Congenital Heart Defects (CHD) are defects in the heart at birth affecting 1% of the population. Majority of CHD do not have genetic origins suggesting that abnormal forces inside the developing heart due to altered blood flow is a major source. Recent evidence via ultrasonography on suspected fetal hearts with cardiac defects has documented the worsening effects of cardiac malformations over gestation. This has motivated the development of in utero interventions for CHD where the potential exists for restoring blood flow inside fetal heart, which would lead to rescuing altered morphogenesis before birth. Progress to date has been limited because of the inadequacy of embryonic animal studies investigating how disease is progressing under altered blood flow and how defects are rescued under restored blood flow. Avian embryos are ideal to study CHD because of the resemblance between human and avian hearts. The applicant has recently generated techniques for visualizing blood flow inside chicken embryo hearts and computationally simulating this flow to quantify blood flow related forces inside these hearts. In this proposal he will be applying these techniques for a well established animal model for a severe CHD, hypoplastic left heart syndrome, to dissect the contribution of blood flow related forces on this disease. He will also evaluate the rescue potential of restoring blood flow for this disease. The results will highlight hemodynamics environment in the heart for progression and potentially rescue for a severe CHD. The techniques will also provide a rationalistic methodology for researchers studying heart disease. This will be the first study on the cardiovascular developmental bioengineering field in the associated country (Turkey). Technical guidance from applicant’s previous mentors in USA will enable timely adaptation of new developments in the field. Collaborations with other groups working in this field in Europe will contribute to European excellence.
Wissenschaftliches Gebiet

/Sozialwissenschaften/Soziologie/Demografie/Gebärhäufigkeit

/Medizin- und Gesundheitswissenschaften/Klinische Medizin/Embryologie

Programm/Programme

FP7-PEOPLE - Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Thema/Themen

FP7-PEOPLE-2009-RG - Marie Curie Action: "Reintegration Grants"

Aufforderung zur Vorschlagseinreichung

FP7-PEOPLE-2010-RG

Andere Projekte für diesen Aufruf anzeigen

Finanzierungsplan

MC-IRG - International Re-integration Grants (IRG)

Koordinator

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Aktivitätstyp
Higher or Secondary Education Establishments

EU-Beitrag
€ 100 000

Website

Die Organisation kontaktieren

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Dieses Projekt findet Erwähnung in ...