

## Editorial



**Received:** Jan 11, 2022  
**Accepted:** Jan 17, 2022  
**Published online:** Jan 18, 2022

### \*Correspondence to

#### Ruby Pawankar

President, APAAACI  
Division of Allergy, Department of Pediatrics,  
Nippon Medical School, Tokyo, Japan.  
Tel/Fax: +81-3-5802-8177  
Email: pawankar.ruby@gmail.com

Copyright © 2022. Asia Pacific Association of Allergy, Asthma and Clinical Immunology. This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

### ORCID iDs

Ruby Pawankar <https://orcid.org/0000-0002-3091-7237>  
Bernard Yu-Hor Thong <https://orcid.org/0000-0002-6338-8482>  
Jiu-Yao Wang <https://orcid.org/0000-0003-4540-9822>

### Conflict of Interest

The authors have no financial conflicts of interest.

# APAAACI 2021 International Conference: a new era of allergy and clinical immunology in digital

Ruby Pawankar <sup>1,\*</sup>, Bernard Yu-Hor Thong <sup>2</sup>, and Jiu-Yao Wang <sup>3</sup>

<sup>1</sup>Division of Allergy, Department of Pediatrics, Nippon Medical School, Tokyo, Japan  
<sup>2</sup>Department of Rheumatology, Allergy and Immunology, Tan Tock Seng Hospital, Singapore  
<sup>3</sup>Allergy, Immunology and Microbiome (AIM) Research Center, China Medical University Children's Hospital (CMUCH), Taichung, Taiwan

There has been a steep increase in the incidence of allergic and autoimmune diseases, reaching epidemic proportions and now affecting more than one billion people worldwide. These diseases are more common in industrialized countries, and their prevalence continues to rise in developing countries in parallel with urbanization and industrialization. Amidst the challenges of the coronavirus disease 2019 (COVID-19) pandemic Asia Pacific Association of Allergy, Asthma and Clinical Immunology (APAAACI) held the APAAACI 2021 International Conference fully virtually with the theme “*Innovations, Challenges, and Opportunities in Allergy, Asthma, and Immunology in the New Era.*” Although this originated as an Asia-Pacific in-person congress, over time the congress pivoted successfully to an on-line meeting with over 3,000 delegates from 59 countries,

The conference comprised 33 symposia, 10 plenary talks, several satellite symposia, Junior member symposia and oral/poster presentations. The scientific program comprised of cutting-edge topics ranging from the microbiome in health and disease, epithelial barrier hypothesis, precision medicine, digital health, allergen immunotherapy (AIT), immune regulation and immune tolerance, COVID-19 and vaccines, urticaria, atopic dermatitis, hereditary angioedema, climate change and air pollution, food allergies, anaphylaxis, biologics and biomarkers, molecular allergology, allergens, severe asthma, big data, real world data and registries, eosinophils and related diseases, asthma, rhinosinusitis phenotypes and endotypes, allergic rhinitis, drug allergies, prevention of allergies, basic immunology, immune deficiencies and a wide array of other cutting-edge topics. In this Editorial, we highlight a few key sessions of the conference.

## Microbiome and immune system in health and disease and epithelial barrier and immune regulation

The session on microbiome highlighted the role of skin microbiota, microbiome and innate immunity and microbiome in early life and its relation to allergic diseases [1, 2].

The key role of a defective epithelial barrier in allergic and autoimmune conditions such as asthma, atopic dermatitis, allergic rhinitis, chronic rhinosinusitis, eosinophilic esophagitis, and inflammatory bowel disease and the immune responses to dysbiotic microbiota in the development of these diseases was highlighted [3].

## Precision medicine: phenotypes, endotypes, and biomarkers

Phenotyping and endotyping allergic diseases are key to the diagnosis and management of severe refractory disease, more commonly in adults than children. This is particularly relevant in disorders of the upper and lower airways (chronic rhinosinusitis with/without nasal polyposis [4] and severe/ difficult asthma [5]) and skin (atopic dermatitis [6] and chronic urticaria [7]). The patient's demographic profile, clinical presentation, and clinical course determine the phenotype; whereas biomarkers in the peripheral blood e.g., eosinophils, IgE, Th2 high proinflammatory cytokines e.g., interleukin (IL)-4, IL-5, IL-13, pattern of inflammatory infiltrate within affected tissue e.g., nasal polyps, form the basis of the endotype. Targeted biologics e.g., omalizumab (anti-IgE), dupilumab (anti-IL-4 receptor alpha antibody), mepolizumab (anti-IL5) and benralizumab (anti-IL5 receptor antibody) specific for certain disease phenotype and endotype thus forms the basis of "personalized" or "precision medicine" [8]. This was extensively covered in the plenary and symposia on biologics in allergic disease, asthma, rhinitis, and atopic dermatitis. Even AIT [9] used in airway allergy and food allergy (oral immunotherapy) is also a form of evidence-based precision medicine, potentially guided by artificial intelligence [10].

## COVID-19 and vaccinations

Characteristics of COVID-19, treatment strategies and COVID-19 vaccinations are key focuses of APAAACI's COVID-19 Task Force [11] highlighted also during the APAAACI Allergy week 2021 in collaboration with the World Health Organization. Symposia covering COVID-19 epidemiological differences in the region, emerging therapies beyond dexamethasone and remdesivir e.g., immunomodulatory agents (e.g., baricitinib), postexposure prophylaxis with anti-SARS-CoV-2 monoclonal antibodies (e.g., sotrovimab, casirivimab plus imdevimab) and primary vaccinations were among the key sessions.

COVID-19 vaccinations are available in the Asia-Pacific region through pandemic special access routes, using different platforms e.g., mRNA (Pfizer-Comirnaty, Moderna), inactivated virus (CoronaVac), adenovirus vector vaccines (Oxford-Astra-Zeneca, Janssen/Johnson & Johnson), protein-subunit for immunoglobulin (Novavax). As the SARS-CoV-2 virus continues to mutate within vaccinated and unvaccinated communities into variants of concern e.g., Delta, Omicron [12], increase health care needs, new infection control measures, new diagnostics and therapeutics will emerge [13]. The rates of mRNA vaccine associated anaphylaxis has significantly reduced globally as the number vaccinated worldwide increase exponentially [14]. The APAAACI 2022, PSAAI@50, Drug Hypersensitivity and Desensitization, Autoimmunity symposiums each had lectures addressing various facets of COVID-19 vaccines.

## Climate change and air pollution

APAAACI is committed to action and research on air pollution and climate change; with a publication of a White paper [15] and the conference session highlighting the global threat of climate change especially to the Asia-Pacific region, increasing the incidence of allergic disorders in postindustrial societies.

## Collaborating society symposia

The conference also had 8 collaborating society symposia including the European Academy of Allergy and Clinical Immunology (EAACI), American College of Allergy, Asthma and Immunology (ACAAI), Federation of Clinical Immunology Societies (FOCIS), Asia Pacific Academy of Pediatric Allergy, Respiriology and Immunology (APAPARI), Philippine Society of Allergy, Asthma and Immunology (PSAAI), Taiwan Association of Allergy, Asthma and Clinical Immunology (TAAACI), International Network of Universities in Molecular Allergology and Immunology (INUNUMA), and World Allergy Organization (WAO). Satellite symposia covered most current updates and case studies on a wide variety of allergic diseases relevant to the practicing clinician.

The outstanding international and regional faculty, covering a multitude of cutting-edge topics focused on updates, trends, and new learnings, contributed to the overall success of the conference.

## REFERENCES

1. Renz H, Skevaki C. Early life microbial exposures and allergy risks: opportunities for prevention. *Nat Rev Immunol* 2021;21:177-91.  
[PUBMED](#) | [CROSSREF](#)
2. Gao Y, Nanan R, Macia L, Tan J, Sominsky L, Quinn TP, O'Hely M, Ponsonby AL, Tang MLK, Collier F, Strickland DH, Dhar P, Brix S, Phipps S, Sly PD, Ranganathan S, Stokholm J, Kristiansen K, Gray LEK, Vuillermin P. The maternal gut microbiome during pregnancy and offspring allergy and asthma. *J Allergy Clin Immunol* 2021;148:669-78.  
[PUBMED](#) | [CROSSREF](#)
3. Akdis CA. Does the epithelial barrier hypothesis explain the increase in allergy, autoimmunity and other chronic conditions? *Nat Rev Immunol* 2021;21:739-51.  
[PUBMED](#) | [CROSSREF](#)
4. Zhang Y, Gevaert E, Lou H, Wang X, Zhang L, Bachert C, Zhang N. Chronic rhinosinusitis in Asia. *J Allergy Clin Immunol* 2017;140:1230-9.  
[PUBMED](#) | [CROSSREF](#)
5. Suzuki M, Cole JJ, Konno S, Makita H, Kimura H, Nishimura M, Maciewicz RA. Large-scale plasma proteomics can reveal distinct endotypes in chronic obstructive pulmonary disease and severe asthma. *Clin Transl Allergy* 2021;11:e12091.  
[PUBMED](#) | [CROSSREF](#)
6. Nomura T, Kabashima K. Advances in atopic dermatitis in 2019-2020: endotypes from skin barrier, ethnicity, properties of antigen, cytokine profiles, microbiome, and engagement of immune cells. *J Allergy Clin Immunol* 2021;148:1451-62.  
[PUBMED](#) | [CROSSREF](#)
7. Zuberbier T, Abdul Latiff AH, Abuzakouk M, Aquilina S, Asero R, Baker D, Ballmer-Weber B, Bangert C, Ben-Shoshan M, Bernstein JA, Bindslev-Jensen C, Brockow K, Brzoza Z, Chong Neto HJ, Church MK, Criado PR, Danilycheva IV, Dressler C, Ensina LF, Fonacier L, Gaskins M, Gáspár K, Gelincik A, Giménez-Arnau A, Godse K, Gonçalo M, Grattan C, Grosber M, Hamelmann E, Hébert J, Hide M, Kaplan A, Kapp A, Kessel A, Kocatürk E, Kulthanan K, Larenas-Linnemann D, Lauerma A, Leslie TA, Magerl M, Makris M, Meshkova RY, Metz M, Micallef D, Mortz CG, Nast A, Oude-Elberink H, Pawankar R, Pigatto PD, Ratti Sisa H, Rojo Gutiérrez MI, Saini SS, Schmid-Grendelmeier P, Sekerel BE, Siebenhaar F, Siiskonen H, Soria A, Staubach-Renz P, Stingeni L, Sussman G, Szegedi A, Thomsen SF, Vadasz Z, Vestergaard C, Wedi B, Zhao Z, Maurer M. The international EAACI/GA<sup>2</sup>LEN/EuroGuiDerm/APAAACI guideline for the definition, classification, diagnosis, and management of urticaria. *Allergy* 2021 Sep 18. <https://doi.org/10.1111/all.15090>. [Epub].  
[PUBMED](#) | [CROSSREF](#)
8. Proper SP, Azouz NP, Mersha TB. Achieving precision medicine in allergic disease: progress and challenges. *Front Immunol* 2021;12:720746.  
[PUBMED](#) | [CROSSREF](#)

9. Incorvaia C, Ridolo E, Bagnasco D, Scurati S, Canonica GW. Personalized medicine and allergen immunotherapy: the beginning of a new era? *Clin Mol Allergy* 2021;19:10.  
[PUBMED](#) | [CROSSREF](#)
10. Ferrante G, Licari A, Fasola S, Marseglia GL, La Grutta S. Artificial intelligence in the diagnosis of pediatric allergic diseases. *Pediatr Allergy Immunol* 2021;32:405-13.  
[PUBMED](#) | [CROSSREF](#)
11. Pawankar R, Thong BY, Tiongco-Recto M, Wang JY, Abdul Latiff AH, Thien F, Oh JW, Kamchaisatian W, Rengganis I, Udwardia ZF, Dhar R, Munkhbayarlakh S, Narantsetseg L, Le Pham D, Leung TF, Zhang L; APAAACI COVID-19 Working Group. Asia-Pacific perspectives on the COVID-19 pandemic. *Allergy* 2021;76:2898-901.  
[PUBMED](#) | [CROSSREF](#)
12. Kannan S, Shaik Syed Ali P, Sheeza A. Omicron (B.1.1.529) - variant of concern - molecular profile and epidemiology: a mini review. *Eur Rev Med Pharmacol Sci* 2021.25:8019-22.  
[PUBMED](#)
13. Haque A, Pant AB. Mitigating Covid-19 in the face of emerging virus variants, breakthrough infections and vaccine hesitancy. *J Autoimmun* 2022;127:102792.  
[PUBMED](#) | [CROSSREF](#)
14. Risma KA. COVID-19 mRNA vaccine allergy. *Curr Opin Pediatr* 2021;33:610-7.  
[PUBMED](#) | [CROSSREF](#)
15. Pawankar R, Wang JY, Wang JJ, Thien F, Chang YS, Latiff AHA, Fujisawa T, Zhang L, Thong BY, Chatchatee P, Leung TF, Kamchaisatian W, Rengganis I, Yoon HJ, Munkhbayarlakh S, Recto MT, Neo AGE, Le Pham D, Lan LTT, Davies JM, Oh JW. *Asia Pacific Association of Allergy Asthma and Clinical Immunology White Paper 2020 on climate change, air pollution, and biodiversity in Asia-Pacific and impact on allergic diseases*. *Asia Pac Allergy* 2020;10:e11.  
[PUBMED](#) | [CROSSREF](#)