CNIC Conference brings together international experts in mechanobiology

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Mechanical forces are the major drivers of development, physiology, and diseases of the cardiovascular system

On November 4 and 5 the *Centro Nacional de Investigaciones Cardiovasculares Carlos III* (CNIC) held the VI CNIC Conference, a key international event in the scientific calendar for researchers in the cardiovascular field. The recent meeting was organized by four CNIC researchers—Jorge Alegre-Cebollada, Nadia Mercader, María Montoya, and Miguel Á. del Pozo—together with Martin Schwartz from Yale University. The meeting, titled '**Mechanical forces in physiology and disease**', brought together international research leaders with expertise in very different areas of mechanobiology, including research technology, cell biology, animal models, human disease, and development.

We live in a gravitational field, and this simple fact ensures that mechanical forces have a profound influence on biological systems. Mechanical forces are the major drivers of development, physiology, and diseases of the cardiovascular system. Mechanical forces act on every biological level: molecules, cells, tissues, organs, and the whole organism. Development of blood vessels and the heart is determined by blood flow; defects in the contractile machinery induce myocardial remodeling that gives rise to cardiomyopathies; atherosclerosis is produced in arterial regions subject to blood-flow alterations; and hypertension and vessel-wall rigidity are the main risk factors for myocardial infarction and stroke.

Models

Among the many eminent speakers at the conference, some of the highlights were Lasker Award winner Mike Sheetz, a pioneer in the field and director of the Mechanobiology Institute in Singapore and professor at Columbia University; Valerie Weaver, professor and director at the Center for Bioengineering and Tissue Regeneration and codirector of the Bay Area Center for Physical Sciences and Oncology (UCSF); Jochen Guck, researcher at BIOTEC - Biotechnology Center TU Dresden (Germany); and Professor Julio M. Fernández, from Columbia University in New York.

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