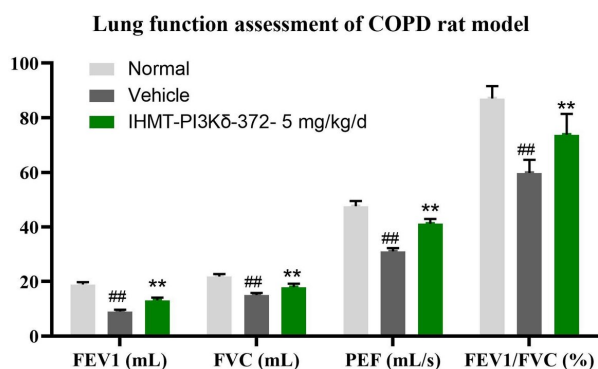


# Researchers discover inhibitor for chronic obstructive pulmonary disease

3 December 2020, by Zhang Nannan



In vivo efficacy evaluation of IHMT-PI3K $\delta$ -372 in a lung inflammation rodent model. Credit: LI Feng

Recently, a research team led by Profs. Liu Qingsong and Liu Jing from the Institute of Health & Medical Technology of the Hefei Institutes of Physical Science (HFIPS) discovered a potent and selective PI3K $\delta$  inhibitor IHMT-PI3K $\delta$ -372, effective against chronic obstructive pulmonary disease (COPD) in vivo.

COPD is a chronic progressive respiratory disease characterized by airflow limitation and associated with abnormal inflammatory response of the lung. In recently years, it is becoming a major health problem and the third cause of death worldwide. Although oral administration of PI3K $\delta$  inhibitor is reported to exhibit adverse effects as an [anti-cancer drug](#) in the clinic, inhaled [drug delivery](#) for respiratory disease may result in a potential reduction or avoidance of systemic side effects by delivering drugs directly to the site of action.

In this study, the researchers adopted a fragment hybridization strategy and discovered a novel PI3K $\delta$  inhibitor IHMT-PI3K $\delta$ -372 through medicinal chemistry exploration.

The compound showed high potency against PI3K $\delta$ , and meanwhile exhibited high selectivity over other class I PI3Ks as well as a low risk of hERG-mediated cardiac toxicity. Notably, it displayed favorable pharmacokinetic properties for inhaled delivery and improved lung function in a rodent model of pulmonary inflammation.

These results suggest that IHMT-PI3K $\delta$ -372 might be a new potential therapeutic candidate for COPD.

**More information:** Feng Li et al. Discovery of (S)-2-(1-(4-Amino-3-(3-fluoro-4-methoxyphenyl)-1H-pyrazolo[3,4-d]pyrimidin-1-yl)propyl)-3-cyclopropyl-5-fluoroquinazolin-4(3H)-one (IHMT-PI3K $\delta$ -372) as a Potent and Selective PI3K $\delta$  Inhibitor for the Treatment of Chronic Obstructive Pulmonary Disease, *Journal of Medicinal Chemistry* (2020).

[DOI: 10.1021/acs.jmedchem.0c01544](https://doi.org/10.1021/acs.jmedchem.0c01544)

Provided by Chinese Academy of Sciences

APA citation: Researchers discover inhibitor for chronic obstructive pulmonary disease (2020, December 3) retrieved 15 May 2021 from <https://medicalxpress.com/news/2020-12-inhibitor-chronic-obstructive-pulmonary-disease.html>

*This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.*