Regenerative Medicine Institute (REMEDI)

NUI Galway, Ireland

Director: Prof. Frank Barry

Contact person in **NEWGEN**: Dr. Jessica Hayes

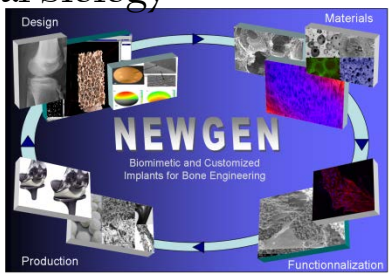
Working Group Involvement: Member of Working Group 4

Staff: 13 Principal Investigators, 12 senior scientists, 20 post-doctoral researchers, 39 PhD students, 20 MSc students

Research Interests: Development of novel stem cell based therapeutics for tissue regeneration

Researcher expertise: Biomaterials, tissue engineering, cellular therapy, transplant biology, fundamental stem cell biology, immunology, clinical pharmacology, gene therapy and developmental biology

REMEDI
Biosciences
NUI Galway
Galway, IRELAND

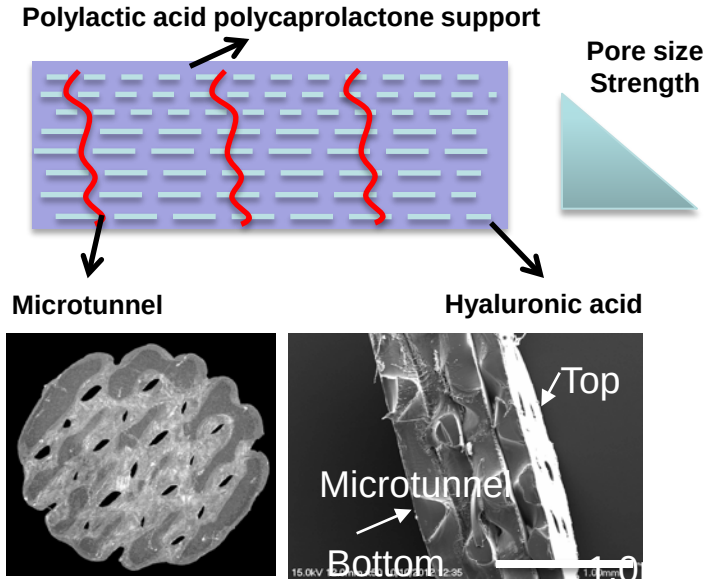


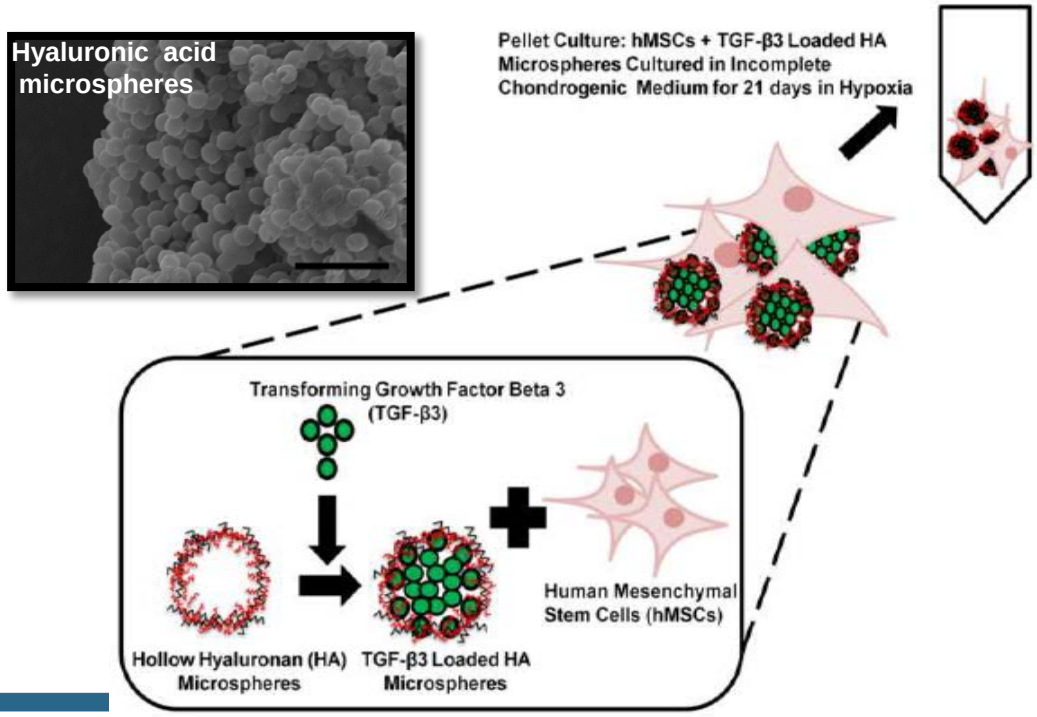
REMEDI

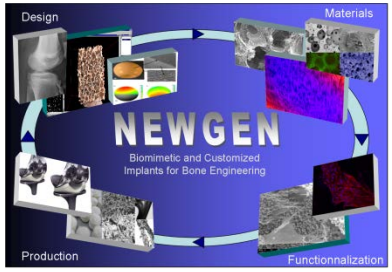
FUNCTIONAL TISSUE ENGINEERING

REMEDI develop novel strategies for tissue engineering. Examples of projects include:

- Development of biological/mechanically optimised scaffolds for functional tissue regeneration
- Development of Hyaluronic acid microspheres for translatable, minimally invasive approach for in situ differentiation and targeting of human MSC.







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REMEDI

SERUM FREE hMSC FOR BONE REGENERATION

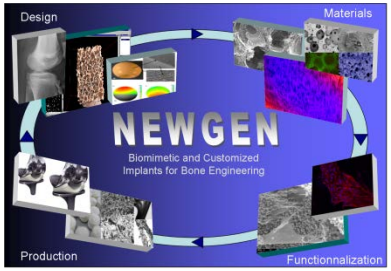
REMEDI has developed proprietary serum-free medium for human mesenchymal stem cells (hMSC), that allow isolation directly from marrow. Example projects include:

- Investigation of serum-free MSC for bone regeneration (based on perceived propensity for osteogenic differentiation).
- Developmental and validation of tri-lineage differentiation medium for serum-free cells

"Current stocks and production rates of serum suitable for GMP manufacture may only be sufficient to support the production of one blockbuster cell therapy"
- David Brindley

Commercially Available Serum-free Media

Name	DXF	BD Mozaic	Mesencult	TheraPEAK	Our Media
Company	Promocell	Fisher	Stem Cell Technologies	Gibco	REMEDI
Isolation	No	No	No	No	Yes
Attachment factors	Fibronectin	Undefined	Undefined	No	Fibronectin
Growth Factors	?	Yes	?	?	Yes



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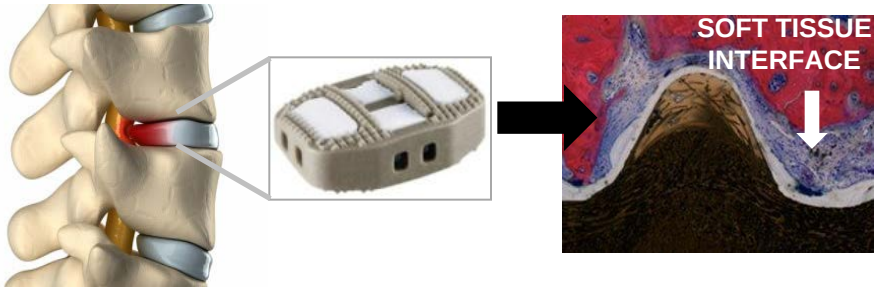
Brindley, D.A. et al. Regen Med 7, 7-13 (2012).

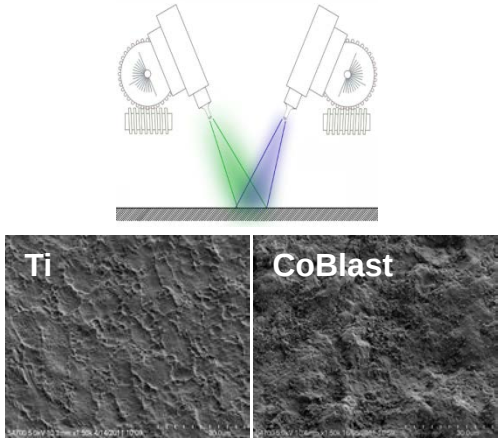
REMEDI

STRATEGIES FOR IMPROVED OSSEOINTEGRATION

REMEDI research involves the development of stable biofunctionalized surfaces using cold plasma treatment for improving bone apposition. Examples of projects include:

- Improving bioactivity of CoBlast metal implants
- Treatment of poly-(ether-ether)-ketone with attachment factors
- Antibody modification of metal implants for improved bone apposition

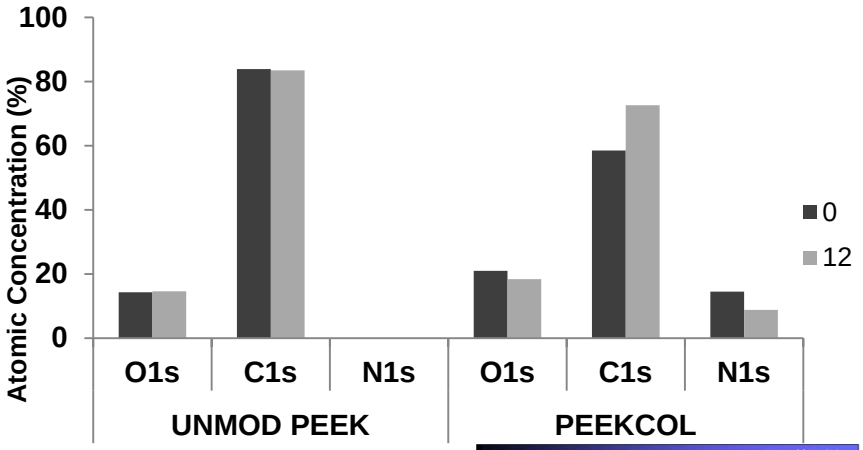


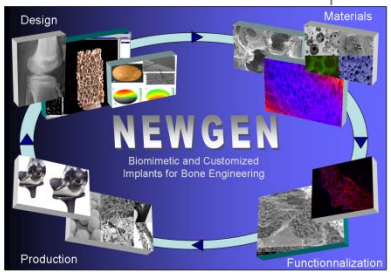


'CoBlast':

Chemically bonded surface modification rather than conventional coating
Ambient temperature and pressure process
Absence of any applied thermal input preserves the structure of the HA
Promotes beneficial lamellar bone formation around the implant

Plasma modification remains stable for 1 year





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REMEDI

CORE FACILITIES

Fully equipped cell culture suites for primary, transformed and transduced cell studies

Flow Cytometry Core facility containing FACS Canto ™ and FACS Aria ™ Flow cytometers

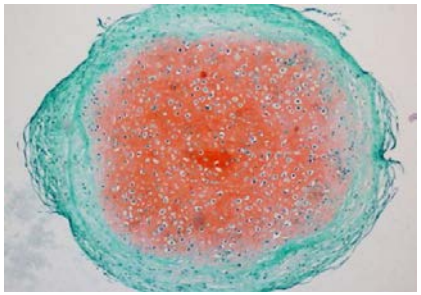
Molecular biology and functional genomics suites incl. QPCR, microarray, Janus Automated Workstation

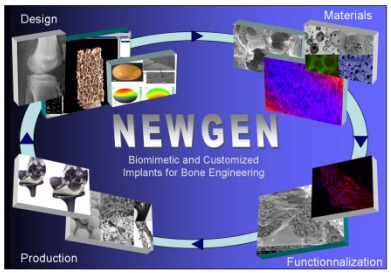
Biological Mass spectrometry

Histology Facility equipped with an automated tissue processor, embedding station, manual microtome, cryo-microtome and staining equipment

Microscopy laboratories containing live cell imaging, scanning probe, fluorescent, confocal, scanning and transmission electron microscopes

Bioengineering incl. surface analysis, material characterization and rapid prototyping





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FACILITIES

Biosciences Preclinical Facility

Scanco vivaCT40, µCT100

Photoacoustic Imaging

GE Healthcare Doppler ultrasound System

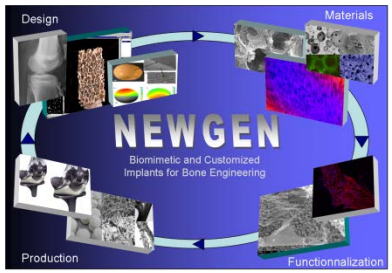
C-arm Angiography System

Spinal Cord Impacter

8 camera SPECT imaging system

State-of-the-art small animal preclinical facility

Dedicated animal welfare staff & surgeon



Centre for Cell Manufacturing Ireland (CCMI)

Irelands first centre for stem cell manufacture for human clinical trials.

Custom-designed, certified EU GMP Annex 1 250m^2 compliant cleanroom

Consists of 2 parallel independent production suites certified to EU GMP grade A/B, allowing the aseptic production of multiple batches of advanced therapeutics

Together with the Clinical Research Facility (Galway University Hospital) provides unique opportunity to translate cutting-edge stem cell research into reflective therapies