

## PRESS RELEASE

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### **LIH detects allergies in almost half of Luxembourg adult population**

#### **Ground-breaking research sheds light on allergy burden in Luxembourg and beyond**

*Allergies have been on the rise, affecting people's lives and straining healthcare systems worldwide. In a new study, pioneering research from the Luxembourg Institute of Health led by Dr Annette Kuehn and Prof Markus Ollert, together with Dr Maria Ruiz-Castell and Dr Guy Fagherazzi, offers profound insights into the allergy epidemic that extends far beyond Luxembourg.*

Allergies have become a global phenomenon, with their prevalence skyrocketing over the past few decades and expected to affect 50% of the population by 2050. They not only diminish the quality of life but also exact a heavy toll on healthcare systems and economies, estimated to be associated with over EUR 60 million per year in avoidable cost in Luxembourg alone. Allergy sufferers endure the consequences of this invisible wave and risk long-lasting consequences stemming from chronic inflammation and the premature aging of their immune system.

In a first-of-its-kind study, the Luxembourg Institute of Health (LIH) brought together two research departments, the Department of Infection and Immunity (DII) and the Department of Precision Health (DoPH), to embark on a quest to confront the rising allergy crisis. Their recently published study unveils the allergy burden in the Luxembourg population, utilizing a cutting-edge technology to study signatures of IgE antibodies in human blood. This resulted in a deep dataset of 480,000 data points collected from 1,462 Luxembourg resident adults.

The basis for this cutting-edge research was the population based European Health Examination Survey in Luxembourg (EHES-LUX), a flagship cross-sectional study led by Dr Maria Ruiz-Castell, Group Leader of the Socio-Economic and Environmental Health and Health Services (DoPH) and Dr Guy Fagherazzi, Director of DoPH. Allergy experts from DII, Dr Annette Kuehn, Group Leader, Molecular and Translational Allergology, the PhD student Rebecca Czolk and Prof Markus Ollert, Director of DII, then meticulously analysed blood samples in all participants and correlated the detected antibody profiles (markers of the presence of allergy sensitization) with health and lifestyle data.

The findings were striking: over 42% of participants reported having a diagnosed allergy, and a staggering 44% tested positive for IgE antibodies, indicating allergic sensitization. The most common sources of sensitization were tree pollens, grass pollens, and mites. Notably, the youngest age group (25–34 years) exhibited the highest sensitization rates and the highest need for medical care, suggesting a connection between modern lifestyle, differing upbringing, overall living conditions, and the onset of chronic inflammation like allergies.

*“This study highlights the epidemic properties of allergies, which also pose a significant socioeconomic burden for the future of modern societies, as children, adolescents and younger adults are increasingly and often severely affected. It not only emphasizes the need for action in this domain but also demonstrates a reasonable use of public funds in research to tackle the problem,”* explains Rebecca Czolk.

*“With the ever-growing allergy epidemic, it is clear that understanding and addressing allergies are of paramount importance,”* adds Dr Kuehn. *“This research not only sheds light on the allergy burden in Luxembourg but also serves as a beacon for nations worldwide grappling with this health crisis. It will be important now to develop more appropriate measures of allergy diagnosis, treatment and prevention for people in Luxembourg and beyond.”*

*“The findings from this study underscore the urgent need for tailored medical care of the most vulnerable groups and for nationally planned interventions, as already implemented in a few countries worldwide, to alleviate the burden of allergies on individuals and society as a whole,”* concludes Prof Ollert. *“In an age where allergies are on the rise, our research results are a wake-up call, but also offer a glimmer of hope for a future with a higher quality of life for all by implementing prevention strategies.”*

The study was published in the leading journal *Clinical and Translational Allergy* under the title: *“Novel, computational IgE-clustering in a population-based cross-sectional study: Mapping the allergy burden.”* ([doi.org/10.1002/clt2.12292](https://doi.org/10.1002/clt2.12292))

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### **About the Luxembourg Institute of Health (LIH)**

*The Luxembourg Institute of Health (LIH) is a public biomedical research organisation focused on precision health and invested in becoming a leading reference in Europe for the translation of scientific excellence into meaningful benefits for patients.*

*The LIH places the patient at the heart of all its activities, driven by a collective obligation towards society to use knowledge and technology arising from research on patient derived data to have a direct impact on people’s health. Its dedicated teams of multidisciplinary researchers strive for excellence, generating relevant knowledge linked to immune related diseases and cancer.*

*The institute embraces collaborations, disruptive technology and process innovation as unique opportunities to improve the application of diagnostics and therapeutics with the long-term goal of preventing disease.*

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