

Agenda

11:00 - Registration

11:30 - Introduction: Prof Paul Kaye, IIB Chair

11:45 - Funding opportunity details: Dr Mariana Delfino-Machín and Dr Alex Phillips, Programme Managers

12:30 - Lunch

13:00 - Networking session: attendees split into two groups (one per theme) to identify potential collaborators and questions to address

14:00 - Workshop close



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Research consortia to underpin proactive vaccinology in SARS-CoV-2

Medical Research Council
22 September 2022



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Introduction

Professor Paul Kaye

University of York

MRC Infections and Immunity Board Chair

UKRI Strategy

Our strategic objectives provide the framework for how we will achieve our vision and realise our principles through world-class:



MRC Strategic Delivery Plan 2022-2025

Vision:

Our vision is to accelerate improvements in human health and economic prosperity by supporting world-class biomedical research and innovation, and strengthening partnerships within UKRI, across the UK and world-wide

People & careers	Places	Ideas	Innovation	Impacts
<ul style="list-style-type: none"> • Support the breadth and diversity of skilled people needed for the future R&D workforce • Advance an open and collaborative research and innovation culture 	<ul style="list-style-type: none"> • Foster Capability and Partnerships – locally, nationally, internationally • Ensure the UK has the infrastructure & digital capabilities needed for world class R&I 	<ul style="list-style-type: none"> • Fund world class discovery science • Drive an integrated understanding of human disease 	<ul style="list-style-type: none"> • Maximise translation of discovery science and strengthen experimental medicine • Drive advanced therapies and innovative technologies • Enhance and broaden partnerships with industry 	<ul style="list-style-type: none"> • Promote healthy ageing throughout life and reduce the burden of mental and physical illness • Strengthen prevention of disease and achieve health equity • Tackle infections • Protect human health in the face of environmental change
<p style="text-align: center;">A world class organisation</p>				
<ul style="list-style-type: none"> • Enable talented people to thrive and strengthen equality, diversity and inclusion • Be an efficient, effective and agile organization • Catalyse change and improve environmental sustainability through partnerships and leadership 				

Background: SARS-CoV-2 research activities

MRC research community led the UK academic response to the pandemic:

- Overall commitment across government of £256m portfolio (£177m from MRC)
- Most projects supported under the explicit premise of providing rapid impacts
- Funding channelled through:
 - UKRI strategic investments (Centres, Units, Institutes)
 - NIHR/UKRI Rapid Response call and UKRI Covid-19 Agile call
 - NIHR/UKRI call to better understand and treat long COVID
 - Major strategic investments in national capability (e.g. COG-UK, G2P, RECOVERY+/UKCTAP and the National Core Studies programme)

3000 applications
in 2020

Pandemic response – cross-cutting strengths

Beyond scientific outputs, the benefits of new collaborations and ways of working were apparent:

- Federated networks of researchers cohering around shared goals
- Open sharing of expertise, facilities, data and samples
- Linking across disciplinary boundaries

The opportunity now is to sustain this landscape through targeted support:

- Coordinated, diverse consortia addressing linked thematic questions
- Mechanistic clinical research at scale – both observational and interventional

Next steps: securing the research legacy

Research to date, in the UK and internationally, has had an enormous impact

First-generation vaccines have underpinned a return to normal life for the majority – but major unanswered questions remain for SARS-CoV-2 and other pathogens, including:

Can we predict future VOCs?

What are the likely limits of viral evolution?

How might adjuvants/immune modulators augment vaccine response?

How might new VOCs impact disease severity?

Can we deliver vaccines intranasally?

What drives mucosal immunity?

Can we induce transmission-blocking immunity?

What are the optimal correlates of protection?

How does immune memory interact with novel variants?

How do viral mutations impact disease transmission?

Is a pan-coronavirus vaccine feasible in the medium term?

What limits the duration of immune protection?

Proactive vaccinology – research support

- Clear need for sustained, substantial investment in **fundamental research** - building on UK strengths and aligned to downstream commercial needs
- Aim is to cohere existing networks and capabilities to take on long-term research challenges, initially targeting SARS-CoV-2 but *with broader reach and ambition*
- This call will **not** directly support asset development – but will enable it
- Initial funding from MRC, BBSRC and UKRI strategic funds

Proactive vaccinology – the pitch...

Virology

.....it is critical to understand the factors that drive variant emergence, building virology capability alongside understanding of the phenotypic consequences of changes to the viral genome.....

....mechanisms underpinning changes in disease transmission and immune escape, predicting disease severity from virus mutation profiles....

.....understanding mutation accumulation in targeted immunosuppressed groups to predict evolution....

....assessing viral antigen stability and functionality....

Immunology

.....understanding the immunological response to vaccination and disease is needed to focus vaccine development on those pathways most tractable for sustained immunity....

.... we do not have the depth of immunological understanding to systematically address this, nor the correlates of protection to support novel development and real-world monitoring....

.... UK's strengths in experimental medicine are recognised internationally; leveraging these for iterative evaluation of responses to vaccine formulations and delivery routes.....

.....enable the development of broadly protective and durable new vaccines....

Proactive vaccinology – aims and goals

Our goal is to support a coordinated portfolio of ambitious discovery research programmes

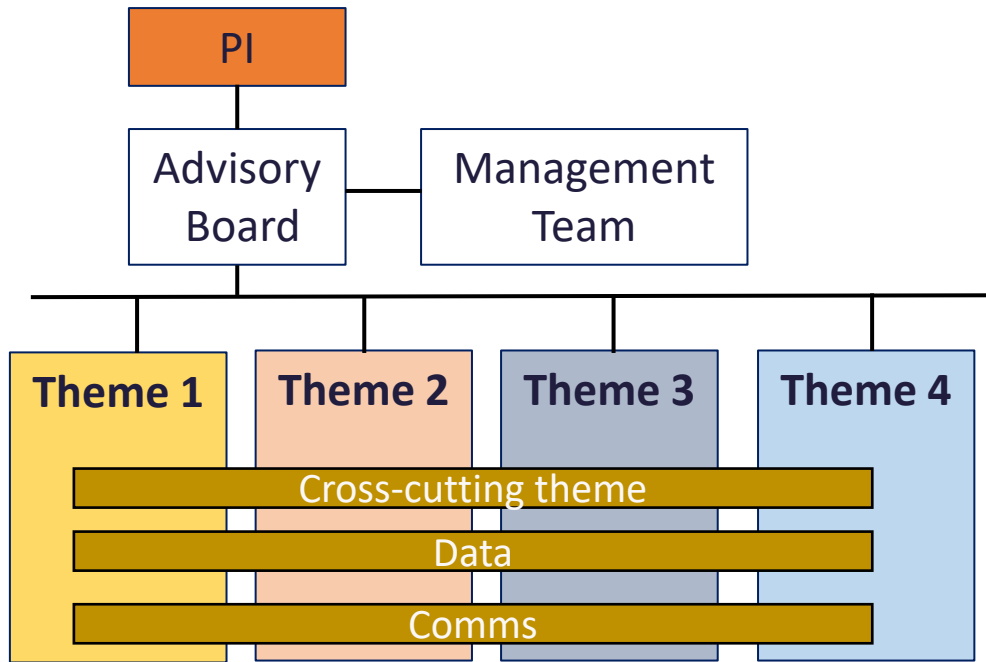
Medium-term outputs

- Deep mapping and understanding of viral structures, antigen stability and functionality
- Enriched understanding of immune responses and clinical risk factors
- Enhanced capability to support, amplify and explain immunophenotyping work
- Novel tools and platforms to underpin future vaccine development

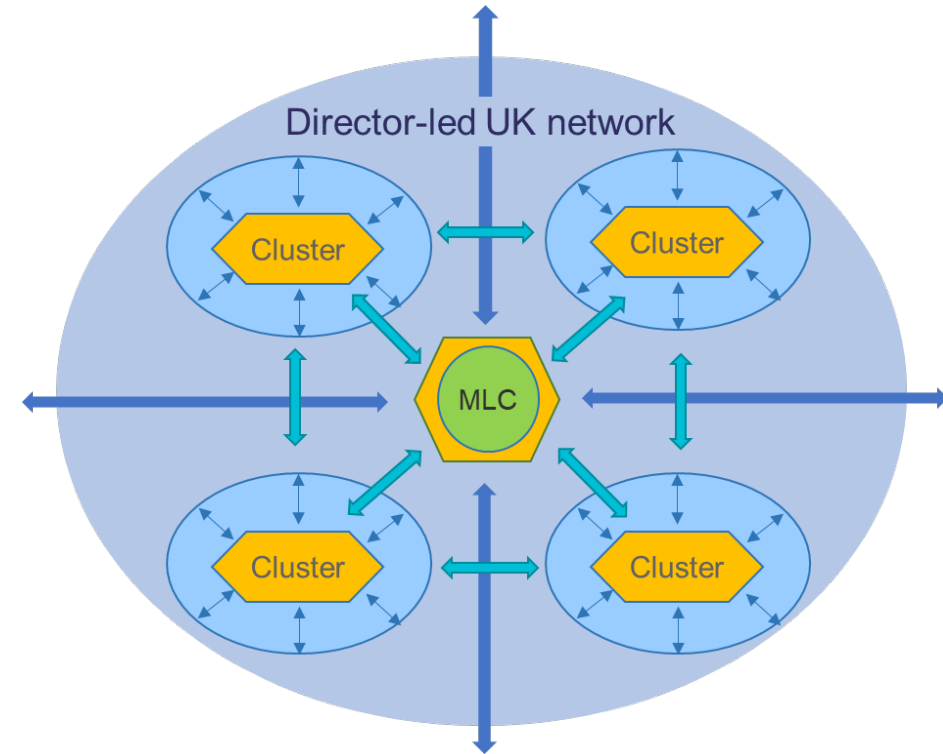
Long-term ambitions

- Enabling next-generation pan-coronavirus vaccines
- Established networks of virologists and immunologists with capacity and tools to rapidly investigate emergent pathogens
- Strong, bidirectional links with vaccine, therapeutic and diagnostic developers
- Improve prospects for vaccine development for all infectious diseases

Examples of potential structures



UK-Coronavirus Immunology Consortia
(UK-CIC)



MRC Mouse Genetics Network

SARS-CoV-2 research – other routes

Importantly, this is **not** the only activity in this space.

- MRC, NIHR and other funders' response mode schemes continue to welcome SARS-CoV-2 research
- New programmes of interdisciplinary investment are in development across UKRI – including a 'Tackling Infections' theme
- Life Sciences Vision highlights government focus on vaccines and immunology

Aim for today is to introduce this call to the academic community



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Funding Opportunity Details

Dr Mariana Delfino-Machín
Dr Alex Phillips

Funding Opportunity: Aims & scope

Despite progress in protecting against severe COVID-19, we are as yet unable to block transmission or drive broad, lasting immunity across the population

Purpose of this call: £16m investment to support mechanistic research to anticipate and block the emergence and spread of new SARS-CoV-2 variants, focusing on two critical gaps:

- **Fundamental virology: drivers and impact of variant emergence**
 - **Underpinning immunology to support vaccinology**
- Current budget will allow support of one consortium to address each of these themes, with up to **£8m available for each consortium over 5 years**
 - Consortia should be ambitious, coordinated and multi-institutional

Aims & scope

Theme 1: Fundamental virology; drivers and impact of variant emergence

Changes in pathogen virulence, transmissibility and immune evasion have significant effects on public health and are as yet not fully understood.

Key gaps have been identified in:

- Drivers of **immune escape** – work to date has largely focused on the spike protein, and further evaluation of the whole virus is needed.
- How changes to the viral genome might impact **disease virulence**, to rapidly highlight dangerous new variants once identified.
- Understanding the factors that drive **variant emergence** to predict and prevent new variants before they arise.

Aims & scope

Theme 2: Underpinning immunology to support vaccinology

Deep understanding of the immune response to vaccination and disease will enable targeted future vaccine development and stratified patient management to protect the most vulnerable.

Key opportunities include:

- Mechanistic clinical **investigations at scale** to map out immune responses to different vaccines and delivery models
- Development and validation of reliable **correlates of protection** to underpin early vaccine development
- Building mechanistic understanding of the **drivers of severe disease** and the role of the immune system will inform future vaccine and therapeutic targets
- Investigation of the drivers of **sustained immunity**, particularly in mucosal tissue.
- Evaluating the drivers of **antibody cross-reactivity** and the impact of **immune memory**.

Aims & scope

Not in remit – other schemes are available

This opportunity is specifically focussed on large-scale consortia targeting these areas.
Related work that would not be suitable for *this* call includes:

- Partnerships and enabling infrastructure for future funding
 - *The MRC COVID-19 partnership highlight notice may be more suitable*
- A project or programme of work targeting a specific pathway or question
 - *A standard MRC research or programme grant would be appropriate*
- A developmental programme to support a novel asset or assets towards the clinic
 - *Translational projects should apply to the MRC Developmental Pathway Funding Scheme*
- A training investment seeking solely to build capacity
 - *Various training schemes may apply – please contact the office*



Eligibility criteria

The call will run under standard MRC eligibility criteria

- A single named Principal Investigator must act as the lead applicant for each consortium and meet the standard MRC eligibility criteria
- A Principal Investigator can only lead on one application to this funding opportunity
- International co-investigators may be included where appropriate (with office pre-approval)
- Collaborative applications between academics and industry partners are encouraged
- Applications led by commercial entities are not eligible and commercial partners may not receive funding from this call.

Application Process

Expression of Interest (Eoi) Stage

- Deadline: **Monday 14 November 2022**
- Eols confirmed within remit will be notified **by 28 November**
- Eols will **not** be formally assessed – this stage is to confirm eligibility and register interest
- **Please contact the office informally if you are unsure of anything**

Full Application Stage

- Deadline: **Wednesday 25 January 2023**
- Submissions via Je-S as per standard MRC process
- Funding decisions: **June 2023**

NOTE:
**Expected start date
is September 2023**

Expression of Interest Stage

Preparation

Applicants should:

- Complete the EoI form (available online)
- Submit the EoI form and a figure summarising your proposed governance framework to the call mailbox (vaccinology2@mrc.ukri.org)

EoI deadline is midday, **Monday 14 November 2022**

- EoIs will be checked by the office for fit to remit, applicant eligibility and scale
- Proposals of a scale suitable for regular funding schemes will not be invited forwards and will instead be directed towards the appropriate MRC Board or Panel
- Individual proposals should focus on only one of the two research themes

Full Application Stage

- Successful EoI applicants will receive the full application form and guidance via email by **28 November**
 - Full applications should be submitted via the Joint Electronic Submission system (Je-S)
 - The deadline for full applications is 4pm on **25 January 2023**
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Required attachments:

- Completed application form
- CVs & publication lists (lead, co-leads and project partners)
- Supporting data/figures
- Data Management Plan
- Justification of Resources
- *Where appropriate*: Industrial Collaboration Framework form, SoECAT

Assessment process

- Full applications will be sent to UK and international experts for peer review, who will score them based on:
 - Importance
 - Scientific potential
 - Resources requested
- You will have the opportunity to respond to peer review comments
- Applications will be considered by members of the MRC Infections and Immunity Board and the MRC Experimental Medicine Panel
- Funding decisions will be made in **June 2023**

Assessment criteria

In addition to the standard MRC criteria of scientific potential and importance, applications will be assessed on:

1. Vision for the consortium:

- Does the application articulate a clear mission statement, moving beyond existing capabilities?
- Does the consortium offer a clear pathway to prioritise and address key knowledge gaps?
- Does the bid illustrate how the requested funding will achieve this?
- Does the bid make a compelling case for impact within and beyond the five-year funding window?
- Do the plans illustrate how the consortium will align with other relevant investments across business, the NHS and academia?
- Does the consortium have a strategy for capacity strengthening impact beyond the funding period?
- Does the application propose an ambitious and integrated multi-institutional approach?
- Do the plans lay out a vision for long-term sustainability?

Assessment criteria

2. Track record:

- Do the proposed consortium leaders have experience managing large, strategic investments?
- Are the consortium partners positioned at the leading edge of research in their respective fields?

3. Partnerships supporting the proposed consortia:

- How does the proposed consortium link to, and gain support from, existing infrastructure?
- Does the application demonstrate open, constructive partnerships between consortium members?
- Are diverse partnerships being leveraged to maximise the impact of funding?
- Are all partners making a significant contribution?
- Does the consortium demonstrate that the plans draw on the best of the UK landscape, alongside a vision for openness to new collaborations?

Assessment criteria

4. Governance:

- Have appropriate governance structures for the consortium been laid out in the application?
- How will the consortium ensure that resources are flexibly and transparently managed in response to the landscape, in a sustainable and appropriate way?
- Have all appropriate risks been identified alongside mitigation plans?
- Does the application include appropriate project management costs and expertise?
- Does the application include clear objectives and metrics to demonstrate progress?
- Are all costs well justified?

Any questions?

Please contact

vaccinology2@mrc.ukri.org

with any questions, and if you wish to receive the link to the recording of these talks