

Beyond the Scalpel: Attracting and Nurturing Surgeon-Scientists in Plastic Surgery

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Introduction

Recent reports have shown that the number of surgeon-scientists pursuing research is on the decline.¹ One initiative to bolster research-oriented clinicians and surgeons was the development of Medical Scientist Training Programs (MSTPs), whose goal is to promote careers in academic medicine by supporting young trainees through a combined program of training leading to both the MD and PhD degrees. However, plastic surgery (PS) has not traditionally attracted or recruited these physician-scientist trainees as compared to non-procedural/surgical specialties and even other surgical specialties, such as neurosurgery. For these reasons, we seek to identify and discuss potential explanations and limitations that may deter MD/PhD trainees, trainees, from pursuing a career as a PS surgeon-scientist, and potential avenues to alleviate this dilemma.

Objectives

- Identify number of MD/PhD residents and faculty in PS
- Elucidate trends in early career awards (K grants) in PS compared to other specialties
- Identify avenues to promote the recruitment of the research-oriented trainee to careers in PS

Methods

We performed a focused review of the available evidence regarding the demographics of MD/PhDs in PS and examined the literature for potential reasons deterring research-oriented trainees from pursuing a career in PS. Our initial search included an investigation into the number of MD/PhDs in PS as well as current grant funding trends in the field. We used the AAMC and ASPS databases to identify the number of current MD/PhD residents and faculty in plastic surgery. Additionally, we utilized the NIH RePORTER to identify grants awarded to investigators in plastic surgery by filtering for the number of active grants awarded during fiscal year 2020 by Department Type. If faculty were enlisted in another department or division by the NIH (e.g. biomedical engineering) then they were excluded.

Results

Factors an applicant may consider when applying to residency:

- Training time – MD + PhD training averages 8 years
- Time away from lab
- USMLE “Score Creep”
- Grant funding/opportunities
 - When compared to other specialties, there were only 2 K awards reported for PS, with the next lowest number of K awards being 18 in urology.
 - This number may be underestimated, as awardees may be listed under surgical departments; however, each department was searched by name to maintain consistency when using the NIH RePORTER
- After training: compensation, resources, and the dilemma between revenue vs. protected research time

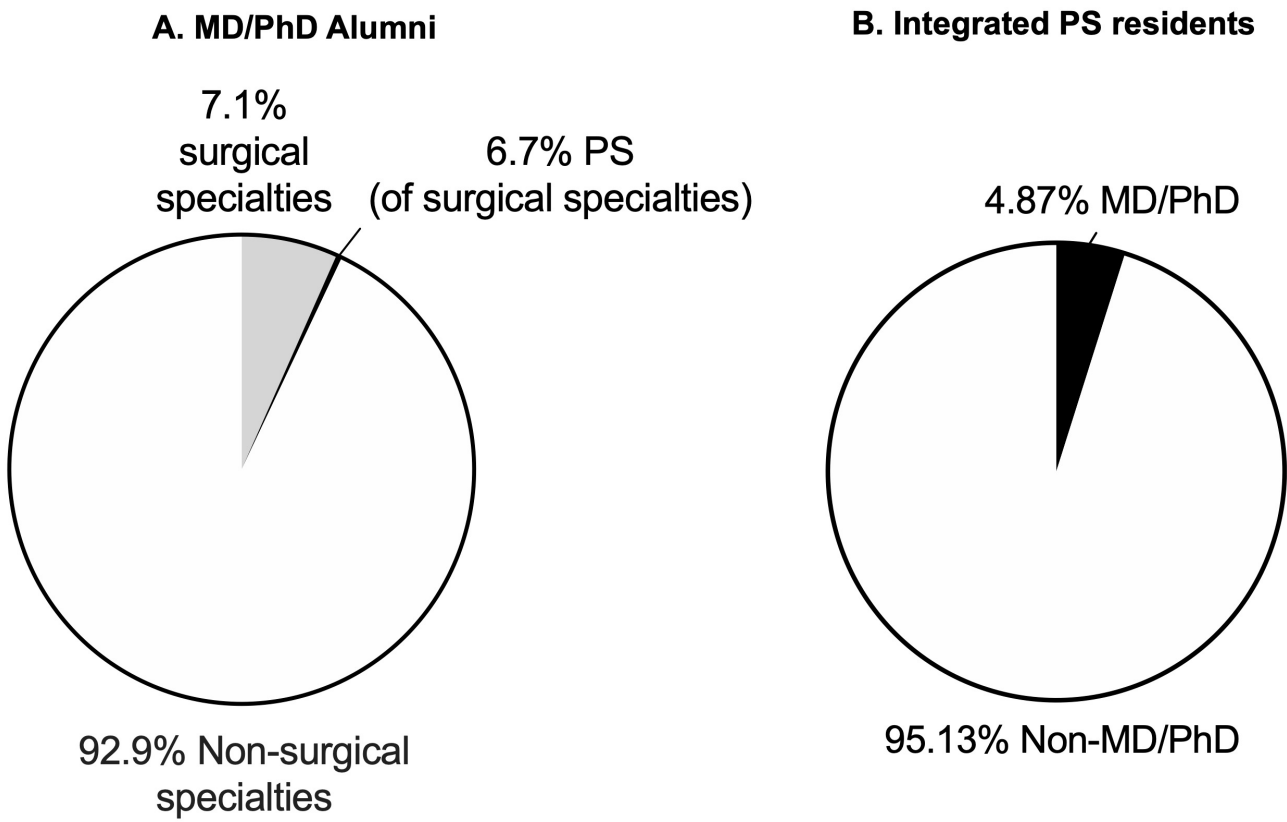


Figure 1: Percentages of MD/PhD that had completed postgraduate training and residents in 2014 according to the National MD/PhD Outcomes Survey¹⁶.

A) Of MD/PhDs who had completed postgraduate training in 2014, 7.1% of MD/PhDs were in surgical specialties. Only 6.7% of that fraction, or 0.48% of the total, were in PS
B) In 2014, of 554 residents in integrated PS residency, only 27 were MD/PhDs (4.9%).

Medical Specialty	# of Active Residents (2017)[1]	# of Active MD/PhD Residents (%) (2017)[1]	K Awards (#)	# of Active Physicians Per Specialty (2017)[2]
Dermatology	1,243	58 (4.7)	35	12,051
Internal Medicine	12,463	440 (3.5)	949	115,557
Neurosurgery	1,271	105 (8.3)	20	5,531
Orthopedics	3,519	38 (1.1)	19	19,001
Otolaryngology	1,468	33 (2.2)	25	9,526
Plastic Surgery	787 (integrated) 190 (independent)	28 (integrated) (3.6) 2 (independent) (1.1)	2	7,142
Urology	1,176	31 (2.6)	18	9,921

Table 1: Number of MD/PhD Residents in select specialties and K award funding as reported by the AAMC Resident Report and NIH RePORTER³⁷.

Awards were investigated by filtering for the number of active grants during fiscal year 2020 by Department Type. *If faculty were enlisted in another department or division by the NIH e.g. biomedical engineering then they were not enlisted here.

Conclusions

Here, we outlined some potential reasons for this discrepancy, and highlight some changes that are currently being made to attract research-oriented minds, including length of training, time away from lab, USMLE “score creep”, and grant/funding opportunities. Surprisingly, the number of K awards is significantly less in PS when compared to other specialties. In addition, plastic surgery does not currently offer a direct pathway to research for aspiring trainees. Other areas in medicine have created physician-scientist research pathways and fast-track to faculty positions that allow for the motivated clinicians who are strongly committed to research careers.

Notably, the emergence of Physician-Scientist Training Programs (PSTPs) in certain specialties, most notably internal medicine, but also neurosurgery, otolaryngology, and dermatology, has sparked much support amongst the National Association of MD-PhD Programs. Not only do these fast-tracked programs allow for the trainee in the specialty to return to research in a more accelerated manner, but PSTP programs often provide financial incentives during training. These fast-tracked residency positions may also include the promise of guaranteed fellowship positions and/or faculty positions once training is completed.

Developing a structured research training allows surgical residents to have protected research time during their training while pursuing a research degree. A recent survey of SSTP graduates showed that 86% remained in academia, 67% maintain active ongoing research, and 56% have secured external grant funding. Such efforts would go a long way to ensure that PS remains a leader in translational research by cultivating a group of individuals who have been trained in basic research and are thereby competitive to obtain extra-mural grant funding.

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