TALES OF A FAILED PHYSICIAN-SCIENTIST

Without a cadre of high-quality physician-scientists to drive basic and translational discovery, the cutting-edge of our specialty may be lost.
Shortly after this, Dr. Jay Loefller became director of radiosurgery at the JCRT. He thoughtfully expanded the applications of this treatment modality into malignancies and other benign lesions in the brain. Later he developed, with Varian and Radiomics, the first dedicated radiosurgery linac.

Meanwhile, I joined the radiation oncology department at the University of Arizona at the invitation of its chair Dr. Robert Cassady. At this time, there was considerable interest in the JCRT radiosurgery approach. With Dr. Cassady’s support and significant contributions from Dr. Bruce Lulu and Bill Kinball we assisted almost 40 institutions in implementing this radiosurgery technique.

This article was submitted on behalf of the ASTRO History Committee.

HEALTHpolicy

95 percent success rate. Additionally, ASTRO offers members a MOC Part 4 Practice Quality Improvement (PQI) template that allows PQSwizard participants the opportunity to use their PQRS data to complete an ABR-qualified PQI template.

Further details on PQRS, the Oncology Measures Group, the ASTRO PQSwizard and the MOC PQI template are available on ASTRO’s PQRS Toolkit at www.astro.org/pqrswizard.

2015 Medicare EHR Incentive Program

The Medicare and Medicaid EHR Incentive Programs are CMS programs that use downward payment adjustments to promote the adoption, implementation and meaningful use of certified EHR technology (CEHRT) by eligible professionals. Failure to successfully demonstrate meaningful use in 2015 will result in a -3.0 percent payment adjustment of total Medicare Part B FFS claims in 2017. Members who have never participated in the program before are only required to demonstrate meaningful use for a 90-day period in 2015. Members who have participated in program before (even if unsuccessfully) are required to demonstrate meaningful use for the full year.

Hardship exceptions are available, and ASTRO encourages members to submit a hardship exception application by July 1, 2015 to avoid the 2017 payment adjustment. More information on the EHR Incentive Program and Hardship Exceptions Application is available on ASTRO’s EHR Incentive Program Toolkit at www.astro.org/Practice-Management/EHR-Incentive-Program/Index.aspx.

Visit the CROPS open community on ROhub by logging on to the ASTRO website with your user name and password and clicking the ROhub icon at the top of the page.
KEYS TO A SUCCESSFUL CAREER AS A PHYSICIAN-SCIENTIST

BY SIMON N. POWELL, MD, PHD, FASTRO, AMATO J. GIACCIA, PHD, ALEXANDER SPEKTOR, MD, PHD, AND APARNA KESARWALA, MD, PHD

PHYSICIAN-SCIENTISTS ARE AN IMPORTANT ASPECT of radiation oncology and play a vital role in advancing the field. With 20 years of experience recruiting and mentoring physician-scientists, we have seen several key factors that must be addressed to ensure physician-scientists receive the necessary support to foster a successful career in the field.

CRITERIA FOR SELECTING A FACULTY-LEVEL PHYSICIAN-SCIENTIST

Selecting a physician-scientist for a faculty position, either a laboratory investigator or a clinical investigator, will differ between institutions, depending on needs. However, factors that are considered universally by recruiting departments include quality of training (both clinical and laboratory), mentorship, publications and potential for future contributions to the field. The most important feature in an interview is to converse openly and let the candidate’s personality and drive come through.

A universal criterion in the selection process is training. While the most intense of these experiences is through a combined MD-PhD degree, there are also a significant number of individuals who possess strong research skills and have completed an MD degree. A second important consideration in the evaluation process is the individual’s mentor and laboratory during the training process. It is presumed that publications and grant support weigh heavily in the hiring criteria; however, the quality and rigor of the training and publications are even more important. A final consideration is assessing the potential contribution of the applicant to the field of radiation oncology. There are a plethora of well-trained physician-scientists in cancer biology looking for academic jobs; however, the dedication and commitment of the applicant to the radiation sciences is critical if the field is to move forward.

MENTORING, EARLY DEVELOPMENT AND THE KEYS TO SUCCESS FOR A PHYSICIAN-SCIENTIST

There are key components for success in recruiting and mentoring physician-scientists. A physician-scientist is considered successful if he or she has run an independent research program for more than five years after completion of all training. Based on our own observations, the success rate is less than 50 percent; however, there is a lack of published data. Of the 20 Holman Pathway trainees in radiation oncology during the first 10 years of the program, 75 percent were working in an academic department.

The single most common factor for success in mentoring and training successful physician-scientists is the time spent in research. One year of research during residency is almost never adequate; at least two and usually three or more years of research after completing a doctoral degree is preferred. This can be achieved by creating post-residency fellowships, which are not popular in radiation oncology since there is a significant difference in salary between a fellow and a new faculty member. An alternative is to utilize an instructor-level position, which has faculty status and a higher salary than a fellow, and is time-limited, allowing the time for research.

A supportive department is critical to success. It is important to obtain the correct grounding to develop a good research plan, to develop collaborations with key individuals, to succeed with publications and to lay the foundation for successful grant applications.

Each physician-scientist should have an advisory committee to monitor the research progress and advise the faculty member in all aspects of scientific, clinical and career development. This committee should construct a clear professional development plan in conjunction with the physician-scientist that includes both short- and long-term goals and reinforce what is expected of an individual in their career path for advancement and promotion. The mentoring plan should also include sufficient time to attend meetings and conferences to help the physician-scientist acquire new scientific and clinical skills. In this age of precision medicine and big data, analytical, computational and programming skills are essential.

WHAT ARE THE REASONS FOR FAILING AS A PHYSICIAN-SCIENTIST?

As a general rule, failure occurs when one or more of the keys to success are missing. Mentoring is critical because making bad scientific decisions early in a career can hold back progress over the critical first five years. Departments can lack commitment when the going gets tough; if the funds for...
CROPS serves as resource for physician-scientists

Radiation oncology attracts an extremely competitive pool of applicants with significant research experience and interest, including the highest percentage of MD/PhDs of any specialty. Many individuals are attracted to radiation oncology with aspirations toward physician-scientist careers. Conclusions from recent studies suggest that scarcity of mentorship, training in grant writing and established funding sources in combination with the current compensation structure in academic departments are potential obstacles.

In order to address some of these potential obstacles, the Community of Radiation Oncology Physician Scientists (CROPS) was recently established. The mission of CROPS is to advance basic and translational research in radiation oncology and promote the careers of physician-scientists in the specialty by bringing together individuals at all stages of their careers, facilitating the open exchange of ideas, creating a collaborative environment, promoting mentorship and funding opportunities, and raising awareness of the issues pertinent to basic and translational researchers in radiation oncology.

CROPS held its inaugural workshop at ASTRO’s 56th Annual Meeting in San Francisco. Topics included an overview of the current status of physician-scientists and the obstacles currently faced by aspiring physician-scientists and potential solutions. Topics for future workshops include applying for jobs, grant writing, mentorship, establishing collaborations and funding opportunities. An open community on ROHub allows CROPS members to connect with each other between in-person events. ROHub is accessed from the ASTRO website.

CROPS is also working closely with ASTRO leadership on a joint ASTRO-CROPS Mentoring Program, which will help to promote a research community across institutions.

All ASTRO members are invited to join CROPS and propose new ideas and initiatives that will benefit the entire community. The future of research in radiation oncology is at a critical juncture, and coordinated efforts by the entire community are necessary to ensure the future of the specialty.

REFERENCES

supporting the physician-scientist are discretionary funds fed from the margins of the departmental operations, then as soon as the margins are trimmed or become nonexistent, many department chairs will be tempted to stop the flow of funds into nurturing physician-scientists. Furthermore, departments then cut back on the planned number of positions, creating a shortage of good physician-scientist positions. The solution is to insulate the funds for physician-scientists, whenever possible, to prevent the temptation to eliminate this funding. Funding obtained from a defined source, such as separate institutional funds for recruitment, is much more likely to survive when there is pressure on operational funds.

With good institutional and departmental support and the strong drive to succeed, physician-scientists have a good chance of succeeding long-term. This success is important to the future of the field because physician-scientists play a key role in driving new developments in the specialty.

REFERENCE

Dr. Pocock is chair of the department of radiation oncology at Memorial Sloan Kettering Cancer Center in New York, a member of the Molecular Biology Program of Sloan Kettering Institute, incumbent of the Enid A. Haupt endowed chair and professor of graduate medical sciences at Weill Cornell Medical College.

Dr. Ciaccia is the Jack, Lulu and Sam Wilkson Professor in Cancer Biology in the Department of Radiation Oncology at Stanford University in Stanford, California, director of the Cancer Biology Program and associate director for basic sciences at the Stanford Cancer Institute.

Dr. Spektor is an assistant instructor of radiation oncology at Harvard Medical School and a radiation oncologist at the Brigham and Women’s Hospital and Dana-Farber Cancer Institute in Boston.

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CAREER PATHS FOR PHYSICIAN-SCIENTISTS IN RADIATION ONCOLOGY

BY DAVID G. KIRSCH, MD, PHD

THIS IS AN EXCITING TIME FOR RESEARCH IN RADIATION ONCOLOGY. During the past few years, many gene mutations that drive cancer have been identified. Also, molecular mechanisms that govern the cellular response to ionizing radiation have been described. In addition, novel genetically engineered mouse models and new techniques for genome editing have been developed, which provide opportunities to make new discoveries with potential for translation into the clinic. At the same time, the field of radiation oncology has been fortunate to attract talented medical students, many of whom have completed rigorous PhD training in the basic sciences. With so many talented trainees entering our field and the tremendous opportunities in cancer research and radiation biology, this should be a golden era for radiation oncology research. However, as a field, we are not reaching our potential for basic and translational research. This is likely a consequence of many factors; however, this article will focus on the challenges that physician-scientists face when they begin a career in radiation oncology leading an independent laboratory.

Although there are many different training pathways that can lead to success, if a radiation oncologist wants to maintain an independent research program, then he or she will need to receive grants from the federal government, foundations or other sources. The competition for these grants is generally not restricted to other radiation oncologists and radiation biologists. Instead, the competition includes medical oncologists, pediatric oncologists and other cancer researchers. Medical oncologists and pediatric oncologists often have significantly more postdoctoral research training than radiation oncologists. For example, they often have three, four or more years of postdoctoral research experience. Therefore, they typically have more publications on their CV and, more importantly, have more often defined a scientific niche, developed a model system or research approach with which they can establish an independent research program. In contrast, radiation oncology residents may have only 12 months of research training during residency. Even with the Holman Research Pathway for residency training, 21 months

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With so many talented trainees entering our field and the tremendous opportunities in cancer research and radiation biology, this should be a golden era for radiation oncology research.

for research training may not be sufficient time for trainees to publish papers and develop a scientific niche upon which they can successfully build a research program and compete for grants against others who have a much longer period of postdoctoral training.

How can trainees in radiation oncology receive a similar level of postdoctoral research training as in other oncology subspecialties? The Holman Research Pathway is a good place to start. However, when trainees finish the Holman Research Pathway, they may still require further training in a mentored research environment. Currently, there is no standard pathway to support junior faculty in radiation oncology to complete postdoctoral research training and promote their transition to scientific independence. If trainees complete residency training and initially want to spend most of their professional effort in a mentored scientific environment, they may be offered faculty positions with a lower salary.

To provide some salary and protected research time, residents can apply for the National Institutes of Health Mentored Clinical Scientist Research Career Development Award (K08). The K08 award requires a commitment of 75 percent effort for research and provides up to $100,000 of salary support per year for up to five years. The K08 grant mechanism is a bridge that medical oncologists and pediatric oncologists often utilize to achieve scientific independence because it provides salary support for protected research time. However, there are only a small number of radiation oncologists with K08 or related career awards. This may be because the salary support from these highly competitive grants generally does not cover 75 percent of the salary of a junior faculty member in radiation oncology. Therefore, trainees with the potential to become independent physician-scientists may seek faculty positions where more of their time is devoted to caring for patients so that they can obtain a higher salary. These kinds of positions make it more challenging to compete for grants with physician-scientists from medical oncology and pediatric oncology.

These are examples of physician-scientists in radiation oncology who have successfully established an independent laboratory without lengthy postdoctoral research training and while spending several days per week caring for patients. In addition, there are many models in which radiation oncologists can successfully contribute to basic and translational research and lead an independent lab. However, if the goal of the trainee is to lead an independent research lab, then the more time that a radiation oncologist has for research training when they complete residency training, the greater the likelihood for success in obtaining independent research grants.

What can ASTRO do to address this challenge? ASTRO already supports faculty development with the ASTRO Junior Faculty Career Research Training Award with $100,000 annually for two years. The goal of this grant mechanism is to provide bridge funding so that a junior faculty member can obtain K08 or similar career development funding. If organizations that support radiation research would also supplement the salary of K08 grant awardees, then this would make the pathway to scientific independence more financially viable for both departments and trainees. To receive a K08 award, radiation oncologists must compete with the very best physician-scientists in other oncology subspecialties. This support is an investment in some of our best trainees, which will not only yield a great dividend in future basic and translational research in radiation oncology, but will also help ensure the health of our specialty in the years ahead.

Dr. Kitsch is associate professor and vice-chair for basic and translational research in the Department of Radiation Oncology at Duke University Medical Center in Durham, North Carolina.