

Translating Omics studies into clinically relevant insights for lung fibrosis patients

Initiative: zukunft.niedersachsen (nur ausgewählte Ausschreibungen)

Ausschreibung: Big Data in den Lebenswissenschaften der Zukunft

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Laufzeit:

Lung fibrosis is responsible for 10 billion Euro health care costs and in Europe about 750.000 individuals suffer from it. Idiopathic pulmonary fibrosis (IPF) is the most common manifestation with an estimated median survival time of 3 years and a variable course. The number of deaths due to fibrosis is two times higher than that of cancer. After more than 2 decades of frustrating research, available therapies only increase median survival of treated patients to 4.5 - 5 years. A major part of the difficult drug development history for IPF is caused by major limitations of available models. Recent advances in single cell RNA sequencing technologies allow researchers to capture the cellular activity in the fibrotic lung with unprecedented detail. They can study subpopulations of cells by integrative computational analysis to further the understanding of underlying mechanisms and pathways of IPF. Furthermore applying these data in the area of pharmaceutical risk assessment, the disease signatures will allow for the design of alternative methods for hazard characterization and by this reduce the need for animal testing. Given the complexity of fibrotic disease and the technology challenges and opportunities provided by novel sequencing technologies, a core strength of this project is its interdisciplinary approach, combining expertise in medicine, biology, and data science across three of Hannover's leading research institutions.

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