

**14 August 2006**

## **MRC: Questionable Dedication to Human Health**

**By Lara**

In January this year, the Journal: Nature Reviews Microbiology printed a short editorial entitled 'Bacteria not welcome at the MRC?'. [1] This article began by reviewing the many outstanding breakthroughs in bacteriological research funded by the Medical Research Council UK since its establishment in 1913. These included such medical milestones as the purification of penicillin in pharmaceutical quantities by Ernst Chain and Howard Florey which subsequently enabled the drug to become available for curing a wide range of bacterial infections. Later in 1962, Watson and Crick solved the molecular structure of DNA while working at the MRC Unit for Research on the Molecular Structure of Biological Systems (which went on to be the MRC Laboratory of Molecular Biology at Cambridge).

Sadly, such groundbreaking discoveries seem to be a thing of the past and the study of bacteriology, according to the editorial, now seems to have taken a back seat at the MRC. The editorial calculated that in the region of £3 million was spent on bacteriology in the 2004/05 financial year, or less than 1% of the MRC budget. While post-genome research was ear-marked as a research priority, according to the editorial, this did not include the elucidation of the genome sequence of medically important bacterial pathogens. Furthermore, despite having 50 research facilities, the MRC does not have a unit dedicated to the understanding of bacterial pathogens.

Later in May, 2006, Colin Blakemore, Chief Executive of the MRC wrote a reply to the editorial in which he clarified that the spend for bacteriology in the most recent financial year (2005/06) was in fact £8.5 million. [2] This he said comprised:

- £4.8 million administered by the Infections and Immunity board within the MRC
- The remainder (£3.7 million) for research in bacteriology being supported in MRC units and institutes, principally at the National Institute for Medical Research in Mill Hill, London, and the MRC laboratories in The Gambia.

Professor Blakemore goes on to mention several external organisations whose study of bacteriology 'complements ours [the MRC]', these parties including The Wellcome Trust and the biotechnology industry.

Blakemore goes on to state in regards to the MRC that:

*'We are dedicated to building on the legacy of our previous Nobel laureates and continuing our quest to tackle disease and improve human health, not least through support for research on infectious diseases'*

So, one might ask the question – what is the MRC doing to support research into tick borne diseases including Lyme borreliosis? How much of the £8.5 million spend is devoted to these devastating pathogens and their role in ill-health?

While information on the money spent in this area by external organisations is not something that can be compiled easily, the MRC website does contain downloadable spreadsheets listing its grant awards for the period 2004-2006. [3] A search of these spreadsheets for the keywords: babesia, babesiosis, bartonella, bartonellosis, borrelia, borreliosis, ehrlichia, ehrlichiosis, lyme, tick and spirochaetes, turned up exactly no results, none whatsoever. Unless, these terms are not sufficiently exhaustive to uncover research aimed at tick-borne pathogens listed within these spreadsheets, then it would appear that in the last two years, the MRC has not awarded a single grant to these areas.

Considering then, the role that tick-borne pathogens have been postulated for some time now to play in those patients labelled with ME/CFS, the stated dedication of the MRC in supporting research on infectious diseases would appear to have badly neglected these patients.

However, it is no small irony that funding totalling £8.5 million (identical to the total MRC spend on bacterial research in 2005/06) was in fact awarded by the government to trials based on a highly flawed, unproven and harmful psychiatric approach to dealing with ME/CFS (The PACE trials). The MRC also allotted these trials £2.6 million of its own budget. It would seem that had this money not been made available for these trials (which many patients and organisations have wholeheartedly rejected), then it could have been allotted instead to research on bacteriology at the MRC, thus more than doubling its budget for this area.

I believe that any calls for future funding of the harmful and inappropriate psychiatric approach to ‘treating’ ME/CFS should be firmly refused in favour of further research into tick-borne pathogens, other bacteria and their interaction with viral pathogens. These mechanisms are postulated to play a role in the illness of patients labelled with ME/CFS. Some areas which, therefore would be of enormous benefit to patients I believe are the following:

- Clinical studies to validate (and ultimately make available through the NHS) of tests for chronic borreliosis including:
  - o CD57 lymphocyte (Stricker Panel)
  - o Vitamin D (25-OH and 1,25-OH) totals and ratios
  - o Dark Field Microscopy blood analysis
  - o ATP profiles
- Presence of tick-borne pathogens, other bacteria and viruses in ME/CFS labelled patients
- Clinical studies of the treatment of patients with tick-borne pathogens and other bacteria with anti-biotic therapy.
- Study of patients with polymicrobial infections and the effectiveness of anti-biotics vs. anti-viral therapies
- Effectiveness of vitamins/supplements in treating ATP dysfunction in patients with tick-borne infections and other bacteria.

The information now available to the government regarding the role of various infections in ME/CFS labelled patients now makes any further funding of trials involving inappropriate exercise/psychotherapy wholly inexcusable. If the government truly wishes to reduce the burden of incapacity benefit, and the MRC wish to stand by its claim of being dedicated to improving human health, it is time ensure that appropriate funds are made available to those patients who desperately need proper research and treatment for their debilitating and devastating diseases.

## References

1. Editorial: Bacteria not welcome at the MRC? Nature Reviews Microbiology 4, 2 (January 2006). Available at:  
<http://www.nature.com/nrmicro/journal/v4/n1/abs/nrmicro1332.html> (subscription only)
2. Bacteria not welcome at the MRC? The MRC response. Nature Reviews Microbiology 4, 320 (May 2006) Colin Blakemore FRS. Available at:  
<http://www.nature.com/nrmicro/journal/v4/n5/full/nrmicro1418.html>
3. Recent MRC grant awards 2004-2006. Available at:  
[http://www.mrc.ac.uk/index/funding/funding-awards/funding-recent\\_grant\\_awards.htm](http://www.mrc.ac.uk/index/funding/funding-awards/funding-recent_grant_awards.htm)

\*\*\*\*\*

## Editorial

**Nature Reviews Microbiology 4, 2 (January 2006)**

<http://www.nature.com/nrmicro/journal/v4/n1/abs/nrmicro1332.html>

## Bacteria not welcome at the MRC?

Diseases caused by bacteria place a huge burden on the UK's health system. As the UK's largest public funder of biomedical research, could the MRC do more to further our understanding of these pathogens?

The Medical Research Council (MRC) is a grant-awarding organization of international repute. Supported by UK taxpayers, the MRC is the UK's largest public provider of biomedical-research funds and, armed with this capital, the organization seeks to promote research into all areas of medical science "with the aims of improving the health and quality of life of the UK public and contributing to the wealth of the nation".

There is no doubt that MRC-funded research has benefited many, not only in the UK. Since its establishment in 1913, the organization has been directly responsible for many of the most significant discoveries and achievements in medicine. For readers of this journal, notable milestones include the work of Ernst Chain and Howard Florey who, building on the 1929 discovery by Alexander Fleming of penicillin's antibacterial properties, showed that it was possible to purify penicillin in pharmaceutical quantities and cure a wide range of infectious bacterial diseases. All three were awarded the Nobel Prize in Physiology or Medicine in 1945. In 1953, James Watson and Francis Crick solved the molecular structure of DNA while

working at the MRC Unit for Research on the Molecular Structure of Biological Systems, which later became the MRC Laboratory of Molecular Biology at Cambridge. Watson, Crick and their collaborator, Maurice Wilkins, received the 1962 Nobel Prize in Physiology or Medicine for their discovery.

Both of these discoveries, and many other achievements made possible through the support of the MRC over their 93-year history, have proved invaluable in furthering our understanding of bacteria, bacterial infectious diseases and antimicrobial strategies. Putting the reputation of the organization to one side, a pertinent question of more immediate relevance is to consider whether the MRC is in a position to provide a similar degree of stimulus to the field of bacteriology in the years to come? A rudimentary analysis of recent funding trends by the MRC in this area suggests that this will not be the case.

A review of the lists of recently awarded MRC grants from the last grant awarding session ([http://www.mrc.ac.uk/index/funding/funding-recent awards.htm](http://www.mrc.ac.uk/index/funding/funding-recent%20awards.htm)) [Lara note - this link is not working – use reference 3 as above for full details of grant awards] revealed that 293 grants were awarded to UK biomedical scientists. Of these, just 10 could be classified as awards funding research on pathogenic bacteria. The lucky few included projects on Group A streptococcal fimbriae, structural and functional studies on the Shigella type III secretion system, and the roles of sialic acid in the commensal and disease states of Haemophilus influenzae. The 10 grants amount to approximately 3% of the listed funded grants or £3 million pounds in funding, a sum of money that equates to less than 1% of the total MRC research grant budget for 2004/2005. Surprisingly, of these awards, none were devoted to furthering our understanding of bacteria responsible for either food-borne diseases or hospital-acquired infections, two of the more devastating medical burdens afflicting the UK health system.

“...of these awards, none were devoted to furthering our understanding of bacteria responsible for either food-borne diseases or hospital-acquired infections.”

On reflection, perhaps this paucity of success for grants funding bacteriology-focused projects is not entirely unexpected. Among the 50 or so MRC research centres and units, there is no facility that focuses on research into improving our understanding of the biology of bacterial pathogens, a first step in the successful development of any therapeutic strategy. Recently, the funding body announced a spending priority on post-genome research, a worthy ambition. However, deciphering the genome sequence of medically important bacterial pathogens — a crucial research milestone in achieving an understanding of the molecular basis of the infectious process and an obvious prerequisite to post-genomic studies — is left to other funding bodies to support.

The remit of the MRC is huge — their portfolio encompasses the whole spectrum of biomedical science, from basic research to bedside clinical practice. In addition to supporting research across these disparate areas, a focus on clinical research must be at the heart of the MRC's mission to build a knowledge base that will ultimately improve clinical practice and maintain public health. With this essential focus on clinical research and with so many important causes competing for limited funds, striking the correct balance is a complex and constantly evolving undertaking. In

general, the MRC does an admirable job in achieving an equitable balance. Where there is an argument for a reassessment of priorities is a clearer recognition of the importance of bacteriology and, more specifically, an increased commitment to providing support that furthers our understanding of the biology of bacterial pathogens, especially those that place the greatest pressure on the UK health system.

\*\*\*\*\*

**Nature Reviews Microbiology 4, 320 (May 2006)**

<http://www.nature.com/nrmicro/journal/v4/n5/full/nrmicro1418.html>

## **Bacteria not welcome at the MRC?**

### **The MRC response**

Colin Blakemore FRS<sup>1</sup>

#### **Author affiliations**

1. Colin Blakemore FRS is Chief Executive of the Medical Research Council, 20 Park Crescent, London, W1B 1AL, UK

In a recent editorial, we argued that the UK's Medical Research Council (MRC) was neglecting the field of bacteriology. Here, Colin Blakemore FRS, Chief Executive of the MRC, responds to these criticisms.

The editorial in your January 2006 issue, ['Bacteria not welcome at the MRC?'<sup>1</sup>](#), asked whether the [MRC](#) could be doing more to further our understanding of bacteria and the diseases linked to them.

As you pointed out, the MRC has a proud history of achievements, not only James Watson and Francis Crick's solution of the molecular structure of DNA in 1953, the discovery of monoclonal antibodies at the MRC Laboratory of Molecular Biology in Cambridge, and Sir Richard Doll's work linking smoking to cancer, but also Ernst Chain and Howard Florey's breakthrough in purifying penicillin in pharmaceutical quantities.

In your editorial, you carried out what you admit was a rudimentary analysis of recent funding trends by the MRC in bacteriology. At the time of writing, it was broadly correct to say that new MRC awards amounted to approximately £3 million, but that was only part of the picture. I can now bring the figures up to date for the whole financial year.

The MRC does not have sufficient resources to fund all the research that it would wish. Despite the increase in our budget over the past few years, our research boards are still only able to fund less than 20% of all the applications we receive and cannot even fund all internationally competitive proposals submitted. The Infections and Immunity Board of the MRC is responsible for funding research in virology, parasitology, bacteriology and immunology. In 2005–2006, more than 20% of the board's budget for grants was invested in bacteriology — a figure of £4.8 million. Furthermore, your calculations did not account for research in bacteriology being

supported in MRC units and institutes, principally at the [National Institute for Medical Research](#) in Mill Hill, London, and the [MRC laboratories in The Gambia](#).

The total adds up to a budget for bacteriology of £8.5 million pounds each year, or more than 2% of the MRC's total spend. The portfolio includes grants for food-borne pathogens and hospital-acquired infections. It is interesting to note that the MRC (then the Medical Research Committee) was established in 1913 specifically to tackle the problem of tuberculosis, and it developed the first effective treatments. Tuberculosis is, of course, a re-emerging problem, and approximately 50% of our current budget for bacteriology is spent on research into this disease.

You also acknowledged that "the remit of the MRC is huge — their portfolio encompasses the whole spectrum of biomedical science, from basic research to bedside clinical practice." And you were correct to say that we are the largest provider of public funds for medical research. However, we are not the only funder of medical research and we are working in partnership with the others, many of which are themselves supporting bacteriology. We work closely with all the Health Departments, charities such as [The Wellcome Trust](#) and [Cancer Research UK](#), as well as the biotechnology industry through the [UK Clinical Research Collaboration](#) (UKCRC). Some organizations support areas of bacteriology that complement ours, such as the work of The Wellcome Trust in "deciphering the genome sequence of medically important bacterial pathogens". Other agencies are also addressing the broader questions of the UK's capacity in microbiology. For instance, the [Biotechnology and Biological Sciences Research Council](#) is currently reviewing microbiology. The MRC will also take part in a look at microbiology and infection research to be carried out by UKCRC, which can be expected to pick up on issues highlighted by the [Academy of Medical Sciences](#), among others, in earlier reviews.

For some time, the MRC has been listening to and addressing concerns like those raised by your editorial. The Infections and Immunity Board of the MRC, the budget for which has increased significantly, and disproportionately, over the past two years, is monitoring the balance between the different parts of its research portfolio. More importantly, we are working with the bacteriology community to enhance the competitiveness of their proposals so that funding is as full and fair as possible. This effort is beginning to bear fruit. Scientists are telling us that they recognize our increased commitment to this field. We are dedicated to building on the legacy of our previous Nobel laureates and continuing our quest to tackle disease and improve human health, not least through support for research on infectious diseases.