Biographical Sketch

Provide the following information for each individual included in the Research & Related Senior/Key Person Profile (Expanded) Form.

NAME	POSITION TITLE: DEPUTY CENTRE HEAD & RESEARCH GROUP HEAD (HUDSON INSTITUTE OF MEDICAL RESEARCH); ADJUNCT PROF. (MONASH UNIVERSITY)
RICHARD L. FERRERO	

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training).

INSTITUTION AND LOCATION	DEGREE (IF APPLICABLE)	YEAR(S)	FIELD OF STUDY
NSW Institute of Technology, Sydney, Australia	B. App. Sc.	1981-84	Microbiology/Biochemistry
University of NSW, Sydney, Australia	Honours degree	1985	Microbiology
University of NSW, Sydney, Australia	PhD	1986-90	Microbiology
Unité des Entérobactéries, Institut Pasteur, Paris, France	Postdoctoral training	1990-94	Microbiology/Molecular Biology
Monash University, Melbourne, Australia	Grad Certificate in Higher Education	2007-09	Education

Employment:

1984	Scientific Officer (full-time) - Microbiology Department, The Royal North Shore Hospital, Sydney, Australia
1986-1988	Technical Officer (part-time) - Microbiology Department, Mansfield's Private Pathology Services, Sydney, Australia
1986-1987	Technical Officer (part-time) - EML Consulting Services, Sydney
1994-1996	Research Scientist (tenured) - Unité de Pathogénie Bactérienne des Muqueuses (UPBM), Institut Pasteur, Paris, France
1996-2004	Senior Research Scientist (tenured) - UPBM, Institut Pasteur, Paris
2004-2009	Senior Lecturer (tenured) - Department of Microbiology, Monash University, Melbourne, Australia
2009-2014	Assoc. Professor, Senior Scientist and Group Leader - Monash Institute of Medical Research, Melbourne, Australia
2010-2014	Senior Research Fellow - National Health and Medical Research Council (NHMRC)
2013	Visiting Scientist - The Walter Elisa Hall Institute for Medical Research Melbourne, Australia (6 months); Institut Pasteur, Paris (2 months)
2015	Research Group Leader - Hudson Institute of Medical Research, Melbourne, Australia
2015-present	Senior Research Fellow - National Health and Medical Research Council (NHMRC)
2016-2018	Adjunct Associate Professor - Biomedicine Discovery Institute (BDI), Department of Microbiology, Monash University
2018-2023	Adjunct Professor - BDI, Dept. of Microbiology, Monash University
2018-2023	Adjunct Professor - Dept. of Molecular & Translational Sciences, Monash University
2022-present	Deputy Centre Head, Centre for Innate Immunity and Infectious Diseases, Hudson Institute of Medical Research

Experience and Professional Memberships:

2002-present	International Scientific Committee Member of "The International Workshop on Pathogenesis and Host Response in *Helicobacter* infections"
2005-present	Co-founder and member of *Helicobacter pylori* research network in Australia ("HEPYS")
2005-2009	Member of the Animal Services Committee of The School of Biomedical Sciences, Monash University
2005-2009	Member of the Board of The Faculty of Medical, Nursing and Health Sciences, Monash University
2006-2009	Member of the Education Committee of The School of Biomedical Sciences and Chairman of the "Research-Teaching Nexus" portfolio, Monash University
2006-2009	Scientific consultant for Ondek Pty Ltd, Perth, Australia
2007-2010	Member of the Australasian Society for Immunology
2008-2011	Committee member of the Australian-French Association for Science and Technology
2009-present	Chairman/leader of abstract review panels for the American Gastroenterological Association *Digestive Disease Week*
2010-present	Member of the American Society for Microbiology
2011-2012	Chairman of the Monash Health Translation Precinct (MHTP) Seminar Committee
2012-2019	Member of the Monash Micro Imaging (MMI)/MHTP Advisory Committee
2014-2018	Chair of the Hudson Recruitment, Retention and Promotion Committee
2015-2019	Member of the Research Board of the Faculty of Medicine, Nursing & Health Sciences, Monash University
2016-2018	Member Representing the Infection and Immunity theme on the Organising Committee for MHTP Research Symposium
2018-present	Chair of the Education Committee, Hudson Institute of Medical Research
2022-present	Co-Convenor of the Victorian Infection and Immunity Network (VIIN)

Honors:

1990-1991	Postdoctoral scholarship - Institut Pasteur, Paris
1991-1993	Postdoctoral scholarship – Institut National de la Santé et de la Recherche Médicale
1994, '96	Young scientist award, International Workshop on Gastroduodenal Pathology and *H. pylori*
1995	Best presentation Prize in the "Vaccination and immune response" workshop, The VIIIth International Workshop on Gastroduodenal Pathology and *H. pylori*
1997	Prize for research in gastroenterology, in France, *Association Charles Debré*
2001	The Dr Darolles prize for "Studies on *Helicobacter* infections," *L'Académie Nationale de Médecine*, France
2010-2014	Senior Research Fellowship – National Health and Medical Research Council of Australia
2013	"Research in Paris" Award for visiting scientists – City of Paris, France
2015-2019	Senior Research Fellowship – National Health and Medical Research Council of Australia
2016	University of Technology Sydney Alumni Award for Excellence – Faculty of Science

Publications (since 2017):

Original articles

1. Hutton, M. L., D'Costa, K., Rossiter, A. E., Wang, L., Turner, L., Steer, D. L., Masters, S. L., Croker, B. A., Kaparakis-Liaskos, M., **FERRERO, R. L.** (2017) A *Helicobacter pylori* homolog of eukaryotic flotillin is a new virulence factor required for cholesterol accumulation, epithelial cell responses and host colonization. *Front Cell Infect Microbiol.* 7, 219.
2. Patak, A., Blair, V. L., **FERRERO, R. L.**, Kedzierski, L., Andrews, P. C. (2017) Structural influences on the activity of bismuth(III) indole-carboxylato complexes towards *H. pylori* and *Leishmania. J Inorg Biochem.* 177, 266-275
3. Bitto, N. J., Chapman, R., Pidot, S., Costin, A., Lo, C., Choi, J., D'Cruze, T., Reynolds, E. C., Dashper, S. G., Turnbull, L., Whitchurch, C. B., Stinear, T. P., Stacey, K. J., **FERRERO, R. L.** (2017) Bacterial membrane vesicles transport their DNA cargo to the nucleus of host cells. *Sci Rep.* 7, 7072.
4. Tran, L. S., Tran, D., De Paoli, A., D'Costa, K., Creed, S. J., Ng, G. Z., Sutton, P., Silke, J., Nachbur, U., **FERRERO, R. L.** (2018) NOD1 is required for *Helicobacter pylori* induction of IL-33 responses in gastric epithelial cells. *Cell Microbiol.* 20, e12826.
5. Hill, D. J., West, A., Balic, J. J., Yu, L., Oshima, H., McLeod, L., Oshima, M., Gallimore, A., D'Costa, K., **FERRERO, R. L.**, Jones, S. A., Jenkins, B. J., Jones, G. W. (2018) Hyperactive gp130/STAT3-driven gastric tumourigenesis promotes submucosal tertiary lymphoid structure development. *Int J Cancer* 143, 167-178.
6. O'Reilly, L. A., Putoczki, T. L., Mielke, L. A., Low, J. T., Lin, A., Preaudet, A., Herold, M. J., Yaprianto, K., Tai, L., Kueh, A., Pacini, G., **FERRERO, R. L.**, Gugasyan, R., Hu, Y.,, Christie, M., Wilcox, S., Grumont, R., Griffin, M. D. W., O' Connor, L., Smyth, G., Ernst, M., Waring, P., Gerondakis, S., Strasser, A. (2018) Loss of NF-κB causes gastric cancer with aberrant inflammation and expression of immune checkpoint regulators in a STAT1-dependent manner. *Immunity* 48, 570-583.e8.
7. Ferrand, J., Croft, N. P., Pépin, G., Diener, K. R., Wu, D., Mangan, N. E., Pedersen, J., Behlke, M. A., Hayball, J. D., Purcell, A. W., **FERRERO, R. L.**, Gantier, M. P. (2018) The use of CRISPR/Cas9 gene editing to confirm congenic contaminations in host-pathogen interaction studies. *Front Cell Infect Microbiol.* 8, 87.
8. Bitto, N. J., Baker, P. J., Dowling, J. K., DePaoli, A., Tran, L. S., Leung, P. L., Stacey, K. J., Mansell, A., Masters, S. L.*, **FERRERO, R. L.*** (2018) *Pseudomonas aeruginosa* membrane vesicles activate the non-canonical inflammasome in human macrophages through caspase-5. *Immunol Cell Biol*. doi: 10.1111/imcb.12190. * Co-senior authors
9. Turner, L., Bitto, N. J., Steer, D. L., Lo, C., D'Costa, K., Ramm, G., Shambrook, M., Hill, A. F., **FERRERO, R. L.**, Kaparakis-Liaskos, M. (2018) *Helicobacter pylori* outer membrane vesicle size determines their mechanisms of host cell entry and protein content. *Front Immunol*. 9, 1466.
10. Modak J. K., Tikhomirova A., Gorrell R. J., Rahman M. M., Kotsanas D., Korman T. M., Garcia-Bustos J., Kwok T., **FERRERO, R. L.**, Supuran C. T., Roujeinikova A. (2019). Anti-*Helicobacter pylori* activity of ethoxzolamide. *J Enzyme Inhib Med Chem.* 34, 1660-1667.
11. Sun T., **FERRERO, R. L.**, Girardin S. E., Gommerman J. L., Philpott D. J. (2019). NLRC5 deficiency has a moderate impact on immunodominant $CD8^+$ T-cell responses during rotavirus infection of adult mice. *Immunol Cell Biol.* 97, 552-562.
12. Dawson E. M., Dunne K. A., Richardson E. J., Praszkier J., Alfawaz D., Woelfel S., De Paoli A.,

Chaudhry H., Henderson I. R., **FERRERO, R. L.***, Rossiter A. E.* (2019). Complete genome sequence of *Helicobacter pylori* B128 7.13 and a single-step method for the generation of unmarked mutations. *Helicobacter* 24, e12587. *Co-Senior authors

13. Pusceddu, M., Barboza, M., Keogh, C. E., Schneider, M., Stokes, P., Sladek, J., Jung, H., Kim, D., Torres-Fuentes, C., Goldfild, L., Gillis, S., Brust-Mascher, I., Rabasa, G., Wong, K., Lebrilla, C., Byndloss, M., Maisonneuve, C., Baumler, A., Philpott, D., J., **FERRERO, R. L.,** Barrett, K. E., Reardon, C., Gareau, M. (2019) Nod-like receptors are critical for gut-brain axis signaling in mice. *J. Physiol* 597, 5777-5797.

14. Chonwerawong, M., Ferrand, J., Chaudhry, H. M., Higgins, C., Tran, L. S., Lim, S. S., Walker, M. M., Bhathal, P. S., Dev, A., Moore, G. T., Sievert, W., Jenkins, B. J., D'Elios, M. M., Philpott, D. J., Kufer, T. A., **FERRERO, R. L.** (2020) Innate immune molecule NLRC5 protects mice from *Helicobacter*-induced formation of gastric lymphoid tissue. *Gastroenterol.* 150, 169-182.

15. Balic, J. J., Saad, M. I., Dawson, R., West, A. J., McLeod, L., West, A. C., D'Costa, K., Deswaerte, V., Dev, A., Sievert, W., Gough, D. J., Bhathal, P. S., **FERRERO, R. L.**, Jenkins, B. J. Constitutive STAT3 serine phosphorylation promotes *Helicobacter*-mediated gastric disease. *Am J Pathol.* 190, 1256-1270.

16. Maisonneuve, C., Tsang, D., Foerster, E., Mukherjee, T., Prescott, D., Tattoli, I., Lemire, P., Winer, D. A., Winer, S., Streutker, C. J., Geddes, K., Cadwell, K., **FERRERO, R. L.**, Martin, A., Girardin, S. E., Philpott, D. J. (2021) Nod1 promotes colorectal carcinogenesis by regulating the immunosuppressive functions of tumor-infiltrating myeloid cells. *Cell Rep* 34, 108677.

17. Keough, D. T., Wun, S. J., Baszczyňski, O., Eng, W. S., Špaček, P., Panjikar, S., Naesens, L., Pohl, R., Rejman, D., Hocková, D., **FERRERO, R. L.**, Guddat, L. W. (2021) *J Med Chem* doi: 10.1021/acs.jmedchem.0c02184.

Invited reviews and book chapters:

18. Baker, P. J., De Nardo, D., Moghaddas, F., Tran, L. S., Bachem, A., Nguyen, T., Hayman, T., Tye, H., Vince, J., Bedoui, S., **FERRERO, R. L.**, Masters, S. L. (2017) Post-translational modification as a critical determinant of cytoplasmic innate immune recognition. *Physiol Rev*. 97, 1165-1209.

19. Tran, L. S., Chonwerawong, M., **FERRERO, R. L.** (2017) Regulation and functions of inflammasome-mediated cytokines in *Helicobacter pylori* infection. *Microb Infect.* 19, 449-458.

20. D'Costa, K., Chonwerawong, M., Tran, L. S., **FERRERO, R. L.** (2018) Mouse models of *Helicobacter* infection and gastric pathologies. *J Vis Exp* 140. doi: 10.3791/56985.

21. Tran, L. S., **FERRERO, R. L.** Isolation of mouse primary gastric epithelial cells to investigate the mechanisms of *Helicobacter pylori* associated disease. (2018). In: the series *Methods in Molecular Biology*. Inflammation and Cancer. Ed. Jenkins, B. J. 2018; 1725:119-126.

22. Ying, L., **FERRERO, R. L.** (2019). Role of NOD1 and ALPK1/TIFA signalling in innate immunity against *Helicobacter pylori* infection. *Curr Top Microbiol Immunol*. 421, 159-277.

23. Lehours, P., **FERRERO, R. L.** (2019). *Helicobacter*: Inflammation, immunology, and vaccines. *Helicobacter* 24, e12644.

24. Chonwerawong, M., **FERRERO, R. L.** (2020) Analysis of the innate immune response. In: *Methods in Molecular Biology*. *H. pylori* Methods and Protocols. Ed. Smith, S. 2283, 191-214.

25. Le, L. H. M., Ying, L., **FERRERO, R. L.** Nuclear trafficking of bacterial effector proteins. *Cell Microbiol* e13320.

Representative earlier publications pertinent to this application:

26. **FERRERO, R. L.**, Thiberge, J.- M., Labigne, A. (1997). Local immunoglobulin G antibodies in the stomach may contribute to immunity against *Helicobacter* infection in mice. *Gastroenterol.* 113, 185-194.

27. **FERRERO, R. L.**, Thiberge, J.- M., Huerre, M., Labigne, A. (1998). Immune responses of specific-pathogen-free mice to chronic *Helicobacter pylori* (strain SS1) infection. *Infect. Immun.* 66, 1349-1355.

28. **FERRERO, R. L.**, Ave, P., Radcliff, F. J., Labigne, A., Huerre, M.- R. (2000). Outbred mice with longterm *Helicobacter felis* infection develop both gastric lymphoid tissue and glandular hyperplastic lesions. *J. Pathol.* 191, 333-340.

29. Gobert, A.P., Bambou, JC., Werts, C., Balloy, V., Chignard, M., Moran, A.P., **FERRERO, R. L.** (2004). *Helicobacter pylori* Heat Shock Protein 60 mediates interleukin-6 production by macrophages via a Toll-like Receptor (TLR)-2-, TLR-4- and Myeloid Differentiation factor 88-independent mechanism. *J. Biol. Chem*. 279, 245-250.

30. Viala, J. Chaput, C., Boneca, I. G., Cardona, A., Girardin, S. E., Moran, A. P., Athman, R., Mémet, S., Huerre, M. R., Coyle, A. J., DiStefano, P. S., Sansonetti, P. J., Labigne, A., Bertin, J., Philpott, D. J., **FERRERO, R. L.** (2004) Nod1 responds to peptidoglycan delivered by the *Helicobacter pylori* cag pathogenicity island. *Nature Immunol.* 5, 1166-1174.

31. Fritz, J. H., **FERRERO, R. L.**, Philpott, D. J., Girardin, S. E. (2006) Nod-like proteins in immunity, inflammation and disease. *Nature Rev. Immunol.* 7, 1250-1257.

32. Fritz, J. H, Le Bourhis, L., Sellge, G., Magalhaes, J. G., Fsihi, H., Kufer, T. A., Collins, C., Viala, J., **FERRERO, R. L.**, Girardin, S. E., Philpott, D. J. (2007) Nod1-mediated innate immune recognition of peptidoglycan contributes to the onset of adaptive immunity. *Immunity* 26, 445-459.

33. Wee, J. L., Chionh, Y. T., Ng, G. Z., Harbour, S. N., Allison, C., Pagel, C. N., Mackie, E. J., Mitchell, H. M., **FERRERO, R. L.**, Sutton, P. (2010) Protease-activated receptor-1 down-regulates the murine inflammatory and humoral response to *Helicobacter pylori. Gastroenterol*. 138, 573-582.

34. Allison, C. C., Ferrand, J., McLeod, L., Hassan, M., Kaparakis-Liaskos, M., Grubman, A., Bhathal, P. S., Dev, A., Sievert, W., Jenkins, B. J., **FERRERO, R. L.** (2013) NOD1 enhances IFN-γ signaling in gastric epithelial cells during *Helicobacter pylori* infection and exacerbates disease severity. *J Immunol.* 190, 3706-3715.

35. Irving, A. T., Mimuro, H., Kufer, T. A., Lo, C., Wheeler, R., Turner, L. J., Thomas, B. J., Malosse, C., Gantier, M. P., Casillas, L. N., Votta, B. J., Bertin, J., Boneca, I. G., Sasakawa, C., Philpott, D. J., **FERRERO, R. L.**, Kaparakis-Liaskos, M. **(**2014) The immune receptor NOD1 and kinase RIP2 interact with bacterial peptidoglycan on early endosomes to promote autophagy and inflammatory signaling. *Cell Host Microb.* 15, 623-35.

36. Kaparakis-Liaskos, M., **FERRERO, R. L.** (2015) Immune modulation by bacterial outer membrane vesicles. *Nat Rev. Immunol.* 15: 376-387.

37. Menheniott, T. R., O'Connor, L., Chionh, Y. T., Däbritz, J., Rollo, B. N., Ng, G. Z., Scurr, M., Kurklu, B., Mercer, S., Minamoto, T., Ong, D. E., **FERRERO, R. L.**, Fox, J. G., Wang, T. C., Sutton, P., Judd, L. M., Giraud, A. S. (2016) Loss of Gastrokine-2 exacerbates premalignant inflammation and tumor progression in gastric cancer. *J Clin Invest.* 126, 1383-400.