

Curriculum Vitae - Prof. Abdelkarim ABOUSALHAM

Last name: ABOUSALHAM

First name: Abdelkarim

Full Professor at the University Claude Bernard Lyon 1, France

Institute of Molecular and Supramolecular Chemistry and Biochemistry (ICBMS) - UMR CNRS 5246

Team: Enzyme Engineering, Biomimetic Membranes and Supramolecular Assemblies (GEMBAS), University Claude Bernard Lyon 1, 43, Bd du 11 novembre 1918, 69622 Villeurbanne cedex, France



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Education

Habilitation à diriger des recherches of Enzymology, Aix-Marseille University, France (2000)

PhD in Enzymology, Aix-Marseille University, France (1995)

M.Sc. of Organic Chemistry, Aix-Marseille University, France (1989)

Research Experience

- 2007 - Present Professor of Biochemistry, University Claude Bernard Lyon 1
- 2005-2007 Scientific Director of Cooperative Laboratory at GERME S.A. company specialized in biotechnologies, Marseille, France
- 1997-2004 Research Associate, Enzymatic Lipolysis Laboratory, UPR9025CNRS, Marseille, France
- 1995-1997 Postdoctoral Fellow, Signal Transduction Laboratories, Lipid and Lipoprotein Research Group", University of Alberta, Edmonton, Canada

Main research interests

The research theme we are currently developing is mainly focused on understanding the molecular and interfacial mechanisms of enzymatic lipolysis, especially lipases and phospholipases. Understanding the specificity of action of (phospho)lipases, and being able to modify it, is an important issue because these lipolytic enzymes have many fields of biotechnological and medical applications. Inhibition of phospholipase D (PLD) to reduce tumor size, or digestive lipases to reduce fat absorption, has become a preferred pharmacological approach to cancer therapies and obesity treatment, respectively. We have developed in the laboratory innovative and efficient specific enzyme assays that allow direct and continuous screening of the activity of these lipolytic enzymes, in the presence of effectors. This methodology allowed us to identify new molecules that specifically inhibit PLD or digestive lipases by screening the ICBMS chemical library (more than 3000 compounds)

Bibliographie

- Bibliometric data: h-index = 22 ; Citation: 1418
- Publications: 64
- Book Chapter: 5

Research Management:

- Supervisor of 9 PhD students and 3 postdoctoral researcher
- Supervisor of more than 20 Master students in Biochemistry
- 10 invited international conference lectures and more than 20 seminars
- Reviewing activities for Analytical Biochemistry; Biochemistry; PLOS One; Food & Function; Colloids and Surfaces B: Biointerfaces; Process Biochemistry; Chemistry and Physics of Lipids; Chirality; BBA-Molecular and Cell Biology of Lipids; FEBS Journal; Journal of Medicinal Chemistry; International Journal of Biological Macromolecules.

Publication list (last 5 years):

- Kamoun, J., Krichen, F., Koubaa, I., Zouari, N., Bougatef, A., **Abousalham, A.**, and Aloulou, A. *In vitro* lipolysis and physicochemical characterization of unconventional star anise oil towards the development of new lipid-based drug delivery systems, *Heliyon* **2021**, *7*, e06717.
- Arhab, Y., Bessaa, K., Abla, H., Aydin, M., Rahier, R., Comte, A., Brizuela, L., Mebarek, S., Perret, F., Cherrier, M.V., **Abousalham, A.**, Noiriél, A. Phospholipase D inhibitors screening: Probing and evaluation of ancient and novel molecules. *Int J Biol Macromol* **2021**, *166*:1131-1140
- Eddehech, A., Smichi, N., Violot, S., Bettler, E., Brizuela, L., Noiriél, A., **Abousalham, A.**, and Zarai, Z. Deciphering the recombinant thermostable phosphatidylcholine-specific phospholipase C activity from *Bacillus thuringiensis*: Biochemical and interfacial properties, *Colloids Surf, A Physicochem Eng Asp* **2021**, *630*, 127629.
- Eddehech, A., Rahier, R., Smichi, N., Arhab, Y., Noiriél, A., Abousalham, A., Sayari, A., and Zarai, Z. Heterologous expression, kinetic characterization and molecular modeling of a new sn-1,3-regioselective triacylglycerol lipase from *Serratia* sp. W3, *Process Biochem* **2021**, *103*, 87-97.
- Smichi, N., Othman, H., Zarai, Z., Fendri, A., **Abousalham, A.** Identification of a novel intestinal phospholipase A₂ from annular seabream: Insights into its catalytic mechanism and its role in biological processes. *Process Biochem*, **2020**, *91*: 197-207. doi: <https://doi.org/10.1016/j.procbio.2019.12.012>.
- Smichi, N., Parsiegla, G., Achouri, N., Zarai, Z., **Abousalham, A.**, Fendri, A. Intestinal phospholipase A₂ from Sparidae species: Functional properties and cytotoxic potential evaluation. *Int J Biol Macromol* **2020**, *143*:881-890. doi: 10.1016/j.ijbiomac.2019.09.149.
- Arhab, Y., **Abousalham, A.**, Noiriél, A. Plant phospholipase D mining unravels new conserved residues important for catalytic activity. *Biochim Biophys Acta Mol Cell Biol Lipids* **2019**, *1864*, 688-703.
- Eddehech, A., Zied, Z., Aloui, F., Smichi, N., Noiriél, A., **Abousalham, A.**, Gargouri, Y. Production, purification and biochemical characterization of a thermoactive, alkaline lipase from a newly isolated *Serratia* sp. W3 Tunisian strain. *Int J Biol Macromol*, **2019**, *123*, 792-800.
- Kamoun, J., Rahier, R., Sellami, M., Koubaa, I., Mansuelle, P., Lebrun, R., Berlioz-Barbier, A., Fiore, M., Alvarez, K., **Abousalham, A.**, Carriere, F., Aloulou, A. Identification of a new natural gastric lipase inhibitor from star anise. *Food Func*, **2019**, *10*, 469-78
- Eddehech, A., Smichi, N., Arhab, Y., Noiriél, A., Abousalham, A., Gargouri, Y., Zied, Z. Production, purification and functional characterization of phospholipase C from *Bacillus thuringiensis* with high catalytic activity. *Process Biochem*, **2019**, <https://doi.org/10.1016/j.procbio.2019.05.012>.
- Wang, F., Chen, W., **Abousalham, A.**, Yang, B., Wang, Y. Exploring the influence of phospholipid monolayer conformation and environmental conditions on the interfacial binding of *Gibberella Zeae* lipase. *Int J Biol Macromol* **2019**, *132*, 1051-1056.
- Wang, F., Wu, Z., **Abousalham, A.**, Yang, B., Wang, Y., Deletion the C-terminal peptides of *Vibrio harveyi* phospholipase D significantly improved its enzymatic properties. *Int J Biol Macromol* **2018**, [10.1016/j.ijbiomac.2018.12.097](https://doi.org/10.1016/j.ijbiomac.2018.12.097). DOI: 10.1016/j.ijbiomac.2018.12.097.
- Wang, F., Wei, R., **Abousalham, A.**, Chen, W., Yang, B., Wang, Y., Effect of N- and C-Terminal Amino Acids on the Interfacial Binding Properties of Phospholipase D from *Vibrio parahaemolyticus*. *Int J Mol Sci* **2018**, *19*. DOI: 10.3390/ijms19082447.
- Smichi, N., Othman, H., Achouri, N., Noiriél, A., Triki, S., Arondel, V., Srairi-Abid, N., **Abousalham, A.**, Gargouri, Y., Miled, N., Fendri, A., Efficient heterologous expression, functional characterization and molecular modeling of annular seabream digestive phospholipase A₂. *Chem Phys Lipids* **2018**, *211*, 16-29. DOI: 10.1016/j.chemphyslip.2017.06.004.
- Rahier, R., Abla, H., Arhab, Y., Noiriél, A., **Abousalham, A.**, Direct and Continuous Measurement of Phospholipase D Activities Using the Chelation-Enhanced Fluorescence Property of 8-Hydroxyquinoline. *Methods Mol Biol* **2018**, *1835*, 129-138. DOI: 10.1007/978-1-4939-8672-9_6.
- El Alaoui, M., Soulere, L., Noiriél, A., Sutto-Ortiz, P., Grand, L., Popowycz, F., Rodriguez-Gonzalez, J. A., Queneau, Y., **Abousalham, A.**, A Continuous and Sensitive Spectrophotometric Assay for Lipase and Phospholipase A Activities Using alpha-Eleostearic Acid-Containing Substrates. *Methods Mol Biol* **2018**, *1835*, 119-128. DOI: 10.1007/978-1-4939-8672-9_5.
- Eddehech, A., Zied, Z., Aloui, F., Smichi, N., Noiriél, A., **Abousalham, A.**, Gargouri, Y., Production, purification and biochemical characterization of a thermoactive, alkaline lipase from a newly isolated *Serratia* sp. W3 Tunisian strain. *Int J Biol Macromol* **2018**, *123*, 792-800. DOI: 10.1016/j.ijbiomac.2018.11.050.
- Arhab, Y., Rahier, R., Noiriél, A., Cherrier, M. V., **Abousalham, A.**, Expression and Purification of Recombinant *Vigna unguiculata* Phospholipase D in *Pichia pastoris* for Structural Studies. *Methods Mol Biol* **2018**, *1835*, 191-201. DOI: 10.1007/978-1-4939-8672-9_10.
- Aloulou, A., Rahier, R., Arhab, Y., Noiriél, A., **Abousalham, A.**, Phospholipases: An Overview. *Methods Mol Biol* **2018**, *1835*, 69-105. DOI: 10.1007/978-1-4939-8672-9_3.
- Sutto-Ortiz, P., Camacho-Ruiz, M. L. A., Kirchmayr, M. R., Camacho-Ruiz, R. M., Mateos-Diaz, J. C., Noiriél, A., Carriere, F., **Abousalham, A.**, Rodriguez, J. A., Screening of phospholipase A activity and its production by new actinomycete strains cultivated by solid-state fermentation. *PeerJ* **2017**, *5*, e3524. DOI: 10.7717/peerj.3524.
- Smichi, N., Othman, H., Achouri, N., Noiriél, A., Arondel, V., Srairi-Abid, N., **Abousalham, A.**, Gargouri, Y., Miled, N., Fendri, A., Functional and Structural Characterization of a Thermostable Phospholipase A₂ from a Sparidae Fish (*Diplodus annularis*). *J Agric Food Chem* **2017**, *65*, 2468-2480. DOI: 10.1021/acs.jafc.6b05810.
- El Alaoui, M., Soulere, L., Noiriél, A., Queneau, Y., **Abousalham, A.**, alpha-Eleostearic acid-containing triglycerides for a continuous assay to determine lipase sn-1 and sn-3 regio-preference. *Chem Phys Lipids* **2017**, *206*, 43-52. DOI: 10.1016/j.chemphyslip.2017.06.005.