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RESEARCH INTERESTS

Mechanistic and Structural Enzymology

- Enzyme/protein dynamics and structure
- Enzyme mechanisms
- Protein/protein and protein/RNA Interaction
- Ammonia-channeling enzymes
- RNA modification/thiolation
- X-ray crystallography
- Iron-sulfur cluster

SUMMARY

My goal is to understand enzymatic catalysis at the molecular level. I use various techniques such as X-ray crystallography, molecular modeling, site-directed mutagenesis, RNA and protein mass spectrometry, RNA transcription, to study the catalytic mechanism and structure of enzymes. My main subjects of interest are catalytic antibodies, an ammonia-channeling enzyme called glucosamine-6P synthase, and RNA-modification enzymes including [4Fe-4S]-dependent thiolation enzymes.

PUBLICATIONS

GolinelliPimpaneau B OR Golinelli-Pimpaneau B in web of science

RECENT PUBLICATIONS

* : corresponding author

2026

- Evolution, structure and function of L-cysteine desulfidase, an enzyme involved in sulfur metabolism in the methanogenic archeon *Methanococcus maripaludis*. S. Gervason, P. Zecchin, E. B. Shelton, N. He, L. Pecqueur, P. S. Garcia, T. Akinyemi, N. Touati, O. Bimai, C. Velours, J.-L. Ravanat, B. Faivre, W.B. Whitman, M. Fontecave, **B. Golinelli-Pimpaneau***. *Commun. Biol.*, 2026, doi: 10.1038/s42003-025-09053-0
- The thiolation of U34 at carbon 2 in tRNA by Escherichia coli MnmA precedes modification at carbon 5 and is dependent on a [4Fe-4S] cluster. S. Gervason, S. Sen, J. Zhou, M. Libiad, K. Podskoczyj, G. Leszczynska, S. Caillat, J.-L. Ravanat, M. Fontecave, B. **Golinelli-Pimpaneau***. *J Inorg Biochem.* 2026, 274, 113064.
doi: 10.1016/j.jinorgbio.2025.113064; Corrigendum doi:10.1016/j.jinorgbio.2025.113096

2025

- Deciphering the influence of the [4Fe-4S] cluster of tRNA thiolation enzymes on tRNA binding. S. Gervason, S. Sen, J.-L. Ravanat, S. Caillat, D. Hamdane*, B. Golinelli-Pimpaneau*. **RNA**. 2025, 31, 735-742. doi: 10.1261/rna.080292.124
- Dissecting the mechanism of biosynthesis of sulfurated biomolecules: the case of tRNA sulfuration, S. Gervason, M. Fontecave, B. Golinelli-Pimpaneau*, **Acc Chem Res**. 2025, 58, 3146-3153. doi: 10.1021/acs.accounts.5c00485

2024

- "[4Fe-4S]-dependent enzymes in non-redox tRNA thiolation". S. Gervason, S. Sen, M. Fontecave, B. Golinelli-Pimpaneau*. **Biochim Biophys Acta Mol Cell Res**. 2024, 1871, 119807
- "Structure-based insights into the mechanism of [4Fe-4S]-dependent sulfur insertase LarE". P. Zecchin, L. Pecqueur, J. Oltmanns, C. Velours, V. Schünemann, M. Fontecave, B. Golinelli-Pimpaneau. **Protein Sci**. 2024, 33, e4874

2023

- The thiolation of uridine 34 in tRNA, which controls protein translation, depends on a [4Fe-4S] cluster in the archeum *Methanococcus maripaludis*. O. Bimai, J. Zhou, M. Lénon, P. Legrand, J.-L. Ravanat, N. Touati, F. Barras, M. Fontecave, B. Golinelli-Pimpaneau*. **Sci Rep**. 2023, 13, 5351.
- TudS desulfidases recycle 4-thiouridine-5'-monophosphate at a catalytic [4Fe-4S] cluster. J. Fuchs, R. Jamontas, M. H. Hock, J. Oltmanns, B. Golinelli-Pimpaneau, V. Schünemann, A. J. Pierik, R. Meškys, A. Aučynaitė, M. Boll*. **Comm. Biol**. 2023, 6, 1092

2022

- Structural Insights into the Dimeric Form of *Bacillus subtilis* RNase Y Using NMR and AlphaFold. N. Morellet*, P. Hardouin, N. Assrir, C. van Heijenoort, B. Golinelli-Pimpaneau*, **Biomolecules** 2022, 12, 1798.
- A subclass of archaeal U8-tRNA sulfurases requires a [4Fe-4S] cluster for catalysis. N. He, J. Zhou, O. Bimai, J. Oltmanns, J. L. Ravanat, C. Velours, V. Schünemann, M. Fontecave, B. Golinelli-Pimpaneau*, **Nucleic Acids Res.**, 2022, 50, 12969-12978.
- TtuA and TudS, two [4Fe-4S]-dependent enzymes catalyzing non-redox sulfuration or desulfuration reactions. J. Zhou, O. Bimai, S. Arragain, L. Pecqueur, B. Golinelli-Pimpaneau*. In **Encyclopedia of Inorganic and Bioinorganic Chemistry**, R.A. Scott (Ed.). 2022 <https://doi.org/10.1002/9781119951438.eibc2811>
- Prediction of the Iron-Sulfur Binding Sites in Proteins Using the Highly Accurate Three-Dimensional Models Calculated by AlphaFold and RoseTTAFold. B. Golinelli-Pimpaneau*. **Inorganics** 2022, 10, 2
- Determination of the absolute molar mass of [Fe-S]-containing proteins using Size Exclusion Chromatography-Multi Angle Light Scattering (SEC-MALS). C. Velours, J. Zhou, P. Zecchin, N. He, M. Salameh, M.-P. Golinelli-Cohen, B. Golinelli-Pimpaneau*. **Biomolecules**, 2022, 12, 270

2021

- Structural evidence for a [4Fe-5S] intermediate in the non-redox desulfuration of thiouracil. J. Zhou, L. Pecqueur, A. Aučynaitė, J. Fuchs, R. Rasa, J. Vaitekūnas, R. Meškys, M. Boll, M. Fontecave, J. Urbonavičius*, B. Golinelli-Pimpaneau*. **Angew. Chem. Intl. Ed**, 2021, 60, 424-431
- "Iron sulfur biology invades tRNA modification: the case of U34 sulfuration." J. Zhou, M. Lénon, N. Touati, J. L. Ravanat, C. Velours, M. Fontecave, F. Barras*, B. Golinelli-Pimpaneau*. **Nucleic Acids Res**. 2021, 49, 3997-4007
- "De novo crystal structure determination of double stranded RNA binding domain using only the sulfur anomalous diffraction in SAD phasing". B. Guimaraes, B. Golinelli-Pimpaneau* **Cur. Res. Struct. Biol.**, 2021, 3, 112-120

2020

- Structure-based mechanistic insights into catalysis by tRNA thiolation enzymes." O. Bimai, S. Arragain, B. Golinelli-Pimpaneau. **Curr Opin Struct Biol**. 2020, 65, 69-78.

2018

- Dissociation of the dimer of the intrinsically disordered domain of RNase Y upon antibody binding. Hardouin P., Velours C., Bou-Nader C., Assrir N., Laalami S., Putzer H., Durand D., **Golinelli-Pimpaneau B.** *Biophys. J.* 2018 Dec 4; 115(11): 2102-2113.

2017

- Nonredox thiolation in tRNA occurring via sulfur activation by a [4Fe-4S] cluster. Arragain S, Bimai O, Legrand P, Caillat S, Ravanat JL, Touati N, Binet L, Atta M, Fontecave M, **Golinelli-Pimpaneau B.** *Proc Natl Acad Sci U S A.* 2017 Jul 11;114(28):7355-7360.

2015

- An extended dsRBD is required for post-transcriptional modification in human tRNAs. Bou-Nader C, Pecqueur L, Bregeon D, Kamah A, Guérineau V, **Golinelli-Pimpaneau B**, Guimarães BG, Fontecave M, Hamdane D. *Nucleic Acids Res.* 2015 Oct 30;43(19):9446-56.

2014

- Dynamics of RNA modification by a multi-site-specific tRNA methyltransferase. Hamdane D, Guelorget A, Guérineau V, **Golinelli-Pimpaneau B.** *Nucleic Acids Res.* 2015, Oct;42(18) : 11697-706.
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2013

- ubiI, a new gene in Escherichia coli coenzyme Q biosynthesis, is involved in aerobic C5-hydroxylation. Hajj Chehade M, Loiseau L, Lombard M, Pecqueur L, Ismail A, Smadja M, **Golinelli-Pimpaneau B**, Mellot-Draznieks C, Hamelin O, Aussel L, Kieffer-Jaquinod S, Labessan N, Barras F, Fontecave M, Pierrel F. *J Biol Chem.* 2013; 288(27):20085-92.

2012

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2011

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- Insights into the hyperthermostability and unusual region-specificity of archaeal Pyrococcus abyssi tRNA

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- 2009**
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