Sex- and Gender-Specific Mechanisms in Myocardial Hypertrophy

Research Training Group (GK-754I-III)

Research Focus

Myocardial hypertrophy (MH) is one of the most frequent precursors of heart failure (HF) in humans. MH is induced by different stimuli, such as pressure overload, hypertension, ageing, diabetes or myocardial ischaemia. Until now, sex- and gender-specific aspects in the clinical features, genetics, pathomechanisms and molecular phenotypes in the myocardium have been underestimated. Under the same level of mechanical stress and neurohumoral stimulation, women develop less cardiac hypertrophy and less systolic dysfunction compared to men. However, a severe cardiac hypertrophy has more adverse consequences for women than for men. The molecular basis of sex differences may be related to the effect of sex hormones on the myocardium. Experimental results point to an impact of estrogen or testosterone on NO-synthesis, on the endothelin system, the renin-angiotensin system, lipid and glucose metabolism, expression of contractile proteins, proliferation, growth and aging processes. The scientific aim of this graduate program is to analyse the mechanisms of sex-specific differences in the pathophysiology of myocardial hypertrophy.

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Disciplines

Due to the complexity of the phenomena, all scientific approaches are organized in an interdisciplinary manner. A detailed and carefully elaborated study programme teaches sex and gender aspects in cardiology, nephrology, pharmacology, physiology, biology, and health sciences, genomics und proteomics. This creates significant added value for the students. The participating medical students learn principles and methods of basic research, while the scientists get across the basics of medical science. We have the goal to educate highly qualified young scientists for interdisciplinary research projects as a prerequisite for international competitiveness.

Institutions Involved

The program collaborates with outstanding partners in the molecular medicine groups as well as the new institute of gender in medicine (GiM) in Berlin. Most of the groups in the graduate course are located in the Center for Cardiovascular Research (CCR), some groups are also located at the Campus Benjamin Franklin, the Campus Mitte, Campus Virchow and the Campus Buch of the Charité.

Admission

11 PhD + 2 MD studentships were offered for each funding period. A number of projects have been designed for PhD students. They are all integrated into running projects and also supported by external funding.

Start of Program

The graduate school started in October 1st 2001 and is now in the third funding period until October 2010.

Application Deadline

Applications are not accepted at the moment, but associates are welcome.

Language of Instruction

English

Website

www.charite.de/graduiertenkolleg754