




Laboratory Name	GB2 - Group of Biomarkers and Biosensors	
Main Goals	<p>1) Large scale protein profiling projects to characterize the response of microbial organisms (e.g. sulfate reducers; denitrifiers, yeast, actinomycetes) to stress conditions.</p> <p>2) Development of cheap, easy-to-use and disposable electrochemical biosensing devices, with particular emphasis in point of care tests (POCT).</p>	

Lab Head	Gabriela Almeida, PhD
Group	Tiago Monteiro (PhD student) Joana Sousa (PhD student) Rita Coelho (MSc student)
Senior Researchers	
PhD Students	Tiago Monteiro Joana Sousa

Research Projects (from 2013)	<p>2012-2014 PROBING THE REGULATION MECHANISM OF CYTOCHROME CD1 NITRITE REDUCTASE - A COMBINED ELECTROCHEMICAL AND CRYSTALLOGRAPHIC APPROACH. - FUNDING: CRUP (INTEGRATIVE ACTIONS PORTUGAL-GERMANY, REF. A-38/12).</p> <p>2014-2015 POINT OF CARE TESTING OF CARDIOVASCULAR DISEASES MARKERS – DETECTION OF HOMOCYSTEIN-THIOLACTONE. - Funding: FUND. CIÊNCIA E TECNOLOGIA (EXPL/DTP-PIC/1758/2013).</p> <p>2013-2014 WHY IS MITOXANTRONE A POISON TO THE</p>
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HEART? FOCUSING ON THE MITOCHONDRIA, CYTOSKELETON, AND METABOLIC BIOACTIVATION MECHANISMS

- Funding: Fund. Ciência e Tecnologia (EXPL/DTP-FTO/0290/2012);

2013-2016 NEW INSIGHTS INTO THE MECHANISM OF VASCULAR CALCIFICATION IN CHRONIC KIDNEY DISEASE (CKD): THE ROLE OF GRP;

- Funding: Fund. Ciência e Tecnologia (PTDC/BIM-MEC/1168/2012);

2014 NOVEL CHEMBIOCHEMICAL PROPERTIES OF MARINE ACTINOMYCETES SALINISPIRA SPP. UNVEILED BY A COMBINED PROTEOMIC AND METABOLOMIC APPROACH; - Funding: REQUIMTE (Lab. Associado).

2014 A COMBINED GENOMIC, PROTEOMIC AND METABOLOMIC APPROACH TO UNVEIL NOVEL CHEMBIOCHEMICAL PROPERTIES OF MARINE ACTINOMYCETES SALINISPIRA SPP. PID 1153. - Funding: INSTRUCT INTEGRATING BIOLOGY

2016 NANOBE – INNOVATIVE GOLD NANOSTRUCTURED INTERFACES FOR ELECTROCHEMICAL BIOSENSING; - - Funding: REQUIMTE (Lab. Associado);

**Publications (10
most relevant, last
5 years)**

R.R. Nair, C.M. Silveira, M.S. Dinis, M.G. Almeida, J.J.G. Moura, M.G. Rivas (2015) "Changes in metabolic pathways of *Desulfovibrio alaskensis* G20 cells induced by high molybdate levels" *J. Biol. Inorg. Chem.*, 20(2), 311-22. DOI: 10.1007/s00775-014-1224-4

T. Monteiro, P.R. Rodrigues, A.L. Gonçalves, J.J.G. Moura, L. Añorga, E. Jubete, B. Piknova, A.N. Schechter, C.M. Silveira, M.G. Almeida (2015) "Construction of effective disposable biosensors for point-of-care testing of nitrite" *Talanta*, 142, 246–251. DOI: 10.1016/j.talanta.2015.04.057

V. Kemsawasd, P. Branco, M.G. Almeida, J. Caldeira, H. Albergaria, N. Arneborg (2015) "Cell-to-cell contact and antimicrobial peptides play a combined role in the death of *Lachancea thermotolerans* during mixed-culture alcoholic fermentation with *Saccharomyces cerevisiae*", *FEMS Microbiol. Letters*, 362(14), 1-7. DOI: doi.org/10.1093/femsle/fnv103

L. Santos, C. Silveira, E. Elamurugu, J.P. Neto, D. Nunes, L. Pereira, R. Martins, J. Viegas, J.J.G. Moura, S. Todorovic, M.G. Almeida, E. Fortunato (2016) "Synthesis of WO₃ Nanoparticles for Biosensing Applications", *Sensors Actuators B* 223, 186-194.



DOI:10.1016/j.snb.2015.09.046

T. Monteiro, F. Oliveira, A. Fins, C.G. Dias, C.M. Silveira, S.A. Pereira, M.G. Almeida (2016) "Assessment of human paraoxonase activity by electrochemistry: a simple and novel approach", *Anal. Methods*, 8, 8141-8146. DOI: 10.1039/C6AY01944G

P. Branco, D. Francisco, M. Monteiro, M.G. Almeida, J. Caldeira, N. Arneborg, C. Prista, H. Albergaria (2017) "Antimicrobial properties and death-inducing mechanisms of saccharomycin, a biocide secreted by *Saccharomyces cerevisiae*", *Applied Microbiol. Biotechnol.*, 101(1), 159- 171. DOI 10.1007/s00253-016-7755-6

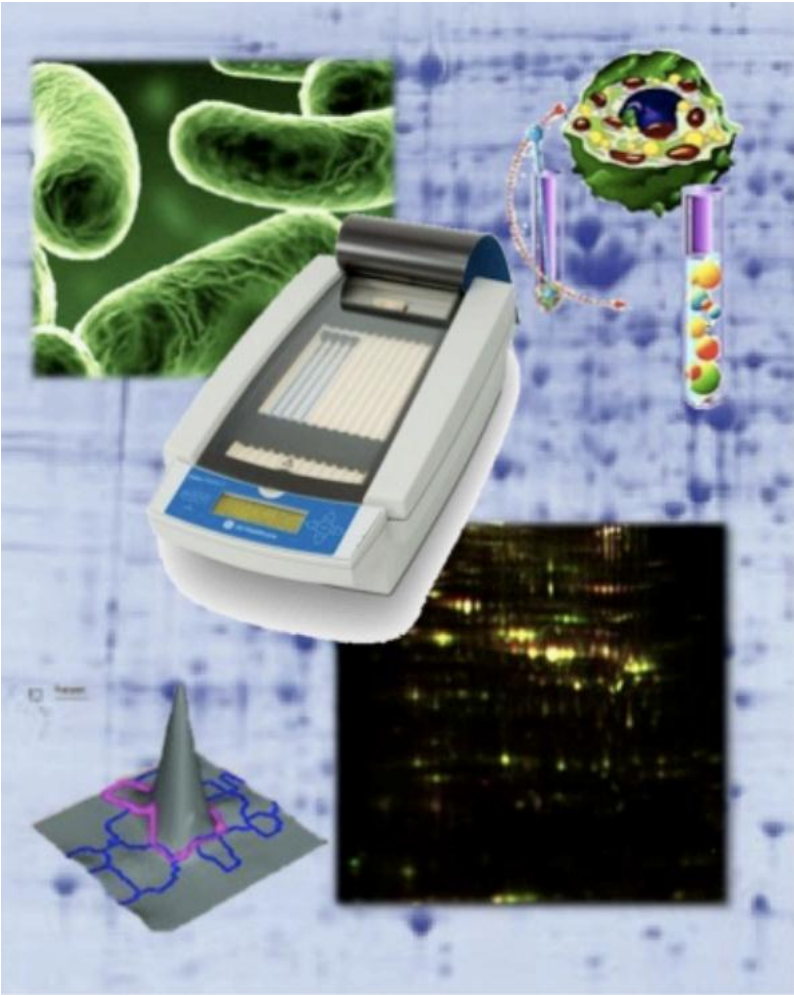
P. Branco, V. Kemsawasd, L. Santos, M. Diniz, J. Caldeira, M.G. Almeida, N. Arneborg, H. Albergaria, (2017) "Saccharomyces cerevisiae accumulates GAPDH-derived peptides on its cell surface that induce death of non-Saccharomyces yeasts by cell-to-cell contact", *FEMS Microbiology Ecology*, 93(5), 1-10. DOI: 10.1093/femsec/fix055

J.R. Sousa, C.M. Silveira, P. Fontes, C. Roma-Rodrigues, A.R. Fernandes, G. van Driessche, B. Devreese, I. Moura, J.J. Moura, M.G. Almeida (2017) "Understanding the response of *Desulfovibrio desulfuricans* ATCC 27774 to the electron acceptors nitrate and sulfate - biosynthetic costs modulate substrate selection", *BBA – Proteins and Proteomics*, 1865 (11), 1455-1469. 14:1-23

T. Monteiro, M.G. Almeida "Electrochemical enzyme biosensors revisited: old solutions for new problems", *Crit Rev Anal Chem.*, 14:1-23. DOI:10.1080/10408347.2018.1461552

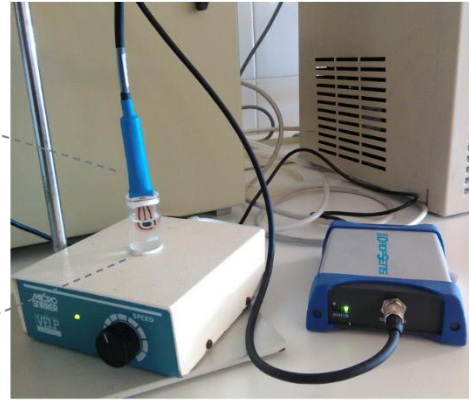
T. Monteiro, S. Gomes, E. Jubete, L. Añorga, C.M. Silveira, M.G. Almeida (2019) "A quasi-reagentless point-of-care test for nitrite and unaffected by oxygen and cyanide", *Scientific Reports*, 9, 2622. DOI: 10.1038/s41598-019-39209-y



Equipment/Techniques	2D electrophoresis system (GE Healthcare) Potentiostat/galvanostat Autolab 12 (Eco-Chemie)
Announcements	
Some Pictures	<p>Microbial proteomics</p> 



Electrochemistry



al

Biosensors

Location

Lab. 305

Links

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<https://qb29.webnode.pt/>