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Commentary
Training and retaining physician scientists in dermatology: Japan

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Abstract
Recently, the number of dermatologists who pursue their scientific research career is also dwindling in Japan. One of the major reasons for the reduction is recent alterations of Japanese medical specialty training system. Our strategies against the decline of young dermatologists’ desire to be physician-scientists include establishment of a simultaneous PhD program for specialty course trainees, young academician-fostering seminar by Japanese Society for Investigative Dermatology, and support for studying abroad by Japanese Dermatological Association.

Similar trend of dwindling physician-scientists in Japan
I read the article entitled “Training Physician-Scientists for Careers in Investigative Dermatology” (Li et al, 2021) with great interest. This article tells us the current state of affairs in US Physician-Scientists in detail, and they carefully analyzed the affairs from all conceivable aspects. My first impression is that we exactly share the situation with US investigative dermatologists and definitely follow US in the dwindling number of physician-scientists. Recently, a lesser number of Japanese dermatologists pursue their scientific research career even after obtaining PhD. Here, I would like to offer commentary on their paper from the Japanese side.
I try to look back on the time when young dermatology trainees became altered and lost interest in physician scientists. For Japanese investigative dermatologists as the members of Japanese Society for Investigative Dermatology (JSID), International Investigative Dermatology (IID), which is now changed developmentally to International Society for Investigative Dermatology (ISID), provides a milestone to review this issue. Targeting at IID2008 and IID2013, our dermatology trainees were
enthusiastic for basic research with laboratory works and they succeeded in achieving the goal in these meetings as well as in the JSID annual meetings held in between. Cultural environment in the department also helped raise physician scientists. We were able to keep our activities in 2018, when IID2018 was held in Orlando, but I began to feel the decline of young dermatologists’ desire to be physician scientists in those days, while, perhaps, this trend was more remarkable in other clinical departments than in dermatology.

It is apparent that eagerness for research is important for a doctor who specializes in clinical medicine. Part of the major reasons for the reduction of the willingness of Japanese dermatology trainees to be physician scientists is recent two big alterations of our system to train medical specialty. With these changes in the clinical training system, fewer young doctors in all departments are showing interest in research careers.

**First change in clinical training system in Japan**

The first reform took place in 2004, focusing on the 2-year period of the early (junior) residency, which corresponds to the post-graduate year in US, and the “intern” started to rotate through many different departments (Fig. 1). After the 2-year period of early residency, medical trainee generally entered a course of specialty programs. Until 2004, each university or college hospital was entrusted with the postgraduate medical education by different programs, as there was no clear boundary between the early and late residency. In some university hospitals, therefore, residents worked as researchers as well as dermatologists, getting early training as physician scientists. After the change, early exposure to research had been lost. Upon entering the late-period, specialty residency (usually 5 years; corresponding to US-style residency), the trainees had to
decide to serve as usual residents with or without research work or to take a PhD course in parallel. Although the flexibility to do research was reduced compared to the system before, they were still able to aim to be researchers at this point. Thus, the number of talented physician scientists in Dermatology was kept even with this change.

Under these circumstances from 2004 to 2017, the Japanese Dermatological Association (JDA) conducted the 5-year dermatology specialty program and accredited the board-certified dermatologist with the society-based examination for the purpose of training excellent specialists in dermatology. The applicants should attend at JDA-oriented lectures, had at least three publications, gave presentations at certain dermatological meetings, and finally pass the JDA examination. Thus, JDA gave the qualifications of dermatology specialists, including the board certification and its renewal. The other clinical departments also had their own board-certified systems. Renewal required credits obtained by attending meetings or making presentations. Through that process, a high proportion of the dermatology specialty residents were engaged in research if the faculty had investigative culture, mentors and funds that allowed the residents to do so.

**Second change in clinical training system in Japan**

In 2017, we had the second drastic transformation, which was concerned with the 5-year specialty training (**Fig. 1**). This change was conducted comprehensively by the newly established Medical Specialty Board in all clinical medical specialties. The dermatology course was determined to be one of the 19 basic specialties. The former society-based authentication was thus changed to the general certification system by the Medical Specialty Board, which is organized by the Ministry of Health, Labour and Welfare.
Although JDA is continuously in charge of administering the examination assigned by the Medical Specialty Board and maintains its training courses and other dermatology-related meetings, the board also insists that attendance for common lectures for physicians, which was newly added and could be formally, is obligatory.

The attempt for the Ministry to control the disparity of specialist number as well as the regional disparity in each clinical department could decrease the dermatology specialty residents, resulting in the decreased number of talented physician scientists in Dermatology. There may be concern that a few number of dermatology trainees have inadequate time to spare and just concentrate on daily practice alone as a result.

To fix the problem, JDA played an initiative role and all clinical departments have made an appeal to include a program that a certain number of the specialty course residents is able to enter a PhD course simultaneously. This program is still primitive in Japan, but hopefully being comparable to “research-in-residency” (RiR) or physician-scientist training programs (PSTPs) in US. It needs a wide variety of structures and timelines, involving the integration of dedicated research time into the clinical curriculum.

Although we do not know whether this will be work, we believe that it will be promising by negotiating the Medical Specialty Board.

**Attempts to promote physician-scientists**

Generally, it is not easy to train and retain young physicians to become successful scientists. To sufficiently prevent the decline of young dermatologists’ desire to be physician-scientists, the Japanese societies have conducted number of strategies. JSID played an initiative role for the society-based educational programs. JSID established a 3-day seminar in Okinawa to train promising, enthusiastic young dermatological
researchers, named “Kisaragi Juku” (young academician-fostering seminar), started in 2010. This seminar also aimed at raising future leaders. "Kisaragi" is the Japanese lunar word for February, and we continue to hold the seminar every February for 30-40 attendants. JSID believes that providing intensive seminars to educate young researchers through human exchanges of heated educational discussions can be one of the solutions to help change those circumstances. Warm exchanges are naturally the basis for Kisaragi Juku. It is ideal that attendees and their tutors could establish lasting friendships. Kisaragi Juku successfully increased the number of talented physician scientists that remained in academic research.

Furthermore, in 2017, JSID launched a seminar named Aoba Juku, focusing on earnest doctors younger than those participating in Kisaragi Juku. The seminar is held annually with 30 attendants. Aoba is the Japanese word for fresh green leaves, imaging the young people who absorb energy quickly and grow up rapidly. To further intensify the research activity, it is indispensable to recruit more talented doctors into this field. It is assumed that there are many young dermatological trainees who hesitate to explore the basic research. There will also be a synergistic effect of Aoba Juku and Kisaragi Juku. Young attendees of Aoba Juku show zeal for basic research and come to Kisaragi Juku as more motivated and enthusiastic physician scientists.

Studying abroad is one of the requirements to raise global physician scientists from Japan. Many Japanese physicians studied overseas to US, European countries, and other areas not only to further develop their science but also to promote friendship with foreign researchers. Recently, however, the number of postdocs studying overseas from Japan has been reduced. This trend seems to be associated with the change of our
specialty training system. Given the 2-year intern residency, 5-year specialty residency, and period of PhD course, it is difficult for physicians to squeeze out their time for studying abroad (Fig. 1). Raising children is a big concern when it comes to pursuing a career as a physician-scientist. Moreover, recent situation does not economically allow them to study abroad. Therefore, in 2019, JDA established a study abroad support system, in which about 15 JDA members are awarded with maximum limit of 5 million JPY. Potential strategies may include early contact between faculty and students not only through teaching in medical school lectures, but also by supporting them to participate in the annual meetings of the societies. This can help connect dermatologists with interested students and showcase research projects and guide them towards a career in investigative dermatology. The clinical component of residency may be modified to enable more time for research. We do not have the US system of Investigative Training Track in Dermatology, “2 + 2 track”, allowing trainees to focus on the clinical dermatology curriculum in the first 2 years with reduced direct patient care duty in years 3 and 4 to enable additional time for dedicated research. This also would be helpful in Japan. Instead of “2 + 2 track”, we have proposed the PhD-parallel course of specialty training period. Since 2020, this kind of training program has been performed flexibly by a part of universities, in a modified “2+2” or just parallel way. Each department is ultimately responsible for a mix of clinical practice and research, and there is no definite timeline for physician-Scientists. In most cases of physicians choosing PhD course, they work as medical trainees for a couple years after the early residency, and subsequently enter PhD course. Therefore, we do not have a high frequency of “leaky pipeline”, but after obtaining
PhD, only a small population of physicians pursue the physician-scientist career. There is another problem that MD doctors with PhD course may not sufficiently devote their time to research, because they usually work as physicians for a considerable time.

**Conclusions**

As clearly pointed out (Li et al, 2021), a key factor in successfully implementing the proposed timeline is the support of the Department Chair, who can manage the training of physician-scientists through mentorship, monetary investment, and creation of a supportive departmental culture. It is important to harmoniously keep balance between physician-scientists and clinical dermatologists generating more revenue. Technology is essential for the development of science, but clinical trainees may hesitate to do research because of uneasy entrance into “wet-bench” basic research training. Recent trend toward clinical and computer epidemiological studies may be an option to solute this issue, but there is a penetrating remark that this might stem from the difficulty in laboratory works.

To further intensify the research activity, it is indispensable to recruit more talented dermatologists into investigative dermatology. They will become leaders in dermatology and advance the field. Once again, we should keep it in mind that success in research leads to improving the clinical abilities of the individual.

**Author contributorship:**

**References**

**Figure legends**

Figure 1. Timeline for clinical and investigative dermatology training during residency in Japan.
Figure 1.

- 6 years: Medical students
  - University or associated hospitals

- 2 years: Junior residents (intern)
  - University or associated hospitals

- 5 years: Senior residents (Dermatology specialty course)
  - University or associated hospitals
  - 4-year PhD course variably

- Faculty members or doctors at associated hospital

- Study abroad