Witness Name: Dr Peter Cotgreave
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UK COVID-19 INQUIRY

WITNESS STATEMENT OF DR PETER COTGREAVE

I, Dr Peter Cotgreave, will say as follows: -

Introduction

1. The Microbiology Society is a membership charity for scientists interested in microbes, their effects and their practical uses. It is a company limited by guarantee registered with the UK Companies House (Company No. 1039582) and a charity registered with the Charity Commission for England and Wales (Charity No. 264017) and the Office of the Scottish Charity Regulator (Charity No. SC039250). Founded in 1945, with the Nobel prizewinning discoverer of penicillin Sir Alexander Fleming as its founding President, the Society brings together scientists across a range of microbiological disciplines. The organisation was known until 2015 as the Society for General Microbiology, when the name was formally changed.

2. The charitable purpose of the Microbiology Society, as specified in its Memorandum and Articles of Association, is "to advance the art and science of microbiology". Microbiology is the study of a huge and diverse variety of life forms that are generally invisible to the naked eye, including bacteria, viruses, fungi, protists, archaea and algae. The Society operates throughout the UK and has always been active in the Republic of Ireland. It has a worldwide membership of approximately 7,000 based in universities, industry, hospitals, research institutes, schools and other organisations. These range from early career researchers to world-leading established experts, and

include basic researchers, infection scientists, clinical professionals and those engaged in private sector research and development and its application.

3. The Society is governed by a Council of 17 members, who are both directors of the company and trustees of the charity. They are all members of the Society, with some being appointed by Council and others elected by the membership. All serve two or three year terms. The organisation has a turnover in excess of £4million annually and a permanent staff of about 50. The principal goal is to strengthen its culture of being a community-driven Society by amplifying the members' voices, wherever they are in the world, and empowering them to embed the benefits of microbiology within wider society.

4. The Council's strategy has three elements, which can be summarised as:

    - Strengthening the relationships among microbiologists and promoting access to new communities, unlocking the potential for international collaboration and global knowledge exchange,
    - Advancing the understanding of microbiology and championing the contribution made by microbiology, our members and their work in addressing global challenges, and
    - Ensuring the organisation and its activities are sustainable.

5. The principal activities through which the Society achieves these objectives are:

    - Publishing five peer-reviewed scientific journals and an online research platform, which collectively provide a suitable avenue for the dissemination to the scientific and medical community of any research involving microbes. The Society published the discovery of the first known human coronavirus in the 1960s, and between the start of the pandemic in 2020 and the end of 2022, we published 126 research articles specifically about the SARS-CoV-2 virus, a rate of roughly one per week, and almost 800 papers that mention coronaviruses, more than one per working day.

- Holding a series of in-person and online scientific conferences to allow the sharing of research findings. The Society's forthcoming Annual Conference will include approximately 100 presentations about SARS-CoV-2, and contributions from Professor Sharon Peacock, who chairs the highly successful Covid-19 Genomics consortium and Professor Wendy Barclay, world-leading virologist who was a member of the Government's Scientific Advisory Committee on Emergencies (SAGE) during the pandemic.
- Supporting the professional development of microbiologists, frequently at the interface of different elements of the scientific landscape, through training and networking events and providing grants and awards to support the advancement of microbiology and showcase the results of scientific research. Examples include (i) a series of collaborative workshops on bridging the clinical-research gap, run jointly with the Healthcare Infection Society, bringing together hospital clinicians and academic researchers to explore how to collaborate meaningfully, (ii) The Royal College of Pathologists /Microbiology Society Medical Elective small grant scheme that supports undergraduate medical and veterinary students who wish to undertake electives in pathology disciplines, and (iii) the Infection Science Award, an exchange scheme that supports promising trainee and early career individuals from academia and healthcare settings, fostering the exchange of ideas between the two sectors and the career development of early career researchers and doctors by exposing them to new audiences and networks.
- Raising awareness and influencing policy in relevant areas including both policies to support science and those that draw on the results of microbiological research. For example, in 2021 the Microbiology Society collaborated with the Food Standards Agency as part of a £19 million programme in pathogen surveillance in agriculture, food and the environment, in which experts across academia, industry and government came together during a series of focused groups that served to inform the setting up a national genomic surveillance infrastructure. Through this collaboration, the Society developed a model for future collaborations with government departments, with an emphasis on facilitation, engagement and knowledge exchange. A further example is provided by a 2020 project entitled 'A Sustainable Future' which served to raise the profile of microbiology in achieving

the UN Sustainable Development Goals. Resulting in a collection of case studies, policy reports and responses to government inquiries, the project set out key recommendations to the decision-makers involved in today's most important debates and provided a powerful tool for microbiologists to showcase their research to a wide range of stakeholders.

6. This response to the Covid-19 Inquiry's Rule 9 Request is submitted on behalf of the Council by the Chief Executive of the Microbiology Society, Dr Peter Cotgreave, on the basis of information and views provided by members of the Society. The Chief Executive is a full-time employee who is also Company Secretary and who is not a microbiologist. The content of the response reflects the experience and views of a range of expert members of the Society.

Preparedness

7. The Microbiology Society recognises that is not possible for a country to be fully prepared for any pandemic. However, previous experience of infectious disease outbreaks provided a base of relevant knowledge. The HIV pandemic first discovered in the mid-1980s, the BSE/vCJD crisis in 2000, the foot and mouth disease epidemic in 2001, the SARS-CoV-1 epidemic in 2002-4, and the pandemic influenza H1N1/09 in 2009 were all forerunners and proving grounds for understanding infectious disease spread in the UK. With epidemics of MERS-CoV from 2012, Ebola from 2013-2016 and Zika virus in 2016, UK science has been actively involved in basic and applied research of new infections worldwide for the last 35 years. It is therefore of little surprise that UK science expertise in mathematical modeling, epidemiology, virus genome sequencing and clinical trial research during a pandemic, became world leading beacons for the global response to COVID-19.

8. Lessons from previous virus outbreaks clearly show that basic properties of a new pathogen can be inferred from deep knowledge of closely related pathogens. Although proof of specific biological properties of a new virus such as SARS-CoV-2 requires studies to produce an evidence base and test assumption, the UK had very little coronavirus basic and applied research to draw upon, despite the warnings of their

outbreak potential from pervious SARS-CoV-1 and MERS CoV epidemics. This also applies for drug, antibody and vaccine development activities, where the UK's historic excellence in basic and pharmaceutical infectious disease research has diminished in recent decades.

9. With the increasing global population, intensive farming and greater large-scale movement of people, pandemics are more likely, shifting the cost to benefit ratio of various potential preparations to respond better in the future.

10. Adequate pandemic preparedness involves a wide range of scientific, logistic, social, political, economic and other factors. Most of these are outside the direct expertise of the Microbiology Society as a whole, but some involve some of our individual members. More use of the Microbiology Society to channel and leverage its experts, networks, laboratories and workforce was a missed opportunity of the pandemic. Here we focus on scientific areas that fall within our competence namely 'investment' in our scientists and 'networks' of expertise. Further we comment on the considerable effort the Society has made to inform governments on infectious diseases for many years.

Investment

11. Preparing for any unpredictable event with a scientific dimension requires a strong and broad base of scientific expertise and experience. Since by definition it is not possible to have specific advanced knowledge of entirely new pathogens, the only sensible approach to preparation is to foster a diverse range of expertise across generic subjects (epidemiology, modelling etc) and pathogen groups likely to cause more human disease in the future. This expertise cannot be created rapidly from scratch and must be constantly supported and nurtured. The UK has a long history of scientific excellence and was fortunate during the Covid-19 pandemic to have a broad and diverse range of expertise in microbiology, immunology, biochemistry, vaccine development, genetics and a range of other disciplines. This does not mean that we had expertise in everything – there was no critical mass of knowledge specific to coronaviruses, but in scientific terms, our overall strong expertise was probably the single most important factor that supported positive outcomes. The vaccine taskforce,

the advisory groups such as SAGE, the testing laboratories and the Covid Genomics Consortium, COG-UK, all made important contributions; they were all able to draw on strong expertise, including many members of the Microbiology Society.

12. It is worth noting that in learning lessons for the future, the availability of this range and strength of expertise in 2020 was dependent on continued investment over previous decades. The country's ability to react as strongly again next time will depend crucially on choices that are made now. As just one example of worrying signs for the future, the House of Commons Public Accounts Committee concluded in October 2022 that the government's main facility for research on potential zoonotic diseases, the Animal and Plant Health Agency at Weybridge in Surrey "has been left to deteriorate to an alarming extent"[1].

13. No country can have instant expertise in everything, and a small nation like the UK, even a rich one, needs the ability to understand, interpret and utilise the strengths of other countries. A hugely important element of the UK's scientific strength is the strong links that the research community has built with other nations. Of particular concern for future preparedness is that, as a result of the UK leaving the European Union, British research can currently no longer access the Horizon Europe programme, which was not merely a source of funding for many EU funded pandemic preparedness partnerships (examples include EMPERIE, ANTIGONE, PREDEMICS and PREPARE) but which helped the UK's research community forge an extraordinarily strong partnership with those of other developed nations. Although the current government has made commitments to sustaining the model in some way even if it is not possible to rejoin Horizon, a recent Treasury announcement appears to suggest that the funding has been withdrawn[2]. This is not a political point. Science

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[1] *Redevelopment of Defra's Animal Health infrastructure*, Twenty-fourth Report of Session 2022-23, House of Commons Committee of Public Accounts, available at https://committees.parliament.uk/publications/31598/documents/177448/default/

[2] Central Government Supply Estimates 2022-2023 (February 2023), H M Treasury, p. 295, item xxxiii. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1138300/E02853837_HC_1133_Supply_Estimates_22-23_Web_Accessible.pdf

needs the stimulus of interaction and if its powerful international links are reduced, British science will be less well prepared for the next crisis that calls on it.

Networks

14. However strong a nation's research base, when any crisis with a scientific dimension hits, including pandemics of infectious diseases, systems and processes are needed to put the existing scientific expertise to use. Owing to the unpredictable nature of pandemics, these systems and processes cannot be sustained as standing capacity during normal times, and must be generated rapidly when needed.

15. The root of such systems is clear and effective communication among different parts of the scientific landscape – the universities, health services, private companies, central government, local government and public sector laboratories. The experience of many of the scientists who were involved in the national response to Covid-19 was that delays in establishing these processes formed the main points of failure and weakness in the nation's pandemic preparedness. The Microbiology Society's direct experience was primarily in the area of establishing the systems of diagnostic testing. With hindsight, one senior member expressed our experience like this: "there was no clear line of official command, no system from bringing Public Health England and the NHS together and most frustratingly, no rapid development of test and trace".

16. The Department of Health and Social Care's *Technical Report on the COVID-19 pandemic in the UK* published in December 2022 attributes the UK's relatively slow scaling up of large scale testing for Covid-19 to the fact that the country's diagnostics industry is not as large as the equivalents in other high income nations[3]. Without seeking to detract from the truth or importance of this observation, it only explains a relatively small part of the problems the UK faced.

[3] *Technical Report on the COVID-19 pandemic in the UK,* Department of Health and Social Care (2022), p.108.

17. Although our diagnostics industry may be relatively modest by comparison with other countries, the UK has a broad base of relevant expertise in universities, the private sector, research institutes, government laboratories (such as the Animal and Plant Health Agency), hospitals and the wider NHS. The key to rapidly building testing capacity in 2020 would have been effective communication and central coordination across these various partners to make maximum use of the skills, knowledge and infrastructure that each possesses. Despite efforts by various actors, including the Microbiology Society, this was not achieved at sufficient speed to optimise the outcomes. Indeed, more time was spent by some of our members 'educating' management consultants within government in the basics of infectious diseases, obtaining samples from people, diagnostics, and serology rather than the same experts given authority to establish at speed and scale what they already knew worked from past experience. A similar approach to testing and diagnostics as was applied by the vaccine taskforce may have avoided much expense and delays in diagnostics.

18. The DHSC report further observes that many individual laboratories and scientists, with significant resources and expertise, offered to assist in the testing endeavour, but their offers were never taken up. The report appears to conclude with a defeatist attitude that it would never have been possible to utitlise this huge and enthusiastically willing resource[4].

19. With sufficient will, and if appropriate networks had been promoted by official efforts, the core scientific expertise and skills of the country could have made a far greater contribution.

20. During the early stages of the pandemic, whilst we were in constant contact with the Government's Office for Life Sciences, we repeatedly drew attention to the unused capacity for potential PCR testing in the universities. On numerous occasions, we suggested that there were large and small university laboratories with the people,

[4] *Technical Report on the COVID-19 pandemic in the UK,* Department of Health and Social Care (2022), p.188ff.

skills, equipment and willingness to offer PCR testing at short notice, which collectively would have added up to meaningful capacity, especially at the beginning of the pandemic when overall capacity was extremely limited. In the event, the Government's Office for Life Sciences, Public Health England and NHS Test and Trace all turned down or ignored genuine offers of support. The overall impression of official responses to offers of help from genuine experts with real potential to be of potentially life-saving value to the nation was not that they were not needed but that they were not wanted.

21. The details of these interactions would appear to be more relevant to Module 2 of the Inquiry, and the Microbiology Society would of course be willing to provide more information when relevant.

22. An alternative approach and an example of good practice was found in Germany, where since 1995, the government's central scientific institute for biomedicine, the Robert Koch Institute (RKI), has established a system of 20 National Reference Centres and 38 Consultant Laboratories across the country, to "play a central role in detecting infectious diseases, monitoring outbreak response and providing scientific evidence to prevent and control diseases". Of these 58, only a minority (15) are part of the RKI itself, with the majority being based in universities, federal or state institutes, private sector laboratories and other research facilities. The laboratories that form part of this network are certified by the RKI for a fixed timescale, after which they are retested to ensure quality control and consistency. The RKI describes what it calls the "general goal" of the arrangement as "to improve the efficiency of infection protection".[5] Without such a pre-existing network at the start of the Covid-19 pandemic, the UK had not merely to construct diagnostic infrastructure from scratch but also had to build the network of relationships on which it would depend.

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[5]https://www.rki.de/EN/Content/infections/Diagnostics/NatRefCentresConsultantLab/natRefCentresConsultantLab_node.html

23. The UK's decision to concentrate testing in a small number of large centres was, at least in part, an almost inevitable consequence of its lack of an existing network to utilise its diffuse and varied range of laboratories compounded by an official lack of will to create one. Without the backbone to generate a diffuse, localised ecosystem of community testing, and without the imagination and will to create it quickly, large scale laboratories, with the inevitable time lag, expense and lack of sustainability were the only answer. A new epidemic now would face all the same problems.

Prior engagement with government

24. In common with many scientific and medical organisations, the Microbiology Society has long drawn attention to the threat of novel microbes, both in policy terms and within the scientific community. For example, in a briefing for Parliamentarians in 2015, we highlighted the "global threat posed by zoonoses that emerge from 'nowhere'," with particular reference to novel coronaviruses **(PC/1 - INQ000177798).** This document stimulated questions to the government from members of the House of Lords, which received answers that might be taken to demonstrate the narrowness of official understanding about the essential benefits of a cohesive scientific ecosystem of interlocking elements.

25. Based on our briefing, Lord Jones of Cheltenham asked the government on 29 June 2015, "what research is being supported by Public Health England and the Animal and Plant Health Agency into the global health and economic security threats posed by pandemics caused by emerging zoönoses and coronaviruses". The official answer does not mention links to, or relationships with universities, hospitals or the private sector. Likewise, in a debate in the House of Lords on the same day, in which Baroness Masham quoted directly from the Microbiology Society's briefing, and in which a variety of members drew attention to the issues it raised, the minister failed to mention universities, the NHS or private sector research laboratories.

26. In oral evidence to the House of Lords Science and Technology Committee on 16 January 2018, with particular reference to infectious disease outbreaks, the Society again drew attention to the need for the "coming together of three or four strands" and

that "what you do in an outbreak is beyond individual companies". A specific example of an infectious disease epidemic that we highlighted was that "It would have been hard to predict 20 years ago that the ability to track Ebola as it moves from person to person would be a culmination of computer science, evolutionary biology, people on the ground taking samples in public health-type laboratories and computation happening in various parts of the world feeding back to the WHO. It is hard to keep those things rubbing together, but we must."[6]

27. While not primarily focused on infectious disease, the resultant report from the House of Lords criticised aspects of the government's approach which mirror the core point that to optimise outcomes, different elements of the scientific landscape need to be networked. For example, it criticised the "transactional" rather than joined up strategic approach to life sciences, and the government's failure to take account of the "important and central role of the NHS". At heart, these recommendations reflect the same weaknesses that, in the event of the Covid-19 pandemic, hindered the rapid and effective bringing together of willing pockets of expertise at a time of great national need.

28. It would be facile to claim that these individual points of contact with Parliament or with government policy should have, in and of themselves, made a significant effect on national preparedness for the Covid-19 pandemic. However, they represent long-standing efforts by the scientific community more broadly to encourage greater official incentives favouring cohesion and collaboration in the nation's scientific endeavours rather than too much competition and division. They also reflect a continued lack of understanding within government of science networks, expertise and capacity within government.

Overall perspective

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[6] Life Sciences Industrial Strategy: Who's Driving the Bus?, House of Lords Science and Technology Committee, Session 2017-2018, Oral and Written Evidence, Question Q270. https://www.parliament.uk/globalassets/documents/lords-committees/science-technology/life-sciences-industrial-strategy/Life-sciences-industrial-strat-evidence.pdf

29. At the start of the Covid-19 pandemic in 2020, the UK had a strong base of scientific expertise on which it could call as part of the national effort to combat the infectious disease outbreak. That expertise was spread across a range of disciplines in a range of settings and with a range of perspectives including commerce, public service and basic research. But its strength and diversity owed much to decades of past investment. In learning lessons for future pandemics, it is worrying that elements of that investment no longer appear secure and are at serious risk.

30. In some aspects of the fight against Covid, the country failed to make best use of its science because it was not sufficiently prepared to apply it in a cohesive and coherent way. It relied to some extent on networks such as the membership of the Microbiology Society, but insufficient political and official will, both before the pandemic and once it had started, meant that potentially valuable connections and collaborations spread throughout the UK were missed or delayed.

Statement of Truth

I believe that the facts stated in this witness statement are true. I understand that proceedings may be brought against anyone who makes, or causes to be made, a false statement in a document verified by a statement of truth without an honest belief of its truth.

Signed: Personal Data

Dated: 12/04/2023