



# “Leverage Grant”

## Leveraging Scotland’s World Leading Research in Optical Imaging for Medicine, Healthcare and Biology

*A collaborative Scottish Funding Council funded project involving:*

**Scottish Universities Physics Alliance (SUPA)**

*Universities of Aberdeen, Dundee, Edinburgh, Glasgow, Heriot-Watt, St Andrews, Strathclyde  
and West of Scotland*

**Scottish Universities Life Sciences Alliance (SULSA)**

*Universities of Aberdeen, Dundee, Edinburgh, Edinburgh Napier, Glasgow, Heriot-Watt, Robert Gordon,  
St Andrews, Stirling and Strathclyde*

**Scottish Imaging Network: A Platform for Scientific Excellence (SINAPSE)**

*Universities of Aberdeen, Dundee, Edinburgh, Glasgow, St Andrews, Stirling and Strathclyde*





# Rationale

- Optical imaging is a key enabling technology for the life sciences and medicine – for research, manufacturing, diagnostics, treatment
- Scotland has world-leading research and existing industrial activities
- Intervention is required to support and encourage significant initiatives in this truly multidisciplinary area, engaging both academic and industrial partners
- New approaches are needed to address grand challenge funding opportunities (discussion topic)

With a modest investment, potential to leverage significant benefits  
– for both academic research and economy



## Key activities

- Innovator in Residence post
- Opportunities and market assessment
- 'Crucible' workshop
- Support for a portfolio of proof-of-principle projects (~£5k, 1 year duration)



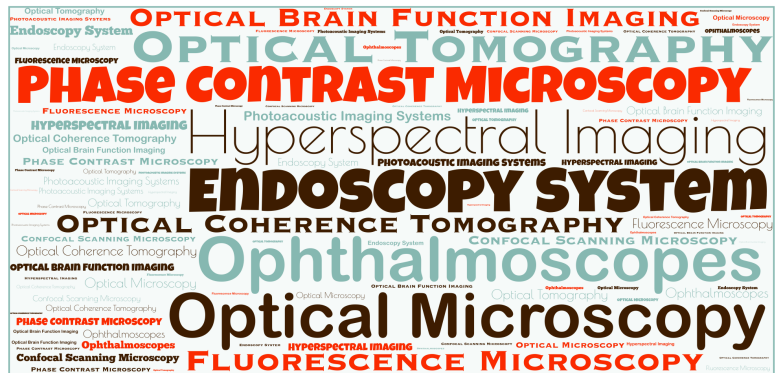
## Key activities

- Innovator in Residence post – identifying expertise and building new academic-industrial partnerships for innovation and commercialisation
  - Des Gibson, UWS, appointed October 2018 (delayed from project plan)
  - Has built an overview of activities and capabilities in Scotland
  - Extensive series of meetings with both academics working in optical imaging and companies
  - Outcomes focusing on opportunities which are close to commercialisation

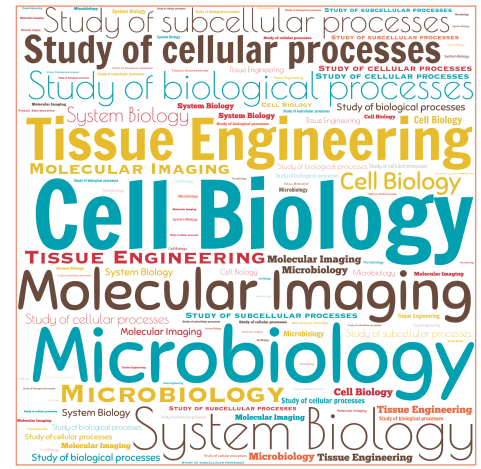




# Key activities



- Opportunities and market assessment – understanding the global landscape
  - Have appointed Anke Lohmann, ESP Central Ltd, to undertake market opportunity analysis
  - Challenges are range of markets and segmentation



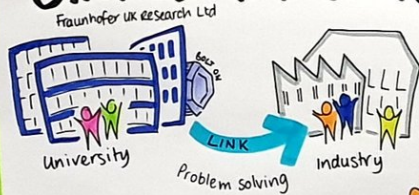


## Key activities

- ‘Crucible’ workshop: an intensive networking event for early career researchers from physics, life sciences and medical communities; designed to inspire and kick-start new collaborations
  - Used proven format and process
  - ECRs apply to participate, provide bio which is circulated to all attendees
  - Keynote presentations including international speakers
  - ‘Speed collaboration’
  - Informal networking dinner

# OPTICAL IMAGING

**SIMON ANDREWS**



multi disciplinary team  
RESPECT your colleagues  
GPs  
Producers

It's absolutely **WONDERFUL** to fail!!!  
hair removal



**BEN PANTER**

Western General



2006 Proof of concept

2008 QCUK Business Plan

2010 Company formed

20 minutes to 1 second



2013 Trial

2015 Clinical deployment

2016 Optos

2017 Radnet

Phillips

2018 Platform development

US

Australia

UK

Now sell other's products via our platform

Mid size companies make best partners

Value propositions have most value

It takes time & costs money

Healthcare innovation

technologies  
**JHMANN**

# OPTICAL IMAGING CRUCIBLE

**T FANCEY**

Be



- Optics timelapse Viability
- Reproductive medicine
- Neuroscience Mapping Neural circuits
- Immunology
- Optics create safe transplants
- Remove cells and

**DR. PANER**

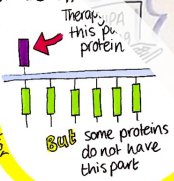
**PROF. AMY HER.**

proteforms play critical roles but are di

- EASE OF USE
- COST
- LANGUAGE

Embed in industry & understand unmet needs

Collaboration is people led



25 April  
Dead line



- 3 models:
  - Large company
  - Small company
  - Academia



**PROF. GA**

We rely on biology & microscope  
MESOLAB Talk to us

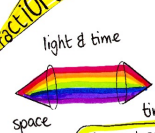
5-10 year cycle  
**INNOVATION INFRASTRUCTURE**  
from development → product

WHERE PHOTONICS CAN HELP...  
IN 10 YEARS

- 1 Listen & understand
- 2 Listen to their problems
- 3 Solve them!

You can change the world

**PROF. KISHAN DHOLAKIA**



idea team  
if you have a new device - give to your end user, they will show you how good it is



## Key activities

- Support for a portfolio of proof-of-principle projects (~£5k, 1 year duration)
  - Seven projects funded spanning innovative technology development and novel applications in life sciences and medicine
  - Project leads from across the three research pools

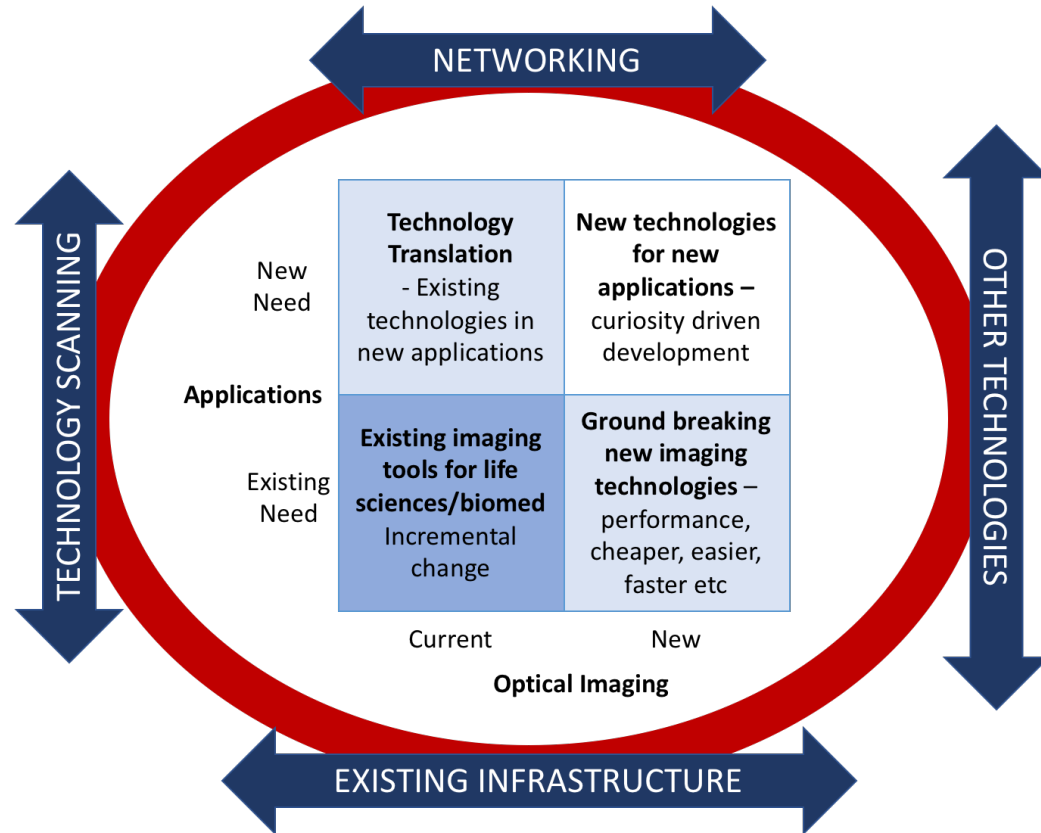




# Funded Proof-of-Principle Projects

Applicant	Project	Industry Partner	Lead Pool
Calum Brown, Inst for Integrated Micro and Nano Systems, Edinburgh	Liquid Crystal Lasers: Towards Retinal Disease Diagnostics	Optos, Dunfermline	SUPA
Ali Dun, Edinburgh Super-Resolution Imaging Consortium, Heriot-Watt	Using advanced microscopy to study the process of fat digestion for application(s) in the food science industry	Devro, Glasgow	SULSA
Leandro Lemgruber, Inst of Infection Immunity & Inflammation, Glasgow	Facilities open day series in connection with the Scottish Microscopy Group	Zeiss (UK), Nikon (UK),	SULSA
Richard McCracken, Inst of Photonics & Quantum Science, Heriot-Watt	Wavelength-versatile pulsed laser sources for multiphoton microscopy	Scientifica (UK)	SUPA
Patricia Martin, Dept of Biological and Biomedical Sciences, GCU	Skin deep: new mesoscopic imaging of large tissue volumes at high resolution	Tissue Solutions, Glasgow	SULSA
Shigeng Song, Inst of Thin Films, Sensors and Imaging, UWS	Development of a low cost miniaturised hyperspectral imaging camera incorporating linear variable optical filters for medicine	Wideblue, Glasgow	SUPA
Tom MacGillvray, Centre for Clinical Brain Sciences, Edinburgh	Building a Transatlantic Optical Eye Imaging Consortium	Optos, Dunfermline	SINAPSE

# Bringing it all together



- Helps with:
  - Understanding landscape
  - Identifying gaps
  - Innovation pipeline
  - Projects at range of TRL levels → identification of most appropriate funding
- Likely outcomes
  - A network
  - Specific commercialisation initiatives
  - Challenge funding bid(s)
  - A process?