out on “the greatest zest in life” (37). By communicating the most important values of medicine, the mentor satisfies the Hippocratic obligation of passing knowledge to the next generation and at the same time satisfying the desire to pay back (1). “I hold every man a debtor to his profession,” intoned Francis Bacon.

CONCLUSION

In guiding Telemachus, Mentor was assisted by Athena, the Greek goddess who embodied good counsel, prudent restraint, and practical insight (1). Mentors in academic medicine are mere mortals, and do not get help from Greek goddesses. The virtues I list for the ideal mentor are intimidating. A wise reader may wonder whether through writing this essay, I am succumbing to the counsel of my fellow Irishman, Oscar Wilde: “I always pass on good advice. It is the only thing to do with it. It is never of any use to oneself.”

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Questions/Exercises

NIH-HHS Mentoring Program

Below are some reflective questions to use as preparatory exercises for participation in a NIH-HHS Mentoring Program relationship.

We would appreciate your taking the time to ponder and respond to the questions below. These can serve as launching grounds for your early communications with your respective mentor/mentee. This will include discussing the commonalities and/or differences among your responses, and a discussion of how mentors and mentees may work together to facilitate an effective mentoring relationship that fulfills both parties' needs.

For Mentees Only:

- Name 3 to 5 expectations that you have for your mentoring relationship.
- Describe why these expectations are so important to you.
- Describe your view of an ideal mentoring relationship.

For Mentors Only:

- Name 3 to 5 reasons why you chose to become a mentor.
- Consider motivations that might underlie each reason you have identified and identify your primary motivation for mentoring.
- Name one major expectation that you have for the mentoring relationship.

Please also contemplate the following questions on your own:

For Mentees Only:

- How do you typically learn? Are you a proactive learner, or a passive learner?
- What are some ways that you have tried to increase your knowledge of or stay current with trends in your field?
- What are some examples of ways that you can gain knowledge from more knowledgeable people?
- Have you had an experience in which you received advice that did not match your needs or situation?
- What was its impact on your feelings? What did you ultimately do?

For Mentors Only:

- Can you remember a time in which you facilitated another person's learning?
- What factors positively or negatively impacted your efforts?
- What did you feel or learn as a result of that experience?
- What would you have done differently?
- What are specific things that you can and are willing to do to help the individual with whom you are paired?

Questions/Exercises

NIH-HHS Mentoring Program

While the Mentor is available to counsel and impart lessons learned, it is the mentee who should take the lead in the mentoring sessions. The mentee can propose agendas, facilitate the meeting, summarize agreements, and so on. Amid a busy week, sometimes you may be at a loss for ideas on what to do during the meetings and how to deepen your communication. Below please find some quick conversation starters and activities to boost your sessions:

- ✓ Spend time learning more about each other in building a personal relationship before formally tackling mentoring program objectives.
- ✓ Negotiate your ground rules for working together, when and how you will meet, confidentiality, etc. (see Mentor-mentee agreement). Schedule official times on your calendars. Sometimes an informal location, such as a coffee shop, may be preferable.
- ✓ Conduct some short telephone communications as well, with some structure added in: propose agendas and follow-up actions pertaining to the call.
- ✓ Share career stories. Career start, changes made along the way, high and low points. What experiences were helpful?
- ✓ Discuss mentee's personal vision: What would he/she like to be remembered for over the next few years?
- ✓ Talk about topics not pertaining to work: news and events, family history, hobbies, movie.
- ✓ Discuss mentee's strengths and how to enhance their growth. (Get mentee should find information from their own observations, comments in performance reviews, informal feedback from supervisors or coworkers (by e-mail, for example), educational grades). What do people say you do best? Mentor can add his/her observations.
- ✓ Discuss mentee's growth areas and tentative plans for working on them. Discuss how feedback will be given and received, and what, if anything, either would like to avoid doing.
- ✓ Mentee assignment: Write down the picture of a perfect week. What are you doing, where are you living, how do people talk about you? Discuss these discoveries with your mentor and what you can learn/apply from them.
- ✓ Identify/refine 1-3 objectives to work on together -- preferably skills pertaining to growth areas and leveraging strengths.
- ✓ Mentee can regularly brief Mentor on a book addressing career development/another skill set that mentee is reading independently. Mentor and mentee can also read the same book together throughout the year. Communication, personality style, conflict, creativity, organization -- the subject matter can be determined by the mentee's particular goals for growth during the relationship.
- ✓ Discuss any generational differences that may come into play in the workplace. Watch the DDM Series videocast, "What a Difference a Generation Makes," and discuss afterwards.
- ✓ Conduct informal networking by introducing mentee to at least two people who could prove helpful to their careers. Before, provide tips on issues to address or avoid, and review afterwards.
- ✓ Invite mentee to one of Mentor's key meetings. Debrief with mentee afterward.

- ✓ Exchange and discuss potentially useful articles.
- ✓ Review and discuss mentee's resume with a critical eye, offering suggestions.
- ✓ Review and discuss a letter, proposal or other document written by mentee.
- ✓ Discuss external non-job practice round in which mentee is developing skill set (Toastmasters, leading a community project, etc.)
- ✓ Discuss a quote that has certain meaning or inspiration for each.
- ✓ Discuss any cultural values that each of you hold onto. Has culture come into play at all in adjusting to the work setting?
- ✓ Mentee can invite a Mentor to a presentation s/he is delivering or a meeting s/he is facilitating (with permission from mentee's supervisor). Debrief afterwards, or in the next session.
- ✓ Discuss some of the "unwritten rules" each of you had observed or learned about success in your organization. How has this differed from other organizations? What other lessons have been learned?
- ✓ Communicate about what you have appreciated about your mentoring relationship with one another and thus far. This type of "check-in" can only be done in a note or e-mail.
- ✓ Mentee can research, write up or present on various career path they would consider taking within the organization. Mentor can provide feedback, provide a sounding board, discussion.
- ✓ Share/lend books, tapes, CDs.
- ✓ Discuss: How do you each best like to learn.
- ✓ Discuss: how would your competitors or critics describe you?
- ✓ Discuss a role model that has been influential in each of your lives. How has s/he impacted your decisions or beliefs?
- ✓ Discuss: What keeps you up at night?
- ✓ Meet up with other mentoring pairs for lunch, coffee or participation in an NIH community activity.
- ✓ Mentee and shadow mentor or observed him/her while he/she works. Debrief afterwards. Determine ahead of time what mentee particularly interested in learning about or observing first.
- ✓ Exchange jokes, funny stories to touch base with this side of yourselves. Bring in a favorite cartoon with respect to the workplace.
- ✓ If mentee agrees and there is no conflict, have lunch with mentor, mentee and his/her supervisor.
- ✓ Mentee can research learning opportunities (training courses, books, on-the-job activities) and vet them with mentor.
- ✓ Mentee can identify risks, difficulties or stress s/he is facing in the next few months (deadline, conflicts was premises, fears, etc.), and plan with mentor way to minimize them.
- ✓ Discuss a situation of interpersonal conflict that the mentee has experienced or successfully avoided.
- ✓ Discuss a situation of miscommunication that the mentee has experienced or successfully avoided.
- ✓ If possible, serve on a committee together on or off the job.
- ✓ Prepare for the end of your formal mentoring relationship: take stock of lessons learned, directions taken, and what is still needed to be accomplished.

Questions/Exercises

NIH-HHS Mentoring Program

While it may feel strange to do at the beginning, it is important to discuss and agree on the appropriate boundaries of the mentoring relationship between you and your partner early on. When boundaries are too loose, they may be misinterpreted, and when they are too rigid, they can also incapacitate the relationship. If you haven't already, or have experienced misunderstanding or confusion on this issue, please take the time to cover these bases with each other in your next session.

Everyone has different boundaries, from the degree to which one is comfortable with physical proximity, to talking about personal and confidential issues, to the amount of time one wants to spend with a mentor or mentee. As for time, NIH mentors of the HHS Mentoring Program are required to spend one hour per month with a mentee to discuss issues of growth and development one-on-one. We also recommend spending some time attending a lecture or training together, participating in a shadowing activity, or other activities.

Do take the time to talk frankly about what each of you expect to give and take in terms of time, as it will vary from relationship to relationship. Also, make sure that you are on the same page about how you prefer to interact. Questions below can guide you through this.

Both:

- Talk about your responsibilities, what you can and can't do.
- Agree on frequency, duration and intervals of meetings/communications and how this will occur.
- Beyond agreeing to confidentiality, discuss what confidentiality actually means to each of you in various scenarios.

Mentors:

- What kind of access does the mentee have to you? What is the limit?
- Does being a mentor mean the employee has unlimited access to you for the duration of the relationship?
- Does communicating require an appointment?
- What kind of telephone access does the mentee have to you?

Refer on if necessary, using the resources listed at the bottom of this page. Debt, financial issues, or personal problems can crop up; only discuss those issues you are comfortable with and refer to the appropriate professionals below.

Mentees:

- Avoid unhealthy dependence. For example, mentors are not expected to have definitive answers or be available 24/7.
- Consider "what would I do if..." in assessing your own boundaries.
- Prioritize how you wish to best utilize your mentor's time and expertise.
- Know there are additional resources out there for you! See below.

Master of Science in Clinical Investigation Program
Mentorship Agreement

_____ (mentor) and _____ (trainee) do hereby enter into a formal mentoring agreement on this day_____.

Time Commitment

During the period from _____ to _____ the trainee commits to spend adequate time devoted to the research project. Non-research time shall not exceed:

Clinic (no more than ½ day per week)_____.

Call months_____.

Communication

The mentor and the trainee shall hold a scheduled meeting twice monthly.

The mentor and trainee shall meet every 6 months with the mentorship committee and provide a formal written report to MSCI. These individuals comprise the committee:

Professional Development

The trainee shall attend the following conferences and/or national meeting(s)

Scientific productivity

The mentor and trainee have set the following goals for:

First abstract submission_____

First manuscript submission_____

Career development grant submission_____

Resources

The mentor agrees to provide the following resources for the trainee's development

Space_____

Equipment_____

Supplies_____

Personnel_____

Travel_____

Conflict resolution

Conflicts can arise in a mentor-trainee relationship. The mentor and trainee agree to use open communication as a first step to address any such conflicts. As a next step the mentor and trainee agree to seek the counsel of the program directors and if necessary to submit to arbitration.

Trainee date

Mentor date

The following description of roles within mentoring teams was developed by the UCSF Mentor Development Program and is available online at <http://ctsi.ucsf.edu/training/mdp-seminar1-definitions>.

Lead/Scholarly Mentors have the overall responsibility for developing the creative and independent research careers of their mentees. Lead/Scholarly mentors advise their mentees about career direction and academic promotion, about navigating institutional challenges and barriers and facilitating networking on a local, national, and international level. One helpful tool to achieve this is the development of a 5-year-development plan and a feasible, coordinated research plan.

In addition to being experts in the scientific and/or methodological area that the mentee has chosen, lead/scholarly mentors are familiar with faculty and resources within and outside of their discipline at the scientific institution. These resources may include databases, space, funding, and research staff that can facilitate the mentee's research.

Lead/Scholarly mentors assist with communication of findings including oral presentations, writing of abstracts, manuscripts and development of grant applications and securing funding. As importantly, they provide guidance to their mentees about didactic coursework and training opportunities and help them to identify potential collaborators and build a mentoring team. The mentoring team assures that the projects are progressing in a timely fashion from data collection to presentations as well as publication. The team includes co-mentors, one of them being from a multidisciplinary team, if the lead/scholarly mentor does not direct a multidisciplinary team. Lead/Scholarly mentors also insure that the mentee has a departmental career mentor who is assigned by their departmental mentor facilitator of the institution's Faculty Mentoring Program.

The lead/scholarly mentor is responsible for one to three faculty members. S/He will meet with them on a regular basis, minimally twice a month, and insure the ongoing communication with the co-mentors of the mentoring team.

Co-mentors are responsible for working with the lead/scholarly mentor on overall mentoring responsibilities for the mentee and for providing particular guidance in their areas of expertise. The co-mentor is responsible for one to three mentees, depending on the number of the lead/scholarly mentor's obligations and expected to meet with each mentee once per month to review the overall progress report of the mentee. The co-mentor will also be provided with the Individual Development Plan (IDP) and be familiar with its goals, challenges and the action plan that the lead/scholarly mentor and the mentee have worked out.

Research Mentors supervise the completion of a defined, time-limited research project, whether it be data collection, data analysis, manuscript preparation, grant preparation, etc. This is an excellent way for a junior faculty to begin mentoring others, learning many of the skills that will eventually allow them to become a lead mentor. For instance, s/he may supervise a summer research project, a 1-year commitment of research, or s/he may assist with the writing of papers, research grants and research reviews. The meetings will vary in timing, depending on the level of activity for the specified projects.

Career Mentors are senior faculty responsible for providing career guidance and support for their junior faculty mentees. Yet they may not be intimately familiar with the mentees research interests. It is the goal of the UCSF Faculty Mentoring Program to offer one main career mentor for each junior faculty. Career mentors provide guidance about the advancement and promotion at the scientific institution and/or in particular their department. They are expected to meet with the mentee 2-3 times a year to review the overall career goals and advise them on issues related to advancement and promotion. Ideally, career mentors will not be the mentee's direct supervisor, but will most likely be in their home department, division or organized research unit.

Advisors have informal relationships with mentees. They may or may not have a concordant area of research, but they are familiar with the institution and program. Advisors may assist in developing and refining the mentee's program of research, networking, family advice, and help launch their career. Meetings are usually arranged on an as needed basis.

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1) Mentee's Name _____

2) Primary Mentor's Name _____

3) How many meetings have you scheduled with your primary mentor during the previous 6 months? _____

4) How many times did you meet with your primary mentor during the previous 6 months? _____

Intellectual Growth and Development

5) Helps me become increasingly independent in identifying research questions and conducting and publishing my research

Strongly disagree Disagree Agree Strongly agree

6) Provides constructive feedback on my experimental designs

Strongly disagree Disagree Agree Strongly agree

7) Provides thoughtful advice on my research progress and results

Strongly disagree Disagree Agree Strongly agree

Professional Career Development

8) Provides counsel for important professional decisions

Strongly disagree Disagree Agree Strongly agree

9) Maintains balance between supporting his/her own research and developing my career

Strongly disagree Disagree Agree Strongly agree

10) Helps me to envision a career plan

Strongly disagree Disagree Agree Strongly agree

Academic Guidance

11) Provides advice on my coursework and academic goals

Strongly disagree Disagree Agree Strongly agree

12) Ensures that I am firmly grounded in rules regarding ethical behavior and scientific responsibility

Strongly disagree Disagree Agree Strongly agree

Skill Development

13) Provides constructive feedback on my presentation and writing skills

Strongly disagree Disagree Agree Strongly agree

14) Encourages me to present my work at scientific meetings and involves me in peer review of abstracts and manuscripts

Strongly disagree Disagree Agree Strongly agree

Personal Communication

15) Routinely monitors my progress and reviews proposed timelines and milestones with me

Strongly disagree Disagree Agree Strongly agree

16) Provides timely feedback

Strongly disagree Disagree Agree Strongly agree

17) Is appropriately accessible to me

Strongly disagree Disagree Agree Strongly agree

Serves as a Role Model

18) Illustrates active teamwork and collaboration

Strongly disagree Disagree Agree Strongly agree

19) Illustrates good work habits

Strongly disagree Disagree Agree Strongly agree

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Please complete a separate form for each mentee if you have more than one.

1 Mentor's Name

2 Mentee's Name

3 I have the following concerns regarding my mentee's progress:

- Issues related to research project
- Issues related to publications/grants
- Issues related to time management
- Issues related to containment of clinical duties by clinical supervisor
- Other
- None

Please describe the nature of this concern.

4 How could MSCl more effectively support your trainee?

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Mentorship Committee Meeting for _____ Date: _____ Location: _____

Mentor: _____

Mentoring Committee:

- (1) _____ (title)
- (2) _____ (title)
- (3) _____ (title)
- (4) _____ (title)

	General Info.	Timeline/Dates	Comments / Goals for the next year
Track: Post-doctoral fellow / Physician Scientist	Post-doctoral fellow / Instructor / Assistant Professor of Medicine Department of _____ / Division of _____ / Center for _____		
Research Group	Mentor: Co-mentor (if applicable): Collaborators/co-investigators and role: Biostatistical co-investigator: Research staff: (1) Grant name / sponsor/mentor. Title		
Current Funding or grant on which you are working and PI	(1) Grant name / sponsor / mentor. Title		
Grants applications pending or planned	(1) Grant name / sponsor / mentor. Title	Submitted (date) Resubmission (date/due)	Percentile of ____
Status of on-going projects	(1) Name of project – description of project/overview. (2) Name of project/sub-project – description of project/overview.		
Manuscripts – past year			
Clinical responsibilities	On-service at _____, doing _____ for a total of ____ weeks per year for next year. Clinic ____ day/week + ____ procedures		
Teaching responsibilities			
Committees and time commitment, interviewing, administrative responsibilities, other			
Regular meetings	Research group meeting (when, time, how often do you meet, what is your role)		
Needs/discussion points	One-on-one time with mentor (when, time, how often do you meet) Delineate 4 questions to address to the committee 1. 2. 3. 4.		

Mentorship Challenges and Problem-Solving Strategies

The following list of common challenges to the mentee-mentor relationship was developed by the Institute for Clinical Research Education and is available online at: www.icre.pitt.edu/mentoring/challenges_solutions.html.

Problem: Providing inadequate direction. There are two errors a mentor can make with respect to providing direction. Providing too much help can stall a mentee's movement toward independence and encourage dependence. Providing too little help could leave the mentee to flounder and, again, inhibit progress toward independence.

Strategy: While it is important for the mentor to stay vigilant about his or her actions, this is probably a time when the mentee has to step up and take action. It may be useful for the mentee to talk to peers to get a better picture of the extent of direction they are receiving. When the mentee has a good understanding of the situation and is prepared to discuss it with the mentor, the mentee should do so. Assuming that the mentee has a relationship of trust and uses good communication skills, the mentor will be responsive to the mentee's concerns.

Problem: Taking advantage of greater power. It is important that mentors be careful about the requests they make of their mentees, since mentees are inclined to please their mentors and may perceive a request as a demand. In some cases, mentors inadvertently take advantage of their power and have a mentee take on the work of the mentor. In addition to leading to fear and resentment on the part of the mentee, this could increase the mentee's workload and stall progress in career development.

Strategy: It may be that the mentor is unaware of his or her use of power and that a simple conversation will solve the problem; however, it is likely that a third party will be needed to mediate the situation. If possible, the third party should be someone who is senior to both the mentee and the mentor (perhaps a division chief or department chair). A meeting of the mentor, mentee, and mediator will often lead to a positive conclusion.

Problem: Dealing with conflicting demands. Individuals at the beginning of their career have a great deal of difficulty saying "no." Junior faculty, fellows, and postdocs with multiple mentors or supervisors sometimes become inundated with demands for work. Since they don't have the experience to know how to prioritize these demands, their workloads can become burdensome and a threat to their career development.

Strategy: When different mentors simultaneously want to make use of your time, it is hard to decide how to prioritize the workload. The problem is often made harder because you don't want to disappoint anyone. One way to resolve this dilemma is to take the list of assignments to your mentors individually and ask them to help prioritize your tasks. Better yet, call a team meeting so your mentors can negotiate with one another about the priority of tasks.

Problem: Dealing with conflicting advice. It is inevitable that mentees with multiple mentors and advisors receive conflicting advice with respect to research or teaching plans, writing manuscripts, and other aspects of their career development. This is worth repeating: it is inevitable. Conflicting advice also inevitably leads to confusion, fear, and other negative emotions and reactions.

Strategy: Your mentors are wise and knowledgeable, but they are not infallible. When you get conflicting advice, think about what you want to do. Ask friends for their opinions. Speak to other colleagues. Everyone has been in this situation, so people will be supportive as you work out how to handle it.

Problem: Lacking commitment. On the one hand, a mentor may find that his or her mentee lacks the motivation and commitment to carry out the considerable work required to develop a successful career in academia. This situation is difficult for both the mentor and mentee because the mentee has a real chance of failing and because the mentor may believe that he or she has wasted a great deal of valuable time working with the mentee. On the other hand, it is also possible that the mentee feels that the mentor lacks commitment (e.g., the mentor misses meetings or does not respond to a mentee's e-mails). The mentee's frustrations and lack of guidance can inhibit his or her movement toward independence. Because of the differential in power between the mentor and mentee, this problem is difficult to resolve while maintaining a productive and amiable relationship.

Strategy: If a mentee is viewed as lacking commitment, it is important for the mentor to try to discern the cause. It may be that the mentee-mentor match is not working well, or it may be that the mentee has discovered that his or her career focus is no longer appealing. The junior people here tend to be highly motivated and committed to academic careers, so while there may be an occasional case in which there is a real lack of commitment, there is usually another issue underlying the problem and it is the mentor's job to identify it and help resolve it. Conversely, if a mentor is viewed as lacking commitment and is missing meetings and not responding to e-mails, the mentee needs to do something about it. It may be that the mentor is unaware that the mentee is feeling neglected, or it may be that the mentor is so busy with other responsibilities that there is an unfortunate lapse in mentoring. Remembering that individuals who have agreed to be mentors already have a strong commitment to the process, the mentee should raise the issue with the mentor. If it is an especially busy time for the mentor, the mentee can ask if the mentor wants to touch base or have meetings by phone for a few weeks. When discussing a problem such as this, it is helpful to have some solutions to propose.

Problem: Neglecting the mentee or the mentor. It is important to pay appropriate attention to both the mentee and the mentor. Mentees need to respond in a timely fashion to requests and recommendations from their mentors. Mentors need to be available to their mentees on a regular basis but should also be sensitive to the times when their mentees need extra support or feedback.

Strategy: Try to maintain awareness of the other individual and what he or she is experiencing. By being vigilant, you will know when something is up, and you may be able to offer a hand.

Problem: Crossing boundaries. Boundaries-both professional and personal-tend to be sensitive. Crossing boundaries has the unfortunate effect of making both parties uncomfortable and has the potential for creating tension in the mentee-mentor relationship.

Strategy: To avoid this problem, the mentee and mentor should discuss boundaries at the onset of the relationship. Different people may have different ideas about what the boundaries should be. For instance, is it appropriate for a mentor to ask a mentee to babysit? This crosses the line because the power differential between mentee and mentor could result in a perception of coercion. If the issue is work-related (e.g., a mentor asks a mentee to give a talk that the mentor agreed to give), the extent to which a boundary has been crossed is less clear. Being prepared will help avoid problems down the line. It may also be useful for mentees to talk to a peer or a peer's mentors to ask for their perspectives on the issue. As in most other challenges, honest and direct communication can solve a number of problems. However, some boundaries-especially those of a sexual nature-should never be crossed.

Problem: Discovering a mismatch between mentor and mentee. Unfortunately, a mismatch between a mentor and mentee can occur. The mismatch may result from conflicting personalities, differing career goals or areas of scientific expertise, differences in work ethic, or any number of other reasons. Fortunately, the mismatch is usually discovered early in the relationship by the mentor, the mentee, or both. The longer the mismatch continues, the more difficult it is to resolve.

Strategy: While finding a mismatch is regrettable, it is a problem that is relatively simple to correct. If both the mentor and the mentee believe that a switch is desirable, the mentee can work with his or her division chief, department chair, and even the current mentor to help identify a more appropriate mentor.

Problem: Breaching confidentiality. Confidentiality is sacrosanct in the mentee-mentor relationship. A breach of confidentiality has the potential for irrevocably rupturing the mentee-mentor relationship. At a minimum, breaching confidentiality will cause considerable damage to the trust established between the mentor and mentee.

Strategy: This is a difficult problem to resolve, so it is best to avoid it altogether. At the onset of the relationship, mentees and mentors need to identify the kinds of things that should be confidential, and they need to be up-front about what is acceptable and what is not. When one party thinks there is a reason for disclosing confidential information, he or she should talk with the other to obtain permission in advance. If, however, a breach of confidentiality has occurred and you want to preserve the relationship despite the lapse in confidentiality, you can try to rectify the situation. The mentor and mentee should make clear what they thought happened and what they can do to avoid the situation in the future. It is vital not to assume intentionality, and the mentee and mentor should try to rebuild the relationship through communication and negotiation. Rebuilding can occur only if both the mentee and the mentor want to preserve the relationship.

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Master of Science in Clinical Investigation

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