

Bruno Emanuel Correia

École Polytechnique Fédérale de Lausanne
Institute of Bioengineering
AI 3138 (Bâtiment AI)
Station 19
CH-1015 Lausanne

Phone: +41216936166
Email: bruno.correia@epfl.ch

Education

PhD in Computational Biology, ITQB - Universidade Nova de Lisboa, Portugal, 2010

B. S. in Chemistry, Faculdade de Ciências e Tecnologia da Universidade de Coimbra, Portugal, 2004

High-School in Miranda do Corvo, Distrito de Coimbra, Portugal, 1998

Current and Previous Scientific Activities

03/2015 - **Assistant Professor in Bioengineering (tenure track), École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland**

09/2011-02/2015 **Research Associate, The Scripps Research Institute, La Jolla, USA**

Supervised by Benjamin Cravatt.

Development of whole-proteome small molecule fragment-based screening methods.

10/2006-08/2011 **PhD Student and Research Associate, University of Washington, Seattle, USA**

Supervised by William Schief and David Baker.

Development of computational flexible backbone design methodologies for immunogen design.

09/2005-08/2006 **PhD Student, Instituto Gulbenkian Ciência, Oeiras, Portugal**

Supervised by Jorge Carneiro and Marie France-Sagot.

Curricular year of the first portuguese PhD program in Computational Biology.

09/2004-09/2005 **B. S. Student, University of Warwick, Coventry, UK**

Supervised by Teresa Pinheiro.

Structural changes of the full-length Prion protein upon binding to different lipid membranes.

09/2003-09/2004 **B. S. Student, Universidade de Coimbra, Coimbra, Portugal**

Supervised by Rui Brito.

Transthyretin - Molecular states in aggregation and molecular modeling of amyloid protofilaments.

Scholarships and Awards

- Protein Science Young Investigator Travel Grant - Protein Society, 2011
- Young Investigator Award - Protein Society, 2010
- Travel Award - Keystone Symposia HIV Immunobiology, 2009
- Travel Award - AIDS Vaccine Meeting, 2008
- PhD scholarship - Fundação da Ciência e Tecnologia, Portugal, 2006-2010
- Young Researcher Scholarship - VI European Symposium Meeting of Protein Society, 2005
- Erasmus Program Scholarship, European Union, 2004

Poster Communications

Correia BE, Bates JT, Jardine JG, Vittal V, Kalyuzhniy O, Schroeter A, Corrent C, Kleivit RE, Strong RK, Baker D, Crowe JE Jr, Schief WR(2011). Precise structural stabilization of a functional site through folding and design of a novel protein.

B. E. Correia, M. Holmes, Y. A. Ban, P. Huang, E. Boni, C. Bretz, D. Baker, L. Stamatatos, R. Strong, W. Schief (2010). Flexible Backbone protein remodeling with atomic accuracy: Two case studies confirmed by crystallography. Keystone Symposium - Structural Genomics.

B. E. Correia, Y. A. Ban, M. Holmes, N. Sather, E. Boni, C. Bretz, O. Kalyuzhniy, C. Xu, K. Ellingson, Z. Kraft, D. Friend, D. Baker, L. Stamatatos, R. Strong, W. Schief (2009). 4E10-like immune responses elicited by computationally designed epitope-scaffolds. AIDS Vaccine Meeting.

B. E. Correia, Y. A. Ban, M. Holmes, E. Boni, C. Bretz, N. Sather, D. Baker, L. Stamatatos, R. Strong, W. Schief (2009). Structural Mimicry by Computational Design: 4E10 "Epitope-Scaffolds". Keystone Symposia - HIV Immunobiology.

B. E. Correia, Y. A. Ban, N. Sather, M. Holmes, E. Boni, C. Bretz, D. Baker, L. Stamatatos, R. Strong, W. Schief (2008). Computationally Designed Proteins Presenting the 4E10 Epitope: Structural and Biophysical Characterization, and Insights for Improvement. AIDS Vaccine Meeting.

Oral Communications

Correia B. E.*, Azoitei M. L.*, Ban Y. A., Kalyuzhniy O., Schroeter A., Baker D., Schief W. R. (2010). Transplantation of a complex binding site using computational design and *in vitro* evolution. 24th Protein Society Symposium.

Bruno E. S. Correia, Nuno L. Ferreira, J. Rui Rodrigues, Rui M. M. Brito (2004). A High Resolution Model of an Amyloid Protofilament of Transthyretin. Communication held by Rui M. M. Brito in the XIV National Meeting of Biochemistry.

Patents

"Protein Design Methods, Designed Protein Scaffolds and mAb b12 Epitope Scaffolds". William Schief, David Baker, Mihai Azoitei, **Bruno Correia**, Yih En Andrew Ban. US patent application - 61/548,661.

"Protein Design Methods, Designed Protein Scaffolds and RSV F Epitope Scaffolds". William Schief, David Baker, **Bruno Correia**. US patent application - 61/390,591.

Short Courses and Workshops

Practical Course: Principles of Molecular Biology at Instituto de Higiene e Medicina Tropical (Universidade Nova de Lisboa). 40 hours post-graduate course.

Other Skills/Activities

Member on the organizing committee of the 1st Portuguese Forum in Computational Biology (2008).

Practitioner of Shotokan Karate.

Nature photography short course in Universidade de Coimbra.

Publications

-Peer-reviewed articles

Full publication list

Niphakis MJ, Lum K, Cognetta A, **Correia BE**, Ichu T, Brown S, Kundu S, Piscitelli F, Rosen H, Cravatt BF (2015). "Lipid-protein interaction maps and their ligandability in cells". *Cell*, (in press)

Kambe T, **Correia BE**, Niphakis MJ, Cravatt BF (2014). "Mapping the protein interaction landscape for fully functionalized small-molecule probes in human cells". *JACS*, **136**,10777-82. doi: 10.1021/ja505517t

Procko E, Berguig GY, Shen BW, Song Y, Frayo S, Convertine AJ, Margineantu D, Booth G, **Correia BE**, Cheng Y, Schief WR, Hockenbery DM, Press OW, Stoddard BL, Stayton PS, Baker D (2014). "A computationally designed inhibitor of an Epstein-Barr viral Bcl-2 protein induces apoptosis in infected cells". *Cell*, **157**,1644-56. doi: 10.1016/j.cell.2014.04.034

Correia BE, Bates JT, Loomis RJ, Baneyx G, Jardine JG, Rupert RP, Correnti C, Kalyuzhniy O, Vittal V, Connell MJ, Stevens E, Schroeter A, Chen M, MacPherson S, Serra AM, Adachi Y, Holmes MA, Li Y, Klevit RE, Graham BS, Wyatt RT, Baker D, Strong RK, Crowe JE Jr, Johnson PR, Schief WR (2014). "Proof of principle for epitope-focused vaccine design". *Nature*, **507**,201-6. doi: 10.1038/nature12966

Bates JT, Keefer CJ, Utley TJ, **Correia BE**, Schief WR, Crowe JE Jr (2013). "Reversion of Somatic Mutations of the Respiratory Syncytial Virus-Specific Human Monoclonal Antibody Fab19 Reveal a Direct Relationship between Association Rate and Neutralizing Potency". *J Immunol*, **190**, 3732-9. doi: 10.4049/jimmunol.1202964

Sanghera N, **Correia BE**, Correia JR, Ludwig C, Agarwal S, Nakamura HK, Kuwata K, Samain E, Gill AC, Bonev BB, Pinheiro TJ (2011). "Deciphering the molecular details for the binding of the prion protein to main ganglioside GM1 of neuronal membranes". *Chem Biol*, **18**, 1422-31. doi: 10.1016/j.chembiol.2011.08.016

Azoitei ML*, **Correia BE***, Ban YE, Carrico C, Kalyuzhniy O, Chen L, Schroeter A, Huang P, McLellan JS, Kwong PD, Baker D, Strong RK, Schief WR (2011). "Computation-guided backbone grafting of a discontinuous motif onto a protein scaffold". *Science*, **21**, 373-6. doi: 10.1126/science.1209368

Correia BE*, Holmes MA*, Huang PS, Strong RK, Schief WR (2011). "High-resolution structure prediction of a circular permutation loop". *Protein Sci*, **20**. doi: 10.1002/pro.725

Bouvignies G, Vallurupalli P, Hansen DF, **Correia BE**, Lange O, Bah A, Vernon RM, Dahlquist FW, Baker D, Kay LE (2011). "Solution structure of a minor and transiently formed state of a T4 lysozyme mutant". *Nature*, **477**, 111-4. doi:10.1038/nature10349

McLellan JS*, **Correia BE***, Chen M*, Yang Y, Graham BS, Schief WR, Kwong PD (2011). "Design and characterization of epitope-scaffold immunogens that present the motavizumab epitope from respiratory syncytial virus". *J Mol Biol*, **409**, 853-66. doi:10.1016/j.jmb.2011.04.044

Correia BE, Ban YE, Friend DJ, Ellingson K, Xu H, Bradley-Hewitt T, Bruhn-Johannsen JF, Stamatatos L, Strong RK, Schief WR (2010). "Computational Protein Design Using Flexible Backbone Remodeling and Resurfacing: Case Studies in Structure-Based Antigen Design". *J Mol Biol*, **405**, 284-97. doi:10.1016/j.jmb.2010.09.061

Correia BE*, Ban YE*, Holmes MA, Xu H, Ellingson K, Kraft Z, Carrico C, Boni E, Sather DN, Zenobia C, Burke KY, Bradley-Hewitt T, Bruhn-Johannsen JF, Kalyuzhniy O, Baker D, Strong RK, Stamatatos L, Schief WR (2010). "Computational Design of Epitope-Scaffolds Allows Induction of Antibodies Specific for a Poorly Immunogenic HIV Vaccine Epitope". *Structure*, **18**, 1116-26. doi:10.1016/j.str.2010.06.010

* co-first authorship

Last updated: April 14, 2015