



[Billing Code 4140-01-P]

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Government-Owned Inventions; Availability for Licensing

AGENCY: National Institutes of Health, HHS.

ACTION: Notice.

SUMMARY: The inventions listed below are owned by an agency of the U.S. Government and are available for licensing to achieve expeditious commercialization of results of federally-funded research and development.

FOR FURTHER INFORMATION CONTACT: Licensing information may be obtained by communicating with Vidita Choudhry, Ph.D., National Heart, Lung, and Blood, Office of Technology Transfer and Development, 31 Center Drive Room 4A29, MSC2479, Bethesda, MD 20892-2479; telephone: 301-594-4095; email: vidita.choudhry@nih.gov. A signed Confidential Disclosure Agreement may be required to receive any unpublished information.

SUPPLEMENTARY INFORMATION: Technology description follows.

Reducing bloodstream neutrophils as a treatment for lung infection and inflammation

During lung infection, bloodstream neutrophils (PMNs) responding to infection travel to

the airspace lumen. Although successful arrival of microbicidal PMNs to the airspace is essential for host defense against inhaled pathogens, excessive accumulation of PMNs in the lung contributes to the pathogenesis of several prevalent lung disorders, including acute lung injury, bronchiectasis, and chronic obstructive pulmonary disease (COPD). Unfortunately, there is no treatment for controlling PMN accumulation in the lung. The subject invention describes epithelial membrane protein 2 (EMP2) as a lung epithelial protein that regulates PMN entry into the inflamed airspace. EMP2 knockout mice have reduced PMN accumulation and exhibit increased survival during bacterial infection. Inhibition of EMP2 can potentially reduce intra airway PMN accumulation and provide a specific treatment for various lung disorders.

Potential Commercial Applications:

Development of EMP2 inhibitor for treatment of neutrophil-dependent lung disorders, such as:

- acute lung injury
- pneumonia (bacterial, viral, fungal)
- bronchiectasis
- COPD and asthma
- radiation- or chemotherapeutic-induced pneumonitis
- idiopathic or induced interstitial lung disease
- bronchopulmonary dysplasia
- lung transplant rejection

Competitive Advantages:

- EMP2 can selectively target PMN accumulation in the lung, rather than broadly affecting PMN trafficking through all tissues.

Development Stage:

- Early stage
- *In vitro* and *in vivo* (animal) data available

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Intellectual Property: HHS Reference No. E-125-2018-0; U.S Provisional Patent Application 62/664,805 filed April 30, 2018, International Patent Application PCT/US2019/29801 filed on April 30, 2019.

Publications: Lin WC, Gowdy KM, Madenspacher JH, *et al.* Epithelial membrane protein 2 governs transepithelial migration of neutrophils into the airspace. *J Clin Invest.* 2020;130(1):157-170.

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This notice is made in accordance with 35 U.S.C. 209 and 37 CFR Part 404.

Dated: September 28, 2020.

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[FR Doc. 2020-21709 Filed: 9/30/2020 8:45 am; Publication Date: 10/1/2020]