

Pulmonary arterial hypertension targeted for new treatment

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Scientists at the University of Sheffield, working in collaboration with drug and vaccine developer Kymab Ltd, Cambridge, have identified a novel antibody that has the potential to become a new treatment for

pulmonary arterial hypertension (PAH).

Research published today in *Nature Communications* (Friday 15 November 2019) from the University's Department of Infection, Immunity and Cardiovascular Disease shows that treatment with a specific antibody can reverse the process behind the development of PAH, and will now be considered for clinical development.

Pulmonary arterial hypertension or PAH is a rare but fatal [disease](#) with the only cure being lung transplantation. It results in high blood within the lungs due to the constriction and overgrowth of the cells within the arteries that supply blood to the lungs.

Over time this growth restricts blood flow through these vessels, putting strain on the heart and eventually causing heart failure.

A therapeutic human anti-OPG antibody was found to stop the progress of the disease in experimental lab rodent and cell models, and reverse the proliferation of cells which cause the arteries to thicken.

Allan Lawrie, Professor of Translational Cardiopulmonary Science at the University of Sheffield, said: "Current treatments for PAH ease the symptoms by relaxing and dilating the affected blood vessels which can help extend the life expectancy for those living with PAH, but they do not stop the underlying drivers of the disease.

"The great benefit of this research is the potential for this new drug to be used in conjunction with current treatments, to ease symptoms and further halt or reverse the progression of the disease."

PAH is a [rare disease](#), affecting less than one in 2000 people and has 'orphan disease' designation, meaning that despite smaller numbers of patients affected there is a recognised need for effective treatments to be

developed.

Sheffield Teaching Hospitals NHS Foundation Trust and the University of Sheffield are one of the largest specialist centres in the world for diagnosis, treatment and leading research into PAH, with this study being the first time that this particular mechanism of the disease has been targeted with a therapeutic human antibody.

"The support from the Medical Research Council in collaboration with Kymab Ltd—which generated the antibody—and the British Heart Foundation to fund this research through the recently formed Donald Heath Research Programme in Sheffield is a hugely significant recognition of the importance of research in this field of medicine which aims to improve the outcome for patients suffering from PAH," added Professor Lawrie.

More information: Nadine D. Arnold et al. A therapeutic antibody targeting osteoprotegerin attenuates severe experimental pulmonary arterial hypertension, *Nature Communications* (2019). [DOI: 10.1038/s41467-019-13139-9](https://doi.org/10.1038/s41467-019-13139-9)

Provided by University of Sheffield

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