

Jack P. K. Bravo, Ph.D.

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Research experience

Feb 2020 – Present	Postdoctoral research scholar 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
Oct 2015 – Oct 2019	BBSRC-funded 4-year PhD with Dr Roman Tuma and Dr Alex Borodavka, University of Leeds, UK
Jul – Oct 2018	Research internship with Dr. Chen Davidovich, Monash University, Melbourne, Australia
Sep – Dec 2014	Undergraduate Honours Project with Dr. Roman Tuma, University of Leeds, UK
July - Sep 2014	Summer Research Project with Prof. Arwen Pearson, University of Hamburg, Germany

Education

2015 – 2019	University of Leeds, UK PhD in Biochemistry and Structural Biophysics
2012 – 2015	University of Leeds, UK BSc (Hons) Biochemistry (2:1)

Talks & Presentations

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.
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

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
2021	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

1. **Bravo, J. P. K.**, et al. (2022) RNA targeting unleashes indiscriminate nuclease activity of CRISPR–Cas12a2. *Nature*. 10.1038/s41586-022-05560-w
2. Yelland, J. N. **Bravo, J. P. K.**, et al. (2022). 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

3. **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.
4. 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
5. O'Brien, R. E., **Bravo, J. P. K.**, et al. (2022) Modes of inhibition used by phage anti-CRISPRs to evade type I-C Cascade. *bioRxiv*. 10.1101/2022.06.15.496202. *Revised manuscript in preparation at Molecular Cell*.
6. **Bravo, J. P. K.**, et al. (2022). Structural basis for anti-phage immunity by DISARM. *bioRxiv. Nature Comms*. 10.1038/s41467-022-30673-1
7. 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. *Co-first author.
8. **Bravo, J. P. K.**, et al. (2022). Structural mechanisms of mismatch surveillance by CRISPR-Cas9. *Nature*. 10.1038/s41586-022-04470-1
9. **Bravo, J.P.K.**, et al. (2021). Structural basis of rotavirus RNA chaperone displacement and RNA annealing. *PNAS*. 10.1073/pnas.2100198118
10. 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
11. 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
12. Zhou, Y.*, **Bravo, J.P.K.***, Taylor, H.N.*, et al. (2021). Structure of a type IV CRISPR-Cas effector complex. *iScience*. *Co-first author. 10.1016/j.isci.2021.102201
13. **Bravo, J.P.K.**, et al. (2021). Remdesivir is a delayed translocation inhibitor of SARS CoV-2 replication in vitro. *Molecular Cell*. 10.1016/j.molcel.2021.01.035
14. 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.
15. **Bravo, J. P. K.**, et al. (2018) Stability of local secondary structure determines selectivity of viral RNA chaperones. *Nucleic Acids Res.*, 10.1101/293191.

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