

Training and Retaining Physician–Scientists in Dermatology in Taiwan

Yi-Shuan Sheen¹, Chia-Yu Chu¹ and Sung-Jan Lin^{1,2,3,4}, on behalf of the Taiwanese Dermatological Association and the Taiwanese Society for Investigative Dermatology



Currently, only 14.7% of practicing dermatologists in Taiwan who work at medical centers are dedicated to innovative research. Dermatology departments appear to face steeper challenges with the recruitment and retention of physician–scientists than other medical specialties. The need to increase the number of physician–scientists is clear and can be achieved through the provision of good training programs, financial support, early mentorship, and sustained funding.

JID Innovations (2022) 2, 100079. doi:10.1016/j.xjidi.2021.100079

In their new article in the *JID Innovations*, Li et al. (2021) reported the identification of distressing trends among the small proportion of dermatologists who consider research to be their primary occupation in the United States. If these trends remain unchanged, a steep decline will occur in the size of the physician–scientist workforce (Li et al., 2021). A similar phenomenon has been observed in Taiwan. In this commentary, we propose measures for immediate implementation in Taiwan to address this decline.

A substantial change in preferred career choices for medical graduates has been observed over recent decades in Taiwan. Several important health policies issued by Taiwan health authorities may have had dramatic impacts on health service providers and career planning for medical graduates (Chang and Lee, 2020). Within the current climate of healthcare policy

reform, a nationwide shortage of physician–scientists has developed. The percentage of top medical graduates working at medical centers has declined significantly, from 58% during 1981–1994 to 33.3% during 1995–2001, which coincided with the launch of the National Health Insurance program in 1995 (Chang and Lee, 2020). The implementation of the National Health Insurance program has significantly influenced work life, home life, working hours, and income for medical workers (Chang and Lee, 2020). Physicians are increasingly taking lifestyle into consideration when selecting their specialties, with recent medical graduates demanding flexibility and protected time to spend with friends and family during their careers (Sanfey et al., 2006).

The dermatology specialty, which has been associated with a great lifestyle considering fewer working hours than in other specialties, is currently the

most competitive specialty for medical graduates in Taiwan (Yu et al., 2009). An annual cap on specialty residency training capacity was launched in 2001 to promote a balanced distribution of physician resources across the various specialties (Chang and Lee, 2020). Although >1,300 students graduate annually from medical schools, only 26–28 students (approximately 2% of total medical students) can be placed in a dermatology residency annually (Yu et al., 2009). Dermatology has become the most popular specialty for medical graduates; however, the proportion of dermatologists who seek research careers after residency training is among the lowest of all specialties (Yu et al., 2009). Lifestyle and workload issues greatly influence the career plans of young dermatologists. After 4 years of residency training, dermatologists in Taiwan tend to choose careers with controllable lifestyles and greater job stability. Many dermatologists are choosing to leave positions in academic research for careers in high-paying private practice. Without corrective action, we anticipate a steady decline in the biomedical research workforce, accompanied by a reduction in successful discoveries, as the remaining physician–scientists retire (Milewicz et al., 2015).

In Taiwan, hospitals have been classified into three levels: medical centers, regional hospitals, and district hospitals. Medical centers are tasked with leading the development of medically relevant and innovative research, holistic education, the care of severe or rare diseases, social responsibility, and the implementation of national health-related policies. According to profiles obtained from the Taiwan Medical Association, approximately 60% of Taiwan's physicians work in hospitals as employees, with the remainder practicing in private clinics. The data for 1,082 dermatologists in Taiwan in 2021 showed that 30% of dermatologists currently work in hospitals, significantly lower than the proportion of all physicians. Currently, 19% of dermatologists work at the 23 hospitals that offer dermatology residency training programs, and only 14.7% of dermatologists work at the 19 medical centers

¹Department of Dermatology, National Taiwan University Hospital and National Taiwan University College of Medicine, Taipei, Taiwan; ²Center for Frontier Medicine, National Taiwan University Hospital, Taipei, Taiwan; ³Department of Biomedical Engineering, National Taiwan University, Taipei, Taiwan; and ⁴Research Center for Developmental Biology and Regenerative Medicine, National Taiwan University, Taipei, Taiwan

Correspondence: Sung-Jan Lin, Department of Biomedical Engineering, National Taiwan University, 1, Section 1, Jen-Ai Road, Taipei 100, Taiwan. E-mail: drsjlin@ntu.edu.tw

Cite this article as: *JID Innovations* 2022;2:100079

© 2021 The Authors. Published by Elsevier, Inc. on behalf of the Society for Investigative Dermatology. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

COMMENTARY

considered to be the top level of Taiwan's medical care system. Most dermatologists choose to enter higher-paying private practice rather than selecting a research career. An analysis of 32 dermatologists trained at National Taiwan University Hospital from 1998 to 2007 found that 21.9% obtained a doctoral degree and continued to pursue a research career in academia. From 2008 to 2017, only 10% of dermatologists trained in the same department earned a doctoral degree, which may reflect current workforce challenges in academic dermatology. Medical aesthetics has been a booming industry in Taiwan over recent years. Although events regarding medical aesthetics are well-attended, few people attend meetings dedicated to the advancement of investigative dermatology and cutaneous biology. The Taiwanese Dermatological Association (TDA) has 1,082 members, whereas the Taiwanese Society for Investigative Dermatology (TSID) has only 215 dermatologist members to share their research at the annual TSID meeting.

Most physician–scientists in Taiwan pursue careers that represent a mixture of both clinical practice and research. Although Taiwan's hospital accreditation system has improved healthcare quality, administrative paperwork has increased the intensity of the physician workload. Lower salaries in academia than in private practice, increased pressure for clinical productivity, decreased grant application success rates, and the difficulties associated with raising children are the frequently reported concerns that prevent physicians from pursuing a career as a physician–scientist (Hirschtritt et al., 2018). The challenges encountered during the physician–scientist's career path require that significant efforts be undertaken to improve the training process and provide better support for physician–scientist candidates (Li et al., 2021).

Training and funding opportunities are critical components in the career of a physician–scientist (Hirschtritt et al., 2018). Dermatology departments should support physician–scientists by providing financial commitments, resources, mentorships, and research programs (Li et al., 2021). Institutional support should include the provision of

startup resources that allow for candidates to hire laboratory technicians to assist with the performance of benchwork, which would be extremely beneficial to physician–scientists, who still have to attend to heavy clinical duties, helping them to advance their research (Li et al., 2021). Bickle's (2001) report highlighted the impacts of role models and mentors for medical students and residents when they are setting career goals. Dermatology departments can provide adequate and continuous mentorship opportunities to promote a promising career in investigative dermatology. The implementation of early departmental contacts with residents is crucial for identifying potential residents who have the capacity to actively pursue scientific research (Li et al., 2021). Early mentorships can help residents to develop independent research projects and guide them toward a career in investigative dermatology (Li et al., 2021). At the national level, the success rate of grant applications from the Department of Life Science, Ministry of Science and Technology (MOST) declined from 45.8% in 2015 to 38.1% in 2021. As MOST funding becomes increasingly competitive, research budgets can become uncertain. Dedicated and sustained financial support from the MOST could allow physician–scientists to concentrate on building their research careers.

TSID and TDA have implemented some innovative policies for training physician–scientists to pursue careers in investigative dermatology. TSID/TDA organize several online and in-person training courses, including courses on how to write good research proposals, advice for submitting grant applications, the necessary stages involved in clinical trial design, suggestions for successful publication submissions, and more. Sharing the latest research results and experiences from foreign research laboratories presented by physician–scientists with study-abroad experiences would be of great value for young investigators. Using social media platforms, TSID/TDA integrate research resources from major medical centers in Taiwan. Advancements in web-based conferencing technologies will allow for physician–scientist mentors to be recruited from various fields

of study, regardless of institutional affiliation (Milewicz et al., 2015). These efforts can help physician–scientists to develop their research careers and identify potential collaborators. TSID/TDA will focus on optimizing the training timeline for young dermatologists who intend to participate in the investigative track.

Choosing a career is a complex process that is dependent on a variety of intrinsic and extrinsic factors. Economic and lifestyle considerations are becoming increasingly important factors in the career choices of young dermatologists in Taiwan. Current dermatologists appear more inclined to choose careers with controllable hours than in the past, and heavy workloads, low earnings, and high-stress levels have been noted as factors that discourage young dermatologists from pursuing careers as physician–scientists. Although many physician–scientists continue to work toward furthering our understanding of dermatologic diseases and treatments, the dwindling numbers of physician–scientists represent a significant concern in Taiwan. Working toward increasing the number of physician–scientists is a high priority in Taiwan. Sustained funding at the institutional and national levels, continuous mentorship, and adequate research training programs represent crucial elements, which are necessary to support the recruitment, training, and development of physician–scientists throughout their careers.

ORCID

Yi-Shuan Sheen: <http://orcid.org/0000-0002-8743-7496>

ACKNOWLEDGMENTS

This work is supported by the Taiwan Ministry of Science and Technology (MOST 110-2314-B-002-035-MY3 to SJL and MOST 109-2314-B-002-051-MY3 to YSS), National Taiwan University Hospital (NTUH 111-UN0028 to YSS), and Taiwan Bio-development Foundation (SJL).

CONFLICT OF INTEREST

The authors state no conflict of interest.

REFERENCES

- Bickel J. Gender equity in undergraduate medical education: a status report. *J Womens Health Gen Based Med* 2001;10:261–70.
- Chang YW, Lee CH. A growing trend of females and dermatologists among top medical graduates in 30 years. *BMC Med Educ* 2020;20:114.

Hirschtritt ME, Heaton PM, Insel TR. Preparing physician-scientists for an evolving research ecosystem. *JAMA* 2018;320:31–2.

Li S, Yancey KB, Cruz Jr PD, Le LQ. Training physician-scientists for careers in investigative dermatology. *JID Innovations* 2021.

Milewicz DM, Lorenz RG, Dermody TS, Brass LF, National Association of MD-PhD Programs Executive Committee. Rescuing the physician-scientist workforce: the time

for action is now. *J Clin Invest* 2015;125:3742–7.

Sanfey HA, Saalwachter-Schulman AR, Nyhof-Young JM, Eidelson B, Mann BD. Influences on medical student career choice: gender or generation? [published correction appears *Arch Surg* 2007;142:197]. *Arch Surg* 2006;141:1086–94.

Yu HS, Lan CC, Wang LF. The Taiwanese Dermatological Association and the Taiwanese Society for Investigative Dermatology: brief history and

current status. *J Invest Dermatol* 2009;129:1313–4.



This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>