Juan Pablo Bustamante, PhD | *Bioinformatician*

bustamante.bio@gmail.com
• Argentina •
+54(11) 1564419444
Age: 34

Summary

I am a CONICET Researcher (National Scientific and Technical Research Council in Argentina) focused in the human microbiome field applied to clinical applications. I am Academic Director of Biomedical Engineering and Professor. I have a PhD in biological chemistry and I was a member of the pioneer Argentinian team in developing clinical genomics in Argentina, working closely with several national hospitals. In the last years, I have coordinated the clinical validation process in a world leader start-up in the human microbiome field producing 3 clinical tests closely related to clinical diagnosis focused in the human microbiome study and pathogen detection through NGS. I have proven experience in the design and implementation of different kinds of lab experiments and bioinformatics analysis for pathogen detection in NGS platforms with demanding degrees of analytical detection and approved ISO certifications. I have coordinated and was first author of 2 validation processes of clinical tests and 2 ISO certification processes for these tests in the US and Canadá. Furthermore, I am experienced in clinical product development coordinating several cross-functional teams (data science, bioinformatics, lab, clinical validations, data quality, engineering, quality assurance, clinical reports, design), with a strong scientific background and a performance-driven workstyle.

Current Positions

2020-Present **Academic Director**
Biomedical Engineering at the School of Engineering - Austral University, Argentina.

2019-Present **Professor**

School of Engineering - Austral University, Argentina.

2019-Present **CONICET Researcher**
Institute of R&D in Bioengineering and Bioinformatics (IBB) – CONICET-UNER, Argentina.
CONICET is the National Scientific and Technical Research Council in Argentina.

2016-Present **Professor**
School of Engineering – National University of Entre Ríos (FI-UNER) – Argentina.
Drug Discovery and Design. BSc/MSc in Bioinformatics.
Modeling and Simulation of Macromolecules. BSc/MSc in Bioinformatics.

Other Employments

2017-2019 **Delivery Manager of Clinical Products**
Research & Development / Product Teams - *uBiome, USA*

2017-2019 **Coordinator | Translational Science Lead**
Clinical Validations / Research & Development Team - *uBiome, USA*

2017 **Senior Bioinformatician**
Data Quality Team - *uBiome, USA*

Education

<table>
<tr><td>2016-2017</td><td>Postdoctoral Fellow in Clinical Genomics
Structural Bioinformatics Group - University of Buenos Aires (UBA)
Subject: Clinical Genomics, Personalized medicine. Advisors: Dr. Marcelo Martí and Dr. Adrián Turjanski.</td></tr>
<tr><td>2011-2015</td><td>PhD in Computational Chemistry
Molecular Modeling Laboratory - UBA
Thesis: Physicochemical and bioinformatic study of the truncated hemoglobin family. Advisors: Dr. Darío Estrin and Dr. Leonardo Boechi.</td></tr>
<tr><td>2006-2010</td><td>BSc/MSc in Bioinformatics
School of Engineering – National University of Entre Ríos (FI-UNER) – Argentina. Grade point average: 8.48/10.
Thesis: Computational study of truncated hemoglobins adaptation to extreme temperature conditions. Advisors: Dr. Darío Estrin and Dr. Leonardo Boechi.</td></tr>
<tr><td>2003-2006</td><td>Graphic Design Computer Specialist
ECTA Institute (Training and Education in Applied Technologies). Supported by University of Cambridge, International Examination. Grade point average: 10/10. Paraná, Entre Ríos, Argentina.</td></tr>
</table>

Publications (last 8 years)

* Equal contributions
† Corresponding authors

1. I. Cassol, RD. Peralta, R. Taussig, **JP. Bustamante**. *Human Microbiome Data: Key Considerations for a Correct and Comparative Study*. An Microbiota Probióticos Prebióticos. 2021;2(1):91-94.

2. E. Sosa, C. Shuster, B. Navarro, **JP. Bustamante**[†], MA. Marti[†]. *GlobinQ: An interactive and integrative site for globin sequence, phylogenetic, structural and functional queries relationships. In preparation*.

3. EM. Bik*, SW. Bird*, **JP. Bustamante**, LE. Leon, PA. Nieto, K. Addae, V. Alegría-Mera, et al. *A new sequencing-based women's health assay combining self-sampling, HPV detection and genotyping, STI detection, and vaginal microbiome analysis*. PLoS One 2019. doi: 10.1371/journal.pone.0215945.

4. L. Radusky, C. Modenutti, J. Delgado, **JP. Bustamante**, S. Vishnopolska, C. Kiel, L. Serrano, MA. Marti and A. Turjanski. *VarQ: A Tool for the Structural and Functional Analysis of Human Protein Variants.* Front. Genet. 2018. doi: 10.3389/fgene.2018.00620

5. MI. Pérez Millán, SA. Vishnopolska, AZ. Daly, **JP. Bustamante**, A. Seilicovich, I. Bergadá, D. Braslavsky, AC. Keselman, RM. Lemons, AH. Mortensen, MA. Marti, SA. Camper, JO. Kitzman. *Next generation sequencing panel based on single molecule molecular inversion probes for detecting genetic variants in children with hypopituitarism.* Mol Genet Genomic Med. 2018. doi: 10.1002/mgg3.395.

6. VG. Bañares, P. Corral, AM. Medeiros, MB. Araujo, A. Lozada, **JP. Bustamante**, R. Cerretini, G. López, M. Bourbon, LE. Schreier. *Preliminary spectrum of genetic variants in familial hypercholesterolemia in Argentina*. J Clin Lipidol, 2017, 11(2):524-531.

7. **JP. Bustamante**, ME. Szretter, M. Sued, MA. Martí, DA. Estrin, L. Boechi. *A quantitative model for oxygen uptake and release in hemeproteins*. **Bioinformatics**, 2016, 32 (12): 1805-1813. doi: 10.1093/bioinformatics/btw083.

8. **JP. Bustamante**, L. Boechi, L. Radusky, DA. Estrin, A. ten Have, MA. Martí. E*volutionary and Functional relationships in the truncated hemoglobin family*. **PLoS Comp. Biol.**, 2016, 12(1):e1004701.

9. A. Pesce, **JP. Bustamante**, A. Bidon-Chanal, L. Boechi, D. Estrin, FJ. Luque, A. Sebilo, M. Guertin, M. Bolognesi, A. Martino, P. Ascenzi, N. Marco. *The N-terminal pre-A region of Mycobacterium tuberculosis 2/2HbN promotes NO-dioxygenase activity*. **FEBS Journal**, 2015, 10.1111/febs.13571.

10. D. Giordano, A. Pesce, L. Boechi, **JP. Bustamante**, E. Caldelli, BD. Howes, A. Riccio, G. di Prisco, M. Nardini, D. Estrin, G. Smulevich, M. Bolognesi, C. Verde. *Structural flexibility of the heme cavity in the cold-adapted truncated hemoglobin from the Antarctic marine bacterium Pseudoalteromonas haloplanktis TAC125*. **FEBS Journal**, 2015, *282(15):2948-65*.

11. **JP. Bustamante***, I. Boron*, KS. Davidge, S. Singh, F. Forti, LAH. Bowman, M. Tinajero-Trejo, R. Poole, K. Dikshit, DA. Estrin, MA. Marti, L. Boechi. *Ligand uptake by M. tuberculosis truncated hemoglobin N is modulated by both two tunnels and retained water molecules.* **F1000Research**, 2015, 4:22. doi: 10.12688/f1000research.5921.1.

12. **JP. Bustamante***, FP. Nicoletti*, E. Droghetti, BD. Howes, *M. Fittipaldi,* A. Bonamore, P. Baiocco, A. Feis, A. Boffi, DA. Estrin, G. Smulevich. *Interplay of the H-bond donor-acceptor role by distal residues in the hydroxyl ligand stabilization of Thermobifida fusca truncated hemoglobin. **Biochemistry,** 2014*, 53, pp 8021−8030.

13. **JP. Bustamante**, A. Bonamore, AD. Nadra, N. Sciamanna, A. Boffi, DA. Estrin and L. Boechi. *Molecular Basis of Thermal Stability in Truncated (2/2) Hemoglobins. **BBA General Subjects***, 2014, 1840, pp 2281-2288.

14. **JP. Bustamante**, S. Abbruzzetti, A. Marcelli, D. Gauto, L. Boechi, A. Bonamore, A. Boffi, S. Bruno, A. Feis, P. Foggi, DA. Estrin, C. Viappiani. *Ligand Uptake Modulation by Internal Water Molecules and Hydrophobic Cavities in Hemoglobins*. **J. Phys. Chem. B**, 2014, 118 (5), pp 1234–1245.

Patents

Zachary Apte, Elisabeth Bik, Sara W. Bird, Luis E. Leon, Pamela A. Nieto, Victor Alegria-Mera, Cristian Bravo, Juan P. Cardenas, Paulo Covarrubias, Sarah L. Gupta, Kira Harman, Juan Jimenez, Felipe Melis-Arcos, Camila F. Navas, Harold Nunez, Eduardo Olivares, Nicolas Ordenes-Aenishanslins, Francisco J. Ossandon, Ignacio Varas, Patricia Vera-Wolf, Donna Marie B. Hongo, Laurens Kraal, Nathaniel A. Walton, Amanda Morton, **Juan P. Bustamante**, Kwasi Addae, Graham Gass, Katia Soto-Liebe, Juan A. Ugalde, Eduardo H. Morales, Daniel Almonacid, Jessica Richman. *Method and system for characterization for female reproductive system-related conditions associated with microorganisms*. 2019. US20190078142A1

Teaching experience (last 8 years)

2016-Present	**Professor** Drug discovery and design. BSc/MSc in Bioinformatics. FI-UNER. Modeling and Simulation of Macromolecules. BSc/MSc in Bioinformatics. FI-UNER.
2015	**Guest Lecturer** Computational Biology. MSc in Medical Molecular Biology. UBA. Two lectures.
2014-Present	**General interest talks on Bioinformatics for undergraduate students**
2014	**Course Instructor and co-organizer** Computational modeling and simulations of macromolecules. BSc/MSc in Bioinformatics, MSc in Biomedical Engineering. FI-UNER. Two months.
2013-2016	**Course Instructor** Drug discovery and design. BSc/MSc in Bioinformatics. FI-UNER. Spring quarter.
2013	**Guest Lecturer** Computational Biology. MSc in Medical Molecular Biology. UBA. Three lectures.

PhD Thesis direction

2020-Present *Characterization and deep analysis of argentinian human microbiota and microbiome through gut disease-driven profiles.* R. Taussig. PhD in Engineering. FI - Universidad Austral, Argentina.

2019-Present *A standardized procedure for analysis and characterization of human microbiome profiles.* R. Peralta. PhD in Engineering. FI-UNER, Argentina.

BSc/MSc Thesis direction

2021-Present *Comparison of available metrics for alpha diversity measurements on microbiota samples.* M. Ibañez. BSc/MSc in Bioinformatics. FI-UNER, Argentina. In progress.

2019-2020 *Design of an identification method of molecular markers for microbes detection starting from a microbiome sample using a variable number of tandem repeats.* L. Wiebke. BSc/MSc in Bioinformatics. FI-UNER, Argentina. Grade point average: 10/10.

2019 *Looking for possible antiviral drugs for human rhinovirus infections.* J. Piñero. BSc/MSc in Bioinformatics. FI-UNER, Argentina. Grade point average: 8/10.

2017-2019 *A complementary approach for the improvement of diagnoses at the genes level.* M. Bernardi. BSc/MSc in Biology. UBA, Argentina. Grade point average: 10/10.

2017 *Molecular characterization of species and genotypes of rhinovirus in the infant population of Santa Fe using bioinformatic methods.* R. Peralta. BSc/MSc in Bioinformatics. FI-UNER, Argentina. Grade point average: 10/10.

2014 *Computational study of the enzymatic hydrolysis of anti-HIV prodrugs.* S. Metz. BSc/MSc in Bioinformatics. FI-UNER, Argentina. Grade point average: 10/10.

Grants

2021 *Illumina.* "Characterization and Follow-Up of Microbiome, Clinical, Biochemical, Antropometric Parameters and Diet in Obese, Pre-Diabetes and Type 2 Diabetes Cohorts in Argentina".

*Estimated in **U$S 1.400.000** in supplies for kits and involved logistics.*

2020 *Zymo Research.* "Characterization and Follow-Up of Microbiome, Clinical, Biochemical, Antropometric Parameters and Diet in Obese, Pre-Diabetes and Type 2 Diabetes Cohorts in Argentina".

*Estimated in **U$S 300.000** in supplies for kits and involved logistics.*

2019 *Microbiome Grant Initiative - uBiome.* "Analysis and Characterization of Microbiome Profiles in People with Type 2 Diabetes in Argentina". In collaboration with the Argentine Society of Diabetes (SAD).

*Estimated in **U$S 450.000** in supplies for kits and involved logistics. Deprecated due to uBiome's bankruptcy.*

Fellowships

2016-2018   *Postdoctoral Fellow – National Scientific and Technical Research Council (CONICET)*

2014-2016   *PhD Fellow II – CONICET*

2011-2014   *PhD Fellow I – CONICET*

Presentations (last 8 years)

- JP Bustamante. Human microbiota and microbiome: fundamentals, techniques and applications. (**Invited Speaker**). Course of Introduction to clinical and translational bioinformatics. School of Pharmacy and Biochemistry. Universidad de Buenos Aires. Buenos Aires, Argentina. December 2021.

- JP Bustamante. *Consumer acceptance and understanding of microbiome innovations: What needs to be done?.* (**Invited Speaker**). Workshop on Education in Food Systems Microbiome Related Sciences: Needs for Universities, Industry and Public Health Systems. Microbiome Support. Austria. October 2021.

- JP Bustamante. Human Microbiota: What we already know today and how much can we apply to the clinic?. (**Invited Speaker**). Course of Omics sciences applied to the study of microorganisms. School of Exact and Natural Sciences. Universidad de Buenos Aires. Buenos Aires, Argentina. October 2021.

- JP Bustamante. *Human Microbiota: What we already know today and how much can we apply to the clinic?.* (**Invited Speaker**). Course of Omics sciences applied to the study of microorganisms. School of Exact and Natural Sciences. Universidad de Buenos Aires. Buenos Aires, Argentina. September 2020.

- RD Peralta, IJ Cassol, E Elguero, AL Millán, F Zapata, HG Alvarado, D Fuentes, GE Cerrone, GD Fretchel, I Pedroso, CG Boggio Marzet, JP Bustamante. Pilot Study of Human Microbiota in Argentine-Chilean Fecal and Skin Samples. XI Workshop de la Sociedad Española de microbiota, probióticos y prebióticos. Granada, Spain. February 2020.

- JP Bustamante. *The human microbiome: Standards and their impact over the interpretation of results.* (**Invited Speaker**). First Course about microbiota and health. Sociedad Argentina de Nutrición. Buenos Aires, Argentina. November 2019.

- JP Bustamante. Human Microbiota: What we already know today and how much can we apply to the clinic?. (**Invited Speaker**). Course of Omics sciences applied to the study of microorganisms. School of Exact and Natural Sciences. Universidad de Buenos Aires. Buenos Aires, Argentina. October 2019.

- JP Bustamante. *The bioinformatic role in the way towards Translational Medicine: Impact of Human Microbiota.* (**Invited Speaker**). Hospital Italiano. Buenos Aires, Argentina. May 2019.

- JP Bustamante, ME Szretter, M Sued, MA Martí, DA Estrin, L Boechi. *A quantitative model for oxygen uptake and release in hemeproteins.* (**Poster**). Latin American Conference on Mathematical Modeling of Biological Systems. Buenos Aires, Argentina. December 1st to 4th 2015.

- JP Bustamante, ME Szretter, M Sued, MA Martí, DA Estrin, L Boechi. *A quantitative model for oxygen uptake and release in hemeproteins.* (**Poster**). Mathematics as a tool to understand biology / Biology as a source of mathematical problems. Buenos Aires, Argentina. April 23rd and 24th 2015.

- JP Bustamante, L Boechi, L Radusky, M Sued, M Szretter, DA Estrin, A ten Have, MA Martí. *Physicochemical and Phylogenetic Approaches shed light on Complete 2/2 Hemoglobins Family Classification and Characterization.* (**Talk**). V Argentinian Conference on Bioinformatics and Computational Biology. Bariloche, Argentina. September 22th to 24th 2014.

- JP Bustamante, L Boechi, L Radusky, DA Estrin, A ten Have, MA Martí. *Physicochemical and Phylogenetic Approaches shed light on Complete 2/2 Hemoglobins Family Classification and*

Characterization. (**Poster**). 18th International Conference on Oxygen-Binding and Sensing Proteins. Sheffield, United Kingdom. July 6th to 10th 2014.

Languages

Spanish	Native
English	Comprehension: proficient. Speech: proficient. Writing: proficient
Italian	Comprehension: intermediate. Speech: basic. Writing: basic

References

- *Dr. Elisabeth Bik (Microbiome and Science Integrity Consultant – USA)*
eliesbik@gmail.com

- *Dr. Eduardo Morales (Chief Technology Officer @ Aanika Biosciences, Inc. – USA)*
eduardo.morales.s@hotmail.com

- *Dr. Daniel Almonacid (ex Senior VP @ uBiome, Head Of Data Science & Product Development @ Biome Makers, Inc. – USA)*
daniel.almonacid@ucsf.edu

- *Prof. Dr. Giulietta Smulevich (Università degli Studi di Firenze – Italia)*
giulietta.smulevich@unifi.it

- *Prof. Dr. Cristiano Viappiani (Università degli Studi di Parma – Italia)*
cristiano.viappiani@unipr.it

- *Prof. Dr. Darío A. Estrin (University of Buenos Aires – Argentina)*
dario.estrin@gmail.com

- *Prof. Dr. Marcelo A. Martí (University of Buenos Aires – Argentina)*
marti.marcelo@gmail.com