

Jimena Rinaldi

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**Position (From 06/2013)**

Member of the Research Career, National Council of research, Argentina (CONICET) Fundación Instituto Leloir, Buenos Aires, Argentina.

Category: Assistant

Supervisor: Dr. Fernando Alberto Goldbaum

Education/Training**Postdoc in Structural Biology (2009-2013)**

Fundación Instituto Leloir, Buenos Aires, Argentina.

- Structural basis of a light activated signaling pathway involved in the virulence process of Brucella and other Rhizobial bacteria
- Supervisor: Dr. Fernando Alberto Goldbaum
- Fellowships: CONICET & National Agency of Scientific and Technological Promotion

PhD in Biological Chemistry/Structural Biology (2004-2009)

Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, Buenos Aires, Argentina.

Collaborative work with Susan Taylor's group, 8-month stay in Susan Taylor's lab at UCSD during 2007 and 2008.

- Thesis title: Bioinformatic, biochemical and structural analysis of PKA regulatory subunit in fungal models
- Supervisor: Dr. Silvia Moreno de Colonna, Department of Biological Chemistry, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires
- Fellowship: CONICET

Bachelor in Biological Sciences (1998-2003)

Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, Buenos Aires, Argentina

Publications

22. Lisandro H. Otero, Sabrina Foscaldi, Giuliano T. Antelo, Germán L. Rosano, Serena Sirigu, Sebastián Klinke, Lucas A. Defelipe, Maximiliano Sánchez-Lamas, Giovanni Battocchio, Valeria Conforte, Adrián A. Vojnov, Leonard M. G. Chavas, Fernando A. Goldbaum, Maria-Andrea Mroginski, Jimena Rinaldi, Hernán R. Bonomi. Structural basis for the Pr-Pfr long-range signaling mechanism of a full-length bacterial phytochrome at the atomic level. Accepted on 17/09/2021 in Science Advances. In press.

21. Conforte V, Otero LH, Toum L, Sirigu S, Antelo GT, Rinaldi J, Foscaldi S, Klinke S, Chavas LMG, Vojnov AA, Goldbaum FA, Malamud F, Bonomi HR. Pr-favoured variants of the bacteriophytochrome from the plant pathogen *Xanthomonas campestris* hint on light regulation of virulence-associated mechanisms. *FEBS J.* 2021 Apr 17. doi: 10.1111/febs.15883. Epub ahead of print. PMID: 33864705.
20. Rinaldi J, Fernández I, Shin H, Sycz G, Gunawardana S, Kumarapperuma I, Paz JM, Otero LH, Cerutti ML, Zorreguieta Á, Ren Z, Klinke S, Yang X, Goldbaum FA. Dimer Asymmetry and Light Activation Mechanism in *Brucella* Blue-Light Sensor Histidine Kinase. *mBio.* 2021 Apr 20;12(2):e00264-21. doi: 10.1128/mBio.00264-21. PMID: 33879593; PMCID: PMC8092228.
19. Barraza CE, Solari CA, Rinaldi J, Ojeda L, Rossi S, Ashe MP, Portela P. A prion-like domain of Tpk2 catalytic subunit of protein kinase A modulates P-body formation in response to stress in budding yeast. *Biochim Biophys Acta Mol Cell Res.* 2021 Jan;1868(1):118884. doi: 10.1016/j.bbamcr.2020.118884. Epub 2020 Oct 9. PMID: 33039554.
18. Antelo GT, Sánchez-Lamas M, Goldbaum FA, Otero LH, Bonomi HR, Rinaldi J. A Spectroscopy-based Methodology for Rapid Screening and Characterization of Phytochrome Photochemistry in Search of Pfr-favoured Variants. *Photochem Photobiol.* 2020 Jul 19. doi: 10.1111/php.13313.
17. Leonardo Pellizza, José L. López, Susana Vázquez, Gabriela Sycz, Beatriz G. Guimarães, Jimena Rinaldi, Fernando A. Goldbaum, Martín Aran, Walter P. Mac Cormack and Sebastián Klinke. Protein structure of C24 gene from *Bizionia argentinensis* resembles the phage T4 long tail fiber receptor-binding tip: a new role for a recent insertion or a novel marine bacteriophage? Enviado el 9 de mayo de 2020 a *Journal of Structural Biology.* *J Struct Biol.* 2020;107595. doi:10.1016/j.jsb.2020.107595
16. VANESA ZYLBERMAN, SANTIAGO SANGUINETI, ANDREA V. PONTORIERO, SANDRA V. HIGA, MARÍA L. CERUTTI, SUSANA M. MORRONE SEIJO, ROMINA PARDO, LUCIANA MUÑOZ, MARÍA E. ACUÑA INTRIERI, VANINA A. ALZOGARAY, MARTÍN M. AVARO, ESTEFANÍA BENEDETTI, PAULA M. BERGUER, LAURA BOCANERA, LUCAS BUKATA, MARINA S. BUSTELO, ANA M. CAMPOS, MARIANA COLONNA, ELISA CORREA, LUCÍA CRAGNAZ, MARÍA E. DATTERO, MARÍA DELLAFIORE, SABRINA FOSCALDI, JOAQUÍN V. GONZÁLEZ, LUCIANO L. GUERRA, SEBASTIÁN KLINKE, MARÍA S. LABANDA, CONSTANZA LAUCHÉ, JUAN C. LÓPEZ, ANABELA M. MARTÍNEZ, LISANDRO H. OTERO, ELÍAS H. PEYRIC4, PABLO F. PONZIANI, ROMINA RAMONDINO, JIMENA RINALDI, SANTIAGO RODRÍGUEZ, JAVIER E. RUSSO, MARA L. RUSSO, SOLEDAD L. SAAVEDRA, MAURICIO SEIGELCHIFER, SANTIAGO SOSA, CLAUDIO VILARIÑO, PATRICIA LÓPEZ BISCAYART, ESTEBAN CORLEY, LINUS SPATZ, ELSA G. BAUMEISTER, FERNANDO A. GOLDBAUM. Developedment of a Hyperimmune equine serum therapy for COVID-19 in Argentina. (2020) *Medicina*, Vol. 80 (Supl. III): 1-6.
15. Klinke S, Rinaldi J, Goldbaum FA, Suarez S, Otero LH. (2019) An All-Inclusive and Straightway Laboratory Activity to Solve the Three-Dimensional Crystal Structure of a Protein. *Biochem Mol Biol Educ.*47(6):700-707. doi:10.1002/bmb.21296
14. Sosa, S., Rossi, A.H., Szalai, A.M., Klinke, S., Rinaldi, J., Farias, A., Berguer, P.M., Nadra, A.D., Stefani, F.D., Goldbaum, F.A., Bonomi, H.R. Asymmetric bifunctional protein nanoparticles through redesign of self-assembly (2019) *Nanoscale Advances*, 1 (5), pp. 1833-1846. DOI: 10.1039/c8na00375k
13. Rinaldi, J., Fernández, I., Poth, L.M., Shepard, W.E., Savko, M., Goldbaum, F.A., Klinke, S. Crystallization and initial X-ray diffraction analysis of the multi-domain *Brucella* blue light-activated histidine kinase LOV-HK in its illuminated state (2018) *Biochemistry and Biophysics Reports*, 16, pp. 39-43. DOI: 10.1016/j.bbrep.2018.09.005
12. Wetzler, D.E., Fuchs Wightman, F., Bucci, H.A., Rinaldi, J., Caramelo, J.J., Iusem, N.D., Ricardi, M.M. Conformational plasticity of the intrinsically disordered protein *asr1* modulates its function as a drought stress-responsive gene (2018) *PLoS ONE*, 13 (8), art. no. e0202808. DOI: 10.1371/journal.pone.0202808

11. Sapp, A., Huguet-Tapia, J.C., Sánchez-Lamas, M., Antelo, G.T., Primo, E.D., Rinaldi, J., Klinke, S., Goldbaum, F.A., Bonomi, H.R., Christner, B.C., Oteroc, L.H. Draft genome sequence of *Methylobacterium* sp. strain V23, isolated from accretion ice of the Antarctic subglacial Lake Vostok (2018) *Genome Announcements*, 6 (10), art. no. e00145-18. DOI: 10.1128/genomeA.00145-18
10. Hiriart, Y., Rossi, A.H., Biedma, M.E., Errea, A.J., Moreno, G., Cayet, D., Rinaldi, J., Blancá, B., Sirard, J.C., Goldbaum, F., Berguer, P., Rumbo, M. Characterization of structural and immunological properties of a fusion protein between flagellin from *Salmonella* and lumazine synthase from *Brucella* (2017) *Protein Science*, 26 (5), pp. 1049-1059. DOI: 10.1002/pro.3151
9. Otero, L.H., Klinke, S., Rinaldi, J., Velázquez-Escobar, F., Mroginski, M.A., Fernández López, M., Malamud, F., Vojnov, A.A., Hildebrandt, P., Goldbaum, F.A., Bonomi, H.R. Structure of the Full-Length Bacteriophytochrome from the Plant Pathogen *Xanthomonas campestris* Provides Clues to its Long-Range Signaling Mechanism (2016) *Journal of Molecular Biology*, 428 (19), pp. 3702-3720. DOI: 10.1016/j.jmb.2016.04.012
8. Rinaldi, J., Arrar, M., Sycz, G., Cerutti, M.L., Berguer, P.M., Paris, G., Estrín, D.A., Martí, M.A., Klinke, S., Goldbaum, F.A. Structural Insights into the HWE Histidine Kinase Family: The *Brucella* Blue Light-Activated Histidine Kinase Domain (2016) *Journal of Molecular Biology*, 428 (6), pp. 1165-1179. DOI: 10.1016/j.jmb.2016.01.026
7. González Bardeci, N., Caramelo, J.J., Blumenthal, D.K., Rinaldi, J., Rossi, S., Moreno, S. The PKA regulatory subunit from yeast forms a homotetramer: Low-resolution structure of the N-terminal oligomerization domain (2016) *Journal of Structural Biology*, 193 (2), pp. 141-154. DOI: 10.1016/j.jsb.2015.12.001
6. Ibañez, A.E., Coria, L.M., Carabajal, M.V., Delpino, M.V., Risso, G.S., Cobiello, P.G., Rinaldi, J., Barrionuevo, P., Bruno, L., Frank, F., Klinke, S., Goldbaum, F.A., Briones, G., Giambartolomei, G.H., Pasquevich, K.A., Cassataro, J. A bacterial protease inhibitor protects antigens delivered in oral vaccines from digestion while triggering specific mucosal immune responses (2015) *Journal of Controlled Release*, 220, pp. 18-28. DOI: 10.1016/j.jconrel.2015.10.011
5. Klinke, S., Foos, N., Rinaldi, J.J., Paris, G., Goldbaum, F.A., Legrand, P., Guimarães, B.G., Thompson, A. S-SAD phasing of monoclinic histidine kinase from *Brucella abortus* combining data from multiple crystals and orientations: An example of data-collection strategy and a posteriori analysis of different data combinations (2015) *Acta Crystallographica Section D: Biological Crystallography*, 71, pp. 1433-1443. DOI: 10.1107/S1399004715007622
4. Klinke, S., Otero, L.H., Rinaldi, J., Sosa, S., Guimarães, B.G., Shepard, W.E., Goldbaum, F.A., Bonomi, H.R. Crystallization and preliminary X-ray characterization of the full-length bacteriophytochrome from the plant pathogen *Xanthomonas campestris* pv. *Campestris* (2014) *Acta Crystallographica Section F: Structural Biology Communications*, 70, pp. 1636-1639. DOI: 10.1107/S2053230X14023243
3. Rinaldi, J., Gallo, M., Klinke, S., Paris, G., Bonomi, H.R., Bogomolni, R.A., Cicero, D.O., Goldbaum, F.A. The β -scaffold of the LOV domain of the *brucella* light-activated histidine kinase is a key element for signal transduction (2012) *Journal of Molecular Biology*, 420 (1-2), pp. 112-127. DOI: 10.1016/j.jmb.2012.04.006
2. Rinaldi, J., Wu, J., Yang, J., Ralston, C.Y., Sankaran, B., Moreno, S., Taylor, S.S. Structure of Yeast Regulatory Subunit: A Glimpse into the Evolution of PKA Signaling (2010) *Structure*, 18 (11), pp. 1471-1482. DOI: 10.1016/j.str.2010.08.013
1. Rinaldi, J., Ocampo, J., Rossi, S., Moreno, S. A novel activating effect of the regulatory subunit of protein kinase A on catalytic subunit activity (2008) *Archives of Biochemistry and Biophysics*, 480 (2), pp. 95-103. DOI: 10.1016/j.abb.2008.09.014

Training of human resources

Sabrina Foscaldi. Postdoc. Bacterial photoreception of red/far red light. (2017-)

Juan María Paz. Undergraduate (Biology, FCEN-UBA) internship. Bacterial photoreception of blue light. (2017-2019). Bachelor Thesis defended on April 2019.

Giuliano Tomás Antelo. Undergraduate (Biology, FCEN-UBA) internship. Bacterial photoreception of red/far red light. (2017-2020). Bachelor Thesis defended on March 2020.

Olivier Gibson. Undergraduate (Biology, FCEN-UBA) internship. Bacterial photoreception of red/far red light. (2015-2016)

Grants

Position in the grant: Member of the researchers group

Code: PICT2019-02130

Title: Molecular insights into the signaling pathway of the *Brucella* blue-light sensing histidine kinase

Amount: \$2165625

Type of project: ANPCyT I-B (Open topics – Research group)

Starting date: 03/2021 y Ending date: 03/2024

Position in the grant: Main researcher

Code: PICT2016-1618

Title: Molecular bases of a light activated signaling pathway involved in the virulence process in *Brucella*.

Amount: \$170000

Type of project: ANPCyT I-B (Open topics – Young Researchers)

Starting date: 10/2017 y Ending date: 09/2019

Organization of scientific meetings

Coordination of a poster session in the area “Structural and functional biochemistry” at the Joint Biosciences Meeting, which took place in Buenos Aires, Argentina, from November 13 to 17, 2017.

Organization of the Workshop "Bioinformatic tools for the study of the sequence, structure and function of proteins applied to the problem of photoreceptors", in the III Meeting of Argentine Molecular Photobiologists, San Miguel de Tucumán, Argentina September 1, 2016.

Organization of the Photoreceptor Structural Biology Symposium at the 16th International Congress of Photobiology, which took place in the city of Córdoba, Argentina between September 8 and 12, 2014.

Evaluation activitiesEvaluation of scientific articles

2019. Nature Communications. Título del trabajo: Revisiting the pH-gated Conformational Switch on the Activities of HisKA-family Histidine Kinases.

2017. Nature Communications. Job title: A pH-gated conformational switch regulates the phosphatase activity of bifunctional histidine kinases in the two-component signaling system.

2016. Scientific reports. Title of the work: Merr and ChrR mediate blue light induced photo-oxidative stress response at the transcriptional level in *Vibrio cholerae*.

2016. Scientific reports. Job title: Genome-wide response of *Vibrio cholerae* to blue light via two different signaling mechanisms.

PhD Thesis jury

December 2020. Jury of the PhD Thesis of Marisel Tuttobene, Facultad de Ciencias Bioquímicas y Farmacéuticas, Universidad Nacional de Rosario, directed by María Alejandra Mussi and co-directed by María Soledad Ramírez.

Bachelor Thesis jury

March 2018. Jury of the Bachelor Thesis of Federico Alberto Olivieri of the Bachelor's Degree in Biological Sciences Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, directed by Diana Wetzler and co-directed by Martín Dodes Traian.

Teaching Experience

Teaching Assistant. Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, Buenos Aires, Argentina.

Macromolecular Crystallography Course CELFI (2019-2017)

Department of Molecular and Cellular Biology (2014-2016)

Department of Biological Chemistry (2013)

Department of Molecular and Cellular Biology (2010-2012)

Department of Biological Chemistry (2007)

Department of Ecology, Genetics & Evolution (2004-2005)

Teaching Assistant. Facultad de Farmacia y Bioquímica, Universidad de Buenos Aires, Buenos Aires, Argentina.

Course: Methods for the study of the conformation of proteins and their interactions. (2012-2019).