

# Understanding normal and aberrant stem cell biology to improve human health

SCIENCE AND  
INDUSTRY  
ENDOWMENT  
FUND

## Increasing our understanding of stem cell biology to improve outcomes in human health.

**the challenge** Diseases such as breast cancer and a range of disorders of blood cell production such as leukaemia, lymphoma, myelodysplastic syndromes and blood cell function (e.g. chronic inflammatory diseases such as arthritis) increase in prevalence with age. As a consequence of Australia's aging population, these diseases represent a major national challenge.

**the response** In order to gain insight into these types of diseases, the Stem Cell Biology Team is undertaking research focussed on the fundamental understanding of stem cell biology and developing a more comprehensive understanding of how resident stem cell populations are regulated. The Team will work together to further understand normal and aberrant stem cell biology, including extensive cellular, molecular and functional analyses of blood stem cells, their progeny and bone marrow environment. This information will be used to generate research tools and identify potential new drug targets.

**the collaboration** The project brings together two iconic Australian institutions with highly complementary expertise; CSIRO and the Walter and Eliza Hall Institute of Medical Research (WEHI) to create a team that is world class in fundamental research. CSL Ltd is also part of the collaboration and will be engaged throughout the project to realise ongoing opportunities and to help guide research towards commercial and clinical impact.

**projected impact** The fundamental intention of this project is to reduce the health care burden on Australia through:

- The development of new medicines to mobilise blood stem cells, thus improving the outcomes of bone marrow transplantation.
- Extensive preclinical evaluation of new stem cell mobilisation medicines.
- Directly influence in the treatment of breast cancer and a range of disorders of the blood production (e.g. leukaemia, lymphoma and myelodysplastic syndromes) and function (e.g. chronic inflammatory disease such as arthritis).
- The development of technologies for use in blood cell bioreactors.



For further information  
SIEF Manager  
t +61 3 9545 7952  
e [sief@sief.org.au](mailto:sief@sief.org.au)  
[www.sief.org.au](http://www.sief.org.au)

### What is SIEF?

Spanning a history of over 85 years, the Science and Industry Endowment Fund (SIEF) provides grants to science and scientists for the purposes of assisting Australian industry, furthering the interests of the Australian community and contributing to the achievement of Australian national objectives. In 2009 this unique and esteemed funding arrangement was rejuvenated by a gift from CSIRO, made possible due to the commercial success of CSIRO's fast WLAN, or Wi-Fi technology. Thus past accomplishments are reinvested into new science and innovation for the nation.