



**By email**

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Our ref: 14/04/21/tr/114

13 May 2021

Dear Jarrod Kirkman,

**Re: Scientific evidence proving that SARS-COV-2 has been isolated and causes Covid-19 disease**

Thank you for your request received on 14 April 2021 addressed to Public Health England (PHE). In accordance with Section 1(1)(a) of the Freedom of Information Act 2000 (the Act), I can confirm that PHE does hold some of the information you have specified. I have answered your questions in the order raised:

***This is a request for information pursuant s.1 Freedom of Information Act 2000.***

***1) Evidence to prove SARS-COV-2 virus.***

***Produce any recorded information to evince that the Public Health England have acquired scientific evidence proving that the so called SARS-COV-2 virus has been isolated and purified in reference laboratories run by Public Health England under Professor Zambon (Imperial College London and Sage member).***

***2) Evidence to prove Covid-19 disease.***

***Produce any recorded information to evince that the Public Health England have acquired scientific evidence proving that the so called COVID-19 disease has been isolated and purified in reference laboratories run by Public Health England under Professor Zambon (Imperial College London and Sage member).***

To answer questions 1 and 2, Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the virus that causes COVID-19 (coronavirus disease 2019).

PHE's microbiology teams use the term "isolation" to mean culture in the laboratory. It is used sometimes interchangeably to mean isolation from a patient or clinical material – but usually implies that the organism has been grown in culture. An organism is identified by looking for its unique genetic material in a clinical sample and further identification is refined and confirmed by whole genome sequencing.

The Virus Reference Laboratory at PHE, Colindale, London has grown the virus, SARS-CoV-2. The virus culture method has been published in the following peer-reviewed paper: <https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.32.2001483>

PHE's culture work on other SARS-CoV-2 variants is in progress and has not published in any peer-reviewed papers at present.

Furthermore, under Section 16 of the Act, public authorities have a duty to provide advice and assistance. Accordingly, please find the following links below regarding evidence of COVID-19:

SARS-CoV-2 has been cultured and then subjected to electron microscopy. Evidence of the Electron Micrograph is available at the following link: <https://publichealthmatters.blog.gov.uk/2020/01/23/wuhan-novel-coronavirus-what-you-need-to-know/>

General information pertaining to SARS-CoV-2, which causes the disease known as COVID-19: <https://www.gov.uk/government/publications/wuhan-novel-coronavirus-background-information/wuhan-novel-coronavirus-epidemiology-virology-and-clinical-features>

'Finding the evidence: Coronavirus': <https://phelibrary.kohaptfs.co.uk/coronavirusinformation>

The collection of 'Scientific evidence supporting the government response to coronavirus (COVID-19)': <https://www.gov.uk/government/collections/scientific-evidence-supporting-the-government-response-to-coronavirus-covid-19>

**3) Evidence to prove causality between the alleged new novel SARS-COV-2 coronavirus and the purported COVID-19 disease.**

***Produce any recorded information to evince that the Public Health England have acquired scientific evidence proving that SARS- COV-2 is the cause of the COVID-19 disease so as to fulfil all of the requirements of Rivers Postulates (1973).***

PHE can confirm that it does hold some of this information.

Evidence for causation between a virus and a disease can be derived from: (i) a specific virus must be found associated with a disease with a degree of regularity; and (ii) the virus must be shown to occur in the sick individual not as an incidental or accidental finding but as the cause of the disease under investigation. The pathogenic virus does not need to be present in every case of the disease, the possibility of a viral carrier state and asymptomatic infection has to be recognised. PHE has published information showing the isolating and culture COVID-19 virus and the use of RT-PCR and the description of tests and methods performed in PHE in London between January and April 2020 which identify the SARS-CoV-2 virus (<https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.32.2001483>). This paper shows a strong relationship between the

Ct value (threshold value for virus detection by PCR) and the ability to demonstrate live virus multiplying in tissue culture in the laboratory (i.e. virus isolation). Virus isolation is only done in highly specialist laboratories and it is not possible in each and every diagnostic laboratory.

**4) Evidence to prove transmission capability of SARS-COV-2 novel coronavirus.**

**Produce any recorded information to evince that Public Health England have acquired scientific evidence of clinical study to prove that the purported SARS-COV-2 new novel coronavirus is capable of transmission between like species.**

PHE can confirm that it does hold information on research conducted by PHE on the transmission of the SARS-CoV-2 virus, that causes the disease known as COVID-19. However, this information is exempt from disclosure under section 21 of the FOI Act because it is reasonably accessible by other means, and the terms of the exemption mean that we do not have to consider whether or not it would be in the public interest for you to have the information. You may be interested in the collection on 'Scientific evidence supporting the government response to coronavirus (COVID-19)'. This includes evidence and research considered by the Scientific Advisory Group for Emergencies (SAGE) in responding to COVID-19, including research and analysis conducted by PHE. You can access this information at: <https://www.gov.uk/government/collections/scientific-evidence-supporting-the-government-response-to-coronavirus-covid-19>

You may find the following papers prepared by PHE and presented to SAGE of interest:

- Factors contributing to risk of SARS-CoV-2 transmission in various settings <https://www.gov.uk/government/publications/phe-factors-contributing-to-risk-of-sars-cov2-transmission-in-various-settings-26-november-2020>
- Susceptibility and transmission risk in children: <https://www.gov.uk/government/publications/phe-sars-cov2-susceptibility-and-transmission-risk-in-children-an-overview-of-current-evidence-from-phe-surveillance-work-19-august-2020>  
<https://www.gov.uk/government/publications/phe-prospective-active-national-surveillance-of-preschools-and-primary-schools-for-sars-cov-2-infection-and-transmission-21-august-2020>

Additionally, SAGE, the Environmental and Modelling Group (EMG) and the New and Emerging Respiratory Virus Threats Advisory Group (NERVTAG) have published a number of papers on the transmission of SARS-CoV-2. These include but are not limited to:

- <https://www.gov.uk/government/publications/nervtagemg-role-of-aerosol-transmission-in-covid-19-22-july-2020>
- <https://www.gov.uk/government/publications/pheemg-aerosol-and-droplet-generation-from-singing-wind-instruments-and-performance-activities-13-august-2020>

- <https://www.gov.uk/government/publications/nervtagemg-hand-hygiene-to-limit-sars-cov-2-transmission-2-july-2020>
- <https://www.gov.uk/government/publications/emg-measurement-of-effectiveness-of-risk-mitigation-measures-in-reducing-transmission-16-july-2020>
- [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/952799/s1020-Reducing-within-between-household-transmission.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/952799/s1020-Reducing-within-between-household-transmission.pdf)

Research on transmission is not limited to that conducted by PHE. Other organisations and academic institutions have also undertaken research in relation to the transmission of SARS-CoV-2.

#### **5) Evidence to prove spread.**

***Produce any recorded information to evince that the Public Health England have acquired scientific evidence of clinical study to prove that the SARS-COV-2 virus is capable of being spread, so as to decree whether alive in the air, alive on surfaces, alive in droplets, and/or something other.***

PHE cannot answer whether a virus is “alive”. This is a debatable topic and depends on one’s definition of life. Under section 16 of the FOI Act, public authorities have a duty to provide advice and assistance. Accordingly, I have provided a link below to an article discussing the concept of whether viruses can be considered “alive”, <https://microbiologysociety.org/publication/past-issues/what-is-life/article/are-viruses-alive-what-is-life.html>.

PHE can confirm that it has detected SARS-CoV-2 RNA on surfaces and in the air in COVID-19 patients’ rooms as have many researchers worldwide. However viable virus was not detected

(<https://www.medrxiv.org/content/10.1101/2020.09.24.20191411v1>

doi: <https://doi.org/10.1101/2020.09.24.20191411>). Other studies have detected viable virus in air, for example the paper "Viable SARS-CoV-2 in the air of a hospital room with COVID-19 patients". The paper can be found here:

<https://www.medrxiv.org/content/10.1101/2020.08.03.20167395v1.full.pdf>

If you have any queries regarding the information that has been supplied to you, please refer your query to me in writing in the first instance. If you remain dissatisfied and would like to request an internal review, then please contact us at the address above or by emailing [foi@phe.gov.uk](mailto:foi@phe.gov.uk).

Please note that you have the right to an independent review by the Information Commissioner’s Office if a complaint cannot be resolved through the PHE complaints procedure. The Information Commissioner’s Office can be contacted by calling the ICO’s helpline on 0303 123 1113, visiting the ICO’s website at [www.ico.org.uk](http://www.ico.org.uk) or writing to the ICO at Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF.

Yours sincerely  
FOI Team