New approach for treating idiopathic pulmonary fibrosis

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Researchers at Helmholtz Zentrum München, in collaboration with an international team, have identified a potential novel drug target for idiopathic pulmonary fibrosis, a dangerous chronic lung disease. They elucidated a new mechanism of fibrosis formation that plays an important role in the pathogenesis of the disease. These findings have now been published in the leading scientific journal *American Journal of Respiratory and Critical Care Medicine*.

Idiopathic pulmonary fibrosis (IPF) is a chronic lung disease for which as yet no causal therapy exists. It is, however, known that the lung interstitium – the connective tissue between the air sacs in the lower part of the lung – is affected. There scar tissue consisting mainly of collagen accumulates, thus reducing lung elasticity and gradually impairing lung function. Patients with IPF have an extremely poor prognosis; on average they survive only two or three years after the diagnosis has been made.

Analysis of patient data

Prof. Dr. Oliver Eickelberg and Dr. Claudia Staab-Weijnitz of the Comprehensive Pneumology Center (CPC) at Helmholtz Zentrum München and their colleagues at LMU University Hospital in Munich and Yale University School of Medicine have now discovered a new therapeutic target for IPF. The main focus of their research was to identify causative mechanisms involved in the disease. The researchers

analyzed microarray data of samples from German patients and from an IPF cohort of the Lung Tissue Research Consortium in the U.S.

The analysis revealed elevated levels of the protein FKBP10 in the lungs of IPF patients. The researchers hypothesized that if the production or activity of the protein could be inhibited, this might lead to a new therapeutic approach. Further experiments confirmed that knockdown of this protein in IPF fibroblasts diminished the collagen synthesis. "Thus, FKBP10 represents a potential new target molecule for the individualized therapy of IPF," said Claudia Staab-Weijnitz. "In the future, these results could also lead to new therapeutic options for the treatment of other fibrotic diseases."

New ways to understand the disease cause

Eickelberg has made the study of IPF one of his key priority research areas. Together with his team of researchers, he is studying the pathogenic mechanisms with the aim to develop causal therapies – and thus one day to actually cure IPF. In the short term, however, the main focus is on delaying the progression of the disease and alleviating the symptoms. "My foremost objective is to help develop an effective treatment that will completely halt the progression of IPF in the patient," said Eickelberg. "These approaches are best developed in international networks. This cooperative project is a direct result of the research stay of Professor Kaminski (Yale) at the CPC through the support of a Helmholtz International Fellow Award (HIFA)."

"With our translational approach," said Eickelberg, "we want to help alleviate the suffering of patients with lung disease." In the case of IPF, the researchers now want to establish a drug screening assay and begin clinical trials with an FKBP10 inhibitor, an agent to inhibit the production or activity of the FKBP10 protein.

More information: "FK506-binding Protein 10 is a Potential Novel Drug Target for Idiopathic Pulmonary Fibrosis." *Am J Respir Crit Care Med*. 2015 Jun 3. www.ncbi.nlm.nih.gov/pubmed/26039104

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