

DR. CLAUDIA BONFIO (@ClaudiaBonfio)

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RESEARCH EXPERIENCE

from **Junior Group Leader**, Laboratory of Supramolecular Biochemistry
Oct '21 Supramolecular Science and Engineering Institute (ISIS), University of Strasbourg, FR

Jan '21 - **Royal Commission for the Exhibition of 1851 Research Fellow** – Mentor: Prof. Chris Hunter
Sep '21 Department of Chemistry, University of Cambridge, UK

Apr '19 - **Marie Skłodowska Curie European Fellow** – Advisor: Prof. John Sutherland
Mar '21 MRC Laboratory of Molecular Biology, Cambridge, UK

Oct '19 - **Visiting Research Fellow** – Host: Nobel Laureate Prof. Jack Szostak
Nov '19 Harvard University, Cambridge, US

Nov '17 - **Post-Doctoral Training Fellow** – Advisor: Prof. John Sutherland
Mar '19 MRC Laboratory of Molecular Biology, Cambridge, UK

Jan '14 - **PhD Student** – Supervisor: Prof. Sheref Mansy
Dec '17 Centre for Integrative Biology, University of Trento, IT

Jun '16 - **Visiting PhD Student** – Hosts: Nobel Laureate Prof. Jack Szostak and Prof. Dimitar Sasselov
Sep '16 Harvard University, Cambridge, US (*funding by Simons Foundation*)

Sep '15 - **Visiting PhD Student** – Host: Prof. John Sutherland
Dec '15 MRC Laboratory of Molecular Biology, Cambridge, UK (*funding by Cost Action CM1304*)

EDUCATION

Jan '14 - **PhD in Biomolecular Sciences**, *cum laude* (selected as “best PhD student” in my last year)
Dec '17 Centre for Integrative Biology, University of Trento, IT

Oct '11 - **MSc in Chemistry**, *cum laude* (First class honours)
Jul '13 University of Padova, IT – Thesis topic: Bioinorganic Chemistry

Oct '08 - **BSc in Chemistry**, *cum laude* (First class honours)
Jul '11 University of Siena, IT – Thesis topic: Protein Crystallography

PUBLICATION LIST (* corresponding author, [§] co-first author)

MANUSCRIPTS SUBMITTED FOR PUBLICATION

16- Aleksandrova M., **Bonfio C.*** – Bioenergetics of early life: coupling reaction networks and compartments. **EMBO Reports**, *invited article (under review)*.

PEER-REVIEWED PUBLICATIONS

- 15- **Bonfio C.*** – A possible origin for encoded protein synthesis. **Nature** (2022), News&Views, *asap*.
- 14- Rubio-Sanchez R., Wang A., O'Flaherty D., Coscia F., Petris G., Di Michele L., Cicuta P., **Bonfio C.*** – Thermally-driven membrane phase transitions enable content reshuffling in primitive cells. **JACS** (2021), 143, 16589-16598.
- 13- **Bonfio C.*** - The curious case of peptide-coordinated iron-sulfur clusters: prebiotic and biomimetic insights. **Dalton Trans.** (2021), 50, 801-807.
- 12- Liu Z., Wu L., Xu J., **Bonfio C.**, Russell D. A., Sutherland J. D. - Harnessing chemical energy for the activation and joining of prebiotic building blocks. **Nat. Chem.** (2020), 12, 1023-1028.
- 11- **Bonfio C.***[§], Russell D. A.[§], Green N. J., Mariani A., Sutherland J. D. - Activation chemistry drives the emergence of functionalised protocells. **Chem. Sci.** (2020), 11, 10688-10697.
- 10- Pellegrini L., **Bonfio C.**, Chadwick J., Begum F., Skehel M., Lancaster M. Choroid plexus organoids predict CNS drug permeability and reveal human CSF proteins produced by specialised cell types. **Science** (2020), 369, eaaz5626.
- Independent collaboration: designed and developed a NMR-based method for drug permeability studies in cerebral organoids. Featured in: **Science; Nat. Methods; Cell Stem Cell**.
- 9- **Bonfio C.**[§], Caumes C.[§], Duffy C. C.[§], Patel B. H.[§], Percivalle C.[§], Tsanakopoulou M.[§], Sutherland J. D. - Length-selective synthesis of diacylglycerol-phosphates through energy-dissipative cycling. **JACS** (2019), 141, 3934-3939.

- 8- Liu X., Russell D. A., **Bonfio C.**, Summons R. E. - Glycerol configurations of environmental GDGTs investigated using a selective sn2 ether cleavage protocol. **Org. Geochem.** (2019), 128, 57-62.
- Independent collaboration: designed a characterisation method for glycerol configuration in lipids.
- 7- Mariani A., **Bonfio C.**, Johnson C., Sutherland J. D. - pH-driven RNA strand separation under prebiotically plausible conditions. **Biochem.** (2018), 57, 6382-6386.
- 6- **Bonfio C.**, Godino E., Corsini M., Fabrizi De Biani F., Guella G., Mansy S. S. - Prebiotic iron-sulfur peptide catalysts generate a pH gradient across model membranes of late protocells. **Nat. Catal.** (2018), 1, 616-623.
- Featured in: **Nat. Catal.**
- 5- Sen S., **Bonfio C.**, Mansy S. S., Cowan J. A. - Investigation of glutathione-derived electrostatic and hydrogen bonding interactions and their role in defining Grx5 [2Fe-2S] cluster stability, optical spectra and transfer chemistry. **J. Biol. Inorg. Chem.** (2018), 23 (2), 241-252.
- Collaboration: designed and synthesised a library of peptides for FeS cluster coordination.
- 4- **Bonfio C.**, Mansy S. S. - The chemical roots of iron-sulfur dependent metabolism. **Biochem.** (2017), 56, 5225-5226.
- 3- **Bonfio C.**, Valer L., Scintilla S., Shah S., Evans D. J., Jin L., Szostak J. W., Sasselov D. D., Sutherland J. D., Mansy S. S. - UV light-driven prebiotic synthesis of iron-sulfur clusters. **Nat. Chem.** (2017), 9, 1229-1234.
- Featured in: **Science; C&En.**
- 2- Scintilla S., **Bonfio C.**, Belmonte L., Forlin M., Rossetto D., Li J., Cowan J. A., Galliani A., Arnesano F., Assfalg M., Mansy S. S. - Duplications of an Iron-Sulfur Tripeptide Leads to the Formation of a Protoferredoxin. **Chem. Comm.** (2016), 52, 13456-13459.
- 1- Belmonte L., Rossetto D., Forlin M., Scintilla S., **Bonfio C.**, Mansy S. S. - Cysteine containing dipeptides show a metal specificity that matches the composition of seawater. **Phys. Chem. Chem. Phys.** (2016), 18, 20104-8.

SELECTED RESEARCH GRANTS AND FELLOWSHIPS (€960.000 ca. as Junior Group Leader @ ISIS)

- 2022 **IdEx Attractivité**, Excellence Grant Scheme, University of Strasbourg (2 years, €70.000)
HFSP Early Career Research Grant, Human Frontier Science Program (3 years, \$380.000)
 with Prof. Derek O'Flaherty (CA) and Prof. Evan Spruijt (NL) (tot. amount awarded \$1.14M)
LabEx Complex Systems Chemistry Grant, French Govt. Program of Excellence (2 years, €125.400)
USIAS Fellowship, University of Strasbourg Institute for Advanced Studies (2 years, €140.000)
- 2021 **LabEx Complex Systems Chemistry Installation Grant**, French Govt. Program of Excellence and University of Strasbourg (2 years, €260.000)
- 2020 **Royal Commission for the Exhibition of 1851 Research Fellowship** (3 years, £140.000)
- 2019 **Marie Skłodowska-Curie European Fellowship**, Horizon 2020, EU (2 years, £225.000)

SELECTED AWARDS (in addition to €11.000 ca. in travel grants and €20.000 in non-stipendiary fellowships)

- 2022 **European Young Researchers' Award – top 3**, EuroScience
- for young researchers who incorporated a European dimension into their research.
- 2021 **ItalFarmaco Award**, Italian Chemical Society, Biochemistry Division (€2.500)
- for the most promising Italian biochemist under-35.
- 2020 **Dream Chemistry Award**, Polish Academy of Sciences & Czech Academy of Sciences (€11.000)
- for a young chemist with an idea of a scientific project that she/he dreams to solve.
- 2019 **"Italy Made Me" Award**, Italian Embassy in London (£1.000)
Dalton Emerging Researcher Award, Royal Society of Chemistry (£1.000)
- 2018 **Primo Levi Award**, Italian Chemical Society (€1.000)
- for the best publication in Chemistry by a young Italian chemist.
- 100 Under 30**, Forbes Italy - Top 5 in the Science category
- 2017 **Reaxys Young Researcher Award**, Elsevier & Italian Chemical Society (€1.000)

SEMINARS AND TALKS (47 talks, including 34 invited talks)

Invited lectures at international conferences (selected):

- Jun '22 GRC Systems Chemistry, Newry, ME, US
- Dec '21 Dream Chemistry Award Meeting, IOCB, Prague, CZ
- Feb '20 Dalton Emerging Researcher Award Lecture, University of Bristol, UK

Invited lectures in seminar series (selected):

- May '22 Department of Chemistry, ETH, Zurich, CH
Nov '20 UK Centre for Astrobiology, Edinburgh, UK (online)
Oct '19 Soft Micro Systems, CNRS, Univ. Bordeaux, FR
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SUPERVISION AND TEACHING EXPERIENCES

- since '21 **Research Supervisor** of two PhD, two Master and one Erasmus+ students, ISIS, Strasbourg, FR
Oct '21 - **Guest lecturer** in Complex Systems Chemistry (Graduate School in Complex Systems Chemistry, now 15 students) University of Strasbourg, FR
Sep '18 - **Tutor** in Biological Chemistry (2nd year, 12 students), King's College and Corpus Christi College
Sep '21 University of Cambridge, UK
Feb '15 - **Research Supervisor, Trainer and Mentor** of one Junior PhD, two Master and one Bachelor students, Sep '21 University of Trento, IT and one PhD student and two PDRAs, University of Cambridge, UK
Oct '16 - **Co-lecturer and Lab Demonstrator** in Biochemistry (BSc in Biotechnology, 2nd year, 30 students), Sep '17 University of Trento, IT
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ACADEMIC SERVICE AND INSTITUTIONAL RESPONSIBILITIES

- since '14 **Reviewer** for Nature, Nat. Chem., Chem. Comm., Comms. Chem., RSC Adv., ChemBioChem.
Jun '22 **"2022 GRS in Biointerface Science" Co-Chair** – Barga, IT
Oct '21 **PhD Committee Member** for 1 PhD student – Radboud University Nijmegen, NL
Aug '21 **IUPAC National Representative** (UK) – Division III (Organic and Biomolecular Chemistry) to take part in events and projects organised by IUPAC and develop international collaborations.
Apr '21 - **Early-Career Advisory Board** - ChemBioChem, Wiley
now to broaden horizons in terms of journal coverage and support early-career biochemists.
May '21 **"European Chemical Biology Symposium 2021" Scientific Committee Member**
"Origin of Life and Synthetic Biology" Session Chair
Mar '21 **Guest Editor** for Frontiers in Molecular Biosciences
Special Issue on "Reconstituting cell communication from the bottom-up"
Sep '20 - **Director of Studies** - Chemistry (3rd year), Corpus Christi College, UK
now to be responsible for the academic coursework of the 3rd year Chemistry students.
Jan '20 - **Advisory Board Member & Team Leader** of the European Young Chemist Network (Networks team)
now to foster collaboration and lead projects with EU partners (e.g., COST Actions) and policymakers.
Jan '19 - **Advisory Board Member** of the Italian Chemical Society - Young Group
now to support the career of young chemists in Italy and abroad.
Dec '18 - **Undergraduate Interview Committee Member** for Chemistry and Chemical Engineering,
now Corpus Christi College, UK
Oct '18 **"Roadmap for Universal Life" Lorentz Center Workshop Scientific Committee Member**, Leiden, NL
funded by a personal RSC Scientific Meeting Grant (£1000)
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OUTREACH AND EDI (EQUALITY, DIVERSITY AND INCLUSION) EVENTS

- Nov '22 **"Mentoring Young Chemists – with Prof. Jen Heemstra" Coordinator and Chair**, EYCN Webinar series.
Jan '22 **"Why do we need Diversity in Chemistry?" Session Coordinator**, EYChem '22.
Sep '20 **"The emotional roller coaster of building a Career in Science" Session Organiser and Chair**, ESOF '20
funded by RSC Inclusion and Diversity grant (£1000) and Science Careers – AAAS grant (€500).
Jul '19 **"A Recipe for Primordial Life" Exhibition Designer and Coordinator**, Royal Society Summer Science
Exhibition, London, UK
Feb '19 - **"Global Women Breakfast" Event Organiser and Speaker** (in Italy and the UK)
now designed to support and assist women in science to expand their network of contacts.
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AFFILIATIONS TO SCIENTIFIC SOCIETIES

- Jan '20 Member of the **Biochemical Society**
Jan '15 Member of the **Royal Society of Chemistry** - Chemistry-Biology Interface Division
Jan '13 Member of the **Italian Chemical Society** - Biochemistry Division