## Ng Oon Tek

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Head, Infectious Disease Research Laboratory, NCID
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Research Interests:

- General Infectious Diseases
- Antimicrobial Resistance
- Emerging Infectious Disease
- HIV Medicine

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**Biography**

Associate Professor Ng Oon Tek received his MBBS from the National University of Singapore. He completed Internal Medicine training within the Singhealth cluster and obtained his MRCP (UK) and M Med (Internal Medicine) in 2004, obtaining the Siah Cheng Siah Gold medal for being the best Internal Medicine candidate. He subsequently completed his Infectious Disease subspecialty training at Tan Tock Seng Hospital in 2008. As a recipient of the NMRC Overseas Research Fellowship, Associate Professor Ng completed a Master of Public Health degree at Johns Hopkins followed by a year-long research attachment with a US NIH funded group led by Prof Thomas Quinn from 2009 to 2011. In 2024, he completed his PhD with the Lee Kong Chian School of Medicine, Nanyang Technological University, Singapore.

Associate Professor Ng has an interest in research integrating public health, laboratory medicine and clinical medicine to improve patient outcomes. Previously, he worked with colleagues at TTSH and other institutions and developed tests for HIV patient care in TTSH and other institutions. His current research interest includes antimicrobial resistance especially carbapenem-resistance Gram-negative infections and emerging infectious diseases. He leads a genomics group in NCID using both whole-genome sequencing and metagenomic approaches to research AMR and pathogen discovery and characterization.

**Selected Publications**

- Wang M, Ge L, Chen L, Komarow L, Hanson B, Reyes J, Cober E, Alenazi T, Zong Z, Xie Q, Liu Z, Li L, Yu Y, Gao H, Kanj SS, Figueroa J, Herc E, Cordova E, Weston G, Ananth Tambyah P, Garcia-Diaz J, Kaye KS, Dhar S, Munita JM, Salata RA, Vilchez S, Stryjewski ME, Villegas Botero MV, Iovleva A, Evans SR, Baum K, Hill C, Kreiswirth BN, Patel R, Paterson DL, Arias CA, Bonomo RA, Chambers HF, Fowler VG Jr, Satlin MJ, van Duin D, Doi Y; Multi-Drug Resistant Organism Network Investigators*. Clinical Outcomes and Bacterial Characteristics of Carbapenem-resistant Acinetobacter baumannii Among Patients From Different Global Regions. Clin Infect Dis. 2024 Feb 17;78(2):248-258. doi: 10.1093/cid/ciad556. PMID: 37738153; PMCID: PMC10874260. (***Co-author as part of the Multi-Drug Resistant Organism Network Investigators group authorship**)
  https://academic.oup.com/cid/article/78/2/248/7278825

- **Ng OT**, Marimuthu K, Lim N, Lim ZQ, Thevasagayam NM, Koh V, Chiew CJ, Ma S, Koh M, Low PY, Tan SB, Ho J, Maurer-Stroh S, Lee VJM, Leo YS, Tan KB, Cook AR, Tan CC. Analysis of COVID-19 Incidence and Severity Among Adults Vaccinated With 2-Dose mRNA COVID-19 or Inactivated SARS-CoV-2 Vaccines With and Without Boosters in Singapore. JAMA Netw Open. 2022 Aug 1;5(8):e2228900. doi: 10.1001/jamanetworkopen.2022.28900. PMID: 36018588.
  https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2795654

- Marimuthu K, Venkatachalam I, Koh V, Harbarth S, Perencevich E, Cherng BPZ, Fong RKC, Pada SK, Ooi ST, Smitasin N, Thoon KC, Tambyah PA, Hsu LY, Koh TH, De PP, Tan TY, Chan D, Deepak RN, Tee NWS, Kwa A, Cai Y, Teo YY, Thevasagayam NM, Prakki SRS, Xu W, Khong WX, Henderson D, Stoesser N, Eyre DW, Crook D, Ang M, Lin RTP, Chow A, Cook AR, Teo J, **Ng OT**; Carbapenemase-Producing Enterobacteriaceae in Singapore (CaPES) Study Group. Whole genome sequencing reveals hidden transmission of carbapenemase-producing Enterobacterales. Nat Commun. 2022 Jun 1;13(1):3052. doi: 10.1038/s41467-022-30637-5. PMID: 35650193; PMCID: PMC9160272.
  https://www.nature.com/articles/s41467-022-30637-5

- Kang JTL, Teo JJY, Bertrand D, Ng A, Ravikrishnan A, Yong M, **Ng OT**, Marimuthu K, Chen SL, Chng KR, Gan YH, Nagarajan N. Long-term ecological and evolutionary dynamics in the gut microbiomes of carbapenemase-producing Enterobacteriaceae colonized subjects. Nat Microbiol. 2022 Oct;7(10):1516-1524. doi: 10.1038/s41564-022-01221-w. Epub 2022 Sep 15. PMID: 36109646; PMCID: PMC9519440.
  https://www.nature.com/articles/s41564-022-01221-w

- 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. 2021 Nov 9:S1473-3099(21)00399-6. doi: 10.1016/S1473-

3099(21)00399-6. Epub ahead of print. PMID: 34767753. (*__Co-author as part of the Multi-Drug Resistant Organism Network Investigators group authorship__)
https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(21)00399-6/abstract

- __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. 2020 Nov 2:S1473-3099(20)30833-1. doi: 10.1016/S1473-3099(20)30833-1. Epub ahead of print. PMID: 33152271.
https://www.thelancet.com/article/S1473-3099(20)30833-1/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.
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- __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.
https://www.nejm.org/doi/full/10.1056/NEJMc2003100

- Yuan Q, Li W, Goh SG, Chen SL, **Ng OT**, He Y, Gin KY. Genetic traits and transmission of antimicrobial resistance characteristics of cephalosporin resistant Escherichia coli in tropical aquatic environments. J Hazard Mater. 2024 Nov 5;479:135707. doi: 10.1016/j.jhazmat.2024.135707. Epub 2024 Sep 2.
https://doi.org/10.1016/j.jhazmat.2024.135707

- Sutjipto S, Aung AH, Soon MML, Jing C, Ang BSP, Sadarangani SP, Chong KW, **Ng OT**, Marimuthu K, Lim WY, Chow A, Vasoo S. Plastic Waste and COVID-19 Incidence Among Hospital Staff After Deescalation in PPE Use. JAMA Network Open. 2025 Apr 1;8(4):e255264. doi: 10.1001/jamanetworkopen.2025.5264. PMID: 40232716.
https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2832735

**Notable Research/Innovation Awards & Grants from Past 5 Years**

| Name of Awards & Grants | Year Obtained |
|---|---|
| **Communicable Diseases Division, Ministry of Health (MOH CDD) Operational Research Fund** | 2020 |

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|---|---|
| Research Study on Seroprevalence and Exposure Risk Factors Among Close Contacts of COVID-19 Cases | |
| **NMRC COVID-19 Research Fund (COVID19RF)**<br>Transmission Potential of Asymptomatic SARS-CoV-2-infected Persons | 2020 |
| **CENTRE GRANT (CG)**<br>Collaborative Solutions Targeting Antimicrobial Resistance Threats in Health Systems | 2021 |
| **NMRC COVID-19 Research Fund (COVID19RF)**<br>Determining the Impact of SARS-CoV-2 Variants and Vaccination on Close-contact Attack Rates and Acquisition Risk Factors | 2021 |
| **CoSTAR-HS ARG Seed Grant**<br>Development of a clinically relevant human-associated microbiota mouse model of intestinal carbapenem-resistant Enterobacterales carriage and decolonization | 2022 |
| **Programme for Research in Epidemic Preparedness and REsponse (PREPARE) - Outbreak Research Strategic Funds**<br>PREPARE Outbreak Research on Monkeypox in Singapore | 2022 |
| **NMRC OPEN FUND – LARGE COLLABORATIVE GRANT**<br>AntiMicrobial resistance Research & Intervention Alliance Singapore (AMRITAS) | 2023 |
| **Programme for Research in Epidemic Preparedness and REsponse (PREPARE): PREPARE Strategic Commissioned Studies**<br>Metagenomics for emerging infectious disease detection and surveillance | 2024 |
| **Programme for Research in Epidemic Preparedness and REsponse (PREPARE): PREPARE Clinical Trial Funds**<br>A Clinically-Oriented Antimicrobial Resistance Surveillance Network for Healthcare-associated infections (ACORN-HAI) | 2024 |
| **NMRC Clinician Scientist Award (Senior Investigator)**<br>A novel isolation room model based on culture-independent Hi-C metagenomics for tracking antimicrobial resistance transmission between patients and hospital environmental reservoirs | 2025 |
| **Programme for Research in Epidemic Preparedness and Response (PREPARE): Strategic Research Funding**<br>Studying Hygiene Interventions to reduce Nosocomial Infections in southeast Asian Intensive Care Units (SHINIA-ICU) | 2025 |
| **NMRC Clinician Scientist-Individual Research Grant (CS-IRG)**<br>Clinical integration of whole genome sequencing and molecular epidemiology for infection control targeting carbapenem-resistance transmission | 2025 |

**Translating Research/Innovation Into Healthcare**

1. Guna antibiotik harus ikut arahan doktor ("Use antibiotics as directed by your doctor"), published in Berita Harian on 26 Feb 2024.
   https://www.beritaharian.sg/kesihatan/guna-antibiotik-harus-ikut-arahan-doktor

2. Analysis of COVID-19 Incidence and Severity Among Adults Vaccinated With 2-Dose mRNA COVID-19 or Inactivated SARS-CoV-2 Vaccines With and Without Boosters in Singapore (Ng OT *et al*, JAMA Network Open. 2022 Aug 1;5(8):e2228900. doi: 10.1001/jamanetworkopen.2022.28900)

   - Paper was cited by The Federal Office of Public Health (Bundesamt für Gesundheit) as part of Annex 4 submitted to Government of Switzerland on the analysis of the Efficacy of the vaccines.

     *The Federal Office of Public Health (FOPH) is the Swiss federal government's centre for public health and a part of the Swiss Federal Department of Home Affairs. In addition to developing national health policy, it also represents the interests of its country within international health organizations such as the OECD or the World Health Organization.*

Policy citation link (Plum X Metrix):
https://plu.mx/plum/a/policy_citation?doi=10.1001/jamanetworkopen.2022.28900

3. Transmission modes of severe acute respiratory syndrome coronavirus 2 and implications on infection control: a review (Ong SWX *et al*., Singapore Med J. 2020 Jul 30. doi: 10.11622/smedj.2020114)

   - The paper was cited by Sax Institute as part of the evidence snapshot and was commissioned by the Australian Commission on Safety and Quality in Health Care as part of the information to better protect healthcare workers during the SARS-CoV-2 virus.

     *The Sax Institute is an independent, not-for-profit organisation that improves health and wellbeing by driving better use of evidence in policies, programs and services. It is a Evidence Specialist team working collaboratively to embed research into the fabric of policy, program and service delivery decisions. The team develop, test and deliver best practice approaches to working at the interface of research and health decision-making.*

Policy citation link (Plum X Metrix):
https://plu.mx/plum/a/policy_citation?doi=10.11622/smedj.2020114