



## Sanjay Haresh Chotirmall

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Research Interests:

- Respiratory & Infectious Diseases
- Microbiome medicine

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### Biography

Assoc Prof Chotirmall graduated from the Royal College of Surgeons in Ireland (RCSI) with an honours degree and the colleges' gold medal in Microbiology. He completed his early clinical training at Beaumont Hospital Dublin, while attaining memberships of the Royal College of Physicians of Ireland (MRCPI) and the United Kingdom (MRCP UK). Following this, he completed higher specialist training in Respiratory and Critical Care Medicine across multiple hospital sites in the Republic of Ireland.

A/Prof Chotirmall is an internationally recognized, nationally funded clinician-scientist with an established translational respiratory research group at the Lee Kong Chian School of Medicine, NTU Singapore. To date, he has performed key work on endo-phenotyping pulmonary infection, including the use of next generation sequencing approaches, in the context of chronic inflammatory respiratory diseases that have led to >200 publications including Nature Medicine, the New England Journal of Medicine (NEJM), Cell Host and Microbe, Nature Microbiology and the American Journal of Respiratory and Critical Care Medicine (AJRCCM). He continues clinical practice at Tan Tock Seng Hospital, Singapore.

Assoc Prof Chotirmall has been awarded the Royal Academy of Medicine of Ireland (RAMI) Doctor award on two occasions (2010 & 2013), the Irish Thoracic Society Award (2011), the Dublin Centre for Clinical Research (DCCR) Young Investigator Award (2011), the MMI-CSFP Medal (2011), the Royal College of Physicians William Stokes Award for research (2010) and the American Thoracic Societies International Award (2009). In 2018, he was conferred as fellow of the Royal College of Physicians in Ireland (FRCPI), in 2019 as Fellow of the American College of Chest Physicians (FCCP) and in 2020 a fellow of the Royal College of Physicians of the United Kingdom (London). He is a past recipient of talent development awards from the National Medical Research Council (NMRC), Singapore including the NMRC Transition and Clinician-Scientist Awards.

In 2018, he established The Academic Respiratory Initiative for Pulmonary Health (TARIPH), a national programme focusing on improving the lung health of Singaporeans. TARIPH aims to align strategic academic expertise across

Singapore in a formal way to benefit Singaporeans living with lung disease through research with a mission of "bringing research to patients through partnerships". TARIPH has established the Singapore Severe Asthma Registry (SSAR) in 2022, the TARIPH patient network in 2023 and developed partnerships with >50 national and international entities. In 2024, TARIPH was awarded the prestigious NMRC-Large Collaborative Grant (LCG) to study the spectrum of respiratory disease and prevention with an Asian focus.

In 2020, Assoc Prof Chotirmall was awarded the inaugural Dean's Award for Research at LKCMedicine and the Alumni Award for 'Research and Innovation' by the Royal College of Surgeons in Ireland (RCSI). In collaboration with a team of clinicians at Tan Tock Seng Hospital (TTSH), he secured the NHG Research Impact Award (2021) and the LKCMedicine-NHG Clinician-Scientist Award (2022) for his pioneering work in bronchiectasis, a chronic irreversible lung disease of high Asian prevalence. This was followed by recognition by Expertscape as a 'World Expert in Bronchiectasis' (top 0.1% of scholars writing about Bronchiectasis over the past 10 years: <https://expertscape.com/ex/bronchiectasis>). He has been appointed Provost's Chair in Molecular Medicine at NTU Singapore since 2019 and Vice Dean (Research) at the Lee Kong Chian School of Medicine since January 2024. He previously served as Assistant Dean (Faculty Affairs) (2021-2022) and Assistant Dean (Research) (2023). Assoc Prof Chotirmall regularly participates as an investigator for key multi-centre clinical trials in the field of Respiratory Medicine while continuing to educate undergraduates and postgraduates through formal teaching and supervision both at the bench and bedside. He was appointed by the National University of Ireland (NUI) as the external examiner for the Perdana University-Royal College of Surgeons in Ireland (PU-RCSI) MBBS programme from 2019-2024.

Assoc Prof Chotirmall has been an academic editor for over a decade holding prior editorial roles as Associate Editor/Editorial Board Member at the *American Journal of Respiratory and Critical Care Medicine* (AJRCCM), the *European Respiratory Journal*, *Respirology*, *npj Primary Care Respiratory Medicine*, *Respiratory Research*, the *American Journal of Physiology-Lung Cellular and Molecular Physiology*, *Frontiers in Pharmacology* and *PLOS One*. In senior capacity, he has served at *Mycopathologia* (as Executive Editor) and *BMC Pulmonary Medicine* (as Section Editor). He currently serves as Deputy Editor at the *American Journal of Respiratory and Critical Care Medicine* (AJRCCM), a leading journal in the field of Respiratory and Critical Care Medicine.

### **Selected Publications**

- Chotirmall SH, Greene CM, Oglesby IK, et al. 17 $\beta$ -Estradiol inhibits IL-8 in cystic fibrosis By up-regulating secretory leucoprotease inhibitor. *American Journal of Respiratory and Critical Care Medicine*. 2010; 182(1).
- Chotirmall SH, Smith SG, Gunaratnam C, et al. Effect of estrogen on pseudomonas mucoidy and exacerbations in cystic fibrosis. *The New England Journal of Medicine*. 2012; 366(21):1978-86.
- Chotirmall SH, Coughlan CA, Renwick J, et al. The effect of Aspergillus Fumigatus infection on vitamin D receptor expression in cystic fibrosis. *American Journal of Respiratory and Critical Care Medicine*. 2012; 186(10):999-1007.

- Chotirmall SH, Hector A, Lavelle GM, et al. Chitinase activation in patients with fungus-associated cystic fibrosis lung disease. *Journal of Allergy and Clinical Immunology*. 2016; 138(4):1183-89.
- Mac Aogáin M, Chandrasekaran R...Chotirmall SH. Immunological corollary of the pulmonary mycobiome in bronchiectasis: the CAMEB study. *European Respiratory Journal*. 2018; 52(1): pii1800766.
- Mac Aogáin M, Tiew PY... Chotirmall SH. Distinct 'Immuno-Allertypes' of disease and high frequencies of sensitisation in non-cystic fibrosis bronchiectasis. *American Journal of Respiratory and Critical Care Medicine*. 2018. doi: 10.1164/rccm.201807-1355OC.
- Chalmers JD, Chotirmall SH. Bronchiectasis: new therapies and new perspectives. *Lancet Respiratory Medicine*. 2018; 6(9):715-726.
- Chotirmall SH, Martinez FJ, Schumacker PT, Cooke CR, Seam N, Brochard L, Tighe RM, Levy BD, Gern D, Wedzicha JA. Life at the Editorial "COVID Frontline". The American Thoracic Society Journal Family. *Am J Respir Crit Care Med*. 2020; /201(12):1457-1459. doi: 10.1164/rccm.202005-1516ED.
- Tiew PY, Ko FWS, Narayana JK, Poh ME, Xu H, Neo HY, Loh LC, Ong CK, Mac Aogáin M, Tan JHY, Kamaruddin NH, Sim GJH, Lapperre TS, Koh MS, Hui DSC, Abisheganaden JA, Tee A, Tsaneva-Atanasova K, Chotirmall SH. "High-Risk" Clinical and Inflammatory Clusters in COPD of Chinese Descent. *Chest*. 2020; 22:S0012-3692(20)30326-3. doi: 10.1016/j.chest.2020.01.043. PMID: 32092320.
- Mac Aogáin M, Lau KJX, Cai Z, Narayana JK, Purbojati RW, Drautz-Moses DI, Gaultier NE, Jaggi TK, Tiew PY, Ong TH, Koh MS, Hou ALY, Abisheganaden JA, Tsaneva-Atanasova K, Schuster SC, Chotirmall SH. Metagenomics Reveals a Core Macrolide Resistome Related to Microbiota in Chronic Respiratory Disease. *Am J Respir Crit Care Med*. 2020. doi: 10.1164/rccm.201911-2202OC. PMID: 32320621.
- Vidailiac C\*, Yong VFL\*, Aschtgen MS, Qu J.....Normark S, Henriques-Normark B, Chotirmall SH. (2020). Sex Steroids Induce Membrane Stress Responses and Virulence Properties in *Pseudomonas aeruginosa*. *mBio* 2020 Sep 29;11(5):e01774-20. doi: 10.1128/mBio.01774-20.
- Tiew PY, Dicker AJ, Keir HR....Miller BE, Tal-Singer R, Chalmers JD, Chotirmall SH. (2020) A high-risk airway mycobiome is associated with frequent exacerbation and mortality in COPD. *Eur Respir J*. 2020 Sep 24:2002050. doi: 10.1183/13993003.02050-2020.
- Mac Aogáin M\*, Narayana JK\*, Tiew PY....Chotirmall SH. (2021). Integrative microbiomics in bronchiectasis exacerbations. *Nat Med* 2021. doi: 10.1038/s41591-021-01289-7
- Chan LLY, Anderson DE.....Wang LF, Chotirmall SH. (2022). The establishment of COPD organoids to study host-pathogen interaction reveals enhanced viral fitness of SARS-CoV-2 in bronchi. *Nat Commun*. 2022 Dec 10;13(1):7635.

- Narayana JK, Aliberti S.... Blasi F, Chotirmall SH. (2023). Microbial Dysregulation of the Gut-Lung Axis in Bronchiectasis. *Am J Respir Crit Care Med.* 2023 Apr 1;207(7):908-920.
- Li L, Mac Aogáin M.....Fang M, Chalmers JD, Chotirmall SH. Neisseria species as pathobionts in bronchiectasis. *Cell Host Microbe.* 2022 Sep 14;30(9):1311-1327.
- Mac Aogáin M, Xaverius Ivan F, Jaggi TK.....Chalmers JD, Chotirmall SH. [Airway "Resistotypes" and Clinical Outcomes in Bronchiectasis.](#) *Am J Respir Crit Care Med.* 2024 Jul 1;210(1):47-62.
- Meldrum OW, Donaldson GC, Narayana JK.....Wedzicha JA, Chotirmall SH. Accelerated Lung Function Decline and Mucus-Microbe Evolution in Chronic Obstructive Pulmonary Disease. *Am J Respir Crit Care Med.* 2024 Aug 1;210(3):298-310.
- Chotirmall SH, Chalmers JD. [The Precision Medicine Era of Bronchiectasis.](#) *Am J Respir Crit Care Med.* 2024 Jul 1;210(1):24-34.
- Long MB, Chotirmall SH, Shteinberg M, Chalmers JD. [Rethinking bronchiectasis as an inflammatory disease.](#) *Lancet Respir Med.* 2024 Jul 3:S2213-2600(24)00176-0.
- Chalmers JD, Mall MA, McShane PJ.....Sullivan SD, Chotirmall SH. A systematic literature review of the clinical and socioeconomic burden of bronchiectasis. *Eur Respir Rev.* 2024 Sep 4;33(173):240049.
- Tiew PY, Leung JM, Mac Aogáin M.....Carlsten C, Chotirmall SH. [Residential exposure to Aspergillus spp. is associated with exacerbations in COPD.](#) *Eur Respir J.* 2024 Oct 10:2400907.
- Jaggi TK, Agarwal R, Tiew PY....Delhaes L, Chotirmall SH. Fungal Lung Disease. *Eur Respir J* 2024 Oct 3: 2400803.

#### Notable Research Awards & Grants from Past 5 Years

Name of Awards & Grants	Year Obtained
National Medical Research Council (NMRC) Transition Award (TA)	2017
National Medical Research Council (NMRC) Clinician-Scientist Individual Research Grant (CS-IRG)	2019
Provost's Chair in Molecular Medicine, NTU Singapore	2019
Royal College of Surgeons in Ireland (RCSI) Alumni Award: Research and Innovation	2020
Lee Kong Chian School of Medicine Dean's Award for Research	2020
National Medical Research Council (NMRC) COVID-19 Research Fund Grant	2020
National Healthcare Group (NHG) Research Impact Award	2021
Expertscape World Expert in Bronchiectasis <a href="https://expertscape.com/ex/bronchiectasis">https://expertscape.com/ex/bronchiectasis</a>	2021

National Medical Research Council (NMRC) Clinician-Scientist Award (INV)	2021
National Medical Research Council (NMRC) Clinician-Scientist Individual Research Grant (CS-IRG)	2023
National Medical Research Council (NMRC) Open-Fund Large Collaborative Grant (Corresponding PI)	2024
Margaret Turner Warwick Lecture 2024; Imperial College London	2024
33rd Seah Cheng Siang Memorial Lecture; Academy of Medicine Singapore	2024

### Translating Research/Innovation Into Healthcare

- Scientists make major cystic fibrosis breakthrough. *Irish Examiner*. Published 9 August 2010. <https://www.irishexaminer.com/news/arid-30468625.html>
- Breathing a little easier. *Irish Medical Times*. Published 9 September 2010. <https://www.imt.ie/clinical/breathing-a-little-easier-09-09-2010/>
- Royal College of Physicians of Ireland Announce Winner of 2010 William Stokes Award. *Royal College of Physicians of Ireland*. Published 17 November 2010. <https://www.rcpi.ie/news/releases/royal-college-of-physicians-of-ireland-announce-winner-of-2010-william-stokes-award/>
- Cystic fibrosis breakthrough reveals why females fare worse than males. *ScienceDaily*. Published 24 May 2012. <https://www.sciencedaily.com/releases/2012/05/120524092750.htm>
- Bronchiectasis Patients More Prone To Allergies, Study Shows. *AsianScientist*. Published 15 April 2019. <https://www.asianscientist.com/2019/04/health/bronchiectasis-lung-disease-allergen-fungi-dust-mites/>
- COVID-19: Interim Guidance on Management Pending Empirical Evidence. *American Thoracic Society-led International Task Force*. Published 3 April 2020. <https://www.thoracic.org/covid/covid-19-guidance.pdf>
- No direct link but climate change could affect response to Covid-19 pandemic: WHO. *The Straits Times*. Published 23 April 2020. <https://www.straitstimes.com/singapore/health/coronavirus-no-direct-link-but-climate-change-could-affect-response-to-pandemic-who>
- NTU probes link between tiny air organisms and respiratory woes. *The Straits Times*. Published 9 May 2020. <https://www.straitstimes.com/singapore/health/ntu-probes-link-between-tiny-air-organisms-and-respiratory-woes>

- Researchers propose new way to treat chronic lung condition.  
<https://www.news-medical.net/news/20210519/Researchers-propose-new-way-to-treat-chronic-lung-condition.aspx>
- Study led by NTU Singapore finds that microbes work as a network in causing lung infection.  
<https://www.eurekalert.org/news-releases/819099>
- New centre to research respiratory diseases in Asian context. [The Straits Times](#), page A14 and [online](#)
- New lung disease centre established with focus on Asian patients. [Lianhe Zaobao](#), page 6
- New research centre to fill knowledge gap in Asian-centric lung diseases, [CNA](#), Singapore Tonight, 20 Sep, 10 pm
- New research centre in SG to study effective treatment for Asian patients, [Suria Berita](#), 20 Sep, 8pm