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# LETTERS

Dear Editor:

**A**s I read the recent *Journal* article by Zuzolo, Smith, Spina, and Grayson (Summer/Fall 1997) on research administration through a decade of change, I recognized several enduring themes: (a) competition for funding continues to increase; (b) the demands on principal investigators do not subside; and (c) society has a renewed interest in accountability in research.

In higher education, research administrators have immediate and pressing issues that are the outcome of the cumulative effect of these three factors. Essentially, we must nurture and encourage the best and the brightest to continue research careers when the majority of the environmental messages are indicating the opposite.

#### *Competition for Funding Continues to Increase*

During the past decade, state-based financial support for public higher education has declined steadily. This has been the result of two macro-level budget issues. First, state legislatures have been very sensitive to taxpayer demands to reduce their tax burdens and avoid deficit spending. Governors have been under pressure to operate their states within the constraints of tax revenue. Second, state-reimbursed medical expenses have continued to soar, and every state in the nation has been forced to choose between paying medical bills for their least-advantaged citizens or supporting their educational institutions. Legislators

across the nation have opted for paying the medical bills and advised their universities to raise tuition.

Concurrent with this financial crunch, federal and state funding agencies have experienced increased public scrutiny, increased workloads to meet accountability requirements, and reduced budgets. The end result of these macro-level issues is that more and more colleges and universities now view extramural funding as a necessary line item in their annual revenue. University presidents and provosts have increased expectations that faculty will compete for and obtain extramural funding at a time when the faculty are least likely to be successful.

#### *Demands on Principal Investigators and Faculty Do Not Subside*

These are exciting and challenging times for higher education and university-based research in the United States. Information technologies, advances in the physical and life sciences, and unprecedented access to higher education have contributed to making higher education invigorating and innovative. Unfortunately, reduced state support of higher education and its consequence of rising tuition rates have contributed to a growing sense of urgency in the higher education community. In response to these pressures, many colleges and universities have scrutinized their promotion and tenure standards, their expectations for faculty productivity, and their fundamental sense of identity.

The core of the identity issue encapsulates three self-evident truths about higher education's mission in society: (a) faculty must teach; (b) faculty must contribute to the refinement and furtherance of their respective disciplines (e.g., through research and scholar-

**Funding sponsors, university promotions committees, and university research administrators share a common goal: *support the best and brightest in their efforts to contribute to their disciplines and advance the common good.***

ship); and (c) faculty must contribute to the well-being of the communities in which they live (i.e., service). Teaching, research, and service form the typical triad of activities on campuses; they are the frameworks for

revisions in indicators of productivity, promotion, and tenure standards, and they are the university's response to legislative mandates for accountability. Unfortunately, this triad also is the basis of the relentless, conflicting demands on faculty time.

As universities plan for the future, they are defining and refining their key performance indicators. As this process unfolds and matures, the opportunity arises for university promotions committees, funding sponsors, and campus research administrators to make substantial improvements in fostering research development and scholarship. We share common concerns, and a few direct innovations can have far-reaching effects on faculty—particularly on the development of future scientists and innovators.

*Society Has a Renewed Interest in Accountability in Research and Education*

Wasteful governmental spending often is symbolized by costly, esoteric research that does not have immediate and obvious consequences. Talk show hosts and newspaper headlines quickly assert that taxpayers' money is wasted when spent on researching the habitat of an endangered species or developing the technologies that will contribute to building a space station. Funding agencies have been and will continue to be watched closely by public interest groups. Moreover, the provisions of the Governmental Performance and Results Act (GPRA) will formalize this scrutiny.

During the past few years, higher education also has been the target of increased public concern for accountability. Rising tuition costs, the prices of books and incidental fees, and public concern about faculty productivity

have converged to create a milieu of public distrust of the higher education enterprise. Now, more than ever, the public wants to know how universities operate and what reasonable expectations should be for faculty. Campuses must be responsive to these concerns or their very existence may be jeopardized.

### *Shared Concerns*

Higher education is in a period of major transition. Ultimately, this transition will be shaped by three principal forces: (a) changing demographics of faculty, (b) reductions in financial support for higher education, and (c) changing expectations for the roles and rewards of the job.

The aging of faculty is a nationwide phenomenon. During the next decade, many senior faculty will retire while young, relatively inexperienced professionals fill their positions. These "new docs" will be assuming entry-level positions in higher education and their first mission will be to determine how to stay (tenure) and advance (promotion). To ensure that these new assistant professors are as successful as they can be, we must clearly articulate the institution's expectations for tenure and promotion. If we are to keep and nourish the best and brightest, then we must be prepared to detail the job requirements and reward those who meet them.

Campuses are changing their weighting of the relative contributions of teaching, research, and service. As the nation criticizes higher education for "failing to teach," the popular rejoinder from academia is that campuses do not reward teaching. Many faculty believe research has received too much emphasis and that the reward structure should be shifted

to favor teaching as the preeminent campus activity. However, teaching as an activity is still ill-defined in the setting of rapidly changing instructional technologies and a vastly diversified student body. We are confronted with the essential paradox that the only way to improve teaching is to conduct creative and elegant research to evaluate which pedagogical approaches work best with which student populations. If we make teaching the paramount focus on campus, then it can only advance by systematic and passionately pursued research.

The great danger that lurks beneath these events is that many of the best and brightest will not pursue careers in research or sponsored scholarship. If the culture within higher education does not systematically reward the pursuit of extramural support for research and program development, then research will become trivialized or nonexistent. Junior faculty will choose the safe route of small, low-budget, intramurally funded research over larger-scale efforts simply because the smaller project is guaranteed and will generally lead to a minor publication. The time and effort to prepare a funding proposal that leads to an uncertain end could be better spent preparing yet another manuscript based on 5-year-old dissertation data.

### *A Common Solution*

Funding sponsors, university promotions committees, and university research administrators share a common goal: *support the best and brightest in their efforts to contribute to their disciplines and advance the common good.* All of the individual activities that contribute to this goal strengthen the nation, serve higher education, and help faculty

develop professionally into the “movers and shakers” of their generation. Identifying and nurturing creative genius is an extraordinarily important process — perhaps the most important in the world.

To ensure that we continue to support the best and brightest, university promotions committees and productivity standards task forces must recognize and quantify the value of pursuing extramural funding. A competitive proposal represents substantial work. A proposal manager must be both a content expert and an entrepreneur. He or she must prepare a document that would convince strangers that money invested in this enterprise would be well spent. Unlike a simple manuscript submitted for publication, the proposal will be judged on its scientific merit, the publication and management record of the proposed principal investigator, and the appropriateness of the institutional setting. A well-written, scientifically sound proposal for funding is *prima facie* evidence of a faculty member’s competence as a researcher. If it is reviewed by discipline-specific or research-related professionals and found to be worthy of funding, it is at an equal level with a research publication. Funded, multiyear projects that culminate in significant contributions to one’s discipline are extremely important to advancing our scientific

understanding. However, many campuses do not recognize or reward the principal investigators until the “successful” conclusion of the work, and this success is operationalized as a publication in a prestigious journal. Years of creative and meticulous science become reduced to a few pages in a scholarly journal. We must develop and implement standards for rewarding faculty who are managing “works in progress.”

To ensure the survival of the research enterprise, research administrators must take a proactive position as human-resource developers within their various work environments. Research administration is a professional-development activity and must be viewed and implemented as such if we are to maximize our effectiveness.

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Send your letters, comments, and suggestions to: Pam Miller, PhD, Editor, *SRA Journal*, Southern Illinois University, Research Development and Administration, Carbondale, IL 62901. E-mail: pmiller@siu.edu.

# FEATURES

## DEVELOPING RECRUITMENT PACKAGES FOR RESEARCH FACULTY IN A RESTRUCTURED ACADEMIC MEDICAL SYSTEM<sup>1</sup>

By James E. Lewis, PhD

### ABSTRACT

The author examines the financial aspects of recruiting in relation to the purpose of the recruitment, the stature of the investigator, and the nature of his or her research. Cost-effective strategies for handling various aspects of recruiting in a restructured academic medical system are presented.

### INTRODUCTION

**F**or several years, leaders of academic medical centers at the levels of dean, department chair, and division director have focused on the need to restructure their institutions in light of changes in the health care delivery system. Still, research, along with patient care, remains an important part of a quality medical education.

The lack of growth in the National Institutes of Health (NIH) spending for extramural research in the early- and mid-1990s has discouraged many faculty from submitting applications and pursuing research careers. Yet,

according to the U.S. Department of Health and Human Services (1994), total funding for biomedical research has continued to climb, with funding from industry surpassing total federal government support in 1994. Significant new growth in funding for the NIH and other federal government research programs is expected as the decade closes.

There is no end to research opportunities, some of which are central to the success of integrated health care delivery systems—whether built around academic medical centers or not. The revolution that began with molecular biology still has a long running time, even as research and acade-

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<sup>1</sup>Based on a presentation made at the Association of Professors of Medicine (APM) Symposium on "The Future Role of Subspecialists in Departments of Internal Medicine," Lansdowne, VA, Sept. 9-10, 1995.

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mic leaders work to reestablish clinical research as a key link between the wet bench and the patient.

The academic research enterprise derives part of its stimulation and innovation from new researchers joining and initiating investigative groups and collaborative teams. Recruiting is a continuous process, although the pace and volume of recruiting are heavily influenced by the actual and perceived availability of external funding. Since much of the funding for faculty recruitment and startup costs has come from the academic clinical enterprise over the past 3 decades, anticipated reductions in these funds raise several concerns about future recruitment packages:

1. Where will recruitment and startup funds come from?
2. How much funding will be needed?
3. What factors will affect the amount of monetary support and other resources?
4. Can useful alternatives to traditional funding patterns be identified?

This paper examines the financial aspects of recruiting in relation to the purpose of the recruitment, the stature of the investigator, and the nature of his or her research.

## INITIATING THE RECRUITMENT PROCESS

For the recruiting unit, a fundamental set of issues must be considered. Before the recruiting begins with what is often a hastily put-together job description and advertisement, careful thought should be given to the following questions:

1. What is the purpose of the research program?
2. What kinds of research faculty should be recruited?
3. What kinds of facilities and equipment will the selected faculty require to be successful?
4. What are the candidate's financial concerns?
5. What research support structures can be used to magnify the effects of startup assistance and improve the potential for each candidate's success?

These questions have received little attention during the exponential growth of the academic medical research enterprise over the past 30 years. Now that resources are tighter and external funding more difficult to obtain, these questions must be addressed if newly recruited researchers are to become early programmatic and financial contributors to the institution.

## WHAT IS THE PURPOSE OF THE RESEARCH PROGRAM?

This first question seems so obvious that I can almost hear readers say, "Everybody knows the purpose of the research program is to create new knowledge." No argument. However, the successful recruiter should pursue this point by asking some additional questions:

1. How does the current research program contribute to the medical education and patient-care delivery missions of the institution?
2. Is the purpose of the recruitment to develop a new research direction or to fill a gap in an existing stream of research?

Unless everyone involved in the recruitment process agrees on the answers to these questions, the recruitment of new faculty should be delayed. If a consensus on the purpose of recruiting research faculty cannot be reached, disappointment and wasted resources will result, including wasted recruiter time. In many academic medical centers, it is easy to look around and spot the people who were recruited, given 2 or 3 years of startup support, and left alone (often terribly alone) to develop their program. Three years pass and tenure becomes an important item of discussion. Only then does it become apparent that the individual has been unable to obtain funding and is still trying to find a research niche where he or she can play an effective role in the organization.

Inadequate mentoring may play a role in this outcome. More often, however, the problem is due to lack of compatibility between the individual's research interests and capabilities and the overall research interests of the division, department, or institution. When there is a poor fit between the researcher and the institution, mentoring can scarcely solve the problem.

## WHAT KINDS OF RESEARCH FACULTY SHOULD BE RECRUITED?

This paper will not attempt to define clinical research, basic research, or any other kind of research. The reader can refer to the

excellent book by Ahrens (1992) and the recent discussions of the NIH Director's Clinical Research Advisory Committee, chaired by David Nathan<sup>2</sup>. Attempts to define and categorize research will continue so long as there are scientists.

However, the following descriptors are useful in thinking about the startup costs, facilities, and equipment required for someone engaged in one or more of these areas: (a) "basic" biomedical (wet-bench laboratory); (b) "basic" psychosocial; (c) clinical (MD plus whole patient in the same room); (d) clinical trials (industry and NIH); (e) health services (access, cost, quality); (f) clinical decision-making; (g) clinical and/or molecular epidemiology; and (h) technology transfer/continuing medical education effectiveness.

Obviously, the initial investment for a wet-bench scientist is different from that for a dry-bench scientist. The dollar amount of research grants and/or contracts generated by these individuals are comparative. However, grants and contracts generated by dry-bench scientists usually are much larger and have lower overhead costs (not rates) than those generated by wet-bench scientists.

Clinical trials—whether inpatient or outpatient—should take place in the usual clinical settings. For this activity to operate efficiently and successfully, reasonable modifications of available space may be necessary. Some of the requirements of clinical trials include: (a) space to store case reports, (b) space for study monitors

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<sup>2</sup>*Science, The Blue Sheet*, other trade publications, and the popular press carried many reports of the deliberations of this committee in 1995 and 1996. To the author's knowledge, NIH has not published a formal report of the committee's work and recommendations.

to review newly acquired data, and (c) a secure storage area for pharmaceutical agents.

Many academic medical centers have yet to give much credence to clinical trials—regardless of sponsorship. This has helped create a crisis in clinical research. In the late 1970s, NIH Director James Wyngaarden (1979) noted the shortage of trained medical investigators, even though it was well

**We know from medical student demographics that in the future, more women and minorities will be pursuing research careers.**

beyond the crisis stage at that point. This crisis continued through the establishment of the NIH Director's Advisory Panel on Clinical Research, in 1995. Only within the past 1 or 2 years have institutions acknowledged that not only are clinical trials justifiable in academic medicine, but they contribute to the education and research enterprise as a whole.

From a program-planning and faculty-recruitment perspective, it might be more helpful to think of research facilities in terms of the following categories:

1. Wet-bench laboratory
2. Dry-bench laboratory
3. "Big machine," including catheterization laboratories, operating rooms, whole-body magnetic resonance instruments, PET scanners, and radiologic and other imaging devices
4. Clinical, including outpatient and inpatient studies conducted in standard patient-care facilities

By thinking of research programs in these terms, it is possible to plan for differences in facilities, equipment and instrumentation, staffing, and capital outlays—all of which will be required by newly recruited research faculty using each type of research facility.

#### WHAT KINDS OF FACILITIES AND EQUIPMENT WILL BE REQUIRED?

We know from medical student demographics that in the future, more women and minorities will be pursuing research careers. Moreover, an increasing number of generalist physicians will be involved in clinical epidemiology, health-services research, and clinical research. These investigators almost certainly will be more team-oriented and, thus, more interested in collaborative research.

Undoubtedly, these investigators will want to access the Internet and e-mail to contact their collaborators. This reality will make computers a necessity and influence the kinds of facilities, instrumentation, and other equipment that will be needed.

For example, we can expect more facilities that meet FDA "good manufacturing practice" standards for the production of gene therapy agents and vectors. We can expect more

requests for dry-bench laboratories, offices, and record-storage and computer equipment space. Regardless of physical location, the computer equipment will have to be linked by some form of groupware to allow collaborators to work together simultaneously. Researchers also will need to be linked to large databases and the Internet.

We can expect more coordinated, carefully managed, multi-investigator outpatient clinics for patient-oriented research. With luck, this will take place in the usual clinical space. Undoubtedly, however, some institutions will find it necessary to provide separate space—perhaps as an extension of an NIH-funded General Clinical Research Center (GCRC). Moreover, GCRCs almost certainly will be called upon to become more flexible in their approach to different kinds of clinical research. This will occur as a result of changes in the nature of research, the expectations of investigators, and the funding available through NIH and other sources.

In the near future, investments in new molecular biology labs will be modest, because most of the laboratory space required for this activity has been built or renovated over the past 2 decades, and a significant amount of new space will not be needed. On the other hand, because of the ever-increasing sensitivity of this kind of research to environmental contaminants, improved heating, ventilation, and air-conditioning systems will be needed, as will advanced scientific instrumentation.<sup>3</sup>

If competition among wet-bench investigators continues to increase while available funding decreases, some institutions may have underutilized wet-lab space. Since there are few effective space-reallocation programs in academic medicine, it will be difficult to spot underutilized space. Hard measures like dollars per-square-foot, grants per-square-foot, or investigators per-square-foot will be needed to test faculty claims that they could not possibly get along with less space.

Reduced construction and renovation costs per-square-foot should result from these changes, and startup costs should drop for both wet-bench and dry-bench investigators. This, of course, puts a totally different light on the cost of recruitment, and may improve the clinical relevance and character of research carried out in many schools.

## WHAT ARE THE RECRUITING ISSUES?

### *The Candidate's Perspective*

What are the recruiting issues for medical research faculty? Most candidates will ask questions about potential colleagues and mentors—perhaps not directly, but in the context of questions about what other people are doing or who the research leaders are in the institution. Certainly, the first question any newly minted medical researcher will ask is, “How much protected time will I have?”

His or her next question will relate to the length of the tenure track. The

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<sup>3</sup>Obviously, this hypothesis is driven by the assumption that within the next 10 to 20 years, there will not be any new biomedical research paradigms (in the true sense of that phrase). If that assumption proves false, then these predictions will change because new paradigms tend to set everything back to zero.

candidate will want to know the likelihood of attaining tenure under some reasonable conditions of success. Particularly astute candidates will ask about access to graduate students, post-doctoral trainees, and fellows. They may even ask the recruiting unit to pay for them.

Startup resources will be the next item on the candidate's list. Space, equipment, research technicians—what will they have to work with? Candidates from strong research institutions may expect that they will not have to share these things with anyone else.

Starting salary will be a concern, and some may ask about fringe benefits. What salary increases can they expect if they are successful? In addition to compensation, young faculty may be concerned about paying off debts incurred in the course of their education. They also may inquire about the cost of childcare or reimbursement for relocation expenses.

Finally, they will want to know how long it will take to begin their research program and what level of startup support they can expect. How the recruiter answers these questions will ultimately determine whether a candidate accepts or rejects the offer of a position.

#### *The Recruiter's Perspective*

From the standpoint of the recruiting unit, there is a different list of questions, and it may only partially intersect with the candidate's list. One of the first questions should be, how long will it take this individual to achieve independent funding or funding as part of a group? Are there people with currently funded programs who could use this individual's skills and would be interested in making an

investment to bring him or her to the institution?

The next three questions relate to the match between the individual, the needs of the institution, and the aims of the research programs: Does the individual have innovative ideas? Will he or she fill gaps in current knowledge or skills that will help existing programs become stronger? Does he or she offer the potential of opening new research directions and opportunities? If there are positive responses to any of these questions, then the candidate is probably worth pursuing. If the candidate's salary demands and startup costs are reasonable, additional questions need to be asked:

- Will the candidate generate external funding, either immediately or within a reasonable amount of time?
- Does he or she have applications for funding under review?
- Are there publications pending in the next several months?
- Can the individual lead as well as follow?

Collaborative, team-based research—probably the only successful model for the future—requires individuals to play the roles of both leader and follower. There may not be room for prima donnas in the future.

Finally, there may be a question of a position for the spouse. What was once a tendency for faculty candidates to have a spouse with equally important career needs and aspirations is now a given. Both must be recruited, which often means finding, and possibly even funding, a suitable position for the spouse.

It makes a real difference if the spouse can fill another gap in the unit

or in another part of the institution, or if a position for the spouse must be created with internal funding. Sometimes it seems that every desirable research candidate is married to a professor of some esoteric subject that is currently being downsized at your institution.

## WHAT ARE THE FINANCIAL ISSUES?

What are the financial issues involved in recruiting research faculty? First is the need to evaluate the present cost of attracting the researcher to the organization versus the researcher's future benefit to the unit. This is not necessarily strict cost-benefit economics. However, if it is unclear whether the individual will bring substantial benefit as a leader, follower, teacher, and respected scientist, then the cost of having him or her at your institution must be carefully considered.

Furthermore, it is unlikely that there are any secrets in an academic medical institution. Once made, a commitment sets a precedent. If the action is repeated, the precedent becomes a policy. After that, research faculty will expect the same response throughout the recruiter's career—if not their own careers.

Recruiting should be handled at the level where resource commitments are made. If it occurs at the division level, the primary decision should be made there. Obviously, the chair and dean should be involved to demonstrate institutional interest and provide an additional assessment of the individual's capability and value. If the recruiting unit requires resources from the department, school, hospital, or other components of the orga-

nization, then of course the chair and dean will need to be involved. Administrators can help secure commitments in the overall context of institutional and departmental priorities and needs.

Table 1 (see p. 54) summarizes specific recruitment items. The table is organized to illustrate the differences between junior and senior faculty candidates, with recommendations for handling the various aspects of the recruiting process and recruiting decisions. Table 1 illustrates that there are both reasonable and unreasonable things to do for faculty recruits.

People from the community also may be used in the recruitment process. Community representatives are perfectly suited to helping someone from out of town understand and evaluate local schools, the residential market, the job market for the spouse, etc.

For a few more years, not every faculty person will require a cellular telephone, and not every individual needs a fax machine. However, you won't be able to recruit someone without providing him or her with at least one computer.

With respect to wet-bench recruits, there are usually opportunities to recycle equipment and develop sharing relationships. Therefore, it is possible to determine and then stage over a period of time the amount of renovations, supplies and technical support that will be needed. Careful mentoring can help a new researcher use available resources effectively. This helps the recruit feel integral to the enterprise and maximizes the benefit he or she brings to the institution.

Incentives are very different for junior and senior faculty. In both

**Table 1**  
**Financial Issues**

<b>Item</b>	<b>Junior Faculty</b>	<b>Senior Faculty</b>
Relocation	Could cap amount	Actual cost
House-hunting: use expert	Combine with recruiting trips	1-2 extra visits
Moving: contract for best price	Cap	Actual cost
Purchase existing house	No	Avoid: \$40K - \$50K minimum
Mortgage assistance	Institutional FB (friendly banker)	Institutional FB (friendly banker)
Spouse employment	Avoid except referrals	Avoid except referrals
Education debt assistance	Try to avoid; or, pre-employment bonus	NA
Childcare costs	Institutional FB	Institutional FB
Cellular phone, fax	No	Out of startup funds, if at all
Startup costs (excludes salary and fringe benefits)	Office and secretarial support	Office and secretarial support
Wet bench	\$200K - \$300K; 500 - 1,000 asf; Recycle; Share; No major renovations; 2/3 - 3/4 year 1; Tech. + supplies years 2, 3	\$1M+; 50% year 1; 30% year 2; 20% year 3; Additional facilities; Major renovations + equipment
Dry bench	\$30K - \$50K; 50% year 1; 0-200 asf; Computer	\$75K - \$100K; 30% year 1; 200-500 asf; Computer network
Incentives: nonmonetary	Supportive environment; Mentoring Responsible administration at all levels Career development Nomination for professional awards/recognition Access to division/dept./ inst. funds if performance warrants Expanded facilities if performance warrants Speaking/consulting opportunities Sincere interest/attention from division director/chair	Increased autonomy  Responsible administration at all levels Build program Nomination for ASCI/AAP; IOM HHMI Access to institutional fundraising opportunities  Sponsor regional/national meetings  Leaders consult on important institutional matters
Incentives: monetary	Reward performance/program building, not longevity	Reward program building, not longevity

cases, a responsive administration costs virtually nothing, yet buys great performance and loyalty—that's what leading and managing academic units is all about. Monetary incentives, including salary increases, should be linked to what the person is asked to do. For junior faculty members, the measure is performance: Are they beginning to submit applications for external support? Are they submitting manuscripts for publication? Are funding organizations and publishers responding favorably to these efforts? For senior investigators, the question is different: Are they building programs that will serve the institution? In neither case should monetary rewards be given for longevity only.

Finally, try to prevent newly recruited faculty members from becoming frustrated by petty details, an incomprehensible bureaucracy, or other roadblocks that are part of the institutional culture. Similarly, bringing new faculty in, giving them the keys to a laboratory, and letting them fend for themselves is not likely to produce positive results for them or the institution.

## WHAT RESEARCH SUPPORT STRUCTURES HELP WITH RECRUITMENT?

**I**n academic medicine, at least three research support structures might be used to recruit new faculty and enhance their productivity. One is the administrative staff of the unit (or units) where the individual will be appointed. Another is the “centers” mechanism often funded by NIH, voluntary health agencies, industry, or the institution itself. A third is a multi-investigator clinical trials unit,

which is an evolving entity in many academic medical centers. Such units are designed to improve the teaching of clinical investigative skills and techniques and to attract industry-sponsored clinical trials for maximum institutional effect.

### *Administrative Staff*

The administrative staff of the academic unit can assist the faculty in at least three ways:

1. Environmental monitoring (internal and external)
2. Provision and maintenance of a supportive environment for research
3. Assistance with developing applications for external support

Internal environmental monitoring includes: (a) maintaining knowledge of faculty strengths and weaknesses; (b) helping faculty maintain awareness of the directions that internal research groups are taking, including new topics and new techniques; and (c) assisting in the development of links to faculty in other departments.

External environmental monitoring should focus on: (a) the plans and policies of research sponsors; (b) new developments from the cutting edge of science; and (c) funding sources for pilot or feasibility projects, instrumentation, and facilities, such as corporate foundations, philanthropic organizations, or disease-oriented voluntary health agencies.

One of the challenges facing administrative staff is helping faculty diversify the sponsorship of their research programs. In addition to NIH, many government agencies support biomedical and health services research and training. In industry,

many organizations besides the traditional pharmaceutical houses are interested in health-related research (e.g., the device industry). A growing number of large corporations also have taken their basic corporate strengths and applied them to health issues—whether these be diagnostic or therapeutic techniques or different ways of approaching health care delivery.

Maintaining a supportive environment for research should be a central responsibility of the unit administration. This includes maintaining a clear understanding of the organization's mission, goals, and objectives so that everyone understands the role of research in the organization. The administrative staff also can be helpful in recruiting faculty and assisting in the development of their strengths and skills.

The unit leader should constantly review the faculty for nominations for NIH study sections and advisory bodies as well as for the advisory committees for other research sponsors. Maintenance of a research committee in a large department also may be useful if the committee's role is to promote the development of research and the involvement of faculty and trainees in research-oriented activities.

Allocation of resources within the unit should be consistent with the unit's goals and objectives. Faculty performance should be considered in relation to these goals and objectives. In a supportive environment, information about funding opportunities is available, and internal review and approval processes run smoothly.

In some cases, administrative staff can assist in developing and maintaining working relationships with funding agency personnel, particularly

those at NIH. In so doing, they are in a position to inform faculty of any changes in research direction at the sponsor level. Furthermore, the administrative unit should:

1. Monitor faculty performance, such as the number, quality, and dollar value of applications submitted and funded.
2. Calculate application success ratios over a period of time. Allow sufficient time for the final review and disposition of the proposal.
3. Monitor the productivity per-square-foot of research space.
4. Keep track of publications and the career trajectories of trainees.
5. Encourage, assist, and arrange faculty participation in professional meetings.
6. Track the involvement of faculty with various sponsors.
7. Inform faculty and trainees about the responsible conduct of research.

Helping trainees understand important elements of the profession in which they are engaged also is an administrative responsibility. This information includes issues related to authorship, ownership of data, research ethics, scientific misconduct, institutional versus individual responsibility, and conflicts of interest and commitment.

It always helps if faculty understand indirect costs and how they are calculated and used. They must understand biosafety and their role in developing and promoting positive employee attitudes towards safe and healthy behavior in the laboratory setting. They must be kept informed of changes in the way applications are submitted, handled, and processed.

(For example, NIH will begin processing proposals electronically in the near future. Already, the *NIH Guide* is available only by electronic means, and electronic publishing is expanding with each passing month.)

Administrative staff also can assist with the application development process. They can assist in the identification of prospective principal investigators or project directors—particularly for multi-investigator projects, where experienced staff may become involved in project conceptualization and application development. Staff should help maintain smooth relations with institutional human subjects review committees, animal use review committees, and the office of research administration.

Staff can develop and maintain up-to-date information about resources and environment; that way, it need not be developed anew for each application. Such information should be maintained in a standard, easily accessible format—preferably computer based.

Furthermore, staff can help keep information up to date on pending and active funding. Such information is required by a growing number of research sponsors for each application and each investigator listed in the application. The administrative staff also can assist in maintaining current faculty curriculum vitae and biographical sketches. These should be updated on a regular basis—at least annually—so they are always ready to be assembled to accompany an application. Institutions that have a VA affiliation can gain from having a good relationship with their local VA Medical Center. Thus, for example, when a memorandum of understanding is needed for an NIH application, it can be obtained expeditiously.

There are many other tasks that a good administrative staff can help accomplish. The point of all of this is to maximize the amount of time the investigator puts into the important part of the application—the science and the actual work to be done. It is foolish to waste investigator time on those parts of an application that can be handled equally well or better by others.

#### *Research and Training Centers*

Research and training centers, particularly those sponsored by the NIH (including the GCRCs), can provide significant support for both junior and senior faculty. Usually these entities include an administrative core; often, they are able to provide data-management support, including biostatistics. They also may have funds available for feasibility and developmental studies. Such centers are focal points for the development of collaborative relationships, and may provide additional special access to funding opportunities for investigators associated with them. Table 2 (see p. 58) displays the awards generated by an existing faculty member over a 5-year period. This researcher (“Faculty Member A”) works a 4-day week by choice. By working with a disease-oriented research center, this individual has maintained a strong research profile. Only the dollars are represented here, but be assured that the institution and external sponsors regard the quality of the faculty member’s research very highly. At the same time, this individual has maintained a fairly active clinical profile, particularly given the fact that these data represent only outpatient collections in a non-procedurally oriented subspecialty of internal medicine.

Table 2  
Faculty Member A\*: NIH Grants

Project	1991 Award	1992 Award	1993 Award	1994 Award	1995 Award
1	\$53,375	\$121,165	\$138,784	\$139,094	\$137,724
2	22,645	36,088	36,072	11,718	—
3	—	—	1,492	18,630	26,047
Subtotal	76,020	157,253	176,348	169,442	163,771
Pat. Care Rev.	115,549	94,475	89,115	98,146	77,837
Total	\$191,569	\$251,728	\$265,463	\$267,588	\$241,608

\*Faculty Member A works a 4-day week.

### *Organized Clinical Research Units*

Organized clinical research units usually include an administrative core and provide support as needed for patient recruitment, nursing services for study patients, study management, data management, and quality control. When properly developed, such units facilitate sponsor access to investigators. They are critically important, too, for minimizing faculty time and headaches with respect to involvement in clinical research—particularly industry-sponsored clinical trials.

Table 3 (see p. 59) shows the research and patient care revenue for a senior faculty member in another nonprocedurally oriented subspecialty of internal medicine. This clinician-scholar ("Faculty Member B") had abandoned clinical trials several years earlier because he had difficulty maintaining a competent staff through sporadic periods of inactivity. Working with an organized clinical

trials unit since 1991, this individual has shown growth in productivity on the research side while slightly increasing the overall patient care revenue. In FY 1995, his clinical trials income exceeded his patient care revenue. By working with the organized clinical trials unit, his actual involvement in clinical trials is only about 2 hours a week. Thus, the doubling of this researcher's revenue contribution to the academic unit came without a substantial increase in effort.

### CONCLUSION

Many issues influence the recruitment of research faculty in a restructured academic medical system. The critical components include the institution's research agenda as well as the researcher's interests and pursuits. Together, these considerations influence the needs for space, equipment, and instrumentation as well as recruitment and startup costs.

Table 3  
Faculty Member B – Clinical Trials

Project	1991		1992		1993		1994		1995	
	Award	Revenue	Award	Revenue	Award	Revenue	Award	Revenue	Award	Revenue
1	\$ 49,465	\$ 13,616	\$ 35,970	\$ 27,740		\$ 32,331		\$ 6,053		\$ 1,881
2						\$ 62,520	\$ 61,137	\$ 1,779		
3						\$ 10,000	\$ 10,000			
4						\$ 59,520	\$ 15,000	\$ 5,832		
5						\$ 30,000		\$ 44,500	\$ 425	\$ 27,450
6							\$ 29,700	\$ 5,940		\$ 14,454
7							\$ 40,000	\$ 10,000	\$ 14,000	\$ 32,000
8							\$ 309,125	\$ 41,999		\$ 94,536
9								\$ 74,228	\$ 83,557	
10								\$ 11,997	\$ 12,000	
11								\$ 61,200	\$ 33,120	
12								\$ 55,200	\$ 15,300	
13								\$ 77,756	\$ 38,880	
14								\$ 282,064	\$ 28,311	
15								\$ 56,717		
Subtotal	\$ 13,616	\$ 27,740				\$ 118,468		\$ 116,103		\$ 381,489
Pat. Care Rev.	\$ 307,991	\$ 316,563				\$ 326,034		\$ 358,301		\$ 374,985
Total Revenue	\$ 321,607	\$ 344,303				\$ 444,502		\$ 474,404		\$ 756,474

Whether the individual is a junior or senior faculty member, the main financial issue is cost versus anticipated contribution to the program.

Academic administrators and leaders need to remember that the truly important characteristic of a research program—whether wet-bench, dry-bench, “big machine,” or clinical investigation—is that nonmonetary incentives and rewards usually are more important than monetary incentives.

All faculty should be aware of the need to develop collaborative, team-oriented relationships. From the administrative standpoint, faculty must be willing to be leaders as well as followers. Building single-investigator laboratories without supporting connections with other groups is destined at some point to leave an expensive hole in the organization. This hole may occur through changes either in the interests and directions of sponsoring organizations or in the ability

of the senior investigator to attract support. In either case, unit leaders need to recognize the potential problem and insist that faculty participate in collaborations and teams to maintain funding throughout the unit.

Overall, administrative support is fundamental to maintaining a strong research effort and to recruiting single and/or multiple investigators at appropriate times in the development of the program. Research and training centers and organized clinical trials units are other mechanisms that can improve the productivity of faculty. These structures maximize the amount of time faculty spend on the things they have been trained to do. This allows faculty to capitalize on their talents and research administrators to use their skills to support the research. Together, research faculty and research administrators can deliver a superbly effective effort for the organization as a whole.

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# FEATURES

## FACTORS INFLUENCING GRANT WRITING: PERCEPTIONS OF TENURED AND NONTENURED FACULTY

By Patricia Boyer and Irv Cockriel

### ABSTRACT

This study examines factors that motivate and hinder faculty in their pursuit of grants. The focus of this study is the differing perceptions of tenured and nontenured college of education faculty at Association of American Universities (AAU) institutions in the United States.

The findings suggest that nontenured faculty perceive motivational factors and barriers differently from tenured faculty. The authors conclude that adequate training in grant writing is essential, that incentives must be individualized to faculty, and that support for nontenured faculty in every aspect of grant writing is necessary for their pursuit of grant proposals.

### INTRODUCTION

Being “scholarly” traditionally means engaging in research, writing articles for publication, and sharing research findings with students (E. L. Boyer, 1990). Recently, the pursuit of grants has come under the umbrella of research in academia (Blackburn & Lawrence, 1995). Research universities judge themselves—and are judged by others—

based on research productivity and the dollar amount of acquired grants. In addition, writing proposals increases the number of publications submitted and published by faculty.

Researchers such as Daniel and Gallaher (1989), Monahan (1993), and Dooley (1994) have identified factors that motivate and hinder faculty in their pursuit of grants. These studies reveal that junior faculty and senior faculty differ in their perception of the grant-pursuit process. While both

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groups are concerned about expanding workloads and diminishing opportunities for external funding (Finkelstein, Seal, & Schuster, 1996), they identify different reasons for not pursuing grants. Nontenured, junior faculty found the grant-submission process to be intimidating, especially in the absence of a mentor (P. G. Boyer, 1997) or prior experience in proposal writing (Lischwe, O'Neal, & Willimann, 1987). Tenured faculty, on the other hand, did not pursue grants because they were not seeking promotion, tenure, or new jobs at other institutions. Moreover, some senior faculty will not seek grants under any condition, simply because they do not want to (Monahan, 1993).

The purpose of the present study is to examine in greater detail the factors that motivate or hinder faculty—both tenured and nontenured—in their pursuit of grant funding. Specifically, the authors (a) identify factors that influence successful grant writing for tenured and nontenured faculty, and (b) clarify those factors that are obstacles for tenured and nontenured faculty who are seeking external funding. (See Tables 1 and 2 on pages 63 and 64 for a list of the motivators and barriers used in this study). The study focuses on college of education faculty at “Research I” institutions that are constituents of the Association of American Universities (AAU).

## METHODS AND DEMOGRAPHICS OF THE SAMPLE

### *Survey Instrument*

The survey was based on instruments used by Thomas Monahan and Larry Dooley as well as a review of the related literature. The pilot for the

survey instrument was a sample of faculty in the College of Education at the University of Missouri-Columbia. The instrument was generated based on factors from the literature that influenced education faculty in their pursuit of grants.

The questionnaire was mailed to 370 faculty randomly selected from institutions that are members of AAU Research I institutions. The questionnaire examined motivators and barriers based on the rank of faculty. Chi-square tests of independence were used to analyze the data. A sample size of 248 (67%) usable responses were completed and returned. The sample—identified through a systematic random selection of names of AAU faculty—was designed to have a confidence level of 90%, with a margin of error of +/-5%.

Of the AAU faculty responding to the questionnaire, 141 (57.3%) were males and 105 (42.7%) were females. Of professors responding to the questionnaire, 143 (58.1%) were full professors, 58 (23.6%) were associate professors, and 45 (18.3%) were assistant professors; 191 (77.6%) of the respondents were tenured professors, while 55 (22.4%) were untenured professors.

## RESULTS

The factors that motivated faculty pursuit of grants are presented in Table 3 (see p. 65), while the barriers to grant pursuit are listed in Table 4 (see p. 66). Significant motivating factors include “Consideration in tenure or promotion decisions” ( $\chi^2=30.371$ ,  $df=3$ ;  $p<.001$ ); “Building my professional reputation as a capable researcher” ( $\chi^2 =10.644$ ,  $df=3$ ;  $p<.01$ ); and “A strong commitment

**Table 1:  
Motivating Factors In Writing Research Proposals**

*To what extent do you consider the following as **motivators** for you in grant-writing activities?  
(Circle one response for each option.)*

	<i>Very Important</i>	<i>Moderately Important</i>	<i>Marginally Important</i>	<i>Not Important</i>
1. Return to my department a portion of the indirect funds derived from my grant	4	3	2	1
2. Personnel support such as graduate assistants and clerical help when preparing proposals	4	3	2	1
3. Personnel support such as graduate assistants and clerical help when proposals are funded	4	3	2	2
4. Consideration in tenure or promotion decisions	4	3	2	1
5. Recognition in college publication	4	3	2	1
6. More flexibility in how time is allocated	4	3	2	1
7. Opportunity to probe or research new information	4	3	2	1
8. Having travel money available for conferences	4	3	2	1
9. Ability to purchase equipment	4	3	2	1
10. Contact with funding sources	4	3	2	1
11. Assistance in grant proposal preparation	4	3	2	1
12. A strong commitment from the college president	4	3	2	1
13. Having access to boilerplates	4	3	2	1
14. Building my professional reputation as a capable researcher	4	3	2	1
15. Gaining recognition for my institution	4	3	2	1
16. Other (please specify) _____				

**Table 2:  
Barriers In Writing Research Proposals**

*To what extent do you consider the following as barriers for you in grant-writing activities?  
(Circle one response for each option.)*

	<i>Very Important</i>	<i>Moderately Important</i>	<i>Marginally Important</i>	<i>Not Important</i>
1. Inadequate support available to submit a proposal in a timely manner	4	3	2	1
2. Lack of training in grant seeking and grant writing	4	3	2	1
3. Heavy teaching load	4	3	2	2
4. Too many committee assignments	4	3	2	1
5. Lack of knowledge of funding sources	4	3	2	1
6. Too much work and bother	4	3	2	1
7. Too time consuming	4	3	2	1
8. No colleagues with whom to work	4	3	2	1
9. Advising students	4	3	2	1
10. Lack of clarity in the college's expectations	4	3	2	1
11. Lack of knowledge of budget development	4	3	2	1
12. Unwritten policy or ambiguous in the job description	4	3	2	1
13. Unlikely chance of getting funded	4	3	2	1
14. Reduce the number of signatures required to submit proposals	4	3	2	1
15. Access to the Internet	4	3	2	1
Other (please specify) _____				

**Table 3:  
Motivating Factors by Faculty Rank**

Variable	RANK			Variable	RANK		
	Tenure f (%)	Nontenured f (%)	$\chi^2$		Tenure f (%)	Nontenured f (%)	$\chi^2$
<i>Indirect funds</i>			4.108	<i>Equipment</i>			0.016
Not	46 (24.60)	12 (23.08)		Not	17 (9.04)	5 (9.09)	
Marginally	62 (33.16)	13 (25.00)		Marginally	40 (21.28)	12 (21.82)	
Moderately	43 (22.99)	19 (36.54)		Moderately	70 (37.23)	20 (36.36)	
Very	36 (19.25)	8 (15.38)		Very	61 (32.45)	18 (32.73)	
<i>Support</i>			1.509	<i>Contact funding source</i>			6.667
Not	24 (12.70)	9 (16.36)		Not	26 (13.83)	6 (11.32)	
Marginally	36 (19.05)	9 (16.36)		Marginally	65 (34.57)	17 (32.08)	
Moderately	48 (25.40)	17 (30.91)		Moderately	64 (34.04)	24 (45.28)	
Very	81 (42.86)	20 (36.36)		Very	33 (17.55)	6 (11.32)	
<i>Support when funded</i>			1.810	<i>Grant preparation</i>			0.657
Not	8 (4.26)	1 (1.82)		Not	37 (19.68)	9 (16.36)	
Marginally	5 (2.66)	1 (1.82)		Marginally	46 (24.47)	12 (21.82)	
Moderately	37 (19.68)	8 (14.55)		Moderately	57 (30.32)	18 (32.73)	
Very	138 (73.40)	45 (81.82)		Very	48 (25.53)	16 (29.09)	
<i>Tenure &amp; promotion</i>			30.371***	<i>Commitment from president</i>			9.467*
Not	38 (20.32)	1 (1.85)		Not	79 (42.25)	14 (25.93)	
Marginally	24 (12.83)	3 (5.56)		Marginally	43 (22.99)	16 (29.63)	
Moderately	57 (30.48)	8 (14.81)		Moderately	36 (19.25)	19 (35.19)	
Very	68 (36.36)	42 (77.78)		Very	29 (15.51)	5 (9.26)	
<i>Publications</i>			1.951	<i>Boilerplates</i>			4.100
Not	66 (35.29)	18 (32.73)		Not	63 (35.80)	12 (23.53)	
Marginally	49 (26.20)	16 (29.09)		Marginally	54 (30.68)	15 (29.41)	
Moderately	49 (26.20)	11 (20.00)		Moderately	41 (23.30)	18 (35.29)	
Very	23 (12.30)	10 (18.18)		Very	18 (10.23)	6 (11.76)	
<i>Time allocated</i>			4.381	<i>Professional reputation</i>			10.644**
Not	15 (8.02)	5 (9.43)		Not	12 (6.35)	2 (3.64)	
Marginally	37 (19.79)	4 (7.55)		Marginally	21 (11.11)	5 (9.09)	
Moderately	54 (28.88)	18 (33.96)		Moderately	75 (39.68)	11 (20.00)	
Very	81 (43.32)	26 (49.06)		Very	81 (42.86)	37 (67.27)	
<i>New information</i>			2.045	<i>Recognition</i>			3.758
Not	4 (2.12)	1 (1.82)		Not	24 (12.70)	7 (12.96)	
Marginally	4 (2.12)	3 (5.45)		Marginally	51 (26.98)	12 (22.22)	
Moderately	31 (16.40)	7 (12.73)		Moderately	73 (38.62)	28 (51.85)	
Very	150 (79.37)	44 (80.00)		Very	41 (21.69)	7 (12.96)	
<i>Travel money</i>			3.089				
Not	9 (38.30)	6 (40.00)					
Marginally	36 (37.77)	9 (32.73)					
Moderately	71 (19.15)	18 (16.36)					
Very	72 (4.79)	22 (10.91)					

\*p < .05. \*\*p < .01 \*\*\*p < .001.

**Note:** df = 3. Critical values for  $\chi^2_{.05} = 7.815$ ,  $\chi^2_{.01} = 11.345$ ,  $\chi^2_{.001} = 16.266$ .

**Table 4:  
Barriers by Faculty Rank**

Variable	RANK			Variable	RANK		
	Tenure f (%)	Nontenured f (%)	$\chi^2$		Tenure f (%)	Nontenured f (%)	$\chi^2$
<i>Inadequate support</i>			1.736	<i>Advising students</i>			0.916
Not	26 (13.90)	4 (7.27)		Not	68 (36.56)	17 (30.91)	
Marginally	36 (19.25)	11 (20.00)		Marginally	68 (36.56)	23 (41.82)	
Moderately	53 (28.34)	17 (30.91)		Moderately	30 (16.13)	10 (18.18)	
Very	72 (38.50)	23 (41.82)		Very	20 (10.75)	5 (9.09)	
<i>Lack of training</i>			16.968***	<i>Expectations</i>			0.748
Not	71 (38.17)	13 (23.64)		Not	103 (55.08)	30 (55.56)	
Marginally	55 (29.57)	12 (21.82)		Marginally	44 (23.53)	14 (25.93)	
Moderately	44 (23.66)	14 (25.45)		Moderately	25 (13.37)	5 (9.26)	
Very	16 (8.60)	16 (29.09)		Very	15 (8.02)	5 (9.26)	
<i>Heavy teaching load</i>			5.509	<i>Budget development</i>			14.716**
Not	32 (17.11)	3 (5.45)		Not	102 (54.84)	20 (36.36)	
Marginally	51 (27.27)	15 (27.27)		Marginally	59 (31.72)	17 (30.91)	
Moderately	49 (26.20)	15 (27.27)		Moderately	18 (9.68)	9 (16.36)	
Very	55 (29.41)	22 (40.00)		Very	7 (3.76)	9 (16.36)	
<i>Committee assignments</i>			4.031	<i>Policy &amp; job description</i>			2.400
Not	34 (18.38)	7 (12.73)		Not	118 (65.19)	31 (57.41)	
Marginally	45 (24.32)	19 (34.55)		Marginally	41 (22.65)	12 (22.22)	
Moderately	61 (32.97)	13 (23.64)		Moderately	12 (6.63)	6 (11.11)	
Very	45 (24.32)	16 (29.09)		Very	10 (5.52)	5 (9.26)	
<i>Lack of knowledge</i>			7.937*	<i>Getting funded</i>			1.696
Not	58 (31.02)	13 (23.64)		Not	39 (20.63)	12 (21.82)	
Marginally	56 (29.95)	11 (20.00)		Marginally	53 (28.04)	19 (34.55)	
Moderately	49 (26.20)	16 (29.09)		Moderately	49 (25.93)	10 (18.18)	
Very	24 (12.83)	15 (27.27)		Very	48 (25.40)	14 (25.45)	
<i>Work &amp; bother</i>			0.824	<i>Reduced signatures</i>			1.083
Not	59 (32.07)	19 (34.55)		Not	92 (50.00)	28 (51.85)	
Marginally	56 (30.43)	19 (34.55)		Marginally	50 (27.17)	16 (29.63)	
Moderately	44 (23.91)	11 (20.00)		Moderately	33 (17.93)	7 (12.96)	
Very	25 (13.59)	6 (10.91)		Very	9 (4.89)	3 (5.56)	
<i>Too time consuming</i>			0.832	<i>Internet access</i>			0.518
Not	44 (23.53)	14 (25.93)		Not	134 (72.04)	39 (70.91)	
Marginally	47 (25.13)	16 (29.63)		Marginally	34 (18.28)	8 (14.55)	
Moderately	55 (29.41)	14 (25.93)		Moderately	16 (8.60)	6 (10.91)	
Very	41 (21.93)	10 (18.52)		Very	2 (1.08)	2 (3.64)	
<i>Work with colleagues</i>			2.938				
Not	77 (41.18)	16 (29.09)					
Marginally	50 (26.74)	19 (34.55)					
Moderately	39 (20.86)	14 (25.45)					
Very	21 (11.23)	6 (10.91)					

\*p < .05. \*\*p < .01 \*\*\*p < .001.

Note: df = 3. Critical values for  $\chi^2_{.05} = 7.815$ ,  $\chi^2_{.01} = 11.345$ ,  $\chi^2_{.001} = 16.266$ .

from the college president” ( $\chi^2 = 9.467$ ,  $df=3$ ;  $p < .05$ ). Each of these factors were more important for nontenured faculty than for tenured faculty. Significant barriers included “Lack of training in grant seeking and grant writing” ( $\chi^2 = 16.968$ ,  $df=3$ ;  $p < .001$ ); “Lack of knowledge of budget development” ( $\chi^2 = 14.716$ ,  $df=3$ ;  $p < .01$ ); and “Lack of knowledge of funding sources” ( $\chi^2 = 7.937$ ,  $df=3$ ;  $p < .05$ ). As with the significant motivating factors, each of these barriers were more important for nontenured faculty than for tenured faculty.

## DISCUSSIONS

Most faculty seek opportunities to build their professional reputations as researchers; grant writing is one means of accomplishing this task. When grant proposals are funded, faculty disseminate this information by publishing the results. This study shows that nontenured faculty consider “building their professional reputation” to be very important, while tenured faculty think it’s only moderately important.

To motivate faculty to use grants “to make a name for themselves,” incentives must be individualized, allowing them to contribute to their area of research interest. Baldwin (1985) claims, “the key to faculty vital-

ity is to discover the types of incentives that are most attractive to faculty members and that will most economically and effectively stimulate professor’s best work” (p. 15).

Lack of training and knowledge in grant-proposal activities—particularly in areas such as developing budgets and locating funding sources—were barriers for the faculty in this study, more so for nontenured than for tenured faculty. Many junior faculty members perceive grant proposal writing as a barrier because they lack training and knowledge about the process. Additional research is needed to determine specifically where help is needed. Clearly, however, it is important that junior faculty have faculty-development programs and mentors to assist them through the process.

The results of this study can be used by college of education faculty and administrators to: (a) plan faculty development programs that assist junior faculty in developing greater knowledge of external-funding sources and proposal budget development; (b) help junior faculty in obtaining tenure or promotions; and (c) assist faculty in training and shaping the curriculum for future faculty members. This research holds important implications for universities in developing programs to support and mentor junior faculty in their pursuit of grants.

*(References appear on p. 68)*

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## HOW TO PREVENT GRANT PROPOSALS FROM UNDERMINING PATENT PROTECTION

By Jeff Myers and Ann J. Roberson

**G**rant proposals are often submitted at the last minute. In the rush to get the proposal in the overnight mail or transmitted electronically, little thought may be given to the patentability of an invention that might result from the research proposed in the application. However, proposal developers should be aware that an invention is not patentable in the United States and many other countries if it has been described in a printed publication more than 1 year prior to the filing date of a U.S. patent application. Furthermore, foreign filing rights are lost immediately upon publication if a priority filing date has not already been established (via a U.S. or foreign application).

What does this have to do with the submission of grant proposals? In the past, they were not considered printed publications because of the perception that such documents were not generally accessible to the public. The submission of grant proposals to federal agencies was not taken into

account in determining the patent bar date (the last date for filing a valid patent application).

However, in *DuPont v. Cetus*, a federal court in northern California held that a National Science Foundation (NSF) grant proposal *did* constitute a publication because it was "sufficiently accessible" to interested persons who exercised "reasonable diligence." In this case, the grant proposal was determined to be publicly accessible because it had been "filed, indexed by title, author, institution, and grant number in the NSF's published indices" and could be obtained through a request under the Freedom of Information Act (FOIA). Because this apparent act of publication (i.e., inclusion of the grant proposal in NSF's published indices) took place more than 1 year prior to the filing of the patent application, the court held that the grant proposal constituted a bar to the award of a patent.

What is the impact of this ruling in the university setting? Consider a hypothetical case: Dr. Smith, a

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respected faculty member at a research university, submits a grant application to the NSF in which he summarizes the current state of the art, formulates a research plan, and speculates on the anticipated results of the proposed research. NSF later notifies Dr. Smith that his research project will be funded for a period of 5 years. Dr. Smith begins the research several months after submission of the grant proposal. Anticipating a major breakthrough in his research, Dr. Smith is careful not to publish any manuscripts or make any presentations at scientific meetings that would constitute public disclosure. When the anticipated breakthrough materializes, Dr. Smith submits an invention disclosure to the university.

It has been 4 years since Dr. Smith received notification that NSF planned to fund his research proposal. Approximately 3-1/2 years have passed since a description of Dr. Smith's research first appeared in NSF's published indices. According to the ruling in *DuPont v. Cetus*, Dr. Smith's proposal constitutes a printed publication that has been publicly available for more than 1 year. As such, the proposal can be considered "prior art" for the purpose of determining whether or not Dr. Smith's invention is really new.

Dr. Smith can argue that the new technology he wants to patent was not even invented at the time he wrote the research proposal, and thus could not possibly have been disclosed at that time. However, even though Dr. Smith had no research data when he submitted the grant proposal, he correctly predicted the invention. This type of speculation—even when made by the inventor without any supporting research data—may be sufficient to

bar patentability if it is published more than 1 year prior to the filing of a patent application.

Ironically, the research proposal that made it possible for Dr. Smith to conduct his research has, in this case, become a bar to the patentability of the invention that resulted from the research. The ruling in *DuPont v. Cetus*, although not binding on all jurisdictions, has yet to be contradicted by any other case law.

An effective way of dealing with this unfortunate situation is to prevent it from occurring in the first place. Presumably, if a grant proposal were protected from disclosure under the Freedom of Information Act, then it would not be "accessible to the public" and would not constitute a printed publication that could preclude patent protection. Universities can accomplish this goal by exercising rights available under the Freedom of Information Act, which exempts from disclosure trade secrets and privileged or confidential commercial and financial information.

To bring a grant proposal with the provisions of the FOIA exemption, each individual page should be stamped "Confidential," and the legend should be stamped on the front of the grant proposal at the time of submission (see Figure 1 on p. 71).

In addition, to emphasize the need for treating a specific proposal as confidential, a cover letter should accompany each grant proposal submitted to an agency of the federal government. The letter in figure 2 (see p. 71) provides a rationale for keeping the proposal confidential and requests that the university and investigators be notified of all requests the agency receives for copies of the proposal under the FOIA.

Figure 1  
Sample Legend<sup>1</sup>

Confidential

This document, or portions of it, contains confidential information that is or may become the subject of a United States patent application and that is important to future commercial efforts based on such confidential information. Accordingly, this document and the confidential information is exempt from disclosure under the Freedom of Information Act, Sections 552(b)(3) and (b)(4) of Title 5 of the United States Code and corresponding regulations of United States government agencies.

In many instances, however, the faculty member may be reluctant to include such a statement. Some faculty (and research administrators as well) feel that to include such a cover letter may reduce the likelihood of funding. Others may feel that it is an inappropriate condition or obligation to include with a basic research proposal. Common belief is that placing conditions such as this on the proposal makes it less attractive to reviewers and the agency. Universities may want to use the "stamp" of confidentiality in conjunction with their standard cover or transmittal letter and fully inform their faculty as to the potential for proposals constituting a publication bar date.

Occasionally, RFPs will prohibit the inclusion of proprietary information, which may precipitate a number

of problems. Consider the situation that surrounds another hypothetical faculty member. Dr. Jones is a highly productive, up-and-coming tenure-track assistant professor. Dr. Jones

Figure 2  
Sample Cover Letter<sup>1</sup>

Dear \_\_\_\_\_:

The accompanying grant proposal contains information that is or may become the subject of a United States patent application and that is important to future commercial efforts based on such confidential information. Disclosure of this document and the information it contains may cause substantial harm to such commercial efforts. Accordingly, this grant proposal and the confidential information contained in it are exempt from disclosure under the Freedom of Information Act, Sections 552(b)(3) and (b)(4) of Title 5 of the United States Code and the corresponding regulations of [the Agency]. If any person or entity should request a copy of this document or any portion of it, [University and Applicant] ask that notices of such requests be provided to [Applicant and Designated Official at University] as provided in Executive Order No. 12,600. Thank you for your consideration.

Sincerely,

[Research Officer or  
other appropriate  
University official]

<sup>1</sup> Taken from an advisory memorandum distributed by Research Corporation Technologies Inc.

discloses an early-stage invention to the university and then seeks research funding to further explore one expected field of use. Naturally, this is encouraged. However, the federal agency program identified for the highest likelihood of success will not accept proprietary information in proposals and asserts that all proposals will be publicly available. Development staff is surprised considering the agency and the nature of the program. With 2 weeks before the proposal deadline, the university is apparently forced either to refuse to allow the proposal submission (and really upset Dr. Jones), to allow the proposal to go forward possibly losing foreign patent rights and starting the running of the 1-year period, or quickly file a patent application before fully evaluating the invention's viability.

According to some patent attorneys,<sup>2</sup> changes in language that may seem relatively minor could help protect future patentability. If possible, avoid direct and definite predictions concerning the results of the research. Statements in a proposal that “a research plan should lead to outcomes

such as...” or “I believe the research will result in...” may constitute a public disclosure of a potential invention. In any case, a great deal of cooperation among faculty, proposal developers, and intellectual property administrators is required to reduce the likelihood that such a situation may jeopardize a patent position.

In *The Journal of NIH Research* (November, 1996), Robert Charrow wrote that grant applications and manuscripts may be protected as trade secrets. However, others feel that the commercial nature and requirements of trade secret law may preclude universities from being able to make this claim. There is no clear case law in this area yet.

In conclusion, universities should take steps to protect potential future inventions—sooner rather than later. The possibility for public disclosure in proposals is significant, especially with the growing practice of posting online funded proposals or proposal abstracts. Universities should be diligent in protecting this information and encourage a high degree of cooperation between intellectual property and research administrators.

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Charrow, R. (1996, November). Why Your Grant Application Is a Trade Secret. *The Journal of NIH Research* 8, 61.

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2 Mary E. Golrick, Esq., “ERA and Issues in Intellectual Property Administration,” NCURA 38th Annual Meeting, November 5, 1996.

# COMMENTARY

Marcia Landen Zuzolo, Associate Editor

## LEADERSHIP CHALLENGES IN RESEARCH/SPONSORED PROGRAM ADMINISTRATION

Charmaine Judy Streharsky, EdD

### ABSTRACT

The interrelationships between leaders, followers and the situations they encounter affect organizational progress. Research and sponsored program administrators are often middle managers in complex organizations. Most are concerned with enhancing their leadership skills, inspiring followers, and coping with dynamic situations. Sponsored program professionals play key roles within organizations that have multiple stakeholders. Leadership under these circumstances often is more challenging and involves more risk than for middle managers in many other professional fields. Leaders in the sponsored programs profession are urged to: (a) maintain personal and organizational integrity with unwavering focus on mission in responding to internal and external changes; (b) lead by example as principled followers; (c) enunciate inspired vision while conserving the organization's missions, values, and supports; (d) display workplace conscientiousness; (e) participate as thoughtful readers and writers of scholarly literature and popular press articles on principled leadership and management; (f) demonstrate positive regard for their followers, empowering them individually and within teams; (g) stimulate their superiors and stakeholders toward positive, ethical change; and (h) eliminate factors known to contribute to employee feelings of powerlessness.

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## COMMENTARY

**J**ust as the sender, receiver, message and their interactions are essential elements in effective communication, the leader, follower, situation and their interactions are critical elements in contemporary organizations. Research and sponsored program administrators often are middle managers in complex organizations. Therefore, they need to be effective leaders and effective followers simultaneously.

One Saga Corp. executive was quoted saying, "Most people fail in jobs because they lack followership skills" (Newstrom & Davis, 1993). The authors describe desirable "followership" behaviors as: (a) not competing with the leader for the limelight; (b) being a loyal and supportive team player; (c) not being a "yes" person, automatically agreeing with anything; (d) acting as the devil's advocate by asking penetrating questions; (e) questioning to gain understanding of the leader's ideas, values, and actions; and (f) anticipating potential problems and preventing them. Many of us in sponsored program administration probably reached middle management positions because we consciously or unconsciously developed these followership skills. As we rise in the ranks of our organization, we should not abandon these abilities; rather, we should teach effective followership skills to our subordinates by example in our interactions with superiors.

Our leadership role becomes increasingly important to future success, both for us professionally and for our respective organizations. As we progress through our organization's management structure, the number of our followers and the

spheres of our influence will most certainly increase, bringing new demands on our leadership.

Thousands of articles and texts have addressed the topic of effective leadership. However, classical theories should still be considered by today's leaders to "harness human energy to organizational requirements," as Douglas McGregor wrote in 1957 (Boone & Bowen, 1987). These include Theory X (the carrot-and-stick approach to managing workers) and Theory Y (participatory management, emphasizing worker and organization shared interests). The autocratic management views associated with Theory X are still encountered today in more conservative organizations and fields. Management approaches related to McGregor's Theory Y, such as those outlined by Peter Drucker in *Management By Objectives* (Boone & Bowen, 1987), still prevail in both the public and private sectors.

Organizations also operate under what has been called Theory Z, whose roots are in John Deming's management behavior theory and Japanese management techniques, popularized in the United States by William Ouchi and others in the 1980s (Grant & Hoover, 1994; Boone & Bowen, 1987). Among other things, Theory Z recommends long-term and holistic valuing of workers as keys to high-quality productivity. The Total Quality Management programs popular in public and private organizations in recent years found roots in Deming and Ouchi and Theory Z.

A number of social science researchers have attempted to determine the critical traits of effective leaders. Newstrom and Davis (1993), for example, list: (a) high personal drive, (b) desire to lead, (c) personal

integrity, (d) self-confidence, (e) analytical ability/sound judgment, (f) knowledge of organization/industry/technology, (g) charisma, (h) creativity, and (i) flexibility. Edwin Ghiselli, in an examination of 300 business managers, found the following traits were just as prominent: (a) supervisory ability/ability to delegate; (b) occupational achievement and motivation to achieve; (c) intelligence, reasoning, judgment; (d) decisiveness and problem solving; (e) self-assurance; and (f) initiative, self-starting, and self-directed (Grant & Hoover, 1994). In a treatise on public administration, Grant and Hoover state that different research has shown related traits as important, including: (a) persistence, (b) mental energy, (c) integrity, (d) persuasiveness, (e) ability to handle people, (f) self-confidence, (g) mental and physical endurance, (h) enthusiasm, (i) sense of responsibility, and (j) desire to achieve.

Stephen Covey, in his book *The 7 Habits of Highly Effective People* (1989), leads off with Habit #1, "Be Proactive," and Habit #2, "Begin With the End in Mind." The latter is based on principles of personal leadership, including vision and a personal mission statement. Covey values character above personality traits. He urges us to "center" and "ground" ourselves: "By centering our lives on timeless, unchanging principles, we create a paradigm of effective living" (p. 123). This is even more important if we wish to lead others.

Larry Terry (1990) addresses the administrative conservator leader. He sees a three-point mandate for public leaders: (a) conserving mission, ensuring that the spirit as well as the letter of statutes/mandates associated with mission prevails; (b) conserving values

and integrity; and (c) conserving support of stakeholders. When considering desirable leadership traits, many authors underscore the importance of integrity and a principled desire to achieve and lead.

When considering what theories and traits should best be pursued by middle management leaders in research/sponsored program administration, we also must consider the *situations* in which we are expected to lead. In several key respects we operate in situations more complex than do others in middle management.

The amount of legitimate power and authority that top managers delegate to middle managers may be quite clear and consistent across situations. That is probably *not* the case with most research/sponsored program administrators. For example, pre-award sponsored programs administrators may have been delegated significant, legitimate authority to enter into or reject contracts and grants on behalf of their institutions. Post-award administrators may have extensive authority in financial management controls and policies. Both groups may be responsible for budget and staff management. However, we often have virtually no authority to initiate a sponsored program proposal, or even to direct others reporting to us to do so.

Middle managers may have little authority or influence (and correctly so) with researchers concerning topics of investigations, selection of project personnel, time and effort assignments, and decisions about result-reporting. If a researcher decides half way through a negotiation with a sponsor to withdraw the proposal in favor of another opportunity, we again have little authority or influ-

ence. I am not recommending that sponsored program administrators have greater authority in these matters (given that these decisions are generally best left to the investigator). However, such situations do have an impact on our ability to lead and follow effectively, as well as on our success in carrying out legitimate objectives on behalf of our employers.

**Compared with middle managers in other fields, research administrators have an unusually high number of stakeholders with whom we are associated.**

Compared with middle managers in other fields, research administrators also have an unusually high number of stakeholders with whom we are associated: “top” management, such as a board of trustees, a state board of regents, state legislature, or governor; project directors and principal investigators, who may be entrepreneurial; a host of public funding agencies with serious concerns about their interests and our accountability; aggressive private-industry sponsors, who have their own agendas; organizational donors, who may also be contractual

partners in sponsored programs; and our local governments, community organizations, and schools.

The public good is of high concern in our profession, even if our employer is a private organization. By its nature, the professional enterprise of research administration must support our organizations’ efforts to acquire and teach new knowledge; cure diseases; save the environment; create new and useful materials and processes; aid world understanding and peace; promote literacy; eliminate hunger; and feed the human soul through, for example, the fine and performing arts.

In state universities or other public institutions, serving the public good must affect decisions regarding allocation of organizational resources—money, facilities, human resources, or intellectual property. For a state university, the regional taxpaying public, the sponsor, and the public at large have interests that necessarily impact our patenting and licensing activities.

One major responsibility of a leader is to conduct an ongoing “values audit”—that is, to create a vision that preserves and enhances the organization’s institutional culture and mission and raises the level of ethical aspiration in others (Wilcox & Ebbs, 1992). In their article on integrity in the research university and our role in preserving it, Kennedy and Katz (1995) ask, “...[H]ow do we build and maintain an institutional culture that represents the ideals of the academy in the face of countervailing cultural pressures that are to a large extent inherent in the race for big research dollars? Can our institutions be, at one and the same time, communities of scholars and hierarchies of contractors?” (p. 37). They also ask, “...[A]re we

courageous enough in our own convictions of right and wrong to assure that the standards of community conduct are applied equally across all elements of our institutions?" (p. 37).

In addition to these mission and integrity issues, we are responsible for issues related to safety and environmental health, which affect the welfare of our organizations' researchers, staff, and students as well as the general public. Many of us are required to strike a balance between, on the one hand, the rights for privacy and welfare of human subjects and ethical and humane treatment of animals and, on the other, the need to gain knowledge for potential greater public good—which may require a sacrifice of some of those rights.

As authorized negotiators, signatories of proposals and contracts, and/or financial officers for our organizations, we also are called upon to serve the economic interests of our local or national industries, local communities and public agencies, the state, and nation—all within the ideals and mission of our organization. These economic pressures sometimes bring us to legal impasses and profound ethical dilemmas in negotiating agreements, including instances of misconduct and conflict of interest. Such dilemmas challenge us to be mission leaders within our organizations.

Fred Katz, in *Autonomy and Organization* (1968), speaks of the differences between internal and external autonomy. Sponsored program administrators, like many middle managers, are caught between the two. Employees who have very little internal autonomy (e.g., production workers who remain in their assigned work area during specified periods) may have considerable external autonomy and freedom

once they are off the premises and clock. Other types of employee, such as a minister, may have a great deal of internal autonomy and freedom of choice regarding their work schedule, but may have very little external autonomy because they never are entirely disassociated from their work role (Streharsky, 1994). Research administrators often are squeezed by expectations of their availability at the work site for proposal authorizations and contract negotiations. But at the same time, their external autonomy is limited because they are expected to uphold organizational image and be ever aware of opportunities for their institution. Therefore, in our profession, we have both limited internal autonomy (generally allied to a follower role) and limited external autonomy (generally allied with a leadership role). If we are more aware of the realities of these forces upon our autonomy in followership and leadership, we should be more comfortable in acting in accord with institutional expectations.

Under the best circumstances, our organization, stakeholders, and all those we deal with will operate with moral "rightness." Under the worst circumstances, we may find ourselves attempting to change unethical behavior. In such instances, one option is to distance yourself from an ethically unacceptable, "unfixable" situation—even if this involves your resignation. Richard Nielson (1989) suggests alternate intervention strategies to change unethical organizational behavior, including:

1. Secretly blowing the whistle within the organization
2. Quietly blowing the whistle by informing a responsible higher-level manager

3. Secretly threatening the offender with blowing the whistle
4. Secretly threatening a responsible manager with blowing the whistle outside the organization
5. Publicly threatening a responsible manager with blowing the whistle
6. Sabotaging the implementation of the unethical behavior
7. Quietly refraining from implementing an unethical order or policy
8. Publicly blowing the whistle within the organization
9. Conscientiously objecting to an unethical policy or refusing to implement the policy
10. Indicating uncertainty about or refusing to support a cover up in the event that the individual and/or organization gets caught
11. Secretly blowing the whistle outside of the organization
12. Publicly blowing the whistle outside the organization

Each of these actions has moral/ethical and even legal elements that must be rationally considered. Nielsen quotes philosopher Paul Tillich in Nielsen's discussion on an individual trying to change unethical organizational behavior: "...the courage to be as an individual is the courage to follow one's conscience and defy unethical and/or unreasonable authority.... [S]uch an act can entail great risk and require great courage" (p. 155). As leaders, we may occasionally face such tests of courage and the consequences of our choices.

Fortunately, most of us are rarely faced with "unfixable" unethical organizational behavior that requires such acts of courage. So what are we as professional research administrators to do to be the best leaders, even as we

also are followers? We can enunciate our vision and its worth in following the mission of our organization, demonstrate positive regard for our followers, and display conscientiousness in our work. We can strive to take the high road, demonstrate an admirable level of ethics and values, and speak softly but clearly to encourage others to reflect upon issues of personal and institutional integrity. These are reflections of the good character we must use or lose, and which each of us admires in our leaders and followers.

Much appears in the current leadership press about the importance of empowerment and issues of "super-leadership." We are urged to work toward empowering our subordinates, to help them "be all they can be," as the U.S. Army proclaims. We are advised by James MacGregor Burns in *Teamwork: What Must Go Right/What Must go Wrong* [Larson & LaFasto, (1989)], to become principled transformational leaders, who look for potential motives of followers, seek to satisfy higher needs, and engage the "full person" of each follower. These leaders build a relationship of mutual stimulation (through communicating their vision and by their example) and elevation that converts "followers into leaders and converts leaders into moral agents" (pp. 118-119).

One thing we should be vigilant against is that which contributes to feelings of powerlessness, which is destructive to empowerment and to the growth of ourselves and our subordinates. According to Jay Conger (1989), we should be alert to factors detrimental to self-efficacy, which contribute to feelings of powerlessness. We should seek to determine which factors can be changed and

which cannot, and develop the wisdom to know (and communicate) the difference. Conger alerts us to:

1. **Organizational factors**—significant organizational changes/transitions, startup ventures, excessive competitive pressures, an impersonal bureaucratic climate, poor communications and limited networks, and highly centralized organizational resources.
2. **Supervisory styles**—authoritarian (high-control) supervision, negativism (emphasis on failures), lack of reason for actions and consequences.
3. **Reward systems**—noncontingency rewards (arbitrary reward allocations), low incentive value of rewards, lack of competence-based rewards, lack of innovation-based rewards.
4. **Job design**—lack of role clarity; lack of training and technical support; unrealistic goals; lack of appropriate authority and discretion; low task variety; limited participation in programs, meetings, and decisions with direct impact on job performance; lack of appropriate/necessary resources; lack of network-forming opportunities; highly established work routines; too many rules and guidelines; low advancement opportunities; lack of meaningful goals/tasks; and limited contact with senior management.

Inevitably, some factors on this list will exist with negative effect on our empowerment and our ability to empower others. However, we can strive to develop or maximize our desirable traits, which social science

and management researchers suggest contribute to effective leadership.

The importance of work groups and team decision-making is emphasized throughout recent leadership and management literature. Sponsored program administration cries out for team effort, and most who become successful in this profession are part of successful teams. Larson and Lafasto (1989) found that effective team leaders: (a) have a plan for change; (b) demonstrate that the plan is possible by demonstrating an ability to make things happen; (c) are able to influence constituencies outside the team (not only the upper level of management, but the board, media, industry, legislature, etc.); and (d) unleash the energy and talents of contributing members/followers.

Larson and Lafasto also advise that a team leader must encourage educated risk-taking and provide a supportive decision-making climate by: (e) trusting team members with meaningful levels of responsibility, (f) providing team members with the necessary autonomy to achieve results, (g) offering challenging opportunities that stretch team members' abilities, (h) recognizing and rewarding superior performance, and (i) standing behind the team and supporting it.

Leadership and management fads are created by our need for renewed hope and vision, which is a vital part of our professional lives. Given that the research and public service enterprise is intrinsically important, and that many of our employing organizations have missions more admirable and visionary than average, perhaps we have some advantages after all.

*(References appear on p. 80)*

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# REVIEWS

Lisa F. den Hamer, Associate Editor

**JANN E. FREED AND MARIE R. KLUGMAN,  
*QUALITY PRINCIPLES AND PRACTICES IN  
HIGHER EDUCATION: DIFFERENT QUESTIONS  
FOR DIFFERENT TIMES.* ORYX PRESS FOR THE  
AMERICAN COUNCIL ON EDUCATION,  
1997. 254 pp., \$24.95.  
PHONE: (800) 279-6799;  
FAX (800) 279-4663.**

By Linda J. McKinley

*Quality Principles and Practices in Higher Education: Different Questions for Different Times* reviews the changes in focus within quality higher education, from the resource model to the performance model. It also details the necessary steps required for institutional survival. Clear and easy to understand, concise and to the point, the book is an excellent resource for any professional involved in higher education, whether in state colleges, private colleges, or even academic medicine. It helps define the issues that educational administrators are facing, and it clarifies the rationale behind many decisions made in today's educational institutions.

Today, higher education is dominated by financial issues, as institutions face budget cuts and reallocation of resources while students and parents demand higher quality and better results from the institutions they select. When the corporate world faced these same issues, total quality management (TQM) or continuous quality improvement (CQI) programs were developed and put into place. This book defines what TQM and CQI are, and how these programs have benefited the educational world. *Quality Principles and Practices* also describes the results of a study done by the authors, in which the TQM and CQI programs were integrated into 10 educational systems,

including the Universities of Minnesota, Michigan, and Wisconsin. These programs enabled these colleges to be more competitive in times of crisis and evolution, which helped them to take advantage of the changing times.

Freed and Klugman describe the evolution of the quality-improvement movement in higher education. They state that after World War II, college

**The institutional culture itself can be a barrier in the way it involves and empowers its members, how it recognizes and rewards its members, how it identifies fear, and how it drives fear out.**

enrollments and revenues increased, causing overcrowding and increased demands. In turn, this resulted in new program development, new buildings, and more faculty and staff. During this time, institutions followed the “resource model.” Under this model, according to Daniel Seymour, author

of *TQM: Focus on Performance, Not Resources*, the quality of an institution is based on reputation, which usually is a reflection of admission test scores, size of endowments, library holdings, and the number of PhDs on the faculty. “If a college or university is able to attract more resources, perceived quality increases, which leads to greater public trust and therefore, increased resources,” Seymour writes.

The focus shifted from the resource model to a performance model during the 1980s and 1990s, when federal funding cuts led to increases in tuition, decreases in traditional college-aged students, and a public demand for accountability and productivity from institutes of higher learning. According to Seymour, the “performance model states that as performance increases relative to resources, the perceived value of the institution increases and public trust increases.”

Freed and Klugman identify many external and internal forces that affect the performance model. Six external forces are discussed in detail: (a) decreasing budgets, (b) declining enrollments, (c) increasing competition, (d) increasing demands from business and industry, (e) increasing demands from governing boards, and (f) increasing demands from accrediting agencies.

Four internal forces also are identified: (a) senior and mid-level leaders, (b) personal commitment, (c) faculty, and (d) skeptics.

Institutions have developed different systems to make the performance model work. Freed and Klugman describe nine systems in detail: (a) System of Creating a Quality Culture, (b) System of Learning Quality Principles, (c) System for Developing

and Communicating Vision/Mission Statements, (d) System for Professionally Developing Members, (e) System for Collecting and Analyzing Data, (f) System for Improving Communication, (g) System for Developing and Encouraging Teamwork, (h) System for Improving Learning and Teaching, and (i) System for Financially Supporting Quality Efforts.

Also discussed are barriers for systems development and implementation, including a lack of understanding, time, and financial resources. The institutional culture itself can be a barrier in the way it involves and empowers its members, how it recognizes and rewards its members, how it identifies fear, and how it drives fear out. Leadership also

can be a fundamental barrier to the development and implementation of processes and systems, as can the institution's philosophy on professional development.

Further, Freed and Klugman address the outcomes of adopting quality principles and practices. These include more collegial leadership styles, improved coordination among members and systems, decision-making driven by hard data, improved communication, a team approach with improved processes, an increase in the involvement of the members making the decisions, improved stakeholder satisfaction, and the development of a culture based on continuous improvement.



# INFORMATION FOR CONTRIBUTORS

## I. TOPICS OF INTEREST

The *SRA Journal* publishes a variety of articles intended to expand the knowledge and tools of research administration. Manuscripts are solicited on topics such as the role of the administrator (e.g., aspects of professional training, responsibilities, and career advancement); methods to improve administrative management; issues of compliance; higher education-industry partnerships; use of new technology; techniques to enhance the management of research; long-range planning strategies; procedures which stimulate faculty interest in research; and other timely subjects that will be of interest to research administrators employed in the public or private sectors. Contributors need not be a member of SRA to submit an article to the *Journal*.

The *SRA Journal* offers contributors several methods for presenting their subject matter:

- *Research papers* allow research administrators to report the results of original research. Articles should reflect the stages of the research process and be organized into distinct sections (i.e., introduction, materials and method, results, conclusions, cited references, acknowledgments, tables and figures—see “Style” below).
- *Theoretical articles* draw upon the existing research literature to advance a theory in any area related to research development and/or administration.
- *Scholarly critiques* organize, integrate, and evaluate previously published information on research development and administration. Authors should identify contradictions, gaps, and inconsistencies in this body of knowledge and recommend the next step or steps needed to resolve the identified problem(s).
- *Commentary articles* present an author’s point of view on a topic related to the development and/or administration of the research enterprise. The author’s position is supported by literature citations, data and/or examples from personal experience.
- *Case studies* provide background information on a problem or issue related to research development and/or administration and describe how this problem or issue has been resolved within a particular organization.
- *Reaction papers* are articles in which the author responds to an article previously published in the *Journal*. Such articles may be initiated from the field or invited by the editor. The author of the original manuscript will always be given an opportunity to reply.
- *Brief reports* are concise descriptions of innovative techniques, procedures, or policies that would be of interest to other research administrators. Brief reports are limited to no more than 410 lines of 60-space text.

- *Review articles* evaluate books, films, and other media relevant to the field of research administration.
- *Other articles* may include edited transcripts of roundtable discussions that focus on topics of interest to research administrators; articles based on interviews with key policy-makers; or other forms of written expression deemed appropriate to the mission of the *Journal* by the editor in consultation with the Editorial Review Board.

Except under unusual circumstances, the *SRA Journal* does not accept manuscripts that have been published elsewhere, or that will be published prior to appearing in the *SRA Journal*. Authors are reminded to inform the editor of such matters at the time a manuscript is submitted.

## II. STYLE

The *SRA Journal* has adopted the publication style manual of the American Psychological Association as the guide to follow when submitting manuscripts.\* When appropriate, articles should be organized according to the following format:

- *Title Page.* Please include the title of the manuscript, name of author(s) with current title(s) and institutional affiliation(s) and complete mailing address for correspondence, including telephone, fax and e-mail (if applicable). Articles based on

- presentations should be identified as such on the title page.
- *Abstract.* Each manuscript should be prefaced with an abstract of 100-200 words summarizing the topic and principal conclusions.
- *Introduction.* This portion should thoroughly chronicle the past history of the subject under discussion with appropriate use of references from the literature. Use of reference materials is very often an integral part of an accepted manuscript.
- *Materials and Methods.* This section should identify the procedures and techniques used to conduct the study (e.g., type of survey employed).
- *Results.* This part should summarize the results achieved as a direct consequence of the techniques/methods used in the study.
- *Conclusions.* This section should provide a concise summary of the study and any future or practical implications for the use of the results achieved.
- *Cited References.* References should be cited alphabetically and listed together in a uniform manner at the end of the manuscript. Footnotes should be avoided. Articles and books should be cited as follows:

*Journal Article* (single author):

Lewis, J. P. (1988). Research administration—the cost in dollars and in faculty time. *SRA Journal*, 19(3), 39-46.

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\*Copies are available in most public and university libraries or through most university psychology departments. Reference information: *Publication Manual of the American Psychological Association* (4th Ed., 1994), Washington, DC: American Psychological Association.

*Journal Article* (multiple authors):  
Emery, J. A., Myers, W., & Hunter, D. E. (1992). NIH FIRST awards: Testing background factors for funding against peer review. *SRA Journal*, 24(2), 7-15.

*Book* (single author):  
Krathwohl, D. R. (1988). *How to prepare a research proposal* (3rd ed.). Syracuse, NY: Syracuse University Press.

*Book* (multiple authors):  
Beasley, K. L., Dingerson, M. R., Hensley, O. D., Hess, L. G., & Rodman, J. A. (1982). *The administration of sponsored programs*. San Francisco, CA: Jossey-Bass.

### III. TEXT FORMAT

All manuscripts should be submitted in duplicate (including all tables and figures) and in double-spaced, typewritten copy without page numbers (although all tables and figures should be numbered consecutively—see “Graphics” below).

#### *Length*

While the *Journal* realizes that different subjects will require treatments of different lengths, authors should attempt to keep manuscripts to fewer than 2,000 words (approximately ten 8-1/2 x 11 manuscript pages, double-spaced).

#### *Computer Diskette*

When possible, all manuscripts should also be submitted to the editor on a computer diskette. MS Word (version 6.0 or higher) and WordPerfect (version 5.0 or higher) are optimal, but the publisher can translate text

from other softwares as well. Submissions through electronic mail will not be considered. Please inform the editor when submitting a manuscript if you are unable to submit a diskette as well.

#### *Typeface*

Twelve-point Times and Times-Bold typefaces are most easily translated, though the publisher can translate other fonts. Please refrain from customizing manuscript text with stylized fonts or formats, such as small caps, larger or smaller point sizes, unusual tab settings or altered margins.

## IV. GRAPHICS

Tables should be numbered consecutively in the order in which they are introduced in the text, using Arabic numerals preceded by the word “Table.” Identify each figure, drawing, illustration, chart or graph consecutively by number (using Arabic numerals) preceded by the word “Figure.” Include reference copies of each graphic with duplicate manuscript. The typeface of text in any table or figure should match that of the manuscript text (see “Typeface” above).

#### *Standard Graphics*

When possible, simple text-based tables and figures (see Table 1) should be submitted both in duplicate and on computer diskette in a standard word processing language. Each table or figure should be assigned a separate filename from that of the manuscript. Alternatively, submit graphics in a camera-ready format as an original black-and-white negative or glossy print only (print-outs on standard

**Table 1**  
**Function Descriptions**

Sixty-nine activities were grouped into these 12 functions in the Physics Department study.

Code	Description
ACAD	Academic support, faculty and student affairs, teaching. Not research.
ACCT	Financial accounting functions, especially bookkeeping and reporting.
FAC	Facilities maintenance of common physical plant. Not specific-use areas like classrooms or research laboratories.
FIN	Financial management. Includes departmental level and individual management of assigned budgets.
GEN	General. Functions any employee might perform, simply by being an employee.
OSS	Office support and supervision. Administrative office functions.
PAMS	Purchasing and Material Support. Buying, contracting, and associated activities, including gasses and stockroom operations.
PAY	Payroll. Setting up payroll, managing payroll records. Distribution of pay.
RA	Research Administration. Pre-award and post-award procedures other than bookkeeping.
RSF	Research Support Functions. Direct technical support of research, e.g., electronics, repairs, and manufacturing.
TVL	Travel. Administration of travel program (not travel expenses themselves).
INT	Internal Controls, e.g., cash controls, auditing, and back-up activities.

paper are usually acceptable, though quality is diminished upon reproduction). Lettering should be uniform and large enough to be legible after reduction of up to 50%.

#### *Complex Graphics*

Complex figures, such as those using overlapping screens, patterns or shading (see Figure 2), should be submitted on computer diskette in a Mac or IBM TIF format. Alternatively, submit the graphic in a camera-ready format as an original black-and-white negative or glossy print. *Complex graphics printed or photocopied on standard paper are usually not accepted.* Lettering should be uniform and large enough to be legible after reduction of up to 50%.

**Note: The publisher reserves the right to deny publication of graphics that do not reproduce clearly in the *SRA Journal*.**

## V. EDITORIAL REVIEW PROCESS

Each manuscript submitted to the *SRA Journal* will be reviewed by the members of the Editorial Review Board. Authors will be notified of the status of their manuscripts as soon as a decision has been reached. Prior to publication, authors of original manuscripts will be required to sign a copyright registration form. Original manuscripts cannot be published unless this copyright form is signed by the author(s).

Figure 2  
Funding Opportunities

The screenshot shows a web browser window titled "Funding Opportunities". The main content area is titled "Georgetown MedNetwork" with a copyright notice "© 1994 CLS/ODRGI". The form contains the following fields:

- Title:** American Heart Association (Nation's Capital Affiliate)
- Description:** Heart Ball Research Award (Pending), Postdoctoral Research Fellowship, Grant-In-Aid, Two Year Research Award
- Requirements:** Research support for studies in cardiovascular diseases and basic sciences
- Amount:** [Empty text box]
- Type Organization:** [Empty text box]
- Contact:** 5335 Wisconsin Avenue, NW, Suite 940, Washington, DC 20007, (202) 686-6888
- Key words:** 1. HEART, 2. CARDIOVASCULAR, 3. BASIC SCIENCE, 4. POSTDOCTORAL FELLOWSHIP, 5. [Empty], 6. [Empty]

At the bottom of the form, there are buttons for "Full Page Description", "Print", "Next", "Previous", "Find", "Ok", "Close", and "Cancel".

Manuscripts and letters-to-the-editor should be sent to Pamela Miller, Ph.D., Office of Research Development and Administration, Southern Illinois University, Carbondale, IL 62901.

Direct formatting and graphics questions to James Fennell at the SRA Executive Office: Phone: (202) 857-1126; Fax: (202) 857-1106; E-mail: james\_fennell@dc.sba.com.