

New method enables improved drug target validation for COPD treatment

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Scientists at Helmholtz Zentrum München have succeeded in testing the effectiveness of new approaches for treating chronic obstructive pulmonary disease (COPD) on ex vivo 3D human lung tissue cultures (3D-LTCs). The results have now been published in the *European Respiratory Journal*.

Together with clinical partners, a team led by Dr. Dr. Melanie Königshoff and the doctoral student Franziska Uhl at the Comprehensive Pneumology Center of Helmholtz Zentrum München have investigated, for the first time, the suitability of Wnt/beta-catenin activation to initiate repair in patient-derived COPD [lung tissue](#). To achieve this, the researchers used a variety of chemical, biological and imaging techniques.

"In our study we showed that activation of the Wnt / beta-catenin - signaling pathway induces lung tissue repair, depending on the patient's stage of COPD," said Königshoff. The method developed by her team represents a powerful new tool for pathological assessment, drug validation, and mechanistic studies in patient-derived lung tissue, which will open novel avenues for successful clinical translation and precision medicine.

New method represents important advancement

"Previously, studies largely relied on animal models, and cell cultures in

the petri dish were limited to two dimensions and individual time points," said Uhl. The new method makes it possible to visualize diseased lung tissue of patients and possible repair mechanisms in 3D with high spatio-temporal resolution, providing valuable insight into lung pathologies and suitable therapeutic avenues.

This method closes the gap that formerly existed between target identification and preclinical validation of drug compounds and their application in the patient. "We hope in this way to develop long-term treatments that induce lung tissue repair in the patients," said Königshoff.

Next, the research team plans to expand the study by increasing the patient cohort, and further optimize new treatment approaches for patients with COPD. Moreover, the team is currently extending the application to other [lung diseases](#) such as pulmonary fibrosis and [lung cancer](#).

More information: "Preclinical validation and imaging of Wnt-induced repair in human 3D lung tissue cultures." [DOI: 10.1183/09031936.00183214](#)

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