

BIOGRAPHICAL SKETCH

NAME Dr. José A. Gavira	POSITION TITLE Research Scientist at the National Research Council of Spain (CSIC)		
EDUCATION/TRAINING			
INSTITUTION AND LOCATION	DEGREE	MM/YY	FIELD OF STUDY
University of Granada, Spain.	BS	1994	Chemistry-Biochemistry
University of Granada, Spain.	PhD	2000	Chemistry
University of Huntsville, AL, USA.	Postdoctoral	2000	Crystallography

A. Personal Statement

Dr. Jose A. Gavira is a Senior Research Scientist at the National Research Council of Spain (CSIC, Spanish abbreviation). Dr. Gavira is originally from a physical chemistry background gaining a PhD in protein crystallization in diffusion mass transport media (Granada, Spain, 2000). He specializes in the crystallization of biological macromolecules employing counter-diffusion techniques (gels, microgravity and capillaries), with many years of experience in X-ray characterization of protein crystals. His major line of research is focused on the biotechnological application of enzymes in crystalline form (cross-linked enzyme crystals, CLECs) including the enhancement of relevant properties arising from phylogenetic analysis (thermal stability, substrate promiscuity, etc.) Other collaborative lines include the study of *P. putida* proteins, related to different stages of their biology and metabolism, such as: the two-component system TodT/TodS, involved in the metabolism of toluene; PtxS, a protein implicated in the glucose metabolism or the chemoreceptor McpS and Pct family. In the last seven years Dr. Gavira is been the leader of the Macromolecular Crystallography line at the Laboratory of Crystallographic Studies (Laboratorio de Estudios Cristalográficos, LEC). Up to day he has deposited 38 structures and has participated in the determination of another 19. Among the 57 deposited PDBs, 30% were obtained at resolution better than 1.5 Å (17). His results have been published in 61 articles in peer-reviewed journals (h index = 16). He is also part of the review panel of ActaF (IUCr journals) and frequent reviewer for ActaD, CG&D, BBA, Cryst. Res. & Tech., Molecular Biology Report, PNAS, etc.

Dr. Gavira is a well-recognized expert on protein crystallization and is member of the Council of the International Organization for Biological Crystallization (IOBCr) since 2006. He is regularly invited as speaker at International schools and workshops. He is involved in several teaching activities, being a lecturer of the International Master in Crystallization and Crystallography (MCC). Dr. Gavira is Director of the International School on Biological Crystallization (ISBC), which takes place every other year and that has run its 4th edition in 2013 supported by the IUCr and the GE3C. He is also committed to participate in several events for the popularization of science.

B. Positions

1991-1992	Laboratory assistant. Dept. Inorganic Chemistry. Univ. of Cádiz, Spain. <i>Area of Research: Hydrothermal Synthesis s of Zeolites. SEM characterization.</i>
1994-1996	Independent Research Student. Dept. of Physical-Chemistry. Univ. of Granada, Spain <i>Area of Research: Calorimetric characterization of Biomacromolecule interactions.</i>
1996	Grant-Research. Group of Biophysics and Molecular Biotech. of the Univ. of Granada, Spain. <i>Area of Research: Characterization of Macromolecular Interaction. Folding-Unfolding of biological macromolecules.</i>
1996-2000	PhD-Student of the MEC (Spain) at LEC, CSIC-U. of Granada, Spain. <i>Area of Research: Protein Crystallization in Diffusive Media.</i>
2000-2003	Post-Doc at the University of Alabama in Huntsville, AL, USA. <i>Area of Research: High Throughput protein crystallization and crystallography.</i>
2003-2007	Research Associated at the LEC, IACT, CSIC-U. of Granada, Spain.
2007-	Research Scientist at the LEC, IACT, CSIC-U. of Granada, Spain.

Honors & Awards

- 2000 Best PhD Dissertation in Chemistry, U. of Granada.
2001 Fellowship Award from the organization of the RapiData 2001.
2001 Fellowship Award from the American Crystallographic Association.
2002 Fellowship Award of the 9th International Conference on the Crystallization of Biological Macromolecules.
2002 Award, travel Grant, of the American Crystallographic Association.
2006 Award of the 11th ICCBM (11th International Conference on Crystallization of BioMacromolecules).

Other Experience and Professional Memberships

- 1998 Member, Real Sociedad Española de Física y Química
1998 Member, Grupo Especializado de Cristalografía y Cristalización (RSQE)
2000 Member, European Crystallographic Association
2000-03 Member, American Crystallographic Association
2006 Chair of the International Organization of Biomacromolecule Crystallization (IOBC)
2009 Selected member of the reviewer committee for Acta Cryst. Section F (IUCr Journals)

C. Selected Peer-reviewed Publications (15 selected from 61 peer-reviewed publications)

1. Phenotypic comparisons of consensus variants versus laboratory resurrections of Precambrian proteins. *Proteins*, (2014), Risso, V. A., **Gavira, J. A.**, Gaucher, E. A. and Sanchez-Ruiz, J. M.
2. Thermostable and promiscuous Precambrian proteins. *Environmental Microbiology*, (2014), Risso, Valeria A., **Gavira, Jose A.** and Sanchez-Ruiz, Jose M.
3. Introduction to protein crystallization, *Acta Cryst.* (2014). F70, 2-20, A. McPherson and **J. A. Gavira.**
4. Conservation of Protein Structure over Four Billion Years, *Structure*, (2013) 12, 2899-902. A. Ingles-Prieto, B. Ibarra-Molero, A. Delgado-Delgado, R. Perez-Jimenez, J. M. Fernandez, E. A. Gaucher, J. M. Sanchez-Ruiz and **J. A. Gavira**
5. Growth of Ultrastable Protein-Silica Composite Crystals, *Crystal Growth & Design*, (2013) 13, 2522-29, **J. A. Gavira**, A. E. S. Van Driessche and J.-M. Garcia-Ruiz
6. Hyperstability and Substrate Promiscuity in Laboratory Resurrections of Precambrian b-Lactamases, *J Am Chem Soc*, (2013) 135, 2899-902. V. A. Risso, **J. A. Gavira**, D. F. Mejia-Carmona, E. A. Gaucher and J. M. Sanchez-Ruiz
7. Evidence for chemoreceptors with bimodular ligand-binding regions harboring two signal-binding sites, *Proc Natl Acad Sci U S A*, (2012) 109, 18926-31. E. Pineda-Molina, J. A. Reyes-Darias, J. Lacal, J. L. Ramos, J. M. García-Ruiz, **J. A. Gavira** and T. Krell
8. Monitoring and scoring counter-diffusion protein crystallization experiments in capillaries by in situ dynamic light scattering, *PLoS One*, (2012), D. Oberthuer, E. Melero-García, K. Dierks, A. Meyer, C. Betzel, A. Garcia-Caballero and **J. A. Gavira**
9. Mutational and structural analysis of L-N-carbamoylase reveals new insights into a peptidase M20/M25/M40 family member, *J Bacteriol*, (2012) 194, 5759-68. S. Martínez-Rodríguez, A. García-Pino, F. J. Las Heras-Vázquez, J. M. Clemente-Jiménez, F. Rodríguez-Vico, J. M. García-Ruiz, R. Loris and **J. A. Gavira**
10. Combining Counter-Diffusion and Microseeding to Increase the Success Rate in Protein Crystallization. *Cryst. Growth Des.*, (2011). 11 (6), 2122–2126. **J. A. Gavira**, M. A. Hernandez-Hernandez, L. A. Gonzalez-Ramirez, R. A. Briggs, S. A. Kolek and P. D. Shaw Stewart
11. Optimization of Protein Crystallization: The OptiCryst Projects. *Cryst. Growth Des.*, (2011). 11 (6), 2112–2121. A. Garcia-Caballero, **J. A. Gavira**, et al.
12. Atomic resolution studies of haloalkane dehalogenases DhaA04, DhaA14 and DhaA15 with engineered access tunnels. *Acta Cryst.* (2010) D66, 962-969. A. Stsiapanava, J. Dohnalek, **J. A. Gavira**, M. Kutý, T. Koudelakova, J. Damborsky and I. Kuta Smatanova.
13. Structure of dihydropyrimidinase from *Sinorhizobium meliloti* CECT4114: new features in an amidohydrolase family member. *Journal of Structural Biology*, (2010) 169, 200-208. Sergio Martínez-Rodríguez, Ana Isabel Martínez Gómez, Josefa María Clemente-Jiménez, Felipe Rodríguez-Vico, Juan Ma. Garcia-Ruiz, Francisco Javier Las Heras-Vázquez and **J.A. Gavira.**

14. Effects of a Magnetic Field on Lysozyme Crystal Nucleation and Growth in a Diffusive Environment. *Cryst. Growth Des.* (2009). Vol 9 (6), pp 2610–2615. **Jose A. Gavira** and Juan M. Garcia-Ruiz.
15. Comparison of Different Experimental Techniques for the Measurement of Crystal Growth Kinetics. *Cryst. Growth Des.* (2008) 8, 4316–4323. A. E. S. Van Driessche, F. Otálora, G. Sasaki, M. Sleutel, K. Tsukamoto and **J. A. Gavira**.

Patents

“Through-Put Crystallization Cassette for the Growth and Optimization of Macromolecular Crystals”. Ng, J.D., García-Ruiz, J.M., Gavira-Gallardo, J.A., Well M., Greg J. Ref. 7.118626, USA. 10/10/2006

Other significant publications can be found at: <http://lec.ugr.es/gavi/publications.php>

D. Research Support

07/12/2006-31/12/2014 “Factoría Española de Cristalización”, MEC, CONSOLIDER INGENIO2010 (5 M €) + Andalucía Regional Government (2 M €) IP: Garcia Ruiz, Juan Manuel, Participants: 84

Role: Co-Investigator

08/04/07-08/04/10 “Optimisation Of Protein Crystallisation for European Structural Genomics (Opticryst)”, VI Frame Programme UE (295.498,0 €)

Role: IP (Spain)

01/01/11-31/03-14 “Production and Characterization of Reinforced Cross-Linked Crystals for Biotechnological Applications”, Spanish Ministry: I+D+i. BIO2010-16800 (121.000,00 €)

Role: IP

Thesis Advisor

PhD students

- 2006 Dr. Raquel Godoy Ruiz, Dto. Physical-Chemistry, U. de Granada, Spain.
 2008 Dr. Alexander E.S. Van Driessche, LEC, IACT, CSIC-U. Granada, Spain.
 2012 Dr. Alvaro Ingles Prieto, Dto. Physical-Chemistry, U. de Granada, Spain.
 on-going Mrs. M^a Teresa Conejero Muriel, LEC, IACT, CSIC-UIMP, Spain.

Masters students

- 2004 Mrs. Emily J. Horner, University of Sud Dakota, USA.
 2005 Mr. Francisco Manuel Gonzalez Rico, LEC, CSIC-U. Granada, Spain.
 2010 Mr. Luis A. Gonzalez Ramirez, LEC, CSIC-U. Granada, Spain.
 2012 Mrs. M^a Teresa Conejero Muriel, LEC, CSIC-U. Granada, Spain.
 2013 Mr. José Manuel Bravo Arredondo, LEC, CSIC-U. Granada, Spain.

Other merits

- Co-director of the “**Crystallization Workshop of the ICCBM**”, 2008 (Mexico) & 2012 (USA).
- Co-director of the “**International School on Biomolecules Crystallization**”, 2005, 2009, 2011 (Spain).
- Director of the “**International School on Biomolecules Crystallization**” 2013 (Spain).
- Coordinator of the master course “**Laboratory of Crystallization**” within the “**Master on Crystallization and Crystallography (MCC)**” of the University Menendez Pelayo, since 2008.