

Jack P. K. Bravo, Ph.D.

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Professional Appointments

Since 2024	Assistant Professor, Institute of Science and Technology (ISTA), Austria
2020-2024	Postdoctoral fellow with Dr David Taylor, University of Texas at Austin, Texas, USA
2019	Postdoctoral research scholar with Dr Alex Borodavka, University of Cambridge, UK

Education

2015 – 2019	University of Leeds, UK PhD in Biochemistry and Structural Biophysics. Advisor: Dr Roman Tuma
2012 – 2015	University of Leeds, UK B.Sc. (Hons) in Biochemistry

Awards

2026	ERC Starting Grant
2026	Vallee Scholar Award
2025	FEBS Excellence Award
2025	FWF Standalone Research Grant
2023	Department of Molecular Biosciences Outstanding Research Paper Award
2021	Prize for best talk, Molecular Biosciences Annual Retreat
2021	Prize for best talk, RNA & DNA club best presentation

Teaching, Outreach & Service

Since 2026	Teaching “Advanced Structural Biology” & “Biology Track Core” courses.
2025	Co-organized 8 th Austrian Cryo-EM Symposium, ISTA.
2022 – 2023	University of Texas at Austin, Department of Molecular Biosciences Diversity, Equality and Inclusion committee member
2022 – 2024	University of Texas at Austin, Department of Molecular Biosciences Postdoc Association committee member
2022	University of Texas at Austin, Youth Science Workshop Guest lecture within “Physical Methods of Biochemistry” undergraduate course, UT Austin.
2021	Guest lecture on CRISPR complexes within “Structure and Function of Molecular Machines” undergraduate course, UT Austin.
2018	“Be Curious” Public Outreach Event, University of Leeds

Peer review: *Nature, Science, Cell, Science, Nature Microbiology, Nature Structural & Molecular Biology, Nature Communications, Science Advances, Cell Host & Microbe, Molecular Cell, PNAS, Nucleic Acids Research & others.*

Most important peer-reviewed publications (*co-first author, †(co-)corresponding author)

1. J. P. K. Bravo[†], D. A. Ramos, R. F Ocampo, C. Ingram & D. W. Taylor. (2024) Plasmid targeting and destruction by the DdmDE bacterial defence system. **Nature**. 10.1038/s41586-024-07515-9
2. J. Steens*, J. P. K. Bravo*, C. P. Salazar*, C. Yildiz, A. M. Amieiro, S. Kostlbacher, S. H. P. Prinsen, C. Patinios, A. Bardis, A. Barendrecht, R. A. Scheltema, T. J. G. Ettema, J. vd Oost, D. W. Taylor, R. Staals. (2024) Type III-B CRISPR-Cas cascade of proteolytic cleavages. **Science**. 10.1126/science.adk0378
3. Bravo, J. P. K., et al. (2023) RNA targeting unleashes indiscriminate nuclease activity of CRISPR–Cas12a2. **Nature**. 10.1038/s41586-022-05560-w
4. Bravo, J. P. K., et al. (2022). Structural basis of mismatch surveillance by CRISPR-Cas9. **Nature**. 10.1038/s41586-022-04470-1

Complete list of publications

1. Williams-Jones D, Bravo JPK. (2026) NAD to the bone: How bacteria put phages under aRES-t ... and how phages fight back. *Cell Host & Microbe*. 34(6), 978–980.
2. Dmytrenko, O., Yuan, B., Crosby, K.T. et al. RNA-triggered Cas12a3 cleaves tRNA tails to execute bacterial immunity. *Nature* (2026). <https://doi.org/10.1038/s41586-025-09852-9>
3. Kiwa is a membrane-embedded defense supercomplex activated at phage attachment sites Z. Zhang, T.C. Todeschini, Y. Wu, R. Kogay, A. Naji, J. Cardenas Rodriguez, R. Mondi, D. Kaganovich, D.W. Taylor, J.P.K. Bravo, M. Teplova, T. Amen, E. Koonin, D.J. Patel, F.L. Nobrega, *Cell* 188 (2025) 5862–5877.e23.
4. Ocampo, R.F., Bravo, J.P.K., Dangerfield, T.L. et al. DNA targeting by compact Cas9d and its resurrected ancestor. *Nat Commun* 16, 457 (2025). <https://doi.org/10.1038/s41467-024-55573-4>
5. Engineered PsCas9 enables therapeutic genome editing in mouse liver with lipid nanoparticles. D. Degtev, J. Bravo, A. Emmanouilidi, A. Zdravković, O. Choong, J. Touza, N. Selfjord, I. Weisheit, M. Francescato, P. Akcakaya, M. Porritt, M. Maresca, D. Taylor, G. Sienski, *Nature Communications*, 15(1), 9173, 2024.
6. Anti-plasmid immunity: a key to pathogen success? JPK Bravo, *Future Microbiology*, 2024.
7. Plasmid targeting and destruction by the DdmDE bacterial defence system. JPK Bravo, DA Ramos, R Fregoso Ocampo, C Ingram, DW Taylor, *Nature*, 630(8018), 961-967, 2024.
8. Lipid droplets as substrates for protein phase separation. A Kamatar, JPK Bravo, F Yuan, L Wang, EM Lafer, DW Taylor, *Biophysical Journal*, 123(11), 1494-1507, 2024.
9. Unraveling the mechanisms of PAMless DNA interrogation by SpRY-Cas9. GN Hibshman, JPK Bravo, et al., *Nature Communications*, 15(1), 3663, 2024.
10. RNA targeting and cleavage by the type III-Dv CRISPR effector complex. EA Schwartz, JPK Bravo, et al., *Nature Communications*, 15(1), 3324, 2024.
11. Type III-B CRISPR-Cas cascade of proteolytic cleavages. JA Steens, JPK Bravo, et al., *Science*, 383(6682), 512-519, 2024.
12. Structural snapshots of R-loop formation by a type IC CRISPR Cascade. RE O'Brien, JPK Bravo, et al., *Molecular Cell*, 83(5), 746-758.e5, 2023.
13. RNA targeting unleashes indiscriminate nuclease activity of CRISPR–Cas12a2. JPK Bravo, T Hallmark, et al., *Nature*, 613(7944), 582-587, 2023.
14. A single 2'-O-methylation of ribosomal RNA gates assembly of a functional ribosome. JN Yelland, JPK Bravo, et al., *Nature Structural & Molecular Biology*, 30(1), 91-98, 2023.
15. Constructing next-generation CRISPR–Cas tools from structural blueprints. JPK Bravo, GN Hibshman, DW Taylor, *Current Opinion in Biotechnology*, 78, 102839, 2022.
16. Structural basis for broad anti-phage immunity by DISARM. JPK Bravo, C Aparicio-Maldonado, et al., *Nature Communications*, 13(1), 2987, 2022.
17. Structural rearrangements allow nucleic acid discrimination by type ID Cascade. EA Schwartz, TM McBride, JPK Bravo, et al., *Nature Communications*, 13(1), 2829, 2022.

18. Structural basis for mismatch surveillance by CRISPR–Cas9. JPK Bravo, MS Liu, et al., *Nature*, 603(7900), 343-347, 2022.
19. Liquid–liquid phase separation underpins the formation of replication factories in rotaviruses. F Geiger, J Acker, G Papa, et al., *The EMBO Journal*, 40(21), e107711, 2021.
20. Structural basis of rotavirus RNA chaperone displacement and RNA. JPK Bravo, K Bartnik, et al., *Proceedings of the National Academy of Sciences*, 118(41), e2100198118, 2021.
21. SCOPE enables type III CRISPR-Cas diagnostics using flexible targeting and stringent CARF ribonuclease activation. JA Steens, Y Zhu, DW Taylor, JPK Bravo, et al., *Nature Communications*, 12(1), 5033, 2021.
22. Remdesivir is a delayed translocation inhibitor of SARS-CoV-2 replication. JPK Bravo, TL Dangerfield, et al., *Molecular Cell*, 81(7), 1548-1552.e4, 2021.
23. Structure of a type IV CRISPR-Cas ribonucleoprotein complex. Y Zhou, JPK Bravo, et al., *iScience*, 24(3), 2021.
24. Structural basis for assembly of non-canonical small subunits into type IC Cascade. RE O'Brien, IC Santos, et al., *Nature Communications*, 11(1), 5931, 2020.
25. Stability of local secondary structure determines selectivity of viral RNA chaperones. JPK Bravo, A Borodavka, et al., *Nucleic Acids Research*, 46(15), 7924-7937, 2020.

Patents

TYPE III-D CRISPR-CAS SYSTEM AND USES THEREOF. US20250361544A1
 COMPOSITIONS AND METHODS RELATED TO MODIFIED CAS12A2 MOLECULES. 63/349,225
 COMPOSITIONS AND METHODS FOR CAS9 MOLECULES WITH IMPROVED GENE EDITING PROPERTIES. 63/330,593
 METHODS AND COMPOSITIONS FOR IMPROVED CAS9 SPECIFICITY. 63/243,481

Invited and contributed presentations

October 2026	Spanish National Cancer Research Center (CNIO) Distinguished Seminar, Madrid, Spain
July 2026	50 th FEBS Congress, Maastricht, The Neatherlands
June 2026	Swiss CRISPR (SwissPR) Symposium, Zurich, Switzerland
May 2026	Institute Seminar, EPFL, Lausanne, Switzerland
May 2026	EMBO Workshop: The Immune Systems of Bacteria, New York, USA
December 2025	International Society for Plasmid Biology Seminar (online event)
November 2025	EMBO Workshop: CRISPR-Cas: From Biology to Therapeutic Applications, Sorrento, Italy
June 2024	Proteolytic Enzymes and Their Inhibitors Gordon Research Conference, Lucca, Italy
May 2023	University of Lausanne, Lausanne, Switzerland
February 2023	Monash University, Melbourne, Australia
February 2023	EMBO Workshop: The Immune Systems of Bacteria, Weizmann Institute of Science, Israel
February 2023	Institute of Science and Technology Austria, Vienna, Austria
September 2022	Genome Engineering Seminar Series (GESS) at Harvard Medical School (HMS) (online event)
September 2022	Toronto RNA Club, Toronto (online event)
March 2022	Department of Biochemistry, St Louis University, USA (online event)
Dec 2021	Early Career Research in Biological Physics Symposium, UK (online event)

May 2021	Department of Molecular Biosciences Annual Retreat, University of Texas at Austin, Texas, USA
Mar 2021	Molecular Biosciences DNA & RNA Club, University of Texas at Austin, Texas, USA
Dec 2019	RNA group at University of Cambridge, Cambridge, UK
July 2019	Nucleic Acids Forum, London, UK
June 2019	RNA Society Meeting, Krakow, Poland
Dec 2018	MakroKomplex symposium on Structure and dynamics of large macromolecular complexes, University of South Bohemia, Czechia
April 2018	Microbiology Society Conference, Birmingham, UK
April 2017	Microbiology Society Conference, Edinburgh, UK
Sep 2016	CCP4 Northern Protein Structure Workshop, Carlisle, UK
Aug 2014	COST Action CM1306 Kick-off Meeting in Budapest, Hungary