Dr. Marouane Libiad

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RESEARCH INTERESTS

- Sulfur-based Enzymology
- Sulfur-based biosynthetic pathways

SUMMARY

I am a protein biochemist. I have studied sulfur-based biochemical processes using Biochemistry and Molecular Biology. I particularly focused on how redox modifications of the sulfur-based amino acids residues, cysteine and methionine, regulate protein function and cell signaling. I have used multidisciplinary approaches both to track the enzymatic sources of sulfur and its effects on cell metabolism.

My current research work will be focused on studying the chemical modification of transfer RNAs by radical insertion involving two metalloproteins MiaB and MiaE.

Publications

2021

[1] Carballal S., Vitvitsky V., Kumar R., Hanna D., **Libiad M.,** Gupta A., Jones J., Banerjee R. Hydrogen sulfide stimulates lipid biogenesis from glutamine that is dependent on the mitochondrial NAD(P)H pool. ***J. Biol. Chem.*** 297(2):100950.

[2] Vitvitsky V., Kumar R., **Libiad M.,** Maebius A., Landry A., Banerjee R. The mitochondrial NADH pool is involved in hydrogen sulfide signaling and stimulation of aerobic glycolysis. ***J. Biol. Chem.*** 296:100736

2020

[1] Carter R., Gibbins M., Barrios-Llerena M., Wilkie S., Freddolino P., **Libiad M.**, Vitvitsky V., Emerson B., Le Bihan T., Brice M., Su H., Denham S., Homer N., Mc Fadden C., Tailleux A., Faresse N., Sulpice T., Briand F., Gillingwater T., Ahn K.H., Singha S., McMaster C., Hartley R., Staels B., Gray G., Finch A., Selman C., Banerjee R., Morton N. The hepatic compensatory response to elevated systemic sulfide promotes diabetes. *Biorxiv.*

[2] Roger F., Picazo C., Reiter W., **Libiad M.**, Asami C., Hanzén S., Gao C., Lagniel G., Welkenhuysen N., Labarre J., Nyström T., Grøtli M., Hartl M., Toledano M. B., Molin M. Peroxiredoxin promotes longevity and H2O2-resistance in yeast through redox-modulation of protein kinase A. ***eLife***, 60346

[3] Kriznik A., **Libiad M.**, LeCordier H., Boukhenouna S., Toledano M. B., Rahuel-Clermont S. Dynamics of a key conformational transition in the mechanism of peroxiredoxin sulfinylation. ***ACS Catalysis***, 10(5):3326-3339.

2019

[1] **Libiad M.**, Vitvitsky V., Bostelaar T., Bak D. W., Lee H. J., Sakamoto N., Fearon E., Lyssiotis C. A., Weerapana E., Banerjee R. Hydrogen sulfide perturbs mitochondrial bioenergetics and triggers metabolic reprogramming in colon cells. ***J. Biol. Chem.*** 294(32):12077-90.

2018

[1] **Libiad M.**, Motl N., Akey D. L., Sakamoto N., Fearon E. R., Smith J. L., Banerjee R. Thiosulfate sulfurtransferase-like domain-containing 1 protein interacts with thioredoxin. ***J. Biol. Chem.*** 293:2675-86.

2015

[1] **Libiad M.**, Sriraman A., Banerjee R. Polymorphic Variants of Human Rhodanese Exhibit Differences in Thermal Stability and Sulfur Transfer Kinetics. ***J. Biol. Chem.***, 290(39):23579-88.

[2] Banerjee R., Chiku T., Kabil O., **Libiad M.**, Motl N., Yadav PK. Assay Methods for H_2S Biogenesis and Catablism Enzymes. ***Methods Enzymol.***, 554:189-200.

[3] Mishanina T. V., **Libiad M.**, Banerjee R. Biogenesis of Reactive Sulfur Species for Signaling by Sulfide Oxidation Pathways. ***Nat. Chem. Biol.***, 7:457-64.

2014

[1] **Libiad M.***, Yadav PK.*, Vitvitsky V., Martinov M., Banerjee R. Organization of the human mitochondrial hydrogen sulfide oxidation pathway. ***J. Biol. Chem.,*** 289, 30901-10 (* **co-first authors**).

2010

[1] Gruez A.*, **Libiad M.***, Boschi-Muller S. and Branlant G. Structural and Biochemical characterization of free Methionine-R-Sulfoxide Reductase from Neisseria meningitidis. ***J. Biol. Chem.***, 285, 25033-43 (* **co-first authors**).