COVID-19 SECOND BRIEFING

AETIOLOGY & IMPLICATIONS - A SECURITY BRIEFING

Professor Gwythian Prins[1] *& Sir Richard Dearlove*[2]
with input from
'Caroline Bell'[3]*, Dr John Constable*[4]*, Professor Angus Dalgleish*[ø] *& Birger Srensen*[si . .].

IT IS NOW BEYOND REASONABLE DOUBT THAT COVID-19 WAS ENGINEERED IN WUHAN INSTITUTE OF VIROLOGY (WIV). SUCCESS IN VACCINE DESIGN IS UNLIKELY IF THIS IS NOT UNDERSTOOD. THE PRC IS NOW ENGAGED IN AN INFORMATION & INFLUENCE OPERATION (IIO) TO DEFLECT RESPONSIBILITY. BEYOND REASONABLE DOUBT WIV RETRO-ENGINEERED A BAT VIRUS IN JANUARY 2020. WE SURMISE THIS WAS DONE TO ALIGN WITH COVID-19 TO SUSTAIN THE 'NATURAL CAUSATION' NARRATIVE. THERE IS CIRCUMSTANTIAL EVIDENCE (PROVIDED HERE) THAT THE JOURNAL 'NATURE' WAS USED TO PROMULGATE THE PRC NARRATIVE.

MAIN POINTS

A: A recent Letter to *Nature Medicine* (Andersen *et al*, 17 March) argue on detailed genomic evidence that COVID-19 was *not* engineered but is of natural, wild origin, from bats, via pangolin most probably, into humans, through a wet market in Huanan. This is contrary to what we have previously briefed in Professor Dalgleish's Note of 17 March. The *Nature Medicine* letter has now been analysed by the Sørensen team in Norway and **ts science is shown to be incorrect** Another related engineered virus has been identified, and the scientific arm used by the PRC to deflect blame is hypothesised. The Sørensen *et al* 'Comment on the Letter' will shortly be published but, for speed, its security implications are explained here (the text validated by Sørensen *et al*). Both the form of the Andersen *et al* Letter, *the scale and nature* of its errors and of its prime source (Zhou *et al*) raise important further non-virological questions, including of **geo-strategic and domestic security,** that can be addressed separately in slower time.

B: We judge, therefore, that the PRC is conductingan information operation to embed the natural causation narrative and, by misdirection, to conceal true origin and responsibility. The science arm (A) is axiomatic. A book (*Coronovirus*

[1] *Emeritus* Research Professor, LSE & former Visiting Senior Fellow, Defence Evaluation & Research Agency
[2] Chairman, Board of Trustees, University of London & former Chief of the Secret Intelligence Service
[3] A serving member of the Civil Service whose identity we are protecting
[4] Director of the Renewable Energy Foundation & former Professor, University of Kyoto, Japan
[ø] Foundation Professor of Oncology, St Georges University of London & co-discoverer of the role of the CD4 receptors in HIV/AIDS
[si . .]. Executive Chairman Immunor AS and President and CEO Bionor Holding AS, Oslo, past Chairman, Norwegian Bio-Industry Association & collaborator with Professor Dalgleish in development of the Sørensen Vaccine

Prevention & Control: The Experts' Guide) has also recently been released in the USA and is soon to be published in the UK (Annex B), which we interpret as a further propaganda initiative following up the praise for Xi's handling of COVID-19. These show how the PRC aims to 'normalise' its role alongside all other countries as victim of an act of nature, thereby escaping its actual responsibility, and to take the moral high ground, posing as altruistic donor of and teacher of superior handling techniques.

AETIOLOGY - A SECURITY BRIEFING

The COVID-19 origins debate: what is now known & an hypothesis about what has recently been happening

1. The Briefing Note authored by Professor Dalgleish [reattached for convenience at the end of this Briefing, and supplied to Government on 17 March 2020, gave two main points from the genomics of the COVID-19 virus which suggested that "it was highly **unlikely** to have evolved from SARS via bats or some other animals."
2. That same day, a letter was published in *Nature Medicine*[5] Its summary concluded that "our analysis **shows clearly** that SARS-CoV-2 is not a laboratory construct or a purposefully manipulated virus." *Nature Medicine* is part of the *Nature* family of science journals published by Springer Nature. [redacted] *Nature* is the world's top-rated peer-reviewed science journal and therefore anything carrying this *imprimatur* has the authority of the *Nature* 'brand.' This finding is at complete variance with the analyses of the Sørensen team in Norway. The Letter also focuses the debate entirely within the specialised discipline of gene analysis, thus disqualifying all other analysis and data.
3. The science of the Andersen *et al Nature Medicine* letter has now been thoroughly checked by the Sørensen team in Norway. This analysis is still in final drafting ('englishing') and will shortly be submitted to *Nature Medicine* for publication. But the security implications of the scientific findings are of such moment that we report them here. The draft paper will follow as soon as its language is perfected.

What is now known?

1. The Wuhan Institute of Virology (WIV - see Annex A) contains the first BSL-4 (Bio-Security Level 4) laboratory in China, built with French assistance 2003-14 and finally certified in 2017, about which western scientists expressed anxiety in 2017,[6] especially in light of the previous accidental release of SARS from a Beijing laboratory.[7] Such escapes can happen. The Andersen *et al* Letter actually references but does not discuss a 2004 report of a laboratory escape of SARS in Singapore through an infected technician (their reference 28).[8]

---

[5] K.G.Andersen *et al*, "The Proximal Origin of SARS-CoV-2" *Nature Medicine*, 17 March 2020, https://www.nature.com/articles/s41591-020-0820-9

[6] https://www.nature.com/news/inside-the-chinese-lab-poised-to-study-world-s-most-dangerous-pathogens-1.21487

[7] https://science.sciencemag.org/content/304/5671/659.full

[8] Lim, P. L. *et al*. "Laboratory-acquired severe acute respiratory syndrome," N. Engl. J. Med. 350, 1740–1745 (2004).

2. Norwegian Intelligence sources have reported to us that they have evidence of two previous, but contained, releases of COVID from the WIV.
3. In 2010 scientists from the 'Special Viruses' section of WIV were engaged in 'gain of function' experiments, jointly with international collaborators, to increase Covid infectiousness for humans.[9] They used an HIV pseudo virus to express seven bat ACE2 receptors and compare their binding properties to human ACE2 receptors in order to pick the best for further optimizing the SARS coronovirus's ability to bind to human cells (they also found that bat ACE2 receptors are very close to human ACE2 receptors). This study provided a model system for the testing of SARS-like viruses which already had been selected in a vast survey of Chinese bat populations between 2005 – 2013.[10] These viruses were potentially infectious to humans via the ACE2 receptor. The lead scientist on the 2010 study was Ms Zheng-Li SHI from the WIV. Further new viruses were identified between 2012-2015.[11]
4. 'Gain of function' experiments increase the potency of viruses and are inherently dangerous procedures, banned for some time in the USA because they produce chimeric viruses of increased infectivity and lethality. This certainly was the case in the 2015 experiment which advanced the 2010 work by perfecting in animal trials a virus optimised to infect the human upper respiratory tract. The 2015 authors were well aware that their chimeric virus was very dangerous and they speculated that " review panels may deem similar studies too risky to pursue as increased pathogenicity in mammalian models cannot be excluded." Sørensen judges that on the balance of probabilities this project *produced the precursor to COVID-19*.
5. In 2015 scientists from the 'Special Viruses' section of WIV were engaged in 'gain of function' experiments, jointly with a majority Chapel Hill team (The US's second-most important veterinary research facility). They manipulated bat viruses to create a chimeric virus – part human part mouse - SHC014-MA15 (MA means Mouse Adapted) which binds to and can proliferate on human upper airway cells (2B4 Calu-3 - a cell line contributed by Chapel Hill): these are in fact COVID-19 properties. In animal (mouse) experiments at Chapel Hill replication of the chimeric virus in mouse lung showed significant pathogenesis (advance of the disease). They reported that it may be hard to develop a vaccine against SHC014-MA15. The lead Wuhan scientist, who provided the Covid material, was Ms Zheng-Li SHI ("provided SHC014 spike sequences and plasmids").

[9] Y. Hou *et al,* "Angiotensin-converting enzyme 2 (ACE2) proteins of different bat species confer variable susceptibility to SARS-CoV entry" *Arch Virol* (2010) 155:1563–1569

[10] Xu. L. *et.al* "Detection and characterization of diverse alpha- and betacoronaviruses from bats in China" *Virologica Sinica*, 2016, 31 (1): 69–77

[11] Lin. X-D *et.al*, "Extensive diversity of coronaviruses in bats from China" *Virology* 507 (2017) 1–10

Ms SHI was also previously a senior author on the 2010 HIV experiment.

6. COVID-19 exhibits inserted sequences from both gp160 HIV ("COVID-19 shows that four sections with amino acids in the spike protein of the new coronavirus were altered artificially with new and extra genetic material from a well-documented human HIV strain when compared to SARS." Dalgleish Note 17 March) and an epitope at the most important location on the virus for binding to human cells appears to be genetic material from a 'flu strain.
7. It is therefore *simply not possible* to conceal COVID-19's engineered construction from virologists such as the Sørensen team. How then to validate the PRC preferred narrative of natural origin of COVID-19 from bats, via pangolins, into the Huanan wet market there to create a "community-acquired pneumonia" which is the language used in the IIO materials (see below) to seize control of the terms of discussion and to avoid responsibility?
8. The primary source cited by Andersen *et al* to demonstrate the alignment of COVID-19 with a bat virus (RaTG13) is a paper published in *Nature* on 2 February 2020 which shows exactly that alignment (Extended Data Fig 3).[12] This paper has a vast list of collaborating Chinese scientists. Mr ZHOU is lead author who is credited with the original concept. Ms SHI is in the list. It looks like 'all hands to the pumps' in Wuhan to write this paper in January 2020.
9. Sørensen *et al* have examined all cited sources in Andersen *et al* ('The Letter') and in ZHOU *et al*. They re-present the six gene sequences displayed in Andersen *et al* Fig 1 with addition data on dates of collection and submission to the international register GenBank. Sequences 1-3 are, respectively COVID-19, Bat virus RaTG13 and Pangolin. Sørensen *et al* also include for comparison more than three further bat sequences registered after the 2003 SARS epidemic. – and intend to include up to ten additional SARS-like isolates from the period between SARS (2003) and COVID-19 (2020).
10. Bat virus RaTG13 has an unusual history. It was originally collected on 24 July 2013 but only registered *six and a half years later*, on 27 January 2020 (ie well after the COVID-19 pandemic was raging and a bare week before publication in *Nature*). It is also unique – unlike all other bat viruses. These, including the three added for comparison in Sørensen *et al*, show similarities to SARS *but not to COVID-19*. As mentioned, more will be added to this test before submission.

[12] Zhou, P., Yang, X., Wang, X. *et al.* "A pneumonia outbreak associated with a new coronavirus of probable bat origin". *Nature* 579, 270–273 (2020). https://doi.org/10.1038/s41586-020-2012-7

11. RaTG13, in contrast, is unlike *all* other bat sequences found before the 2019 COVID-19 outbreak. But it *is similar to COVID-19*. Both COVID-19 and RaTG13 are engineered viruses and show inserts that are homologous to gp160 HIV sequences. They are presented (Extended Data Fig 3, blue boxes) without comment in Zhou *et al*. But they are there, hidden in plain sight.
12. Sørensen *et al* also examine the Pangolin sequence which Andersen *et al* deploy in the Letter with equal weight to that which they give to Bat RaTG13 to complete the links in the virological chain between bat origin, COVID-19, pangolin onward transmission and placement of the virus in the Huanan wet market. Another surprise. The Pangolin sequence is unverified and exists neither in GISAID nor GenBank registries. It is, in a word, a fake.

An hypothesis about what has recently been happening

1. COVID-19 is an engineered, chimeric virus created during or as a consequence of 'gain of function' experiments in the Wuhan Institute of Virology that somehow, by a vector as yet unknown, escaped late in 2019, fulfilling the worst fears of those critical of China engaging in BSL-4 research.
2. We do not know just how much the late Dr Li Wen Liang, ophthalmologist of Wuhan Central Hospital, had realised when he first warned in December and was reprimanded by the Police for 'spreading rumours' before he lost his life to COVID-19; but by January the CCP was engaged in a full-scale IIO.
3. The CCP is desperate to conceal the true nature and origin of COVID-19, which is a repetition of the SARS escape from a Beijing laboratory, and is engaged upon a subtle, ruthless and clever strategy of misdirection.
4. Axiomatic to this is the need to embed with the greatest scientific credibility the narrative of natural and hence blameless origin, blameless that is except upon the exotic eating habits of the people of Huanan.
5. Unfortunately for the CCP wild bat viruses do not match COVID-19; so during January 2020, an old sequence was retro-engineered by a team including Zhou and Shi who are well expert in such work (Zheng-li Shi most especially). They inserted HIV sequences into RaTG13, registered it on 27 January and with remarkable speed were able to publish it in *Nature* one week later.
6. The following month, one speculates perhaps by invitation, a group of virologists published a Letter in *Nature Medicine* which mainly seeks to deny (without discussion of evidence) the 'engineered escapee' thesis and to assert (by use of what Sørensen *et al* have shown to be defective and/or compromised evidence*)* the 'natural causation' narrative which, coincidentally or not, the CCP propaganda effort is seeking by all means to normalise world wide. It is an intervention in the world-leading science journal which in practice serves the agenda of the Chinese Communist Party as

evinced in the new 'normalisation' book published in the USA in March and shortly due in the UK.[13] (Annex B. Full text obtained for us by sources.).

7. *Coronavirus Prevention & Control: The Experts' Guide* aims to achieve three things*:* to seize control of the terms of debate by naming COVID-19 "community-acquired pneumonia"; to 'normalise' the natural transmission narrative (p.20 Para 6) and to occupy the moral high ground, presenting China as a world-leader in containment, as a prompt sharer of understanding of the virus with WHO (p.11) and as altruistic dispenser of superior advice from a superior country to lesser, still afflicted, countries.
8. However, an over-arching question arises from what the Sørensen *et al* team have uncovered: just why and how did the *Nature* peer-review process fail so entirely to pick up what Sørensen *et al* have discovered about the Zhou *et al* article of 2 February 2020 and the Andersen *et al* Letter of 17 March?

The PRC Information & Influence Campaign: Nature and China[14]

1. This is not the first time in the recent past that *Nature* has been accommodating to the Chinese Communist Party's wishes; and it is commercially engaged with the PRC via subscription income and joint venture.
    a. In 2017 the company agreed to block access on its Chinese site to hundreds of articles that displeased the CCP ruling elite.
    b. In January 2020, the article mentioned above and published in 2017 which raised concern about the risks of constructing BSL-4 (Bio-Safety Level 4) laboratories in China[15] was *retrospectively edited* to add a prefix health warning, as follows: "Editors' note, January 2020: Many stories have promoted an unverified theory that the Wuhan lab discussed in this article played a role in the coronavirus outbreak that began in December 2019. Nature knows of no evidence that this is true; scientists believe the most likely source of the coronavirus to be an animal market." This is noteworthy.
    c. Nature is also commercially linked closely to Chinese virology. The journal *Virologica Sinica* is published as a joint venture between the Wuhan Institute of Virology, the Chinese Academy of Sciences and Springer Science+Business Media Singapore 2016. Springer Nature was formed in 2015 by the

[13] https://www.austinmacauley.com/book/prevention-and-control-coronavirus-experts-guide

[14] We wish to acknowledge the indispensable role of Dr Constable's swift and effective primary research on this section.

[15] D. Cyranowski, "Inside the Chinese lab poised to study world's most dangerous pathogens: Maximum-security biolab is part of plan to build network of BSL-4 facilities across China," *Nature*, 22 February 2017 https://www.nature.com/news/inside-the-chinese-lab-poised-to-study-world-s-most-dangerous-pathogens-1.21487

merger of Nature Publishing Group, Palgrave Macmillan and Macmillan Education (held by Holtzbrinck Publishing Group) with Springer Science+Business Media (held by BC Partners which spun out of Baring Capital Partners).

2. [redacted]

3. [redacted]

4. [redacted]

5. [redacted]

6. [redacted] The CCP has long pursued a strategy of identifying "Agents of Influence" in nodal positions who wittingly or otherwise, can be exploited to advance the interests of the PRC.

16 [redacted]

17 [redacted]

18 [redacted]

7. [redacted]

8. [redacted]

9. [redacted]

Annex A
The Wuhan Institute of Virology

The Wuhan Institute of Virology (WIV) of the Chinese Academy of Sciences (CAS) was established in 1956. It is the only institute specializing in virology, viral pathology and virus technology among 19 other biological and biomedical research institutes in CAS.

The research landscape of WIV has witnessed drastic changes, owing to the demands of the eco-social development of China and great challenges in virological science and technology. WIV's traditional programs that focused on insect viruses and applied microbiology have expanded to include more diverse areas of interest, including molecular virology, the etiology and epidemiology of emerging infectious diseases, immunovirology, analytical pathogenic microbiology, and agricultural and environmental microbiology. Thanks to its dynamic research programs and capacity, the institute has developed two unrivaled research platforms in China, the China Center for Virus Culture Collection, and the National Mega Science Facility for Biosafety Containment. These facilities have tremendously reinforced WIV's R&D capacity and will inevitably help advance the life sciences nationwide. The hard work of WIV has paid off with global visibility and international recognition, especially in terms of research on the baculovirus, the etiological origin of the Severe Acute Respiratory Syndrome (SARS) virus, and the discovery of numerous key regulators of innate immune signaling.

WIV has one state key laboratory, one CAS key laboratory, and one key Wuhan municipal laboratory. The State Key Laboratory of Virology (SKLV), established in 2004 and jointly supported by Wuhan University and WIV, focuses on basic research into various viruses. The CAS Key Laboratory of Agricultural and Environmental Microbiology (KLAEM), founded in 2010, focuses on fundamental microbiological studies of agricultural and environmental importance. The Key Laboratory of Emerging Infectious Diseases of Wuhan, set up in 2012, focuses on basic and applied research on emerging infectious disease pathogens. WIV has different biosafety level laboratories for working on human pathogens, including 17 biosafety level 2 (BSL-2) labs, one animal BSL-2 (ABSL-2) lab and two BSL-3 labs. In addition, the first national BSL-4 laboratory is now under construction. This

high-level biosafety laboratory signifies that WIV has an irreplaceable role to play in tackling emerging infectious diseases.

As of 2013, WIV had a staff of 266, including 35 principal investigators and specialists. Among WIV's personnel are eight chief scientists in charge of national mega-research programs. WIV also has four recipients of the prestigious Distinguished Young Scientist Award and 14 CAS One Hundred Talents Program fellows, all honored for their academic merit and innovative research.

As a National International Collaboration Center, WIV promotes medium- and long-term international collaboration with organizations around the world. For example, WIV, in cooperation with Wageningen University in the Netherlands and France's Montpellier 2 University, established the Joint Lab of Invertebrate Virology in 1998. WIV has also played a key role in the development of the CAS-African Research Center in Nairobi. WIV is in charge of setting up the microbiology and epidemiology lab, which will specialize in pathogen detection, the epidemiology of infectious diseases, and prevention and control of infectious diseases.
WIV will spare no effort to to conduct fundamental, strategic and forward-looking R&D with the support of its world-class faculty and dedicated administrative and technical support staff. WIV is determined to become one of the world's leading institutions in virological and microbiological research, a training base for scholars in the field, and a powerful engine of biotech transfer by the year 2020.

Director Xinwen CHEN

[NOTE: CHEN is reported to have been replaced as Director by Major General Chen Wei of the PLA, a biological weapons specialist, in early February, having arrived in Wuhan to lead the testing programme in January]

[NOTE: the same article reports that Zheng-Li SHI (*passim* above) is now a Director of WIV: she is quoted]

https://www.dailymail.co.uk/news/article-8003713/China-appoints-military-bio-weapon-expert-secretive-virus-lab-Wuhan.html

Xinwen CHEN, PhD,, Professor. He obtained his BSc and MSc from the Department of Biology, Central China Normal University in 1986 and Henan University of Technology in 1988, respectively. In 1998, he obtained his PhD from Wageningen University in 2001. He subsequently worked at the University of California at Berkeley and Wageningen University as a visiting scientist. Dr. Chen is one of the scientists in “Hundred-talent Project” CAS and one of the awardees of the "National Outstanding Youth Fund". Dr. Chen’s current positions include Director General of WIV, a member of the institute’s Academic Committee, a member of the institute's Academic Degree Committee. In addition, Dr. Chen is Editor- in-Chef of Virologica Sinica, a member of the Council of the Hubei Society of Microbiology and a member of the Council of the Hubei Society of Biotechnology. Dr. Chen as the chief scientists assume "national major scientific research projects", and also assume multiple projects such as 973, the national natural science foundation and institute project. Dr. Chen has more than 130 publications, of which more than 70 are registered in the SCI index. He was also awarded second prize in the "National Innovation Award" in 2005, awarded first prize in the "Natural Science of Hubei Province" in 2011.

Deputy Secretary of the Party Committee Gengfu XIAO

Gengfu Xiao, Ph.D., Professor. Dr Xiao obtained his BSc and MSc in Medicine from Tongji Medical University in 1989 and 1992. And he obtained his Ph.D. degree in virology from Wuhan University in 1999. From 1992 to 2008, he worked at the college of Life Science in Wuhan University as a Teaching Assistant, Lecturer, Associate Professor and Professor. Dr Xiao was one of the awardees of the “Outstanding Youth Fund” in Hubei province in 2003; he then obtained the support of the Program for New Century Excellent Talents in University in 2006 and the Support of the Hundred Talents Program of CAS in 2008. Now Dr Xiao is the Deputy Director General and Professor at Wuhan Institute of Virology, CAS, and is the head of the research group of viral biochemistry, furthermore Dr Xiao is deputy director of the State key laboratory of virology.Dr Xiao has worked on the study of medical molecular virology for many years. In recent years, his research focuses on biochemistry of viral proteins. Dr Xiao is supported by National Basic Research Program of China

and the CAS pilot project of Knowledge Innovation Programs.

Dr Xiao participated in editing three monographs, “genetic engineering”, “Modern Molecular Biology of the Cell”, and “Human flu and Bird flu”.

Deputy directors Hong TANG

Hong TANG, PhD (Rutgers University). Professor of Molecular Immunology, and deputy director general of the Institute. His work on innate immune response and regulation has resulted in a series of high impact publications in Nat Med, Nat Immunol, J Exp Med, Cell Res, PNAS, J Immunol, among others. He was a fellow of One-Hundred Talents Program of CAS (2001-2004) and recipient of the National Outstanding Young Investigators Fellowship (2001-2005). He was elected to the standing committee of Board of Directors of Chinese Society for Immunology, and served as the vice chairman of Division of Infection and Immunity, Chinese Society for Immunology, ever since. He also served on Infection Diseases Review Panel of State Basic Research Development Program of China (2007-2013), Strategic Reviewers Panel for National Programs of Prevention and Control of Primary Infectious Diseases Including Viral Hepatitis and AIDS (2008-2012). He is now an associated editor or editor for several journals, including Science China Life Science, Virologica Sinia, Cell & Mol Immunol, Protein & Cell.

Deputy directors Changcai HE

Changcai HE, Bsc & MSc, worked in the Research Group of Ichthyology of Institute of Hydrobiology, Chinese Academy of Sciences (CAS) from Jul. 1985 to Jun. 1996. Then, he worked in the Division of Graduates in the Institute of Hydrobiology, CAS from Jul. 1996 to Feb. 2000. During the following seven years (from Mar. 2000 to Dec. 2007), working in Wuhan Education Center, he was the deputy head of the General Office of Education Center, Executive Vice President of the School for Advanced Study in Wuhan Branch, CAS, and then head of the General Office of Education Center, among which, he was also the deputy head of Admission Office of Graduate University of CAS from Oct. 2001 to Oct. 2003, and the deputy head of Office of Organization and Human Resource from Mar. 2002 to Mar. 2004. Within the following five years, namely from Jan. 2008 to Aug. 2013, he acted as the head of the General Office, Office of Infrastructure, and assistant of the President of Wuhan Branch, CAS. In addition, he was the chairman of the corporate trade union of Wuhan Branch from Jan. 2004 to Sep. 2013, and the Corporate Secretary of the Party at Wuhan Branch from Oct. 2005 to Jul. 2013. Since the Aug. of 2013, he has been the deputy director general of Wuhan Institute of Virology, CAS.

Annex B

"Coronovirus Prevention & Control: The Experts' Guide"

This is the second Chinese information and influence campaign publication.

https://www.austinmacauley.com/book/prevention-and-control-coronavirus-experts-guide

It was published in the USA on 24 March and is being pushed world-wide in many languages by the China Publishing House. The UK edition is ready but not yet published and attached to this briefing in full as a WORD document which has been obtained by our sources.

COVID 19 Vaccine development

An Urgent Note for the Prime Minister and his Advisers
17 March 2020

Professor Angus Dalgleish MD FRCP FRACP FRCPath FMedSci
Foundation Professor of Oncology, St Georges University of London

(specialising in experimental cancer immunotherapy and co-discoverer of the role of the CD4 receptor in HIV)

MAIN POINTS

A: Contrary to many experts' opinion, a detailed analysis of the sequence of COVID-19 **is consistent with this being an 'escapee' from a laboratory** (as was SARS before it).

B: This has important implications for vaccine design. **A vaccine based on these findings is currently in production for pre-clinical testing, expected to start in April 2020**. UK funding for rapid trials and changes to normal trials protocols are now required.

Origins of the COVID-19 virus

1. The present conventional wisdom among some virology experts is that the COVID-19 is in origin a wild virus originating in bats that has evolved through other species and entered humans through the Huanan wet food market.
2. My colleague, Birger Sorenson with whom I have worked with over many years with funding from the Norwegian Research Council (NRC), has analyzed the COVID-19 sequence in detail and was one of the first to conclude that **it is highly unlikely** that this virus has evolved from SARS via bats or some other animals into Covid-19 for the following reasons:
    a. COVID-19 shows that four sections with amino acids in the spike protein of the new coronavirus were altered artificially with new and extra genetic material from a well-documented human HIV strain when compared to SARS. If this had come via a natural recombination, they would **not** have been identical.

   b. Moreover, the most important location on the virus for binding to human cells appears to include genetic material from a Flu strain.
3. These two observations in combination underpin the hypothesis that COVID-19 is very probably the result of laboratory intervention. It is not uncommon to combine viruses in laboratories to elucidate receptors in 'gain-of-function' studies. It is known that the Wuhan BSL4 Laboratory was/is conducting 'gain-of-function' experiments with bat viruses.
4. Laboratory leaks do occur. Remember the 2007 Foot & Mouth escape at Pirbright from a broken effluent pipe contaminating mud which was spread by lorry tyres leading to decimation of our cattle industry by a piece of what can only be described as criminal incompetence.

The Sorensen COVID-19 Vaccine

1. Acceptance of the engineered aetiology of the COVID virus has permitted Birger and his colleagues to identify a risk in any vaccine development that ignores this crucial understanding; but it also reveals an Achilles Heel that can be exploited.
2. Having observed that large parts of this virus have human-like sequences, a vaccine incorporating such regions may not mount a robust repertoire of neutralizing antibodies and may, in a worst-case scenario, actually cause local or systemic autoimmunity.
3. Birger Sorensen's COVID-19 vaccine has eliminated all such human-like domains for safety and efficacy reasons and focuses solely on the parts where the virus binds to human cells.
4. The parts were initially defined by analysing the similarities of the COVID-19 virus to the SARS-Coronavirus on gene sequence as well as at X-ray level. In early March researchers funded by the Norwegian National Institutes of Health/National Institute of General Medical Sciences (NIH/NIGMS) published new X-ray data of the interaction between the virus and the human cells, which verified the regions the Sorensen COVID-19 vaccine is targeting.
5. These parts of the COVID-19 virus have been analysed across more than 80 different globally sequenced viruses covering both COVID subtypes S&L; and these specific cell binding parts have shown no sign of mutations, which indicates that the vaccine has targeted conserved parts of the virus and that the vaccine therefore has a global potential.
6. Birger and I both predicted correctly that the three major HIV vaccine designs would not only not work because they used incorrect epitopes but would make counterproductive vaccines. Last month the third large trial using a vaccine that all the experts had promised would work was halted in South Africa due to futility (with a trend to increased infections in those given the vaccine).
7. So far these experts have spent hundreds of millions of pounds and 36 years on developing three failed products.
8. The purpose of this reminder of the AIDS vaccine story is to help prevent with COVID-19 vaccine development a repetition of the disaster experts made with HIV. I am not suggesting that in this emergency other lines than ours should be abandoned. I am warning from experience in the strongest terms of dangers in vaccine design that does not start from a correct understanding of the aetiology of the COVID-19 virus.
9. Standing on our past record of being correct against majority views in our profession, I therefore wish strongly to suggest that the Sorensen COVID-19 Vaccine be given equal prominence with the other candidate vaccines that may not have thought this through.
10. Birger has had the vaccine made and is going to be the first to take it as he has a lung condition which makes him more susceptible.
11. I am helping with assessing different adjuvants to help optimize the response. I have noted that one we have shown in the Laboratory to be a good adjuvant, has been in trials for cancer patients (IMM 101) and appears as a co-benefit to stop people getting their usual colds and 'flus every winter, and hopefully COVID-19 as well.

12. With the Sorensen Vaccine we are aiming for a one-shot preventative for COVID-19 as quickly as possible. The material arrived in Norway today. Financial resources to manufacture the vaccine candidate and an administrative vehicle were put in place late last week: the development company was registered on Friday.
13. What we will need from the British Government, as a matter of urgency, to proceed in the UK are funding for rapid trials and agreed safe but accelerated test protocols to prove the vaccine which, once through initial test (para 10) and accelerated mouse/rat model we believe could most efficiently be trialed by ring vaccination of all contacts traced of a proven carrier.