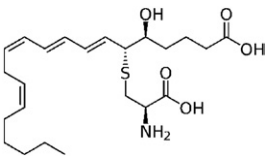
Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

NEWS Beyond Our Pages

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

Omalizumab for aspirin-exacerbated respiratory disease: A new indication?

Despite our increasing understanding of the pathogenesis of aspirin-exacerbated respiratory disease, including excess cysteinyl leukotriene production and mast-cell activation, treatment options remain limited. Hayashi et al (Am J Respir Crit Care Med. 2020 Mar 6. https://doi.org/10.1164/rccm.201906-1215OC) performed the first double-blind, randomized controlled trial examining the efficacy of the anti-IgE mAb omalizumab in patients with aspirin-exacerbated respiratory disease and detectable environmental allergen-specific IgE. Omalizumab treatment decreased production of known pathogenic lipids, including leukotrienes, and reduced eosinophilic airway inflammation and mast cell activity within 24 hours of treatment. Finally, a majority of subjects tolerated oral aspirin after 3 months of treatment with omalizumab. Overall, these data support the use of omalizumab in the treatment of aspirin-intolerant respiratory disease. *Figure attribution: Public Domain at Wikimedia Commons by user Calvero.*



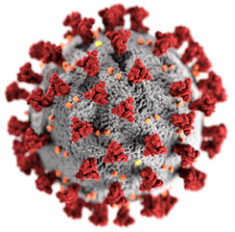
Omalizumab treatment decreased production of known pathogenic lipids

Masami Taniguchi

We asked senior author Masami Taniguchi, MD, PhD, from National Hospital Organization Sagamihara National Hospital in Sagamihara, Japan, to comment on the study. He writes, "Omalizumab had efficacy against the key features of aspirin-exacerbated respiratory disease (AERD), characterized by the overproduction of cysteinyl leukotrienes, mast cell activation, and aspirin-hypersensitivity. The findings in this first randomized study indicate that omalizumab is an important therapeutic candidate for AERD."

Uncovering the mechanism of SARS-CoV-2 cell entry

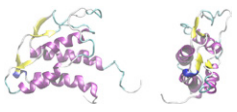
Amongst the most pressing issues surrounding the novel severe acute respiratory syndrome (SARS) coronavirus 2 (SARS-CoV-2) are improved risk stratification of patients on the basis of pre-existing comorbid conditions and the development of novel therapeutics. Through analysis of the medical records of 140 hospitalized Chinese patients with confirmed community-acquired SARS-CoV-2 infection, Zhang et al (Allergy. 2020 Feb 19. https://doi.org/10.1111/all.14238) found no evidence for increased risk of infection in patients with chronic obstructive pulmonary disease or allergic diseases, including asthma. Hoffmann et al (Cell. 2020 Mar 4. https://doi.org/10.1016/j.cell.2020.02.052) performed mechanistic studies to understand the pathogenesis of SARS-CoV-2 infection and found that viral entry relies upon host angiotensin-converting enzyme 2 (ACE2) for attachment and the serine protease TMPRSS2 for priming of the viral spike protein. Importantly, viral entry was blocked by the TMPRSS2 inhibitor camostat mesylate, as well as convalescent sera from prior SARS patients. Collectively, these 2 studies have provided further information regarding risk factors and potential therapeutic targets of SARS-CoV-2 infection, which hopefully will lead to improved clinical risk stratification and drug discovery. *Figure attribution: Public domain at Wikimedia Commons by users CDC/ Alissa Eckert, MS; Dan Higgins, MAM.*



Viral entry was blocked by the TMPRSS2 inhibitor camostat mesylate

IL-21 restrains IgE production

The molecular mechanisms underlying IgE class switch recombination (CSR) are incompletely understood. Yang et al (J Exp Med 2020;217(5). https://doi.org/10.1084/jem.20190472) have discovered that IL-21 broadly inhibits IgE CSR. Follicular helper T cells were the predominant source of IL-21 *in vivo*, and activation of surface IL-21 receptors present on B cells led to STAT3-dependent signaling and inhibition of IgE CSR and IgE responses. In total, these findings underscore the importance of follicular



IL-21 broadly inhibits IgE CSR

*Section Editor.

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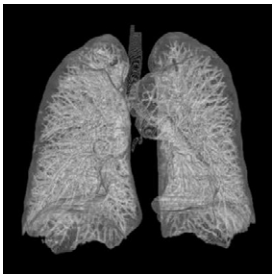
T helper cells in IgE CSR, and further investigation into the modulation of IL-21 activity to prevent pathogenic IgE responses is warranted. *Figure attribution: Public Domain at Wikimedia Commons by user Ayacop/CC0.*

Abnormally truncated airway trees: A tipping point for asthma?

While chest computed tomography (CT) images have revealed the presence of narrowed, occluded airway lumens and thickened airway walls in asthma, the spatial extent of these abnormalities and the total number of CT-visible terminal airways has never been determined. In patients with asthma, Eddy et al (Am J Respir Crit Care Med. 2020 Jan 2. https://doi.org/10.1164/rccm.201908-1552OC) quantified abnormally low numbers of subsegmental and sub-sub-segmental airways across a spectrum of disease severity. Unexpectedly, the number of CT-visible airways (total airway count [TAC]) negatively correlated with asthma severity, similar to what was recently observed in patients with chronic obstructive pulmonary disease. Airways that appeared missing on CT were associated with thicker airway walls at the airway terminus and pulmonary functional magnetic resonance imaging (MRI) ventilation defects, which suggests that the missing airways were mainly related to airway obstruction (although mucous plugs did not dominate) and not destruction. The authors propose CT total airway count as a tipping point for the need for more aggressive treatment with the caveat being that once an airway is blocked or destroyed, inhaled therapies may be difficult to reconcile, and robust FEV_1 responses may be compromised. *Figure attribution: Public Domain at Wikimedia Commons by user AndreasHeinemann at Zeppelinzentrum Karlsruhe, Germany http://www.rad-zep.de / CC BY-SA (http://creativecommons.org/licenses/by-sa/3.0/).*



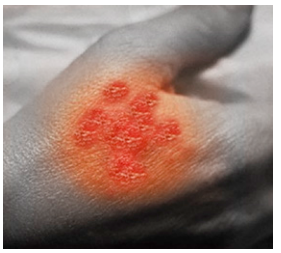
CT total airway count as a tipping point for the need for more aggressive treatment

Grace Parraga

We asked senior author Grace Parraga, PhD, of Robarts Research Institute in London, Ontario, Canada, to comment on the study. She writes, "We found that CT terminal airway count was abnormally low, even in GINA step 1 asthma participants and more than 2-fold lower again in GINA step 4-5 participants. These abnormal airway termini were spatially paired with MRI ventilation defects which tells us these structural changes have an impact on lung function."

Daily emollients do not prevent atopic dermatitis

Two independent groups investigated the efficacy of the daily use of emollients during the first year of life in preventing the development of atopic dermatitis. Skjerven et al (Lancet. 2020 Feb 19. https://doi.org/10.1016/S0140-6736(19)32983-6) found no effect of daily emollient use on the development of atopic dermatitis by age 12 months in a general infant population. Similarly, Chalmers et al (Lancet. 2020 Feb 19. https://doi.org/10.1016/S0140-6736(19)32984-8) found no effect on the development of atopic dermatitis by 2 years of age in a high-risk cohort of infants with known family history of atopic disease. Furthermore, an increased risk for skin infection with daily emollient use was identified. In total, these findings do not support the use of daily emollients in infants for primary prevention of atopic dermatitis.



No effect of daily emollient use on the development of atopic dermatitis

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