Dupilumab Versus Omalizumab Improves Clinical Outcomes in Patients With Severe Chronic Rhinosinusitis With Nasal Polyps, Coexisting Asthma, and Anosmia in the Phase 4 EVEREST Study

Anju T. Peters[1], Enrico Heffler[2,3], G. Walter Canonica[2,3], Brian J. Lipworth[4], Martin Wagenmann[5], Gaëlle Bégo-Le-Bagousse[6], Arman Altincatal[7], Mark Corbett[8], Vijay Alagappan[9], Rebecca Gall[9], Andrew Moraco[7], John J. Oppenheimer[10]

[1]Feinberg School of Medicine, Northwestern University, Chicago, IL, USA; [2]Humanitas University, Pieve Emanuele, Milan, Italy; [3]Personalized Medicine, Asthma and Allergy, Humanitas Research Hospital, Rozzano, Milan, Italy; [4]Scottish Centre for Respiratory Research, and ENT Rhinology Clinic, Ninewells Hospital and Medical School University of Dundee, Dundee, UK; [5]Düsseldorf University Hospital (UKD), Düsseldorf, Germany; [6]Sanofi, Gentilly, France; [7]Sanofi, Cambridge, MA, USA; [8]Sanofi, Morristown, NJ, USA; [9]Regeneron Pharmaceuticals Inc., Tarrytown, NY, USA; [10]University of Medicine and Dentistry of New Jersey-Rutgers New Jersey Medical School, Newark, NJ, USA

CO38

Full poster download
Copies of the presentation obtained through the QR code are for personal reference only

CRSwNP/ Asthma

Conclusion

In patients with severe CRSwNP, coexisting asthma, and anosmia at baseline, dupilumab vs omalizumab yielded a greater proportion of patients no longer anosmic and improved large and small airway function over 24 weeks

Objective

To evaluate the efficacy of dupilumab vs omalizumab in patients with anosmia at baseline in EVEREST

Background

- Anosmia is a hallmark symptom of CRSwNP commonly associated with type 2 inflammation and comorbid asthma[1]
- Anosmia markedly reduces quality of life, affecting safety and nutrition and is strongly associated with anxiety and depression[2]
- Up to 90% of patients with uncontrolled CRSwNP may have loss of smell,[3] while adult patients with asthma and comorbid nasal polyps are >3 times more likely to also have olfactory dysfunction[4]
- Anosmia is underrecognized in patients with coexisting asthma, despite being detectable through screening
- Dupilumab, a fully human monoclonal antibody that blocks the shared receptor component for IL-4 and IL-13,[5,6] and omalizumab, a humanized monoclonal antibody targeting IgE,[7] are approved for the treatment of inadequately controlled CRSwNP and moderate-to-severe asthma[8,9]
  - In EVEREST, dupilumab improved CRSwNP- and asthma-related outcomes vs omalizumab[10]
  - EVEREST is the first head-to-head study of approved respiratory biologics[10]

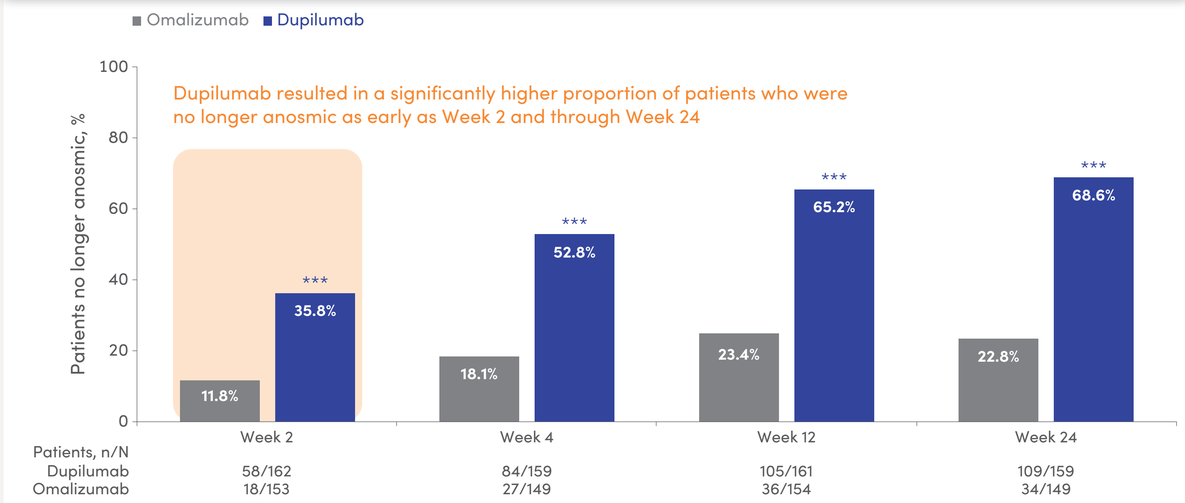
Methods

Study design

- EVEREST (NCT04998604), a multicenter, randomized, double-blind, phase 4 clinical trial, evaluated the efficacy and safety of dupilumab vs omalizumab
- Patients ≥18 years with severe CRSwNP and coexisting uncontrolled asthma (ACQ-5 score ≥1.5) on stable background INCS, ICS, and a second asthma controller (i.e. LABA/LTRA) were randomized 1:1 to add-on dupilumab 300 mg q2w (n = 181) or omalizumab 75–600 mg q2w or q4w (n = 179) for 24 weeks
- This analysis included patients with anosmia, defined by baseline UPSIT score ≤18, receiving dupilumab (n = 166/181; 91.7%) or omalizumab (n = 158/179; 88.3%)
- Endpoints included proportion of patients over time who were no longer anosmic (i.e., achieved an UPSIT score >18) and changes from baseline in scores for NPS, LoS, ACQ-5, in pre-bronchodilator FEV_1 and in pre-bronchodilator $FEF_{25-75\%}$ using a mixed-effect model with repeated measures over 24 weeks of treatment
- All analyses are post hoc; thus, reported *P* values are nominal

Results

Dupilumab vs omalizumab increased the proportion of patients who were no longer anosmic over 24 weeks of treatment



Patients, n/N				
Dupilumab	58/162	84/159	105/161	109/159
Omalizumab	18/153	27/149	36/154	34/149

***P < 0.001 vs omalizumab.

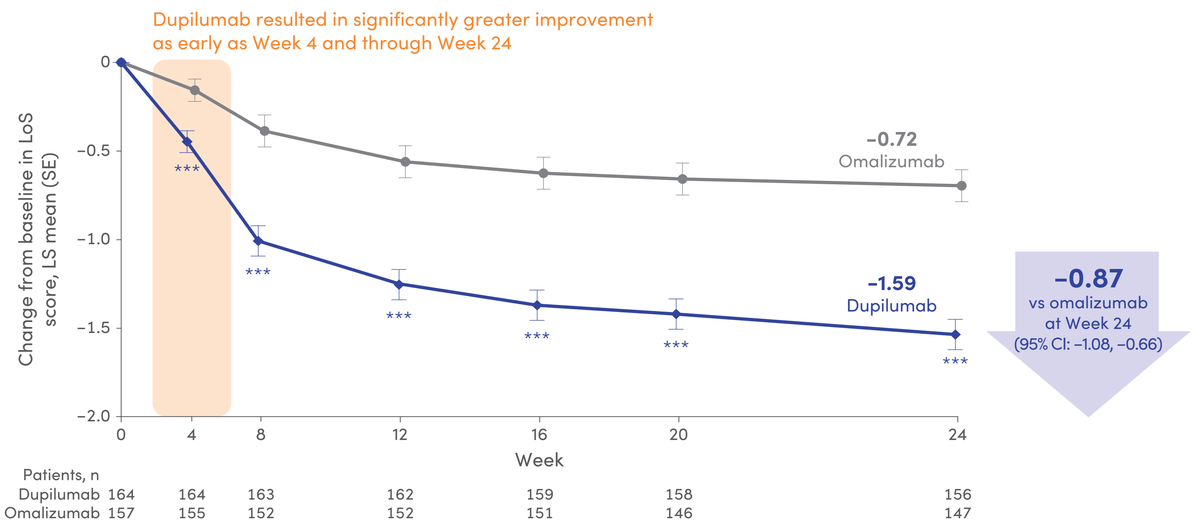
Dupilumab vs omalizumab improved ACQ-5 score over 24 weeks of treatment



Patients, n				
Dupilumab	166	155	150	149
Omalizumab	158	150	140	126

ACQ-5 score range: 0–6. ***P < 0.001 vs omalizumab.

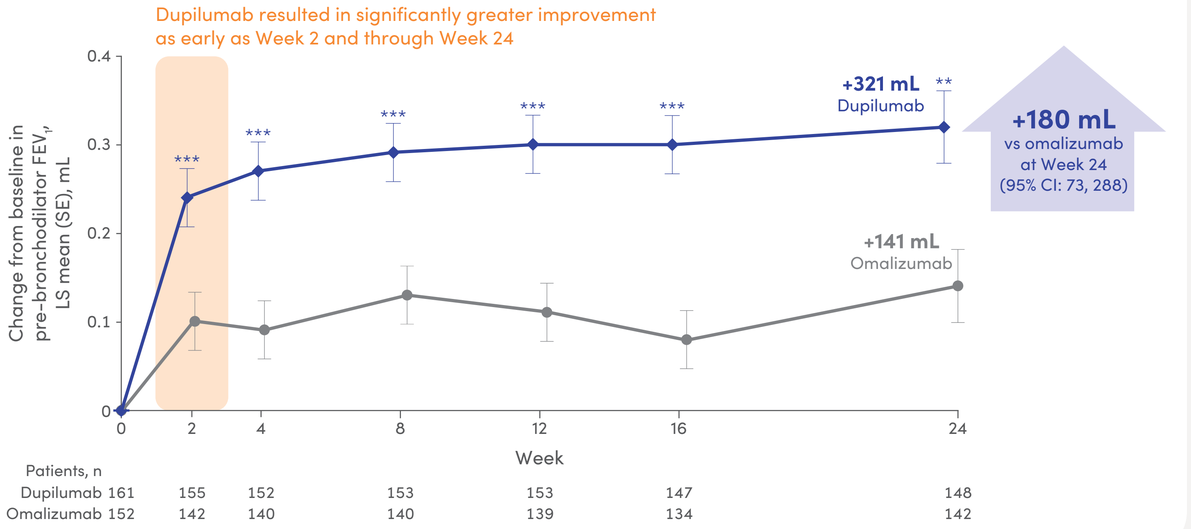
Dupilumab vs omalizumab improved LoS score over 24 weeks of treatment



Patients, n							
Dupilumab	164	164	163	162	159	158	156
Omalizumab	157	155	152	152	151	146	147

LoS score range: 0–3. ***P < 0.001 vs omalizumab.

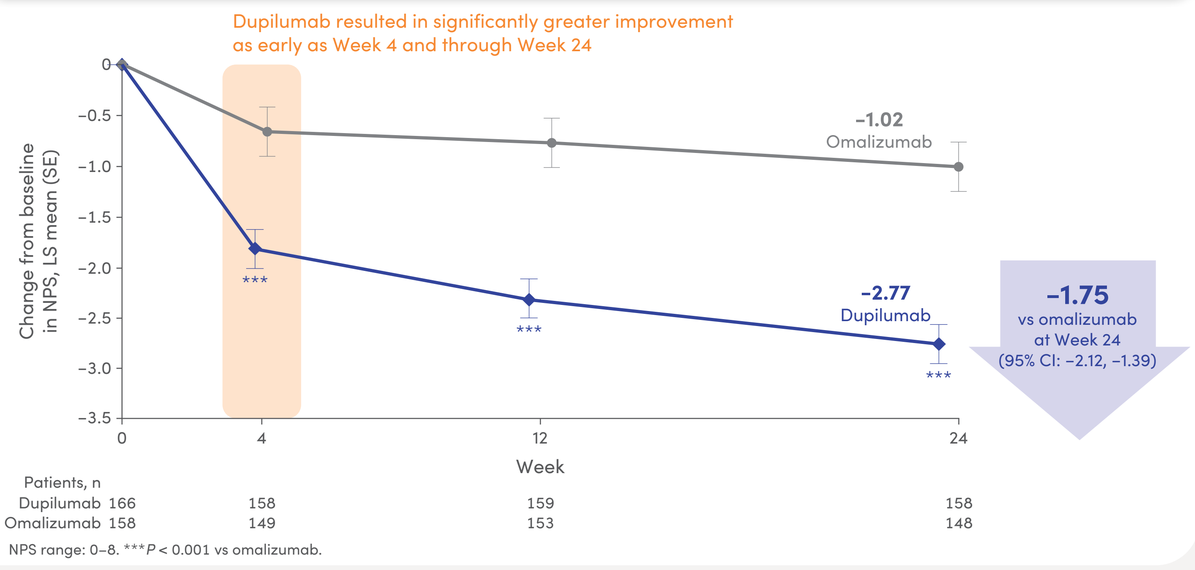
Dupilumab vs omalizumab improved pre-bronchodilator FEV_1 over 24 weeks of treatment



Patients, n							
Dupilumab	161	155	152	153	153	147	148
Omalizumab	152	142	140	140	139	134	142

**P < 0.01, ***P < 0.001 vs omalizumab.

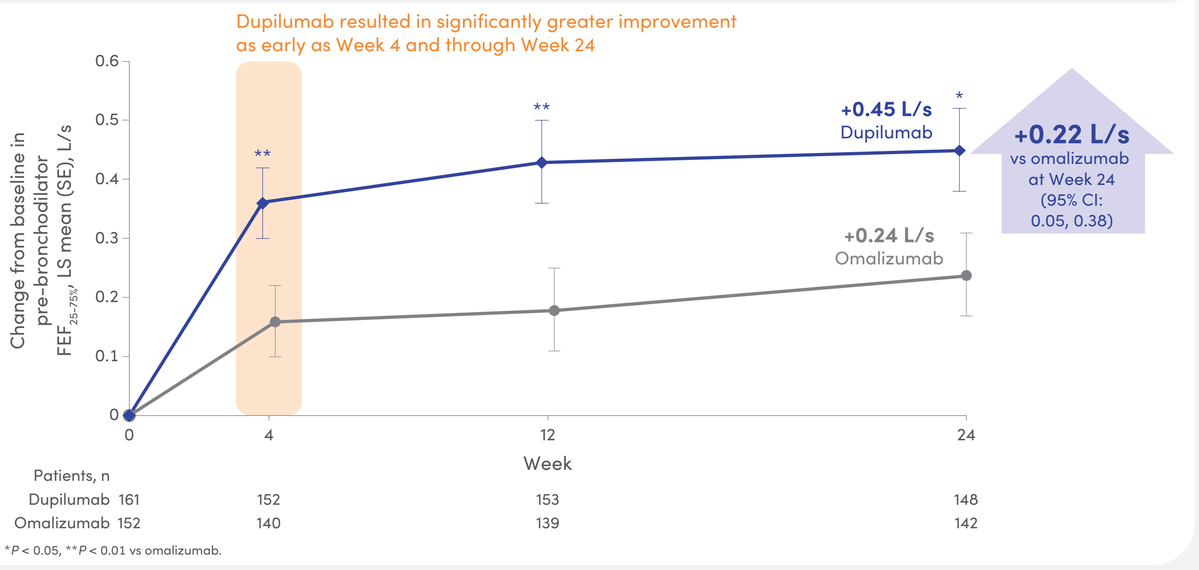
Dupilumab vs omalizumab improved NPS over 24 weeks of treatment



Patients, n				
Dupilumab	166	158	159	158
Omalizumab	158	149	153	148

NPS range: 0–8. ***P < 0.001 vs omalizumab.

Dupilumab vs omalizumab improved pre-bronchodilator $FEF_{25-75\%}$ over 24 weeks of treatment



Patients, n				
Dupilumab	161	152	153	148
Omalizumab	152	140	139	142

*P < 0.05, **P < 0.01 vs omalizumab.

ACQ-5, 5-item Asthma Control Questionnaire; CRSwNP, chronic rhinosinusitis with nasal polyps; $FEF_{25-75\%}$, forced expiratory flow at 25–75% of pulmonary volume; FEV_1, forced expiratory volume in 1 second; FVC, forced vital capacity; ICS, inhaled corticosteroid(s); IL, interleukin; INCS, inhaled nasal corticosteroid(s); LABA, long-acting β_2-agonist(s); LS, least squares; LoS, loss of smell; LTRA, leukotriene receptor antagonist(s); NPS, nasal polyp score; q2w, every 2 weeks; q4w, every 4 weeks; SE, standard error; UPSIT, University of Pennsylvania Smell Identification Test.

References: 1. Bachert C, et al. J Asthma Allergy. 2021;14:127-34. 2. Soler ZM, et al. Adv Ther. 2024;41:4384-95. 3. Macchi A, et al. Front Allergy. 2023;4:1083964. 4. Rhyou H-I, et al. J. Asthma Allergy. 2021;14:309-16. 5. Gandhi NA, et al. Expert Rev Clin Immunol. 2017;13:425-37. 6. Le Floc'h A, et al. Allergy. 2020;75:1188-204. 7. Busse W, et al. J Allergy Clin Immunol. 2001;108:184-90. 8. DUPIXENT® (dupilumab): Highlights of Prescribing Information. US Food and Drug Administration. Revised April 2026. Available from: https://www.accessdata.fda.gov/drugsatfda_docs/label/2025/761055s070lbl.pdf. Accessed October 2026. 9. XOLAIR® (omalizumab): Highlights of Prescribing Information. US Food and Drug Administration. Revised February 2024. Available from: https://www.accessdata.fda.gov/drugsatfda_docs/label/2024/103976s5245lbl.pdf. Update to October 2026. 10. De Corso E, et al. Lancet Respir Med. 2025;13:1067-77.

Acknowledgments and funding sources: The authors would like to thank Scott Nash, former employee of Regeneron Pharmaceuticals Inc., for their contributions to this study. Research sponsored by Sanofi and Regeneron Pharmaceuticals Inc. ClinicalTrials.gov Identifier: NCT04998604. Medical writing support, under the direction of the authors, was provided by Orthis Saha, PhD, employee of the Publications and Medical Affairs Division of Omnicom Health Medical Communications, funded by Sanofi and Regeneron Pharmaceuticals Inc. in accordance with the Good Publication Practice (GPP 2022) guidelines.

Disclosures: Peters AT: AstraZeneca, Eli Lilly, Insmed, Novartis, Regeneron Pharmaceuticals Inc., Sanofi – advisory board member/consultancy fees; Eli Lilly, Novartis, Regeneron Pharmaceuticals Inc., Sanofi – research grant; GSK – consultant. **Heffler E:** Allergy Therapeutics, Almirall, Apogee Therapeutics, AstraZeneca, Bosch, Celltrion Healthcare, Chiesi, Insmed, Lofarma, Novartis, Orion Pharma, Regeneron Pharmaceuticals Inc., Sanofi – consulting fees; AstraZeneca, Chiesi – research grants; AstraZeneca, Chiesi, GSK, Lofarma, Sanofi – speaker fees/honoraria; AstraZeneca, GSK – travel support. **Canonica GW:** A. Menarini, Allergy Therapeutics, AstraZeneca, Chiesi Farmaceutici, Genentech, GSK, Guidotti-Malesci, HAL Allergy, Innovacaremd, Novartis, OM Pharma, Red Maple, Regeneron Pharmaceuticals Inc., Sanofi, Stallergenes Greer, Uriach Pharma – research grants, lecturer, and/or advisory board fees. **Lipworth BJ:** Argenx, AstraZeneca, Bambusa, Belenos, Chiesi, Eli Lilly, Glenmark, Lupin, Propeller Bio, Regeneron Pharmaceuticals Inc., Sanofi – advisory boards, consultancy and speaker fees. **Wagenmann M:** Abbott, Advanz Pharma, Allergopharma, ALK-Abelló, AstraZeneca, Celltrion, CSL Behring, Genzyme, GSK, HAL Allergie, MSD, Novartis, NeilMed, Regeneron, Sanofi, Takeda, Teva – member of national and international scientific advisory boards (consulting), honoraria for lectures, grants for research projects. **Bégo-Le-Bagousse G, Altincatal A, Corbett M, Moraco A:** Sanofi – employees, may hold stock and/or stock options in the company. **Alagappan V, Gall R:** Regeneron Pharmaceuticals Inc. – employees and shareholders. **Oppenheimer JJ:** Aimmune, Amgen, Aquestive Therapeutics, ARS Pharmaceuticals, GlaxoSmithKline, Novartis, Sanofi – consultant and advisory boards; UpToDate – reviewer; Annals of Allergy, Asthma and Immunology – executive editor.

Presented at the 29th Annual European Congress of the International Society for Pharmacoeconomics and Outcomes Research (ISPOR Europe) 2026; Vienna, Austria; November 8–11, 2026.