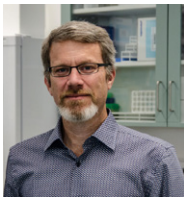
Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

NEWS Beyond Our Pages

Marc E. Rothenberg, MD, PhD,* and Jean Bousquet, MD*

Urinary lipids as biomarkers for asthma

In order to promote precision medicine, Kolmert et al (Am J Respir Crit Care Med. 2020 Jul 15. https://doi.org/10.1164/rccm.201909-1869oc) characterized expression of urinary lipid mediators in patients with type 2 asthma. Levels of multiple types of eicosanoids, including leukotriene E4 (LTE4) and prostaglandin D2, positively correlated with severity of asthma and type 2 inflammation. Notably, eicosanoid levels were independent of oral corticosteroid treatment status but were decreased in subjects on anti-IgE therapy. The association of type 2 asthma to urinary levels of LTE4 was similar to blood eosinophils and exhaled nitric oxide. The authors propose that measurement of urinary metabolites such as LTE4 may serve as useful noninvasive biomarkers to guide treatment selection in patients with asthma.



Craig E. Wheelock

We asked senior author Craig E. Wheelock, MA, PhD, of Karolinska Institute, Stockholm, Sweden, to comment on the study. He writes, "We found that severe type II asthma is associated with elevated levels of the urinary eicosanoids LTE4 and PGD2 metabolites, which importantly are unaffected by oral corticosteroid treatment. Based upon these results, we suggest that monitoring urinary concentrations of LTE4 and PGD2 metabolites may be useful for improving patient stratification for type II asthma treatment."

Lung function during infancy predicts risk of adulthood asthma

Impaired lung function during infancy is associated with increased risk of subsequent development of childhood asthma. Guerra et al (Am J Respir Crit Care Med. 2020 Jul 10. https://doi.org/10.1164/rccm.202001-0194OC) utilized a longitudinal birth cohort followed into mid-adulthood. Multiple metrics indicative of impaired infant lung function were associated with reduced airflow and airway caliber at age 26 as well as increased risk of active asthma by the fourth decade of life. Notably, nearly two-thirds of infants in the lowest tertiles for both of 2 lung function parameters subsequently developed asthma. Overall, these results emphasize the prominent role of airway function in very early life (possibly even fetal life) on the development of asthma later in life.

Nearly two-thirds of infants in the lowest tertile for lung function subsequently developed asthma

Stefano Guerra and Wayne J. Morgan

We asked first author Stefano Guerra MD, PhD, and senior author Wayne J. Morgan, MD, both at the University of Arizona, Tucson, to comment on the study. They write, "Leveraging the extraordinary phenotypic data and nearly 40-year follow-up from the Tucson Children's Respiratory Study, this work highlights the long-lasting influence of the fetal origins of asthma. These findings indicate that lung function deficits present at birth are associated with airway structural changes and persistence of asthma symptoms well into adult life."

Serum amyloid A senses environmental allergens

Serum amyloid A1 (SAA1) is a pattern recognition receptor for environmental allergens

Several studies have highlighted that the ability of certain proteins to drive allergic responses in susceptible hosts may depend on direct engagement with innate immune pattern recognition receptors (PRRs) and an altered innate immune recognition and/or activation at mucosal surfaces. In their study, Smole et al (Nat Immunol 2020;21:756-65. https://doi.org/10.1038/s41590-020-0698-1) have identified that the acute phase reactant serum amyloid A1 (SAA1) is a soluble PRR for environmental allergens that drives type 2 inflammation in the lung. Direct binding of SAA1 to distinct allergenic fatty-acid binding proteins (FABP) from mites including Der p 13 from house dust mite (HDM) led to the release of the epi-

*Section Editor.

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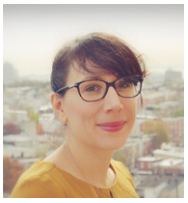
These results suggest nemolizumab as a useful agent for treatment-resistant pruritus in patients with atopic dermatitis

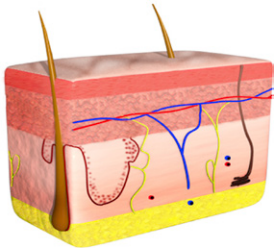
thelial type-2-promoting cytokine IL-33. Loss of binding of SAA to FABP protected against HDM-induced experimental murine allergic airway inflammation. Finally, evidence of up-regulation of the SAA1-IL-33 axis was identified in nasal epithelial cells obtained from patients with chronic rhinosinusitis, confirming the likely relevance to humans. Overall, these results demonstrate a pro-allergic role for SAA1 through detection of environmental allergens and the active release of IL-33, amplifying asthma symptoms and airway inflammation. The fact that other members of the fatty acid binding protein family also drive SAA1-dependent type 2 immune responses (ie, FABP from the parasite Schistosoma mansoni) suggests that SAA1 activation may be a generalized mechanism of type 2 immunity-driven allergenicity.



Ursula Smole

We asked first author Ursula Smole, PhD, of the University of Ghent, in Ghent, Belgium, to comment on the study. She writes, "Our findings offer compelling new insights into the pathways by which allergic and inflammatory disorders arise in susceptible individuals. Blocking the SAA-FABP pathway may be a promising avenue for a preventive or treatment strategy against asthma and other allergic reactions. Modulation of SAA1 could also work for other chronic inflammatory diseases associated with high SAA1 levels including atherosclerosis, rheumatoid arthritis, Alzheimer's or Crohn's disease."

Nemolizumab for pruritus in atopic dermatitis



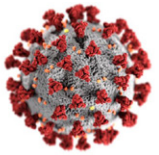
Pruritus is a hallmark feature of atopic dermatitis that imposes significant morbidity upon patients. Kabashima et al (N Engl J Med 2020;383:141-50. https://doi.org/10.1056/nejmoa1917006) recently examined in a phase 3 randomized controlled trial the efficacy of nemolizumab, an mAb against IL-31 receptor A, in treating pruritus in patients with atopic dermatitis resistant to topical agents and antihistamines. Nemolizumab improved pruritus after 16 weeks as compared to placebo and was well-tolerated. These results suggest nemolizumab as a useful agent for treatment-resistant pruritus in patients with atopic dermatitis, although further trials with longer durations are warranted.

Kenji Kabashima

We asked first author Kenji Kabashima, MD, PhD, of the Graduate School of Medicine and Faculty of Medicine, Kyoto University in Kyoto, Japan, to comment on the study. He writes: "Nemolizumab plus topical agents may ameliorate both pruritus and signs of eczema and may lessen the severity of atopic dermatitis by disrupting the itch–scratch cycle."

Promising developments in the fight against COVID-19

In parallel to vaccination development and repurposing of other drugs, numerous advances are being made in the generation of protective antibodies for prevention and treatment of COVID-19. mAbs capable of inhibiting SARS-CoV-2 viral replication in vitro have been isolated from patients with COVID-19 (Brouwer et al. Science 2020 Jun 15;eabc5902. https://doi.org/10.1126/science.abc5902) and SARS (Wec et al. Science 2020 Jun 15;eabc7424. https://doi.org/10.1126/science.abc7424). Rogers et al (Science 2020 Jun 15;eabc7520. https://doi.org/10.1126/science.abc7520) found that passive transfer of a neutralizing antibody protected against SARS-CoV-2 infection in Syrian hamsters. Hansen et al (Science 2020 Jun 15;eabd0827. https://doi.org/10.1126/science.abd0827) utilized genetically humanized mice and human survivors to identify candidate antibodies with highly-potent binding to the SARS-CoV-2 spike protein. Finally, Baum et al (Science 2020 Jun 15;eabd0831. https://doi.org/10.1126/science.abd0831) identified an antibody cocktail to SARS-CoV-2 spike proteins that prevented mutational escape observed with serial treatment with individual antibodies. Collectively, these findings highlight the potential for antibody-based treatments for COVID-19.



News items were written by medical writer Jared Travers, MD, PhD.

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