Infections and Immunity Board (IIB) Scientific (QQR) Review of the MRC-University of Glasgow Centre for Virus Research Director: Professor Massimo Palmarini

Report of the IIB Visiting Subcommittee

Subcommittee Visit 12th and 13th November 2015

Introduction

The MRC undertakes scientific reviews to be assured of the strategic justification, scientific excellence and value for money of the work being carried out within its Units and Institutes. These reviews take place every five years and are known as quinquennial reviews (QQRs). The process is designed to assess the Unit overall through an evaluation of the quality of its individual scientific programmes, Unit-wide research-related activities, and the added value of the whole. The process enables clear and strategic decisions to be taken about the value of the MRC investments within the national and international landscape.

The Director submitted the Unit Report on June 2015. A Subcommittee (SC) of national and international experts was convened under the Chairmanship of Professor Paul Moss (Chair of IIB), to assess the Unit's past performance since its establishment in 2010, and to assess proposed future programmes and strategy. All members of the SC were requested to declare any conflicts of interest and these are recorded in **Annex 1**.The SC provided an expert assessment of the quality, impact and productivity of the Unit and research programmes in line with the Terms of Reference for the review. The Terms of Reference and SC Membership for the Review can be found at **Annex 2**.The views of the SC were also informed by comments received from expert reviews of each scientific programme and the Unit overall, and the Director's written response to these.

The SC met twice: An initial advisory meeting was held at MRC Head Office (London) on 9th October 2015, followed by the site visit to the Unit on 12 and 13 November 2015. The site visit followed a private meeting of the SC at the Glasgow Hilton on 11 November 2015. Prior to the second meeting, the Director provided a written response to both the reviewers' comments and issues raised by the SC at its first meeting, together with an update on the Unit's activities/achievements since submitting its report.

During the site visit, the Director and Programme Leaders introduced the key features of their programmes and any notable updates since the submission of the report. The SC led a 'Question and Answer' session with each Programme Leader to clarify issues including any concerns. Discussions were also held between the SC and senior staff from University of Glasgow[1] to probe the strategic and financial support for the Unit from the University.

Alongside reports on the scientific programmes, the Unit also submitted a breakdown of resources for both the past and future programmes and the Unit as a whole. To help the SC assess the Unit-wide research related activities (resources and value for money; training, career development and capacity building; knowledge transfer, and public engagement), MRC Head Office staff provided comments and identified some issues that required further clarification.

[1] Anna Dominiczak and Iain McInnes

This report is not intended to be a verbatim transcript of the visit; rather, it focuses on the criteria the SC were asked to assess and key issues which emerged from the discussions which have a bearing on the final conclusions and recommendations.

The initial feedback document handed to the Director at the end of the visit is superseded by this report which expands on the feedback provided on the day and any additional comments to be considered by the Director.

Subcommittee Conclusions and Recommendations

UNIT OVERALL

Past

[redacted]

Since its inception in 2010, the CVR had broadened its remit from primary focus on Herpes viruses and hepatitis through combining the previous MRC Unit of Virology with other University groups that included Virology. With the enhanced infrastructure provided in the new building, the personnel and team leads had been better equipped to deliver on the programmes detailed in the report.

[redacted] The Unit has achieved many of their aims during this period of transition. The CVR is now better positioned to undertake research and impact human and animal health. [redacted]

There were several examples of excellent science within the Unit, with impressive past achievements and strong prospects for continued impact. [redacted]

The CVR had taken time to build its new PI profile, with some appointments made only in the last couple of years, too recent to impact the CVR output of the last 5 years. [redacted]

The SC recognised that having such a broad remit including research on human health, animal health on a range of viruses including vector borne pathogens would make it challenging to be internationally leading on all fronts.

Future

CVR is now well placed to fully capture exciting opportunities in the future. Having started to address MRC's expectation (including broadening its remit) for the last five years, there are now opportunities to develop research on emerging and zoonotic viral infections under the global health umbrella.

The site visit clarified the future plans of CVR beyond the limitations of the report. The themes presented were good areas for collaborative research, and the specific programmes provided research examples with potential international impact.

[redacted]

[redacted]

The SC emphasised the need for the CVR to translate the excellent basic science into collaborations with clinical virology. The SC were also keen to see further development of the 'One Health' agenda and take advantage of the opportunities arising from the co-location of the CVR with excellent veterinary and clinical facilities. Attracting more clinical researchers would be crucial and CVR would need to extend their search beyond Glasgow and Scotland.

[redacted]

[redacted]

University partnership
The CVR had a successful move into the University Unit model with strong support provided by the University leadership as evident at the site visit. The SC strongly welcomed the virology immunology links with the University although these needed to be further developed and strengthened. The overall partnership was perceived as very positive.

The SC strongly encouraged CVR to strengthen the links with clinical, veterinary and bioinformatics research especially considering that the new University structure included medical, veterinary and life sciences research within one institute. The links with the new hospital were crucial to attracting clinical academics into the centre and build the necessary collaboration for translational research.

The SC was encouraged by the University plans to strengthen virus research and support the recruitment of senior experts, a crucial step for the CVR future plans.

Resources
The future core MRC funding requested by the CVR over the next quinquennium was [redacted]

The SC recommended level funding for the future of the CVR (£26.3m) and [redacted]

[redacted]

- [redacted]
- [redacted]

The Director was encouraged to seek external funding from sources outside the CVR (Research councils, EU and others) especially for those programmes that were well established and would be highly competitive. [redacted]

The MRC will take into account the Director's response to the comments raised by the visiting SC when coming to a decision on the indicative scores for the Unit.

Score – Unit Overall	
Past work:	
Future Proposals	

INDIVIDUAL SCIENTIFIC PROGRAMMES

Theme 1 Chronic and community acquired viral infections

Programme 1- Respiratory Infections
Programme Leader: Dr Pablo Murcia
Proposed Future Programme Costs: £1,641k

Science

This programme aimed to understand the impact of virus ecology and virus evolution on the epidemiology of respiratory viral infections. Dr Murcia proposed to study the ecological and evolutionary dynamics of a variety of respiratory viruses over 4-5 years from a study population in Scotland. Outcomes from the programme might help predict epidemics of respiratory viral infections.

[redacted]

This was a new programme and the past work was considered too preliminary to score or comment on.

Resources

[redacted]

Score	
Past work:	N/A
Future Proposals:	[redacted]

Programme 2 - Congenital, Genital and Transplant Acquired Infections
Programme Leader: Dr Andrew Davison
Proposed Future Programme Costs: £2,919k

Science
This programme was focused primarily on HCMV, an important cause of congenital infections and a frequent complication in recipients of solid organ transplantation and haemopoietic cell transplantation.

[redacted]

Resources
[redacted]

Score	
Past work:	[redacted]
Future Proposals:	[redacted]

Programme 3 - Viral Hepatitis
Programme Leader: Dr John McLauchlan and Dr Arvind Patel
Proposed Future Programme Costs: £6,924k

Science
This programme aimed to study hepatitis C (HCV) virus evolution and diversity, viral-host interaction as well as identify novel neutralizing antibodies that would lead to vaccine development.

[redacted]

[redacted]

Resources

[redacted]

Score	
Past work (both):	[redacted]
Future: [redacted] :	[redacted]
Future: [redacted]	[redacted]

Theme 2 Emerging and Zoonotic viral infections

One of the three scientific themes across the CVR is `emerging and zoonotic virus infections'. This theme will focus on 'new' emerging viruses and 'old' viruses re-emerging in new geographic areas. The theme consists of two programmes: `Arthropod-borne infections' and `Emerging Virus Infection in High Risk Areas'. Given the international interest in emerging diseases, and comparatively little scientific research in this area being undertaken in the UK, it was logical for CVR to establish the two research programmes, especially as arthropod vector-borne and zoonotic virus infections account for >70% of all emerging diseases.

[redacted]

[redacted]

Programme 4 - Arthropod-borne Infections
Programme Leader: Dr Alain Kohl
Proposed Future Programme Costs: £4,642k

Science

The SC agreed that this was an important area of work and [redacted].

[redacted]

[redacted]

[redacted]

[redacted]

Resources

[redacted]

Score	
Past work:	[redacted]
Future Proposals:	[redacted]

Programme 5 - Emerging Virus Infection in High Risk Areas
Programme Leader: Dr Daniel Streicker
Proposed Future Programme Costs: £2,464k

Science

This programme aimed to study emerging virus infection, a priority for CVR, focusing on the bat/human interface.

[redacted]

[redacted]

This was a new programme and the past work was considered too preliminary to score or comment on.

Resources

[redacted]

Score	
Past work:	N/A
Future Proposals:	[redacted]

Theme 3 Host immunity to Virus Infection

Programme 6 - Intrinsic Immunity
Programme Leader: Dr Chris Boutell
Proposed Future Programme Costs: £2,885k

Science

This proposal aimed to understand key virus-host interactions at the biochemical and cellular levels. [redacted]

[redacted]

[redacted]

Resources

[redacted].

Score	
Past work:	[redacted]
Future Proposals:	[redacted]

Programme 7 - Innate Immunity and Host Species Barriers
Programme Leader: Professor Massimo Palmarini
Proposed Future Programme Costs: £2,735k

Science

This [redacted] and [redacted] programme aimed to address the role of interferon stimulated gene products (ISGs) in virus infections. It was led by Prof Palmarini and was supported by scientific input from Dr Wilson. [redacted]

[redacted]

[redacted]

This was a new programme and the past work was considered too preliminary to score or comment on.

Resources

[redacted]

Score	
Past work:	N/A
Future Proposals:	[redacted]

Programme 8 - Virus Structure
Programme Leader: Dr David Bhella
Proposed Future Programme Costs: £3,209k

Science
This was a [redacted] programme aimed to deliver [redacted] structural work. The Unit had expertise in cryo-EM and the more recent cryo-ET, an extremely valuable resource within the overall CVR programme. The report demonstrated some of their [redacted], thus far. [redacted]

[redacted]

[redacted]

[redacted]

Resources
[redacted]

Score	
Past work:	[redacted]
Future Proposals:	[redacted]

CROSS-UNIT ACTIVITIES

Core facilities including Viral Genomics and Bioinformatics
The SC agreed that the CVR developed in the last five years the core facilities needed to deliver its programmes. As research programmes develop, the CVR would want to have a core group with the right skills to deliver the planned research.

[redacted]

[redacted]

Viral Genomics and Bioinformatics

There has been a major investment in recruitment and staffing within genomics and bioinformatics area with 10 faculty and staff members. [redacted]

[redacted]

This programme cited 70 joint publications with groups within the CVR and externally and noted the release of two software packages which are specific to the needs of the HTS facility. [redacted]

[redacted]

[redacted]

Data Management Plan (DMP)

[redacted]

Research Training & Capacity Building including clinical and veterinary virology

The achievement in this area in the last 5 years was impressive, including the undergraduate degree in virology and the growth in PhD students. CVR training developed a critical mass and a supportive environment at all levels of research training. Hence the modest increase in MRC funded PhD studentships from 18-20 [four per year] and in clinical fellows [one per year] was strongly supported. The CVR was encouraged to develop a database of the next destination(s) of its graduates/postdoctoral researchers and an alumni organisation.

The SC noted the virology degree programme at the University and [redacted]

The CVR would need to enhance its mentoring programme – the College of Medical, Veterinary & Life Sciences could be more involved and the CVR could aspire to the Athena SWAN Silver award, which was held by the Institute of Health and Wellbeing within the University of Glasgow.

Master degrees in Clinical Virology could be considered to enhance the training in Clinical Virology – it could be an option after the intensive course in Virology and Viral Disease for individuals to do short research projects and write a dissertation. This could combine early clinical training with a few months of research experience before applying for a competitive

PhD Fellowship. [redacted]

The proposed basic research on viruses and vectors was impressive but its translation would need to be consolidated. [redacted] taking advantage of the MRC funded clinical fellowship(s) attached to the CVR. This was training of 'bench to bedside' clinician scientists at its best. This achievement could be followed by other programmes.

The proposed plan to appoint a Senior Lecturer in Clinical Virology was important in terms of translation to diagnostic services.

Interaction with the veterinary virology community, in particular with the veterinary college on site, should be enhanced considerably including joint teaching and training in Veterinary Virology. Attracting veterinary students from the local vet school should be a focus in the future to credibly realize the one health concept. [redacted]

Public Engagement and Knowledge Transfer

[redacted] The report did not highlight the different activities that the CVR had been involved in over the last five years.

[redacted]

Annexes

Annex 1 – Conflicts of Interest

Annex 2 – Membership and Terms of Reference of the Subcommittee

Annex 1 – Conflicts of Interest

Subcommittee Declarations of Interest

Name	Institution	Declarations of Interest
Professor Paul Moss (Chair)	University of Birmingham	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

Confirmed on 9 October 2015
Reviewed on 11 November 2015
Approved by Chair (Paul Moss) on 11 November 2105

Annex 2 – Membership and Terms of Reference of the Subcommittee

Terms of Reference

- To assess the overall quality, impact[2], and productivity (past and future potential) of the MRC core funding and the contribution to the MRC-CVR.
- To consider if, and how, MRC programmes contribute to the MRC-CVR and its distinctive, important and high priority input to the UK and global research portfolio; and if the MRC-CVR's strategy continues to address an important, distinctive and high priority area for the MRC.
- To consider if the added value provided by MRC-CVR[3] justifies continued MRC support or whether other funding arrangements could be better.
- To review and advise on whether the MRC-CVR's training, career development and capacity building strategy is appropriate to help deliver the MRC-CVR's mission.
- To assess the value for the MRC investment in the MRC-CVR– taking account of all resources and space, including co-funding, collaborations and university contributions to scientific productivity.
- To provide recommendations on whether the work of the MRC-CVR should continue, and if so on what scale and in what form.
- Advise on realistic expectations for the development of the MRC-CVR's work over the next five years.
- To report back to the Infection and Immunology Board.

Subcommittee Membership

Professor Paul Moss- Chair	University of Birmingham

[2] This includes Public Engagement and Knowledge Transfer and Exchange.

[3] e.g. Co-location of the Unit, Director lead, long term funding, etc.