

PUBLIC ENQUIRY

RAVINDRA GUPTA: *Reference for Request - M2/SAGE/01/RG*

I read Medical Sciences at Cambridge University from 1994 to 1997 and pursued the clinical part of my medical training in Oxford University from 1997 to 2001. During that I was made aware of the Fulbright scholars programme which enabled students to spend a year at a United States institution in order to foster links between the United States of America and the United Kingdom. I chose a course in international public health at Harvard and gained interest in infectious diseases. I trained in London and Oxford and became a clinical academic at UCL, specialising in HIV. I became full Professor at UCL in 2016. I was recruited to Cambridge in 2018 and in 2020 we pivoted our HIV work to COVID-19.

I wrote to Jonathan van Tam to request a zoom meeting when we had data on how well the alpha variant was neutralised by serum from vaccinees. We had also been involved in describing how new variants arise. JVT agreed that my expertise could be useful and referred me to Peter Horby, and that is how I came to be a co-opted member of NERVTAG.

Key publications

1. Meng B, Abdullahi A, Ferreira IATM, Goonawardane N, Saito A, Kimura I, Yamasoba D, Gerber PP, Fathi S, Rathore S, Zepeda SK, Papa G, Kemp SA, Ikeda T, Toyoda M, Tan TS, Kuramochi J, Mitsunaga S, Ueno T, Shirakawa K, Takaori-Kondo A, Brevini T, Mallery DL, Charles OJ; CITIID-NIHR BioResource COVID-19 Collaboration; Genotype to Phenotype Japan (GP-Japan) Consortium members; Ecuador-COVID19 Consortium, Bowen JE, Joshi A, Walls AC, Jackson L, Martin D, Smith KGC, Bradley J, Briggs JAG, Choi J, Madisson E, Meyer K, Mlcochova P, Ceron-Gutierrez L, Doffinger R, Teichmann SA, Fisher AJ, Pizzuto MS, de Marco A, Corti D, Hosmillo M, Lee JH, James LC, Thukral L, Veleser D, Sigal A, Sampaziotis F, Goodfellow IG, Matheson NJ, Sato K, **Gupta RK**. **Altered TMPRSS2 usage by SARS-CoV-2 Omicron impacts tropism and fusogenicity.** *Nature*. 2022 Feb 1. doi: 10.1038/s41586-022-04474-x.

2. Mlcochova P, Kemp S, Dhar MS, Papa G, Meng B, Ferreira IATM, Datir R, Collier DA, Albecka A, Singh S, Pandey R, Brown J, Zhou J, Goonawardane N, Mishra S, Whittaker C, Mellan T, Marwal R, Datta M, Sengupta S, Ponnusamy K, Radhakrishnan VS, Abdullahi A, Charles O, Chattopadhyay P, Devi P, Caputo D, Peacock T, Wattal DC, Goel N, Satwik A, Vaishya R, Agarwal M; Indian SARS-CoV-2 Genomics Consortium (INSACOG); Genotype to Phenotype Japan (G2P-Japan) Consortium; CITIID-NIHR BioResource COVID-19 Collaboration, Mavousian A, Lee JH, Bassi J, Silacci-Fegni C, Saliba C, Pinto D, Irie T, Yoshida I, Hamilton WL, Sato K, Bhatt S, Flaxman S, James LC, Corti D, Piccoli L, Barclay WS, Rakshit P, Agrawal A, **Gupta RK**. **SARS-CoV-2 Delta variant replication and immune evasion.** *Nature* 2021 online ahead of print doi.org/10.1038/s41586-021-03944-y

3. Kemp SA, Collier DA, Datir R, Ferreira I, Gayed S, Jahun A, Hosmillo M, Rees-Spear C, Mlcochova P, Lumb IU, Roberts DJ, Chandra A, Briggs J, van Gils MJ, Smith K, Bradley JR, Smith C, Doffinger R, Ceron-Gutierrez L, Barcenas-Morales G, Pollock DD, Goldstein RA, Smielewska A, Skittrall JP, Gouliouris T, Goodfellow IG, Gkrania-Klotsas E, Illingworth C, McCoy LE, **Gupta RK**. **SARS-CoV-2 evolution during treatment of chronic infection.** *Nature* 2021 Apr;592(7853):277-282

4. Collier DA, Ferreira I, Kotagiri P, Datir R, Lim E, Touizer E, Meng B, Abdullahi A; CITIID-NIHR BioResource COVID-19 Collaboration, Elmer A, Kingston N, Graves B, Le Gresley E, Caputo D, Bergamaschi L, Smith KGC, Bradley JR, Ceron-Gutierrez L, Cortes-Acevedo P, Barcenas-Morales G, Linterman M, McCoy L, Davis C, Thomson E, Lyons P, McKinney E, Doffinger R, Wills M, **Gupta RK**. **Age-related heterogeneity in immune responses to SARS-CoV-2 vaccine BNT162b2** *Nature* 2021 Aug;596(7872):417-422.

5. Collier DA, De Marco A, Ferreira IATM, Meng B, Datir R, Walls AC, Kemp S SA, Bassi J, Pinto D, Fregni CS, Bianchi S, Tortorici MA, Bowen J, Culap K, Jaconi S, Cameroni E, Snell G, Pizzuto MS, Pellanda AF, Garzoni C, Riva A, Elmer A, Kingston N, Graves B, McCoy LE, Smith KG, Bradley JR, Temperton N, Ceron-Gutierrez L L, Barcenas-Morales G, Harvey W, Virgin HW, Lanzavecchia A, Piccoli L, Doffinger R, Wills M, Veessler D, Corti D, **Gupta RK**.

Sensitivity of SARS-CoV-2 B.1.1.7 to mRNA vaccine-elicited antibodies.

Nature 2021. May;593(7857):136-141

NERVTAG meetings

I attended 24 meetings in total and 3 extraordinary meetings (Dec 2020-present). My inputs were largely on expert opinion and I sometimes showed data from our work on virology and antibody responses to variants. I presented a few papers in addition.

NERVTAG was a very well run group and made very important recommendations that were evidence based. I would say that making the analogy to influenza early on in the pandemic may have biased the composition of advisory groups to influenza experts when in fact broader expertise earlier may have been beneficial. I think there was a lack of attention to the fact that minority groups had worse outcomes from COVID-19.

Resources and support: I cannot comment as we did not receive either in our work during the pandemic. Support appears to have been focused towards modellers rather than lab science – I think this was a mistake given the huge evolutionary changes we have observed and the fact that lab science by people like me had to be funded in other ways that slowed us down in terms of understanding the virus and its behaviour.

I was asked to attend SAGE meetings when we had the world's first data on the altered behaviour of omicron that could explain why it was milder than delta.

SAGE meetings

I attended 4 SAGE meetings from 89 to 102 (Dec 2021-present). My input was largely on expert opinion and in particular regarding the Omicron variant and its predicted severity based on lab data that we had generated.

Documentation wise I have published papers of the work I presented to NERVTAG and SAGE.