

CIC biomaGUNE participating in the 14th anniversary of the Pulmonary Hypertension Foundation

Ikerbasque professor Jesús Ruiz-Cabello, who is senior researcher in CIC biomaGUNE's [Molecular and Functional Biomarkers](#) group, a CIBERES researcher, and specialist in pulmonary vascular diseases, is participating in the events to mark the 14th anniversary of the [Pulmonary Hypertension Foundation](#). For November 24 the foundation has organized an extensive [program](#) which will be attended, in addition to other guests, by professionals who work on a day-to-day basis to combat pulmonary arterial hypertension (PAH), a rare, serious, progressive and chronic disease characterized by high blood pressure that affects the blood vessels that carry blood from the heart to the lungs (the pulmonary arteries). Professor Ruiz-Cabello is set to participate alongside researchers from Stanford University, La Paz University Hospital and the Complutense University of Madrid in a scientific round table on genetic research into PAH.

The Pulmonary Hypertension Foundation raises funds annually for the Empathy project, through which collaborative research is carried out to identify biological markers that can facilitate, firstly, the early diagnosis of PAH and, secondly, to find new avenues of treatment that may lead to a cure for the disease.

In individuals with PAH, the pulmonary arteries become narrowed, so the heart has to work harder to pump blood. As a result, affected individuals may feel very tired, dizzy, short of breath or experience other symptoms. Over time, the heart weakens and this can lead to heart failure. This produces a hemodynamic disorder caused, although not exclusively, by a primary alteration of the pulmonary vessels or, as is more common in elderly patients, may develop as a complication of other pulmonary diseases or may have its origin in left ventricular dysfunction. Fortunately, recent advances in the understanding of the biopathology of this disease have led to the development of new drugs that provide significant benefits, both in terms of survival and patient well-being.

However, we are still a long way from finding the optimal solution as many patients are relatively young and current survival in newly diagnosed cases has only reached 65% 3 years after diagnosis, and the patients have other associated comorbidities. There is still a long way to go before we can come up with a cure and a diagnosis for this disease. So there is an urgent need to find new therapeutic approaches and diagnostic tools to detect the disease earlier, accurately monitor its progression and treat it more efficiently.

The CIC biomaGUNE group led by Prof Ruiz-Cabello is mainly interested in studying pulmonary vascular diseases using a range of approaches, designing various diagnostic tools and testing their development according to environmental parameters or habits, such as exercise, diet, etc. The study of pulmonary circulation and the right ventricle is a field of growing interest and its relevance is becoming increasingly prominent. In this respect, the research group is working on the discovery of biomarkers based on molecular imaging techniques, such as PET and flow Magnetic Resonance Imaging.

The biomarkers will be developed in combination with the structural, molecular and functional information obtained by these imaging techniques. The imaging data are being correlated with molecular data on disease mechanisms obtained by omics techniques, such as proteomics and metabolomics, to understand the different phenotypes and the varying response to treatment.

This approach is opening up fresh perspectives in the study of these complex diseases. The ultimate goal of these biomarkers is clinical application for the diagnosis, monitoring and evaluation of response to treatment in patients with diseases affecting pulmonary circulation.