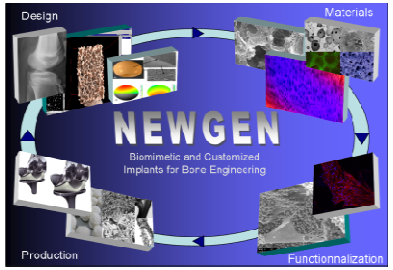
University of South Australia

GENERAL PRESENTATION

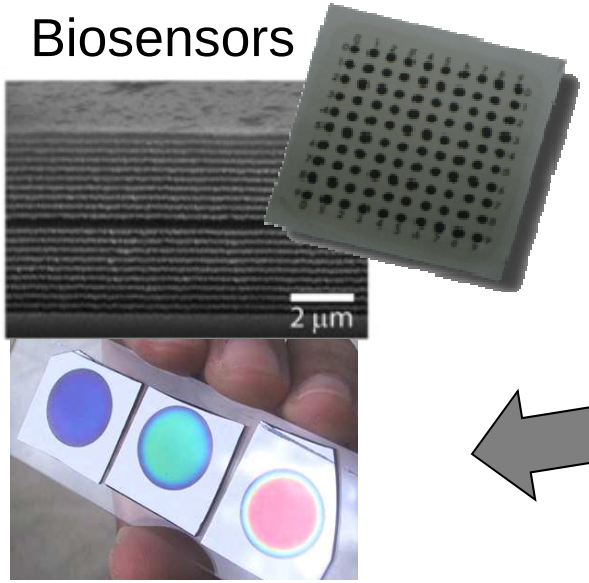
- ✓ **Complete denomination**: University of South Australia
- ✓ **Location (city, country)**: Adelaide, Australia
- ✓ **Directors**: Prof. Hans Griesser, Prof. Nico Voelcker
- ✓ **Contact person in NEWGEN**: Dr F. Cambier
- ✓ **Working Group involvement**: WG1-4
- ✓ **Staff**: Prof. Rob Short, Prof. Allison Cowin, Prof. Krasimir Vasilev, 35 postdocs, 30 PhD students
- ✓ **Research topics**:Tissue engineering, cell therapy, wound healing, surface modification, surface analysis, biodegradable porous materials, wound healing, in vitro and in vivo characterisation of materials, biosensors, drug delivery, theranostics, high throughput screening, antimicrobial surfaces
- ✓ **Researchers expertises**: Surface chemistry, polymer chemistry, porous silicon, optical and electrochemical biosensors, wound biology, plasma processing

Mawson Institute
University of South Australia
Mawson Lakes Blvd
Adelaide, SA5095- Australia

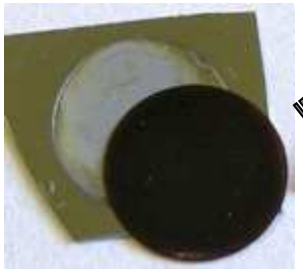


Nanostructured Porous Silicon

Ultrasensitive Biosensors



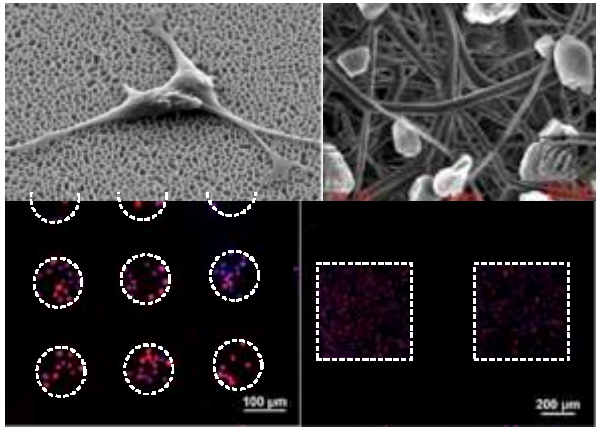
Early diagnosis and better management of diseases



- high surface area
- optical phenomena
- biodegradable
- non-toxic

Jane et al. Trends in Biotechnology 27 (2009) 230.

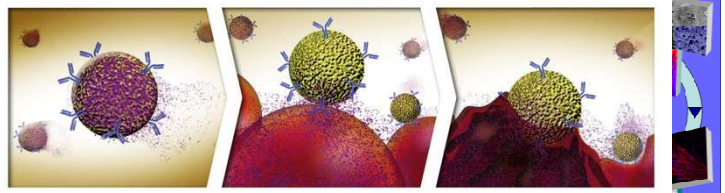
Biomaterials for Cell Therapy



Biodegradable scaffolds for tissue engineering

Low et al., Biomaterials, 30 (2009), 2873-2880

Targeted Drug Delivery



Biocompatible nanoparticles for cancer therapy

Secret et al., Advanced Healthcare Materials, 2 (2013), 718-727.

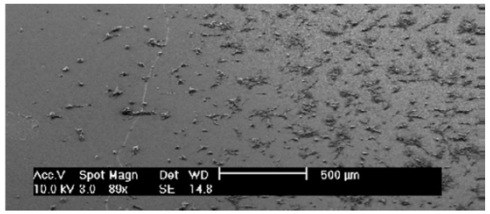
High-Throughput Cell-Based Assays

Conventional Methods

- Time consuming processing and analysis
- Large amount of source material required
- May be difficult to detect minute differences

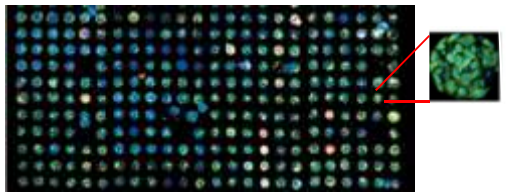
Gradient Surfaces

- Continuous variation in surface properties
- Optimise conditions for a small set of variables
- Interaction between two parameters possible

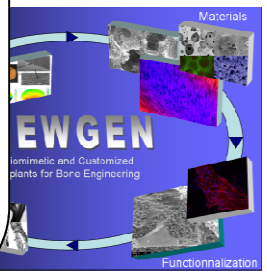


Cell Microarrays

- Multiple parameters investigated simultaneously
- In depth factorial analysis possible



Expertise in platform technology to screen cell material interactions in high throughout



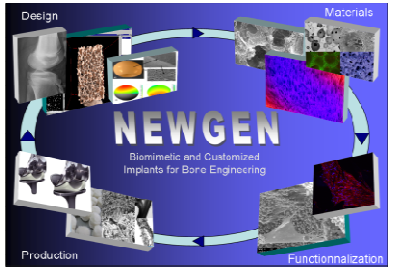
Cell Therapy Manufacturing

Cooperative Research Centre

ctmcrc.com

Vision

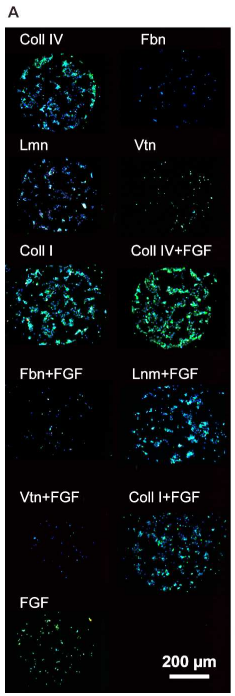
To provide new treatments and develop new materials-based manufacturing technologies to increase the accessibility, affordability and efficacy of cell therapies



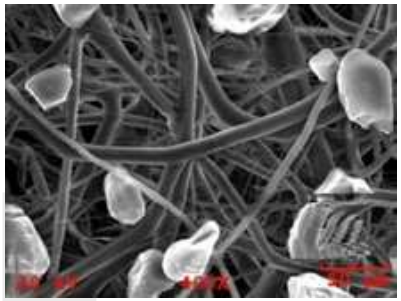
Materials solutions to make cell therapy affordable and accessible

Smart surfaces to mimic *in vivo* environment

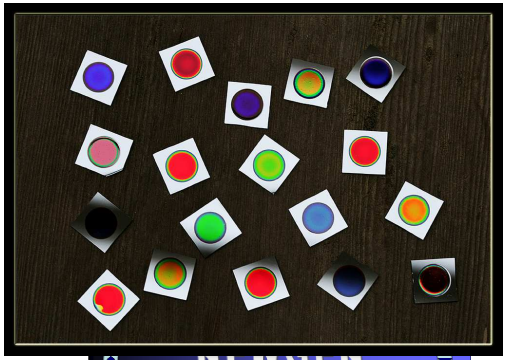
Materials and surfaces to reduce expensive reagents



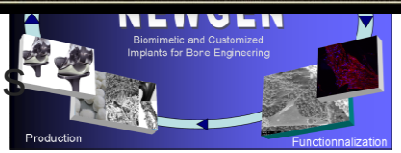
High throughput screening to identify optimal surfaces



Sensors for quality control



Novel delivery systems



ARC Centre of Excellence in

CONVERGENT BIO-NANO SCIENCE & TECHNOLOGY

The University of South Australia node of the ARC Centre of Excellence (CoE) in Bio-Nano Science is located at the Mawson Institute in Adelaide.

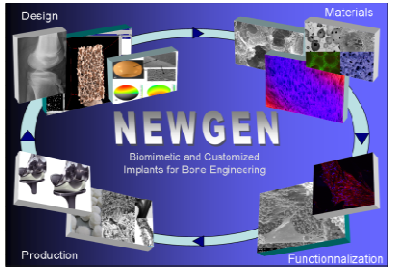
The Centre is a significant international multidisciplinary and multi-institutional research activity (29 Chief Investigators across 15 organisations) that has an annual discretionary budget of approximately $5million per year over 7 years.

The Centre research program will improve the understanding of the interaction between nano-engineered materials and biological systems, leading to a new scientific and social understanding of bionanotechnology.

Acronym/name partner

FACILITIES

Partner's logo

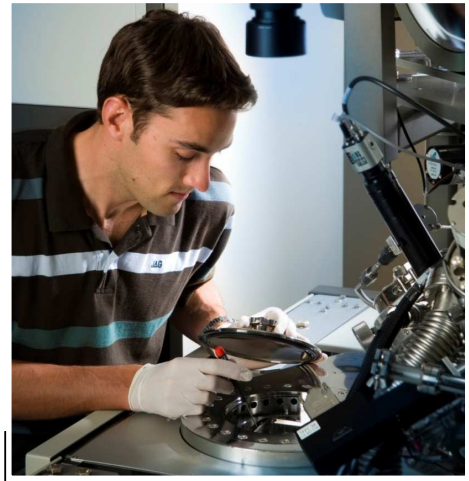


COST Action MP1301

New $73 million Materials & Minerals Science Learning & Research Hub

University of South Australia

World Class facilities for:
Particle and interface characterisation and analysis
Nanofabrication
Nanomaterial engineering



University of South Australia

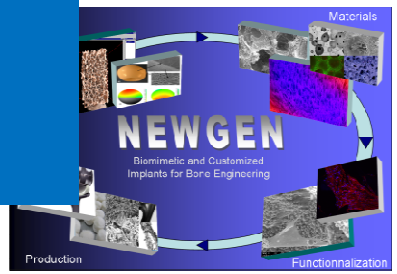
Training the Next Generation of Scientists and Engine

PHI *nano*TOF i*nstrument*

Australian
Microscopy & Microanalysis
Research Facility

University of
South Australia

Health*MAWSON*



COST Action MP1301