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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

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 archaeum *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. Hoock, 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

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2012

- FAD/Folate-Dependent tRNA Methyltransferase: Flavin as a new methyl-transfer agent. Hamdane D, Argentini M, Cornu D, **Golinelli-Pimpaneau B**, Fontecave M. **J Am Chem Soc.** 2012 Dec 5; 134, 19739-45.
- Crystal structure of two anti-porphyrin antibodies with peroxidase activity. Munoz Robles V, Maréchal JD, Bahloul A, Sari MA, Mahy JP, **Golinelli-Pimpaneau B.** **Plos One.** 2012, ;7(12):e51128.
- The Human tRNA m(5)C methyltransferase Misu is multisite-specific. Auxilien S, Guérineau V, Szwedkowska-Kulińska Z, **Golinelli-Pimpaneau B.** **RNA Biol.** 2012 Sep 20;9(11).
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2011

- Structural comparison of tRNA m(1)A58 methyltransferases revealed different molecular strategies to maintain their oligomeric architecture under extreme conditions. Guelorget A, Barraud P, Tisné C, **Golinelli-Pimpaneau B.** **BMC Struct Biol.** 2011 Dec 14;11:48.
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