Principal Investigator
Dr Brent Richards

Applicant Institution
Jewish General Hospital, Lady Davis Institute, Medicine, 3755 Rue Cote Ste Catherine, Montreal, H3T 1E2, Canada

Application Number / Title
24268 - Genetic Determinants of Bone Mineral Density and Fractures

Lead Collaborators

1. Dr Douglas Kiel
2. Dr Fernando Rivadeneira

Collaborating Institutions and Addresses

1. Hebrew SeniorLife, Institute for Ageing Research, 1200 Center Street, Boston MA 02131, United States
2. Erasmus MC, Internal Medicine, Romm Ee5.79, 's-Gravendijkwal 230, Rotterdam 3015 CE, Netherlands

Keywords
Bone mineral density, fracture, genetics

Application Lay Summary

1a: We aim to identify genetic determinants of bone mineral density and fractures. Fractures are a common and costly medical problem, which are partially heritable. Understanding the genetic determinants of fracture will help us to understand what causes fracture.

1b: Our project meets the UK Biobank's aim of improving the prevention, diagnosis and treatment of serious and life threatening illnesses. The proposed study aims to better understand the pathophysiologic mechanisms which lead to fracture, by determining the genetic variants that predispose to fracture and low bone mineral density. Low bone mineral density is a clinically useful predictor of fracture and most of the genetic determinants for fracture identified to date also influence bone density.

1c: We propose to undertake a genome-wide association study of individuals in the UKBiobank who have had heel bone density measured, as well as, a genome-wide association study of fracture, using as cases individuals who have reported a bone fracture within the past five years and control individuals who have not reported a bone fracture within the past five years. Briefly, we will undertake an additive allelic association test between each single nucleotide polymorphism and these two traits (bone density and fracture)

1d: We request the full cohort.