

%5CNewsRoom%5CIRMMMA.doc. Accessed April 10, 2008.

36. Waitzkin H, Yager J, Parker T, Duran B. Mentoring partnerships for minority faculty and graduate students in mental health services research. *Acad Psychiatry*. 2006;30:205–217.
37. Summers MF, Hrabowski FA. Preparing minority scientists and engineers. *Science*. 2006;311:1870–1871.
38. Gates Millennium Scholars. Gates Millennium Scholarship Program of the Bill and Melinda Gates Foundation.

Available at: <https://www.gmsp.org>. Accessed April 21, 2008.

39. Department of Health and Human Services. Mentoring Programs to Diversify the Mental Health and Substance Abuse HIV/AIDS Research Workforce through Innovative Educational Initiatives. Available at: <http://grants.nih.gov/grants/guide/pa-files/PAR-07-386.html>. Accessed January 28, 2009.
40. Barker K. *At the Helm: A Laboratory Navigator*. Cold Spring Harbor, NY: Cold Spring Harbor Laboratory Press; 2002.
41. Barker K. *At the Bench: A Laboratory Navigator*. Cold Spring Harbor, NY: Cold Spring Harbor Laboratory Press; 2005.
42. Bonetta L. *Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty*. Research Triangle Park, NC, and Chevy Chase, MD: Howard Hughes Medical Institute and Burroughs Wellcome Fund; 2006.
43. Lewellen-Williams C, Johnson VA, Deloney LA, Thomas BR, Goyol A, Henry-Tillman R. The POD: a new model

for mentoring underrepresented minority faculty. *Acad Med*. 2006;81:275–279.

44. Berget RJ, Reynolds CF, Ricci EM, et al. A plan to facilitate the early career development of minority scholars in the health sciences. *J Health Soc Policy*. In press.
45. Campbell CD. Best practices for student-faculty mentoring programs. In: Allen TD, Eby LT, eds. *The Blackwell Handbook of Mentoring: A Multiple Perspectives Approach*. Oxford, England: Blackwell Publishing; 2007:325–343.

Mentoring Early-Career Scientists for HIV Research Careers

James S. Kahn, MD, and Ruth M. Greenblatt, MD

Mentoring is important for early-career HIV researchers; it is key for work satisfaction, productivity, workforce diversity, and retention of investigators in a variety of research settings. Establishment of multidisciplinary research projects often is accomplished through mentoring.

The work of early-career HIV investigators frequently requires networks of collaborators, and networking is regularly facilitated by mentors. A structured mentoring program that avoids unnecessary conflicts or time burdens and connects early-career investigators with senior mentors from different disciplines may stimulate new networking possibilities and lead to effective collaborations among investigators with different skills and perspectives.

Effective mentoring by focused mentors will likely contribute to the skills and networks of investigators necessary for the next generation of HIV investigators. (*Am J Public Health*. 2009;99:S37–S42. doi:10.2105/AJPH.2008.135830)

DEVELOPING NEW INVESTIGATORS who are dedicated to HIV research is a task critical to ending the HIV/AIDS epidemic. Research on HIV/AIDS has often moved forward when teams of multidisciplinary investigators worked collaboratively.^{1,2} For example, collaborative work between epidemiologists and clinicians helped identify the set of clinical diseases that defined AIDS and the risk factors associated with disease progression. In addition, clinical, behavioral, and translational research have led to the approval of 31 different antiretroviral medications that interfere with HIV replication based on six different mechanisms of action. Furthermore, new investigations that focus on operations research, especially conducted internationally, are transforming the clinical battle against HIV in developing countries.

These scientific accomplishments are truly spectacular; however, future success in ending the epidemic will fall to the next generation of investigators. Because innovation tends to occur among investigators working at the intersections of their fields, early-career

investigators need to be mentored in the value of teamwork and collaborative research as well as in the pursuit of individual excellence. Thus, it will be critical to recruit, train, and establish the next generation of scientists and to help them work within multidisciplinary groups of investigators.

Mentoring can help early-career investigators as they develop networks of peer investigators, invest in multidisciplinary research projects, and navigate through the different pathways for successful career development.^{3–6} Mentoring, along with appropriate training, is necessary to prepare investigators to conduct research that will address health disparities and focus on HIV-associated morbidity and mortality, and will be especially important for early-career investigators.^{7–13} Mentoring is often the difference between success and failure as early-career investigators develop skills and establish the networks of collaborations that span different disciplines.¹⁴

Mentoring is often recognized to be a key factor for work satisfaction, productivity, and retention of investigators in a variety of

research settings.^{15–30} Many successful senior investigators cite a particularly meaningful mentoring relationship that played an important role in their own personal success. In addition, mentoring is a crucial intervention for developing a diverse workplace and diversity among investigators.^{20,31–39} Traditional mentoring, usually one-on-one mentoring between a supervisor and a trainee, historically has been relatively unorganized. The specific strategies and methodologies for providing mentoring are not well documented, and the outcomes of these experiences are largely dependent on lucky pairings of well-suited mentors and mentees. Organized approaches testing various methods of mentoring will be required to study the beneficial outcomes associated with mentoring, in part because it is clear that multiple approaches are needed and investigators require different types of mentoring at different points in their careers.

The continued development and success of new HIV investigators is critical for maintaining scientific progress toward

understanding HIV and controlling the AIDS epidemic. Despite the high level of interest in HIV research, early-career HIV investigators face several new challenges. Flat or diminishing levels of research funding can create a disadvantage for grant applicants who do not have an extensive track record or clinical earnings or for whom clinical earnings have been a source of support for translational research.^{40–44} Demands for teaching and clinical work can compete with the research effort and impair productivity. Also, the pool of young clinician-scientists has diminished and attrition to industry or non-research career paths has become increasingly common.^{45–47} Mentoring is especially important to promote diversity and to support persons interested in disparities and health outcomes. Including these early-career investigators in research networks, supporting their research, promoting their independence, and building their skills may substantially contribute to their success.

THE CHALLENGES FOR MENTORING

Challenges to mentoring include challenges to the mentees, the mentors, and the organizations that support research. Many research universities and research institutes are spread over multiple locations, making geographic (even in the same city) and intellectual isolation a particular problem for mentees and early-career investigators. Mentoring is needed to enhance the networking required to facilitate interactions necessary for early-career scientists, especially for work that might be multidisciplinary. Mentoring includes activities that help early-career investigators understand

that their work has relevance and value and that their work could trigger new collaborations with persons within their institutions. The multidisciplinary challenges facing young investigators dispersed within a research enterprise are even larger when these investigators decide to conduct their research at international sites. The mentoring required for those early-career clinician-scientists who are dedicated to efforts based in resource-poor countries represents an urgent unmet need.^{48–52} The mentoring needs and complexity of issues for new investigators who spend significant time overseas require specific and tailored approaches.

Effective mentoring is uniformly cited as essential to efforts to produce new scientists. However, despite increasing need, various factors have contributed to a loss of resources and incentives for mentoring. The most competitive research groups may lack a supportive environment for mentoring. A recent survey at the University of California, San Francisco (UCSF), found that 58% of UCSF faculty had been mentored while at UCSF; 36% of these were satisfied with the mentoring they had received but only 12% reported that UCSF was doing a good or excellent job at providing formal mentoring. Subsequently, a chancellor's task force recommended the development of detailed and ongoing mentoring to assist faculty in understanding the terms of their employment, inform them of key campus resources, ensure that progress is assessed, and set career development and productivity guidelines (available at: <http://chancellor.ucsf.edu>).

UCSF is a large research enterprise with multiple independent institutes contributing to the HIV research agenda. The Gladstone

Institute is an example of such an independent research enterprise closely linked to UCSF and focused on a variety of cutting-edge research topics including HIV/AIDS. A recently published survey in *The Scientist* recognized Gladstone as North America's best institutional work environment for life sciences postdoctoral fellows. Mentoring is an area of great importance at the Gladstone Institute and with the decision at UCSF that mentoring must be improved, the Center for AIDS Research (CFAR) (a joint UCSF–Gladstone Institute for Immunology and Virology, National Institutes of Health–funded center) initiated the first mentoring program directed to early-career scientists focused on HIV research.

The CFAR mentoring program's mission focused on developing a diverse workforce to facilitate the development of the next generation of HIV investigators. The goals of the program were to (1) support and create pathways for multidisciplinary HIV research, (2) retain early-career investigators and optimize their productivity, (3) aid promising new investigators by linking them to resources and networking them with other investigators, and (4) assist early-career faculty with transitions as their careers progress, with the ultimate goal being intellectual independence. Carefully included in these goals was the need to include early-career faculty from diverse backgrounds and to include multidisciplinary research investigators. Diversity of early-career investigators and research that was multidisciplinary and included disparity of health outcomes were identified for active mentorship within our research enterprise.

The CFAR mentoring project's initial task was to improve

mentoring by establishing a model that would focus the mentoring mission, provide a basis for evaluating the success of the program, and provide the basis for change, if the program were unsuccessful. We discussed and evaluated several models. One key, early decision was the adoption of the “trans” model for the mentoring program rather than the “cis” model. “Trans” mentoring is a new proposal whereby a mentee is paired with a senior mentor outside the major area of the mentee's focus, such as when an investigator from basic science mentors an investigator whose research emphasizes clinical science. “Cis” mentoring is a model in which persons from the same research discipline mentor one other. A “trans” design for one-on-one mentoring was adopted because it was considered to be a novel mentoring model as well as a model that would be less threatening to ongoing mentoring activities.

As part of the project, we divided the mentors and mentees into three broad categories: basic research, clinical or translational research, and population or behavior research. We asked each mentor and mentee to identify the category that was the closest fit to their type of research. We then matched the mentee and senior mentors so that there would be a “trans” fit among the mentor–mentee matches, meaning that a mentee in basic research would be matched with a senior mentor in clinical–translational research or behavioral or population-based research. A mentee focused on clinical research would be matched with a senior mentor from a basic research or behavioral or population research background. A mentee focused on behavioral research would be matched with a senior scientist

from the basic or clinical or translational research area.

In this way, we hoped to complement mentoring provided by the department or division or research lab, reduce potentially duplicative mentoring (or expand the mentoring perspectives available to the mentee), help the mentee identify new colleagues within the research enterprise, and promote meaningful networking outside the normal channels for the mentees. Thus, the promotion of multidisciplinary research might be facilitated with the “trans” model for mentoring. Such institutional fostering of multidepartmental, multidisciplinary interactions for early-career investigators is broadly advocated.^{3,53,54}

Involvement of a CFAR mentor from a different discipline or site offers additional advantages: It may be easier for the CFAR mentor to assist the mentee in negotiations with his or her home department, which is often also home to the mentee’s supervisor or senior mentor. The “trans” CFAR mentor is optimally positioned to advise the mentee in establishing independence,⁵⁵ and the relationship with the CFAR mentor may in itself aid in the perception of the mentee as having some independence from the supervisor or senior mentor.

To facilitate the one-on-one mentoring between mentee and mentor, the mentoring program provided suggestions of topics for mentee and mentor meetings, such as: career goals and expectations for performance; how to receive and provide feedback on progress; establishing independence; academic portfolio and collegial review; understanding the research funding process; the value of peer review before submission to funding agencies; how to create powerful presentations; how to

identify resources needed for research space, salary, and administrative support; the stresses and challenges of meeting nonresearch duties; personal issues, advice, and resources to foster a balance between personal and professional life; networking; organizational skills; scientific and workplace conduct; and identifying problems and developing strategies for successfully addressing these problems.

While it became clear that “trans” mentoring is not sufficient alone—mentees find value in discussing their work with experts in their own field—the model was well received by persons involved in the project. An important aspect of the “trans” model is that the mentor has no “conflict” with the mentee—that is, the mentor should not benefit by keeping the mentee focused on outcomes that would benefit the mentor or the mentor’s group while providing little value to the mentee. An evaluative role and personal interest in project productivity on the part of the mentor can constitute barriers to the mentoring relationship.^{56,57} Thus, the main benefit to be gained from the “trans” mentoring model might well be the mentee and mentor’s independence from one another and from each person’s area of research. More research to determine the value of the “trans” model compared with an “independence” model or a “cis” model of mentoring will be needed.

Maximizing the value associated with mentoring may require multiple mentors. Certainly multiple mentors increase the opportunity for the mentee to receive different views and may increase the effectiveness of mentoring. In addition, there is an added barrier to mentoring for women and persons from disadvantaged or challenged backgrounds. There are

too few women and persons of color who are also senior HIV investigators. As more women and persons of color choose HIV research as a career goal, they may have limited mentoring choices if they focus only on people with similar backgrounds and experiences. One-on-one mentoring can be burdensome, even when it brings professional satisfaction. The best way to help senior faculty chosen to be mentors is to reduce the time burden and share the mentoring function among several senior investigators. This has the beneficial aspect of sharing the benefits of mentoring, and providing mentees and mentors with a fresh perspective and added diversity within a research enterprise. This diversity might prove to be a powerful force to help diversify the academic environment and build new relationships that support a diversified workforce. Multiple mentors from diverse backgrounds is a characteristic of a successful mentoring program, and is also a characteristic for programs that specifically target underrepresented minority and women faculty; however, we were aware that our program would be perceived as burdensome if the mentoring for women and persons from disadvantaged backgrounds fell only to senior investigators from these same groups. Thus, at first we had two mentors for each mentee. Although this reduced the burden for a mentor, it increased the meeting and time requirements for the mentees. At mentees’ suggestions, two mentors were reduced to one and the time commitment for mentees was halved.

THE MENTORING PROGRAM AT UCSF

After we developed and agreed on a “trans” model for mentoring,

we had to define our program. The following definitions were applied in the mentoring program model. A *mentee* is an individual engaged in the development of a set of knowledge and skills whose professional satisfaction would benefit from a relationship with a senior faculty member at the institution. A *mentor* is a senior faculty member engaged in the development of knowledge and skills set who takes an interest in helping another person develop into a successful professional. *Mentoring* is a process supported to encourage the sharing of intellectual, experiential, and life experience resources to facilitate individual development and professional satisfaction for both mentees and mentors.

Mentees were identified by self-referral and by faculty referrals. E-mail solicitations were sent via an established e-mail discussion list of persons affiliated with HIV research at the institution to increase awareness of the program and encourage participation. Mentors were chosen from the UCSF–Gladstone Institute of Immunology and Virology CFAR senior faculty with proven records of academic accomplishments and with an interest in participating in a pilot-mentoring project. Initially, the mentor program directors paired each mentee with two mentors by using the following guidelines: (1) mentors must not be current members of the mentee’s research unit, (2) at least one woman mentor was needed for each woman mentee, and (3) at least one mentor from outside the mentee’s main field of research was needed.

In the second year of the program, after considering feedback from the first year’s mentees, a different matching approach was taken by the mentoring program

TABLE 1—Advantages and Disadvantages of Various Strategies for Selecting Mentees

Strategy	Pros	Cons
Elite mentoring—Mentoring provided to an elite group of investigators with early successes	High success rate among participants likely via investment of resources in individuals with proven ability and record of success. A less-intensive targeted approach may be adequate. High likelihood of retaining of alumni in HIV research. Participation may become highly coveted as an indicator of “star” status.	May be “preaching to the choir,” with little impact on outcome. Likely to contribute little to expansion of diversity in investigator pool. Reinforces existing strengths of the research unit. Duplicates efforts that institutions, funding agencies, and societies prioritize to “star” candidates.
Open mentoring—Mentoring provided as an open model for persons expressing a desire for mentoring	Provides services to self-selected group that likely is representative of early career investigators interested in HIV research within institution. Good setting for peer-to-peer interactions because group is likely to have varied experience and achievement.	Requires a program that can be tailored to each participant’s needs, with combinations of formats and strategies and flexible mentors. Could duplicate some institutional efforts. Impact will vary with participant; overall success rates may be lower than for program that selects “stars.”
Nonlinked or struggling investigators—Mentoring provided to investigators who may not have achieved success and may not understand the value of mentoring	Targets resources to individuals who are “at risk” in an effort to retain them in the research enterprise. A focused approach is possible. Effort could be provided to members of groups that are feeling less linked to the enterprise such as persons who are underrepresented in medical research based on gender, race, ethnicity, physical challenges, or sexual preferences. If successful, impact would be high.	Participation in mentoring may be perceived as stigmatizing rather than expanding. Overall success rate may be low. Methods not proven. May require more investment with time and finances than initially planned.

directors. At the onset of the second year of the mentoring program, a mentor profile Web page was developed, and mentees were invited to review the mentor profiles within the Web site and then rank three mentors in preferential order. Mentees’ preferences were reviewed and pairings were assigned on the basis of the following priorities: (1) retaining the previous year’s pairing for continuing mentees, (2) matching the mentee with his or her highest ranked mentor, (3) matching a woman mentee with a woman mentor, and (4) matching a mentee with a mentor who would augment his or her mentoring experience. Unfortunately we did not match mentees and mentors on the basis of race, culture, or economic background, due, in part, to a lack of diversity among senior HIV investigators within CFAR. In the third year of the program we continued with allowing mentees’ to review

mentor profiles and rank mentors by preference.

In this program, we identified many important questions for mentoring programs, such as: Should the mentoring program be restricted because of limited funds and the limited time of the mentors? Should a program identify the high-achieving persons for whom mentoring might provide a small but important nudge to their career, or should it concentrate on persons who may be struggling and invest in them so that they can return to a pathway of success? We chose an open mentoring strategy, which allows any young investigator to participate in the mentoring program (Table 1). In response to these questions, we made the program widely available but asked the mentees to apply. We did not turn down applicants. In this way persons who rightly or wrongly feel that they do not want more mentoring are not burdened with

participating in the program and the program does not reject applicants who want mentoring. An advantage of mentee self-selection is that it may help diversify the workforce. Another advantage is that mentees who self-select may “invest” in the mentoring program and, thus, are more likely to attend the voluntary workshops and seminars. Finally, allowing mentees to apply gives the program a sense of importance and helps increase the perceived value of the mentoring they receive. Whether this is the best approach is unknown and, like many other aspects of mentoring, may require a large study into mentoring methodologies.

We added several other components to the one-to-one mentoring. First, we developed a series of workshops with didactic activities and informal events consistent with the successful paradigm reported by Pololi.⁵⁷ The workshops focused on common experiences and provided practical

insights. The topics for the workshops included: “First appointments and promotions”; “What does your chair expect from you?”; “First NIH grants and K awards”; “How to get to yes: excellent submissions to the Committee for Human Research”; “From academia to industry and back again”; “Optimizing job and life experiences”; “Staying out of harm’s way: harassment, hostile work environments, and misuse of resources”; “Being known vs being notorious”; “Maximizing time at work”; “Orally presented abstracts”; “How to avoid becoming road kill on the seminary highway”; “Presenting data, error, and allocating authorship”; and “Developing a satisfying home life.”

We have found, despite the institution-wide investment in mentoring, that our CFAR-sponsored mentoring program is reported by participants to address issues neglected by traditional mentoring modalities. We have also added an

orientation to the research enterprise for the mentees. A mentors' and mentees' virtual home and binder were created and made available on the mentoring Web site. We also developed the aforementioned mentors' profiles and have begun to develop a mentees' "bio page" on the mentoring Web site.

We have also asked our mentees to present at a yearly mentees' symposium. This unique venue has allowed 12 to 16 mentees to present their work in a safe and professional environment, observed by their peers and interested persons within the research enterprise. This experience helps mentees by providing them more experience of presenting their research to the public and fielding questions from an audience. It also provides the mentees with another venue to network with each other and to understand their peers' research. The symposium provides senior members of the institution an opportunity to understand young investigators' research activities and to suggest new collaborations. We have twice matched the mentee symposium with a "mentee speed dating" event. At this event each mentee spends two minutes with another mentee explaining their research and their long-term interests. Each mentee keeps track of the research activities of interest and may obtain contact information or e-mail each other if there is a chance for a new collaboration.

The selection of mentors was relatively straightforward. Based upon studies of mentoring outcomes (demonstrating the value of mentors with "clout," experience, and flexibility; the goal of promoting effective networking; and ability to tailor mentoring to the individual mentees), we selected a group of mentors that were successful senior

faculty principal investigators in HIV research and who participated in research leadership. Critical for the program was the realization that mentoring mattered at UCSF. During the initial development of the program, mentoring became part of the promotion process at UCSF. (Previously mentoring was perceived as a subsection for teaching activities.) Packets for job promotion failed to distinguish excellence in mentoring and so mentoring was not as valued by the institution. The change in value, elevating mentoring from an afterthought that was expected to a process that could be supported, was a critical steppingstone to ensuring senior investigator acceptance and their participation. It is not clear whether superb mentors are "born" or "bred"; successful mentoring probably results from a combination. Our future work will focus on helping to train mentors and provide support to sustain excellence in mentoring.

Mentoring is not without costs. The most significant cost is time. Is the time required for mentoring (including the one-on-one mentoring, workshops, and a symposium) well spent for the mentees and the mentors? Answering this question is difficult and may require standard methodologies for mentoring and eventually a randomized controlled design to ascertain whether certain aspects of the mentoring program are useful. Determining usefulness is not easy because the outcomes of interest take significant time to mature. The outcomes for academic success—grants, and publications in peer-reviewed venues—are important; however, achieving life–work balance, identifying career paths that fit the individual, helping struggling colleagues, identifying new important areas for research, and creating

multidisciplinary approaches to solving complex problems are all important achievements of successful mentoring.

CONCLUSIONS

Mentoring is an important supportive mechanism for early-career investigators. It is especially important for persons who may not have had a close relationship with a successful investigator. Mentoring is likely to be important to bridging multidisciplinary projects, creating diversity among investigators, and establishing a value system to mentorship for senior investigators. Among HIV/AIDS investigators it is critical to help support early-career investigators, because they often work without the benefit of a rich network of colleagues, they often lack organized and integrated space and also because their work may involve novel areas for research.

Our CFAR-sponsored mentoring program represents the first organized mentoring approach that has a multidisciplinary theme and is directed to postdoctoral scholars and early-career faculty seeking to establish a career in HIV/AIDS research. We consciously and deliberately chose a model for the program that would link mentees and mentors in a "trans" mentoring relationship. The program's unique mechanism of connecting early-career investigators with senior mentors from different disciplines was viewed as an important way to stimulate new networking possibilities, and perhaps even collaborations, among researchers with different skills and perspectives.

To avoid conflicts, the program carefully matched mentees with senior faculty mentors who were not their direct supervisors. The CFAR program was designed to enhance existing informal mentoring by

providing a structured opportunity for nonsupervising senior and early investigators to establish personal connections. It was hoped that the nonsupervising mentor would provide an avenue for the mentee to explore issues not easily raised with a direct supervisor. We established a workshop series and a symposium, and began to create a network of early-career investigators to encourage building collaborations. We also extensively used a Web site to create a home for the mentoring activities. Finally, we leveraged the newly identified importance of mentoring as a part of the promotion criteria to motivate senior scientists and include them as mentors. ■

About the Authors

James S. Kahn is with the Department of Medicine, University of California, San Francisco. Ruth M. Greenblatt is with the Departments of Clinical Pharmacy, Medicine, Epidemiology, and Biostatistics, University of California, San Francisco.

Requests for reprints should be sent to Dr James S. Kahn, Positive Health Program, Ward 84, San Francisco General Hospital, San Francisco, CA 94110 (e-mail: jkahn@php.ucsf.edu).

This article was accepted May 1, 2008.

Contributors

J.S. Kahn and R.M. Greenblatt equally originated the CFAR mentoring project, provided leadership for the project, and wrote the article.

Acknowledgments

This work was supported by the National Institutes of Health through the University of California, San Francisco (grant P30 AI27763 to the Center for AIDS Research, grant K24RR024369).

References

- Zerhouni EA. Translational and clinical science—time for a new vision. *N Engl J Med*. 2005;353:1621–1623.
- Zerhouni EA. US biomedical research: basic, translational, and clinical sciences. *JAMA*. 2005;294:1352–1358.
- Brownson RC, Samet JM, Thacker SB. Commentary: what contributes to a successful career in epidemiology in the United States? *Am J Epidemiol*. 2002;156:60–67.

4. Wise MR, Shapiro H, Bodley J, et al. Factors affecting academic promotion in obstetrics and gynaecology in Canada. *J Obstet Gynaecol Can.* 2004;26:127–136.
5. Jackson VA, Palepu A, Szalacha L, Caswell C, Carr PL, Inui T. “Having the right chemistry”: a qualitative study of mentoring in academic medicine. *Acad Med.* 2003;78:328–334.
6. Palepu A, Friedman RH, Barnett RC, et al. Junior faculty members’ mentoring relationships and their professional development in US medical schools. *Acad Med.* 1998;73:318–323.
7. Anders RL, Monsivais D. Supporting faculty proposal development and publication. *Nurse Educ.* 2006;31:235–237.
8. Satcher D, Sullivan LW, Douglas HE, et al. Enhancing cancer control programmatic and research opportunities for African-Americans through technical assistance training. *Cancer.* 2006;107(8 suppl):1955–1961.
9. Green BL, Rivers BM, Arekere DM. Mentoring: a framework for developing health disparities researchers. *Health Promot Pract.* 2006;7:336–345.
10. Andersen SR, Belcourt GM, Langwell KM. Building healthy tribal nations in Montana and Wyoming through collaborative research and development. *Am J Public Health.* 2005;95:784–789.
11. Washington AE, Nápoles-Springer A, Forté DA, Alexander M, Pérez-Stable EJ. Establishing centers to address treatment effectiveness in diverse ethnic groups: the MEDTEP experience. *Ethn Health.* 2002;7:231–242.
12. Trubo R. Mentoring program supports new generation of HIV researchers. *JAMA.* 2006;296:757–758.
13. Gates PE, Ganey JH, Brown MD. Building the minority faculty development pipeline. *J Dent Educ.* 2003;67:1034–1038.
14. McGee R, DeLong MJ. Collaborative co-mentored dissertations spanning institutions: influences on student development. *CBELife Sci Educ.* 2007;6:119–131.
15. Mills J, Lennon D, Francis K. Contributing to a culture of learning: a mentor development and support project for Australian rural nurses. *Int J Nurs Pract.* 2007;13:393–396.
16. Sutherland JA, Hamilton MJ, Goodman N. Affirming At-Risk Minorities for Success (ARMS): retention, graduation, and success on the NCLEX-RN. *J Nurs Educ.* 2007;46:347–353.
17. Bauman RR. Physician mentoring and evaluation. *J Med Pract Manage.* 2007;22:214–219.
18. Hayes JM, Scott AS. Mentoring partnerships as the wave of the future for new graduates. *Nurs Educ Perspect.* 2007;28:27–29.
19. Leners DW, Wilson VW, Connor P, Fenton J. Mentorship: increasing retention probabilities. *J Nurs Manage.* 2006;14:652–654.
20. Daley S, Wingard DL, Reznik V. Improving the retention of underrepresented minority faculty in academic medicine. *J Natl Med Assoc.* 2006;98:1435–1440.
21. Schrubbe KF. Mentorship: a critical component for professional growth and academic success. *J Dent Educ.* 2004;68:324–328.
22. Bernice J, Teixeira R. Mentorship: a successful tool for recruitment, recognition, and advancement. *Clin Leadersh Manage Rev.* 2002;16:386–390.
23. Farrell SE, Digioia NM, Broderick KB, Coates WC. Mentoring for clinician-educators. *Acad Emerg Med.* 2004;11:1346–1350.
24. Staveley-O’Carroll K, Pan M, Meier A, Han D, McFadden D, Souba W. Developing the young academic surgeon. *J Surg Res.* 2004;118:109–113.
25. Allen TD, Eby LT, Poteet ML, Lentz E, Lima L. Career benefits associated with mentoring for protégée: a meta-analysis. *J Appl Psychol.* 2004;89:127–136.
26. Wright WR Jr, Dirsá AE, Martin SS. Physician mentoring: a process to maximize the success of new physicians and enhance synchronization of the group. *J Med Pract Manage.* 2002;18:133–137.
27. Pololi LH, Knight SM, Dennis K, Frankel RM. Helping medical school faculty realize their dreams: an innovative, collaborative mentoring program. *Acad Med.* 2002;77:377–384.
28. Ramanan RA, Phillips RS, Davis RB, Silen W, Reede JY. Mentoring in medicine: keys to satisfaction. *Am J Med.* 2002;112:336–341.
29. Illes J, Glover GH, Wexler L, Leung AN, Glazer GM. A model for faculty mentoring in academic radiology. *Acad Radiol.* 2000;7:717–724, discussion 725–726.
30. Tosi LL, Mankin HJ. Ensuring the success of women in academic orthopaedics. *Clin Orthop Relat Res.* 1998;(356):254–263.
31. Dreachslin JL. The role of leadership in creating a diversity-sensitive organization. *J Healthcare Manage.* 2007;52:151–155.
32. Kosoko-Lasaki O, Sonnino RE, Voytko ML. Mentoring for women and underrepresented minority faculty and students: experience at two institutions of higher education. *J Natl Med Assoc.* 2006;98:1449–1459.
33. Ramani S, Gruppen L, Kachur EK. Twelve tips for developing effective mentors. *Med Teach.* 2006;28:404–408.
34. Ford HR. Mentoring, diversity/academic surgery. *J Surg Res.* 2004;118:1–8.
35. Ambrose L. Mentoring Diversity. Serving a diverse patient population calls for diverse leadership. *Healthcare Exec.* 2003;18:60–61.
36. Lengerich EJ, Siedlecki JC, Brownson R, et al. Mentorship and competencies for applied chronic disease epidemiology. *J Public Health Manage Pract.* 2003;9:275–283.
37. Ralston PA. Diversifying the health professions: a model program. *Am J Health Behav.* 2003;27:235–245.
38. Newman LA, Pollock RE, Johnson-Thompson MC. Increasing the pool of academically oriented African-American medical and surgical oncologists. *Cancer.* 2003;97(1 suppl):329–334.
39. Thomas DA. The truth about mentoring minorities. Race matters. *Harv Bus Rev.* 2001;79:98–107, 168.
40. Thomsen JL, Jarbøl D, Søndergaard J. Excessive workload, uncertain career opportunities and lack of funding are important barriers to recruiting and retaining primary care medical researchers: a qualitative interview study. *Fam Pract.* 2006;23:545–549.
41. Bothwell J. Funding: proposals ignore mentoring and teaching. *Nature.* 2006;441:690.
42. Luckhaupt SE, Chin MH, Mangione CM, et al. Mentorship in academic general internal medicine. Results of a survey of mentors. *J Gen Intern Med.* 2005;20:1014–1018.
43. Shavers VL, Fagan P, Lawrence D, et al. Barriers to racial/ethnic minority application and competition for NIH research funding. *J Natl Med Assoc.* 2005;97:1063–1077.
44. Wolf M. Clinical research career development: the individual perspective. *Acad Med.* 2002;77:1084–1088.
45. Reynolds CF III, Pilkonis PA, Kupfer DJ, Dunn L, Pincus HA. Training future generations of mental health researchers: devising strategies for tough times. *Acad Psychiatry.* 2007;31:152–159.
46. Harms BA, Heise CP, Gould JC, Starling JR. A 25-year single institution analysis of health, practice, and fate of general surgeons. *Ann Surg.* 2005;242:520–526, discussion 526–529.
47. Kupfer DJ, Hyman SE, Schatzberg AF, Pincus HA, Reynolds CF III. Recruiting and retaining future generations of physician scientists in mental health. *Arch Gen Psychiatry.* 2002;59:657–660.
48. Anderson MS, Horn AS, Risbey KR, Ronning EA, De Vries R, Martinson BC. What do mentoring and training in the responsible conduct of research have to do with scientists’ misbehavior? Findings from a National Survey of NIH-funded scientists. *Acad Med.* 2007;82:853–860.
49. Griffiths M, Miller H. E-mentoring: does it have a place in medicine? *Postgrad Med J.* 2005;81:389–390.
50. Brathwaite D. Mentoring students: internationally. *ABNF J.* 2002;13:31–33.
51. Micali S, Virgili G, Vannozi E, et al. Feasibility of telementoring between Baltimore (USA) and Rome (Italy): the first five cases. *J Endourol.* 2000;14:493–496.
52. Loera JA, Kuo YF, Rahr RR. Telehealth distance mentoring of students. *Telemed J E Health.* 2007;13:45–50.
53. Bhattacharjee Y. Postdoctoral training. NSF, NIH emphasize the importance of mentoring. *Science.* 2007;317:1016.
54. Chapman GE, Sellaeg K, Levy-Milne R, Barr SI. Toward increased capacity for practice-based research among health professionals: implementing a multisite qualitative research project with dietitians. *Qual Health Res.* 2007;17:902–907.
55. McCabe L, McCabe E. *How to Succeed in Academics.* San Diego, CA: Academic Press; 2000.
56. Leslie K, Lingard L, Whyte S. Junior faculty experiences with informal mentoring. *Med Teach.* 2005;27:693–698.
57. Pololi L, Knight S. Mentoring faculty in academic medicine. A new paradigm? *J Gen Intern Med.* 2005;20:866–870.