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## Part A. PERSONAL INFORMATION

First Name	Connell		
Family Name	Robert Sean		
URL Web	<a href="https://www.biocru">https://www.biocru</a>		
Email Address			
Open Researcher and Contributor ID (ORCID)			

### A.1. Current position

Job Title	Investigador/ Ikerbasque Research Associate		
Starting date	2021		
Institution	BioCruces Bizkaia Health Research Institute		
Department / Centre	Structural Biology of Cellular Machines/Structural Biology Unit		
Country	Spain	Phone Number	
Keywords	Structural biology, cryoEM, ribosome, antibiotics		

### A.2. Previous positions (Research Career breaks included)

Period	Job Title / Name of Employer / Country
2013 - 2021	Ikerbasque Research Associate / CIC bioGUNE, Centro de Investigación Cooperativa en Biociencias
2007 - 2012	Postdoctoral Investigator/ Goethe-Universität, Frankfurt, Germany
2003 - 2006	Postdoctoral Investigator / Universitätsklinikum Charite, Berlin, Germany
1997 - 2002	Predoctoral Student/ University of Alberta, Edmonton, Canada

### A.3. Education

Degree/Master/PhD	University / Country	Year
Ph.D. in Medical Microbiology	University of Alberta	2003
B.Sc. in Biochemistry	University of Alberta	1997

## Part B. CV SUMMARY

Sean Connell is an Ikerbasque Research Associate (promoted from fellow and recently passed 1st Associate evaluation) at Biocruces since June 2021. Sean Connell (h-index 24; i10-index 28; citations 3384; Google scholar) is an experienced researcher in the field of cryo-EM and ribosomes publishing high-impact papers in cryoEM since 2001 (EMBO, Mol Cell, Nature, Nat Struct Mol Biol, NAR, Science Advances). He is active in the cryo-EM community serving as a user representative at Diamond Light Source (DLS, UK) since 2018 and paneling user discussion in the CCPEM meetings. He has also organized several local cryoEM workshops (e.g. Applications of Electron Microscopy: Knowledge and facilities in the Basque Country) to promote uptake of the technique in the Basque Country. As a PI, he has supervised 3

experienced scientists, 3 PhD students, and numerous masters/undergraduate students. He is has taught in several Master's level programs including, for example, the "PIE curso de verano" and the Santander Biotech and Biomedicine program.

Sean graduated from the University of Alberta (Canada) in 1997 with a B.Sc. in biochemistry. With funding from an Alberta Heritage Foundation for Medical Research Studentship, he earned his PhD in Medical Microbiology in 2003 from the University of Alberta (Canada) and was awarded the Cangene Gold Award from the Canadian Society for Microbiologists for his thesis on the tetracycline resistance protein Tet(O). From 2003-2006, and with the support of an Alexander von Humboldt Research Fellowship, he completed his first post-doc at the Universitat Charite (Berlin, Germany) where, under the supervision of Prof. Spahn, he began using cryo-electron microscopy to characterize complexes of the translational machinery. From 2007-2012 he worked as an independent researcher at the Goethe- Universitat (Frankfurt, Germany) and studied macromolecular machines like the ribosome and fatty acid synthetase using cryo-electron microscopy.

## Part C. RELEVANT ACCOMPLISHMENTS

### C.1. Most important publications in national or international peer-reviewed journals, books and conferences (10 YEARS; 16 publication; 6 with IF > 10 IF; 9 corresponding author)

- 1 Scientific paper. Stagnoli S., Peccati F., **Connell S.R.**, Martinez-CastilloA, Charro D, Millet O., Bruzzone C., Palazon A., Ardá A., Jiménez-Barbero J., Ereño-Orbea J., Abrescia N.G.A., Jiménez-Osés G. 2022. Assessing the Mobility of Severe Acute Respiratory Syndrome Coronavirus-2 Spike Protein Glycans by Structural and Computational Methods. *Frontiers in Microbiology*. DOI. 10.3389/fmicb.2022.870938
- 2 Scientific paper. Schedlbauer A., Kaminishi, T., López-Alonso J.P., Iturrioz I., Ochoa-Lizarralde B., Gil-Carton D., Fucini P., **Connell S.R.** 2021. A conserved rRNA switch is central to decoding site maturation on the small ribosomal subunit. *Science advances*. 7. ISSN 2375-2548. (IF 13.1)
- 3 Scientific paper. Schedlbauer A., Kaminishi T., Fabbretti A., Milón P., Han X., Ochoa-Lizarralde B., Capuni R., Gualerzi C.O., **Connell S.R.**, Fucini P. 2021. Orthoformimycin inhibits translation elongation by displacing the A-site tRNA and preventing peptide bond formation bioRxiv.
- 4 Scientific paper. Mossanen A., Parisi D., Brown-Marke N., Bharudin I, **Connell S.R.**, Fucini P., Mayans O., Mossford S., Morozov I., Caddick MX. .2020. Histone mRNA is subject to 3' uridylation and re-adenylation in *Aspergillus nidulans* *Molecular Microbiology*. 115-2, pp.238-254 (IF 3.27)
- 5 Scientific paper. Schedlbauer A., Çapuni R., Iturrioz I., Ochoa-Lizarralde B., de Astigarraga E., Fucini **Connell S.R.** 2020. Backbone and sidechain NMR assignments for the ribosome maturation factor RbfA from *Escherichia coli*. *Biomolecular NMR assignments*. 14, pp.317-321. ISSN 1874-270X. (IF=0.64; Technical open Access publication)
- 6 Scientific paper. Schedlbauer A., Çapuni R., Iturrioz I., Ochoa-Lizarralde B., de Astigarraga E., Fucini **Connell S.R.**. 2020. Backbone and sidechain NMR assignments for the ribosome maturation factor RimP from *Escherichia coli*. *Biomolecular NMR assignments*. 14, pp.189-193. ISSN 1874-270X. (IF=0.64; Technical open Access publication)
- 7 Scientific paper. Kaminishi T., Schedlbauer A., Ochoa-Lizarralde B., de Astigarraga E., Çapuni R., Yang F., Benn V., Liu Q., Tan X., Zhang M., **Connell S.R.**, Fucini P. 2018. The third-generation tetracycline, KBP-7072, exploits and reveals a new potential of the primary tetracycline binding pocket bioRxiv.

- 8 Scientific paper. López-Alonso J.P., Kaminishi T., Kikuchi T., Hirata Y., Iturrioz I., Dhimole N., Hase Y., Goto S., Kurita D., Muto A., Zhou S., Naoe C., Takemoto C., Yokoyama S., Mills D.J., Himeno H., Fucini P., and **S.R. Connell** ; 2017. RsgA couples the maturation state of the 30S ribosomal decoding center to activation of its GTPase pocket *Nucleic Acids Res.* 45(11):6945-6959. doi: 10.1093/nar/gkx324 (IF 16.97)
- 9 Scientific paper. JP López-Alonso J.P., Fabbretti A., Kaminishi T., Iturrioz I., Brandi L., Gil-Carton D., Gualerzi C.O., Fucini P., **Connell S.R.** 2017. Structure of a 30S pre-initiation complex stalled by GE81112 reveals structural parallels in bacterial and eukaryotic protein synthesis initiation pathways. *Nucleic Acids Res.* 45-4, pp.2179-2187. (IF 16.97)
- 10 Scientific paper. Heidrich C.G., Mitova S., Schedlbauer A., **Connell S.R.**, Fucini P., Steenbergen J.N., Berens C. 2016. The Novel Aminomethylcycline Omadacycline Has High Specificity for the Primary Tetracycline-Binding Site on the Bacterial Ribosome *Antibiotics.* 5-4, pp.E32. (IF 4.64)
- 11 Scientific paper Fabbretti A., Schedlbauer A., Brandi L., Kaminishi T., Giuliodori A.M., Garofalo R., Ochoa-Lizarralde B., Takemoto C., Yokoyama S., **Connell S.R.**, Gualerzi C.O., Fucini P. 2016 *Proc Natl Acad Sci USA.* 113, pp.E2286-E2295. (IF 11.2)
- 12 Scientific paper. Kaminishi T., Schedlbauer A., Fabbretti A., Brandi L., Ochoa-Lizarralde B., He C., Milón P., **Connell S.R.**, Gualerzi C.O., Fucini P. 2015. Crystallographic characterization of the ribosomal binding site and molecular mechanism of action of Hygromycin A *Nucleic Acids Research.* 43, pp.10015-10025. (IF 16.97)
- 13 Scientific paper. Andreas Schedlbauer; Tatsuya Kaminishi; Borja Ochoa-Lizarralde; Neha Dhimole; Shu Zhou; Jorge López Alonso; **Sean Connell**; Paola Fucini. 2015. Structural characterization of an alternative mode of tigecycline binding to the bacterial ribosome. *Antimicrobial Agents And Chemotherapy.* 59, pp.2849-2854. (IF 5.19)
- 14 Scientific paper. Ciccarelli L; **Connell SR**; Enderle M; Mills DJ; Vonck J; Gringer M. Structure and conformational variability of the mycobacterium tuberculosis fatty acid synthase multienzyme complex *Structure* 21: 1251–1257. (IF 4.86)
- 15 Scientific paper. Ratje A.H., Loerke J., Mikolajka A., Brünner M., Hildebrand P.W., Starosta A.L., Dönhöfer A., **Connell S.R.**, Fucini P., Mielke T., Whitford P.C., Onuchic J.N., Yu Y., Sanbonmatsu K.Y., Hartmann R.K., Penczek P.A., Wilson D.N., and Spahn C.M.T. 2013. Head swivel on the ribosome facilitates translocation by means of intra-subunit tRNA hybrid sites. *Nature.* 56, pp.85-93. (IF 49.96)
- 16 Scientific paper. Gelis I., Vitzthum V., Dhimole N., Caporini M.A., Schedlbauer A., Carnevale D., **Connell S.R.**, Fucini P., and Bodenhausen G. 2013. Solid-state NMR enhanced by dynamic nuclear polarization as a novel tool for ribosome structural biology. *J Biomol NMR.* 21, pp.1251-1257. (IF 2.32)

## C.2. Conferences and meetings

- 1 A conserved rRNA switch is central to decoding site maturation on the small ribosomal subunit. *Microscopy at the frontiers of science.* 2021.
- 2 Visualising Ribosomal States Associated with Late Stage Assembly Factors. 25 years of cryoelectron microscopy in Spain: a tribute to José L. Carrascosa. 2019. Spain.
- 3 Understanding Bacterial Ribosome Assembly using cryo-EM. 2019 CCP-EM spring symposium. 2019. United Kingdom.
- 4 Ribosome Biogenesis and the Role Played by RbfA. Humboldt Colloquium “Research without Borders – Alexander von Humboldt’s Legacy Today”. 2019.
- 5 Understanding Bacterial Ribosome Assembly using cryo-EM. *Cryo-EM in Industry & Academia.* 2019.
- 6 RbfA drives ribosome assembly by controlling the maturation state of the 30S decoding center. *MikrobioGUNE, 1st Basque Microbiology Meeting.* 2018. Spain.

- 7 Using single particle Cryo-EM to understand antibiotic action and ribosomal activities. Applications of Electron Microscopy: Knowledge and facilities in the Basque Country. 2018. Spain.
- 8 Ribosome Biogenesis and the Role Played by RbfA. Conference on methods and applications in the frontier between MX and CryoEM. 2017. Spain.
- 9 Sean Connell. Studying ribosomal complexes associated with ribosome biogenesis and antibiotic action using cryo-EM. iNext AHM 2016. 2016. Spain.

### **C.3. Research projects and contracts**

- 1 Project. Discovery and development of novel chemical scaffolds and new molecular targets in action at the translational level: providing new bases to combat antimicrobial resistance. ministerio de economia y competitividad. Paola Fucini/**Sean Connell**. (CIC bioGUNE, Centro de Investigación Cooperativa en Biociencias). 01/01/2017-30/09/2021. 141.000 €.
- 2 Project. A multidisciplinary study on the dynamic interplay between protein synthesis, folding & sorting regulating gene expression at the translational level. ministerio de economia y competitividad. Paola Fucini/**Sean Connell**. (CIC bioGUNE, Centro de Investigación Cooperativa en Biociencias). 01/01/2015-31/12/2017. 147.000 €.
- 3 Project. Structural investigations into hybrid FAS/PKS systems for the coordinated production of bioactive secondary metabolites. Volkswagen Stiftung. **Sean Connell** (CIC bioGUNE, Centro de Investigación Cooperativa en Biociencias). 01/03/2014-29/02/2016. 50.000 €.
- 4 Project. Bizkaia:TALENT. Bizkaia:TALENT. **Sean Connell** (CIC bioGUNE, Centro de Investigación Cooperativa en Biociencias). 01/01/2013-31/12/2015. 63.000 €.