

**Shaping a career in academic medicine:
Guidelines for mentor/mentee conversations**

Advance Faculty Professional Development program
Faculty Affairs and Professional Development
University of Pennsylvania School of Medicine

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Introduction

Q *“What kind of guidance do you want from a mentor?”*

In a series of focus groups with assistant professors in the University of Pennsylvania School of Medicine, conducted over the course of the 2004-2005 academic year, participants responded to the question above. Some of their answers follow here:

A *“I think the mentor’s responsibility should be trying to help you figure out at each stage, as you move toward promotion, what is more important to focus on...”*

“A mentor helps you be analytical and strategic.”

“A mentor’s job is to say, ‘I would not get involved in that project. It’s going to be a time sink. You may not even appear on the paper. .but here is a quick hitter. You’re going to get a lot of notoriety from playing around with this.’”

“I’m looking for a mentor who says this is going to be a very efficient way for you to build your CV.”

As indicated in these quotations, a common denominator underlay focus group participants’ answers: Given promotion standards for their academic track, they wanted to know how to focus their energy at any given stage of their careers so as to achieve long-term goals, that is, how to shape a career in academic medicine strategically.

This reference guide provides assistant professors and their mentors with an explicit understanding of what it means to shape a successful career in academic medicine over time. In doing so, it provides both parties with a shared language for evaluating and discussing mentees’ progress from appointment to promotion. Issues that pertain early in faculty members’ careers will fade in relevance as other issues come to the foreground at mid-career and beyond.

Strategic career planning

“I ask my faculty to think of their careers as start-up businesses. Where do they want to be in three years...in five years?” Alan Pack, M.B., Ch.B., Ph.D., Professor of Medicine

The best way for a mentor and mentee to determine what to emphasize in any given conversation is to think strategically by projecting forward to promotion standards on the mentee’s academic track. Then they can work backward to evaluate whether the mentee is currently on a good trajectory toward meeting those standards.

The shifting emphases in mentor/mentee conversations will be somewhat similar when viewed over time, regardless of track: As faculty move toward promotion, they need to establish ever wider recognition in the academic community for their intellectual leadership. Yet the pace at which they need to meet promotion standards, and the measures and outward markers of success vary considerably from track to track.

What's in this guide

Guidelines for mentor/mentee conversations according to timeline and academic track

To reflect these differences, separate materials have been developed for the different academic tracks. Given that all faculty in probationary status are reviewed for reappointment or promotion at three-year intervals, the guidelines are presented in three-year blocks. However, in reality, as mentees progress toward their review year, they should be speaking with their assigned mentor at least once a month, and meeting with their chief or chair at least once a year for a more formal performance review.

Flexibility of guidelines

Note that the overriding intent of this reference guide is to offer flexible guidelines that mentors and mentees can adapt to mentees' individual situations rather than to impose rigid formulas on conversations. Mentees will have distinct issues pertaining to their individual situations, and ultimately individual mentors and mentees are the best judges of what to emphasize in their conversations. Likewise, mentors and mentees should note that no single approach to shaping a career in academic medicine will guarantee promotion to all faculty. Ultimately, the School of Medicine Committee on Appointments and Promotions considers candidates individually, focusing on each faculty member's unique contributions.

Coaching tips for mentors

Although evaluating mentees' progress toward promotion is an important part of mentor/mentee conversations, it is only one part. To be effective, mentors also need to coach mentees on *how* to achieve long-term goals. For example, letting a mentee know that he or she should have more first-author publications at a certain point in his or her career may be helpful, but equally important is suggesting *how* to increase the number – in other words, coaching the mentee, for example by suggesting ways to focus research ideas, by identifying appropriate journals in the field, or by helping the mentee establish a realistic routine for generating manuscripts. While far from exhaustive, the guide provides examples of the kind of advice that may be helpful to mentees at different points in their professional development.

Resources to support mentees' professional development

It also includes resources such as web sites and PowerPoint presentations that will be helpful to mentees. The majority of these resources are accessible by searching the Faculty Affairs and Professional Development web site at www.med.upenn.edu/fapd.

Value of multiple mentors

“Officially, I had one mentor. Unofficially, I had many more.” Susan H. Guttentag, M.D., Associate Professor, Pediatrics

The emphasis in the guide is on the content of conversations over time. It is worth noting here that mentees are likely to be engaging in these conversations with a number of different mentors – and this is a good strategy. In fact, a recent work-climate survey of faculty in the School of Medicine demonstrated a positive correlation between the number of mentors faculty had and their general satisfaction with their work lives – the greater the number of mentors they had, the greater their level of satisfaction.

In addition to seeking out multiple mentors, faculty may want to switch mentors if they find an assigned mentor personally incompatible or if their research evolves into areas in which the assigned mentor is not well versed. A good first step for finding mentors is to search the Faculty Expertise Database (FEDS) by going to the School of Medicine home page at www.med.upenn.edu and clicking on “faculty” in the left-hand column.

Under development

At present, the guide provides information for our standing faculty – those in the clinician-educator and tenure tracks. Information for faculty in the research and academic-clinician tracks is currently being developed. While the current materials are targeted to assistant professors, faculty at all stages of their professional lives, including senior faculty who have been promoted or attained tenure, are likely to benefit from mentoring as well.

Guidelines for conversations with clinician-educator faculty

Guidelines for conversations with clinician-educators

Begin with the end in mind.

The School of Medicine's standards for promotion on the clinician-educator track appear in the box below. Keeping these standards in mind, mentors should help mentees evaluate whether they are making sufficient progress toward promotion. If mentees are falling behind, mentors should help them devise strategies for getting up to speed. In addition to receiving feedback from their assigned mentors, mentees should make sure to meet annually with their chair or chief for a performance review. During this meeting, they should check to see whether their actual day-to-day activities match their academic plans (job descriptions).

Many C-Es distribute their effort over caring for patients, scholarship, and teaching. However, over time, the C-E track has evolved to include faculty who do not directly care for patients. For example, C-Es may be promoted based on their scholarly contributions in the area of medical education, health care delivery, or statistical methods. The full range of accomplishments that COAP recognizes for faculty in this track are reflected in the School of Medicine's statement on "prototypical pathways in the clinician-education track" available at <http://somapps.med.upenn.edu/fapd/documents/pl00030.pdf>Resource.

COAP Guidelines

<http://somapps.med.upenn.edu/fapd/documents/pl00030.pdf>

Within this document, see "School of Medicine Standards for Promotion or Appointment as interpreted by the COAP – Standing Faculty – Clinician Educator"

Associate Professor

"The successful candidate will have a local and regional reputation as an outstanding clinician in his/her area of expertise. The individual will have a record of academic productivity, including original papers, reviews, chapters, editorials, and letters, that is characterized by a recognizable, distinct contribution and focus. The COAP recognizes the broad range of scholarly activity that can be appropriate for faculty in the Clinician-Educator track. Grant support, when available, is likely to come from federal or privately funded translational/clinical/population science research studies in which the candidate is a participant. Teaching excellence is essential and is established from departmental records, course directors' records and the receipt of teaching awards. Teaching also is demonstrated by invitations to lecture at other medical centers within the region, and by participation in courses at the local and regional levels."

C-E Yrs. 1 – 3

Primary emphasis: Establishing a research focus

Typically, assistant professors will be just out of their instructorships or fellowships at this point. The primary emphasis of mentoring conversations should be on establishing a research focus. Mentors can suggest other faculty within the division, or across divisions or departments with whom mentees may want to collaborate. However, toward the end of this time period, mentors should help mentees begin to organize their own research projects and to be first author on some peer-reviewed papers.

Negotiating sequence of authors

Mentors and mentees should discuss sequence of authors at the beginning of every manuscript project, and they should revisit this topic as the project evolves. Depending on how long the project goes on and how many people have made significant contributions along the way, they may need to re-negotiate the sequence of authors.

Based on International Committee of Medical Journal Editors (ICMJE) guidelines, the BGS Authorship Guidelines, may be helpful in these discussions.

http://www.med.upenn.edu/bgs/documents/BGS_author.pdf

Note that biostatisticians and epidemiologists may be particularly vulnerable to lack of research focus, for, as methodologists, they are likely to be called upon to contribute their expertise to studies representing a broad array of clinical areas. Therefore, it is especially important for these faculty that their mentors help them identify a primary and perhaps a secondary research area on which to focus early on.

In addition to establishing a focus to their research, C-Es are typically teaching within their division or department during this initial phase of their appointment. They should try to keep administrative responsibilities to a minimum. For example, organizing a conference may be reasonable now, but serving on committees or directing a course will most likely siphon off time better devoted to establishing a research focus.

As any funding that the department may have been able to supply begins to dwindle, faculty should start exploring other sources of funding. The R01 is only one funding mechanism. The K08 and the K23, NIH career development awards, may be appropriate for faculty at this early stage of their appointments. To review a number of early-career funding options, faculty may want to look at the presentation in the box that follows.

Resource. Funding for clinical research

Visit the *Advance* web site, www.med.upenn.edu/advance, and search for “Funding for clinical research” to link to a PowerPoint presentation in which Jacqueline A. French, M.D., Professor, Neurology, offers guidance for clinical investigators on finding funding, depending on what their specific goals are -- spending at least 50% of their time on research, paying for research staff, or freeing up some time from seeing patients.

Although mandatory review for promotion may seem a long way off, faculty should make a habit of gathering documentation for their dossiers as they go along. That way, assembling their dossiers will be a much easier task as they approach their review year – and their dossiers will be more likely to represent the full range of their accomplishments, ultimately making a stronger case for their promotion.

The bottom line: faculty should already be gathering documentation for the educational database, known at many other institutions as the teaching portfolio. (See EDB Helpful Hints below). They should also review their academic plans at least once a year to ensure that the distribution of their effort matches what they really do from day-to-day and that it is consistent with expectations for their track. They should bring any inconsistencies to the attention of their chair or chief during their annual performance review. Finally, they should make a point of updating their CVs regularly, using the edit feature on FEDS. (See box below.)

Coaching tip

Q *My mentee is an excellent clinician but has no particular research focus. How can I help her establish a clear focus?*

A Ask your mentee, “What questions keep arising in your mind as you see patients?” Then help her reframe these recurrent concerns as research questions.

Resource: Faculty Expertise Database (FEDS)

To access this database, go to the School of Medicine home page at and click on “faculty” in the left-hand column.

This searchable database stores information related to a number of faculty qualifications, including education, publications, and grants. You should access FEDS when you want to accomplish either of the following tasks:

1. Search for other faculty who could serve as mentors or collaborators.
2. Update your own CV.

Resource. EDB Helpful Hints

For guidance on creating and maintaining your educational database, visit www.med.upenn.edu/fapd and search for “EDB Helpful Hints.”

Resources: Training in clinical investigation

Where can mentees with little experience in study design find guidance?

The School of Medicine interactive web site <http://www.med.upenn.edu/clinrestraining/> allows users to identify training opportunities and degree-granting programs in clinical investigation and patient-oriented research.

C-E Yrs. 4 – 6

Primary emphasis: Increasing scholarly productivity

“COAP and the University are looking for a steady stream of productivity – not a sudden flurry. Steady productivity demonstrates promise of future achievement.” Reed E. Pyeritz, M.D., Ph.D., Professor of Medicine and Genetics; Chair, School of Medicine Committee on Appointments and Promotions, 2004 – 2007.

By now, faculty should have established a clear focus to their research, and they should be hitting their stride, producing papers on a steady basis. As faculty move into this middle phase of their appointments, any start-up funds their departments may have been able to provide early on will have dwindled. Mentors can help them identify sources of additional funding to protect time for scholarship.

Faculty should begin to explore limited administrative responsibilities in order to demonstrate good citizenship. They should also increase the amount of teaching they do outside the hospital. Finally, they should continue to evaluate whether the way they apportion their time from day-to-day matches their academic plans, bringing any discrepancies to the attention of their chief or chair during their annual performance review.

Myth

The School of Medicine COAP expects C-Es to have at least one R01 in hand to be promoted to associate professor.

Fact

While the SOM COAP certainly looks favorably on NIH funding, SOM COAP guidelines do not require NIH funding – or any other grant funding – for promotion on the C-E track. However, many faculty find it advantageous to **obtain** funding to protect some time to achieve the excellence in scholarship needed for promotion. Often this funding comes from federal or privately funded translational/clinical/population science research studies in which the candidate is a participant.

C-E faculty who choose to pursue NIH funding, may want to consult the on-line tutorials and guides available on the *Advance* faculty professional development web site at www.med.upenn.edu/fapd/advance on the “research page.”

Q: I’ve never written a protocol before. Where can I get help?

A: For conceptual issues such as those involving protocol development, study design, and methodology, your mentor may be able to help. In addition, some of the individual classes and degree-granting programs listed at <http://www.med.upenn.edu/clinrestraining/> cover these issues.

For guidance on drafting the actual protocol document, the Office of Human Research in the School of Medicine offers a downloadable template available at http://www.med.upenn.edu/ohr/docs/ProtocolTemp_guidelines.doc

Myth

Teaching doesn’t really count toward promotion.

Fact

A record of teaching excellence will be crucial at both the School of Medicine COAP and at the Provosts’ Staff Conference, the third and final administrative level of review. At the PSC, deans from a number of schools throughout the university meet and scrutinize candidates’ teaching records to the same extent that they would scrutinize the records of their own faculty.

C-E Yrs. 7 – 9

Primary emphasis: Gaining additional exposure

“What really hit me when I started serving on the medical school COAP was how important those letters are.” Kathy N. Shaw, M.D., M.S.C.E.; Professor of Pediatrics at CHOP; Chief, Division of Emergency Medicine at CHOP; member School of Medicine COAP.

When mentees come up for review at the end of this phase of their appointments, the School of Medicine COAP will solicit letters from external reviewers or “extramural consultants.” Standard text for letters to consultants follows in the box below.

Resource: COAP letter to extramural consultants.

Available at <http://somapps.med.upenn.edu/fapd/documents/fa00004.doc>

LETTER TO EXTERNAL REVIEWERS

**Promotion/Appointment to Associate Professor Clinician-Educator
(and—with appropriate modifications—for promotion/appointment to Professor Clinician-Educator)**

Dear Dr. _____:

1st ¶ for promotions:

Dr. _____, who is currently an (**Assistant/Associate Professor**) of _____ in the Clinician-Educator track in the School of _____ at this University, is being considered for promotion to the rank of (Associate Professor/Professor) of _____, Clinician-Educator track. We would very much appreciate your help in evaluating this candidate’s achievements and future potential.

1st ¶ for new appointments:

Dr. _____, is being considered for appointment to the rank of an (**Associate Professor/ Professor**) of _____ in the Clinician-Educator track in the School of _____ at this University. We would very much appreciate your help in evaluating this candidate’s achievements (and future potential ←*for Associate Professor appointment*)

The University expects that those **promoted/appointed** to the rank of (**Associate Professor/Professor**) in the Clinician Educator track will be excellent clinicians and teachers whose achievements have won exceptional recognition, both by those outside the University and by the candidate’s faculty colleagues, and whose presence on the faculty enhances the prestige of the University. The primary emphasis of standing faculty in the clinician-educator track is on teaching and practice. It is expected that such faculty also will generate new knowledge in their respective fields and/or assume a leadership role in the application of new knowledge in clinical practice. [**For Associate Professor: Since appointment to the rank of Associate Professor in the Clinician-Educator track is for an indefinite term, we require that individuals promoted to that rank not only to have established a record of outstanding clinical practice and excellent teaching, but to have shown promise of future achievement.**] In making your evaluation, which should focus on the achievements of the candidate, it would be helpful if you would:

1. Evaluate the scope and significance of the candidate's achievements and their importance within the general discipline;
2. Comment upon the degree of recognition achieved in the candidate's discipline, noting her/his most distinctive contributions;
3. Rank the candidate relative to the leading clinician/scholars in the same field of study [and at a comparable level of professional development;] ← ***DROP FOR FULL PROFESSOR***
4. Evaluate the candidate's likelihood of achieving a similar faculty position and rank at the leading institutions in this discipline;
5. Provide any information or insight that you have on the candidate's skill and effectiveness as a clinician, teacher and communicator;
6. Provide any additional insights that may be helpful in determining whether or not to recommend **appointment/ promotion** to (Associate Professor/Professor) in the Clinician-Educator track.

For your convenience, we enclose Dr. _____'s curriculum vitae, her/his personal statement, teaching chronicle, and [and ***insert additional material as appropriate, e.g., sample of her/his publications***] together with the guidelines for appointment and promotion in the Clinician Educator track.

It is the policy of the University of Pennsylvania that external letters be held in confidence. In the event of litigation or a governmental investigation, however, the candidate or others may gain access to the information contained in these letters.

We would appreciate receiving your evaluation by date , if possible, since the review process requires all materials to be in hand as early in the academic year as possible. We are very grateful for your help in this matter.

Sincerely,

, Chair

Letters from consultants serve as an important gauge of the extent to which candidates are recognized for their contributions within the larger scholarly community. For assistant professors on the C-E track, this translates into a regional reputation. Generally, COAP defines "regional" as referring to locations outside of the Delaware Valley but within a day's drive, so, for example, New York City, Baltimore, Washington, D.C., and Pittsburgh would qualify. Of course, being invited to speak at prestigious institutions beyond this radius will only work to a candidate's advantage.

Coaching tip

Given how important letters are, how can I help my mentees cultivate potential letter writers?

You can solicit invitations that will provide your mentees face-time with scholars in their area of expertise. Be on the alert for the following opportunities:

Service on study sections. Recommend your mentees for study sections. Serving on study sections will offer them the opportunity to demonstrate the clarity of their scientific reasoning to prominent scholars in their fields.

Invited lectures. Call your colleagues at universities throughout the country to solicit invitations for your mentees.

Meetings with visiting scholars. Invite the top names in your mentees' area of expertise to give seminars. If they accept, make sure your mentees get some individual face-time with visiting scholars.

Roles organizing conferences. Find opportunities for your mentees to organize or participate in high-profile conferences.

Memberships in professional and scientific societies. Help your mentees identify the key professional societies in their area of biomedical expertise and secure membership in them.

As faculty approach their mandatory review year, mentors should encourage them to start assembling their dossiers. For guidance in this area, they may want to direct faculty to the guidebook mentioned in the box below.

Resource. Preparing Your Promotion Dossier: A Step-by-Step Guide

Accessible on the *Advance* web site www.med.upenn.edu/fapd/advance by searching for "The Promotion Process, [change]" this short guidebook leads faculty through the steps of preparing an academic dossier and includes the current year's due dates.

Guidelines for conversations with tenure-track faculty

Guidelines for conversations with tenure-track faculty

Begin with the end in mind.

Basic scientists and physician-scientists are evaluated according to the same promotion guidelines. (See box below.) However, physician-scientists are provided an additional three years in recognition of their clinical responsibilities.

Keeping these promotion standards in mind, mentors can help mentees evaluate whether they are making sufficient progress toward promotion.

Resource: COAP Guidelines

<http://somapps.med.upenn.edu/fapd/documents/pl00030.pdf>

Within this document, see “School of Medicine Standards for Promotion or Appointment as interpreted by the COAP – Standing Faculty – Tenure Track”

Associate Professor

“The successful candidate must have a national reputation for outstanding independent scholarship. Independence includes intellectual leadership of collaborative research. A series of peer-reviewed articles in respected journals should tell a coherent story about his/her research. The successful candidate will have independent research grant support, usually from the NIH or NSF. Membership in research societies, regular presentations at national meetings, and invited lectureships indicate the importance of the individual’s research and his/her national reputation. The candidate should have a record of excellence in teaching students and trainees. Those who are involved in patient care are expected to be excellent clinicians.”

The section that follows below is targeted primarily to basic scientists. However, physician-scientists are likely to find it helpful too. Additional material, specifically for physician-scientists, follows in the second section below.

Tenure track Yrs. 1 – 3 Basic scientists

Primary emphasis: Establishing a reputation as an independent investigator

“The most important order of business is getting the lab or research program up and running.” Virginia Man-ye Lee, Ph.D., Professor, Pathology and Laboratory Medicine

Mentors should encourage their mentees to round out the work they did during their fellowships so that they can begin to establish their reputations as independent investigators. Most new faculty on the tenure track arrive at Penn with a research plan in mind, and the sooner they can set this plan in motion the better.

Setting the science in motion

“During your first year, hiring the best lab personnel should take precedence over purchasing the most cutting-edge equipment.” Amita Seghal-Field, Ph.D., Professor, Neuroscience

The first order of business should be getting the experimental systems up and running. Knowing how to handle the nitty-gritty, from ordering equipment to hiring postdocs and technicians to recruiting graduate students can make or break a new faculty member’s ability to get up to speed quickly. Mentors can provide this kind of practical information. Departmental business administrators (BA’s) are an excellent resource too.

Resources. Advice on getting up to speed.

The following two resources are available on the research page on the *Advance* faculty professional development web site www.med.upenn.edu/fapd/advance

1. “Surviving and Thriving at Penn”
PowerPoint presentation in which Robert Doms, M.D., Ph.D. Chair of Microbiology at Penn provides advice for new faculty on getting their Research enterprise up to speed.
2. *Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty.* Developed by the Howard Hughes Medical Institute and recommended by the School of Medicine Dean, Arthur Rubenstein, MBBCh. Provides tips on a range of topics, including setting up your lab and getting the mentoring you need.

The following book can be ordered over Amazon:

At the Helm: A Laboratory Navigator, Kathy Barker.

Cold Spring Harbor, New York: Cold Spring Harbor Laboratory Press, 2002. Provides a wealth of practical guidance for PI's setting up a lab for the first time.

Resource. Five Steps to Recruiting Employees to the School of Medicine

<http://www.med.upenn.edu/somtrain/recruitment/index.htm>

Developed by the School of Medicine Training Office, the presentation at this link offers step-by-step guidance on recruiting, interviewing, and hiring.

In selecting staff for the lab, many faculty prefer graduate students, for graduate students can contribute to shaping the science. They have chosen science as a career and have a vested interest in learning to integrate the literature, design experiments, and interpret the data. Moreover, as entrance into Biomedical Graduate Studies continues to become more competitive, our pool of grad students has become increasingly impressive – but it is a relatively small pool. Given the competition for grad students, mentors should alert their mentees to specific ways in which they can make themselves visible to grad students. [See box below.]

Ways to make yourself visible to grad students

Join at least one graduate group. Crossing departmental and school boundaries, these groups of faculty within Biomedical Graduate Studies can provide you with exposure to a wide range of grad students in addition to colleagues with whom you may want to collaborate.

Join an affinity group. Less formal than graduate groups, a number of joint lab meetings have sprung up around shared interests including HIV, virology, immunology, and cardiac development. These groups meet regularly for brown-bag lunches at which grad students present their data.

Give chalk talks. Generally about 10 minutes long, these talks provide you with a forum to “advertise” your lab’s research to grad students.

Volunteer to teach first-year seminars. Students have not yet committed to an area of research at this point. Now is the time to reach them! If given the choice, opt to teach seminars rather than lectures. Seminars give you more chance to interact with students.

Cultivate rotation students. When you get rotation students, work with them – go over papers with them, and talk with them frequently.

See whether there are T32 grants you can join. Biomedical Graduate Studies maintains a complete list of these institutional training grants, along with their PIs.

Coaching tip

Q *My mentee says his lab is relatively new and unknown. He doesn't believe he stands a chance of competing against more established faculty for grad students. How can I encourage him?*

A Let him know that students are frequently attracted to the labs of young faculty who are viewed as more dynamic, hands-on, and accessible than their senior colleagues.

All this being said, faculty should not overlook the merits of hiring experienced laboratory technicians. Unlike professional lab techs, grad students are with an investigator for only a short period of time. Moreover, they are balancing their career needs with those of their mentor. This means that grad students require more time off a project to attend conferences and courses, and to go to job interviews. By way of contrast, professional lab techs are devoted to the needs of the research group. Any time away from their core work relates to advancing the lab. Perhaps most important, once they master relevant lab techniques, they can teach those techniques to new grad students.

Directing the science

Once new faculty have set their science in motion, they may be tempted to retreat to their offices to focus on grant-writing, leaving lab projects to hum along on their own. However, mentors should encourage them to meet with lab members regularly and to monitor the lab's work closely so that they can keep pushing it to the next phase, troubleshooting as needed, helping to interpret results, and designing the next set of experiments. Ultimately, time spent this way will more than pay itself back.

Mentors should help their mentees to strike a balance between focusing their experiments in order to tell an anticipated story and, at the same time, following unexpected leads that the data suggest along the way. Often it is the most unexpected twists and turns that occur in an experiment that yield the most exciting discoveries.

Funding the science

Some departments are able to provide start-up funds, but the expectation is that faculty on the tenure track secure their own funding early on. The School of Medicine Committee on Appointments and Promotions recognizes that it takes time to generate enough preliminary data to apply for an R01. Therefore, when tenure-track faculty come up for reappointment at year three, COAP will view other **competitive, peer-reviewed** grants favorably, including VA merit awards, grants from the Department of Defense, and foundation grants. Even so, faculty would do well to apply for a joint R01, as co-PI at this point in their careers. That way, they will have been able to demonstrate productivity when they are ready to apply for their second R01 as PI.

Mentors should make sure that their mentees receive feedback on their grants before submitting them. If mentors do not have the background to provide an in-depth critique of the science, they should find other faculty who do. Then they should contact those faculty themselves, for their mentees may feel reluctant to approach their senior

colleagues on their own. Finally, even if mentors are not conversant in mentees' specific area of biomedical expertise, most likely they can provide feedback on the abstract and specific aims.

Extensive resources on grant-writing are available on the *Advance* Faculty Professional Development Program web site. (See box below.) A few words about issues specific to less established investigators follow after the box.

Grant-writing resources: Research page on *Advance* faculty professional development web site www.med.upenn.edu/fapd/advance

Includes the following materials with do's & don'ts, and how-tos:

All About Grants tutorial

Link to the NIAID (National Institute for Allergy and Infectious Diseases) website which provides on-line tutorials on preparing RO1 grant applications.

Common Pitfalls of Grant Preparation

PowerPoint presentation with audio by Ann Kennedy, D.Sc., Richard Chamberlain Professor of Research Oncology, summarizing typical fatal flaws she observed in grants when she served as a member of an NIH study section

Grant-Writing Manual -- School of Medicine

Link to the School of Medicine's Grant-Writing Manual with information on the NIH review process, the anatomy of an NIH grant, resources to support grant-writers, budgeting, and more.

How to Develop and Write an NIH Grant

PowerPoint presentation by Rita Balice-Gordon, Ph.D. Professor of Neuroscience, offers dos and don'ts for writing each of the major sections of an NIH grant application, along with examples.

Inside the NIH Grant Review Process

Video presentation by the NIH Center for Scientific Review, showing a mock study section meeting. Provides an inside look at how NIH grant applications are reviewed for scientific and technical merit

What Happens After Your Grant is Handed to the FedEx Guy?

PowerPoint presentation by Gary A. Koretzky, M.D., Ph.D., Professor of Laboratory Medicine and Pathology, describing what happens during that black box of time between the moment when grants are handed off to the "FedEx guy" and reviewer comments arrive back in the mail. Also provides advice on resubmitting.

Where can I get feedback on my grant?

VIRGA (Voluntary Internal Review of Grant Applications)

Administered by the Research Program Development office, this service matches grant-writers with established investigators who will read the specific aims section. For information, contact rpd@mail.med.upenn.edu

Your peers!

Ask your mentor to review your grants or to identify faculty who can. Also see whether the VIRGA service above can connect you with faculty to read your specific aims. For additional feedback, form a grant-writing discussion group with your peers. Even if their science is not closely related to yours, they can provide general feedback on your abstract and specific aims. Testing the clarity of your writing on them will serve as a good test of whether you will succeed in communicating with study section members, for, typically, members of NIH study sections will have backgrounds that are only generally related to your own. Moreover, if you read your peers' grants, it will be easier for you to ask them to reciprocate by reading yours.

Advice for less experienced grant-writers

New faculty tend to be overly ambitious in writing their first grants, most likely because they want to model their own research after the research that came out of the much more established labs where they did their fellowships. Mentors should remind them that NIH study section members want to fund science that is realistic and achievable within a projected budget.

On a like note, new faculty may want to jump ahead to their most exciting specific aims. Mentors should check to see that aims build on one another in logical sequence. For example, if there are three aims, typically the first aim is likely to be achieved and will produce data that is informative but not particularly groundbreaking. The second aim usually presents the heart of the grant and moves the science into new territory. The third and final aim is predicated on achieving the first two. It tends to be the aim that will yield the most novel information – but it also tends to be the most speculative aim. Mentors need to caution grant-writers against placing too much emphasis on this aim or jumping to it prematurely in grant applications.

Mentors may also need to remind grant-writers to demonstrate that they have thought through how they will handle experiments that do not proceed as anticipated. Study

section members will skim the first page looking for certain magic words such as “potential outcomes” and “alternative approaches” that indicate this kind of foresight.

Finally, mentors should check to see that first-time grant-writers have presented their methods in sufficient detail. More established investigators can get away with less detail, for they have already proved their ability to carry out experimental plans.

Writing scientific papers

Typically, faculty need their first year to ramp their research enterprise up to speed. By the end of the second year, they should have generated enough data to start writing papers – and mentors should encourage them to get going.

Sometimes new faculty wait for a groundbreaking story to emerge from their data, but incremental advances in their area of expertise are worth writing up too. Mentors should point out that any papers their mentees publish, whether or not they are groundbreaking, will signal productivity to COAP when candidates come up for reappointment.

Coaching tip

My mentee keeps accumulating data. It seems like he’s waiting for an epiphany to suggest the perfect paper. How can I get him to start writing?

Suggest that he begin with the figures and place them in logical sequence. Then he can flesh out the story with words.

Myth or fact?

Teaching doesn’t really count toward promotion.

Fact

A record of teaching excellence will be crucial at both the School of Medicine COAP and at the Provosts’ Staff Conference, the third and final administrative level of review. At the PSC, deans from a number of schools throughout the university meet and scrutinize candidates’ teaching records to the same extent that they would scrutinize the records of their own faculty

Making strategic decisions

The promotions clock ticks quickly on the tenure track, so faculty need to make every decision on how they allocate their time with an eye to both short-and long-term goals. They are likely to be inundated with various invitations, and mentors can help them assess invitations based on their long-term goals.

Assess invitations based on long-term goals.

Should I accept an invitation to...

...teach a particular course?

Teaching a course can increase your “face time” with graduate students who will become familiar with your research and, as a result, may well opt to do their rotations in your lab. However, you may want to think twice about accepting an invitation to direct a course as this can be an enormously time-consuming commitment and is often better left until after promotion.

...serve on a committee?

Serving on the BGS admissions committee can provide a great opportunity to increase the pool of graduate students in your area of expertise. However, in general, you should limit committee work, particularly early in your career. (You can use your service on one or two committees as a reason for declining service on others!)

...collaborate on a project?

If you have unique expertise in a particular methodology or lab technique, you may be bombarded with e-mails asking you to collaborate. Be selective. Favor projects that tie in with your research. Too many unrelated collaborations can diffuse the focus of your research, and when you come up for promotion, the Committee on Appointments and Promotions will want to see that your scholarship tells a coherent story.

My chief assumes that he should be senior author on all my papers because they “come out of his shop.” What’s standard?

The following statement from Section 1e in the Biomedical Graduate Studies Authorship Policy may be particularly helpful in determining senior authorship:

“General supervision of a research group is not sufficient for authorship.”

Faculty with questions on this policy, may want to contact Susan Ross, Ph.D., Professor of Microbiology, who is knowledgeable about the BGS policy.

Based on guidelines developed by the International Committee of Medical Journal Editors (ICMJE), the BGS Authorship Policy covers a number of topics including qualification for authorship and proper sequence of authors. It is accessible on line at http://www.med.upenn.edu/policy/BGS_author.pdf

Tenure Track. Years 4-6 Basic Scientists

Primary focus: Writing senior- authored papers

“You need senior author papers – little else matters.”

Robert Doms, M.D., Ph.D. Chair, Department of Microbiology

By now, tenure-track faculty should no longer be writing papers with mentors from their fellowship as senior author. Likewise, they should avoid too many papers with a well-known senior scientist unless they have a sufficient number of additional papers that do not include that person. Their focus now should be on securing a place for themselves as senior author.

All this being said, mentors should not discourage their mentees from any collaborative papers. In fact, effective collaborations can greatly accelerate mentees’ research and make it easier for them to move into new areas, giving them both scientific and funding diversity. However, mentees should make sure that they have clearly defined roles on papers and that their individual contributions to the science are clear.

When tenure-track faculty are evaluated for tenure, the School of Medicine COAP will look for assurance that the candidate has provided for substantial research funding into the foreseeable future. Historically, this has translated into having two R01’s or a renewed R01, along with another grant such as funding from the VA or foundations. While the NIH RO1 remains the gold standard, the School recognizes that, beginning in 2005, overall NIH funding has plateaued. As a result, other sources of peer-reviewed funding, in a time of NIH restriction, take on added importance. If a candidate, at the time of tenure review, has funding that will be ending in the next few years, it is advisable that there be a number of applications listed as ‘pending’.

Letters from external reviewers play a critical role in evaluating faculty for promotion. Standard text for letters soliciting feedback from reviewers follows in the box below.

Resource: COAP letter to extramural consultants.

Available at <http://somapps.med.upenn.edu/fapd/documents/pl00030.pdf>

LETTER TO EXTERNAL REVIEWERS

Promotion/Appointment to Associate Professor (and—with appropriate modifications—for promotion/appointment to Professor)

Dear _____:

1st ¶ for promotions:

Dr. _____, who is currently an (Assistant/Associate Professor) at this University, is being considered for promotion to the rank of (Associate Professor with tenure/Professor). We would very much appreciate your help in evaluating this candidate's scholarly achievements.

OR

1st ¶ for new appointments:

Dr. _____, is being considered for appointment to the rank of (Associate Professor with tenure/Professor). We would very much appreciate your help in evaluating this candidate's scholarly achievements.

The University expects that those *promoted/appointed* to the rank of (Associate Professor/Professor) will be excellent teachers and mature scholars whose achievements have won exceptional recognition both by scholars outside the University and by the candidate's faculty colleagues, and whose presence on the faculty enhances the prestige of the University. **Promotion/Appointment** to this rank is not a recognition of length of service, but rather of outstanding scholarship and excellent teaching. In making your evaluation, which should focus on the achievements of the candidate (*since being promoted to tenured rank*), it would be helpful if you would:

1. evaluate the scope and significance of the candidate's scholarly achievements and their importance within the general discipline;
2. comment upon the degree of recognition achieved in the candidate's discipline, noting his/her most distinctive contributions;
3. rank the candidate relative to the leading scholars in the same field of study [*and at a comparable level of professional development* ← **DROP FOR FULL PROFESSOR**]
4. evaluate the candidate's likelihood of achieving a similar faculty position and rank at the leading institutions in this discipline;
5. provide any information or insight that you have on the candidate's skill and effectiveness as a teacher and communicator;
6. provide any additional insights that may be helpful in determining whether or not to recommend **promotion/appointment** to (Associate Professor/Professor).

For your convenience we enclose Dr. _____'s curriculum vitae [*and insert additional material as appropriate, e.g., statement on research and teaching, manuscript*].

It is the policy of the University of Pennsylvania that external letters be held in confidence. However, in the event of litigation or a governmental investigation, the candidate or others may gain access to the information contained in these letters.

We would appreciate receiving your evaluation by date if possible, since the review process requires all materials to be in hand as early in the academic year as possible. We are very grateful for your help in this matter.

Sincerely,

_____, Chair

Cultivating a reputation in the scholarly community

“After I’ve attended a conference, I consider it a success if I can point to at least one person I’ve spoken with who didn’t know me beforehand.” Glen N. Gaulton, Ph.D., Professor, Pathology and Laboratory Medicine; Vice Dean, Research and Research Training.

As indicated in the box above, the School of Medicine COAP asks reviewers to evaluate the extent to which candidates are recognized in the larger scholarly community for distinctive and significant intellectual contributions. This means that faculty need to get their name “out there” in the larger scholarly community. At professional meetings, they should take advantage of opportunities to discuss their scholarly interests with other attendees. They should be working with their mentors on finding opportunities to create a high profile. Some specific ways in which mentors can help mentees get their names established in the larger scholarly community follow [change: in the box below.]

Coaching tip

Given how important letters are, how can I help my mentees cultivate potential letter writers?

You can solicit invitations that will provide your mentees face-time with scholars in their area of expertise. Be on the alert for the following opportunities:

Service on study sections. Recommend your mentees for study sections. Serving on study sections will offer them the opportunity to demonstrate the clarity of their scientific reasoning to prominent scholars in their fields.

Invited lectures. Call your colleagues at universities throughout the country to solicit invitations for your mentees.

Meetings with visiting scholars. Invite the top names in your mentees’ area of expertise to give seminars. If they accept, make sure your mentees get some individual face-time with visiting scholars.

Roles organizing conferences. Find opportunities for your mentees to organize or participate in high-profile conferences.

Memberships in professional and scientific societies. Help your mentees identify the key professional societies in their area of biomedical expertise and secure membership in them.

As faculty approach their mandatory review year, mentors should encourage them to start assembling their dossiers. For guidance in this area, they may want to direct faculty to the guidebook mentioned in the box below.

Resource. Preparing Your Promotion Dossier: A Step-by-Step Guide

Accessible on the *Advance* web site www.med.upenn.edu/fapd/advance by searching for “Preparing Your Promotion Dossier: A Step-by-Step Guide,” this short guidebook leads faculty through the steps of preparing an academic dossier and includes the current year’s due dates.

Tenure track Yrs. 1 – 3 Physician-scientists

Primary emphasis: Establishing reputation as an independent investigator

“Penn has a strong research infra-structure, and mentors should bring it to mentees’ attention.”

Deborah A. Driscoll, M.D., Professor of Obstetrics and Gynecology;
Chair, Department of Obstetrics and Gynecology

Physician-scientist faculty need to establish their reputations as independent investigators as early as possible. To provide enough time to do so, they should work with their chiefs or chairs to establish clinical schedules that allow them sufficient time for scholarship.

Like their counterparts in the basic sciences, physician-scientists need to get their **research programs** up and running quickly. Mentors can help by bringing Penn’s strong research infrastructure to the attention of their mentees. For example, they can alert mentees to relevant core laboratories **and biostatistical services**. A number of physician-scientists at Penn make use of the genotyping and DNA sequencing facilities. In addition, mentors may want to bring shared resources such as tissue banks and expensive lab equipment to mentees’ attention. Finally, they should let mentees know about shared personnel for clinical research, including statisticians, research nurses, and data managers.

While traditionally graduate students have worked in the labs of basic scientists, there is no reason that physician-scientists should not strive to attract them too, using any of the

suggestions listed in Box ##. Physician-scientists may also want to take advantage of several funding mechanisms specifically for physician-scientists who want to attract medical students or medical fellows in their research training years to their labs. For example, the Doris Duke Clinical Research Fellowship Program and the Howard Hughes Medical Institute fund medical students to take off up to a year to do mentored research under the direction of physician-scientist faculty. For information, contact Gaye Sheffler <sheffler@mail.med.upenn.edu>, Director of Admissions in the School of Medicine.

Resource. Research Opportunities for Penn Medical Students

<http://www.med.upenn.edu/mdresearchopp/guide.shtml>

Faculty can list summer or year-long research opportunities for med students at this site.

Perhaps the most important resource available to physician-scientists is their colleagues. As the NIH and the School place an ever-greater emphasis on translational and multidisciplinary research, mentors can play a key role in facilitating collaboration and cross-fertilization of ideas. They can bring their mentees together with potential collaborators either by making initial individual contacts for their mentees or by organizing retreats where mentees can network and share ideas with colleagues at all stages of their careers. As a first step in identifying potential collaborators, mentors and mentees should search the Faculty Expertise Database. To access the database, visit the School of Medicine home page at www.med.upenn.edu and click on “faculty.”

Tenure Track. Years 4-6 Physician-Scientists

Primary focus: Maintaining scholarly productivity

“It helps you with priorities if you think of yourself as a ‘scientist-physician’ rather than as a physician-scientist.” Alan M. Gewirtz, M.D., Professor, Medicine

In many ways, the careers of physician-scientists mirror the careers of basic scientists on the tenure track. By now, physician-scientists’ labs should be productive, allowing them more time to write. However, unlike their counterparts in the basic sciences, physician-scientists need to establish a clinical niche in addition to a research niche.

They need to be vigilant about protecting their time from unnecessary clinical and administrative demands. A number of K awards offered by the NIH can be helpful in this regard. (See box below.) In particular, the K02 Independent Scientist Award offers up to five years of support with an expectation of at least 75% effort.

Resource: K Kiosk
Information about NIH Career Development Awards

Search for “K Kiosk” on the NIH web site. Of particular interest to physician-scientists relatively early in their faculty appointments is the following award:

K02. Independent Scientist Award

“Provides up to five years of salary support for newly independent scientists who can demonstrate the need for a period of intensive research focus as a means of enhancing their research careers.” Assumes at least 75% effort.

Tenure-Track. Years 7-9. Physician Scientists

Primary Focus: Building a national reputation

As is the case for all faculty, when physician-scientists come up for review, letters will serve as an important gauge of their recognition by the larger scholarly community. To increase the odds of receiving strong letters, faculty should focus on building a national reputation. Mentors can help them by using any of the techniques listed [change:in the lower box on page 21.]

Please send suggestions for future editions of the guide to Mary Blitzer Field, M.Phil., Associate Director, *Advance* faculty professional development program, fieldm@mail.med.upenn.edu

