Vincenzo Torraca
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Infectious Diseases
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Research interests

I am a Lecturer in Infectious Disease at King's College London and a Fellow of the Higher Education Academy (FHEA). My research focuses on host-pathogen interactions, genomic epidemiology, and antimicrobial resistance for globally relevant bacterial pathogens. In my lab, we use the zebrafish model to recapitulate human infections with a variety of bacteria, including *Shigella*, *E. coli*, *Salmonella*, and *Mycobacterium*. We are also interested in cell biology and we explore infections as a tool to obtain a better understanding of cell functions in both physiological and pathological contexts. Over the last few years, my work focused on the persistent carriage of enteropathogens and on the development of innovative strategies to counteract *Shigella* infections.
I was previously a Senior Lecturer in Microbiology and Co-Course Leader for BSc (Hons) Medical Sciences at the University of Westminster, an Assistant Professor and Wellcome ISSF Fellow at the London School of Hygiene and Tropical Medicine, a Marie Curie Research Fellow at Imperial College London and a Marie Curie PhD Fellow at Leiden University.
I was awarded a Postgraduate Certificate in Learning and Teaching (LSHTM), a PhD in Microbiology and Immunology (Leiden University), a MSc in Molecular and Cellular Biology (Salerno University) and a BSc in Molecular and Computational Biology (Salerno University).

Qualifications

Education, Postgraduate Certificate , PGCiLT, London School of Hygiene & Tropical Medicine
Award Date: 4 Jul 2022

Microbiology and Immunology, Doctor of Philosophy, PhD, Leiden University
12 Jan 2012 → 30 Jun 2016
Award Date: 17 Nov 2016

Biology , Master of Science, MSc, Università di Salerno
Award Date: 26 Oct 2011

Molecular and Computational Biology, Bachelor of Science, BSc, Università di Salerno
Award Date: 10 Dec 2009

1 Jan 2022 → … Fellow of the Higher Education Academy, FHEA

10 Oct 2019 → … Home Office Personal Licence, PiL A/B, E1/L

24 Jun 2014 → … Laboratory Animal Science Level C, FELASA C

Employment

Senior Lecturer in Microbial Pathogenesis
Infectious Diseases
King's College London
10 Oct 2023 → present

Visiting Researcher
LSHTM London School of Hygiene and Tropical Medicine
London, United Kingdom
5 Jan 2022 → present

Senior Lecturer in Microbiology
University of Westminster
London, United Kingdom
5 Jan 2022 → present

Associate Editor
Frontiers in Cellular and Infection Microbiology

Switzerland
1 Jan 2021 → present

Assistant professor, Wellcome ISSF Fellow
LSHTM London School of Hygiene and Tropical Medicine
London, United Kingdom
1 Jul 2018 → 4 Jan 2022

MSCA Postdoctoral Fellow
Imperial College London
London, United Kingdom
1 Jul 2016 → 30 Jun 2018

Research outputs

Genome-wide analysis exploring mechanisms used by Shigella sonnei to survive long-term nutrient starvation.
Matanza, X. M., Leung, P. B., Torraca, V., Watson, J., Dorman, M. J., Thomson, N. R. & Clements, A., 21 Apr 2026, In: mSystems. 11, 4, p. 1-22 22 p., e0008826.

Population structure, antimicrobial resistance, and virulence factors of diabetic foot-associated *Escherichia coli*
Ajumobi, V., Tahir, Z., Hayes, P., McCormick, A. & Torraca, V., 3 Feb 2026, In: Microbiology Spectrum . 14, 2, p. 1-19 19 p.

A public resource of 15 genomically characterized representative strains of *Shigella sonnei*
Miles, S. L., Hawkey, J., Vezina, B., Torraca, V., Jenkins, C., Weill, F.-X., Baker, S., Baker, K. S., Mostowy, S. & Holt, K. E., Jan 2026, In: Microbial Genomics. 12, 1, 001596.

DRAM1 promotes the stability of lysosomal VAMP8 to enhance autolysosome formation and facilitates the extravasation
Zhang, R., Zhang, X., Bai, H., Cheng, Q., Yao, X., Li, S., Torraca, V., Yan, C., Dong, X., Miao, S., Hu, X., Yu, Y., Wu, Y., Tan, H., Chen, X., Liu, S., Lyu, H., Xiao, S., Guo, D. & Zhang, Q. & 4 others, Chen, X. Z., Song, Z., Zhou, C. & Tang, J., Dec 2025, In: Nature Communications. 16, 1, 5826.

Enhanced virulence and stress tolerance are signatures of epidemiologically successful *Shigella sonnei*
Miles, S. L., Santillo, D., Painter, H., Wright, K., Torraca, V., López-Jiménez, A. T., Virgo, M., Matanza, X. M., Clements, A., Jenkins, C., Baker, S., Baker, K. S., Cisneros, D., Puhar, A., Sancho-Shimizu, V., Holt, K. E. & Mostowy, S., 9 Oct 2025, (E-pub ahead of print) In: Nature Communications. 16, 9005.

VAMP8 stabilization by DRAM1 enables autophagosome-lysosome fusion and promotes metastatic extravasation
Zhang, R., Torraca, V., Yan, C., Lyu, H., Xiao, S., Guo, D., Zhang, Q., Zhou, C. & Tang, J., 2 Sept 2025, (E-pub ahead of print) In: Autophagy. 21, 11, p. 2531-2533 3 p.

ILKAP Promotes the Metastasis of Hepatocellular Carcinoma Cells by Inhibiting β-Catenin Degradation and Enhancing the WNT Signaling Pathway
Zhang, R., Yuan, J., Liu, S., Torraca, V., Liao, Z., Wu, Y., Tan, H., Yao, X., Hou, X., Lyu, H., Xiao, S., Guo, D., Ali, D. W., Michalak, M., Chen, X.-Z., Zhou, C. & Tang, J., May 2024, In: Advanced biology. 8, 5, p. e2300117 2300117.

Transcriptional profiling of zebrafish identifies host factors controlling susceptibility to *Shigella flexneri*
Torraca, V., White, R. J., Sealy, I. M., Mazon-Moya, M., Duggan, G., Willis, A. R., Busch-Nentwich, E. M. & Mostowy, S., Jan 2024, In: Disease models & mechanisms. 17, 1, dmm050431.

RUNDC1 negatively mediates the fusion of autophagosomes with lysosomes via regulating SNARE complex assembly
Zhang, R., Torraca, V., Lyu, H., Xiao, S., Guo, D., Zhou, C. & Tang, J., 24 Oct 2023, (E-pub ahead of print) In: Autophagy.

Shigella serotypes associated with carriage in humans establish persistent infection in zebrafish
Torraca, V., Brokatzky, D., Miles, S. L., Chong, C. E., De Silva, P. M., Baker, S., Jenkins, C., Holt, K. E., Baker, K. S. & Mostowy, S., 15 Oct 2023, In: The Journal of infectious diseases. 228, 8, p. 1108-1118 11 p.

RUNDC1 inhibits autolysosome formation and survival of zebrafish via clasping ATG14-STX17-SNAP29 complex
Zhang, R., Yang, Y., He, C., Zhang, X., Torraca, V., Wang, S., Liu, N., Yang, J., Liu, S., Yuan, J., Gou, D., Li, S., Dong, X., Xie, Y., He, J., Bai, H., Hu, M., Liao, Z., Huang, Y. & Lyu, H. & 8 others, Xiao, S., Guo, D., Ali, D. W., Michalak, M., Ma, C., Chen, X. Z., Tang, J. & Zhou, C., Oct 2023, In: CELL DEATH AND DIFFERENTIATION. 30, 10, p. 2231-2248 18 p.

Acquisition of a large virulence plasmid (pINV) promoted temperature-dependent virulence and global dispersal of O96:H19 enteroinvasive *Escherichia coli*
Miles, S. L., Torraca, V., Dyson, Z. A., López-Jiménez, A. T., Foster-Nyarko, E., Lobato-Márquez, D., Jenkins, C., Holt, K. E. & Mostowy, S., 31 Aug 2023, In: Mbio. 14, 4, e0088223.

Zebrafish null mutants of Sept6 and Sept15 are viable but more susceptible to *Shigella* infection
Torraca, V., Bielecka, M. K., Gomes, M. C., Brokatzky, D., Busch-Nentwich, E. M. & Mostowy, S., 1 Jul 2023, In: Cytoskeleton (Hoboken, N.J.). 80, 7-8, p. 266-274 9 p.

P1 bacteriophage-enabled delivery of CRISPR-Cas9 antimicrobial activity against *Shigella flexneri*
Huan, Y. W., Torraca, V., Brown, R., Fa-Arun, J., Miles, S. L., Oyarzún, D. A., Mostowy, S. & Wang, B., 17 Mar 2023, In: ACS synthetic biology. 12, 3, p. 709-721 13 p.

Septins promote caspase activity and coordinate mitochondrial apoptosis
Van Ngo, H., Robertin, S., Brokatzky, D., Bielecka, M. K., Lobato-Márquez, D., Torraca, V. & Mostowy, S., 19 Sept 2022, In: Cytoskeleton (Hoboken, N.J.). 80, 7-8, p. 254-265 12 p.

Editorial: Zebrafish models for human disease studies
Zang, L., Torraca, V., Shimada, Y. & Nishimura, N., 11 Mar 2022, In: Frontiers in Cell and Developmental Biology. 10, 861941.

Editorial: Nucleic acid-associated inflammation
Laguette, N., Langevin, C., Olagnier, D., Torraca, V., Vanpouille-Box, C. & Verrier, E. R., 27 Oct 2021, In: Frontiers in Immunology. 12, 791580.

Disruption of Cxcr3 chemotactic signaling alters lysosomal function and renders macrophages more microbicidal
Sommer, F., Torraca, V., Xie, Y., in 't Veld, A. E., Willemse, J. & Meijer, A. H., 13 Apr 2021, In: Cell Reports. 35, 2, 109000.

In vivo biomolecular imaging of zebrafish embryos using confocal Raman spectroscopy
Høgset, H., Horgan, C. C., Armstrong, J. P. K., Bergholt, M. S., Torraca, V., Chen, Q., Keane, T. J., Bugeon, L., Dallman, M. J., Mostowy, S. & Stevens, M. M., Dec 2020, In: Nature Communications. 11, 1, 6172.

Shigella sonnei
Torraca, V., Holt, K. & Mostowy, S., Aug 2020, In: Trends in Microbiology. 28, 8, p. 696-697 2 p.

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Torraca, V., Holt, K. & Mostowy, S., 8 Apr 2020, In: Trends in Microbiology. 28, 8, p. 696-697 2 p.

Deficiency in the autophagy modulator Dram1 exacerbates pyroptotic cell death of Mycobacteria-infected macrophages
Zhang, R., Varela, M., Forn-Cuní, G., Torraca, V., van der Vaart, M. & Meijer, A. H., 1 Apr 2020, In: Cell Death and Disease. 11, 4, 277.

Chemokine receptors and phagocyte biology in zebrafish
Sommer, F., Torraca, V. & Meijer, A. H., 25 Feb 2020, In: Frontiers in Immunology. 11, 325.

Analysis tools to quantify dissemination of pathology in zebrafish larvae
Stirling, D. R., Suleyman, O., Gil, E., Elks, P. M., Torraca, V., Noursadeghi, M. & Tomlinson, G. S., 21 Feb 2020, In: Scientific Reports. 10, 1, p. 3149 1 p.

Frontline science: Antagonism between regular and atypical Cxcr3 receptors regulates macrophage migration during infection and injury in zebrafish
Sommer, F., Torraca, V., Kamel, S. M., Lombardi, A. & Meijer, A. H., 1 Feb 2020, In: Journal of Leukocyte Biology. 107, 2 , p. 185-203 19 p.

CXCR4 signaling regulates metastatic onset by controlling neutrophil motility and response to malignant cells
Tulotta, C., Stefanescu, C., Chen, Q., Torraca, V., Meijer, A. H. & Snaar-Jagalska, B. E., 1 Dec 2019, In: Scientific Reports. 9, 1, 2399.

***Shigella sonnei* O-antigen inhibits internalization, vacuole escape, and inflammasome activation**
Watson, J. L., Sanchez-Garrido, J., Goddard, P. J., Torraca, V., Mostowy, S., Shenoy, A. R. & Clements, A., 1 Nov 2019, In: Mbio. 10, 6, e02654-19.

Meeting report: Zebrafish infection and immunity 2019
Torraca, V., Gomes, M. C., Sarris, M. & Mostowy, S., 1 Oct 2019, In: LAB ANIMAL. 48, 10, p. 284-287 4 p.

Macrophages target Salmonella by Lc3-associated phagocytosis in a systemic infection model
Masud, S., Prajsnar, T. K., Torraca, V., Lamers, G. E. M., Benning, M., Van Der Vaart, M. & Meijer, A. H., 4 May 2019, In: Autophagy. 15, 5, p. 796-812 17 p.

RNAseq profiling of leukocyte populations in zebrafish larvae reveals a *cxcl11* chemokine gene as a marker of macrophage polarization during mycobacterial infection
Rougeot, J., Torraca, V., Zakrzewska, A., Kanwal, Z., Jansen, H. J., Sommer, F., Spaink, H. P. & Meijer, A. H., 2019, In: Frontiers in Immunology. 10, MAR, 832.

Shigella sonnei infection of zebrafish reveals that O-antigen mediates neutrophil tolerance and dysentery incidence
Torraca, V., Kaforou, M., Watson, J., Duggan, G. M., Guerrero-Gutierrez, H., Krokowski, S., Hollinshead, M., Clarke, T. B., Mostowy, R. J., Tomlinson, G. S., Sancho-Shimizu, V., Clements, A. & Mostowy, S., 2019, In: PLoS Pathogens. 15, 12, e1008006.

Shigella-induced emergency granulopoiesis protects zebrafish larvae from secondary infection
Willis, A. R., Torraca, V., Gomes, M. C., Shelley, J., Mazon-Moya, M., Filloux, A., Lo Celso, C. & Mostowy, S., 1 May 2018 , In: Mbio. 9, 3, e00933-18.

Zebrafish infection: From pathogenesis to cell biology
Torraca, V. & Mostowy, S., Feb 2018, In: Trends in cell biology. 28, 2, p. 143-156 14 p.

Functional analysis reveals no transcriptional role for the glucocorticoid receptor β-isoform in zebrafish
Chatzopoulou, A., Schoonheim, P. J., Torraca, V., Meijer, A. H., Spaink, H. P. & Schaaf, M. J. M., 15 May 2017, In: Molecular and Cellular Endocrinology. 447, p. 61-70 10 p.

The chemokine receptor CXCR4 promotes granuloma formation by sustaining a mycobacteria-induced angiogenesis programme
Torraca, V., Tulotta, C., Ewa Snaar-Jagalska, B. & Meijer, A. H., 23 Mar 2017, In: Scientific Reports. 7, 45061.

The inflammatory chemokine Cxcl18b exerts neutrophil-specific chemotaxis via the promiscuous chemokine receptor Cxcr2 in zebrafish
Torraca, V., Otto, N. A., Tavakoli-Tameh, A. & Meijer, A. H., 1 Feb 2017, In: Developmental and Comparative Immunology. 67, p. 57-65 9 p.

Modeling infectious diseases in the context of a developing immune system
Masud, S., Torraca, V. & Meijer, A. H., 2017, *Current Topics in Developmental Biology*. ACADEMIC PRESS INC, p. 277-329 53 p. (Current Topics in Developmental Biology; vol. 124).

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Mazon-Moya, M. J., Willis, A. R., Torraca, V., Boucontet, L., Shenoy, A. R., Colucci-Guyon, E. & Mostowy, S., 2017, In: PLoS Pathogens. 13, 6, e1006467.

Septins and bacterial infection
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The CXCR3-CXCL11 signaling axis mediates macrophage recruitment and dissemination of mycobacterial infection
Torraca, V., Cui, C., Boland, R., Bebelman, J. P., Van Der Sar, A. M., Smit, M. J., Siderius, M., Spaink, H. P. & Meijer, A. H., 1 Mar 2015, In: DMM Disease Models and Mechanisms. 8, 3, p. 253-269 17 p.

Macrophage-pathogen interactions in infectious diseases: New therapeutic insights from the zebrafish host model
Torraca, V., Masud, S., Spaink, H. P. & Meijer, A. H., Jul 2014, In: DMM Disease Models and Mechanisms. 7, 7, p. 785-797 13 p.

Robotic injection of zebrafish embryos for high-throughput screening in disease models
Spaink, H. P., Cui, C., Wiweger, M. I., Jansen, H. J., Veneman, W. J., Marín-Juez, R., De Sonneville, J., Ordas, A., Torraca, V., van der Ent, W., Leenders, W. P., Meijer, A. H., Snaar-Jagalska, B. E. & Dirks, R. P., 15 Aug 2013, In: Methods. 62, 3, p. 246-254 9 p.

Ultra-small graphene oxide functionalized with polyethylenimine (PEI) for very efficient gene delivery in cell and zebrafish embryos
Zhou, X., Laroche, F., Lamers, G. E. M., Torraca, V., Voskamp, P., Lu, T., Chu, F., Spaink, H. P., Abrahams, J. P. & Liu, Z., Oct 2012, In: Nano Research. 5, 10, p. 703-709 7 p.