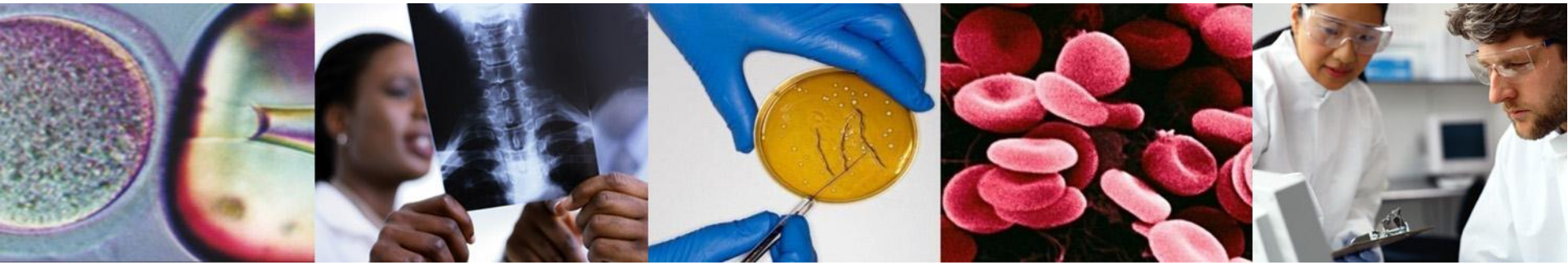


MRC Translational Funding

Dr Alexander Pemberton

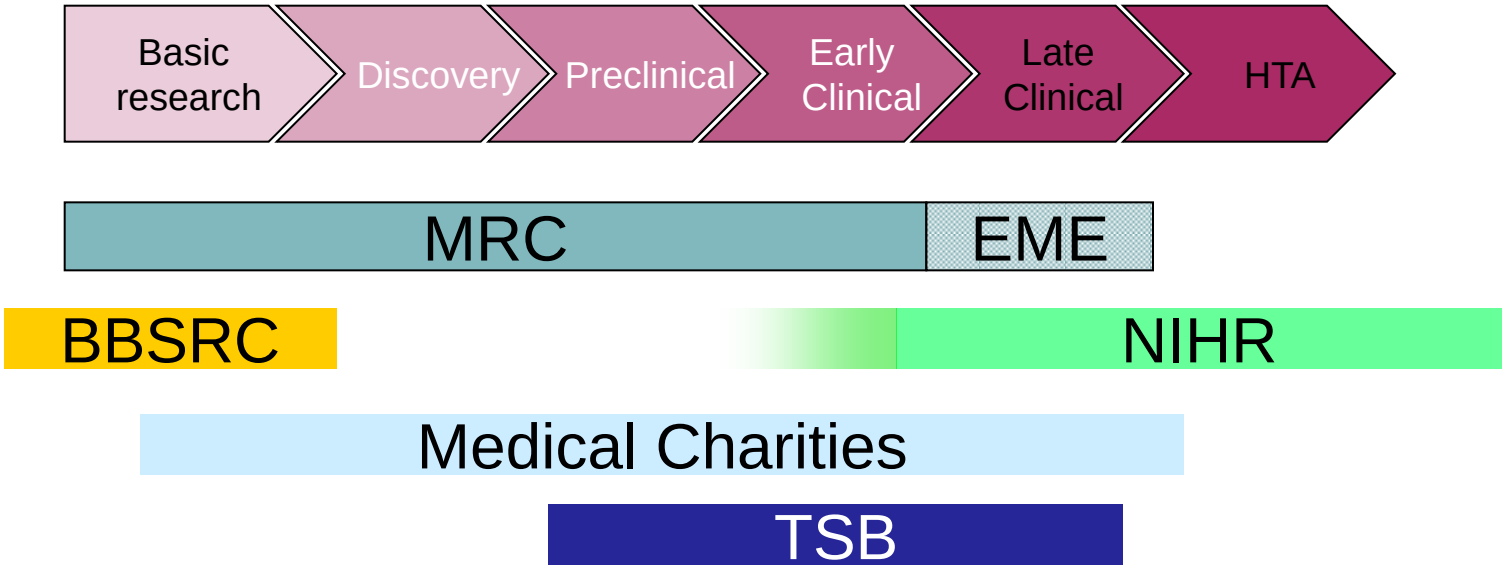
Medical Research Council

MRC mission

- Encourage and support high-quality research with the aim of improving human health.
- Produce skilled researchers.
- Advance and disseminate knowledge and technology to improve the quality of life and economic competitiveness in the UK and worldwide.
- Promote dialogue with the public about medical research.

MRC Remit and Partners

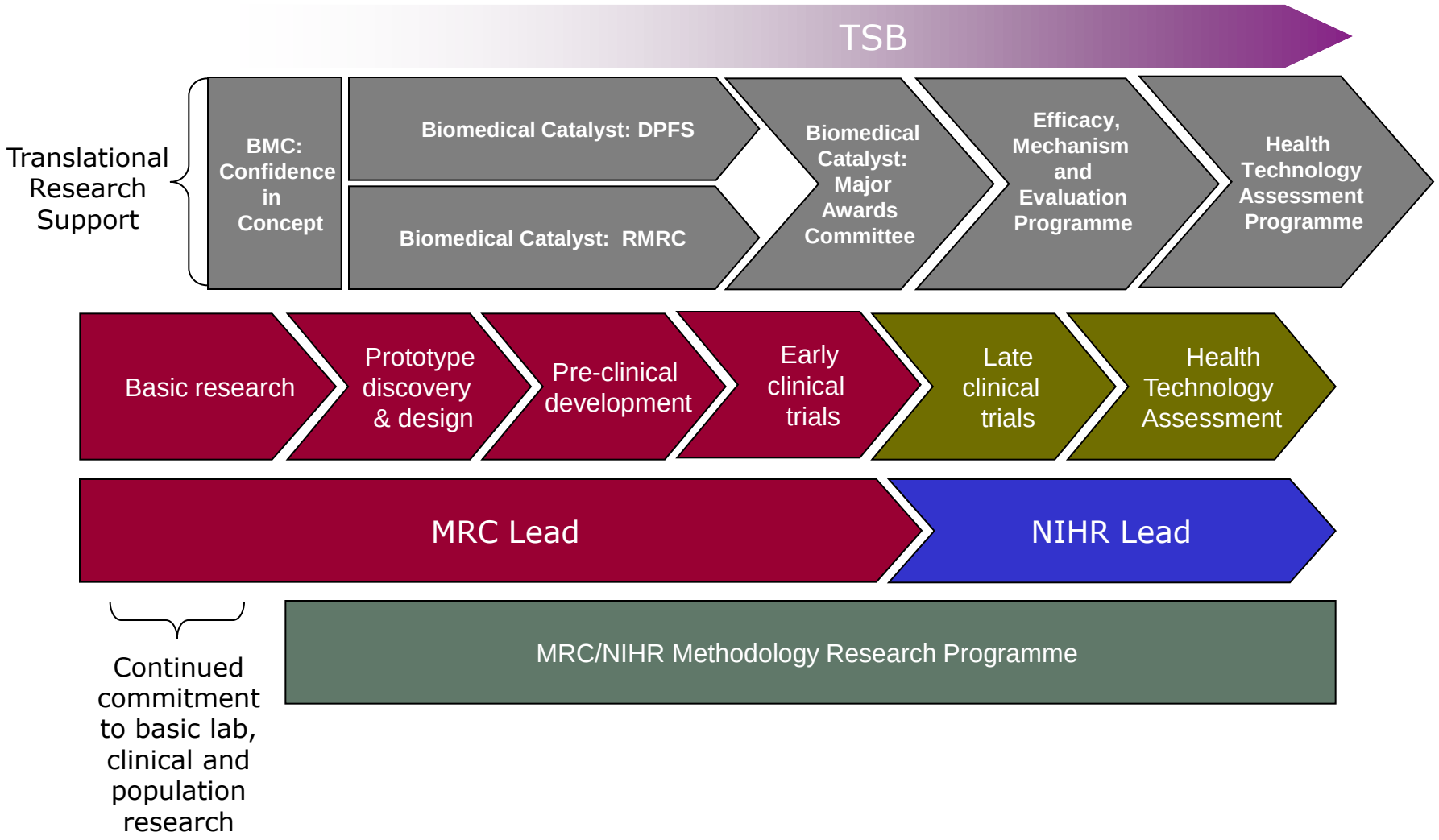
- **MRC: basic research to early clinical trials**
  - Underpinning and aetiological
  - Prevention
  - Detection and diagnosis
  - Treatment development & evaluation
  - Phase 1 & 2 trials
- **Other funders/partners**
  - Department of Health / National Institute of Health Research (NIHR)
  - Other Research Councils
  - Medical Charities
  - Industry
  - Technology Strategy Board (TSB)



MRC and translation

- MRC research expenditure
  - Discovery research 74%
  - Translational and applied research 26%
- Strong discovery science and talented, flexible researchers underpin everything
- Creative and reciprocal co-operation with industry
  - Partnerships to tackle complex fields
  - Public funding, project by project, to bridge the valley of death
- Partnerships with Universities, charities, RCs and TSB

MRC's Translational Research Funding



Translational Initiatives

- **Stratified Medicine**
  £60m over 4 years - funding for structured academic-industry disease consortia

- **Experimental Medicine Challenge Grants**
  £60m investment over 3 years to support ambitious, challenge-led studies of disease mechanisms in humans.

- **MRC/AstraZeneca: Mechanisms of Disease initiative**
  £10m to fund a unique initiative giving academic researchers access to deprioritised experimental assets from AstraZeneca.

Biomedical Catalyst

- Four-year £210 million translational programme open to academia and SMEs jointly managed by the MRC and TSB
- Three categories of grant: Feasibility, Early- and Late-stage
- Major Awards Committee (MAC) assess Late-stage awards and provides strategic oversight
- Industry-led applications are submitted via TSB
  - Funding is available to academic partners
- Academic-led applications for Early and Late-stage academic-led projects are made via the BMC: DPFS scheme.
  - Confidence in Concept is the MRC equivalent of the Feasibility award.

Confidence in Concept

- Institutional awards of up to £1.2m over 18 months
- Awards intended to support multiple projects covering preliminary work or feasibility studies; projects decided by university.
- Projects should be tightly defined, £50-100k in cost and lasting a maximum of 6 months
- The aim is to accelerate the transition from discovery science to translational research i.e. to get projects to the point where they could get funding for development (e.g. through BMC: DPFS)
- Could be seen as equivalent to seed funding – infrastructure and a pipeline of projects should already be in place
- Promotion of academic-industry interactions.

www.mrc.ac.uk/Fundingopportunities/Grants/CiC

BMC: DPFS

- Cornerstone of the MRC's Translational Strategy: www.mrc.ac.uk/Fundingopportunities/Grants/DPFS
- £35m/year, deadlines 3 times/year
- Different to Research Grants
  - Goal oriented and funding is milestone-based
  - Allows MRC to provide a long-term commitment to inherently risky projects
  - Down-stream reporting will help MRC develop a strong evidence base on outcomes
  - Investigators are required to submit
    - quarterly reports, to inform MRC of project progress,
    - milestone reports, to secure continued support

BMC:DPFS

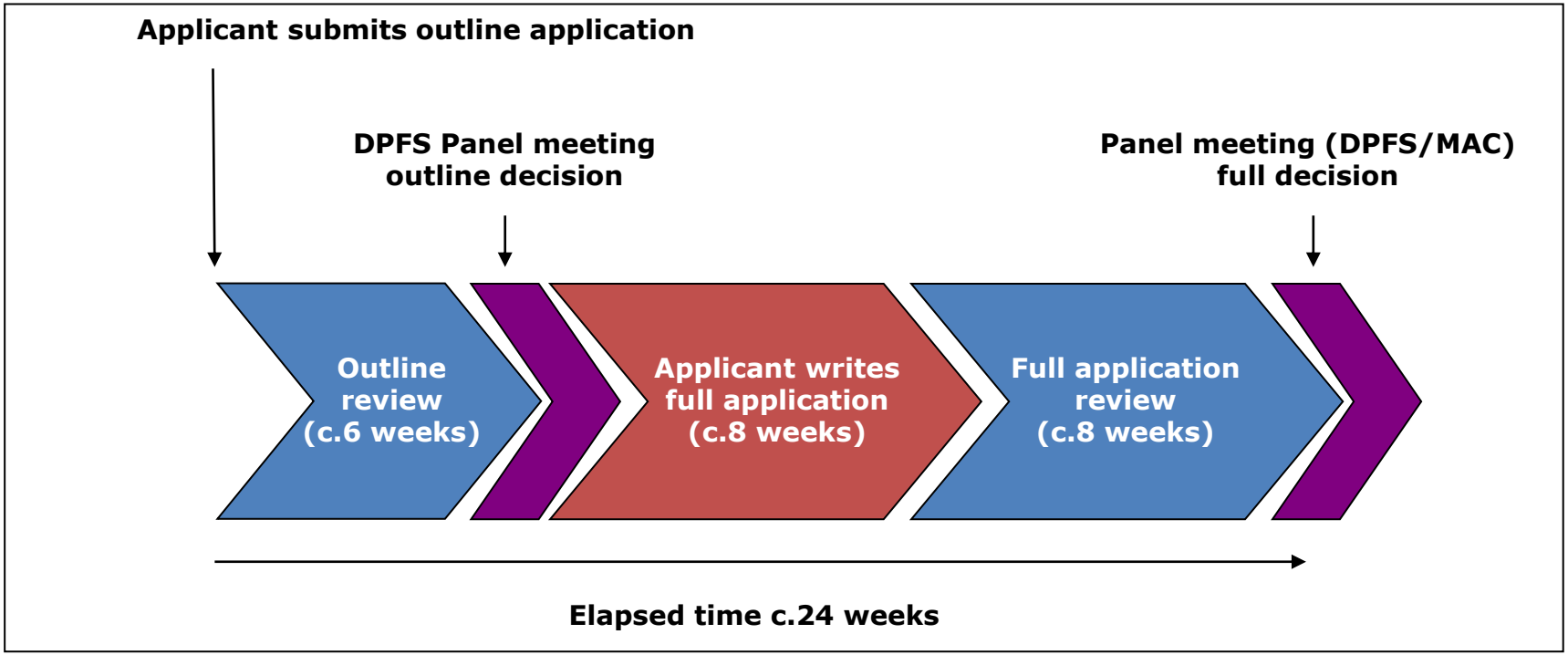
In remit:

- Development and pre-clinical testing of novel therapeutic entities, devices and diagnostics through to early-phase clinical studies (P1 to P2a)
- "Repurposing" clinical studies – existing therapies in new indications

Out of remit:

- Discovery science including mechanistic studies and biomarker identification (MRC research boards)
- Technology development where not aligned to a medical/clinical developmental plan (likely BBSRC or EPSRC remit)
- Phase 2b and 3 clinical trials & trials of non-novel agent-disease combinations (NIHR)
- Pre-clinical development and early clinical testing of novel regenerative medicine therapies is supported through the *Regenerative Medicine Research Committee* (£4m/year, deadlines 3 times/year).

BMC:DPFS application process



DPFS Panel

- Herbie Newell (Newcastle) - Chair

- Mimoun Azzouz (Sheffield; ex-Oxford BioMedica)
- Andrew Baker (Glasgow)
- Paul Brennan (Oxford; ex-Pfizer)
- Gillian Burgess (UCB)
- Alicia El Haj (Keele)
- Tony Gershlick (Leicester)
- David Gray (Dundee; ex-GSK)
- Andy Grieve (Aptiv Solutions)
- Neil Gozzard (UCB)
- Jo Hajnal (Kings; co-founder IXICO)
- John Isaacs (Newcastle)
- Helen Lee (Cambridge)
- John Lunec (Newcastle)
- Iain McNeish (Glasgow)
- Rayaz Malik (Manchester)
- Adrian Mander (MRC Biostatistics Unit)
- Pradeep Nathan (UCB & Cambridge)
- Raj Parekh (Advent Venture Partners)
- Tanya Parkinson (ex-Pfizer)
- Richard Peck (Roche)
- Mike Romanos (Crescendo Biologics)
- Simon Ward (Sussex; ex-GSK)
- Jonathan Weber (Imperial)
- Matthew Wood (Oxford)

Assessment Criteria

- **Need:** What is the need the proposal aims to help address? Is the need significant and does the proposal have a competitive advantage over competing solutions?
- **Rationale:** What is the rationale and supporting evidence for why the proposed solution will meet the targeted need? Is the rationale and level of qualification reasonable?
- **Deliverability:** Is the proposed development plan realistic? Does it offer good value-for-money? Does the team have access to the necessary assets to deliver the plan?
- **Intellectual Property:** Is there an appropriate intellectual property strategy in place to optimise the chances of downstream funding/partnering?

Downstream Project Support and IP

- Downstream Project Support
  - Downstream manufacturing costs: although you may not bear these costs, you do design them in
  - Address why you and your team are best placed to undertake this work
  - Evidence of a well considered exit strategy provides confidence to the Panel that it is providing a bridge rather than a pier
  - Note that if you intend partnering with a company, please explain how the company will access necessary finance/collaborations to support the project's further development

- IP
  - Ensure that you provide details of the IP distribution agreements between academic and industrial parties

Preparing your application

Need

Deliverability

IP

Rationale

Downstream Support

An application will only be as strong as its weakest link

MRC Industry Collaboration Agreements (MICA)

- Encouraging and supporting collaborative research projects between academic and industry researchers
- Key feature: **Flexibility**
  - Level and nature of industry contribution can vary – minimum amount will depend on IP arrangements and research stage (basic or applied)
  - Companies of any size can participate
  - Applies to all MRC funding and fellowship schemes

- Agreement between partners forms part of application – this may take months of negotiation.

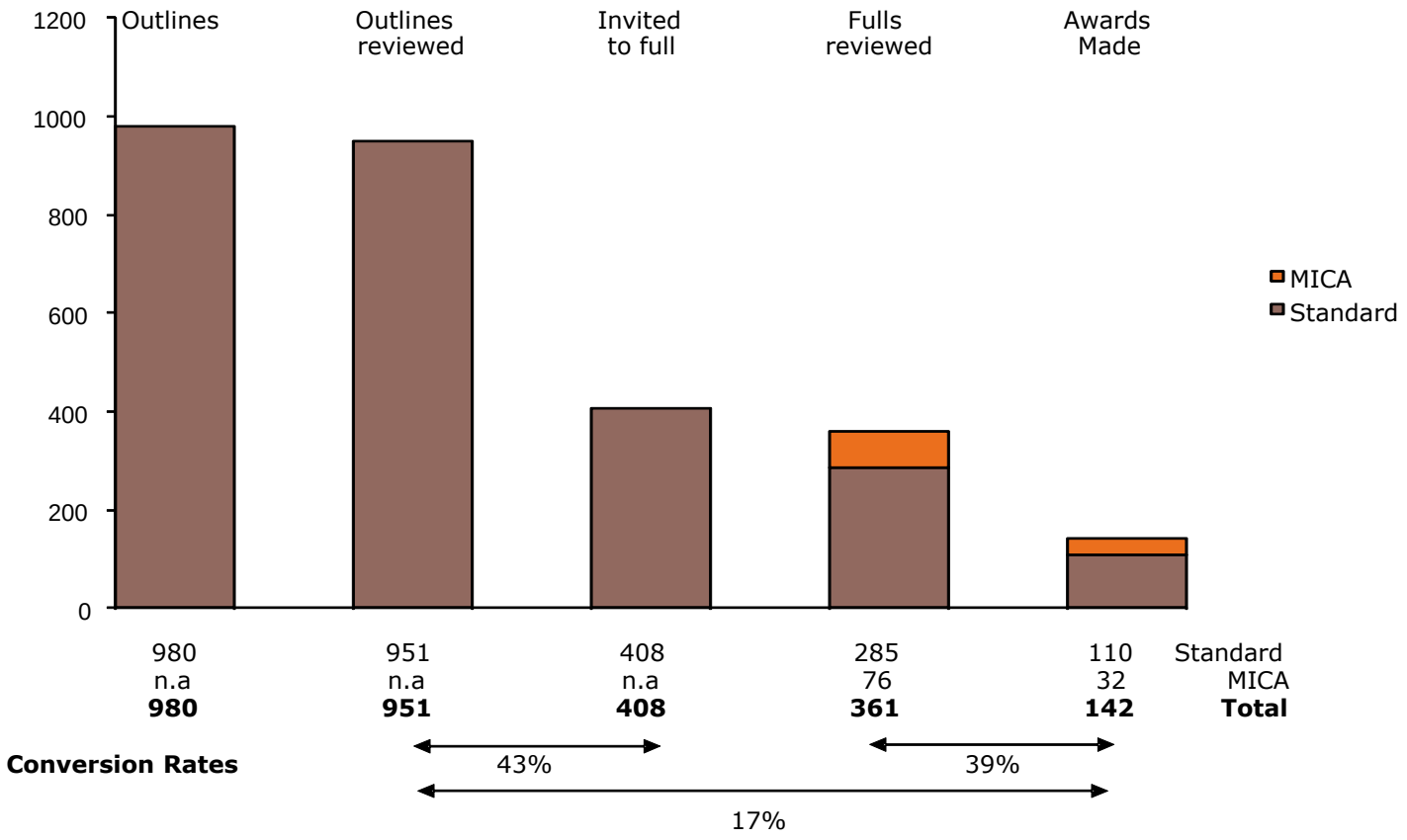
- Required at Full stage; overview should be provided at Outline

http://www.mrc.ac.uk/Fundingopportunities/Grants/MICA/Specification/index.htm

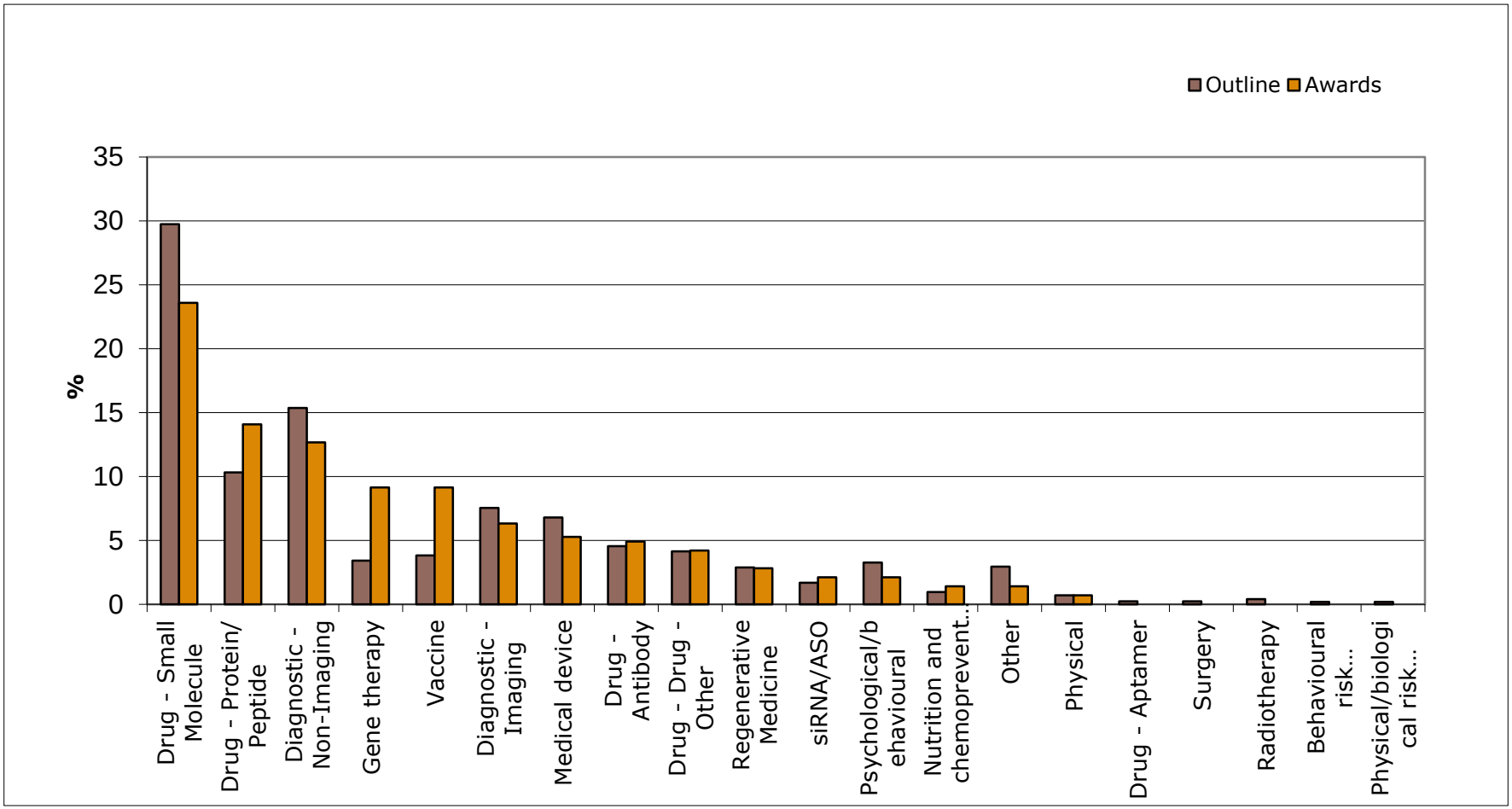
Awards

- At September 2013, 142 projects have been supported – at a total commitment of > £121m:
  - 105 therapeutic interventions including
    - 34 small molecule
    - 20 protein/peptide
    - 7 antibodies
    - 13 gene therapies
    - 13 vaccines
  - 27 diagnostics
  - 8 medical devices
  - 2 support tools

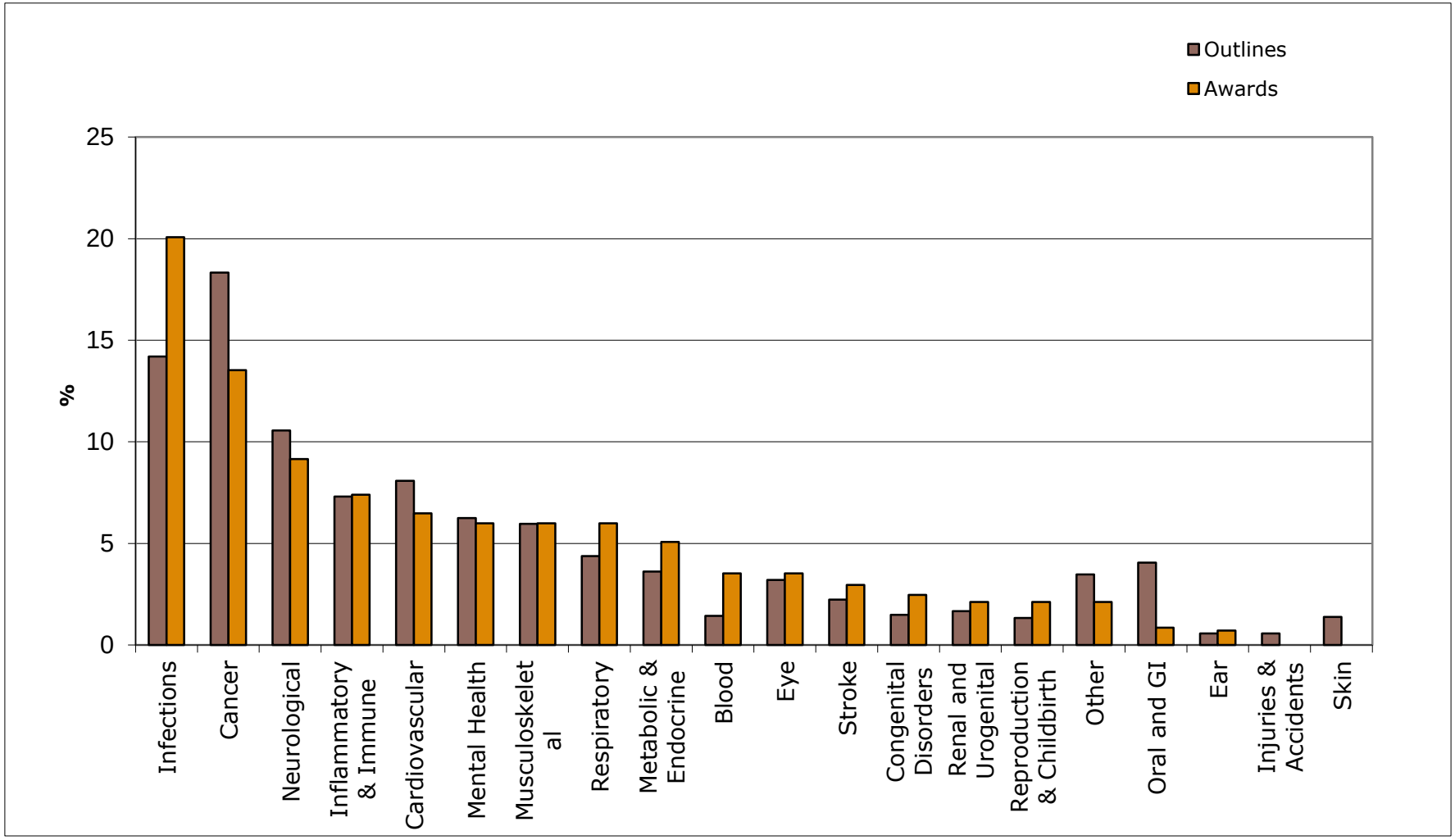
Applications by Stage



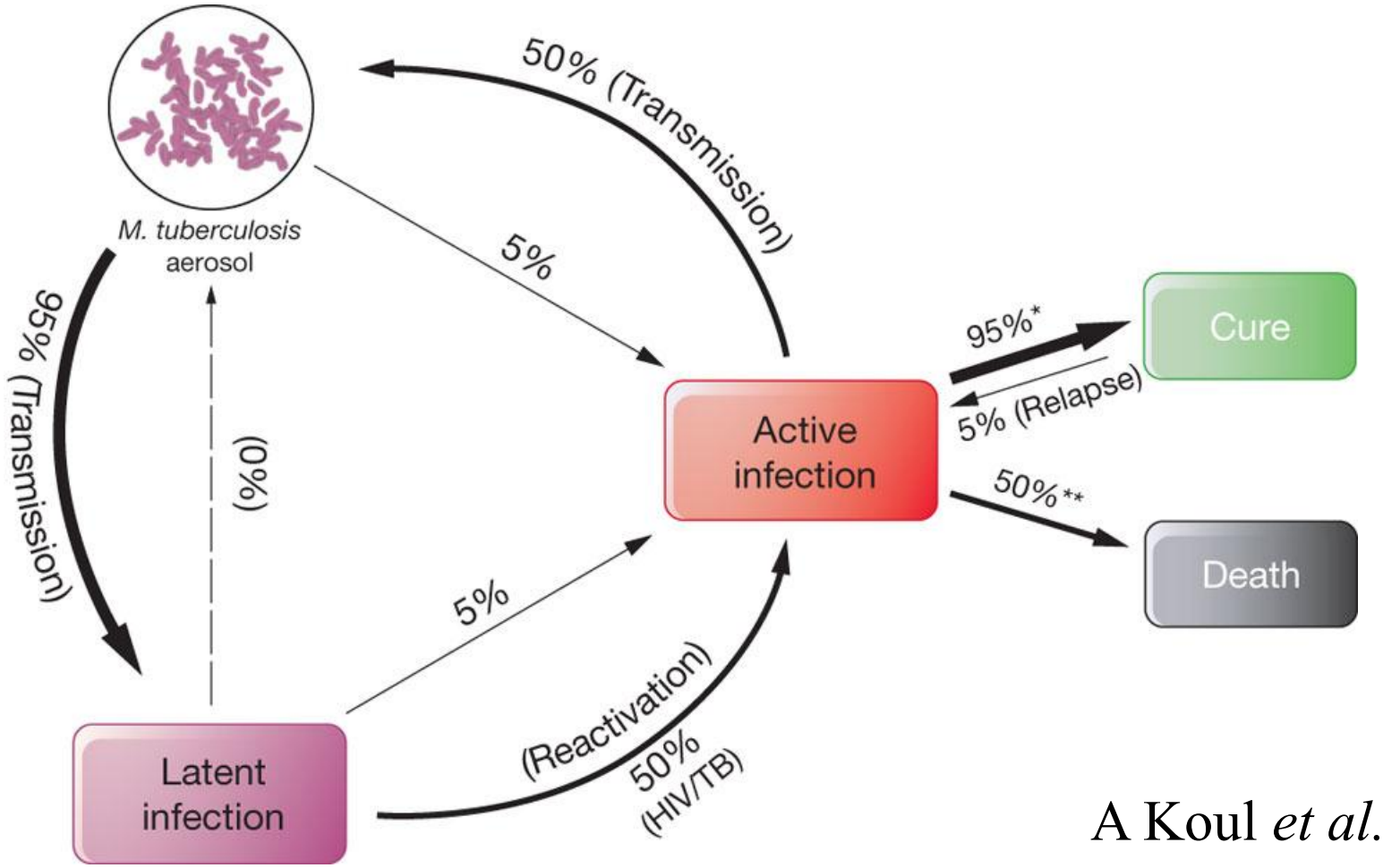
Applications by Modality



Applications by Therapeutic Area



Case Study: New drug against active and latent tuberculosis



A Koul *et al.*
2011 *Nature*

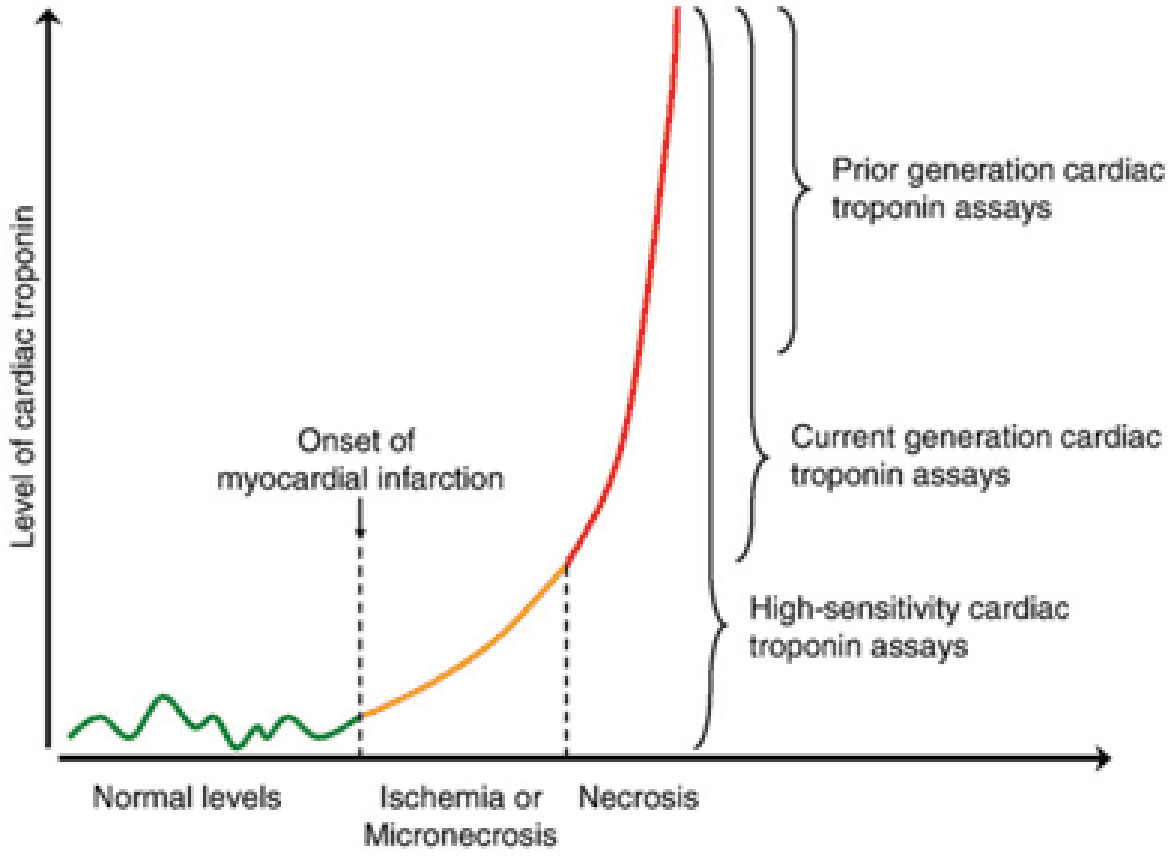
Case Study: New drug against active and latent tuberculosis

- **Clinical need:** New drugs are required for the management of drug resistant Mtb will reduce deaths, reduce the costs and length of treatment times, and reduce the emergence of XDR from MDR cases
- **Intervention:** Small molecule drugs targeting NADH: menaquinone oxidoreductase
- **Rationale:** Target is essential for the survival of replicating, dormant and drug resistant Mtb, and it is absent in humans
- **Project:** Lead development and optimization

- **Starting point:** Small molecule early leads
- **End point:** In vivo proof of concept using chronic Mtb model

- **Cost:** £1.3m (FEC) – **MICA with GSK**

Case Study: Validation of new diagnostic markers of MI



Rollins 2011
Clin Lab News

Case Study: Validation of new diagnostic markers of MI

- **Clinical need:** Current MI diagnosis requires two troponin tests undertaken at least 3 hours after expected MI. A faster single test would enable better patient management
- **Biomarker:** cardiac myosin binding protein C (cMyBP-C)
- **Rationale:** Study of the the ratio of protein released in ischemic coronary effluent compared to control identified a new marker, cMyBP-C, with a 19-fold increase
- **Project:** To develop a high sensitivity cMyBP-C immunoassay and to use this to assess potential of cMyBP-C as an MI diagnostic marker

- **Starting point:** Low sensitivity cMyBP-C immunoassay
- **End point:** Determination of circulating cMyBP-C concentrations in control populations

- **Cost:** £0.5m (FEC)

Case Study: fMRI-based neurofeedback for depression

- **Clinical need:** Treatment-resistant severe depression
- **Intervention:** Neurofeedback-based learning
- **Rationale:** Mechanistic + volunteer trials
- **Project:** Development and efficacy study

- **Starting point:** Healthy volunteer study already completed
- **End point:** Efficacy study in patients completed

- **Cost:** £0.5m (FEC)

Contacts

DPFS:

Dr Mark Pitman (mark.pitman@headoffice.mrc.ac.uk)

- Proteins, peptides, antibodies; imaging & radiotherapy; cell & regenerative medicine

Dr Alex Pemberton (alexander.pemberton@headoffice.mrc.ac.uk)

- Small molecules, siRNA, vaccines, gene therapy (non-neurological)

Dr Steve Oakeshott (stephen.oakeshott@headoffice.mrc.ac.uk):

- Gene therapy (neurological), non-imaging diagnostics, medical devices, psychological/behavioural

RMRC/Stratified Medicine

Dr Jonathan Pearce (Jonathan.Pearce@headoffice.mrc.ac.uk)

Experimental Medicine (& methodology)

Dr David Crosby (David.Crosby@headoffice.mrc.ac.uk)