

## Alejandro Buschiazzo - Short CV - Jan 2021

NAME and SURNAME	POSITION TITLE	WEB SITE	TEL, EMAIL
Alejandro Buschiazzo	Tenured Research Scientist (Associate Professor)	<a href="http://pasteur.uy/en/labs/molecular-and-structural-microbiology-lab/">http://pasteur.uy/en/labs/molecular-and-structural-microbiology-lab/</a>	+598 25220910 <a href="mailto:alebus@pasteur.fr">alebus@pasteur.fr</a> <a href="mailto:alebus@pasteur.edu.uy">alebus@pasteur.edu.uy</a>

### EDUCATION/TRAINING

Institution and location	Degree	Month / Year	Field of Study
School of Natural Sciences, Univ. Nacional de La Plata, Argentina	BSc	03/1985 – 02/1991	Biology (Major in Zoology)
Institute Leloir, Univ. de Buenos Aires, Argentina	Specialization – entrance to Graduate School	03/1991 – 08/1992	Advanced Biological Chemistry course
Institute Leloir, Univ. de Buenos Aires, Argentina	PhD	09/1992 - 07/1999	Chemistry – Thesis in Biological Chemistry and Molecular Biology of Trypanosomatids
Univ. of California, Irvine, USA	Traineeship within PhD program	08/1995 – 10/1995	Training in Protein Crystallography at the Poulos Lab, Department of Molecular Biology & Biochemistry
Institut Pasteur, Paris, France	Traineeship within PhD program	02/1998 – 07/1998	Training in Protein Crystallography at the Alzari Lab, Department of Structural Biology & Chemistry

### A. Positions and Honors.

#### *Positions:*

- 08/1999 – 06/2003 : Postdoctoral Researcher, Dept of Structural Biology & Chemistry, Institut Pasteur, Paris
- 07/2003 – 12/2015 : Tenured Research Scientist (Assistant Professor), Institut Pasteur, Paris
- 01/2016 - present : Tenured Research Scientist (Associate Professor), Institut Pasteur, Paris
- 08/2006 - present : Head of the Unit of Protein Crystallography, and the Laboratory of Molecular & Structural Microbiology, Institut Pasteur de Montevideo, Uruguay (member of the Institut Pasteur International Network)

#### *Honors:*

- 07/2018 : elected Member of the National Academy of Sciences of Uruguay ANCIU
- 10/2015 : recipient of the “Premio Nacional Ciudadano de Oro” Prize, Centro Latinoamericano de Desarrollo, Montevideo, Uruguay
- 01/2014 : recipient of the “François Jacob” Prize, Institut Pasteur, Paris, France
- 02/2003 : qualification as Assistant Professor (*Maître de conference*), Conseil National des Universités (N° 03264133886), Biochemistry and Molecular Biology section, France
- 01/2002 : recipient of the Roux scholarship, Institut Pasteur, Paris, France
- 12/2000 : Special Mention of the Jury - Prize “Profesor Doctor Luis Federico Leloir” to the best Doctoral Thesis in Chemistry – Universidad de Buenos Aires, Argentina

#### *Memberships:*

- Member of the Scientific Evaluation Committee, Institut Pasteur (Paris) – COMESP 2018-2022
- Associate Editor of the journal PLoS Neglected and Tropical Diseases – 2010-continues
- Founding node of the South American network for the advancement of Structural Biology “Centro de Biología Estructural del Mercosur” (CeBEM, <http://www.cebem-lat.org>) – 2008-continues
- Chair of the National Committee of Crystallography (RUCr, Uruguay), member of the International Union of Crystallography (IUCr) <http://www.iucr.org/iucr/ab.html/adhering-bodies/uruguay> – 2013-continues
- Member of the Commission on Biological Macromolecules of the IUCr

## B. Selected peer-reviewed publications.

H-index : 29 (Scopus), 34 (Google Scholar)

Selected among 72 peer-reviewed articles as of October 2020

(full list at <https://www.ncbi.nlm.nih.gov/myncbi/alejandro.buschiazzo.2/bibliography/public/>):

1. Lara J, Diacovich L, Trajtenberg F, Larrieux N, Malchiodi EL, Fernández MM, Gago G, Gramajo H, **Buschiazzo A**. (2020) *Mycobacterium tuberculosis* FasR senses long fatty acyl-CoA through a tunnel and a hydrophobic transmission spine. *Nat Commun*. **11**:3703.
2. Gibson KH, Trajtenberg F, Wunder EA, Brady MR, San Martin F, Mechaly A, Shang Z, Liu J, Picardeau M, Ko A, **Buschiazzo A**, Sindelar CV. An asymmetric sheath controls flagellar supercoiling and motility in the leptospira spirochete. *eLife*. **9**:e53672.
3. **Buschiazzo A**, Trajtenberg F. (2019) Two-Component Sensing and Regulation: How Do Histidine Kinases Talk with Response Regulators at the Molecular Level? *Annu Rev Microbiol*. **73**:507-28.
4. Adhikarla H, Wunder EA Jr, Mechaly AE, Mehta S, Wang Z, Santos L, Bisht V, Diggle P, Murray G, Adler B, Lopez F, Townsend JP, Groisman E, Picardeau M, **Buschiazzo A**, Ko AI. (2018) Lvr, a Signaling System That Controls Global Gene Regulation and Virulence in Pathogenic *Leptospira*. *Front Cell Infect Microbiol*. **8**:45.
5. Mechaly AE, Soto Diaz S, Sassoon N, **Buschiazzo A**, Betton JM, Alzari PM. (2017) Structural Coupling between Autokinase and Phosphotransferase Reactions in a Bacterial Histidine Kinase. *Structure* **25**:939-44.
6. Trajtenberg F, Imelio JA, Machado MR, Larrieux N, Marti MA, Obal G, Mechaly AE, **Buschiazzo A**. (2016) Regulation of signaling directionality revealed by 3D snapshots of a kinase:regulator complex in action. *eLife* **5**: e21422.
7. Wunder EA Jr, Figueira CP, Benaroudj N, Hu B, Tong BA, Trajtenberg F, Liu J, Reis MG, Charon NW, **Buschiazzo A**, Picardeau M, Ko AI. (2016) A novel flagellar sheath protein, FcpA, determines filament coiling, translational motility and virulence for the *Leptospira* spirochete. *Mol Microbiol*. **101**:457-70.
8. Meyer PA, Socias S, Key J, Ransey E, Tjon EC, **Buschiazzo A**, et al. (2016) Data publication with the structural biology data grid supports live analysis. *Nat Commun*. **7**:10882.
9. Fouts D, Matthias MA, Adhikarla H, Adler B, Amorim-Santos L, Berg DE, Bulach D, **Buschiazzo A**, et al. (2016) What Makes a Bacterial Species Pathogenic?: Comparative Genomic Analysis of the Genus *Leptospira*. *PLoS Negl Trop Dis*. **10**:e0004403.
10. Obal G, Trajtenberg F, Carrión F, Tomé L, Larrieux N, Zhang X, Pritsch O, **Buschiazzo A**. (2015) Conformational plasticity of a native retroviral capsid revealed by x-ray crystallography. *Science* **349**:95-8.
11. Methot SP, Litzler LC, Trajtenberg F, Zahn A, Robert F, Pelletier J, **Buschiazzo A**, Magor BG, Di Noia JM. (2015) Consecutive interactions with HSP90 and eEF1A underlie a functional maturation and storage pathway of AID in the cytoplasm. *J Exp Med*. **212**:581-96.
12. Trajtenberg F, Albanesi D, Ruétalo N, Botti H, Mechaly AE, Nieves M, Aguilar PS, Cybulski L, Larrieux N, Mendoza D, **Buschiazzo A**. (2014) Allosteric activation of bacterial response regulators: the role of the cognate histidine kinase beyond phosphorylation. *mBio* **5**:e02105-14.
13. Morero NR, Botti H, Nitta KR, Carrión F, Obal G, Picardeau M, **Buschiazzo A**. (2014) HemR is an OmpR/PhoB-like response regulator from *Leptospira*, which simultaneously effects transcriptional activation and repression of key haem metabolism genes. *Mol Microbiol*. **94**:340-52.
14. Correa A, Trajtenberg F, Obal G, Pritsch O, Dighiero G, Oppezio P, **Buschiazzo A**. (2013) Structure of a human IgA1 Fab fragment at 1.55 Å resolution: potential effect of the constant domains on antigen-affinity modulation. *Acta Crystallogr D Biol Crystallogr*. **69**: 388-97.
15. Albanesi D, Reh G, Guerin ME, Schaeffer F, Debarbouille M, **Buschiazzo A**, Schujman GE, de Mendoza D, Alzari PM. (2013) Structural Basis for Feed-Forward Transcriptional Regulation of Membrane Lipid Homeostasis in *Staphylococcus aureus*. *PLoS Pathog*. **9**:e1003108.
16. Horjales S, Schmidt-Arras D, Limardo RR, Leclercq O, Obal G, Prina E, Turjanski AG, Späth GF, **Buschiazzo A**. (2012) The crystal structure of the MAP kinase LmaMPK10 from *Leishmania major* reveals parasite-specific features and regulatory mechanisms. *Structure*. **20**:1649-60.
17. **Buschiazzo A**, Muiá R, Larrieux N, Pitcovsky T, Mucci J, Campetella O. (2012) *Trypanosoma cruzi* trans-Sialidase in Complex with a Neutralizing Antibody: Structure/Function Studies Towards the Rational Design of Inhibitors. *PLoS Pathog*. **8**:e1002474

18. Oppezzo P, Obal G, Baraibar M, Pritsch O, Alzari P, **Buschiazzo A.** (2011) Crystal structure of an enzymatically inactive trans-sialidase-like lectin from *Trypanosoma cruzi*: the carbohydrate binding mechanism involves residual sialidase activity. *Biochim Biophys Acta.* **1814**:1154-61.
19. Trajtenberg F, Graña M, Ruétalo N, Botti H, **Buschiazzo A.** (2010) Structural and enzymatic insights into the ATP binding and autophosphorylation mechanism of a sensor histidine kinase. *J Biol Chem.* **285**:24892-903.
20. Albanesi D, Martín M, Trajtenberg F, Mansilla MC, Haouz A, Alzari PM, de Mendoza D, **Buschiazzo A.** (2009) Structural plasticity and catalysis regulation of a thermosensor histidine kinase. *Proc Natl Acad Sci USA.* **106**:16185-90.
21. Patenaude AM, Orthwein A, Hu Y, Campo VA, Kavli B, **Buschiazzo A,** Di Noia JM. (2009) Active nuclear import and cytoplasmic retention of activation-induced deaminase. *Nat Struct Mol Biol.* **16**:517-27.
22. **Buschiazzo A,** Alzari PM. (2008) Structural insights into sialic acid enzymology. *Curr Opin Chem Biol.* **12**:565-72.
23. Schujman GE, Guerin M, **Buschiazzo A,** Schaeffer F, Llarrull LI, Reh G, Vila AJ, Alzari PM, de Mendoza D. (2006) Structural basis of lipid biosynthesis regulation in Gram-positive bacteria. *EMBO J.* **25**:4074-83.
24. **Buschiazzo A,** Goytia M, Schaeffer F, Degrave W, Shepard W, Grégoire C, Chamond N, Cosson A, Berneman A, Coatnoan N, Alzari PM, Minoprio P (2006) Crystal structure, catalytic mechanism, and mitogenic properties of *Trypanosoma cruzi* proline racemase. *Proc Natl Acad Sci USA.* **103**:1705-10.
25. Watts AG, Oppezzo P, Withers SG, Alzari PM, **Buschiazzo A.** (2006) Structural and kinetic analysis of two covalent sialosyl-enzyme intermediates on *Trypanosoma rangeli* sialidase. *J Biol Chem.* **281**:4149-55.
26. **Buschiazzo A,** Ugalde JE, Guerin ME, Shepard W, Ugalde RA, Alzari PM. (2004) Crystal structure of glycogen synthase: homologous enzymes catalyze glycogen synthesis and degradation. *EMBO J.* **23**:3196-205.
27. **Buschiazzo A,** Amaya MF, Cremona ML, Frasch AC, Alzari PM. (2002) The crystal structure and mode of action of trans-sialidase, a key enzyme in *Trypanosoma cruzi* pathogenesis. *Mol Cell.* **10**:757-68.

**C. Additional information.** Concerning the last 5 years of activity.

- Principal Investigator in >12 research projects, which have received funding from national and international agencies.
- Supervisor of students (4 undergraduate, 5 MSc, 5 PhD) and postdoctoral researchers (4).
- Member of committees at the Institut Pasteur de Montevideo involved in Scientific counseling to the Executive Director and strategic planning.
- Invited speaker to numerous international conferences and seminars, including Gordon Research Conferences, EMBO Workshops; Department seminars and invited lectures at Harvard University, Yale University, Institut Pasteur (Paris), University of Basel; meetings of the International Union of Crystallography and the International Union of Microbiology Societies.
- Founder and regular organizer of an International Course on Macromolecular Crystallography, which has been run on a regular basis for seven editions at the Institut Pasteur de Montevideo (Uruguay) and the Instituto de Física de Sao Carlos (Univ of Sao Paulo, Brazil), in collaboration with the CCP4 (UK) staff of macromolecular crystallography methods developers. Next one planned for Sep 2021 (<http://pasteur.uy/novedades/mx2020/>)