

Dr Olivier Habimana<http://thehabimanalab.com><https://orcid.org/0000-0002-6357-4285>**PERSONAL****Academic qualifications**

PhD	2009	Microbiology	Université Paris-Sud XI/ France
MSc	2005	Food science	Norwegian University of Life sciences/ Norway
BSc	2003	Food technology	Sør-Trøndelag University College/ Norway

Previous academic positions held

2012 – 2016	ERC Postdoctoral research fellow	University College Dublin/ Ireland
2009 – 2012	Postdoctoral research fellow	Nofima Mat/ Norway

Present Position

Assistant Professor School of Biological Sciences The University of Hong Kong

Previous relevant research work

Achievements in the areas of food and environmental microbiology research qualify me as an expert in the field of microbial ecosystems on inert surfaces. Research outputs have primarily centred on topics directly linked to studying microbial biofilms, from initial bacterial adhesion onto surfaces to, finally, biofilm detachment. The results obtained from research projects offered new insights into the spatial distribution of pathogenic bacterial cells and resident flora during co-cultured biofilm formation or during initial interaction events. This proven ability to cross over disciplinary boundaries has allowed me to explore new research frontiers and, in the process, increase my visibility as an up-and-coming scientist.

TEACHING**Courses taught**

BIOL 3218: Food Hygiene and Quality Control

BIOL 3216: Food Waste Management

BIOL 2013: Basic Microbiology Techniques

Course in development

BIOL 3xxx: Topics on sustainable food and nutrition, which still needs further developing

Supervision of research post graduates (Current)

- Mr. Ngan Wing Yui (MPhil)
- Miss. Yuan YAO (PhD)
- Mr. Yang Pu (PhD)
- Mr. Tongze Zhang (MPhil)

Supervision of undergraduate and MSc students (at HKU)

- Miss. TSUN, Shue Man (2017)
- Miss. LAI, Yan Yin (2017)
- Miss. CHAN, Si Lok (2017)
- Miss. HSING, Huey-Leng (Elizabeth) (2018)
- Mr. LAU, Kin Tak (Winston) (2018)
- Mr. HUNG, Hing Pui (Jonathan) (2018)
- Miss. LO, Man Ying (Cindy) (2018)
- Miss. WONG, Kai In (Flora) (2018)
- Miss. WU, Ying (2018)
- Mr. CHAN, Chung Hang (Jonathan) (2018)
- Mr. CHAN, Yu Suen (Oscar) (2018)
- Mr. CHAN, Terrent Tai Wing (2018)
- Mr. POON, Wing Hang (Mario) (2018)
- Miss. KAN, Karin (2018)
- Mr. TING, Jun Yuan (Brandon) (2018)

Previous co-supervision of Postgraduate

- Mr. Huayu Cao (2016)
- Mr. Giulio Gazzola (2016)
- Ms. Ashley Allen (2017)
- Mr. Rory Heffernan (2016)

Previous co-supervision of undergraduate and MSc students

- Mr. Bin Xu (2015)
- Ms. Niamh MacPherson (2015)
- Mr. Peter Desmond (2013)
- Mr. Pdraig Laffan (2012)
- Mr. David Mangan (2012)

RESEARCH

Grants awarded

1. Development of a low cost green technology for biofouling control in the process industries- Science Foundation Ireland (ca. **\$508,300**) Role: Co-I (completed)
2. Towards a Biofilm-Based Micro-ecosystem Analysis Strategy for Assessing Irrigation Water Safety and Risks (-BioMASS-) UGC/RGC Funding- ECS (**\$567,070**) Role: PI (on-going)
3. Experimental setup for the sampling of biofilms grown from artificially reconstructed freshwater ecosystems-HKU Seed funding (**\$150,000**) Role: PI (completed)
4. Evaluating the bioaccumulated levels of pollutants within benthic biofilm communities from various Hong Kong freshwater environments. HKU Seed funding (**\$63,000**) Role: PI (on-going)
5. Safer water quality "in the pipeline": Assessing the true impact of biofilms in Hong Kong's drinking water distribution systems – BioImpact. HKU Seed funding (**\$35,000**) Role: PI (on-going)

Peer-reviewed Publications record

ISI listed Journal articles: **36**, -Google Scholar-all databases: **1050 citations**, ***h-index*= 17 (25/10/2018) [1-37]**

1. Habimana O, Zanoni M, Vitale S, O'Neill T, Scholz D, Xu B, Casey E: **One particle, two targets: A combined action of functionalised gold nanoparticles, against *Pseudomonas fluorescens* biofilms.** *Journal of colloid and interface science* 2018, **526**:419-428.
2. Habimana O, Casey E: **Biofilm recruitment under nanofiltration conditions: the influence of resident biofilm structural parameters on planktonic cell invasion.** *Microbial biotechnology* 2018, **11**(1):264-267.
3. Cao H, O'Rourke M, Habimana O, Casey E: **Analysis of surrogate bacterial cell transport to nanofiltration membranes: Effect of salt concentration and hydrodynamics.** *Separation and Purification Technology* 2018, **207**:498-505.
4. Allen A, Habimana O, Casey E: **The effects of extrinsic factors on the structural and mechanical properties of *Pseudomonas fluorescens* biofilms: A combined study of nutrient concentrations and shear conditions.** *Colloids and Surfaces B: Biointerfaces* 2018, **165**:127-134.
5. Habimana O, Heffernan R, Casey E: **Nanofiltration-induced cell death: An integral perspective of early stage biofouling under permeate flux conditions.** *Journal of Membrane Science* 2017, **541**:93-100.
6. Grønseth T, Vestby LK, Nesse LL, Thoen E, Habimana O, von Unge M, Silvola JT: **Lugol's solution eradicates *Staphylococcus aureus* biofilm in vitro.** *International journal of pediatric otorhinolaryngology* 2017, **103**:58-64.
7. Choudhari S, Habimana O, Hannon J, Allen A, Cummins E, Casey E: **Dynamics of silver elution from functionalised antimicrobial nanofiltration membranes.** *Biofouling* 2017, **33**(6):520-529.
8. Zanoni M, Habimana O, Amadio J, Casey E: **Antifouling activity of enzyme-functionalized silica nanobeads.** *Biotechnology and bioengineering* 2016, **113**(3):501-512.
9. Choi SY, Habimana O, Flood P, Reynaud EG, Rodriguez BJ, Zhang N, Casey E, Gilchrist MD: **Material-and feature-dependent effects on cell adhesion to micro injection moulded medical polymers.** *Colloids and Surfaces B: Biointerfaces* 2016, **145**:46-54.
10. Cao H, Habimana O, Safari A, Heffernan R, Dai Y, Casey E: **Revealing region-specific biofilm viscoelastic properties by means of a micro-rheological approach.** *npj Biofilms and Microbiomes* 2016, **2**.
11. Kelleher SM, Habimana O, Lawler J, O'reilly B, Daniels S, Casey E, Cowley A: **Cicada wing surface topography: an investigation into the bactericidal properties of nanostructural features.** *ACS applied materials & interfaces* 2015, **8**(24):14966-14974.
12. Heffernan R, Habimana O, Semiao A, Cao H, Safari A, Casey E: **Corrigendum to "A physical impact of organic fouling layers on bacterial adhesion during nanofiltration"[Water Res. 67 (2014) 118e128].** *Water Research* 2015, **83**(41):2e413.
13. Gazzola G, Habimana O, Murphy CD, Casey E: **Comparison of biomass detachment from biofilms of two different *Pseudomonas* spp. under constant shear conditions.** *Biofouling* 2015, **31**(1):13-18.
14. Cao H, Habimana O, Semião AJ, Allen A, Heffernan R, Casey E: **Understanding particle deposition kinetics on NF membranes: A focus on micro-beads and membrane interactions at different environmental conditions.** *Journal of Membrane Science* 2015, **475**:367-375.
15. Allen A, Semião AJ, Habimana O, Heffernan R, Safari A, Casey E: **Nanofiltration and reverse osmosis surface topographical heterogeneities: do they matter for initial bacterial adhesion?** *Journal of Membrane Science* 2015, **486**:10-20.

16. Winn M, Casey E, Habimana O, Murphy CD: **Characteristics of *Streptomyces griseus* biofilms in continuous flow tubular reactors.** *FEMS microbiology letters* 2014, **352**(2):157-164.
17. Vestby LK, Johannesen KCS, Witsø IL, Habimana O, Scheie AA, Urdahl AM, Benneche T, Langsrud S, Nesse LL: **Synthetic brominated furanone F 202 prevents biofilm formation by potentially human pathogenic *Escherichia coli* O 103: H 2 and *Salmonella* ser. Agona on abiotic surfaces.** *Journal of applied microbiology* 2014, **116**(2):258-268.
18. Semião AJ, Habimana O, Casey E: **Bacterial adhesion onto nanofiltration and reverse osmosis membranes: Effect of permeate flux.** *Water research* 2014, **63**:296-305.
19. Safari A, Habimana O, Allen A, Casey E: **The significance of calcium ions on *Pseudomonas fluorescens* biofilms—a structural and mechanical study.** *Biofouling* 2014, **30**(7):859-869.
20. Heffernan R, Habimana O, Semião A, Cao H, Safari A, Casey E: **A physical impact of organic fouling layers on bacterial adhesion during nanofiltration.** *Water research* 2014, **67**:118-128.
21. Habimana O, Semião AJ, Casey E: **Upon impact: the fate of adhering *Pseudomonas fluorescens* cells during nanofiltration.** *Environmental science & technology* 2014, **48**(16):9641-9650.
22. Habimana O, Semião A, Casey E: **The role of cell-surface interactions in bacterial initial adhesion and consequent biofilm formation on nanofiltration/reverse osmosis membranes.** *Journal of Membrane Science* 2014, **454**:82-96.
23. Habimana O, Nesse LL, Møretrø T, Berg K, Heir E, Vestby LK, Langsrud S: **The persistence of *Salmonella* following desiccation under feed processing environmental conditions: a subject of relevance.** *Letters in applied microbiology* 2014, **59**(5):464-470.
24. Giaouris E, Heir E, Hébraud M, Chorianopoulos N, Langsrud S, Møretrø T, Habimana O, Desvaux M, Renier S, Nychas G-J: **Attachment and biofilm formation by foodborne bacteria in meat processing environments: causes, implications, role of bacterial interactions and control by alternative novel methods.** *Meat Science* 2014, **97**(3):298-309.
25. Vázquez-Sánchez D, Habimana O, Holck A: **Impact of food-related environmental factors on the adherence and biofilm formation of natural *Staphylococcus aureus* isolates.** *Current microbiology* 2013, **66**(2):110-121.
26. Semião A, Habimana O, Cao H, Heffernan R, Safari A, Casey E: **The importance of laboratory water quality for studying initial bacterial adhesion during NF filtration processes.** *Water research* 2013, **47**(8):2909-2920.
27. Heffernan R, Semião A, Desmond P, Cao H, Safari A, Habimana O, Casey E: **Disinfection of a polyamide nanofiltration membrane using ethanol.** *Journal of membrane science* 2013, **448**:170-179.
28. Semiao A, Gazzola G, Habimana O, Heffernan R, Murphy C, Casey E: **Understanding the Mechanisms of Biofouling on Nanofiltration Membranes: Effect of the Biofilm Structure on Solute Removal.** *Procedia Engineering* 2012, **44**:1557-1560.
29. Møretrø T, Høiby-Pettersen GS, Habimana O, Heir E, Langsrud S: **Assessment of the antibacterial activity of a triclosan-containing cutting board.** *International journal of food microbiology* 2011, **146**(2):157-162.
30. Habimana O, Steenkeste K, Fontaine-Aupart M-P, Bellon-Fontaine M-N, Kulakauskas S, Briandet R: **Diffusion of nanoparticles in biofilms is altered by bacterial cell wall hydrophobicity.** *Applied and environmental microbiology* 2011, **77**(1):367-368.
31. Habimana O, Guillier L, Kulakauskas S, Briandet R: **Spatial competition with *Lactococcus lactis* in mixed-species continuous-flow biofilms inhibits *Listeria monocytogenes* growth.** *Biofouling* 2011, **27**(9):1065-1072.
32. Møretrø T, Heir E, Mo K, Habimana O, Abdelgani A, Langsrud S: **Factors affecting survival of Shiga toxin-producing *Escherichia coli* on abiotic surfaces.** *International journal of food microbiology* 2010, **138**(1-2):71-77.

33. Habimana O, Møretrø T, Langsrud S, Vestby LK, Nesse LL, Heir E: **Micro ecosystems from feed industry surfaces: a survival and biofilm study of Salmonella versus host resident flora strains.** *BMC veterinary research* 2010, **6**(1):48.
34. Habimana O, Heir E, Langsrud S, Åsli AW, Møretrø T: **Enhanced surface colonization by Escherichia coli O157: H7 in biofilms formed by an Acinetobacter calcoaceticus isolate from meat-processing environments.** *Applied and environmental microbiology* 2010, **76**(13):4557-4559.
35. Habimana O, Meyrand M, Meylheuc T, Kulakauskas S, Briandet R: **Genetic features of resident biofilms determine attachment of Listeria monocytogenes.** *Applied and environmental microbiology* 2009, **75**(24):7814-7821.
36. Rieu A, Briandet R, Habimana O, Garmyn D, Guzzo J, Piveteau P: **Listeria monocytogenes EGD-e biofilms: no mushrooms but a network of knitted chains.** *Applied and Environmental Microbiology* 2008, **74**(14):4491-4497.
37. Habimana O, Le Goff C, Juillard V, Bellon-Fontaine M-N, Buist G, Kulakauskas S, Briandet R: **Positive role of cell wall anchored proteinase PrtP in adhesion of lactococci.** *BMC microbiology* 2007, **7**(1):36.

Book Chapters

1. Method to study the survival abilities of foodborne bacterial pathogens under food processing conditions in "Foodborne bacterial pathogen Book" MiMB Springer (In Press)

POSITIONS OF ESTEEM

Academic Editorship

- PLOS ONE

PhD Internal examiner:

- Mr WU, Qinglong, School of Biological Sciences (27/09/2016)
- Ms DAI Shuhong, School of Biological Sciences (13/06/2018)
- Ms Wu Ruonan, School of Biological Sciences (31/08/2018)
- Ms OU Juanying School of Biological Sciences (2018)

Grant Review Panelist:

- 04/2017: ANR (The French National Research Agency)
- 05/2017: NWO (Netherlands Organisation for Scientific Research)

Peer-review duties in last 4 years:

- 3Biotech
- Biofouling
- Colloids And Surfaces B
- Chemical Engineering Journal
- Food Control
- Frontiers in Microbiology
- Journal of Applied Microbiology
- Journal of Food Science
- Water Research

Invited talks:

- *2-day Course on Food Waste Management*, University of Eastern Finland, FINLAND (11/ 2018)
- *Biofilms out of sight: a food safety concern in food processing*, 2017 Third Trilateral meeting (JNU-SNU-HKU), (08/ 2017)
- *The long road ahead: unravelling the role of resident flora biofilms in the persistence and proliferation of pathogenic organisms*, McGill University, Canada (01/2016)
- *Microbial ecology on surfaces in a Food and Environmental context*. Glasgow Caledonian University, Glasgow, United Kingdom (05/2015)
- *Food Microbiology focusing on microbial life and the persistence of pathogenic bacteria on food contact surfaces*. Abertay University, Dundee, United Kingdom, (08/2013)
- *Salmonella i fôrfabrikker-(Salmonella in the feed industry)*. Biofilmmøte, Oslo, NORWAY (05/2011)
- *Formation Dynamics of Lactococcus lactis biofilms and their reactivity towards Listeria monocytogenes*-Labhealth seminars, Institut National de la Recherche Agronomique, Jouy-en-Josas, FRANCE (03/2009)
- *The key role of Lactococcus lactis cell wall components in adhesion, biofilm structure and interaction with Listeria monocytogenes cells*- Food Factory International Conference, Laval, FRANCE (06/2008)

Conferences:

- Identification of *Lactococcus lactis* cell wall molecular components linked to cells adhesion. (poster). Habimana, O.; Kulakauskas, S.; Briandet, R. **4th ASM Conference on Biofilms**. March 25 – 29, 2007. Quebec City, Quebec, CANADA.
- The key role of *Lactococcus lactis* cell wall components in adhesion, biofilm structure and interaction with *Listeria monocytogenes*. cells (Oral+Poster) Habimana, O.; Kulakauskas, S.; Briandet, R. **Food Factory International Conference**, Laval, 4- 5 June 2008, FRANCE
- Heterogeneities inside *L. lactis* biofilms: a structural, developmental and physiological study (poster). Pérez Núñez, D.; Habimana, O.; Briandet, R.; Guedon, E. **Biofilms III**, Munich, October 2008, GERMANY

Conferences (cont.):

-Survival and biofilm development abilities of microorganisms isolated from meat-processing surfaces (poster) Habimana, O.; Langsrud, S.; Heir, E.; Møretrø, T. Eurobiofilms-**First European Congress on Microbial Biofilms**, Rome, September 2009, ITALY

-Identification and survival of resident bacteria in the feed industry and their effect on *Salmonella* biofilm formation(Poster) Heir, E.; Habimana, O.; Langsrud, S.; Vestby, L.; Nesse, L.; Møretrø, T. **International Symposium Salmonella Salmonellosis**, St Malo, June 2010, FRANCE

-*Salmonella* i fôrfabriker-Salmonella in the feed industry (oral). **Habimana,O. Biofilmmøte**, 3-4 may 2011, Oslo, NORWAY

-Interactions with resident flora strains affect biofilm structures and effectiveness of disinfectants against *Escherichia coli* O157:H7 and *Listeria monocytogenes*. (poster) Heir, E.; Henriksen, I.; **Habimana, O.**; Møretrø, T.; Langsrud, S.; **COST Strategic workshop “Biofilms: Friend or Foe”**, 22-23 June 2011, Berlin, GERMANY

-Biofilm formation and bactericidal effects of disinfectants in mixed species biofilms of meat industry bacteria, *Escherichia coli* O157:H7 and *Listeria monocytogenes*. (poster)Heir, E.; **Habimana, O.**; Møretrø, T.; Langsrud, S. **Food Micro**, 3-7 September 2012, Istanbul, TURKEY

-The importance of laboratory water quality when studying initial bacterial adhesion during nanofiltration processes (poster) Semião, A.J.C.; **Habimana, O.**; Gazzola, G.; Heffernan, R.; Murphy, C.; Casey, E. **Euromembrane Conference 2012**, London-ENGLAND

-When cell meets membrane: A closer look at early stage biofouling during nanofiltration processes. (poster) **Habimana, O.**; Semião, A.J.C.; Cao, H; Heffernan, R.; Gazzola, G.; Safari, A.; Casey, E. **Biofilms 5 International conference**, 10-12 December 2012, Paris-FRANCE

-Ethanol as a Method of Disinfecting Nanofiltration Membranes. Heffernan, R; Semião, A.J.C.; Desmond, P; Cao, H; Heffernan, R.; Safari, A.; **Habimana, O.**; Casey, E. **EWM2013**, 3-7 September 2013, Saint-Pierre d’Oléron, FRANCE

-Influence of surface microtopography of nanofiltration and reverse osmosis membranes on bacterial adhesion. Allen, A.; Semião, A. J. C.; **Habimana, O.**; Casey, E. **EWM2013**, 3-7 September 2013, Saint-Pierre d’Oléron, FRANCE

-Highly irregular surface roughness replicated onto microfluidic part using micro injection molding for cell biological research purposes. Choi, S.Y.; **Habimana, O.**; Flood, P.; Gargan, S.O; Murphy, B.; Marl, S.; Williams, L.; Redmond, M.; Gilchrist, M.D. **4M2013**, 8-10 October, San Sebastián, SPAIN

-Trapped in the matrix: the impact of Natural Organic Matter fouling on bacterial adhesion under full-scale Nanofiltration processes. **Habimana, O.**; Heffernan, R; Semião, A.J.C; Safari, A and Casey, E. **Biofilms 6 International Conference** 11-13 May 2014 Vienna-Austria