

*Daniel Balleza Mejía*  
8 Jan 2013

## Curriculum Vitae



**Name:** Daniel Balleza Mejía

**Place and Date of Birth:** México D.F., March 25, 1972.

**Address:**

Home: Bardenas Reales 1 – 4-izq  
Pamplona, CP 31006  
Navarra, España.

Institution: Unidad de Biofísica, CSIC  
Barrio Sarriena s/n  
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Leioa, España. CP 48080

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Home: 682439533

**Marital Status:** Married

RFC: BAMD720325

CURP: BAMD720325HDFLJN06

NIE: Y0403989P

**Education:**

1990-1993

Bachelor in Biology (February 14, 1996)  
Faculty of Sciences (UNAM)

Thesis: "Gene Amplification of *syRM-nodD3-syrA* from *Rhizobium meliloti* Rm41"

Asesor: Dr. R. Palacios de la Lama  
Centro de Investigación sobre Fijación de Nitrógeno  
(CIFN-UNAM)

1996-1998

Master degree in Biomedicine (March 6, 1998)  
Institution: CIFN-UNAM

Thesis: "Analysis of sequences of reiterated DNA and prediction of genomic rearrangements in *Rhizobium meliloti*"

Asesor: Dr. R. Palacios de la Lama  
Centro de Investigación sobre Fijación de Nitrógeno  
(CIFN-UNAM)

  
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1998-2004

Ph. D. in Sciences (**March 11, 2005**)

Institution: Institute of Biotechnology - UNAM

Thesis: "Study of the ion channels in roots from *Phaseolus vulgaris*"

Asesor: M.C. Ma. Carmen Quinto Hernández / Dr. Froylán Gómez-Lagunas

2006-2008

Posdoctoral Position

Institution: Facultad de Medicina-UNAM

Project: "Study of C-type Inactivation in *Shab11* channels from *Drosophila melanogaster*"

Asesor: Dr. Froylán Gómez-Lagunas

2008-2009

Posdoctoral Position

Institution: Laboratory of Molecular Biology, University of Wisconsin

Project: Cloning and characterization of MscL channel ortholog from *Rhizobium etli*

Asesor: Dr. Ching Kung

2009-2012

Posdoctoral Position


Institution: Unidad de Biofísica, CSIC, UPV/EHU

Project: Phase behavior of mixtures of *n*-acyl and polyprenyl lipids as model of Archaeobacterial membranes

Asesor: Dr. Félix Goñi U.

#### **Professional activities and International Meetings:**

- Laboratory in Chemistry, U.N.A.M. 1989.
- Diploma on Evolutive Biology, Facultad de Ciencias, November 15-19, 1993.
- 1<sup>st</sup> National Course in Molecular Biology applied to Medicine, Instituto Nacional de la Nutrición S. Zubirán, October 13-16, 1993.
- 4<sup>th</sup> National Congress of Nitrogen Fixation, CIFN-UNAM, October, 1996.
- Amersham Sequencing Workshop, CIFN-UNAM, December, 1996.
- 3<sup>rd</sup> Curso Internacional sobre Aplicaciones de la Biología Molecular al Estudio de las Interacciones Planta-Microbio, Facultad de Ciencias Exactas, La Plata-Argentina, November 2-14, 1998.
- IX National Congress of Biochemistry and Molecular Biology of Plants, Mérida-México, October 30 to November 2, 1999.
- 1<sup>st</sup> International Course on Molecular Basis of Ion Channel Function, Universidad Peruana Cayetano Heredia, Lima-Perú, November 15-20, 1999.
- 44<sup>th</sup> Annual Meeting of Biophysical Society, New Orleans, Louisiana-USA, February 12-16, 2000.
- 6<sup>th</sup> International Congress of Plant Molecular Biology (Québec, June 18-24 / 2000).
- XXIII National Congress of Biochemistry, Acapulco, Guerrero, November 19-24, 2000.
- 1<sup>st</sup> International Workshop on Ion Channels: From Structure to Physiopathology, Colima, México, November 26-29, 2000.
- 46<sup>th</sup> Annual Meeting of Biophysical Society, San Francisco, California-USA, February 23-27, 2000.

  
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- 1<sup>st</sup> PanAmerican Plant Membrane Biology Meeting. Cuernavaca, México. May 28 - June 1, 2003
- X National Congress of Biochemistry and Molecular Biology of Plants, Acapulco, México, November 3-7, 2003.
- XLIX National Congress of Physics. San Luis Potosí, México. October 16-20, 2006.
- Symposium: Systematics and Evolution. Cuernavaca, Morelos. June 11, 2007.
- L National Congress of Physics. Boca del Río, Veracruz. October 29 to November 2, 2007.
- LII National Congress of Physics. Acapulco, Guerrero, 26 to 30 October, 2009.
- 55th Annual Meeting Biophysical Society. Baltimore, Maryland, 5 to 9 March, 2011.
  - ISSOL Conference of the International Astrobiology Society and Bioastronomy. Montpellier, France, July 3rd – 8th, 2011.

#### **Experience in Laboratory:**

- Molecular Biology: Cloning and heterologous expression of bacterial genes in *E. coli*.
- Analysis of nucleotide and protein sequences on databases. Multiple alignment tools.
- Isolation and purification of plasmatic membranes, microsomes and lipid rafts.
- Biophysics, structure and function of mechanosensitive and Kv channels.
- Reconstitution of ion channels into planar lipid bilayers and patch-clamp.
- Analysis of electrophysiological recordings of unitary and macroscopic currents.
- Lipid bilayers and liposomes. Differential scanning calorimetry.

**Languages:** Spanish and English (80%)

#### **Teaching:**

- Professor of Evolutionary Biology, School of Medicine "Xochitepec", Cuernavaca, Morelos (2002).
- Professor of Molecular Biology, Faculty of Sciences, UAEM, Cuernavaca, Morelos (2002-2003).

#### **Distinctions:**

- National Researcher (Sistema Nacional de Investigadores SNI1 – CONACyT) (2009-2013)
- Fulbright scholarship for the exchange of scholars México-USA (September 2008 - May 2009)

#### **Community Service:**

- Radio UAEM (UFm – Alterna). Science Divulgarion, "The Origin and Evolution of Life on Earth".

#### **Publications - Articles and Reviews:**

- **Balleza, D.**, Sot, J., Ruiz-Mirazo, K., and Gofí. 2013. Model Archaeobacterial and Eubacterial phospholipid bilayers: Two different solutions to achieve an efficient fluid phase. *Submitted*.
- **Balleza, D.** 2012. Mechanical Properties of Lipid Bilayers and Regulation of Mechanosensitive Function: From Biological to Biomimetic Channels. *Channels*. 6:4; 1-14.
- **Balleza, D.** 2011. Toward understanding protocell mechanosensation. *Orig. Life Evol. Biosph.* 41: 281-304.

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- Arias-Olguin, I.I., Carrillo, E., Meza-Torres, B., Barriga-Montoya, C., **Balleza, D.**, and Gómez-Lagunas, F. 2011. Induction of a fast inactivation gating on delayed rectifier Shab K<sup>+</sup> channels by the anti-inflammatory drug Celecoxib. *Channels*. 5: 56-64.
- **Balleza, D.**, Quinto, C., Elías, D. and Gómez-Lagunas, F. 2010. A high conductance, cation selective, ion channel from the inner membrane of *Rhizobium etli*. *Arch. Microbiol.* 192: 595-602.
- **Balleza, D.**, Gómez-Lagunas, F. and Quinto, C. 2010. Cloning and functional expression of an MscL ortholog from *Rhizobium etli*: Characterization of a mechanosensitive channel. *J. Memb. Biol.* 234: 13-27.
- **Balleza, D.** and Gómez-Lagunas, F. 2009. Conserved motifs in mechanosensitive channels MscL and MscS. *Eur. Biophys. J.* 38(7): 1013-27.
- **Balleza, D.** Kröttsch, G. 2007. Preludio al Génesis de la Vida en la Tierra. *Ciencia y Desarrollo*. Vol. XXXIII (214): 9-15.
- **Balleza, D.**, Gómez-Lagunas, F. Sanchez, F. and Quinto, C. 2005. A high conductance cationic channel from *Phaseolus vulgaris* roots incorporated into planar lipid bilayers *Arch. Biochem Biophys.* 438: 88-92.
- **Balleza, D.**, Quinto, C. and Gómez-Lagunas, F. 2003. A chloride-permeable channel from *Phaseolus vulgaris* roots incorporated into planar lipid bilayers. *Biochem Biophys. Res Commun* 18;307(1):114-8.
- **Balleza, D.**, Quinto, C. and Gómez-Lagunas, F. 2002. Sistemas membranales modelo: El uso de membranas modelo para el estudio de canales iónicos de células vegetales. *Ciencia y Desarrollo*. Vol. XXVIII (166): 24-33.

#### Acknowledgements in published articles:

- Su Z, Zhou X, Loukin SH, Saimi Y, Kung C. 2009. Mechanical force and cytoplasmic Ca<sup>(2+)</sup> activate yeast TRPY1 in parallel. *J Membr Biol.* 227(3): 141-150.
- Gómez-Lagunas F. 2007. Stability of the Shab K<sup>+</sup> channel conductance in 0 K<sup>+</sup> solutions: the role of the membrane potential. *Biophys J.* 93: 4197-4208.
- Romero, D. and Palacios, R. 1997. Gene Amplification and Genomic Plasticity in Prokaryotes. *Annu Rev Genet.* 31: 91-111.


#### Chapters in Books:

- **Balleza, D.** 2010. Mechanosensitive channels in Archaea: Roles, lipid-protein interactions and future questions. *In: Archaea: Structure, habitats and ecological significance.* Nova Pub. Ed. Sakura Y. Katō.
- Quinto, C., Cárdenas, L., **Balleza, D.**, Gómez-Lagunas, F., Nava, N., Alemán, E., Hernández, A., Napsusialy, S. and Santana, O. 2001. Early responses in the *Rhizobium*-legume interaction. CIFN XX Anniversary.

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#### Abstracts on Symposia and Workshops:

- Ruiz-Mirazo, K., Goñi, F., Sot, J., Rendón A. and **Balleza, D.** 2012. Self-Assembly, Stability and Permeability of Precursor Cellular Membranes. ICPOC-21 International Conference on Physical Organic Chemistry, September 9–13, Durham University, UK.
- **Balleza, D.**, Sot, J., Ruiz-Mirazo, K. and Goñi, F. 2011. An experimental study on the 'lipid divide': phase behavior of mixtures of *n*-acyl and polyprenyl lipids. Origins2011 International Conference, July 3<sup>rd</sup>–8<sup>th</sup>, Montpellier, France.
- Arias-Olguin, I., Carrillo, E., Meza, B., **Balleza, D.**, and Gomez-Lagunas, F. 2011. Celecoxib promotes a fast inactivation gating in Shab K<sup>+</sup>Channels. 55<sup>th</sup> Meeting of the Biophysical Society, March 5–9, Baltimore, Maryland.
- Krötzsch, G. y **Balleza, D.** 2009. Composicion y Dinamica de los canales ionicos empleando Fourier Discreto. LII Congreso Nacional de Física. Acapulco, Guerrero. 26 to 30, october, 2009.
- Krötzsch, G. and **Balleza, D.** 2007. Inferencia filogenética de canales iónicos celulares mecano-sensibles. I Congreso Nacional de Física. Boca del Río, Veracruz. October 29 to November 2, 2007.
- Krötzsch, G. and **Balleza, D.** 2006. Algoritmo de reconstrucción condicionada aplicado a genomas, que transforma la topología de árbol en topología de anillo, para representar la evolución filogenética de los tres dominios de la vida. XLIX Congreso Nacional de Física. San Luis Potosí, México. October 16-20, 2006.
- Quinto, C., Cárdenas, L., Jáuregui, D., Nava, N., **Balleza, D.**, Santana, O., Martínez, A., García, K. and Montiel, J. Interacción *Phaseolus vulgaris* – *Rhizobium etli*: Una relación llena de sorpresas y lecciones que ha dado de que hablar... XI Reunión Nacional de la Sociedad Española de Fijación de Nitrógeno: Congreso sobre la Fijación de Nitrógeno Atmosférico y otras Interacciones Beneficiosas Planta-Microorganismos. Madrid, España. June 5 – 8, 2006.
- Quinto, C., Jáuregui, D., Nava, N., **Balleza, D.** and Santana, O. 2006. Expression pattern and sub-cellular location of a *Phaseolus vulgaris* LRR-RLK gene during the nodulation process. Published in the Memories of the 3<sup>rd</sup>. International Conference on Legume Genomics and Genetics. Queensland, Australia, April 9 – 13, 2006.
- Quinto, C., Cárdenas, L., Alemán, E., Nava, N., **Balleza, D.**, Hernández, A., Santana, O., and Sardineta, D. Early Responses in the *Rhizobia* – Legume Interaction. BLAST VII Meeting. Cuernavaca, Mor., México. January 19 – 24, 2003.
- **Balleza, D.** 1<sup>st</sup> Pan-American Plant Membrane Biology Workshop. Chloride channels from bean roots, a study on black lipid bilayers. Cuernavaca, Mexico. May 28 – June 1, 2003
- Quinto, C., Cárdenas, L., Alemán, E., **Balleza, D.**, Nava, N., Santana, O. and Sardineta, D. Eventos tempranos en la simbiosis *Rhizobium etli* – *Phaseolus vulgaris*. XXI Reunión Latinoamericana de Rhizobiología. VI Congreso Nacional sobre Fijación de Nitrógeno. Cocoyoc, Mor., México. October 21 – 24, 2002.

  
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- Quinto, C., Cárdenas, L., Napsucialy, S., Santana, O., Hernández, A., Nava, N., **Balleza, D.** and Alemán, E. 2002. Interacciones simbióticas entre bacterias del suelo y plantas leguminosas desde una perspectiva molecular. *Revista Latinoamericana de Microbiología*. Vol.: 44. No. 1. January – March. pp 147.
- **Balleza, D.**, Quinto, C. and Gómez-Lagunas, F. 2002. Single channel analysis of cation channels from *Phaseolus vulgaris* roots reconstituted in planar bilayers. *Biophysical Journal*. 82: 3115Pos.
- **Balleza, D.**, Gómez-Lagunas, F. and Quinto, C. Biophysical Characterization of Ion Channels from *Phaseolus vulgaris* roots by its Reconstitution in Planar Bilayers. X Congreso Nacional de Bioquímica y Biología Molecular de Plantas / 4<sup>th</sup> Symposium México-USA. La Paz, Baja California, México. October 27 – 30, 2001.
- Quinto, C., Cárdenas, L., **Balleza, D.**, Gómez-Lagunas, F., Nava, N., Napsucialy, S., Hernández, A., Alemán, E. and Santana, O. Early responses in the *Rhizobium*-legume interaction. X Congreso Nacional de Bioquímica and Biología Molecular de Plantas / 4<sup>th</sup>. Symposium México-USA. La Paz, Baja California, México. October 27 – 30, 2001.
- **Balleza-Mejía, D.**, Gómez-Lagunas, F., Sánchez, F. and Quinto, C. Plasma-membrane ion channel currents from *Phaseolus vulgaris* roots. Published in the Memories of the Annual Meeting on Plant Biology, July 21-25, 2001 (Providence, USA).
- **Balleza-Mejía, D.**, Gómez-Lagunas, F. and Quinto, C. 2000. Study of Ion Channels present in Bean Roots, after Reconstitution in Planar Lipidic Bilayers. Published in the Memories of the XXIII National Congress of Mexican Society of Biochemistry (Acapulco, México).
- Quinto, C., Cárdenas, L., Domínguez, J., **Balleza, D.**, Hernández, A., González, AL., Napsucialy, S., Arriaga, G., Nava and Santana, O. Diálogo molecular entre la bacteria del suelo *Rhizobium etli* y plantas leguminosas. XV Congreso Latinoamericano de Microbiología. XXXI Congreso Nacional de Microbiología. Mérida, Yucatán, México. April 9 – 13, 2000.
- **Balleza-Mejía, D.**, Gómez-Lagunas, F. and Quinto, C. Ion Channels Currents in Plasma Membrane Vesicles from Bean Roots. Published in the Memories of the 4<sup>th</sup> European Nitrogen Fixation Conference (Sevilla, Spain). September 16-20, 2000.
- **Balleza, D.** Gómez-Lagunas, F. and Quinto, C. Ion channels currents in plasma membrane vesicles from bean roots. 1<sup>st</sup> International Workshop: Ionic Channels, from Structure to Physiopathology. Colima, México. November 26-29, 2000.
- **Balleza-Mejía, D.**, Gómez-Lagunas, F., Sánchez, F. and Quinto, C. A Reconstitution Study of Ion Channels from Bean Roots, using Planar Lipid Bilayers. Published in the Memories of the 6<sup>th</sup> International Congress of Plant Molecular Biology (Québec, Canada). June 18 – 24, 2000.
- **Balleza-Mejía, D.**, Sánchez, F., Quinto, C. and Gómez-Lagunas, F. 2000. A Voltage-Dependent, Ca<sup>2+</sup>-Modulated Chloride Channel from Bean Roots: Single Channel Recordings in Planar Bilayers. *Biophysical Journal*. 78: 2756Pos.
- **Balleza-Mejía, D.**, Gómez-Lagunas, F., Sánchez, F. and Quinto, C. Characterization of a Voltage-Dependent, Ca<sup>2+</sup>-Modulated Chloride Channel from Bean Roots. IX Congreso Nacional de Bioquímica y Biología Molecular de Plantas / 3<sup>rd</sup> Symposium México-USA, October, 1999. Mérida-México.

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