Academy of Medical Sciences response to the UKCRC microbiology and infectious disease research consultation

The Academy of Medical Sciences welcomes the opportunity to respond to the UKCRC consultation on microbiology and infectious diseases research in the UK. This response was prepared following consultation with a number of Academy Fellows who are experts in the field of microbiology and infectious disease research.

In what areas is research into microbiology and infectious diseases lacking in the UK?

There are probably no major areas in which the UK completely lacks research activity in the field of microbiology and infectious diseases. Indeed, some areas are fairy well served and extremely strong in international terms, such as parasitology, clinical tropical medicine, basic virology and mathematical modelling of infectious diseases. However, others are considerably weaker. The Academy would like to highlight the following areas in which research is lacking in the UK:

1. **Infection control and hospital epidemiology**. This academic discipline is virtually absent from the UK and includes research into hospital acquired infections and antibiotic resistance (there are one or two notable exceptions).
2. **Clinical virology**. Basic studies of viruses, their replication, their interactions with host cells and their ability to cause disease is strong in the UK and this research should be retained. However, there are only one or two really competitive groups that have clinical programmes in the area.
3. **Sexually transmitted diseases (STDs)**. There are very few academic centres that focus on STDs and many of these have taken HIV as their focus.
4. **Bacterial pathogenesis/cellular biology.** There are some strong centres in the UK that carry out research in this area, but it is a huge field that presents many opportunities for important developments.
5. **Basic research into new antibiotics.** There is a need for research into early phase development of new clinical entities and hypothesis testing of new strategies for antibiotic development, even though the track record of research in this area has not been very successful in the past.
6. **Animal diseases.** There is a shortage of veterinary epidemiologists in the UK, which impedes research into this area.

What do you see as the barriers to progress in the disadvantaged areas of research into microbiology and infectious diseases?

A major barrier to progress in the development of these disadvantaged areas is the lack of suitable research funding sources. Increased availability of funding would encourage existing laboratories to work in these areas. More robust support would also attract more trainees. Links between academia and the clinic are always a challenge to build and maintain.

What are the issues around capacity building in microbiology and infectious disease research?

While universities and funding councils support basic research in the fields of microbiology and infectious disease, it is widely agreed that clinical research capacity has been difficult to establish. This is particularly true regarding the potential contribution from the NHS. While almost all major hospitals have a Clinical Microbiologist, even some major teaching hospitals do not have infectious diseases expertise. This feeds into the uncertainty of trainees wishing to go into this research field, as they perceive it to be an orphan area in which future progression may be difficult.

What can be done by funding organisations to move the field forward in these areas in (a) the short or medium term and (b) the longer term?

Funding organisations should provide more schemes that would enable infectious disease clinicians to be trained in basic sciences and would help to improve the career structure in clinical microbiology. There is a need to develop the research base in these fields.

The Strategic Planning Group could identify a) areas where the UK already has significant areas of expertise and inject additional funding support (or infrastructure as necessary), to really propel that subject into the forefront of internationally competitive work, and/or b) areas where it is important that the UK develops expertise and competence, either because they are important scientific areas with major opportunities for advancement, and/or because they are of importance to UK PLC in terms of NHS impact. With regard to the latter, the fields of infection control and epidemiology may not be widely considered to be at the forefront of cutting edge research, but they are of major importance to the NHS and could have a very major impact on health care delivery in the UK.

The Academy suggests that by identifying a portfolio of these topics, to include both basic science and more applied areas of work where expertise is currently lacking, the group could encourage funders to target resources in such a way that establishes confidence and attracts high quality young investigators to pursue careers within these fields.

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