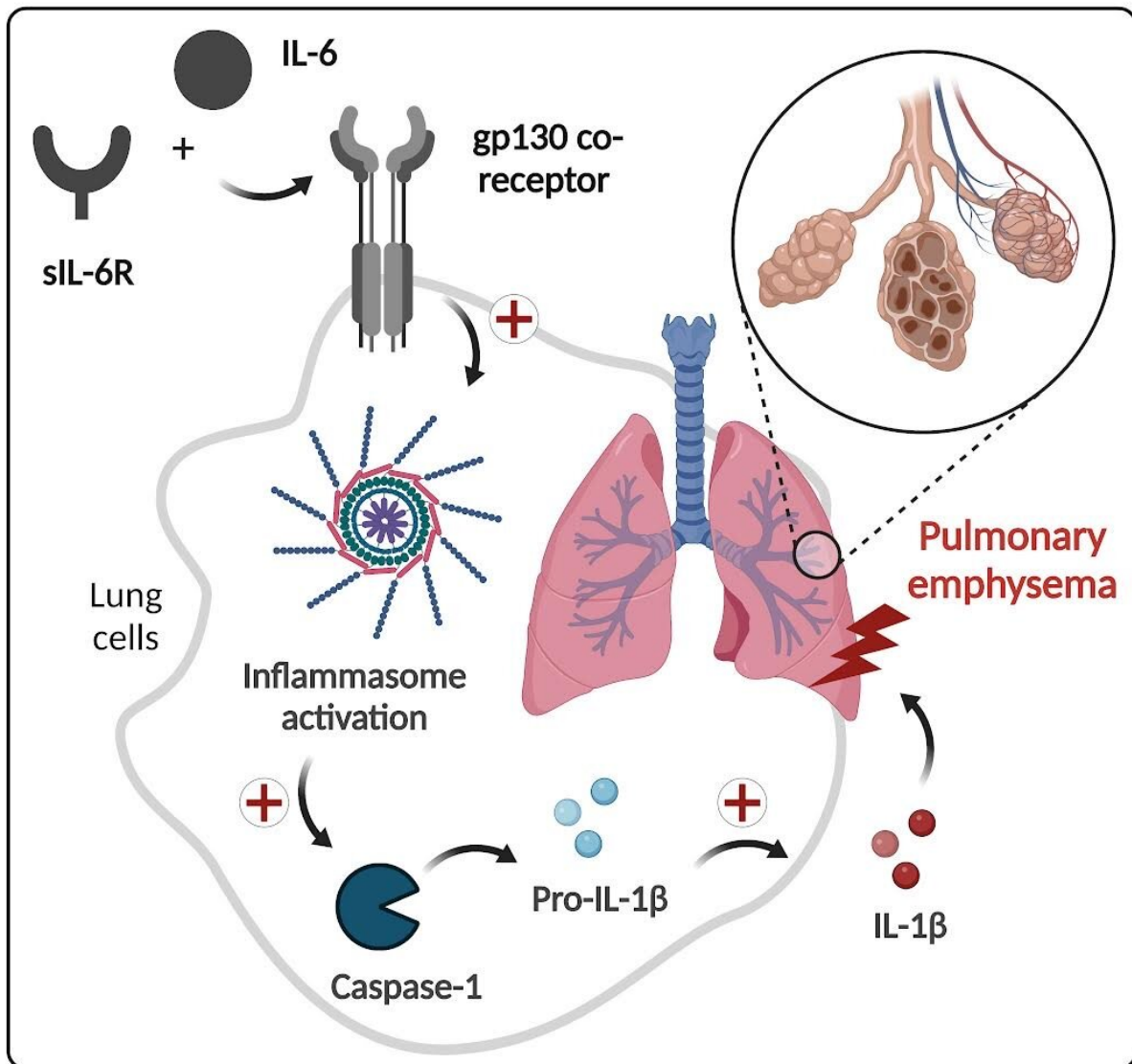


Isolating the molecules that trigger emphysema

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Credit: Hudson Institute of Medical Research

Emphysema is the major debilitating component of the lethal chronic obstructive pulmonary disease (COPD), which was the third leading cause of death worldwide in 2019, causing 3.23 million deaths.

Researchers at Hudson Institute are investigating how uncontrolled activation of the immune system in the lung causes [emphysema](#), and how to prevent it.

Slowing emphysema progress

Professor Brendan Jenkins' research has revealed that a multiprotein complex of the innate immune system, called inflammasomes, promotes the development of emphysema.

His research, as part of a team comprising Australian, German, Swiss and American researchers, is published in *Proceedings of the National Academy of Sciences*.

Prof Jenkins said this opens the possibility of new emphysema treatments targeting the [immune system](#), which could slow emphysema's progress in the lungs.

Immune-based emphysema therapeutics

"These findings lay the foundation for the future design and clinical application of novel innate immune-based therapeutics against emphysema," he said.

"It is significant research, because it's the first to demonstrate a specific pathological role for the AIM2 inflammasome in emphysema, in which

we delineate a function for AIM2 in driving alveolar cell death in the lung that is independent of immune cell activity and inflammation."

Emphysema facts

- Emphysema is the major debilitating component of the lethal chronic obstructive pulmonary disease (COPD), which the World Health Organization says was the third leading cause of [death](#) worldwide in 2019.
- Together, lung cancer and emphysema claim around 15,000 lives in Australia each year.
- Patients with emphysema are at an increased risk (between 25 and 30%) of also developing [lung cancer](#), the most lethal [cancer](#) in the world.

More information: Saleela M. Ruwanpura et al, Cross-talk between IL-6 trans-signaling and AIM2 inflammasome/IL-1 β axes bridge innate immunity and epithelial apoptosis to promote emphysema, *Proceedings of the National Academy of Sciences* (2022). [DOI: 10.1073/pnas.2201494119](#)

Provided by Hudson Institute of Medical Research

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