

## Kalisvar Marimuthu

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### Research Interests:

- Transmission dynamics of multidrug-resistant organisms and emerging pathogens
- Applied genomics in infection prevention and control (IPC) and outbreak investigations
- Cohort studies of multidrug-resistant organisms (MDRO)
- IPC implementation research

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### Biography

Dr Kalisvar Marimuthu completed his advanced specialty training in Internal Medicine and Infectious Diseases in Singapore in 2010 and 2013 respectively. Subsequently, Dr Marimuthu trained in infection prevention and control as a Senior Research Fellow in the Infection Prevention and Control Unit of Geneva University Hospital.

Dr Marimuthu is currently a senior consultant in infectious diseases TTSH and the lead for the HAI surveillance unit at NCID. He is a member of the National Infection Prevention and Control Committee (NIPC) of Singapore. He is also a consultant in the technical advisory committee for the World Health Organisation (WHO)'s carbapenem-resistant Enterobacteriaceae (CRE) guideline and healthcare-associated Infections (HAI) surveillance guideline. He is also a member of the WHO health emergency program ad-hoc IPC advisory panel (WHE-IPC-AP) for COVID-19.

## Selected Publications

- Ng OT, Marimuthu K, Chia PY, Koh V, Chiew CJ, De Wang L, Young BE, Chan M, Vasoo S, Ling LM, Lye DC, Kam KQ, Thoon KC, Kurupatham L, Said Z, Goh E, Low C, Lim SK, Raj P, Oh O, Koh VTJ, Poh C, Mak TM, Cui L, Cook AR, Lin RTP, Leo YS, Lee VJM. SARS-CoV-2 Infection among Travelers Returning from Wuhan, China. *N Engl J Med*. 2020 Apr 9;382(15):1476-1478. doi: 10.1056/NEJMc2003100. Epub 2020 Mar 12. PMID: 32163698; PMCID: PMC7121487.  
<https://www.nejm.org/doi/full/10.1056/NEJMc2003100>
- Pung R, Chiew CJ, Young BE, Chin S, Chen MI, Clapham HE, Cook AR, Maurer-Stroh S, Toh MPHS, Poh C, Low M, Lum J, Koh VTJ, Mak TM, Cui L, Lin RVTP, Heng D, Leo YS, Lye DC, Lee VJM; Singapore 2019 Novel Coronavirus Outbreak Research Team. Investigation of three clusters of COVID-19 in Singapore: implications for surveillance and response measures. *Lancet*. 2020 Mar 28;395(10229):1039-1046. doi: 10.1016/S0140-6736(20)30528-6  
<https://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2820%2930528-6/fulltext>
- Ong SWX, Tan YK, Chia PY, Lee TH, Ng OT, Wong MSY, Marimuthu K. Air, Surface Environmental, and Personal Protective Equipment Contamination by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) From a Symptomatic Patient. *JAMA*. 2020 Apr 28;323(16):1610-1612. doi: 10.1001/jama.2020.3227. PMID: 32129805; PMCID: PMC7057172.  
<https://jamanetwork.com/journals/jama/fullarticle/10.1001/jama.2020.3227>
- Young BE, Ong SWX, Kalimuddin S, Low JG, Tan SY, Loh J, Ng OT, Marimuthu K, Ang LW, Mak TM, Lau SK, Anderson DE, Chan KS, Tan TY, Ng TY, Cui L, Said Z, Kurupatham L, Chen MI, Chan M, Vasoo S, Wang LF, Tan BH, Lin RTP, Lee VJM, Leo YS, Lye DC; Singapore 2019 Novel Coronavirus Outbreak Research Team. Epidemiologic Features and Clinical Course of Patients Infected With SARS-CoV-2 in Singapore. *JAMA*. 2020 Apr 21;323(15):1488-1494. doi: 10.1001/jama.2020.3204  
<https://jamanetwork.com/journals/jama/fullarticle/2762688>
- Young BE, Ong SWX, Kalimuddin S, Low JG, Tan SY, Loh J, Ng OT, Marimuthu K, Ang LW, Mak TM, Lau SK, Anderson DE, Chan KS, Tan TY, Ng TY, Cui L, Said Z, Kurupatham L, Chen MI, Chan M, Vasoo S, Wang LF, Tan BH, Lin RTP, Lee VJM, Leo YS, Lye DC; Singapore 2019 Novel Coronavirus Outbreak Research Team. Epidemiologic Features and Clinical Course of Patients Infected With SARS-CoV-2 in Singapore. *JAMA*. 2020 Apr 21;323(15):1488-1494. doi: 10.1001/jama.2020.3204  
<https://jamanetwork.com/journals/jama/fullarticle/2762688>

- Reyes J, Komarow L, Chen L, Ge L, Hanson BM, Cober E, Herc E, Alenazi T, Kaye KS, Garcia-Diaz J, Li L, Kanj SS, Liu Z, Oñate JM, Salata RA, Marimuthu K, Gao H, Zong Z, Valderrama-Beltrán SL, Yu Y, Tambyah P, Weston G, Salcedo S, Abbo LM, Xie Q, Ordoñez K, Wang M, Stryjewski ME, Munita JM, Paterson DL, Evans S, Hill C, Baum K, Bonomo RA, Kreiswirth BN, Villegas MV, Patel R, Arias CA, Chambers HF, Fowler VG Jr, Doi Y, van Duin D, Satlin MJ; Antibacterial Resistance Leadership Group and Multi-Drug Resistant Organism Network Investigators. Global epidemiology and clinical outcomes of carbapenem-resistant *Pseudomonas aeruginosa* and associated carbapenemases (POP): a prospective cohort study. *Lancet Microbe*. 2023 Mar;4(3):e159-e170. doi: 10.1016/S2666-5247(22)00329-9. Epub 2023 Feb 9

[https://www.thelancet.com/journals/lanmic/article/PIIS2666-5247\(22\)00329-9/fulltext](https://www.thelancet.com/journals/lanmic/article/PIIS2666-5247(22)00329-9/fulltext)
- Chng KR, Li C, Bertrand D, Ng AHQ, Kwah JS, Low HM, Tong C, Natrajan M, Zhang MH, Xu L, Ko KKK, Ho EXP, Av-Shalom TV, Teo JWP, Khor CC; MetaSUB Consortium; Chen SL, Mason CE, Ng OT, Marimuthu K, Ang B, Nagarajan N. Cartography of opportunistic pathogens and antibiotic resistance genes in a tertiary hospital environment. *Nat Med*. 2020 Jun;26(6):941-951. doi: 10.1038/s41591-020-0894-4. Epub 2020 Jun 8. PMID: 32514171; PMCID: PMC7303012.

<https://www.nature.com/articles/s41591-020-0894-4>
- Ng OT, Marimuthu K, Koh V, Pang J, Linn KZ, Sun J, De Wang L, Chia WN, Tiu C, Chan M, Ling LM, Vasoo S, Abdad MY, Chia PY, Lee TH, Lin RJ, Sadarangani SP, Chen MI, Said Z, Kurupatham L, Pung R, Wang LF, Cook AR, Leo YS, Lee VJ. SARS-CoV-2 seroprevalence and transmission risk factors among high-risk close contacts: a retrospective cohort study. *Lancet Infect Dis*. 2021 Mar;21(3):333-343. doi: 10.1016/S1473-3099(20)30833-1.

[https://www.thelancet.com/journals/laninf/article/PIIS1473-3099\(20\)30833-1/fulltext](https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30833-1/fulltext)
- Wang M, Earley M, Chen L, Hanson BM, Yu Y, Liu Z, Salcedo S, Cober E, Li L, Kanj SS, Gao H, Munita JM, Ordoñez K, Weston G, Satlin MJ, Valderrama-Beltrán SL, Marimuthu K, Stryjewski ME, Komarow L, Luterbach C, Marshall SH, Rudin SD, Manca C, Paterson DL, Reyes J, Villegas MV, Evans S, Hill C, Arias R, Baum K, Fries BC, Doi Y, Patel R, Kreiswirth BN, Bonomo RA, Chambers HF, Fowler VG Jr, Arias CA, van Duin D; Multi-Drug Resistant Organism Network Investigators. Clinical outcomes and bacterial characteristics of carbapenem-resistant *Klebsiella pneumoniae* complex among patients from different global regions (CRACKLE-2): a prospective, multicentre, cohort study. *Lancet Infect Dis*. 2022 Mar;22(3):401-412. doi: 10.1016/S1473-3099(21)00399-6.

[https://www.thelancet.com/journals/laninf/article/PIIS1473-3099\(21\)00399-6/fulltext](https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(21)00399-6/fulltext)

- Wu Y, Raju C, Hou Z, Si Z, Xu C, Pranantyo D, Marimuthu K, De PP, Ng OT, Pethe K, Kang ET, Chan-Park MB. Mixed-charge pseudo-zwitterionic copolymer brush as broad spectrum antibiofilm coating. *Biomaterials*. 2021 Jun;273:120794. doi: 10.1016/j.biomaterials.2021.120794.  
<https://www.sciencedirect.com/science/article/abs/pii/S0142961221001502>

### Notable Research Awards & Grants

Name of Awards & Grants	Year Obtained
<b>NMRC Clinician Scientist-Individual Research Grant (CS-IRG)</b> Household Transmission of Carbapenemase-producing Enterobacteriaceae Singapore: A Cohort Study	2019
<b>NHG-NCID COVID 19 Centre Grant</b> Evaluation of airborne and fomite transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in healthcare settings	2020
<b>Clinician Scientist / Clinician Investigator Salary Support Programme (CS/CISSP)</b> Oral capsule-administered faecal microbiota transplantation for intestinal carbapenemase-producing Enterobacteriaceae decolonization	2020
<b>Clinician Scientist / Clinician Investigator Salary Support Programme (CS/CISSP)</b> Household transmission of carbapenemase-producing Enterobacteriaceae Singapore: A cohort study	2020
<b>NHG-NCID COVID 19 Centre Grant</b> Assessing the impact of the COVID-19 pandemic on nosocomial transmission of Carbapenem-resistant organisms (CRO) using integrated whole genome sequencing (WGS), clinical epidemiology, and environmental surveillance	2020
<b>Programme for Research in Epidemic Preparedness and Response (PREPARE): Commissioned Study</b> Preparedness program for air and environmental sampling for future outbreak from emerging or novel pathogens	2023

### Translating Research Into Healthcare

2023:

- [Behind The Mask: Our Healthcare Story] Masking up as a best practice. Published on 15May 2023.  
<https://www.channelnewsasia.com/brandstudio/behindthemask#tile-1-5>

2022:

- NCID's support for nursing homes transit to Care@NH. Published in June. \*No url
- Hidden reservoirs contribute to plasmid-mediated transmission with Dr Kalisvar Marimuthu. Published on 27 Jul 2022.  
<https://podcasts.apple.com/sg/podcast/hidden-reservoirs-contribute-to-plasmid-mediated-transmission/id1560741724?i=1000571298098>

2021:

- MCI COVID-19 Vaccination Campaign. Published from 11 Feb to 27 Feb 2021.  
<https://mediacorp-sg.sharefile.com/d/s458915b9819d45569f7e3cc8374d52f0>
- Singapore's COVID-19 vaccines. Published on 17 Feb 2021.  
<https://www.mewatch.sg/watch/Ethirolis-S17-E45-199618>
- Everyone over the age of 16 in Singapore should be vaccinated against COVID-19. Published on 17 Feb 2021.  
<http://article.isentia.asia/stream/nelmisreportview.aspx?file=20210217-r-968RE-NEWS-190900-Everyone+over+the+ag.mp3&cc=SG&headline=Everyone+over+the+age+of+16+in+Singapore+is+required+to+be+vaccinated+against+COVID-19>
- Expert Explainer Series on Vaccination by MCI for gov.sg (Tamil). Published on 08 Mar 2021. Video 1: <https://www.youtube.com/watch?v=7rx8SZ1sjw8>  
Video 2: <https://www.youtube.com/watch?v=hhge0UX1gSI>
- COVID-19 Vaccination. Published from 14 to 30 Apr 2021.
  - <https://mediacorp-sg.sharefile.com/d/s3049431d46b143b0b1b18872d6608205>
  - <https://mediacorp-sg.sharefile.com/d/s49599997382940fe83dc27ef16cd231d>
- Happy Kopitiam FB Live (Tamil session). Published on 25 Apr 2020.  
<https://www.facebook.com/OurHappyKopitiam/videos/792511725024932/>