

The Centre for In Vivo Imaging:

*technical development and clinical
application*

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Newcastle
University

CIVI: Centre for In Vivo Imaging

MR

PET

Clinical



3T MRI x 2



Preclinical



7T MRI



MR Centre Staff – and what they do



In vitro, in silico,
and hardware
development

Preclinical
imaging &
spectroscopy

First in man
development
studies

Patient
cohorts and
clinical trials

MR Centre Staff – and what they do



In vitro, in silico,
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Patient
cohorts and
clinical trials

Imaging technologies team

Remit

*To develop innovative imaging technologies
and
apply to important questions of human health and
disease*

Remit

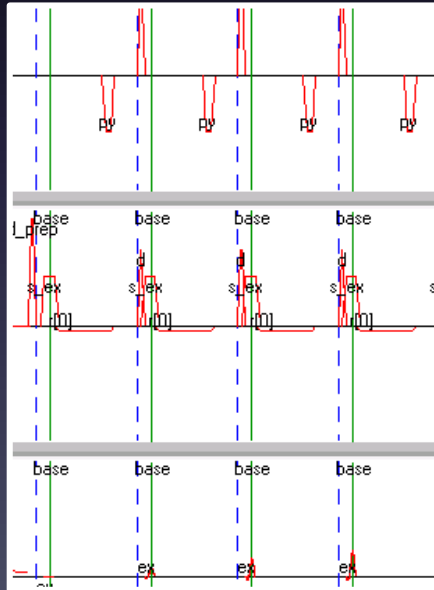
To develop innovative imaging technologies

and

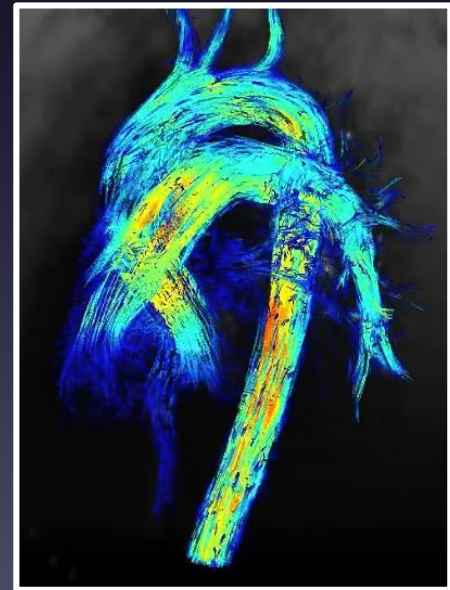
apply to important questions of human health and disease



Scanner hardware



Scan methodology



Data analysis

Examples

Funding:

EPSRC

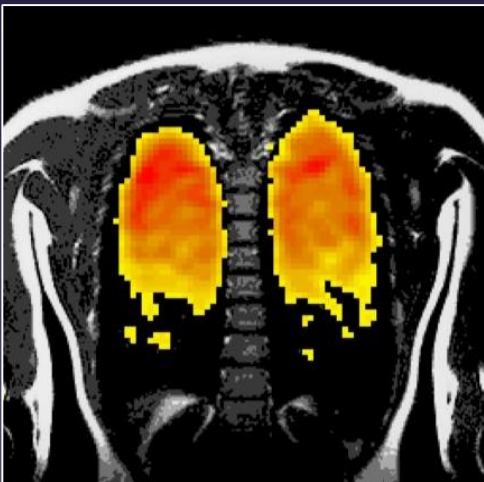
Engineering and Physical Sciences
Research Council

MRC

Medical
Research
Council

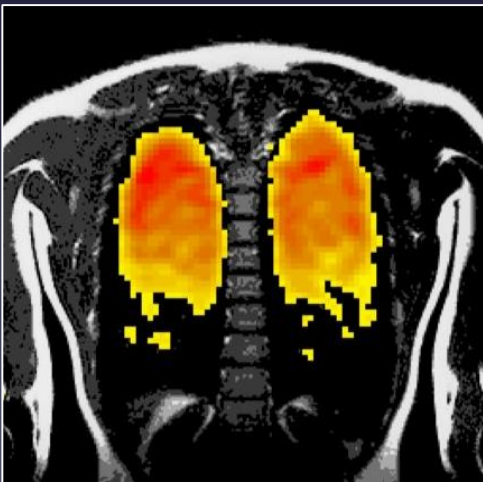
Examples

Inhalable MR-visible gases
for lung function imaging

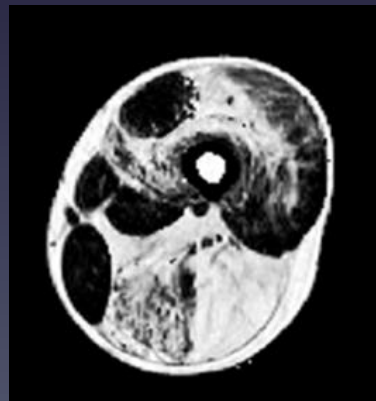
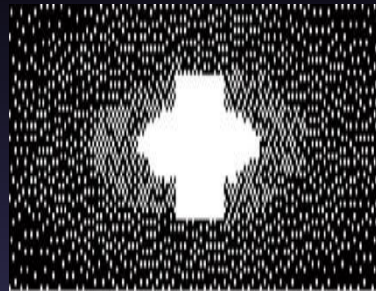


Examples

Inhalable MR-visible gases
for lung function imaging

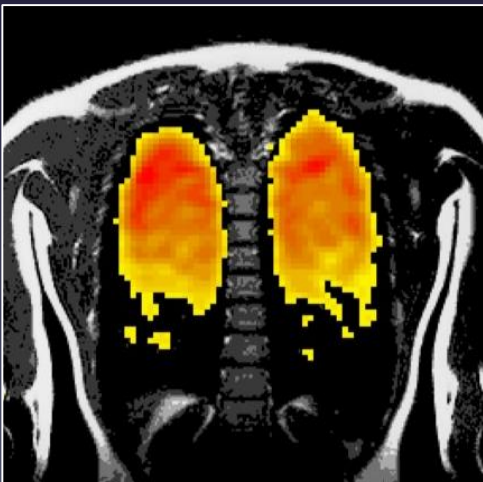


Accelerating MRI for
challenging
patient cohorts

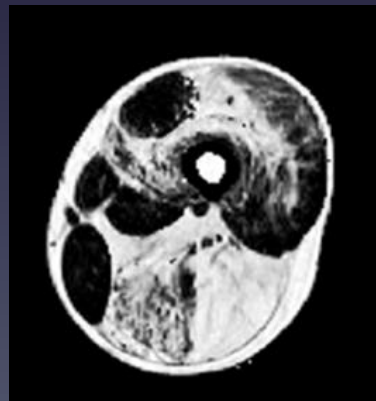
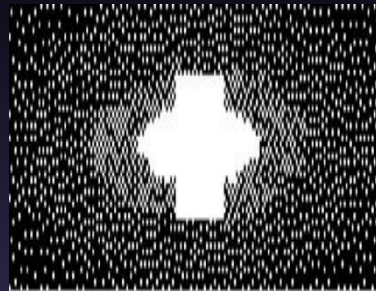


Examples

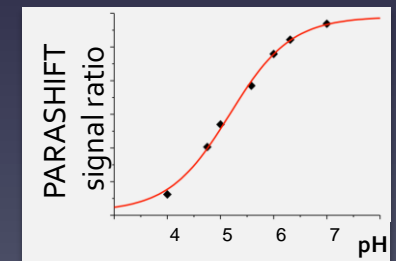
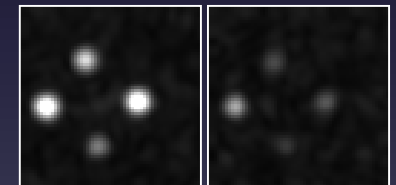
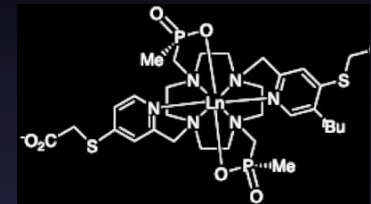
Inhalable MR-visible gases for lung function imaging



Accelerating MRI for challenging patient cohorts



Imaging agents sensitive to tissue physiology



Clinical research

Bipolar disorder

Dementia

Type 2 diabetes

Renal fibrosis

Traumatic brain injury

Cardiac dysfunction

Autonomic dysfunction

Oncology

Mitochondrial dysfunction

Muscle physiology

Tissue oxidative stress

Metabolic disorders

Muscular dystrophy

Hepatic steatosis

Primary Biliary Cirrhosis

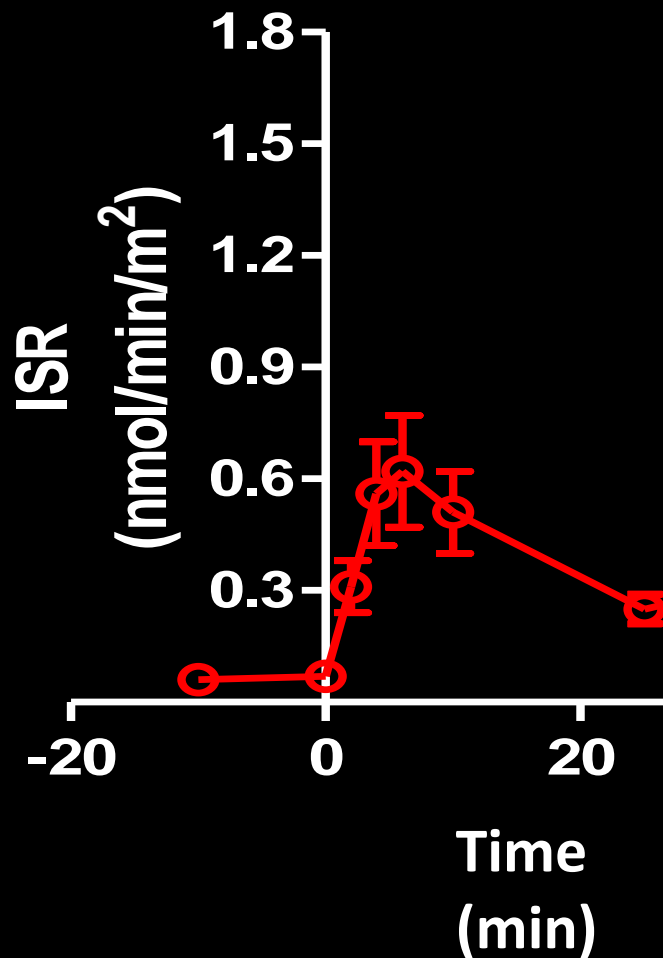
Rheumatoid arthritis

Neuropsychology

Brain ageing

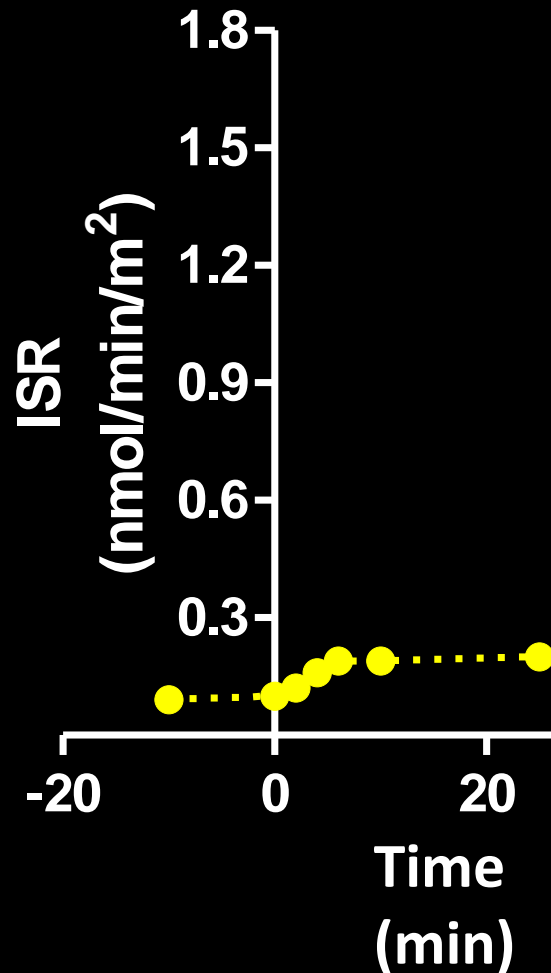
Brain functional imaging

Control subjects: Beta cell function by SISTA



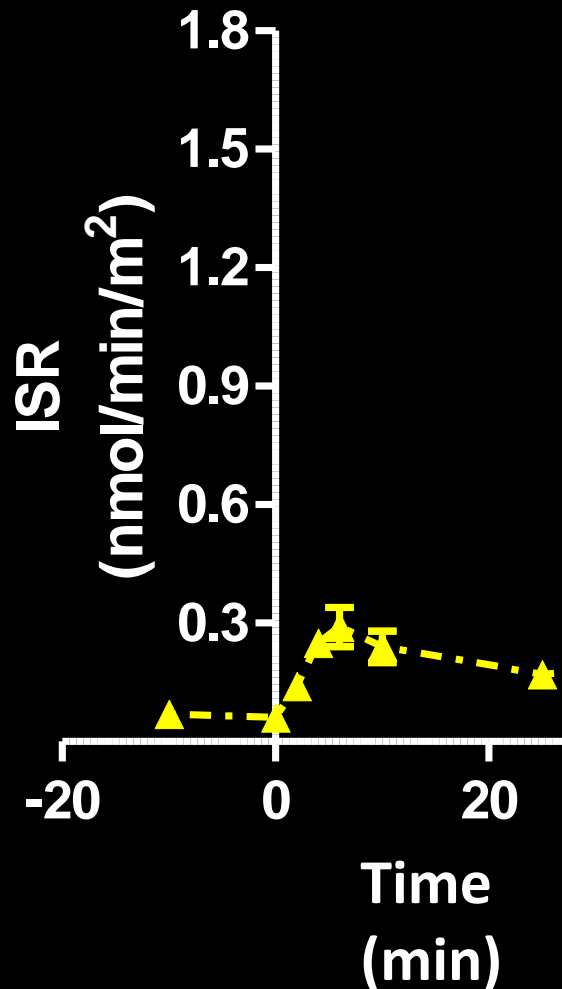
Beta cell function: Diabetes subjects

Baseline



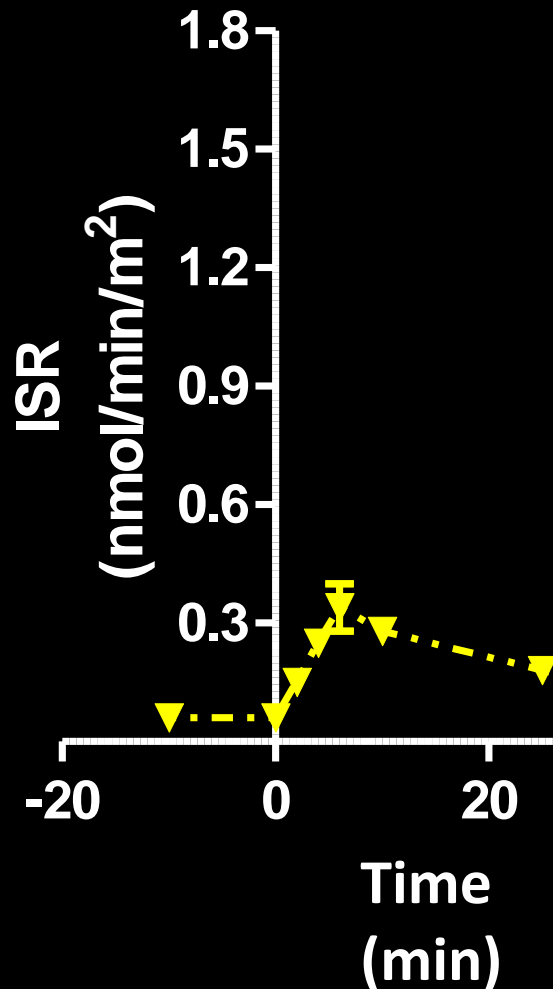
Beta cell function: Diabetes subjects

Week 1



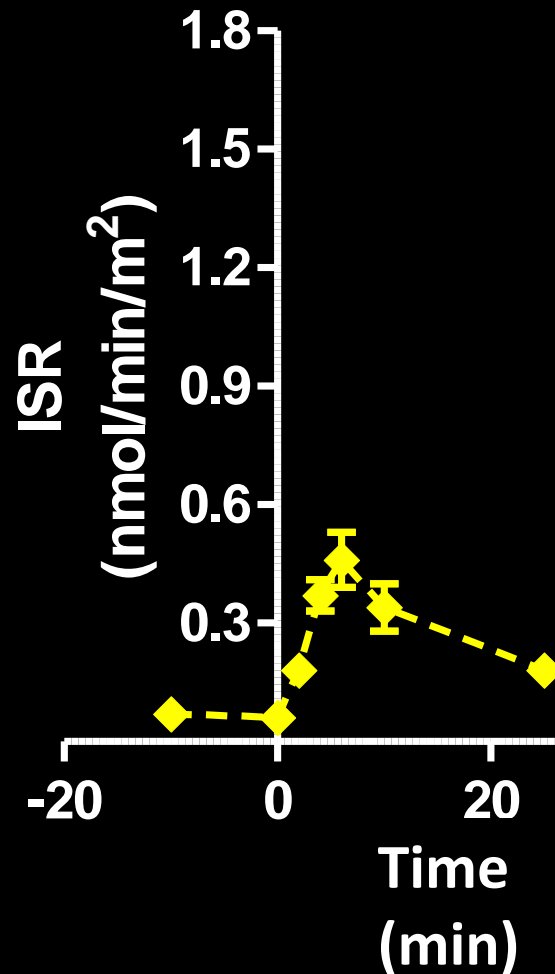
Beta cell function: Diabetes subjects

Week 4

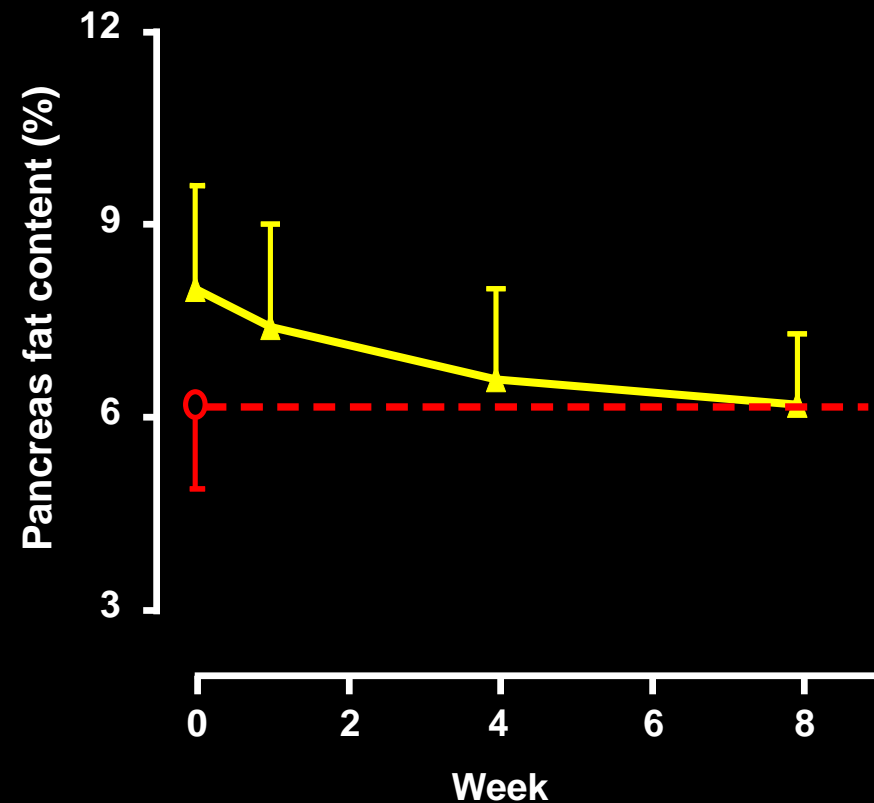
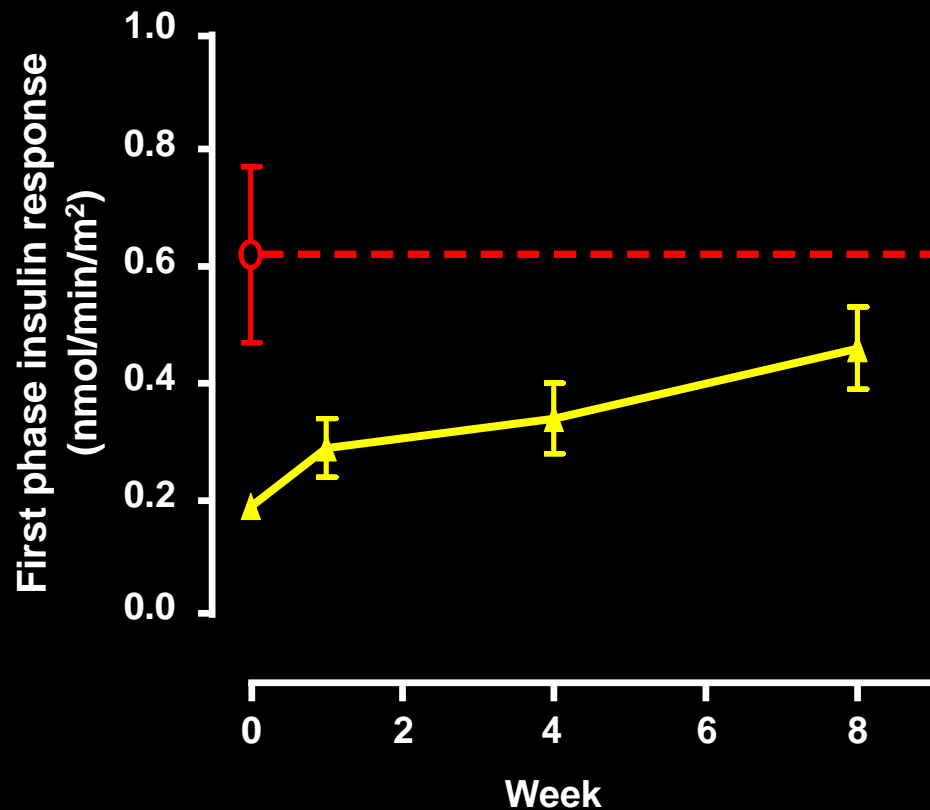


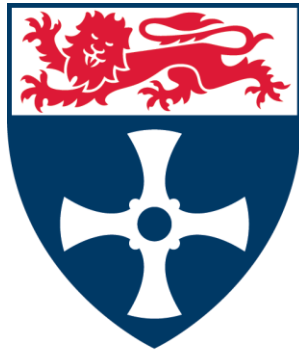
Beta cell function: Diabetes subjects

Week 8



Change in beta-cell function and pancreas fat





Newcastle
University

**Centre for
In Vivo Imaging**

www.ncl.ac.uk/civi