

The value of mentoring in terms of faculty research productivity has been documented.^{4–6} Good research mentors are committed to helping their mentees establish an independent, funded research career. There is no one standardized, best practices mentoring model; in fact, there are numerous mentoring models.⁷ Two mentoring tools that we have found particularly successful in our model include facilitating mentoring relationships and providing a comprehensive range of research-related resources. We facilitate one-on-one, team-based, and peer-based mentoring relationships that grow not only through regular, biweekly mentor–mentee meetings, but through active participation in monthly research meetings where mentees present their specific aims and summary statements to their fellow mentees and mentors. Small groups of mentees also participate in weekly, peer-led, writing accountability groups.⁸ The provision of research-related resources is also critical. Our program provides statistical and database management support, a science writer/editor, graphics and presentation consulting, research assistance (eg, entering data, transcribing focus group interviews), pre- and post-award administrative grant support, email notifications of funding opportunities, and at least monthly workshops and seminars on a variety of research-related, grant writing, and career development topics. Other resources for mentees include competition for small pilot grants, an annual research forum that includes conference travel awards, and an annual retreat.

Institutions need not be intimidated by the cost of establishing a research mentoring program. Our annual budget of about \$300,000 funds 2 full-time staff, 900 square feet of office space, and the program's resources listed above via buy-out of small–5%–10%–efforts of various faculty (eg, statisticians) and staff (eg, database managers) and via external consultants (eg, \$50/hour for the science writer). The institution's investment of approximately \$1.5 million over the past 6 years has resulted in 35 mentees (about half of mentees) being awarded approximately \$43 million in external funding (half from the NIH) and publishing >330 peer-reviewed manuscripts.

But is this success really because of the program? Granted, many of our mentees would likely have been awarded funding regardless of their participation in the program. However, in addition to the mentees' and mentors' reported satisfaction with and support of the program, we found that, when comparing the grant activity among all assistant professors in the medical college 4 years before the program with 4 years after the program, the total number of grant applications submitted increased 82% (from 65 to 118), as did the number of “new”—not resubmitted or continuations—applications (increased 93%, from 46 to 89), and there was a 114% increase in the number of applicants (from 28 to 60; note: increases were consistent after adjusting for 23 additional assistant professors in the post-program period [n = 415 vs 392]).

Academic medical centers that wish to recruit and retain young faculty, especially physician-scientists, must provide them with the tools to be competitive. Research mentoring programs provide valuable research-related mentoring by seasoned investigators and essential resources for relatively minimal cost. Turner speculates that the “perfect storm of economic and administrative challenges facing healthcare and biomedical research” may result in the physician-scientist becoming an endangered species and as such “it is essential that we take steps to enhance the survival of physician-scientists.”³ Such survival may be achieved in part by investing in a formalized research mentoring program. The rewards of such an investment will likely exceed research dollars and include improved investigator morale, increased frequency and quality of cross-disciplinary collaboration, and a higher institutional profile—all feeding into a dynamic cycle of translational research.

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Conflicts of interest

The authors disclose no conflicts.

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Reply. The program described by Skarupski and Keshavarzian¹ appears to be highly effective. The success reported is impressive, and seems similar to that reported by Brown et al,² who described a program for centralized

oversight of physician–scientist faculty development at Vanderbilt. The Vanderbilt program also reports a reduction in the time from career development award support, for example, K series, to independent funding, for example, R01. Like the program at Rush, the Vanderbilt program is built on mentor–mentee relationships and career guidance. However, the investment made by Vanderbilt is more substantial, and includes up to 2 years of salary support. This ensures that the problem of too many caps³ does not undermine the young physician–scientist’s efforts. The Vanderbilt program also requires the physician–scientist’s department chair to contribute \$25,000 for supplies and to commit to providing space and startup funds as the assistant professor’s career progresses. Intuitively, it seems that this is an outstanding approach, because it guarantees buy-in and may enhance departmental support, both financial and otherwise, at later times. Interestingly, the Vanderbilt approach does not require cost-sharing of the mentors’ time. This likely reflects differing institutional cultures, which are also a critical component of physician–scientist success. Overall,

it is clear that we all agree: Devoted mentoring is a critical factor that can contribute to the success of young scientists and physician–scientists. There are many examples of formally organized and informal mentoring programs, each with its own achievements. Although the precise recipe varies by institution, mentor, and mentee, I hope this exchange will continue to direct attention to the problem of physician–scientist attrition and motivate all of us to find solutions.

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