

CARDIFF
UNIVERSITY

PRIFYSGOL
CAERDYDD

Cardiff University

Professor Phil Stephens

Dean of International, College of Biomedical and Life Sciences

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www.cardiff.ac.uk/international



Cardiff University - background

- Founded in 1883 - one of Britain's leading universities
- Member of UK Russell Group of 24 'research intensive universities'
- 12th largest university in the UK, 5th in the Russell Group
- 33,510 students - 23,350 undergraduates & 10,160 postgraduates (8,385 PGT & 1,175 PGR)
- 9,135 international students (148 countries)
- c6,500 members of staff
- University income £500M
- Annual Research income £130M (research portfolio over £550M)
- 24 Schools/3 Colleges

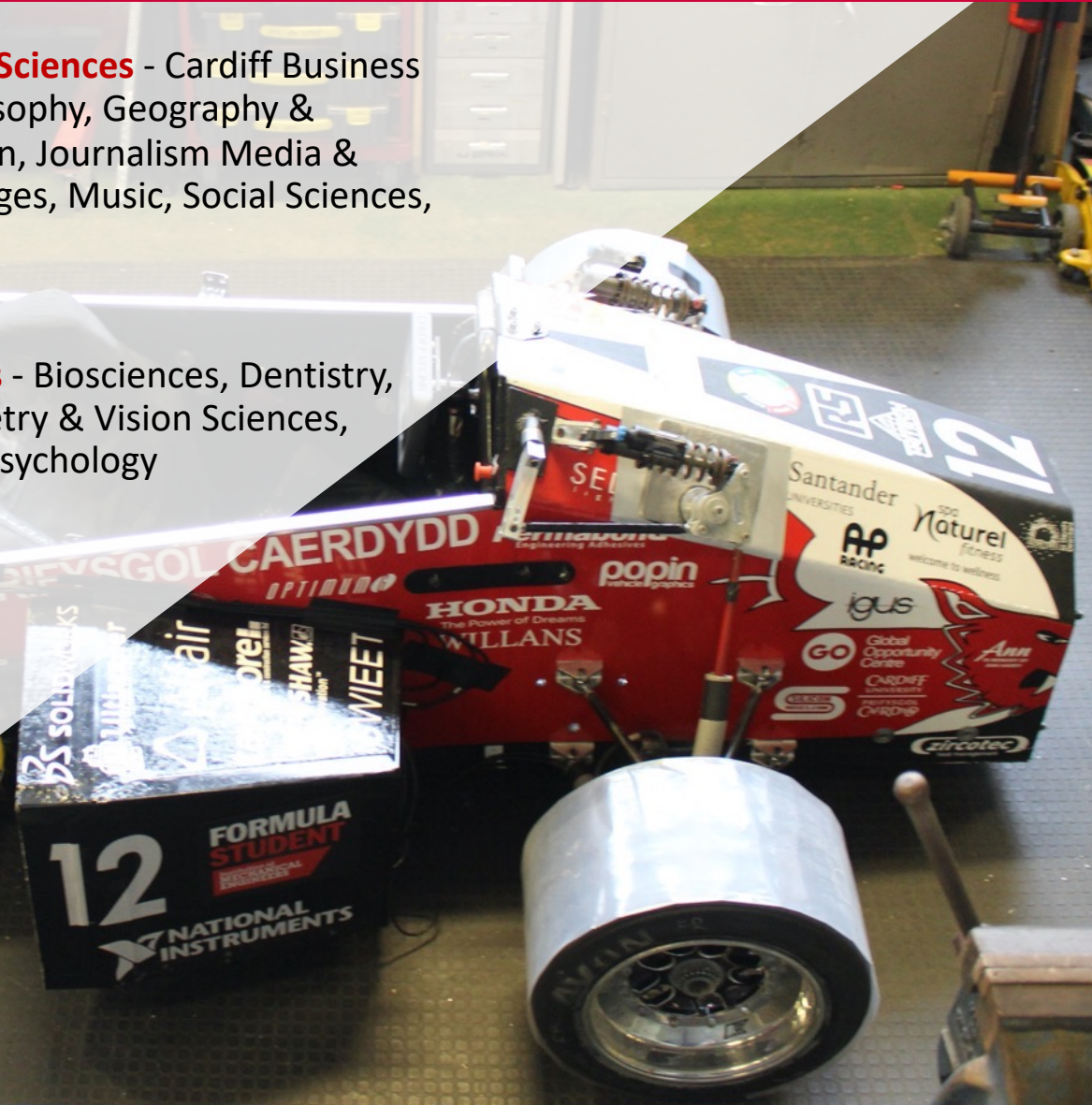


Cardiff University - Schools

College of Arts, Humanities and Social Sciences - Cardiff Business School, English Communication & Philosophy, Geography & Planning, History Archaeology & Religion, Journalism Media & Culture, Law & Politics, Modern Languages, Music, Social Sciences, Welsh

College of Biomedical and Life Sciences - Biosciences, Dentistry, Healthcare Sciences, Medicine, Optometry & Vision Sciences, Pharmacy & Pharmaceutical Sciences, Psychology

College of Physical Sciences and Engineering - Architecture, Chemistry, Computer Science & Informatics, Earth & Environmental Sciences, Engineering, Mathematics, Physics & Astronomy



College of Arts, Humanities and Social Sciences research areas

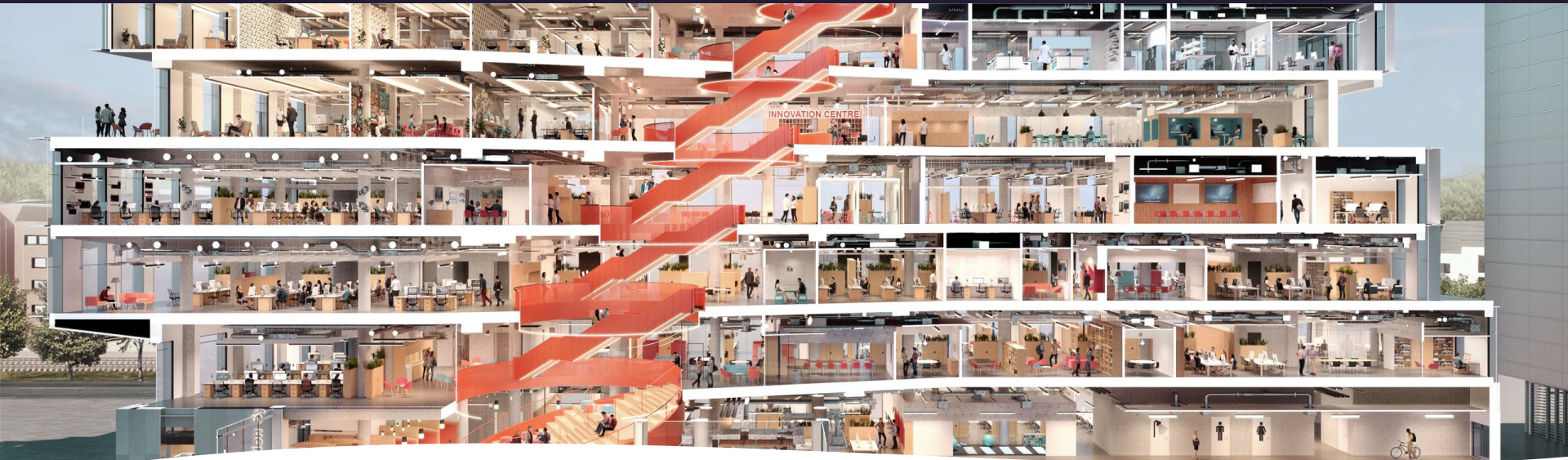
10 multi-disciplinary academic schools:

- Environmental humanities
- Digital cultures/economy
- Data-driven decision-making
- Sustainability and Net Zero
- Governance and devolution
- Language and linguistics
- Welsh culture
- Banking and finance

Pioneering research centres/investment:

- World's first social sciences research centre: sbarc/spark
- Media Cymru focused on Wales' media sector





sbarc | spark

12,000m² purpose-built facility on the Cardiff University Innovation Campus, co-locating 800 people, half of whom will be from the private, public and third sectors

Aims

to create a unique culture and environment for creativity, entrepreneurship and innovation
to provide new resources for developing our analytical and creative capacities
to showcase and develop the intellectual and professional talent amongst staff and students
to undertake cutting-edge solution-oriented research

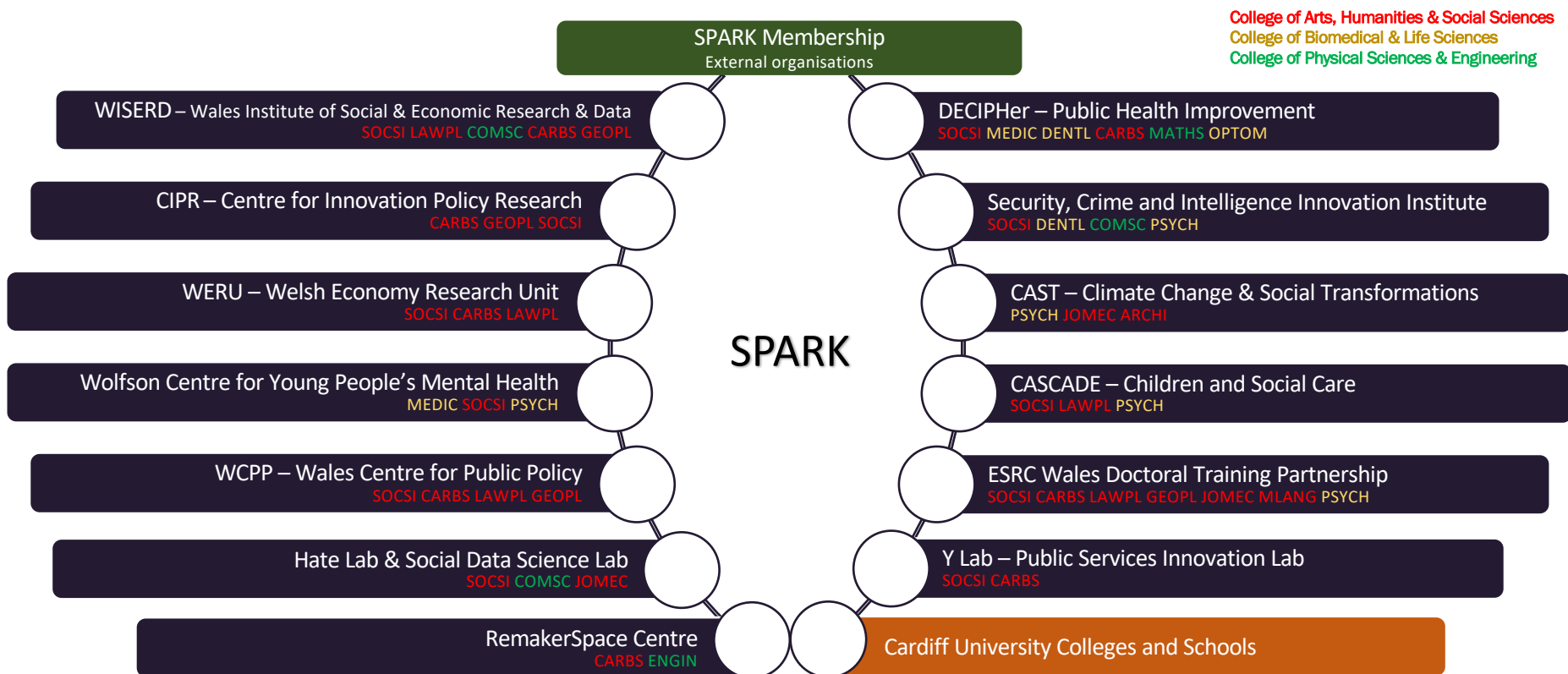
Cardiff Innovations@sbarc

2,800m² of lettable units, including 500m² of lettable wet labs and 300m² of co-working area designed to increase the successful translation of research and innovation processes into new and improved commercial products, processes and services

Social Science Research Park (SPARK)

co-location of all the University's major social science research centres and institutes alongside research collaborators from the private, public and third sectors working together with the aim of addressing major societal challenges

Links to University Colleges and Schools



Enabling Themes, Enabling Researchers



Cancer

Professor Awen Gallimore
gallimoream@cardiff.ac.uk

Mind, Brain & Neurosciences

Professor Krishna Singh
singhkd@cardiff.ac.uk



Population Health

Dr Liba Sheeran
sheeranl@cardiff.ac.uk

Developmental & Regenerative Biology

Dr Mike Taylor
taylormv@cardiff.ac.uk



Infection, Immunity & Inflammation

Professor Andy Godkin
godkinaj@cardiff.ac.uk

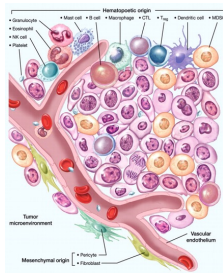
Mechanisms of Living Systems

Professor Pete Kille
kille@cardiff.ac.uk

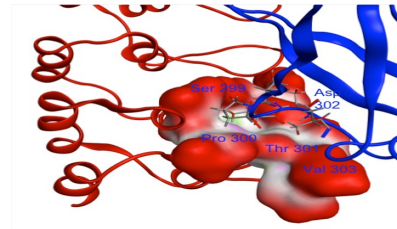




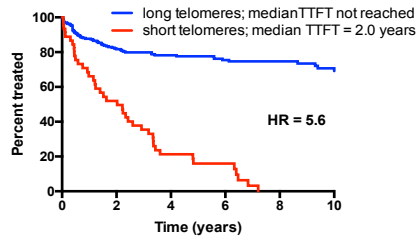
Tumour & Environment



Drug Discovery, Development & Delivery



Personalised Cancer Genetics

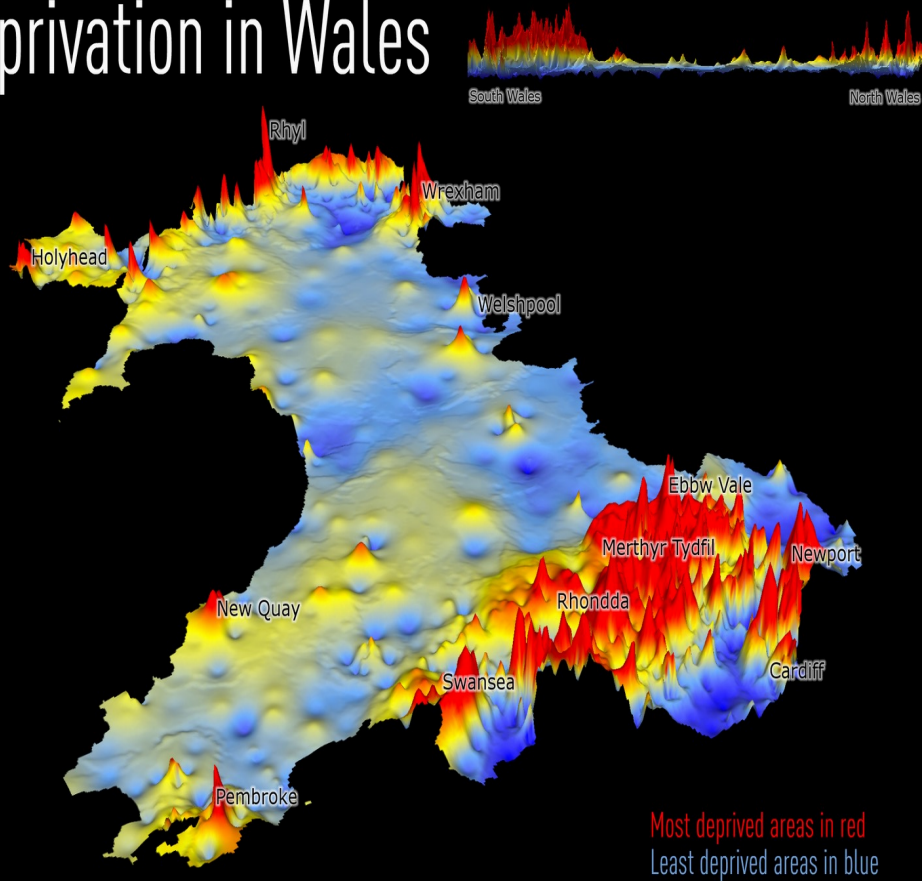


Clinical Trials



Population Health

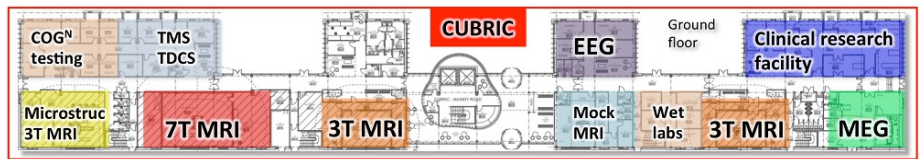
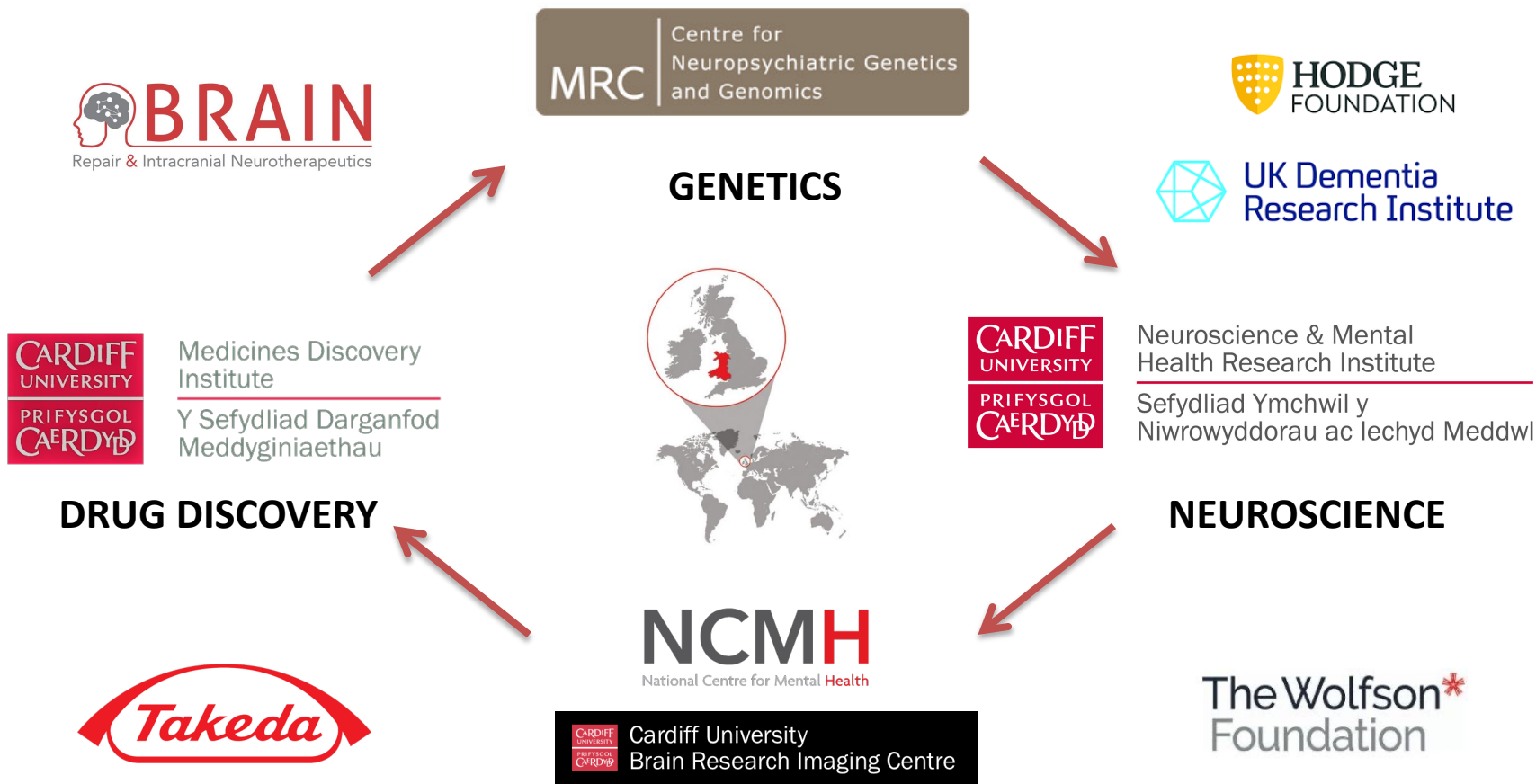
Deprivation in Wales



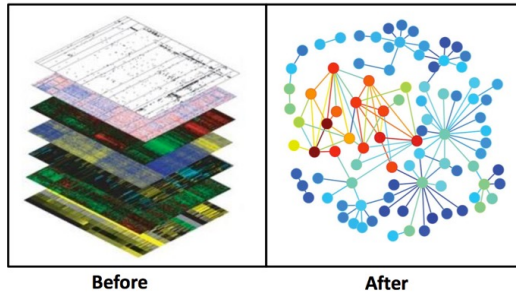
Data Source: Welsh Index of Multiple Deprivation, 2008

- Persistent inequalities in health
- High prevalence of unhealthy behaviours
- Ageing population
- Increasing number of people living with multiple health problems

Mind, Brain and Neuroscience



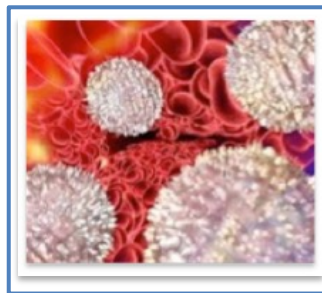
Integrating 'omic datasets



Before

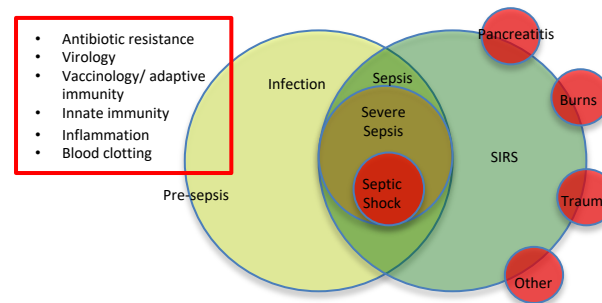
After

Immunopsychiatry

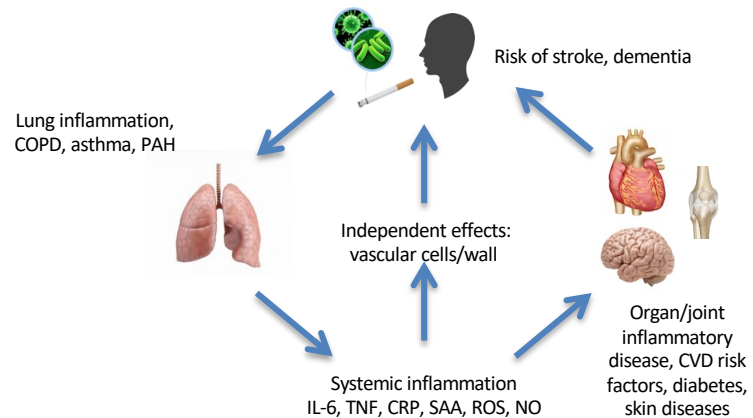


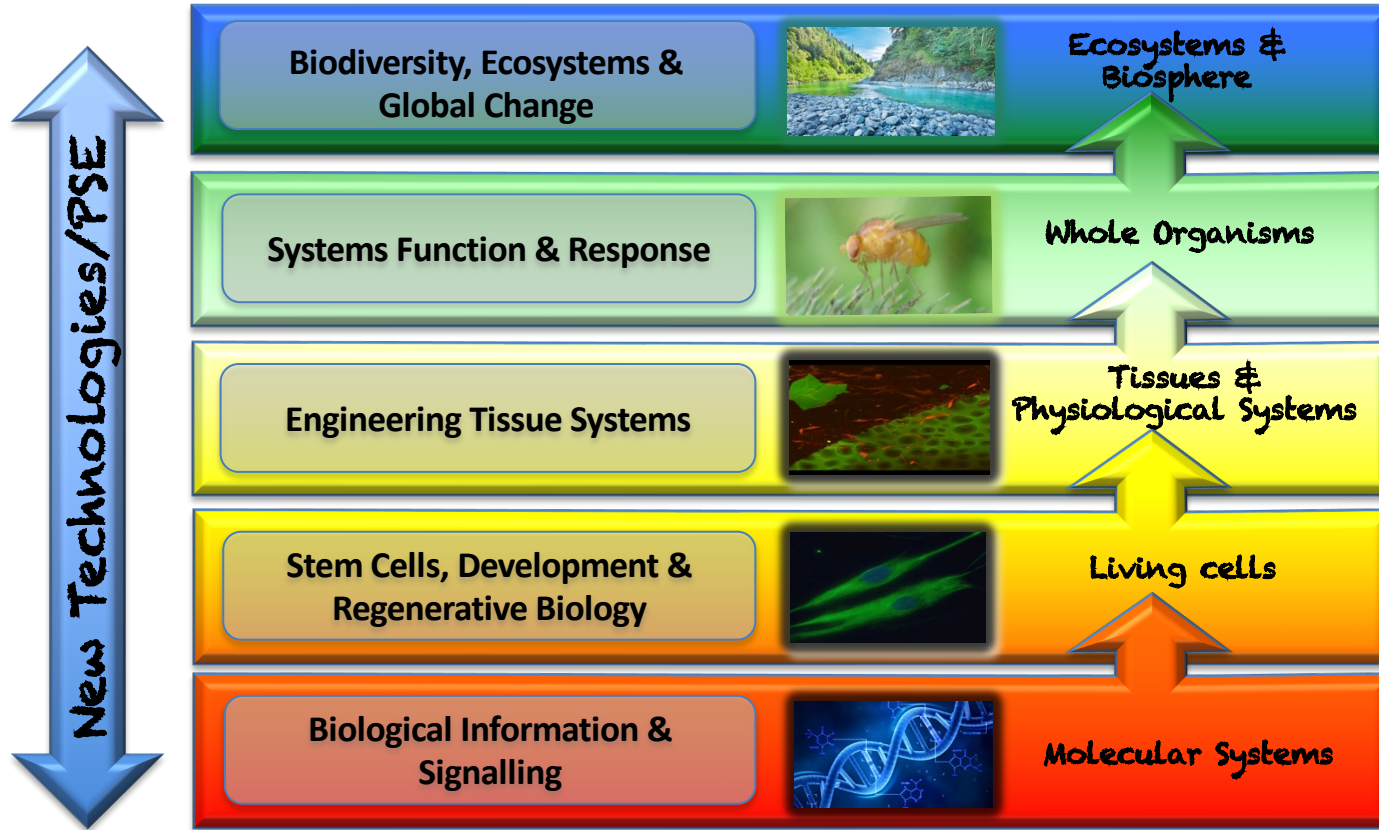
We deliver a comprehensive systems-based approach to Immunity/inflammation research.

Preventing infection



Systems inflammation: understanding co-morbidities





College of Physical Sciences and Engineering research areas



Why gold is the key to a glittering future

Our newly identified catalyst has the potential to save lives, improve health and clean up the environment.



Meeting the challenges of data security

Our research has significantly improved the security of printing and network environments.



Cities and buildings of the future

We have developed advanced computational numerical models that are used in the design of major buildings and urban developments.



Making bridges safer

Providing solutions for bridge inspection without the need for costly shutdowns.



Using maths to save lives

Our new mathematical models are reducing waiting times in hospitals to save lives.



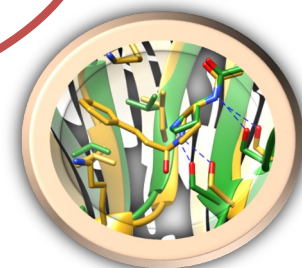
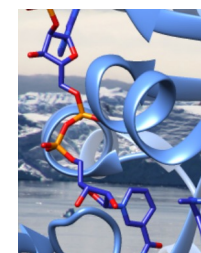
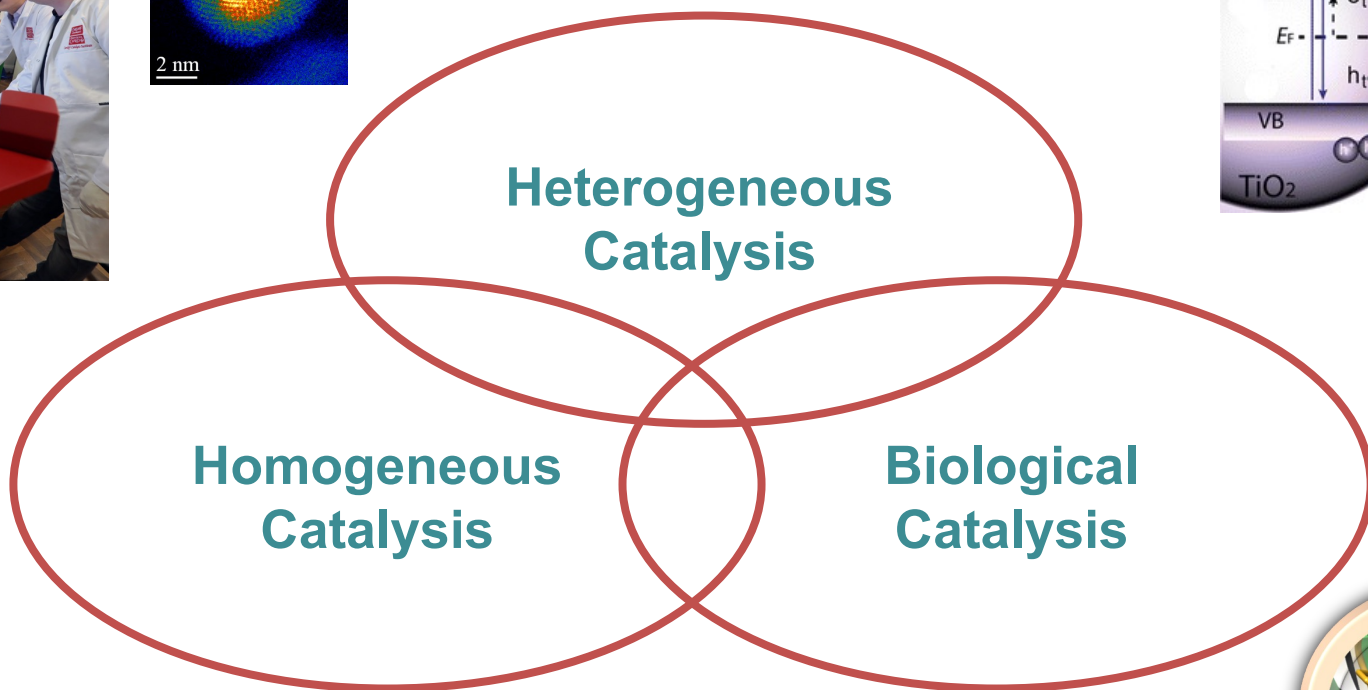
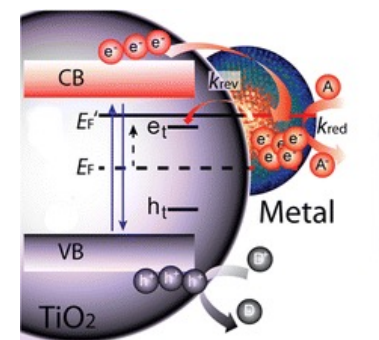
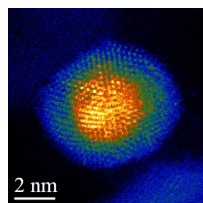
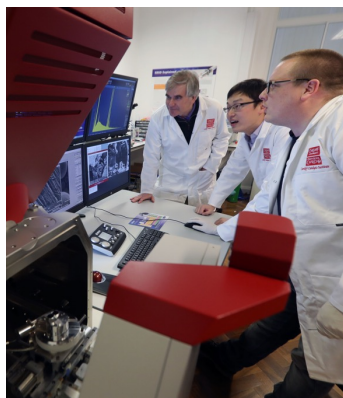
Saving lives and safeguarding water

We are developing accurate and reliable models to safeguard people against global water risks.



Renewable Energy & Systems

Renewable generation,
Electric Vehicles



21 faculty – around 150 postdocs and PhDs



Cybersecurity, Privacy &
Human-Centred
Computing
Dr Parisa Eslambolchilar

- cybersecurity
- social and mobile computing
- human centred computing
- privacy

*Airbus Centre of Excellence in
Cyber Security Analytics*

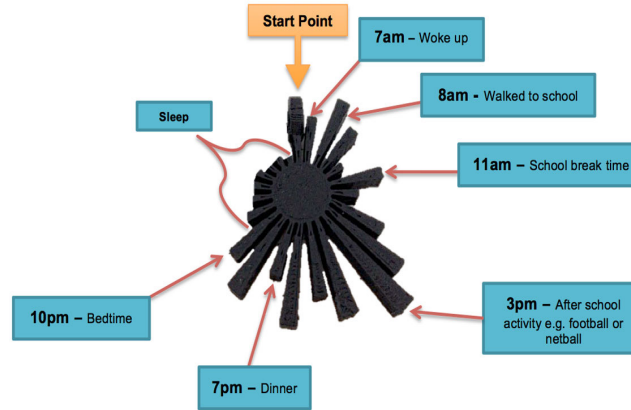
automated algorithmic data
analytics to support decision
making and policy



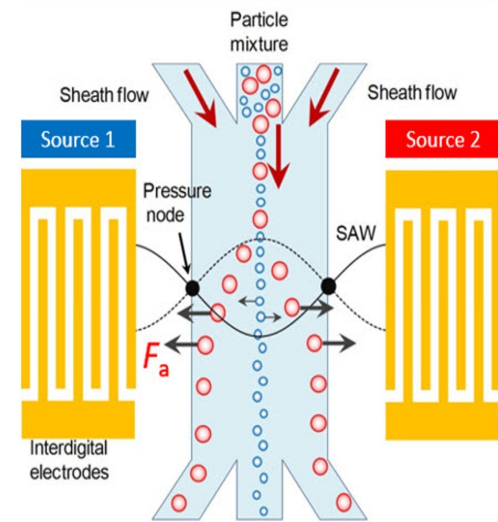
Glucose sensor (using Microwave radiation)



MRI (CUBRIC) -- Alzheimer's disease



Motion capture & Gait (Orthopedic Engineering + BioMechanics & Arthritis UK)



Acoustic (acoustofluidics) Bio-Chips for Cancer cell separation

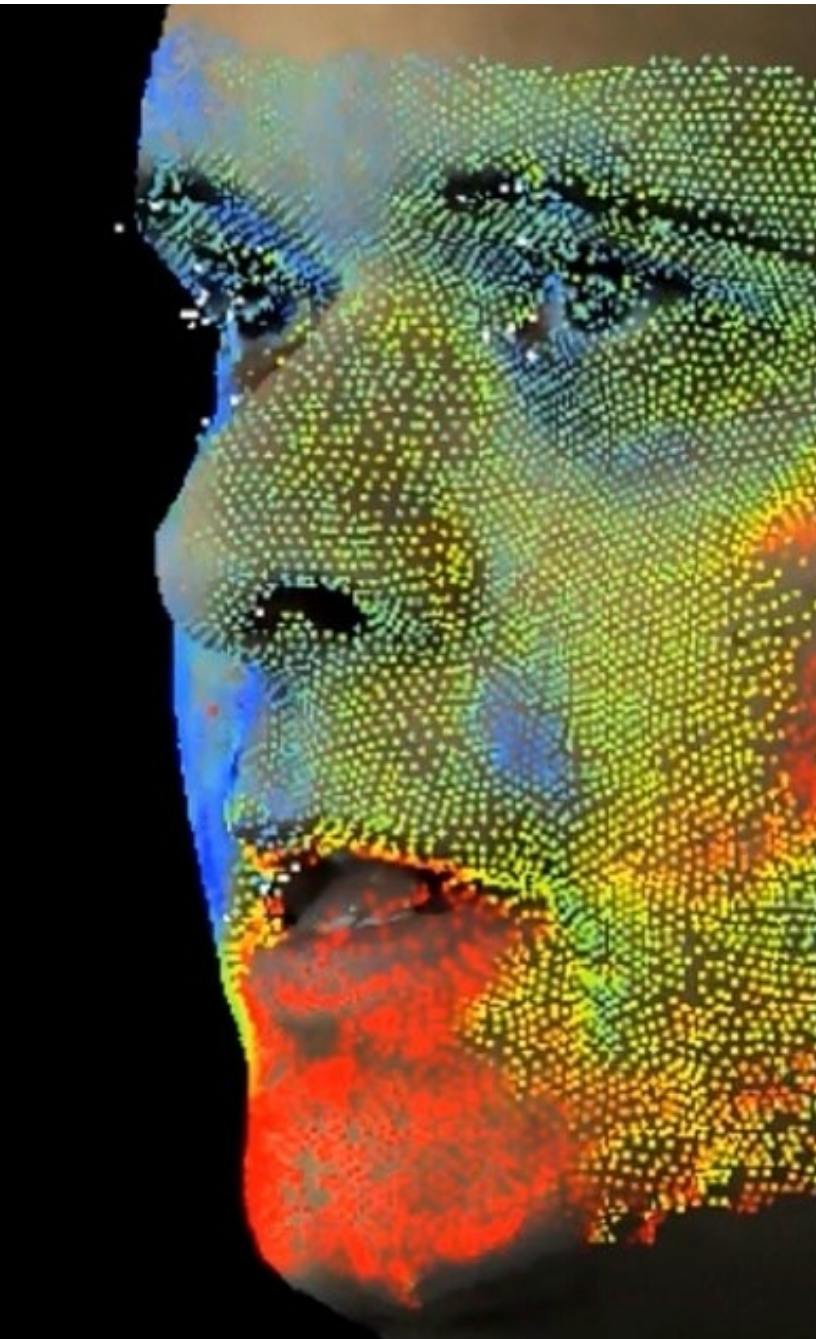


Artificial Intelligence & Data Analytics Prof Steven Schockaert

- knowledge representation and reasoning
- natural language processing
- machine learning and data mining
- distributed intelligent systems

*Unsupervised background knowledge for
multilingual language understanding*

improving NLP models so that they can be
more interpretable, capture commonsense
knowledge, and enhance multilingualism



Visual Computing

Prof Paul Rosin

- Computer vision, image and video processing
- Medical imaging & applications
- 3D data, mesh processing and CAD applications
- Computational modelling and control
- Computational music

Seeing the future

translate predictive coding to the design of a computer vision system



Scalable real-time social data analytics for research, policy & practice

On-line hate crime

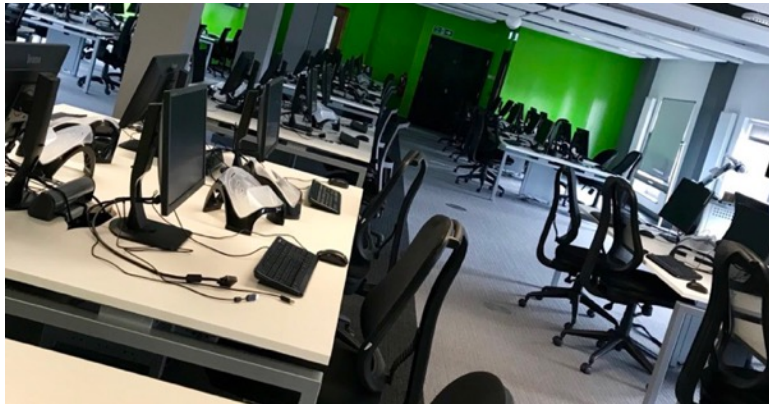
Social media and Malware Analysis

SCADA security

Funding from US Dept. of Justice



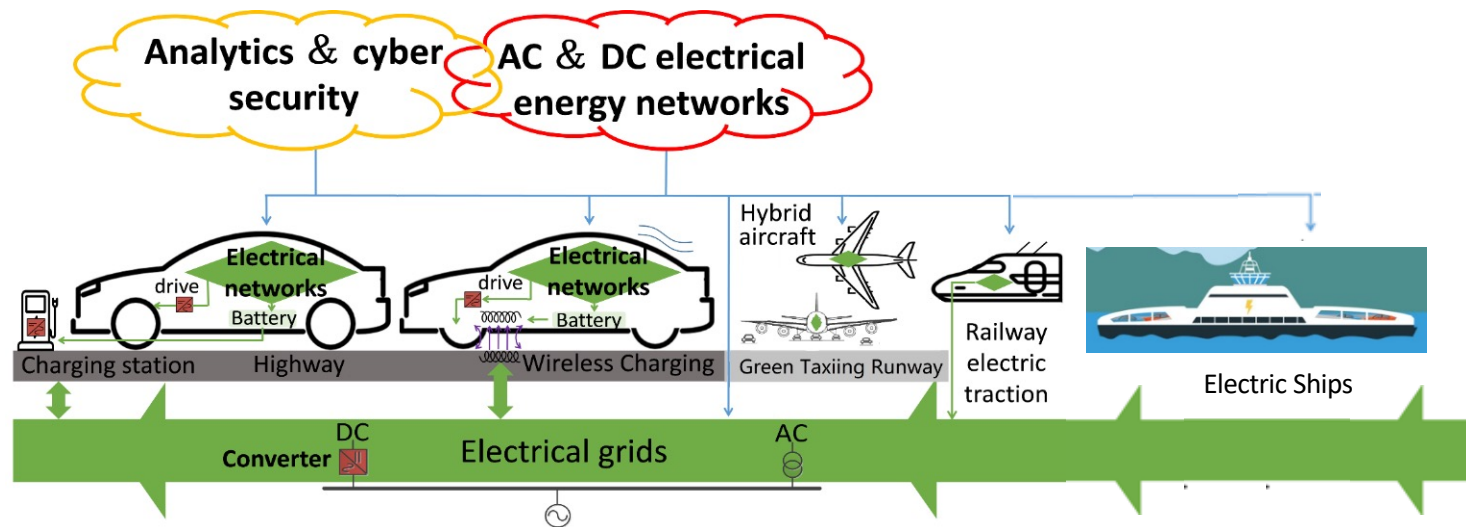
National Software Academy



Decarbonising Transport through Electrification, A Whole System Approach (DTE)



DTE addresses a range of **low-carbon transport modes** (road, rail, aerospace and maritime) alongside associated infrastructures to support existing and deliver future mobility needs, treating these as an **integrated system embedded within the electricity energy vector** with the goal of decarbonising the transport sector



Global research excellence

- **Neuroscience and mental health** - Neuroscience & Mental Health University Innovation Institute (UII), MRC Centre for Neuropsychiatric Genetics and Genomics, UK Dementia Research Institute, National Centre for Mental Health, Wolfson Centre for Young People's Mental Health
- **National and international crime and security problems** - Security, Crime and Intelligence Innovation Institute (UII), Universities' Police Science Institute
- **Net Zero Carbon and tackling Climate Change** - Net Zero Innovation Institute (UII), The Centre for Climate Change and Social Transformations, GW4 Accelerating to Net Zero transformational programme, Net Zero Wales
- **Data** - Digital Transformation Institute (UII), Wales Data Nation Accelerator, Supercomputing Wales

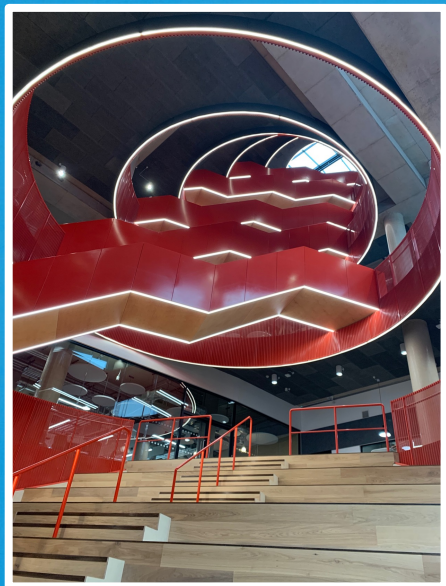


Global research excellence

- **Immunity research** - Systems Immunity Research Institute (URI)
- **Precision medicine, drug discovery and clinical innovation** - Medicines Discovery Institute, UK Precision Medicine Centres of Excellence
- **Creative Industries** – Clwstwr, media.cymru
- **Cyber security** - Academic Centre of Excellence in Cyber Security Research, Wales Cyber Innovation Hub
- **Compound semiconductors** - The Institute for Compound Semiconductors, 'CSconnected'
- **Catalysis** - Cardiff Catalysis Institute



World class facilities



- **Social Media Analytics:**
 - Collaboration with Dr Vimala Balakrishnan (Univ. of Malaya)
 - Via Cardiff Univ. "Social Data Science Lab" (<http://socialdatalab.net/>)
- **School of Engineering & Welsh School of Architecture:**
 - Prof. Roger Falconer (Water Informatics Research)
 - Prof. Chris Tweed (Architectural Design & Innovation)
- <http://www.tidrec.com/>:
 - Tropical Infectious Diseases Research Centre & Education Centre (Dengue virus)
 - Department of Medical Microbiology, Faculty of Medicine, University of Malaya
- **Danau Girang Field Centre in Sabah (Malaysia):**
 - https://www.youtube.com/watch?v=qN_gOPczhs0&t=182s
- **Collaboration with Malaysian industry & organizations:**
 - Malaysia Digital (based at CyberJaya)
 - MIMOS Berhad (National Applied R&D Centre in Malaysia)
- **Understanding energy & infrastructure requirements of Melaka:**
 - Based on work on the *Cardiff Urban Sustainability Platform*
 - Melaka tourism = high demand on infrastructure
 - Combines work in developing "digital twins" for parts of Melaka



Institution	Co-authored publications
Sabah Wildlife Department	65 ▲
University of Malaya	58 ▲
International Medical University	54 ▲
Universiti Sains Malaysia	38 ▲
Universiti Kebangsaan Malaysia	31 ▲
Universiti Malaysia Sabah	24 ▲
Universiti Teknologi Malaysia	22 ▼
Universiti Putra Malaysia	19 ▼
Monash University Malaysia	13 ▼
Taylor's University Malaysia	10
Universiti Tun Hussein Onn Malaysia	10 ▼
Universiti Teknologi MARA	9
Universiti Malaysia Terengganu	8 ▲
Universiti Sultan Zainal Abidin	7
Multimedia University	5



Researching and developing solutions for our communities and wildlife



International Training



Higher education
students based in
DGFC

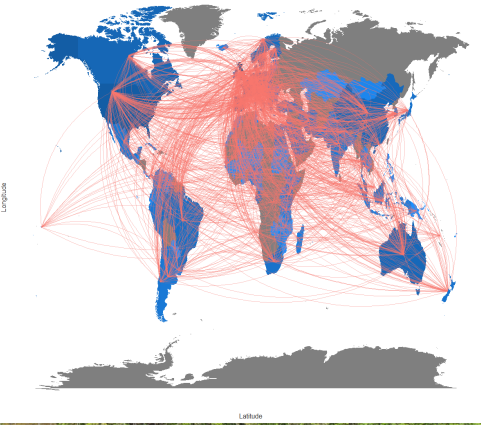
- Australia 2
- Belgium 5
- Canada 3
- Chile 1
- France 6
- Germany 3
- Malaysia 12
- Mexico 3
- Peru 1
- Spain 1
- UK 18
- USA 3



- 37 Master's students and 22 PhDs from 7 different countries
- Field courses with Universities from USA, UK, Holland, Germany, Switzerland Singapore

Far-reaching scientific profile

Country Collaboration Map



- Over 150 publications (behaviour health, population/landscape genetics, landscape dynamics)
- The Wildlife Health, Genetic and Forensic Laboratory and the Wildlife Health Unit

Global Impact



- Four species action plans:
- Bornean elephant
 - Bornean banteng
 - Proboscis monkey
 - Sunda clouded leopard

REGROW Borneo

Engagement

- Government agencies
- NGOs
- Local Community



Any questions?



Sherlock



Dr Who