
BIOGRAPHICAL SKETCH

NAME: Marco Rinaldo Oggioni

POSITION TITLE: Professor

EDUCATION/TRAINING:

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Verona, Verona, Italy	MD	19/07/1990	Medicine
University of Siena, Siena, Italy	Specialisation	27/06/1994	Clinical Microbiology

A. Personal Statement

The analyses of the molecular mechanisms involved in the interaction of bacterial pathogens with their environment - the human host - by use of genomic tools and the study of microbial physiology, capture my imagination. I am chilled by opportunities of interdisciplinary collaborations as I see in these efforts the real opportunity to discover novelty.

B. Positions, Scientific Appointments, and Honors

2020-current Professor of Microbial Genetics, Dip. Farmacia e Biotecnologie, Univ. Bologna, Bologna, Italy.
2013-2025 Professor, Dept of Genetics, Genomics and Cancer Sciences, University of Leicester, Leicester, UK.
2015-2020 Honorary Consultant Microbiologist, University Hospitals of Leicester NHS Trust, Leicester, UK.
1993-2013 Professor of Microbiology (non-tenure) at the Medical School, University of Siena, Siena, Italy.
1993-2013 Consultant Clinical Microbiologist, University Hospital (Azienda Osp. Univ. Senese), Siena, Italy

2024- Designated panel member Italian Research Evaluation GEV VQR 2020-2024 (area 05)
2024- Executive Committee ESCMID Study Group for Infectious Diseases of the Brain (ESGIB)
2023- Registration with the Medical Council of Bologna (Ordine dei Medici)
2022-25 Steering group Italian Society of General Microbiology SIMGBM
2019- Fellow of the International Society of Antimicrobial Chemotherapy FISAC
2015-18 Chair of the ESCMID Study Group for Infectious Diseases of the Brain (ESGIB)
2015- Fellow of the UK Higher Education Academy FHEA

C. Contributions to Science

My recent contributions were the identification of phase variable epigenetic control in bacteria and bacterial replication within a subset of tissue macrophages prior to invasive disease. Currently my work focusses on the analysis of the earliest phases of bacterial infection utilising a translational model of ex vivo normothermic human spleen and liver perfusion. These translational models are delivering excellent data revising important aspects of innate immunity and infection.

Clinical Trials:

- 2023-26 MOISE, CE-AVEC:668/2023/Sper/AOUBo. Scientific responsible.
- 2021-25 TIMOLD, ClinicalTrials.gov NCT05255042, REC 21/PR/0287, Chief Invest.
- 2018-25 TIMID, ClinicalTrials.gov NCT04620824, REC 18/EM/0057, Chief Invest.
- 2019-21 Pollution and Health, REC 19/NW/0584, IRAS 264311, End date: 31/08/2021. Chief Invest.

Recent grant funding:

- 2024-28 EU grant GAP-101186900 BactEradix. Nanomaterial to target Z-DNA. Coll.
- 2024-26 GSK Contract Research In vivo models for pathogen research. PI.
- 2024-27 EU grant GAP-101131231 AMRAMR. Research for Antimicrobial Resistance. Coordinator
- 2023-25 PRIN PNRR grant P2022M8KYE. The innate immune reaction to infection in human organs. PI.
- 2023-26 Cystic Fibrosis Foundation FFC#13/2023. Aptides for prevention of Pseudomonas infections. Co-I.
- 2023-26 Ricerca Finalizzata RF-2021-12375437. RNA vaccine for S. pneumoniae and MTB. Co-I.
- 2022-25 EU grant PNRR PE13 INF-ACT PE00000007. Emerging Infectious Diseases. Co-I
- 2022-25 PRIN 2020 grant 202089LLEH. The CoDiCo (colonisation to disease concepts) project. PI.

Relevant Publications

- Sharaf S, T Lawes, D Roos, I Okoliegbe, S Alapati, Ao Ribeiro, I Nkene, D Ghezzi, SJ Reid, V Austin, D Ayansina, R Wilson, T Rehman, BJ Parcell, I Mellor, CA Marwick, MR Oggioni, K Hijazi. Effects of universal versus targeted chlorhexidine and mupirocin decolonization on the clinical and molecular epidemiology of Staphylococcus epidermidis bloodstream infections in intensive care: a controlled time-series and longitudinal genotypic study. The Lancet Microbe, (101118) accepted Feb 2025.
- Davison C, S Tallman, M de St-Croix, MR Oggioni, M Antonio, B Kwambana-Adams, F Freund, S Beleza. Long-term evolution of Streptococcus mitis and Streptococcus pneumoniae leads to higher genetic diversity within rather than between human populations. PLoS Genetics 20(6): e1011317, 2024 June 6, doi: 10.1371/journal.pgen.1011317.
- Kareem BO, O Gazioglu, K Mueller Brown, M Habtom, D Glanville, MR Oggioni, PW Andrew, A Uliasz, NL Hiller, H Yesilkaya. Environmental and genetic regulation of Streptococcus pneumoniae galactose catabolic pathways. Nature Communication, 2024 Jun 17;15(1):5171. doi: 10.1038/s41467-024-49619-w.
- Boggiano B, M Williams Higgins, J Matheson, D Jenkins, MR Oggioni. The contemporaneous healthcare cost of particulate matter pollution for youth and older adult populations. Journal of Environmental Economics and Management. 2024 April 26, 125:102994. Doi: 10.1016/j.jeem.2024.102994.
- Kwun MJ, AV Ion, MR Oggioni, SD Bentley, NJ Croucher. Diverse regulatory pathways modulate bet hedging of competence induction in epigenetically-differentiated phase variants of Streptococcus pneumoniae. Nucleic Acids Res. 2023 Oct 27;51(19):10375-10394. doi: 10.1093/nar/gkad760.
- Apte S, S Bhutda, S Ghosh, K Sharma, TE Barton, S Dibyachintan, O Sahay, S Tang, AR Sinha, J Rakshit, S Roy, A Datey, S Santra, J Joseph, S Sasidharan, S Hammerschmidt, D Chakravorty, MR Oggioni, MK Santra, DR Neill, A Banerjee. A novel innate pathogen sensing strategy involving ubiquitination of bacterial surface proteins. Science Advances. 2023 Mar 22;9(12):eade1851. doi: 10.1126/sciadv.ade1851.
- **Kanani T, J Isherwood, K ElSamani, WY Chung, K West, MR Oggioni, G Garcea, A Dennison. Development of a novel ex vivo porcine hepatic segmental perfusion proof-of-concept model towards more ethical translational research. Cureus. 2023 Feb 18. 15(2): e35143. DOI 10.7759/cureus.35143.**
 - *Development of a liver segment ex vivo perfusion model using porcine organs to increase organ availability of experimental research as non-diseased liver segments are occasionally surgically removed as part of elective hepatic surgery.*
- **Kanani T, J Isherwood, E Issa, WY Chung, M Ravaioli, MR Oggioni, G Garcea, A Dennison. A Narrative Review of the Applications of Ex-vivo Human Liver Perfusion. Cureus. 2023 Feb 09; 15(2):e34804. DOI: 10.7759/cureus.34804**
 - *Overview on methodologies and actual numbers of organs available for experimental ex vivo organ perfusion.*
- Kwun MJ, AV Ion, H-C Cheng, JC D'Aeth, S Dougan, MR Oggioni, DA Goulding, SD Bentley, N Croucher. Post-vaccine epidemiology of serotype 3 pneumococci identifies transformation inhibition through prophage-driven alteration of a non-coding RNA. Genome Medicine. 2022 Dec 20;14(1):144. doi: 10.1186/s13073-022-01147-2

- Oggioni MR, U Koedel. The glymphatic systems: a potential key player in bacterial meningitis. *mBio*. 2022 Oct 26;13(6):e0235022. doi: 10.1128/mbio.02350-22.
- Nyazika TK, L Sibale, J Phiri, M De Ste Croix, Z Jasiunaite, C Mkandawire, R Malamba, A Kankwatira, M Manduwa, D Ferreira, TS Nyirenda, MR Oggioni, HC Mwandumba, KC Jambo. Intracellular survival of *Streptococcus pneumoniae* in human alveolar macrophages is augmented with HIV infection. *Frontiers in Immunology*. 2022 Sept 20; 13:992659. doi: 10.3389/fimmu.2022.992659.
- Hames RG, Z Jasiunaite, G Ercoli, JJ Wanford, D Carreno, K Straatman, L Martinez-Pomares, H Yesilkaya, S Glenn, ER Moxon, PW Andrew, CP Kyriacou, MR Oggioni. Diurnal differences in intracellular replication within splenic macrophages correlates with the outcome of pneumococcal infection. *Frontiers in Immunology*. 2022 Jun 2; 13:907461. doi: 10.3389/fimmu.2022.907461.
- An H, C Qian, Y Huang, J Li, X Tian, J Feng, J Hu, Y Fang, F Jiao, Y Zeng, X Huang, X Meng, X Liu, X Lin, Z Zeng, M Williams, A Beschin, J Wang, MR Oggioni, JM Leong, J-W Veening, H Deng, R Zhang, H Wang, J Wu, Y Cui, J-R Zhang. Functional vulnerability of liver macrophages to capsules defines virulence of blood-borne bacteria. *Journal of Experimental Medicine*. 2022 Mar 08;219(4): e20212032. doi: 10.1084/jem.20212032..
- **Wanford JJ, R Hames, D Carreno, Z Jasiunaite, WY Chung, F Arena, V Di Pilato, K Straatman, K West, R Farzand, M Pizza, L Martinez-Pomares, PW Andrew, ER Moxon, AR Dennison, GM Rossolini, MR Oggioni. Interaction of *Klebsiella pneumoniae* with tissue macrophages in a murine infection model and ex-vivo porcine organ perfusions: an exploratory investigation. *Lancet Microbe*. 2021 Dec;2(12):e695-e703. doi: 10.1016/S2666-5247(21)00195-6.**
 - *Description of *Klebsiella pyogenes* liver abscess formation using ex vivo perfusion of porcine spleen and liver.*
- Carreno D, JJ Wanford, Z Jasiunaite, RG. Hames, WY Chung, AR. Dennison, K Straatman, L Martinez-Pomares, M Pareek, CJ Orihuela, MI Restrepo, WS Lim, PW Andrew, ER Moxon, MR Oggioni. 2021. Splenic macrophages as the source of bacteraemia during pneumococcal pneumonia. *EBioMedicine*. 2021 Oct 4;72:103601. doi: 10.1016/j.ebiom.2021.103601.
- *Discovery of the spleen as key organ determining the severity of pulmonary infection using ex vivo perfused human spleens.*
- Chung W, JJ Wanford, R Kumar, J Isherwood, R Haigh, MR Oggioni, A Dennison and G Ercoli. 2019. An ex vivo porcine spleen perfusion as a model of bacterial sepsis. *Alternatives to animal experimentation*. *ALTEX*. 2019;36(1):29-38. DOI: 10.14573/altex.1805131.
- *Development and validation of ex vivo perfusion and infection models of the porcine spleen.*
- Ercoli G, VE Fernandes, WY Chung, JJ Wanford, S Thomson, CD Bayliss, K Straatman, PR Crocker, A Dennison, L Martinez-Pomares, PW Andrew, ER Moxon, MR Oggioni. 2018. Intracellular replication of *Streptococcus pneumoniae* inside splenic macrophages serves as a reservoir for septicaemia. *Nature Microbiology*. 2018 May;3(5):600-610. doi: 10.1038/s41564-018-0147-1.
- *Discovery of bacterial intracellular replication within splenic macrophages as origin of invasive infection utilising porcine ex vivo spleen perfusion and infection.*

E. Role and contribution to the application:

In Bologna we will perfuse ex vivo human livers in trial CE-AVEC:668/2023/Sper/AOUBo. We will also perform downstream analyses including microscopy. The work in Bologna will be carried out together with the surgeon Matteo Ravaioli, chief investigator of the clinical trial of which Marco R Oggioni is scientific responsible. The current grant application is submitted by the University of Bologna, but IRCCS Sant Orsola has been informed and approved submission.

Autorizzo il trattamento dei dati personali contenuti nel mio curriculum vitae in base all'art. 13 del D. Lgs. 196/2003 e all'art. 13 del Regolamento UE 2016/679 relativo alla protezione delle persone fisiche con riguardo al trattamento dei dati personali.

Il sottoscritto, consapevole che – ai sensi dell'art. 76 del D.P.R. 445/2000 – le dichiarazioni mendaci, la falsità negli atti e l'uso di atti falsi sono puniti ai sensi del codice penale e delle leggi speciali, dichiara che le informazioni rispondono a verità