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Novel therapeutic approach against severe COVID-19 in males

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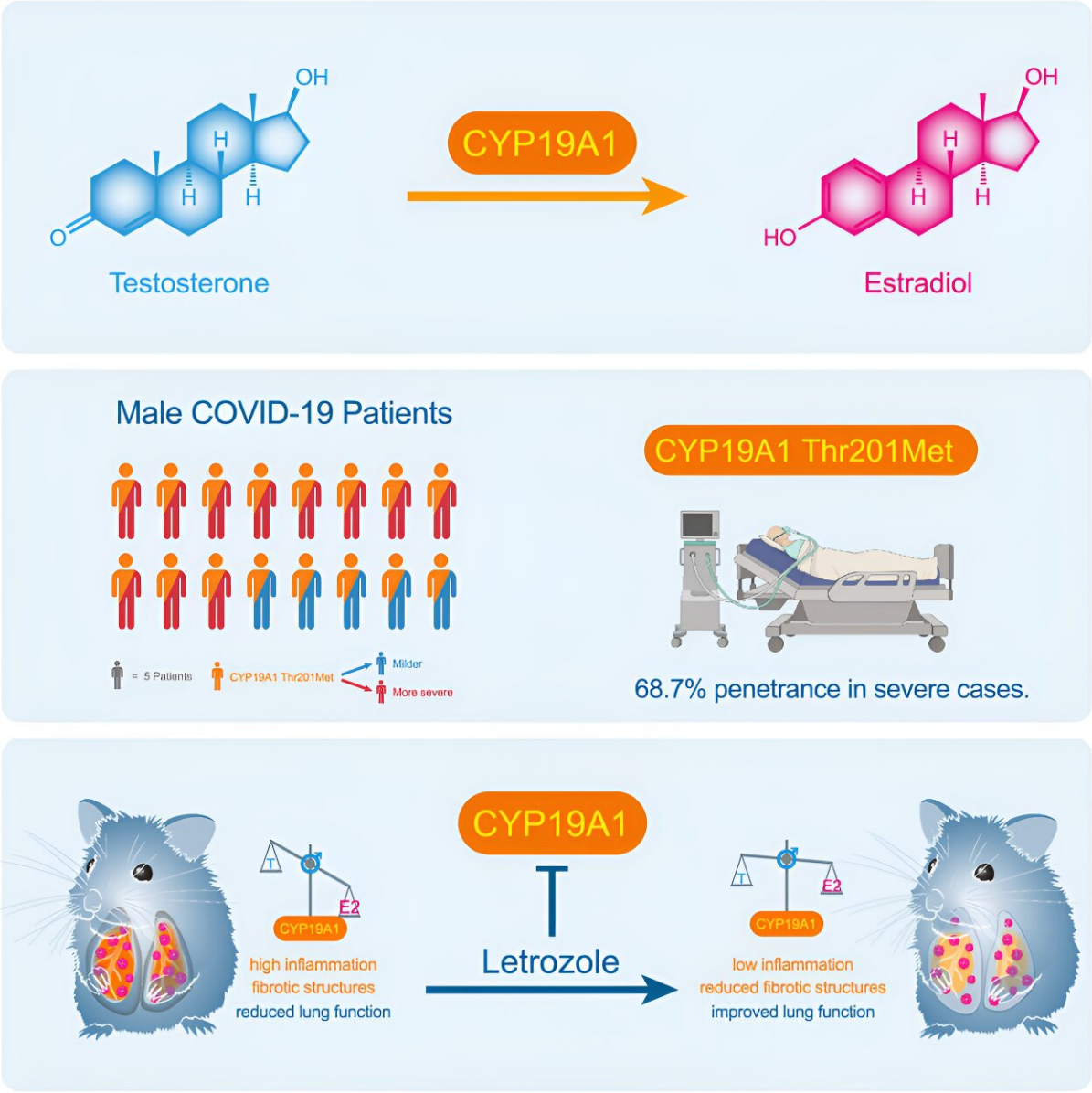

Credit: *Cell Reports Medicine* (2023). DOI: 10.1016/j.xcrm.2023.101152

Retrospective analyses of epidemiologic data have repeatedly shown that COVID-19 mortality is higher in males compared to females. However, the underlying factors mediating sex-specific disease outcome were largely unknown.

In a new study published in *Cell Reports Medicine*, an interdisciplinary research team analyzed genetic data obtained from 2,866 COVID-19 patients and identified a mutation in the CYP19A1 gene that is associated with an increased risk for hospitalization in male patients. CYP19A1 plays a key role in testosterone metabolism. Lung samples analyzed from deceased COVID-19 patients also showed increased expression of the CYP19A1 gene in male patients compared to female patients. These findings suggest that this gene is involved in sex-differences observed in COVID-19 outcomes.

"This collaborative work stresses the importance of host genetics in understanding molecular mechanisms of severity and treatment of viral disorders," says Professor Alessandra Renieri of the University of Siena who provided the genetic data of the large COVID-19 cohort.

Preclinical studies in animal models confirmed these findings. Treatment of SARS-CoV-2-infected animals with the aromatase inhibitor letrozole improved long-term lung function and restored hormonal balance, particularly in male animals. This suggests that aromatase inhibitors may provide a promising therapeutic strategy for the treatment of male COVID-19 patients.

Professor Gülşah Gabriel confirms the importance of international and interdisciplinary collaboration and highlights, "Our collaborative

findings may form a basis for individualized therapeutic strategies against COVID-19."

More information: Stephanie Stanelle-Bertram et al, CYP19A1 mediates severe SARS-CoV-2 disease outcome in males, *Cell Reports Medicine* (2023). DOI: 10.1016/j.xcrm.2023.101152

Provided by Leibniz-Institut für Virologie (LIV)

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