CURRICULUM VITAE INVESTIGATOR			
PERSONAL DATA			
Father's name **Jerez**		Name **Carlos A.**	
Birth date December 15, 1944	Age (at 15/07/2011) 66	Gender (M o F) M	Nationality(ies) Chilean
Title Biochemist		Academic Degree Ph.D. Biochemistry	
Current position Full Professor	Institution (Department, Faculty, Institution) University of Chile, Faculty of Sciences		
Electronic address cjerez@uchile.cl	Telephone (w/codes) 56 2 9787376	Web Site	

EDUCATION, ACADEMIC AND PROFESSIONAL EXPERIENCE

University of Chile, Santiago, Chile, B.Sc., 1968, Biochemistry
University of Iowa, Iowa, U.S.A., Ph.D., 1973, Biochemistry
Roche Institute of Molecular Biology, Nutley, U.S.A.,Postdoctoral, 1978/1980, Molecular Biology.

RESEARCH AND/OR PROFESSIONAL EXPERIENCE
TRAINING/ACADEMIC EMPLOYMENT
1974-1978, Assistant Professor, University of Chile, Faculty of Medicine, Department of Biochemistry.
1979-1980, Posdoctoral fellow, Roche Institute of Molecular Biology, Nutley, N.J., U.S.A.
1981-1992, Associate Professor, University of Chile, Faculty of Medicine, Department of Biochemistry.
1992-1996, Professor, University of Chile, Faculty of Medicine, University of Chile.
1997-present, Professor and Director, Laboratory of Molecular Microbiology and Biotechnology
2000-2005 (Feb.), Senior Scientist, Millennium Institute for Advanced Studies in Cellular Biology and Biotechnology, University of Chile, Faculty of Science, Department of Biology.
2006-2011, Key Senior Scientist, Millennium Institute for Cell Dynamics and Biotechnology, University of Chile, Faculty of Science, Department of Biology.

PH. D. STUDENTS
15 Ph.D. students graduated, 3 current Ph.D. students.

Special invited reviewer Journal of Bacteriology, Applied and Environmental Microbiology, Trends in Genetics, FEBS Letters, Biotechnology and Bioengineering, Environmental Microbiology.
Member of Editorial Board of Open Biotechnology
Member of Editorial Board Applied and Environmental Microbiology, 2003-2005; 2006-2008; 2009-2011.

PROFESSIONAL EXPERIENCE RELATED TO BIOMINING AND BIOTECHNOLOGY.

1990 Research Consultant, Mount Isa Mines Limited, Mount Isa, Research and Development Division, Queensland, Australia
1992 Associate Researcher, Center for Minining and Metallurgy Research (CIMM), Santiago, Chile
1995 Chairman and Organizer, International Biohydrometallurgy Symposium (IBS) 95, Chile
1995 International Advisory Board Member, Biohydrometallurgy Symposium IBS 95, Chile
1999 International Advisory Board Member, Biohydrometallurgy Symposium IBS 99, Spain
2001 International Advisory Board Member, Biohydrometallurgy Symposium IBS 2001, Brazil
2002 National Biotechnology Committee Member (CONICYT, Chile)
2003 International Advisory Board Member, Biohydrometallurgy Symposium IBS 2003, Greece
2004 International Advisory Board Member, World Biotechnology Congress, Chile
2005 International Advisory Board Member, Biohydrometallurgy Symposium IBS 2005, South Africa
2007 Invited Keynote Speaker and International Advisory Board Member, Biohydrometallurgy Symposium IBS 2007, Germany

2009 International Advisory Board Member, Biohydrometallurgy Symposium IBS 2003, Argentina

2011 Invited Keynote Speaker and International Advisory Board Member, Biohydrometallurgy Symposium IBS 2011, China

MAIN PUBLICATIONS IN MEDIA WITH EDITORIAL COMMITTEE

Guiliani, N. and Jerez, C.A. (2000) Molecular cloning, sequencing and expression of Omp40, the gene coding for the major outer membrane protein from the acidophilic *Thiobacillus ferrooxidans*. Appl. Environ. Microbiol. 66: 2318-2324.

Jerez, C.A. (2001) Chemotactic transduction in biomining microorganisms. Hydrometallurgy. 59: 347-356.

Vera, M., Guiliani, N., Ramírez, P., Alvarez, S., and Jerez, C.A. (2001) Proteomic and genomic strategy for the study of the extremely acidophilic *Acidithiobacillus ferrooxidans*. In Biohydrometallurgy: Fundamentals, Technology and Sustainable Development. V.S.T. Ciminelli and O. Garcia Jr. (Editors), pp. 325-333. Elsevier Science B.V.

Alvarez, S., Vera, M., Jerez, C.A. and Guiliani, N. (2001) Polyphosphates, polyphosphate kinase activity and ppk gene in the extremophilic bacterium *Acidithiobacillus ferrooxidans* ATCC 19859. In Biohydrometallurgy: Fundamentals, Technology and Sustainable Development. V.S.T. Ciminelli and O. Garcia Jr. (Editors), pp. 355-362, Elsevier Science B.V.

Cardona, S., Remonsellez, F., Guiliani, N. and Jerez, C.A. (2001) The alleged glycogen-bound polyphosphate kinase from *Sulfolobus acidocaldarius* is actually a glycogen synthase. Appl.

Environ. Microbiol. 67: 4733-4780.

Toledo, H., Valenzuela, M., Rivas, A. and Jerez, C.A. (2002). Acid stress response in *Helicobacter pylori*. FEMS Microbiol. Lett. 213:67-72.

Ramírez, P., Toledo, H., Guiliani, N. and Jerez, C.A. (2002) An exported rhodanese-like protein is induced during growth of *Acidithiobacillus ferrooxidans* in metal sulfides and different sulfur compounds. Appl. Environ. Microbiol. 68:1837-1845.

Cardona, S. T., Chávez, F. P. and Jerez, C.A. (2002) The exopolyphosphatase gene from *Sulfolobus solfataricus*: characterization of the first gene found to be involved in polyphosphate metabolism in Archaea. Appl. Environ. Microbiol. 68:4812-4819.

Vera, M., Guiliani, N. and Jerez, C.A. (2003) Proteomic and genomic analysis of the phosphate starvation response of *Acidithiobacillus ferrooxidans*. Hydrometallurgy. 71: 125-132.

Farah, C., Banderas, A., Jerez, C. A. and Guiliani, N. (2004) Searching for physiological functions regulated by the quorum sensing autoinducer AI-1 promoted by afeI/afeR genes in *Acidithiobacillus ferrooxidans*. In Biohydrometallurgy, a Sustainable Technology in Evolution. Symposium Proccedings, 15th International Biohydrometallurgy Symposium IBS 2003, Tsezos, M., Hatzikioseyian, A., Remoundaki, E., eds., Athens, Greece, pp. 1361-1368.

Ramírez, P., Valenzuela, L., Acosta, M., Guiliani, N and Jerez, C.A. (2004) Expression proteomics of *Acidithiobacillus ferrooxidans* grown in different metal sulfides: analysis of rhodanese-like proteins. In Biohydrometallurgy, a Sustainable Technology in Evolution. Symposium Proccedings, 15th International Biohydrometallurgy Symposium IBS 2003,. Tsezos, M., Hatzikioseyian, A., Remoundaki, E., eds., Athens, Greece, pp. 1287-1296.

Chávez, F., Lünsdorf, H. and Jerez, C.A. (2004) Growth of polychlorinated biphenyl (PCB)-degrading bacteria in the presence of biphenyl and chlorobiphenyls generates oxidative stress and massive accumulation of inorganic polyphosphate. Appl. Environ. Microbiol. 70:3064-3072.

Ramírez., P., Guiliani, N., Valenzuela, L., Beard, S., and Jerez, C.A. (2004) Differential protein expression during growth of *Acidithiobacillus ferrooxidans* on ferrous iron, sulfur compounds or metal sulfides. Appl. Environ. Microbiol. 70: 4491-4498.

Alvarez, S. and Jerez, C.A. (2004) Copper ions stimulate polyphosphate degradation and phosphate efflux in *Acidithiobacillus ferrooxidans*. Appl. Environ. Microbiol. 70: 5177-5182.

Acosta, M., Beard, S., Ponce, J., Vera, M., Mobarec, J.C. and Jerez, C.A. (2005) Identification of putative sulfurtransferase genes in the extremophilic *Acidithiobacillus ferrooxidans* ATCC 23270 genome: structural and functional characterization of the proteins. OMICS. 9: 13-29.

Farah, C., Vera, M., Morin, D., Haras, D., Jerez, C.A. and Guiliani, N. (2005) Evidence of a functional quorum sensing type AI-1 system in the extremophilic bacterium *Acidithiobacillus ferrooxidans*. Appl. Environ. Microbiol. 71: 7033-7040.

Leyton, P., Lizama-Vergara, P.A., Campos-Vallette, M.M., Becker, M.I., Clavijo, E., Reyes, I.C., Vera, M., Jerez, C.A. (2005) Surface enhanced Raman spectrum of nanometric molecular systems. J. Chil. Chem. Soc. 50: 725-230.

Chavez, F.P., Gordillo, F., Jerez, C.A. (2006) Adaptative responses and celular behaviour of biphenyl-degrading bacteria toward polychlorinated biphenyls. Biotechnol. Adv. 24: 309-320.

Valenzuela, L., Chi, A., Beard, S., Orell, A., Guiliani, N., Shabanowitz, J., Hunt, D.F., Jerez, C.A. (2006) Genomics, metagenomics and proteomics in biomining microorganisms. Biotechnol. Adv. 24: 197-211.

Remonsellez, F., Orell, A., Jerez, C.A. (2006) Copper tolerance of the thermoacidophilic archaeon *Sulfolobus metallicus*: possible role of polyphosphate metabolism. Microbiology-SGM, 152: 59-66.

Jerez, C.A., Chavez, F.P., Gordillo, F. (2007) Motility and chemotaxis of *Pseudomonas sp.* B4 towards polychlorobiphenyls and chlorobenzoates. FEMS Microbiol. Ecol. 60: 322-328.

Chi, A.,Valenzuela, L., Beard, S., Mackey, A.J., Shabanowitz, J., Hunt, D.F. and Jerez, C. A. (2007) Periplasmic proteins of the extremophile *Acidithiobacillus ferrooxidans*: a high throughput proteomic analysis. Mol. Cell. Proteomics. 6: 2239-2251.

Jerez, C.A. (2007) Biomining in the post-genomic age: advances and perspectives. Adv. Mat. Res. 20-21: 389-400.

Jerez, C.A. (2007) Proteomics and metaproteomics applied to biomining microorganisms. Microbial Processing of Metal Sulfides (E.R. Donati and W. Sand, Eds.), 241-251.

Jerez, C.A., Valenzuela, L., Beard, S., Chi, A., Shabanowitz, J, Hunt, D.F. (2007) .Differential-Expression Proteomics for the Study of Sulfur Metabolism in the Chemolithoautotrophic *Acidithiobacillus ferrooxidans.* Microbial Sulfur Metabolism (C.Friedrich and C.Dahl., Eds.), 77-86.

Soulère L., Guiliani N., Queneau Y., Jerez C.A., Doutheau A. (2008) Molecular insights into quorum sensing in *Acidithiobacillus ferrooxidans* bacteria via molecular modelling of the transcriptional regulator AfeR and of the binding mode of long-chain acyl homoserine lactones. J. Mol. Model. 14: 599-606.

Frezza M, Soulère L, Reverchon S, Guiliani N, Jerez C.A., Queneau Y, Doutheau A. (2008) Synthetic homoserine lactone-derived sulfonylureas as inhibitors of *Vibrio fischeri* quorum sensing regulator. Bioorg. Med. Chem.16: 3550-3556.

Ruiz, L.M., Valenzuela S., Castro M., Gonzalez A., Frezza M., Soulère L., Rohwerder T., Queneau Y., Doutheau A., Sand, W., Jerez, C.A. and Guiliani, N. (2008) AHL communication is a widespread phenomenon in biomining bacteria and seems to be involved in mineral-adhesion efficiency. Hydrometallurgy. 94: 133-137.

Vera, M., Pagliai, F., Guiliani, N., and Jerez, C.A. (2008) The chemolithoautotroph *Acidithiobacillus ferrooxidans* can survive under phosphate limiting conditions by the expression of a C-P lyase operon that allows it to grow in phosphonates. Appl. Environ. Microbiol. 74: 1829-1835.

Jerez, C.A. (2008) The use of genomics, proteomics and other OMICS technologies for the global understanding of biomining microorganisms. Hydrometallurgy. 94: 162-169.

Navarro, C.A., Orellana, L.H., Mauriaca, C., and Jerez, C.A. (2009) Transcriptional and functional studies of *Acidithiobacillus ferrooxidans* genes related to survival in the presence of copper. Appl. Environ. Microbiol. 75: 6102-6109.

Chavez, F.P., Mauriaca, C., and Jerez, C.A. (2009) Constitutive and regulated expression vectors to construct polyphosphate deficient bacteria. BMC Research Notes. 2:50, doi: 10.1186/1756-0500-2-50.

Jerez, C.A. (2009) Metal extraction and biomining. Encyclopedia of Microbiology. Moselio Schaechter, Editor, pp. 407-420. Oxford: Elsevier.

Jerez, C.A. (2009) Biomining microorganisms: molecular aspects and applications in biotechnology and bioremediation. In Advances in Applied Biorremediation, Soill Biology 17. A. Singh et al., (eds.). pp. 239-256. DOI: 10. 1007/978-3-540-89621-0_13, Springer-Verlag Berlin Heidelberg.

Pagliai, F.A., and Jerez, C.A. (2009) The secretome of the extremophilic *Acidithiobacillus ferrooxidans* ATCC 23270. Adv. Materials Res. 71-73, 183-186.

Castro, M., Ruiz, L.M., Barriga, A., Jerez, C.A., Holmes, D., and Guiliani, N. (2009) C-di-GMP pathway in biomining bacteria. Adv. Materials Res. 71-73, 223-226.

Orell, A., Navarro, C.A., and Jerez, C.A. (2009) Copper resistance mechanisms of biomining bacteria and archaea living under extremely high concentrations of metals. Adv. Materials Res. 71-73: 279-282.

Varela C., Mauriaca C., Paradela A., Albar J.P., Jerez C.A., and Chávez F.P. (2010) New structural and fuctional defects in polyphosphate deficient bacteria: A cellular and proteomic study. BMC Microbiol. 10, 7

Orell A., Navarro, C.A., Arancibia, R., Mobarec, J.C., and Jerez, C.A. (2010) Life in blue: Copper resistance mechanisms of bacteria and Archaea used in industrial biomining of minerals. Biotechnol. Adv. 28, 839- 848.

Jerez, C.A. (2011) Bioleaching and biomining for the bindustrial recovery of metals. In Comprehensive Biotechnology, Second Edition, Moo-Young, M., (ed.). Elsevier. vol. 3, 717-729, DOI: 10.1016/B978-0-08-088504-9.00234.8.

Beard, S., Paradela, A., Albar, J.P., Jerez, C.A. (2011) Growth of *Acidithiobacillus ferrooxidans* ATCC 23270 in thiosulfate under oxygen-limiting conditions generates extracellular sulfur globules

by means of a secreted tetrathionate hydrolase. Front. Microbio. 2:79. *doi*: 10.3389/*fmicb*.2011.00079.

Orellana, L.H., Jerez, C.A. (2011) A genomic island provides *Acidithiobacillus ferrooxidans* ATCC 53993 additional copper resistance: a posible competitive advantage. Appl. Microbiol. Biotechnol. DOI 10.1007/s00253-011-3494-x.

PATENTS

Patent application INAPI, Nº 1831/2009. Protein composition useful to increase growth rate of microorganisms involved in processes for ores bioleaching.