



Indian Institute of Science  
Centre for BioSystems Science and Engineering  
**Seminar**



At 4 PM on 13<sup>th</sup> August 2018 (Monday)

MRDG seminar hall, 1st Floor Biological Sciences Building

### **Stem Cell - Immune Cell Interactions in Wound Repair and Fibrosis**

**Dr. Melanie Rodrigues**  
Stanford University

#### **Abstract**

Wound healing is one of the most heterogeneous processes in the human body. It involves the spatial and temporal synchronization of a variety of cell types with distinct roles in the phases of hemostasis, inflammation, growth, re-epithelialization and remodeling. With the evolution of single cell technologies, it has been possible to uncover the phenotypic and functional diversity within several of these cell types. There have also been discoveries of rare, stem cell subsets within the skin, which take on unique functions following injury. Here, I will describe the discovery of a rare circulating progenitor cell that is recruited to regions of vascular repair following injury. Next, I will describe cellular alterations in two states of impaired wound healing: chronic wounds as seen in diabetes, and fibrotic responses as evidenced during the foreign body response. Ultimately, identifying cellular populations and subsets, as well as their interactions with each other is important in understanding the mechanisms of normal wound closure and alterations in diseased states. A knowledge of these processes translates into the development of effective therapeutic solutions for healing wounds.

#### **About the Speaker**

Melanie completed her Bachelors in Biotechnology from Visvesvaraya Technological University (Bengaluru), Ph.D. in cell and molecular biology from University of Pittsburgh, and a postdoctoral fellowship in regenerative medicine from Stanford University. She is currently an instructor at the Hagey Laboratory for Pediatric Medicine, Stanford University. She is an author on over 35 publications, and is a technical consultant/scientific adviser to 3 startups in the Bay Area, USA. Her research interests are at the interface of stem cell biology, immunology and biomaterials, with the ultimate goal of translating science into technologies that can be used in the clinic.

