

Circulation

JOURNAL OF THE AMERICAN HEART ASSOCIATION



Funding Opportunities for Investigators in the Early Stages of Career Development

C. Amelia Sumandea and C. William Balke

Circulation 2009;119:1320-1327

DOI: 10.1161/CIRCULATIONAHA.107.752691

Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75214

Copyright © 2009 American Heart Association. All rights reserved. Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the World Wide Web at:

<http://circ.ahajournals.org/cgi/content/full/119/9/1320>

Subscriptions: Information about subscribing to *Circulation* is online at
<http://circ.ahajournals.org/subscriptions/>

Permissions: Permissions & Rights Desk, Lippincott Williams & Wilkins, a division of Wolters Kluwer Health, 351 West Camden Street, Baltimore, MD 21202-2436. Phone: 410-528-4050. Fax: 410-528-8550. E-mail:
journalpermissions@lww.com

Reprints: Information about reprints can be found online at
<http://www.lww.com/reprints>

Funding Opportunities for Investigators in the Early Stages of Career Development

C. Amelia Sumandea, PhD; C. William Balke, MD

Abstract—Many sources of advice and guidance are available to the early career investigator. Generally, mentors serve as the primary source of information, although program and review officers are the most underutilized resources. This article organizes these opportunities to enable early career investigators to plot a rational trajectory for career success. A list of the major agencies that provide grant support for early career investigators is included. In addition, funding opportunities are organized on the basis of the stage in career development pathway and the type of terminal degree. (*Circulation*. 2009;119:1320-1327.)

Key Words: career mobility ■ funding ■ research

Nothing in the world can take the place of persistence. Talent will not; nothing is more common than unsuccessful men [and women] with talent. Genius will not; unrewarded genius is almost a proverb. Education will not; the world is full of educated derelicts. Persistence and determination alone are omnipotent. The slogan, "Press on" has solved and always will solve the problems of the human race.

—Calvin Coolidge, January 17, 1914,
Commonwealth of Massachusetts Senate

Careers in biomedical research offer unparalleled opportunities for intellectual achievement and personal fulfillment. The pathways to these careers are clearly marked with the productivity milestones of publications (abstracts and manuscripts) and peer-reviewed funding (grants). Fortunately, numerous funding mechanisms are targeted to investigators in the early stages of their training and career development.^{1,2} The purpose of this article is to organize these opportunities to enable early career investigators to plot a rational trajectory for career success.

Help Along the Way

Many sources of advice and guidance are available to the early career investigator. Mentors often serve as the primary source of information and support for the development of a viable strategy for obtaining peer-reviewed funding.^{3,4} With respect to specific grant mechanisms, most institutions have faculty members who are involved in the administration of career development programs such as the National Institutes of Health (NIH) Clinical and Translational Science Award, K30 Career Development Awards, K12 Career Enhancement Programs, and the Veteran's Administration Career Development Programs. Current awardees of specific programs such

as the Fellow-to-Faculty Transition Award of the American Heart Association (AHA) can be particularly useful in helping early career investigators in selecting appropriate mechanisms and constructing competitive applications. Arguably, program and review officers are the resources that are most underutilized by early career investigators. For example, the NIH program and review officers provide a wealth of information regarding all aspects of specific funding programs, including eligibility, program focus, program requirements, and review criteria. Their input early on and throughout the preparation of an application can be invaluable.

Sources of Support

Table 1 lists the major agencies that provide grant support for early career investigators. The list is not exhaustive and does not include the many programs for early career investigators that are offered by foundations and private agencies. Many of these organizations have multiple mechanisms targeted to specific constituencies, including individuals in educational/training pathways that lead to a research doctorate (PhD) or a professional degree (MD, DO, etc). In general, early career investigators can amplify their competitiveness by applying for multiple mechanisms for which they are qualified (eg, NIH Postdoctoral Fellowship [F32] Award and an AHA Postdoctoral Fellowship Award).

The NIH Loan Repayment Program (LRP) is a notable and undersubscribed resource.⁵ It was designed to lessen the burden of the educational debt of individuals developing careers in biomedical research and the health professions and thereby further incentivize highly qualified individuals to pursue careers in biomedical research.⁵ The LRP targets early career investigators with doctoral degrees who are engaged in research funded by domestic nonprofit or US government

From the Departments of Physiology (C.A.S., C.W.B.) and Internal Medicine (C.W.B.), College of Medicine, University of Kentucky, Lexington, Ky. Correspondence to C. William Balke, MD, University of Kentucky, 800 Sanders-Brown Bldg, SBCA-428, Lexington, KY 40536-0509. E-mail b.balke@uky.edu

© 2009 American Heart Association, Inc.

Circulation is available at <http://circ.ahajournals.org>

DOI: 10.1161/CIRCULATIONAHA.107.752691

Table 1. Sources of Support for Early Career Investigators

National Institutes of Health (NIH)	http://www.nih.gov
National Heart, Lung, and Blood Institute (NHLBI)	http://www.nhlbi.nih.gov
NIH Extramural Research Training Programs	http://grants.nih.gov/training/extramural.htm
NIH Loan Repayment Programs	http://www.lrp.nih.gov
NIH New Investigators Program	http://grants.nih.gov/grants/new_investigators/index.htm
NIH Extramural Fellowship (F) Programs	"F Kiosk": http://grants.nih.gov/training/F_files_nrsa.htm
NIH Extramural Career Development (K) Awards	"K Kiosk": http://grants.nih.gov/training/careerdevelopmentawards.htm
Veterans Affairs Career Development Awards	http://www.research.va.gov/programs/csrd/career_dev.cfm
American Heart Association	http://www.americanheart.org/presenter.jhtml?identifier=9713
American College of Cardiology	http://www.acc.org/about/award/awardopps.htm#research

agencies (federal, state, or local entities), such as most universities. To qualify, the early career investigator must be a US citizen or permanent resident, commit 50% or more of their total professional effort for 2 years to the research, and have an educational loan liability of at least 20% of their "institutional base salary." Successful LRP candidates are not required to have an individual NIH award. Currently, the NIH offers 5 LRP programs, including clinical research, pediatric research (both clinical and basic), health disparities research, clinical researchers from disadvantaged backgrounds, and contraception and infertility research. In exchange for a 2- or 3-year (for intramural general research) commitment to a research career, the NIH will repay up to \$35 000 per year of qualified educational debt. In addition, the NIH will make the corresponding federal tax payments for credit to your Internal Revenue Service tax account at the rate of 39% of each loan repayment to cover your increased federal taxes. The NIH may also reimburse any increased state or local taxes and/or additional increased federal taxes (for cases in which the federal tax payments were not sufficient to fully cover the increased federal taxes) that you incur as a result of your LRP benefits. For qualified individuals, the LRP is a 2-year award with the possibility of one 2-year renewal, for a maximum of \$140 000 in educational loan relief.

Career Development Pathways

Funding opportunities for early career investigators can be organized by stage of career development and by the type of terminal degree. Figure 1 illustrates several of the grant programs offered by the NIH for early career investigators with a research doctorate, and Figure 2 shows the NIH programs available to early career investigators with health professional doctorates. Many private foundations and phil-

anthropic organizations have awards that target individuals at various milestones in both pathways.

Postdoctoral Training

The NIH's Ruth L. Kirschstein National Research Service Award (NRSA) provides support for postdoctoral training (F32)⁶ within the broad scope of biomedical, behavioral, and clinical science to individuals in either pathway. The details of this award, including the criteria by which the application is both organized and reviewed, can be found online. Importantly, the NRSA is available to early career investigators with either research or health professional doctorates who are citizens, noncitizen nationals, or permanent residents of the United States. Because it does not support clinical training, individuals with health professional doctorates can use this award to support their research training only. The NRSA award targets individuals in the early stages of training for a biomedical research career. It is suitable for trainees with little or no research experience. The NRSA supports a mentor-supervised immersion in science designed to position the trainee squarely on the pathway for other career development awards and, ultimately, research independence. Competitive NRSA applications emphasize (1) the potential of the candidate to make important contributions to their field of science; (2) the training potential of the proposed program as a vehicle to achieve the trainee's goals; (3) the qualifications and productivity of the mentor and his or her track record as a successful trainer of individuals at this stage of career development; (4) a hypothesis-driven research plan with specific aims that represent testable predictions of the overall hypothesis; and (5) the quality of the training environment and the resources that are available to the trainee. Overall, the quality of the mentor and the training environment are given careful consideration, because the mentor is arguably the single most important determinant of an early career investigator's long-term career success and retention in biomedical research.

Transition From Postdoctoral Training to Junior Faculty

The transition from postdoctoral training to the first junior faculty position is an important watershed event in career development, and a number of mechanisms are available to facilitate this transition,^{1,2} including the relatively new NIH Pathway to Independence Award (PI or K99/R00 award)⁷, and the AHA Fellow-to-Faculty Transition Award.⁸ Both awards support the completion of mentored postdoctoral training and the first several years of research in a junior faculty position. These awards give recipients a competitive advantage in securing the first junior faculty position. Both awards restrict eligibility to individuals within certain limits of prior postdoctoral experience. Because of the similarities of these NIH and AHA awards, the K99/R00 award will be highlighted below. For the K99/R00 award, the candidate can have either a research or a health profession doctorate and cannot have completed more than 5 years of postdoctoral training at the time of application. Importantly, the K99/R00 award program is one of the few NIH programs that accept applications from non-US citizens. The award supports 1 to 2

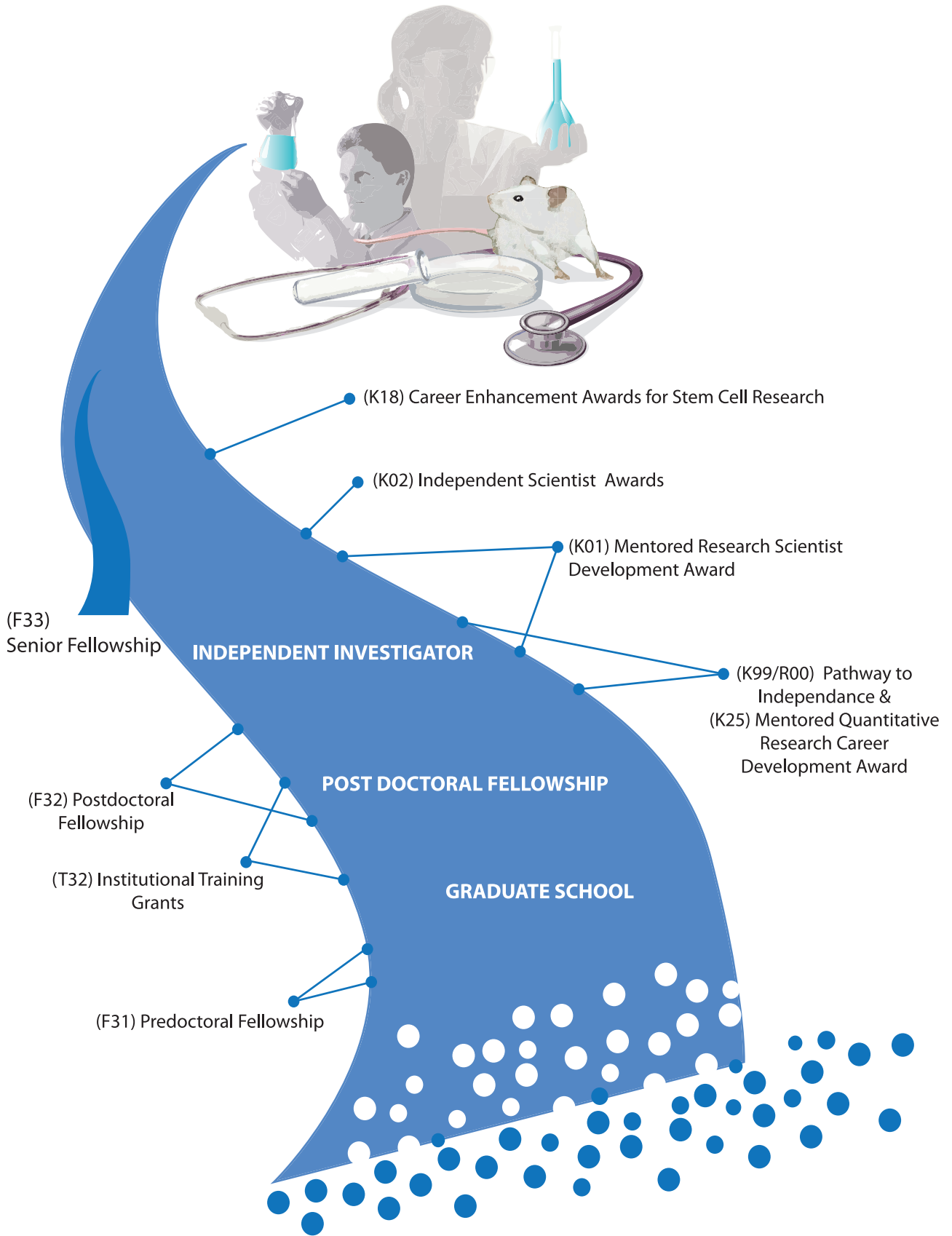


Figure 1. Training and career development awards for individuals with a research doctorate.

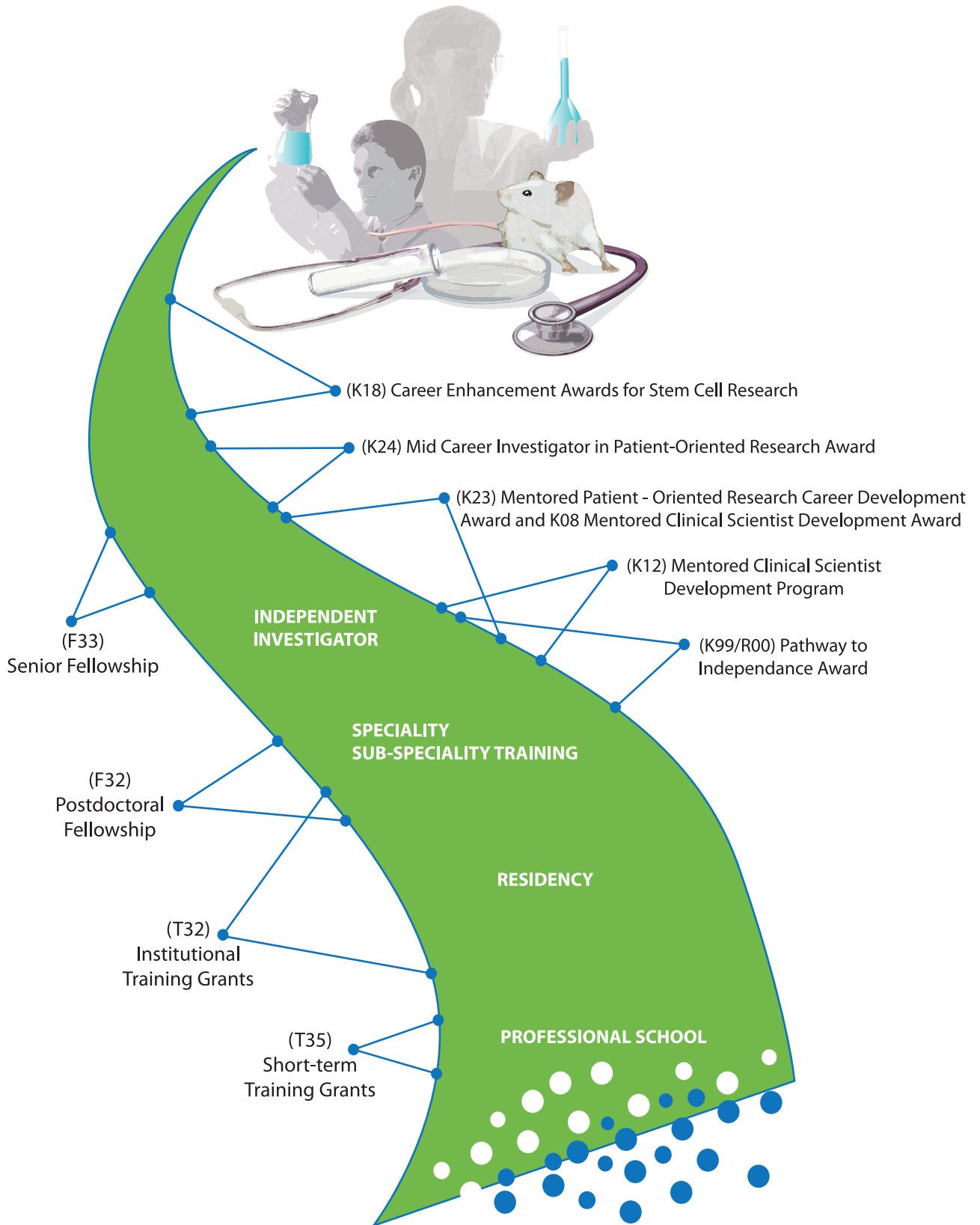


Figure 2. Training and career development awards for individuals with a health professions doctorate.

Table 2. Veterans Administration Career Development Awards (See <http://www.research.va.gov/funding/cdp.cfm>)

	Career Development Award (CDA) Levels			
	Career Development Award, Level 1 (CDA-1)	Career Development Award, Level 2 (CDA-2)	Career Development Transition Award (CDTA)	Career Development Enhancement Award (CDEA)
Purpose/intent	Entry-level mentored career development experience	Mid-level mentored career development experience for researchers with some prior research experience	Transition from research career development to an independently funded VA research position	Intensive short-term research experiences to enhance the careers of established independent VA research scientists
Eligibility	Clinicians and nonclinicians with academic rank not above Instructor	Clinicians and nonclinicians with academic rank not above Assistant Professor	Clinicians with academic rank not above Associate Professor	Clinicians and nonclinicians at the rank of Professor
Duration	2 years	2–5 years	Up to 3 years	Up to 6 months
Benefits	Salary support	Salary support	Salary support	Salary support

years (K99 phase) of mentor-supervised postdoctoral training, followed by 3 years (R00 phase) of independent research within the context of the first junior faculty position. The initiation of the R00 phase also requires the applicant to obtain an independent position as a tenure-track assistant professor (or equivalent) and demonstrate the awardee's independence from the K99 mentor(s). Competitive K99/R00 awards come from candidates with (1) outstanding qualifications, including prior predoctoral and postdoctoral training experiences; (2) a clear commitment to and potential for a successful career as an independent biomedical researcher; (3) productivity, measured in terms of abstracts, manuscripts, and prior funding such as an NIH NRSA or an AHA Fellowship Award; and (4) a commitment of a minimum of 75% of their total professional effort to the career development plan and the research program. Competitive K99/R00 awards are distinguished by (1) a detailed career development plan that is consistent with the specific goals and needs of the candidate and has a high likelihood of establishing the candidate's research independence; (2) the qualifications of the mentor in terms of publication and grant productivity, record of successfully guiding prior trainees through this transition, and a solid commitment to the promotion of the candidate's independence during the K99 phase and beyond through the R00 phase; (3) the scientific merit of the research plan as a platform to develop the candidate's independence; and (4) the institutional environment and commitment to the candidate during the K99 phase. Importantly, the transition from the K99 phase to the R00 phase is adjudicated internally at the NIH by program staff, who evaluate the candidate's successful achievement of the goals made explicit in the career development plan. The transition from the K99 to the R00 phase does not require another application or additional peer review.

The Early Years of the First Junior Faculty Position

The early years of the first junior faculty position represent another critical watershed in the evolution of a successful career in biomedical research, particularly for individuals with health profession backgrounds. Most individuals at this stage of career development need additional training to adequately prepare them for independence, and the NIH

offers a number of mechanisms, designated collectively as K Awards,⁹ for this purpose. Multiple programs exist for trainees with research and health profession doctorates, although not all programs are offered by all of the NIH institutes and centers. Therefore, candidates are urged to contact the program officers of specific institutes/centers for the institute-specific "menu" of available K Awards. (In addition, the Veterans Administration¹⁰ [Table 2] and several philanthropies and foundations [Tables 3 and 4] offer awards targeted to junior faculty). Two of the most popular K Awards are the Mentored Clinical Scientist Award (K08)¹¹ and the Mentored Patient Oriented Research Career Development Award (K23).¹² Although these awards are highly competitive, the success rate is considerably higher than most NIH Research Project Grant Program (R01)¹³ mechanisms. The K08 and the K23 are identical in most respects, except for the scientific emphasis. The K08 award provides research development opportunities for clinician scientists with varying degrees of research experience who are committed to developing into independent investigators skilled in the advanced methods and experimental approaches needed for laboratory and cardiovascular epidemiological and health services research. The K23 award is intended to provide research-oriented clinicians the means to develop independent research skills and gain experience in experimental methods and approaches that will allow them to conduct patient-oriented research. (Per the NIH, patient-oriented research is defined as research conducted with human subjects [or on material of human origin, such as tissues, specimens, and cognitive phenomena] in which an investigator directly interacts with human subjects. This area of research includes mechanisms of human disease, therapeutic interventions, clinical trials, and the development of new technologies). The K08 and K23 awards are restricted to individuals with health profession doctorates who are citizens or noncitizen nationals of the United States. Because these awards appeal to individuals from a wide range of prior research experiences and training, competitive proposals need to be "scaled" to the background of the applicant. For example, the didactic component of the career development plan from an MD/PhD applicant with extensive prior research experiences and training would be expected to be very different from the didactic program designed for an applicant with little or no prior research exposure during the

Table 3. AHA Portfolio of Research Awards (See <http://www.americanheart.org/presenter.jhtml?identifier=9713>)

Program Title	Program Description	Sponsoring AHA Component	
		National Center	AHA Affiliates
Predoctoral Fellowship	Helps students initiate careers in cardiovascular or stroke research by providing research assistance and training		✓
Postdoctoral Fellowship	Helps a trainee initiate a career in cardiovascular research while obtaining significant research results		✓
Clinical Research Program	Encourages early career investigators who have appropriate and supportive mentoring relationships to engage in high-quality introductory and pilot clinical studies that will guide future strategies for reducing cardiovascular disease and stroke while fostering new research in clinical and translational science and encouraging community- and population-based activities	✓	✓
Fellow-to-Faculty Transition Award	Provides funding for trainees with outstanding potential for careers as physician-scientists in cardiovascular or stroke research during the crucial period of career development from the completion of research training through the early years of the first faculty/staff position	✓	
Beginning Grant-in-Aid	Promotes the independent status of promising beginning scientists		✓
Scientist Development Grant	Supports highly promising beginning scientists in their progress toward independence by encouraging and adequately funding research projects that can bridge the gap between completion of research training and readiness for successful competition as an independent investigator	✓	✓
Established Investigator Award	Supports mid-career investigators with unusual promise who have demonstrated a commitment to cardiovascular or cerebrovascular science as indicated by prior publication history and research accomplishments	✓	
Grant-in-Aid	Targets innovative and meritorious research projects from established independent investigators		✓
Innovative Research Grant	Supports highly innovative, high-risk/high-reward research that could ultimately lead to critical discoveries or major advancements that will accelerate the field of cardiovascular and stroke research	✓	

completion of their education and clinical training. The best candidates must demonstrate a clear commitment to and potential for a research career, clearly justify the need for further training, and show how the award will enable the candidate to achieve his or her career goals. Although the review criteria are not weighted individually in the assignment of priority scores, the quality of the mentor and the

career development plans are pivotal components of these programs. In addition, the extent of the institutional commitment to the candidate and mentor is an important determinant of the success of these award programs.

Table 4. American College of Cardiology Foundation Career Development Awards (See <http://www.acc.org/about/award/awardopps.htm#research>)

Fellowship Awards
ACCF/FACT Florida Heart Failure Fellowship Award
ACCF/Merck Research Fellowships in Cardiovascular Disease and Cardiometabolic Disorders
ACCF/Guidant Foundation Fellowship in Women's Cardiovascular Health
Career Development Awards for Junior Faculty
ACCF/Harry B. Graf Award for Heart Disease Prevention
ACCF/William F. Keating Award for Hypertension and Peripheral Vascular Disease
ACCF/GE Healthcare Cardiovascular Career Development Awards in Cardiovascular Imaging Technologies and Targeted Imaging Agents
ACCF/Pfizer Career Development Award in Clinical or Preventive Cardiovascular Medicine
ACCF/Guidant Foundation Career Development Award in Women's Cardiovascular Health

ACCF indicates American College of Cardiology Foundation; FACT, Foundation for the Advancement of Cardiac Therapies.

Established Research Independence and Beyond

The ultimate measure of success of many of the aforementioned career development/enhancement programs is the acquisition of independent research support in the form of independent investigator awards from the NIH (eg, R01 Award¹³), the National Science Foundation,¹⁴ the Veterans Administration (eg, Merit Award¹⁵), the AHA (Established Investigator Award¹⁶ and AHA affiliate-sponsored Grant-in-Aid programs¹⁷), etc. Even at this stage in career development, the NIH and other agencies offer many programs to further enhance career success. Although the details are beyond the scope of this review, many programs (for selected NIH offerings, see Figures 1 and 2) are available to promote the acquisition of new skills/methodologies, facilitate career transitions, encourage national and international collaborations, and develop mentoring skills and experiences.

Conclusions

There has never been a more exciting time to embark on a career in biomedical research. Recent methodological and technical advances have opened up entire new fields of investigation, and the emerging emphasis on interdisciplinary team science shows great promise in solving complex bio-

medical problems that have eluded the efforts of the traditional discipline- or disease-based approaches of the past century. Fortunately, it has also never been easier to embark on a career in biomedical research. For early career investigators with passion, commitment, and focus, the funding opportunities are both bountiful and attainable.

Frequently Asked Questions

1. *Question:* Because many of the career development awards are mentor focused, can they be transferred to another institution?

Answer: Most of these awards can be transferred to another institution. The candidate needs to show that the new institution provides the mentoring components and institutional resources and commitment that were provided at the original institution. This is usually done administratively and does not require a reapplication or additional peer review. This applies to most of the NIH K Awards and the AHA Scientist Development Grant and Fellow-to-Faculty Transition Award. Of note, the NIH K99/R00 award is actually intended to help the candidate secure a faculty position at an institution appropriate for his or her independence. By definition and design, it is mobile.

2. *Question:* Can you hold more than 1 career development award at the same time?

Answer: Generally, an investigator can only have 1 active career development award. Specifically, an individual cannot be supported by an NIH K23 Award and an AHA Scientist Development Grant. However, an investigator can apply for multiple awards at the same time with clear statements in each application that in the event of multiple awards, the other awards will be declined. Of note, the NIH K08 and K23 mechanisms encourage investigators to submit R01 applications during the tenure of the K Award. In certain circumstances, it is possible to hold both a K award and an R award; integration of multiple awards is handled by individual institutes/centers.

3. *Question:* Do you have to have an NIH award to qualify for the NIH Loan Repayment Program?

Answer: No. An investigator can apply for the LRP without being the principal investigator on any other career development award. In addition, the LRP can be held concurrently with any other type of award.

4. *Question:* Many of the career development awards specify a minimum commitment of 75% effort toward the career development activities and research program. Does this mean 75% of a 40-hour work week?

Answer: For the NIH, the 75% commitment refers to your entire professional effort. If you work 80 hours per week, then the NIH expects you to commit 75% of that time. The Veterans Administration awards have somewhat different restrictions, which are described on the Veterans Administration web site.

5. *Question:* Because most of these career development awards support principally salary, where does an early career investigator find the funds to do the actual research?

Answer: Most of the NIH and many of the foundation awards are salary awards, and some have modest resources to support research expenses. It is the expectation that the mentor's funding and the institutional

commitment will provide the resources (laboratory supplies, research nurses, etc) for the candidate to conduct the research. This is one of the reasons why so much emphasis and scrutiny is directed to the mentor and mentoring plan. The most competitive applications specify precisely how the work will be supported in the mentor's statement and in the description of the institutional commitment.

6. *Question:* What career development opportunities exist for individuals who hold visas?

Answer: Early career investigators holding temporary visas have several options, including the NIH K99/R00 Award, the Veterans Administration career development awards, and most of the AHA career development awards (see appropriate World Wide Web links in the references).

7. *Question:* Is the NIH K08 Award for basic science research and the K23 Award for clinical research?

Answer: This is a common misunderstanding. The K08 Award can be for basic science, but it is also appropriate for clinical research when the investigator is not interacting directly with patients, as in some types of epidemiological studies and outcomes research. The K23 Award is restricted to investigations in which the investigator interacts directly with patients. The research plan can have very basic components and animal studies, but at least 1 aim must include studies in which the investigator interacts with patients/clinical subjects.

8. *Question:* Does your mentor have to be at the same institution, and can you have more than 1 mentor?

Answer: In general, the primary mentor should be at the same institution as the applicant. Because the mentor-trainee axis is crucial for the integrity of the career development plan and the ultimate success of the candidate, long-distance relationships between the mentor and trainee are strongly discouraged. However, it is quite reasonable for 1 of the co-mentors to be at another institution. In this case, the candidate needs to provide the details of how the co-mentor will interact with the candidate and what value that mentor is providing to the career development plan. Mentor teams are encouraged, because it is increasingly unlikely that a single mentor will have expertise in all the areas needed to effectively execute the career development plan. In cases of mentoring teams, there still should be a qualified primary mentor, who must describe how he or she will organize and monitor the activities of the other mentors.

Acknowledgments

The authors gratefully acknowledge K.W. Rutledge and M. Hazzard of the University of Kentucky Teaching and Academic Support Center and G.G. Umberger, PhD, MSPH, RPh, for their assistance in generating the figures. The authors also gratefully acknowledge the program/review officers and scientists who have served and continue to serve on the many NIH and AHA review panels dedicated to career development award proposals. Their collective efforts ensure the "pipeline" of future cardiovascular researchers.

Sources of Funding

Dr Balke was supported by grants HL071865, HL68733, and HL086341.

Disclosures

None.

References

1. Balke CW. Funding opportunities for young investigators in the early stages of their career development. In: Fuster V. Symposium presentations: how to become a young investigator. *J Am Coll Cardiol*. 2005;46:A8–A15.
2. Bonow RO. Bridging funding opportunities for young investigators. In: Fuster V. Symposium presentations: how to become a young investigator. *J Am Coll Cardiol*. 2005;46:A15–A18.
3. Mendelsohn ME. Choosing a research project/mentor. In: Fuster V. Symposium presentations: how to become a young investigator. *J Am Coll Cardiol*. 2005;46:A5–A8.
4. Alpert JS, Gardner TJ, Laing ST. The mentoring relationship. In: *Mentoring Handbook*. 2nd ed. Dallas, Tex: American Heart Association; 2003:1–18.
5. NIH Loan Repayment Programs. Available at: <http://www.lrp.nih.gov>. Accessed November 10, 2008.
6. PA-07-107: NIH Ruth L. Kirschstein National Research Service Awards (NRSA) for Individual Postdoctoral Fellows (F32). Available at: <http://grants1.nih.gov/grants/guide/pa-files/PA-07-107.html>. Accessed November 10, 2008.
7. PA-07-297: NIH Pathway to Independence (PI) Award (K99/R00). Available at <http://grants1.nih.gov/grants/guide/pa-files/PA-07-297.html>. Accessed November 10, 2008.
8. American Heart Association 2009 National Fellow-to-Faculty Transition Award. Available at: <http://www.americanheart.org/presenter.jhtml?identifier=3059903>. Accessed November 10, 2008.
9. NIH, Office of Extramural Research. K Kiosk: information about NIH Career Development Awards. Available at: <http://grants.nih.gov/training/careerdevelopmentawards.htm>. Accessed November 10, 2008.
10. Department of Veterans Affairs, Office of Research & Development. Career Development Program. Available at: http://www.research.va.gov/programs/csrd/career_dev.cfm. Accessed November 10, 2008.
11. PA-06-512. NIH Mentored Clinical Scientist Research Career Development Award (K08). Available at: <http://grants1.nih.gov/grants/guide/pa-files/PA-06-512.html>. Accessed November 10, 2008.
12. PA-05-143. NIH Mentored Patient-Oriented Research Career Development Award (K23). Available at: <http://grants1.nih.gov/grants/guide/pa-files/PA-05-143.html>. Accessed November 10, 2008.
13. PA-07-070. NIH Research Project Grant (Parent R01). Available at: <http://grants.nih.gov/grants/guide/pa-files/PA-07-070.html>. Accessed November 10, 2008.
14. National Science Foundation. Funding. Available at: <http://www.nsf.gov/funding/>. Accessed November 10, 2008.
15. Department of Veterans Affairs, Office of Research & Development. Merit Review Program. Available at: http://www.research.va.gov/programs/csrd/merit_review.cfm. Accessed November 10, 2008.
16. American Heart Association. 2008 National Established Investigator Award. Available at: <http://www.americanheart.org/presenter.jhtml?identifier=3058989>. Accessed February 17, 2009.
17. American Heart Association. Affiliate-sponsored Grant-in-Aid Programs. Available at: http://www.americanheart.org/presenter.jhtml?identifier=10000015&filter=p&q=Grant-in-Aid+Program&btnG=Search&entqr=0&output=xml_no_dtd&sort=date%3AD%3AL%3Ad1&ie=UTF-8&summaries=1&oe=UTF-8&num=10. Accessed November 10, 2008.