University of Cincinnati researcher receives US patent for potential COPD treatment

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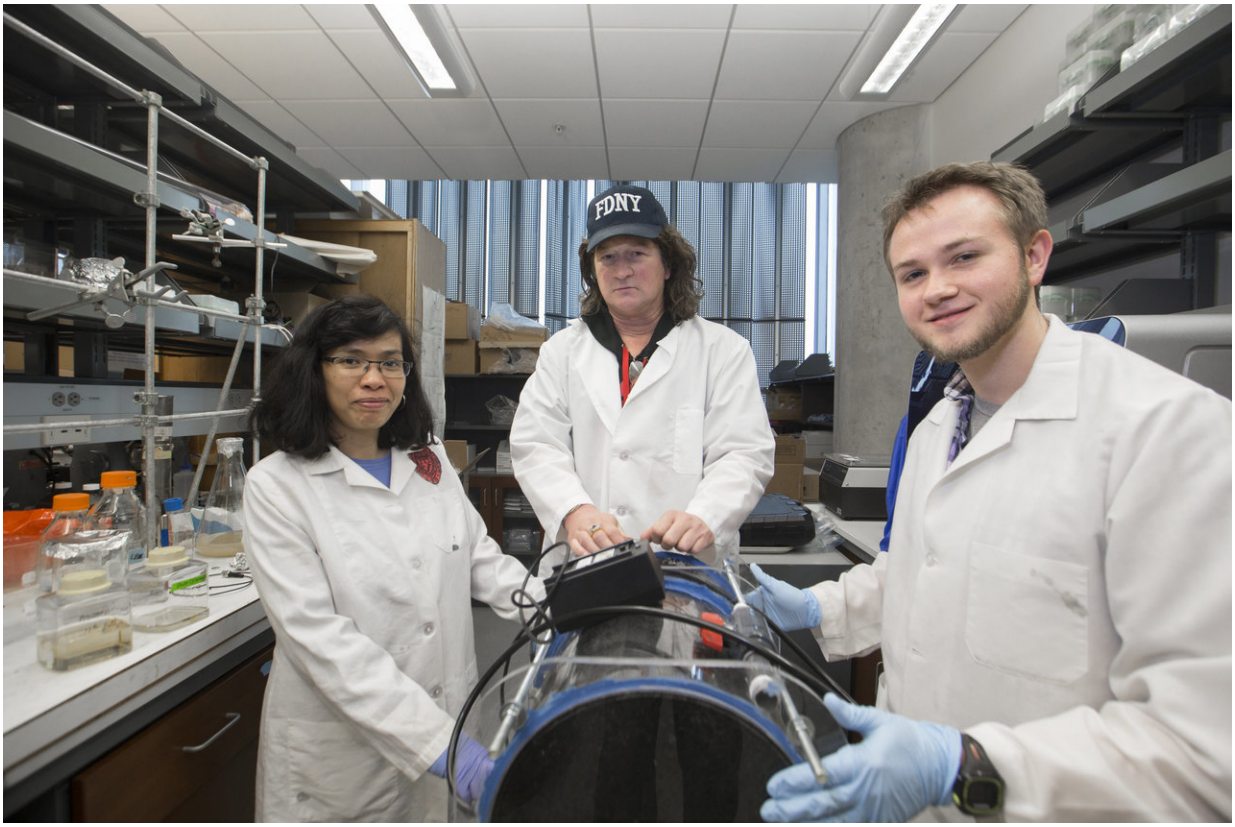

Daniel Hassett, Ph.D., (center) is shown with Warunya Panmanee, Ph.D., research associate, (left) and Cameron McDaniel, Ph.D. student (right) in a laboratory in the UC College of Medicine. Credit: University of Cincinnati

A researcher in the University of Cincinnati (UC) College of Medicine

has been granted a U.S. patent for a potential treatment for a pulmonary infection in patients with cystic fibrosis (CF) and chronic obstructive pulmonary disease (COPD).

The treatment, known as AB569, was developed in the lab of Daniel Hassett, PhD, a professor in the UC Department of Molecular Genetics, Biochemistry and Microbiology. AB569 is a potential treatment for many antibiotic-resistant organisms including, Pseudomonas aeruginosa (P. aeruginosa), which causes pulmonary infections in patients with CF and COPD. The drug has been licensed by the university exclusively to Arch Biopartners, a Toronto-based publicly traded biotechnology company. Hassett is a stockholder and principal scientist at Arch.

"This is some extremely positive and very timely news," says Hassett. "AB569 can be a global game changer and has the potential to positively impact lives around the world."

The U.S. Patent and Trademark Office issued patent #9,925,206 to the University of Cincinnati on March 27, 2018, on which Hassett is the inventor.

CF is a genetic disease that causes persistent lung infections and progressively limits the ability to breathe. In people with CF, a defective gene causes a buildup of thick, dehydrated mucus in the lungs, pancreas and other organs. There are about 40,000 cystic fibrosis patients in the U.S. and more than 70,000 worldwide.

COPD is a progressive disease that makes it hard for individuals to breathe. The condition worsens over time and its symptoms include wheezing, shortness of breath, chest tightness and coughing up large amounts of mucus. Cigarette smoking is the leading cause of COPD, but it can also affect individuals exposed to other lung irritants such as air pollution, chemical fumes or dusts. An estimated 251 million people

worldwide have COPD, according to the World Health Organization.

Hassett's earlier work on CF found that P. aeruginosa was susceptible to destruction by slightly acidified sodium nitrite. In his continued effort to combat CF and COPD, he discovered a synergistic effect by adding disodium ethylenediaminetetraacetic acid to acidified sodium nitrite, which led to the development of AB569.

P. aeruginosa is a significant cause of bacterial respiratory infections in patients who have CF or chronic obstructive pulmonary disease (COPD). It is also a common cause of other pneumonias. Once patients have the antibiotic-resistant mucoid form of P. aeruginosa, however, their overall lung function precipitously declines, resulting in a poor clinical prognosis.

P. aeruginosa colonizes the airways of about 40 percent of CF patients between the ages of 6 and 10. By the age of 17, the frequency of infection increases to more than 50 percent and reaches approximately 60 percent of all cystic fibrosis patients between the ages of 25 and 34.

AB569 is to be administered to patients as a nebulized (inhaled) solution or powder.

Hassett says his work to combat CF dates from his days as post-doctoral fellow at Duke University and the University of North Carolina Chapel Hill when he met CF expert, Richard Boucher, MD, and saw first-hand how families were impacted by the genetic disease, responsible for persistent lung infections that limit the ability to breathe.

"I started meeting people who had cystic fibrosis and found out they would cough up their sputum; it was really smelly, greenish looking stuff, and there was no good treatment for it," says Hassett. "I said then, 'It's going to be my life's goal to find a major treatment where we kill

these nasty antibiotic-resistant bacteria.'"

About 30 percent of patients entering Cincinnati VA Medical Center have COPD and they acquire similar although often not identical infections those with CF, explains Hassett. "Our hope is to provide some relief to our brave veterans and service members with COPD battling chronic bacterial infections."

Hassett says he is working with physicians at the Cincinnati VA Medical Center who have started a Phase 1 human trial in healthy volunteers testing the safety and pharmacokinetic profile of AB569. If the trial is successful, a Phase II study will test AB569 as a treatment for antibiotic resistant bacterial infections in the lungs, which chronically infect COPD and CF patients.

"We are excited that a patent is now issued for AB569, a drug developed by Dr. Hassett, a nationally-renowned faculty member at the UC College of Medicine," says Jason Heikenfeld, assistant vice president of commercialization in the UC Office of Innovation. "Dr. Hassett and the College of Medicine are critical partners as UC advances its innovation agenda here on campus, regionally and globally. We look forward to our continued partnership with Arch Biopartners."

Provided by University of Cincinnati Academic Health Center