**Editorial**

# Mentoring as the cornerstone of continued education in Allergy and Clinical Immunology: 10th Anniversary of the EAACI Mentorship Program

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**Main text**

The prevalence and complexity of allergic disease have risen over the last decades, both in adults and children, resulting in a significant burden for the allergic patients and their families, also including quality of life and indirect effects, such as losing days of work or school (1–4). Hence, training in Allergy and Clinical Immunology (ACI) needs to keep up with the rising professional demand in the field. ACI education patterns vary worldwide (5,6). A recent survey conducted mainly in European countries highlighted a significant heterogeneity between countries with regard to training aspects, recognition of the specialty, and numbers of practicing specialists (1–4). In addition, there are numerous discrepancies in pediatric ACI training. Children and adolescents with allergic diseases are commonly managed by pediatric specialists, who, after this training, may have to carry out integrative subspecialty training in ACI in their countries (2,4,7). Such differences may limit the number of HealthCare Professionals (HCPs) and researchers undergoing ACI training in the future. Consequently, the ageing of currently active specialists in the field may pose a substantial limitation

to the future growth of the ACI community. Therefore, creating awareness and new opportunities for ACI education and harmonization of training pathways are deemed priorities to attract young HCPs and researchers to these specialties (1). The ACI field is undergoing a period of fast changes, with new findings and the inclusion of cutting-edge technologies, e.g., the understanding of molecular mechanisms of disorders and omics sciences (8), leading to the development or optimization of innovative approaches for HCPs, e.g., in the fields of allergen-specific immunotherapy (9) or treatments with biologics (10), that represent prototypes of precision medicine. Moreover, the environment-related health crisis (11) is providing the opportunity to rediscover and deepen the relationship between humans and nature to guarantee a brighter future for the people and the world, according to the broader "One Health" vision. This can be elaborated further, from the immunological point of view, with the epithelial barrier hypothesis; indeed, an impaired epithelial barrier has been demonstrated in allergic, autoimmune and chronic diseases (12).

The EAACI and the Section and Board of Allergology from the Union Européenne des Médecins Spécialistes (UEMS) highlighted their vision for the professional development of the specialty through a blueprint, with a further intention to align their vision with the Pediatric Section of the UEMS (3). Within this context, the EAACI/UEMS Knowledge and Pediatric Exams in Allergology and Clinical Immunology represent highly regarded certifications to test applicants' theoretical knowledge of the field (4). Moreover, they may serve as a potentially valuable tool to reach international harmonization concerning allergy and clinical immunology education across several different geographical environments (3).

Support and mentoring of young HCPs and researchers are considered important assets to achieve this goal (7). Having an adequate number of senior academics in ACI, with specific skills, motivation, and awareness of their central role in mentoring, seems imperative (13). Exposure to excellent senior academics as positive role models is acknowledged to be critical in influencing career choices among undergraduate and post-graduate students (14).

Mentoring in medicine and research, including the ACI field, has been described as an art and a responsibility (15). Mentors need to practice productive interactions to guide mentees through their professional path, support their professional growth and help them develop long-term goals (16). Mentors may also find this educational experience of great value for their own professional aspiration (17). The ultimate goal of mentoring is to prepare mentees to become independent and high-quality HCPs and researchers. The success of the mentorship process strongly relies on the level of motivation and commitment of mentees to a high workload. The quality of the interactions between mentors and mentees is also critical and should be based on a sense of frankness and a trust of shared goals to guarantee an advantageous engagement in the process.

Selecting a shared project is a core feature of the mentorship process (18). The collaboration project chosen should be realistic for the pair, in line with the mentor's capability to support the mentee's expertise, to promote creativity and collaborative efforts between them. Successful projects leading to career-long relationships should be highlighted to demonstrate a positive track record for other potentially interested professionals in the specialty field (17). A calendar of regular meetings of the pair should be planned, in association with periodical progress reports regarding identified objectives (15).

Regularly discussing both positive and negative experiences is of high value to highlight how the mentee is progressing to find personal solutions to potential problems. This approach allows mentees to leave their comfort zone and be open-minded and ready for the possibility of alternative solutions that may influence their individual professional trajectory. Of note, mentors should guide mentees considering their strengths and preferences, which are deemed of critical importance for career success (15).

Scientific ACI societies should have a significant role in the growth of the ACI community and promoting mentorship programs should be part of their educational goals. Since 2011, the European Academy of Allergy and Clinical Immunology (EAACI) has promoted a successful mentorship program targeting post-graduate junior members (JMs), which has recently reached its 10th year

**(Table 1)**. The EAACI Mentorship Program was developed as an active tailored experience based on a bipartite working model in which the mentee and the mentor are both protagonists of the relationship through active collaboration, beginning with a shared plan **(Figure 1a)**. This program aims to support young HCPs and researchers to enhance their professional skills and network by optimizing their interaction with senior experts from leading institutions in the field. Recently, a new EAACI mentorship program has been designed for undergraduate students, called the EAACI Allergy College, to promote the ACI field as a desirable career choice (19) **(Figure 1b)**. Moreover, the EAACI offers the opportunity for JMs to apply for Clinical and Research Fellowships in the field of allergy, which aims to promote education and research, favoring the mobility of young physicians and researchers to other countries (19). For all these projects, committees composed of junior and senior members work together to find candidates and optimal matches between couples based on specific features according to every program's particular characteristics.

In conclusion, the ACI field is going through a period of exciting transformation, with breakthrough advancements for scientists, HCPs, and patients, comprising novel management and preventive options (20). The EAACI Mentorship Program model, which, together with the other initiatives from the Academy, has been proven successful, may serve as an educational model for other scientific organizations in the ACI field and other fields to build up the next generation of high-level HCPs and researchers.

**Table 1.** The EAACI JMA Chairs and MP Coordinators 2009-2024.

| | **2009-2011** | **2011-2013** | **2013-2015** | **2015-2017** | **2017-2019** | **2019-2022** | **2022-2024** |
|---|---|---|---|---|---|---|---|
| **JMA Chair** | Chrysanthi Skevaki | Enrico Heffler | Alexandra Santos | Olympia Tsilochristou | Ibon Eguiluz | Carmen Riggioni | Leticia De las Vecillas |
| **MP Coordinator** | Chrysanthi Skevaki* | Serena O'Neil & Milena Sokolowska | Serena O'Neil | Ibon Eguiluz | Pavel Kolkhir | Mattia Giovannini | Daniela Carvalho |

**Figure 1a**. Working model of the EAACI Mentorship Program

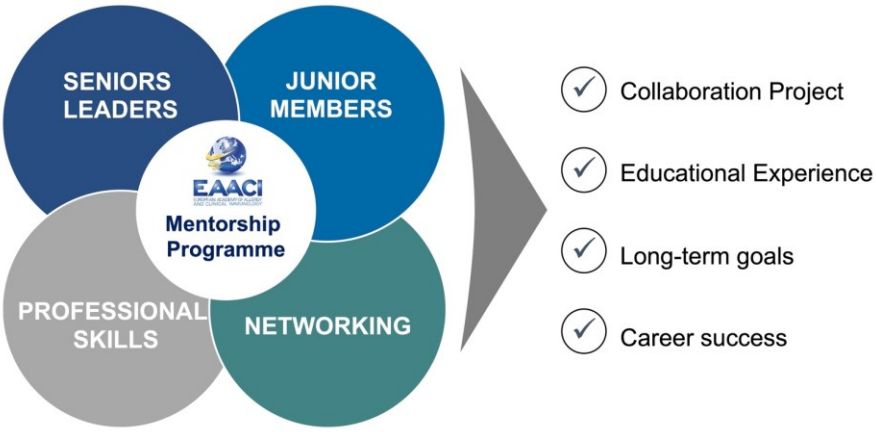
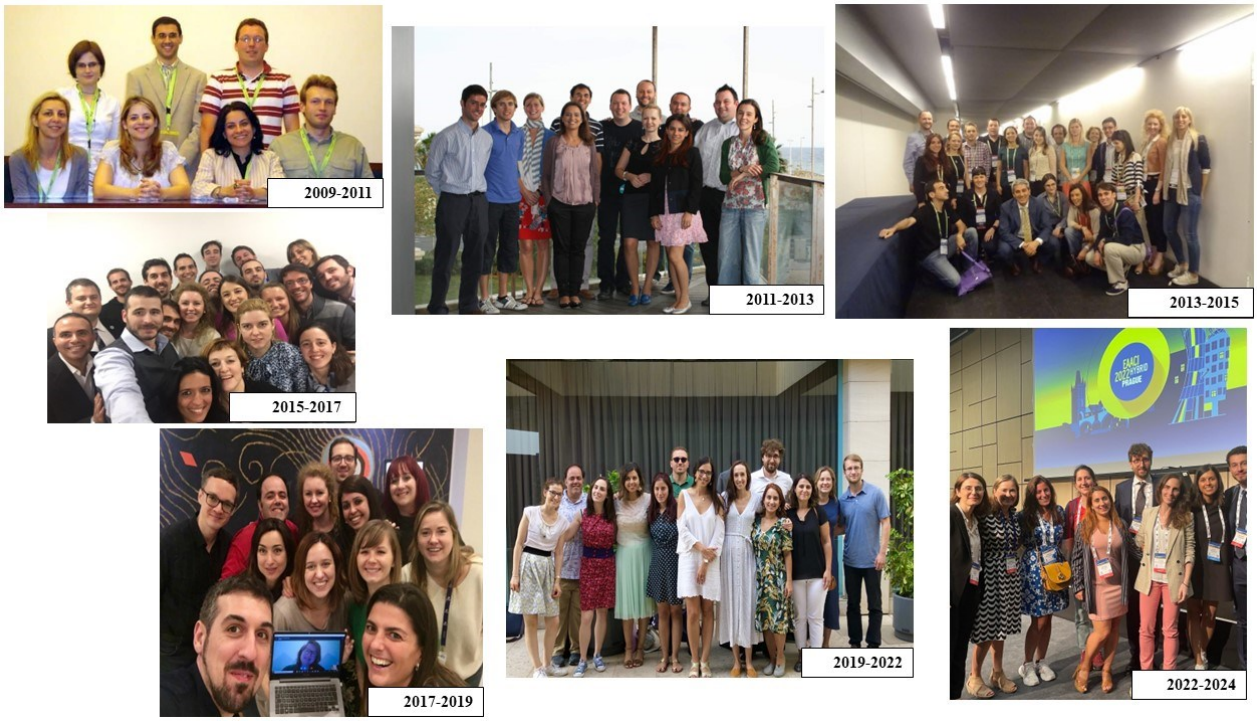



**Figure 1b.** The EAACI JMA Board (2009-2024).



## References


1. Fyhrquist N, Werfel T, Bilò MB, Mülleneisen N, Gerth van Wijk R. The roadmap for the Allergology specialty and allergy care in Europe and adjacent countries. An EAACI position paper. *Clin Transl Allergy* 2019;**9**:3.
2. Del Giacco SG, Malling HJ. Diversity of allergy and clinical immunology reunified by training at the EU level. *Allergy* 2004;**59**:575–576.
3. de Monchy JG, Demoly P, Akdis CA, Cardona V, Papadopoulos NG, Schmid-Grendelmeier P et al. Allergology in Europe, the blueprint. *Allergy* 2013;**68**:1211–1218.
4. Gerth van Wijk R, Eguiluz-Gracia I, Gayraud J, Gutermuth J, Hamelmann E, Heffler E et al. The roadmap for allergology in Europe: The subspecialty of allergology as "stop-over" on the way to a full specialty. An EAACI position statement. *Allergy* 2018;**73**:540–548.
5. Shearer WT. Recognition of clinical immunology as a distinct medical subspecialty: Importance for the practice of allergy. *J Allergy Clin Immunol* 2002;**110**:567–570.
6. Warner JO, Kaliner MA, Crisci CD, Del Giacco S, Frew AJ, Liu GH et al. Allergy Practice Worldwide: A Report by the World Allergy Organization Specialty and Training Council. *Int Arch Allergy Immunol* 2006;**139**:166–174.
7. Tsilochristou O, Maggina P, Zolkipli Z, Sanchez Garcia S, Uysal P, Alvaro Lozano M et al. Current state and future of pediatric allergology in Europe: A road map. *Pediatr Allergy Immunol* 2018;**29**:9–17.
8. Radzikowska U, Baerenfaller K, Cornejo-Garcia JA, Karaaslan C, Barletta E, Sarac BE et al. Omics technologies in allergy and asthma research: An EAACI position paper. *Allergy* 2022;**77**:2888–2908.
9. Pfaar O, Bousquet J, Durham SR, Kleine-Tebbe J, Larché M, Roberts G et al. One hundred and ten years of Allergen Immunotherapy: A journey from empiric observation to evidence. *Allergy* 2022;**77**:454–468.
10. Agache I, Akdis CA, Akdis M, Canonica GW, Casale T, Chivato T et al. EAACI Biologicals

Guidelines—Recommendations for severe asthma. *Allergy* 2021;**76**:14–44.

11. Akdis CA, Nadeau KC. Human and planetary health on fire. *Nat Rev Immunol* Published Online First: 30 August 2022. doi:10.1038/s41577-022-00776-3

12. Akdis CA. Does the epithelial barrier hypothesis explain the increase in allergy, autoimmunity and other chronic conditions? *Nat Rev Immunol* 2021;**21**:739–751.

13. Simpson EL. Jon M. Hanifin - A career of discovery, mentorship, advocacy, and scientific rigor. *Allergy* 2022;**77**:2257–2259.

14. Pien LC, Colbert CY. Time to develop more clinician-educators in allergy and immunology. *J Allergy Clin Immunol* 2020;**145**:456–462.

15. Austen KF. Mentoring: An art and a responsibility. *J Allergy Clin Immunol* 2018;**141**:880–881.

16. Sullivan KE. Μένος: Power, life force, and purpose in mentoring. *J Allergy Clin Immunol* 2022;**149**:547–549.

17. Metcalfe DD. A personal perspective on mentoring. *J Allergy Clin Immunol* 2019;**143**:548–549.

18. Akenroye AT, Keet CA. Mentoring into productivity during fellowship: A working tripartite model. *J Allergy Clin Immunol* 2021;**147**:1627–1628.

19. Skevaki CL, Maggina P, Santos AF, Rodrigues-Alves R, Antolin-Amerigo D, Borrego LM et al. The 10th anniversary of the Junior Members and Affiliates of the European Academy of Allergy and Clinical Immunology. *Pediatr Allergy Immunol* 2011;**22**:754–757.

20. Halken S, Muraro A, de Silva D, Khaleva E, Angier E, Arasi S et al. EAACI guideline: Preventing the development of food allergy in infants and young children (2020 update). *Pediatr Allergy Immunol* 2021;**32**:843–858.

**Conflict of interest:**

I.A. gets consulting fees from Pfizer, AstraZeneca, Chiesi, and Sanofi; payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from Pfizer, AstraZeneca, Stallergenes, Novartis, and Sanofi.

A.F. Santos gets grants from Medical Research Council, Food Allergy Research and Education, National Institute of Health, Rosetrees Trust, BBSRC, Asthma UK; Consulting fees from Allergy Therapeutics, Novartis, IgGenix, and Stallergens; Payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from Novaartis, Thermofisher, and Buhlmann.

R.G.W. served as the President of the UEMS Section and Board of Allergology until 16 September 2022.

P.K. gets consulting fees from ValenzaBio; Payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events for Novartis.

M.S. served as the Chair of the Board of the EAACI Basic and Clinical Immunology Section; member of EAACI Executive Committee.

S.G. has been serving as the President of EAACI between 2022-2024.

M.J. gets consulting fees from Allergopharma, Stallergenes, Regeneron, Pfizer, and Chiesi; Payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from Allergopharma, Stallergenes Greer, and HAL Allergy; Participation on a Data Safety Monitoring Board or Advisory Board of Allergopharma; Clinical Investigator Honoraria from GSK, AstraZeneka, Regeneron, Genetech, Takeda, Chiesi, Novartis, Allergopharma, Stallergenes, Allergy Terapeutics, HAL Allergy, ALK Abello, Shire, Celltrion, Verona Pharma.

**Acknowledgements:** The authors want to thank all the mentors and mentees who were involved into the EAACI Mentorship Program.