MRC perspectives ?

Colin Blakemore

The past (BC): some achievements in basic research

- Chemical transmission in the neuromuscular junction and in synapses
- Nerve impulse propagation and muscle contraction
- Structure of DNA
- Analysis of protein structure and nucleic acid sequencing
- Basis of protein synthesis
- Structure of antibodies
- Development of NMR, MRI and PET
- First complete genome sequence *(C. elegans)*
- Development of monoclonal antibodies
- Stereochemistry of enzyme-catalysed reactions
- Basis of the cell cycle and programmed cell death
- Crystallographic electron microscopy; nucleic acid-protein complexes
- Synthesis of ATP
- Genetic basis of sex determination
- Gene for Huntington's Disease
- Establishing stem cell research in the UK

27 Nobel Prizes to MRC researchers

The past (BC): some achievements of clinical relevance

- 1916: Rickets caused by lack of vitamin D
- 1918: Influenza caused by a virus
- 1930s: Trials of new drugs to treat infections, including meningitis and pneumonia
- 1933: Discovery of the influenza virus
- 1940s: Trials of treatments for tuberculosis and other bacterial infections
- 1940s: Invention of randomized controlled clinical trials
- 1945: Discovery and development of penicillin
- 1956: Smoking causes cancer
- 1960s: Clinical trials of radiotherapy for cancers
- 1960s: Basis of immune suppression for organ transplantation
- 1970s: Clinical trials of chemotherapy for leukaemia
- 1973: Magnetic resonance imaging as a diagnostic tool
- 1970s: Aspirin and warfarin decrease risk of cardiovascular disease
- 1991: Folic acid supplements cut spina bifida risk
- 1990s: Anti-retrovirals and ARV combinations delay progress of AIDS
- 1980-: Humanized and human antibody treatments (e.g. HUMIRA) and diagnostics
- 2001: Statins cut risk of strokes and heart attacks
- 2002: Magnesium sulphate halves risk of eclampsia
- 2000-: Pneumococcus vaccine trials and anti-malarial measures
- 2003: CRASH trial: corticosteroids should not be prescribed for head injury
- 2003: Stem cells to treat spinal injuries
- 2006: Photoreceptor transplantation

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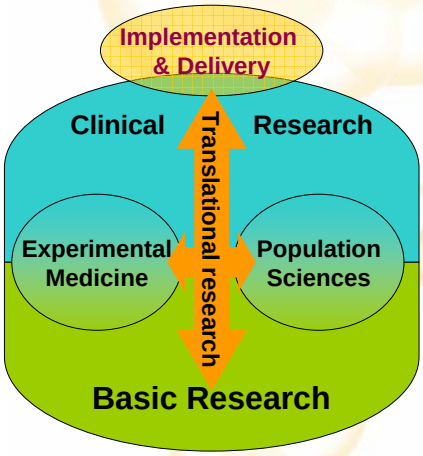
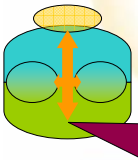
The past: working to embed a translational culture (2003-7)



The MRC definition:

Bidirectional transfer of knowledge between basic work (in the laboratory and elsewhere) with that in the whole patient

Basic Sciences

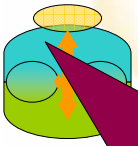


Building on the SR2002 programmes: regenerative medicine, systems and integrative (in vivo) biology, and brain sciences

ENU Mutagenesis Call

New building for LMB

Clinical Research



Doubling funding for clinical trials, including development & evaluation of public health interventions

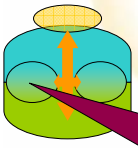
More clinical training awards

Development of the GPRF

Influenza: Call for Proposals

Working with UKCRC partners and the UK Clinical Research Networks

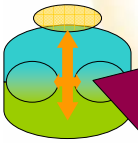
Experimental Medicine



Working with UKCRC partners in a co-ordinated approach, especially CRF Initiative

£15M Experimental Medicine Call – 28 studies funded

Population Sciences



Increased support for cohorts and underpinning methodologies

£4M Call on Methodology & Implementation

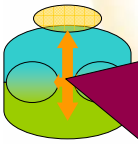
Scottish Institute for Public Health

Population Health Sciences Research Network

Launch of Biobank

International epidemiological research

Translational Research



MRCT Drug Discovery Group, Showcase events, Development Gap and follow-on funding

Milstein Awards and Translator Awards - to promote translational approaches in research

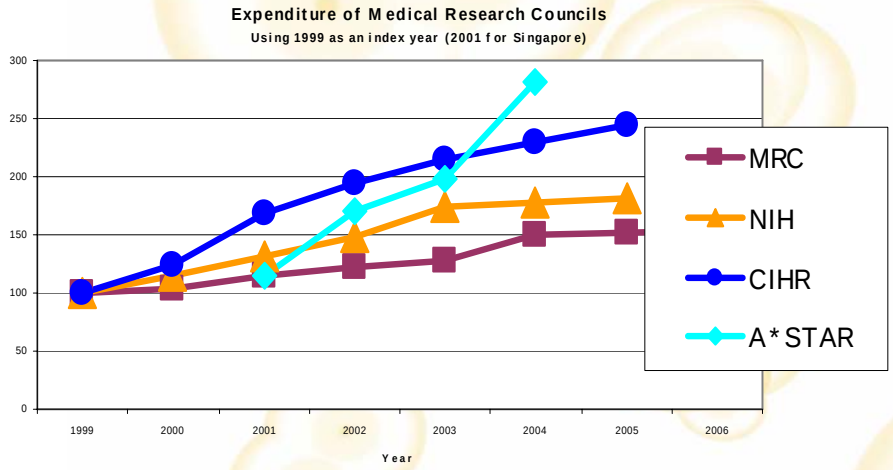
Translational Centre grants

Biomarker Call

Renewal of NIMR with UCL/UCLH

Implementing public health interventions in Africa

Funding: international comparisons



MRC's submission to Cooksey (July 2006)

- **Ideal solution would be a fully merged health research organisation - but difficult!**
- **Develop a large funding programme for collaborative and application-orientated R&D**
  - **Linked to change in strategy development**
- **"Research side" support for implementation of research in NHS should be strengthened, as well as NHS "user-side" innovation**
- **Funders and policy makers need better, objective feedback on benefits from translational and applied research**
- **Retain existing UK research strengths during the changes**

The future (AD): Cooksey's proposals most relevant to MRC

- OSCHR shapes overall funding for MRC and NIHR
- OSCHR ensures strategies are well aligned
- Areas of applied research are responsibility of NIHR
  - Health services research & social care
  - Health technology assessment
  - Applied public health
  - NHS staff research on better patient care
- Translational medicine funding board
  - Jointly funded by, and accountable to, MRC & NIHR
  - Space to develop new ways of working & new partnerships
- Sustained funding for basic science (clinical and non-clinical)

The future (AD): MRC's role

- Genuinely sustaining the quality of the UK's basic research across the full range of pre-clinical and clinical sciences
- Supporting health research throughout the UK and through international collaboration
  - Global health
- Strengthening
  - experimental medicine
  - support for translation in both structures and training
  - partnerships with other funders and users
  - priority areas of basic sciences
  - engagement of physical sciences / mathematics / computation / social science, etc with medicine
- More collaboration with NIHR – despite the clarification of responsibilities

The future (AD): implementing the detail

- **Stimulate translation**
  - ***For public health, prevention and devices, as well as drugs***
  - ***Focus on practical action***
- **New ideas and approaches that add value to UK science**
  - ***Neater boundaries are not enough***
- **No time for territoriality**
  - ***Clarify responsibilities, but don't create new barriers to translation***
- **Improved quality and impact of all research – basic and applied**
  - ***Deciding how to set the balance***
- **Better mechanisms for setting strategic targets**
  - ***But marry clinical need and scientific tractability in determining priorities***

The future (AD): key questions

- **What sort of health research system does the UK need to compete?**
- **What new activities are needed to add value?**
  - **What will bring in more public and private investment ?**
- **How should funders and research organisations refine decision making?**
- **How will we judge success?**
  - **What should be our expectations for the scale, form and speed of delivery?**

The future (AD): international competitiveness

- World class universities and institutes
- Unique infrastructures
  - DIAMOND, Connecting for Health, Biobank, Wellcome Trust Sanger Centre
- Cooperate to achieve strength in complex, integrative sciences
  - Experimental medicine
  - Physical sciences / life sciences interface
  - Behaviour sciences and health
- Selective international links

The future (AD): new opportunities ?

- Precompetitive research partnerships
  - drug safety – from molecular toxicology to Phase IV
  - biomarkers – from lab to validation
  - Regenerative medicine and stem cells
- Public health and prevention of chronic and infectious disease
- Directed programmes of multidisciplinary research
  - Priority disease areas
  - Neglected illnesses
- Experimental medicine
  - Building on new infrastructure, training, basic links

The future (AD): aims and challenges

- **Strengthen translational research**
  - Keeping broad view of sector, balanced incentives and investments
- **More public/private alignment**
  - New decision-making models for research investment on both sides? Balancing long-term and short-term?
- **More directed programmes in priority areas**
  - Achieving excellence in programme leadership; models for decision-making and evaluation
- **Stronger cadre of clinical and translational researchers**
  - Cross-organization work to ensure sustained career incentives and support

The future (AD): success criteria

The model should be reviewed in 2011: how will we judge success, and whether we can do better ?