

Detection of Glutathionylated Proteins

Inventor: Yvonne Janssen-Heininger, et al.

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Overview

Idiopathic pulmonary fibrosis (IPF) is a chronic lung disease characterized by progressive scarring and thickening of lung tissue. This lung tissue remodeling results in a permanent loss of pulmonary function. The treatment of IPF has long revolved around disease management rather than prevention and reversal of pathological changes to lung tissue. However, current research efforts are focused on the development and assessment of disease-modifying therapies. These efforts require reliable disease markers to evaluate the effectiveness of potential treatments.

Professor Yvonne Janssen-Heininger of the University of Vermont has discovered that a particular redox-dependent protein modification is elevated in fibrotic lung tissue.

Invention

A tool to investigate the development of fibrotic changes. This redox-based protein modification amplifies cell death, which is recognized as a crucial step in the remodeling of lung tissue in IPF.

The lungs of patients with IPF have increases in oxidative stress, and the observed redox imbalance has been implicated in the pathogenesis of the disease. This imbalance results in the conjugation of glutathione to cysteine residues, a modification known as protein S-glutathionylation (PSSG). Accordingly, elevated levels of PSSG have been detected in fibrotic lung tissue and promote apoptosis, a critical event in the development of fibrosis. Reducing PSSG levels can prevent cell death and reverse existing fibrosis. Thus, PSSG both serves as an important marker for IPF and is mechanistically linked to the pulmonary cell death associated with fibrotic changes.

Advantages

Detects PSSG, a redox-based modification that is found at high levels in IPF.

Highly specific in comparison to antibody-based techniques and detects only PSSG.

Can be used to detect PSSG in situ , allowing researchers to identify regional and stimulus-specific changes in PSSG content.

More sensitive than other available tests, requiring only a small amount of tissue. Suitable for clinical applications.

Applications

Hospitals, Research centers,
Biomedical markets

Patent Status

Patent Application Filed
Worldwide Rights Available

Learn more about Dr. Janssen's research at:
bit.ly/1ddr4IW

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