

Opportunity: Newly Created Physician-Scientist Research Pathway by the American Board of Pathology

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The American Board of Pathology (ABP) has recently approved a physician-scientist research pathway (PSRP) for pathologists in training.¹ This new pathway was specifically created to increase the recruitment of new physician-scientists to our specialty. Other specialties, such as internal medicine,² pediatrics,³ radiology/radiation oncology,⁴ and dermatology,⁵ have formally Board approved research training pathways, and there was concern that without a Board sanctioned research training pathway, there would be a decline in such individuals training in pathology. Indeed, published data on specialty choices of MD-PhD graduates have suggested that such a decline may have already begun.⁶⁻⁸ Pathology is a unique discipline that is recognized as both a basic biomedical science and a clinical specialty, and it has therefore traditionally attracted energetic, intelligent physician-scientists, interested in studying disease mechanisms at the cellular, molecular, and genetic level.⁹ A survey done in 2014 by the Association of Pathology Chairs (APC) showed that 70 of 86 responding chairs favored the creation of a research training pathway. With this overwhelming mandate from the pathology chairs, the APC Research Committee diligently debated and ultimately designed a research training pathway and formed a coalition to work with the ABP to achieve this goal.

Pathology has been a major participant in the promotion of the physician-scientist. Based on the Blue Ridge Institute for Medical Research analysis of National Institutes of Health (NIH) grant data for fiscal year 2014, the top 5 departments nationally in total NIH dollars awarded are internal medicine, psychiatry, pediatrics, microbiology/immunology, and pathology. Table 1 shows an analysis of the 4 clinical disciplines in this group with respect to some parameters of physician-

scientist training. While pathology commands the least percentage of the NIH budget among the 4 clinical disciplines, the percentage of MD-PhD faculty among all MD faculty is highest in pathology by a factor of 2 to 3 compared to the other disciplines. Table 1 shows that pathology does successfully compete for NIH training grants including institutional T grants, individual fellowship F grants, and the mentored clinical scientist K08 grants. The T and F awards are given to physician-scientists in training, while the K08 awards are provided to junior faculty. Table 2 shows that pathology has the highest percentage of training grants but the lowest percentage of K08 grants, indicating that we are training physician-scientists but failing to recruit them into our discipline. The 2014 APC survey showed while more than half of pathology departments train MD-PhD students, 69% of chairs stated that they had trouble recruiting physician-scientists, reinforcing that our discipline trains but has difficulty in recruiting.

It was clear that a number of academic programs within pathology have had strong track records of training successful physician-scientists and it was therefore important that any new pathway not create obstacles to their continued success. The

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Table 1. Fiscal Year 2014 NIH Grant Funding.*

Discipline	NIH Grant US\$ [†]	% NIH Budget [†]	% Faculty MD-PhD [‡]	Total T + F Awards US \$ [§]	Total K Awards US \$ [§]
Pathology	US\$560	4.8	27.5	US\$30	US\$10
Internal medicine	US\$3217	27.5	8.8	US\$127	US\$161
Pediatrics	US\$686	5.9	7.0	US\$25	US\$45
Psychiatry	US\$737	6.3	10.4	US\$22	US\$50

Abbreviation: NIH, National Institutes of Health.

*The total dollars for each discipline, in millions, is shown. T awards are institutional training grants and F awards are individual fellowship grants.

[†]From the Blue Ridge Institute for Medical Research: http://www.brimr.org/NIH_Awards/NIH_Awards.htm (Accessed December 23, 2015).

[‡]From AAMC Faculty Roster table 14 (% of MD faculty who have an MD-PhD): <https://www.aamc.org/data/facultyroster/reports/420598/usmsf14.html>).

[§]From NIH Research Portfolio Online Reporting Tools (RePORTER): <https://projectreporter.nih.gov/reporter.cfm> (Accessed December 23, 2015).

Table 2. 2014 Fiscal Year Training Awards in Different Disciplines.*

Discipline	% T and F Awards per Total NIH \$	% K Awards per Total NIH \$
Pathology	5.4%	1.8%
Internal medicine	4.0%	5.0%
Pediatrics	3.6%	6.6%
Psychiatry	3.0%	6.8%

Abbreviation: NIH, National Institutes of Health.

*The percentages are calculated from the data in Table 1, expressed as the percentage of the training awards of the total NIH dollars for each discipline.

ABP considered their concerns and approved a flexible pathway that will allow these programs to continue to flourish with no disruption to their individually developed and successful approaches. Importantly, the new pathway should enhance the opportunity for other pathology residency programs to create equally rigorous training venues for newly recruited physician-scientists. Students from institutions with NIH-sponsored Medical Scientist Training Programs and other MD-PhD programs will now more easily recognize that pathology, like medicine, pediatrics, and other specialties, not only accepts but promotes the physician-scientist career at the highest national levels. In addition, as half of the physician-scientist workforce is comprised of MD-only physicians,¹⁰ it is hopeful that this pathway will also help those students to recognize this option within pathology, as they begin to consider careers in basic and translational medical science. The APC heard from a number of pathology departments that students in their medical schools were initially attracted to medicine, pediatrics, and other specialties because they formally endorsed a research pathway at the board level, therefore the ABP Board sanctioned PSRP may now allow these departments to keep their talent at home as well as recruit regionally and nationally.

However, with opportunity comes responsibility. There is a responsibility to identify potential sources of funding to pay for the additional investigative training in those institutions wishing to pursue these options but who do not currently have appropriate support mechanisms for MD and MD-PhD pathology residents. The 2014 APC survey identified institutional T32 training grants and individual F training grants as the best potential sources, which as noted previously, are already

available in some pathology departments. These individual training grants (F-level awards as well as K awards) are particularly important since the NIH strategic plan for the physician-scientist workforce calls for increased support for individual training programs.¹⁰ The establishment of the ABP-endorsed PSRP provides a formalized opportunity for individual pathology departments to establish the infrastructure necessary to help train and retain successful physician-scientists. This infrastructure includes mentorship teams, clear departmental support for research-based academic medicine careers, and career development opportunities. The development of such departmental/institutional programs should position our pathology trainees for a higher level of funding success when applying for individual K awards (where pathology trainees have not been as successful as their counterparts in medicine, pediatrics, or psychiatry, see Table 2). However, national pathology organizations also need to take responsibility to ensure the success of trainees in PSRPs by establishing mechanisms (such as a listserve, a steering committee, and an annual meeting) for PSRP directors and administrators to share best practices, exchange data and ideas, and to help to develop innovative training approaches.

There is also responsibility by the training programs to ensure that trainees do not assume that 12 to 18 months of research will be sufficient to insure a successful career as a physician-scientist, even for those with an MD-PhD (which, as noted previously, may be more frequent for pathology faculty and residents than in other disciplines). In contrast to pathology, medicine and pediatrics most frequently train their physician-scientists as subspecialists (or sub-subspecialists) within their respective disciplines. Pathology is almost unique in its near exclusive use of 1 year subspecialty fellowships; the other “physician-scientist encouraging” specialties generally have additional fellowship training measured in 2 to 4 years beyond a standard 3 or more years of core training. This provides those specialties with the possibility of including more years of research training within the core-plus-fellowship paradigm, whereas pathology programs more frequently include the needed additional research training as additional fellowship years which must remain as a critical part of proper investigative training. Of note, the explosion in pathology knowledge has driven most graduating residents to pursue 1 to 2 fellowships.¹¹ This may create opportunities in

the future to reimagine ideal training possibilities for an increasing specialized world, and if or when these are explored, it will be important to consider their impact on physician-scientist trainees.

A final responsibility will be to document that this new pathway achieves the goal of training the next generation of physician-scientists in pathology. The APC Research Committee has accepted this responsibility and is discussing how to better track potential new recruits to our discipline throughout their career evolution. Tracking will be important not just for demographics but as a means of providing the data that will bring further continuous quality improvement to our training programs. Encouraging the success of the physician-scientists in pathology is the primary responsibility.

As with so many other aspects of medicine as a whole and pathology in particular, this is an exciting time with great opportunities. We applaud the actions of the ABP and recognize that this may be just the first step in reimagining how to best create the finest pathologists and pathologist-scientists during the seismic changes that the 21st century is bringing to our discipline.

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