

Jack P. K. Bravo, Ph.D.

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Professional Appointments

Feb 2020 – Present Postdoctoral fellow with Dr David Taylor, University of Texas at Austin, Texas, USA
Nov 2019 – Dec 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. Advisors: Dr Roman Tuma and Dr Alexander Borodavka
2012 – 2015 University of Leeds, UK B.Sc. (Hons) in Biochemistry

Talks & Presentations

May 2023 **Invited Seminar** at University of Lausanne, Lausanne, Switzerland
February 2023 **Invited Seminar** at Monash University, Melbourne, Australia
February 2023 **Oral Presentation** at EMBO Workshop: The Immune System of Bacteria, Weizmann Institute of Science, Israel
February 2023 **Invited Seminar** at Institute of Science and Technology Austria, Vienna, Austria
September 2022 **Oral Presentation** at Genome Engineering Seminar Series (GESS) at Harvard Medical School (HMS) (online event)
September 2022 **Oral Presentation** at Toronto RNA Club, Toronto (online event)
June 2022 **Poster Presentation** at Three Dimensional Electron Microscopy Gordon Research Conference, Barcelona, Spain.
June 2022 **Oral Presentation** at CRISPR 2022 Meeting, Cambridge Massachusetts, USA.
March 2022 **Invited Seminar** at Department of Biochemistry, St Louis University, USA
Dec 2021 **Oral Presentation** Early Career Research in Biological Physics Symposium, UK (online event)
May 2021 **Oral Presentation** for Department of Molecular Biosciences Annual Retreat, University of Texas at Austin, Texas, USA
Mar 2021 **Oral Presentation** for departmental DNA & RNA Club, University of Texas at Austin, Texas, USA
Dec 2019 **Oral Presentation** for RNA group at University of Cambridge, Cambridge, UK
July 2019 **Oral Presentation** at Nucleic Acids Forum, London, UK
July 2019 **Poster Presentation** at Microscience Microscopy Congress, Manchester, UK
June 2019 **Oral Presentation** at RNA Society Meeting, Krakow, Poland

Dec 2018	Oral Presentation at MakroKomplex symposium on Structure and dynamics of large macromolecular complexes, University of South Bohemia, Czechia
May 2018	Poster Presentation at Virus Assembly Symposium, Madeira, Portugal
April 2018	Oral Presentation at Microbiology Society Conference, Birmingham, UK
Dec 2017	Poster Presentation at BBSRC White Rose DTP symposium, University of York, UK
July 2017	Poster Presentation at Nucleic Acids Forum, London, UK
June 2017	Poster Presentation at RNA Society Meeting, Prague, Czechia
April 2017	Oral Presentation at Microbiology Society Conference, Edinburgh, UK
Sep 2016	Oral Presentation at CCP4 Northern Protein Structure Workshop, Carlisle, UK
May 2016	Poster Presentation at RNA Society Meeting, Kyoto, Japan
Sep 2014	Poster Presentation at International Conference for Crystallisation of Biological Macromolecules (ICCBM), Hamburg, Germany
Aug 2014	Oral Presentation as part of a group of early-stage researchers at COST Action CM1306 Kick-off Meeting in Budapest, Hungary

Awards

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

2022 - present	University of Texas at Austin, Department of Molecular Biosciences Diversity, Equality and Inclusion committee member
2022 - present	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	Led sub-group discussion on CRISPR complexes within “Structure and Function of Molecular Machines” undergraduate course, UT Austin.

Publications

Research papers (* denotes equal contribution)

1. **Bravo, J. P. K.**, et al. (2023) RNA targeting unleashes indiscriminate nuclease activity of CRISPR–Cas12a2. *Nature*. 10.1038/s41586-022-05560-w
2. O’Brien, R. E., **Bravo, J. P. K.**, et al. (2023) Modes of inhibition used by phage anti-CRISPRs to evade type I-C Cascade. *Molecular Cell*. j.molcel.2023.01.024

3. Yelland, J. N. **Bravo, J. P. K.**, et al. (2023). A single 2'-O-methylation of ribosomal RNA gates assembly of a functional ribosome. *Nature Structural and Molecular Biology*. 10.1038/s41594-022-00891-8
4. **Bravo, J. P. K.**, et al. (2022). Structural basis for anti-phage immunity by DISARM. *Nature Comms*. 10.1038/s41467-022-30673-1
5. Schwartz, E. A.* , McBride, T. M.* , **Bravo, J. P. K.***, et al. (2022). Structural basis for PAM-dependent recognition of nucleic acids by type I-D Cascade. *Nature Comms*. 10.1038/s41467-022-30402-8.
6. **Bravo, J. P. K.**, et al. (2022). Structural basis of mismatch surveillance by CRISPR-Cas9. *Nature*. 10.1038/s41586-022-04470-1
7. **Bravo, J.P.K.**, et al. (2021). Structural basis of rotavirus RNA chaperone displacement and RNA annealing. *PNAS*. 10.1073/pnas.2100198118
8. Geiger, F., Papa, G., Arter, W.E., Acker, J., Saar, K.L., Qi, R., **Bravo, J.P.K.**, et al. (2021). Rotavirus Replication Factories Are Complex Ribonucleoprotein Condensates. *EMBO J*. 10.15252/embj.2021107711
9. Steens, J.A., Zhu, Y., Taylor, D.W., **Bravo, J.P.K.**, et al. (2021) SCOPE: Flexible targeting and stringent CARF activation enables type III CRISPR-Cas diagnostics. *Nature Comms*. 10.1038/s41467-021-25337-5
10. Zhou, Y.* , **Bravo, J.P.K.***, Taylor, H.N.* , et al. (2021). Structure of a type IV CRISPR-Cas effector complex. *iScience*. 10.1016/j.isci.2021.102201
11. **Bravo, J.P.K.**, et al. (2021). Remdesivir is a delayed translocation inhibitor of SARS CoV-2 replication. *Molecular Cell*. 10.1016/j.molcel.2021.01.035
12. O'Brien, R.E., Santos, I. C., Wrapp, D., **Bravo, J. P. K.**, et al. (2020). Structural basis for assembly of non-canonical small subunits into type I-C Cascade. *Nature Comms*. 10.1038/s41467-020-19785-8.
13. **Bravo, J. P. K.**, et al. (2018) Stability of local secondary structure determines selectivity of viral RNA chaperones. *Nucleic Acids Res.*, 10.1101/293191.

Preprints

14. Steens, J.* , **Bravo, J. P. K. ***, et al. (2023) Type III-B CRISPR-Cas signaling-based cascade of proteolytic cleavages. *bioRxiv* 10.1101/2023.06.23.546230. Co-first author.
15. Hibshman, G. N.* **Bravo, J. P. K. *†**, et al. (2023) Unraveling the mechanisms of PAMless DNA interrogation by SpRY Cas9. *bioRxiv* 10.1101/2023.06.22.546082 . Co-first and co-corresponding author.
16. Kamatar, A., **Bravo, J. P. K.**, et al. (2023) Lipid droplets as substrates for protein phase separation. *bioRxiv*. 10.1101/2023.06.28.546804
17. Schwartz, E. A., **Bravo, J. P. K.**, et al. (2022) Assembly of multi-subunit fusion proteins into the RNA-targeting type III-D CRISPR-Cas effector complex. *bioRxiv*. 10.1101/2022.06.13.496011

Reviews

18. **Bravo, J. P. K.†**, et al. (2022). Constructing the next-generation of CRISPR-Cas tools from structural blueprints. *Current Opinion in Biotechnology*. 10.1016/j.copbio.2022.102839. †Corresponding author.

Patents

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