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Isaac Amela Abellan BSc, MSc, PhD.

CURRENTLY COLLABORATING WITH:

Group of Bioinformatics of Molecular Biology
Institut de Biotecnologia i de Biomedicina (IBB)
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PROFESSIONAL EXPERIENCE

- 2011-2014 Research contract of the Autonomous University of Barcelona (UAB) under La Marató de TV3 project. Group of Bioinformatics of Molecular Biology, Biotechnology and Biomedicine Institute (IBB), Autonomous University of Barcelona (UAB). Project name: "*Friedreich Ataxia Integrative Research Consortium: a Pathophysiological and Therapeutical Approach (FAIR)*". See Orphanet webpage (<http://www.orpha.net>) for more project details.
- 2005-2010 Scholarship of the Autonomous University of Barcelona (UAB). Group of Bioinformatics of Molecular Biology, Biotechnology and Biomedicine Institute (IBB), Autonomous University of Barcelona (UAB). Project name: "*Bioinformatic analysis of frataxin and other proteins involved in Friedreich ataxia*". See Orphanet webpage (<http://www.orpha.net>).
- 2004 Scientific collaboration with the Group of Bioinformatics of Molecular Biology, Biotechnology and Biomedicine Institute (IBB), Autonomous University of Barcelona (UAB).
- 2001 Practical collaboration with the Biochemists and Molecular Biology Department of the Medicine Faculty of the Autonomous University of Barcelona (UAB).

- 2000 Out-of-school teacher of computer science at the school “L' Olivera” of Cabrils working for the DELFI Private Foundation.
- 1999
- ⌘ Company practices in the Institute of Agroalimentary Technology Research (IRTA) of Cabrils in the agreement of educational cooperation university-company/institution.
 - ⌘ Practices in the Recuperation of Sea Animals Center (CRAM), a center that the Foundation for the Conservation and Recovery of Sea Animals has in Premià de Mar.
- 1995-1997 Veterinary assistant in “Europa” Veterinary Hospital of Cabrils.

EDUCATION

- 2013-2014 Postdoctoral research contract in the Group of Bioinformatics of Molecular Biology at the Institut de Biotecnologia i de Biomedicina (IBB) of the Universitat Autònoma de Barcelona (UAB).
- 2013 July 15 → Thesis defence obtaining a mark of Excellent *Cum Laude*.
Thesis title: Bioinformatics Approaches to Protein Interaction and Complexes: Application to Pathogen-Host Epitope Mimicry and to Fe-S Cluster Biogenesis Model.
- 2005-2013 PhD student in the Group of Bioinformatics of Molecular Biology at the Institut de Biotecnologia i de Biomedicina (IBB) of the Universitat Autònoma de Barcelona (UAB).
- 2005-2007 Master in Biotechnology , “Diploma en Estudis Superiors Especialitzats (DESE)” and “Diploma d'Estudis Avançats (DEA)” of the Universitat Autònoma de Barcelona (UAB).
- 2001-2004 Degree in Biotechnology at the Universitat Autònoma de Barcelona (UAB).
- 1997-2000 Degree in Biology at the Universitat de Girona (UdG).

RESEARCH AREA

Bioinformatics:

- Protein sequence, structure, function and interaction analysis.
- Model of protein complexes.
- Vaccine design.

CONGRESS POSTERS:

- 2008 3rd ESF Functional Genomics and Disease Conference held in the Congress of Innsbruck, Austria. The poster is available at: <http://bioinf.uab.es/rker/poster/innsbruck.pdf> and its title is: "*Friedreich ataxia: computational dynamic model of the key proteins involved in FeS cluster generation in yeast*".
- 2009 14th European Congress on Biotechnology held in Barcelona, Spain. The poster is available at: <http://bioinf.uab.es/rker/poster/symbiosis.pdf> and its title is: "*Friedreich Ataxia: A Computational Dynamic Model of the Key Proteins Involved in the Yeast Fe-S Cluster Biogenesis*".
- 2010 Iron-Sulfur Protein and Frataxin Meetings held in the National Institute for Medical Research (NIMR), London, UK. The poster is available at: <http://bioinf.uab.es/rker/poster/symbiosis.pdf> and its title is: "*Friedreich Ataxia: A Computational Dynamic Model of the Key Proteins Involved in the Yeast Fe-S Cluster Biogenesis*".
- 2011 4th International Friedreich's Ataxia Scientific Conference held in Strasbourg, France. The poster is available at: <http://bioinf.uab.es/rker/poster/strasbourg.pdf> and its title is: "*Friedreich Ataxia: A Theoretical Model of the Key Proteins Involved in the Iron-Sulfur Cluster Biogenesis*".
- 2012 Ataxia Research Conference (ARC) 2012 held in London, UK. The poster is available at: <http://bioinf.uab.es/rker/poster/ataxiaUK2012.pdf> and its title is: "*Bioinformatic analyses of gene expression networks in Friedreich's Ataxia*".

PUBLISHED PAPERS:

- **Amela I., Cedano J., Querol E. (2007)**
Pathogen Proteins Eliciting Antibodies Do Not Share Epitopes with Host Proteins: A Bioinformatics Approach.
PLoS ONE 2(6): e512.
doi:10.1371/journal.pone.0000512

This paper has been selected for Faculty 1000 Biology that is an award-winning online service that highlights and evaluates the most interesting papers published in the biological sciences, based on the recommendations of over 2000 of the world's top researchers. It was launched in January 2002 and already over 85% of the world's top institutions subscribe (e.g. NIH*, Johns Hopkins and all Max Planck Institutes). Papers are highlighted on the basis of their scientific merit rather than the journal in which they appear.

Faculty of 1000 Biology: evaluations for Amela I et al *PLoS ONE* 2007 2 :512
<http://f1000biology.com/article/id/1091344/evaluation>

- **Amela I.**, Cedano J., Delicado P., Querol E. (2009)
Friedreich ataxia: a computational dynamic model of the key proteins involved in the yeast Fe–S cluster biogenesis.
New Biotechnology Volume 255, Supplement 1, S342-S343.
Abstracts of the 14th European Congress on Biotechnology, Barcelona, Spain 13–16.
doi:10.1016/j.nbt.2009.06.1001
- **Amela I.**, Delicado P., Gómez A., Bonàs S., Querol E., Cedano J. (2010)
DockAnalyse: an application for the analysis of protein-protein interactions.
BMC Structural Biology, 10:37.
doi:10.1186/1472-6807-10-37
This paper is labeled in BioMed Central as “Highly accessed”.
- Gómez A., Cedano J., **Amela I.**, Planas A., Piñol J., Querol E. (2011)
Gene Ontology function prediction in Mollicutes using protein-protein association networks.
BMC Systems Biology, 5:49.
doi:10.1186/1752-0509-5-49
- Gómez A., Hernández S., **Amela I.**, Piñol J., Cedano J., Querol E. (2011)
Do protein-protein interaction databases identify moonlighting proteins?
Molecular Biosystems, 7, 2379–2382.
doi: 10.1039/C1MB05180F
doi: 10.1039/c1mb05180f
- Hernández S., **Amela I.**, Cedano J., Piñol J, Perez-Pons JA., Mozo-Villarias A. & Querol E. (2012)
Do moonlighting proteins belong to the intrinsically disordered protein class?
Journal of Proteomics and Bioinformatics, 5: 262-264.
doi:10.4172/jpb.1000247
- **Amela I.**, Delicado P., Gómez A., Querol E. & Cedano J. (2013)
A Dynamic Model of the Proteins that Form the Initial Iron-Sulfur Cluster Biogenesis Machinery in Yeast Mitochondria.
The Protein Journal,2(3):183-96.
doi: 10.1007/s10930-013-9475-4
- Hernández S., Ferragut G., **Amela I.**, Perez-Pons JA., Piñol J., Mozo-Villarias A., Cedano J., Querol E. (2014)
MultitaskProtDB: a database of multitasking proteins.
Nucleic Acids Research, 42:D517-520.
doi: 10.1093/nar/gkt1153

- Hernández S., Calvo A., Ferragut G., Franco L., Hermoso A., **Amela I.**, Gómez A., Querol E., Cedano J. (2014)
 Can bioinformatics help in the identification of moonlighting proteins?
Biochemical Society Transactions, 42(6):1692-7.
 doi: 10.1042/BST20140241
- Hernández S., Franco L., Calvo A., Ferragut G., Hermoso A., **Amela I.**, Gómez A., Querol E., Cedano J. (2015)
 Bioinformatics and moonlighting proteins.
Frontiers in Bioengineering and Biotechnology, 3:90. eCollection 2015.
 doi: 10.3389/fbioe.2015.00090
- Franco L, Hernández S, Calvo A, Ferragut G, **Amela I**, Cedano J. (2016)
 Moonlighting proteins: a bioinformatics analysis of their biochemical characteristics.
New Biotechnology, 2016; 33(3):432-433.
- Franco-Serrano L, Hernández S, Calvo A, Severi MA, Ferragut G, Pérez-Pons J, Piñol J, Pich Ò, Mozo-Villarias Á, **Amela I**, Querol E, Cedano J. (2018)
 MultitaskProtDB-II: an update of a database of multitasking/moonlighting proteins.
Nucleic Acids Research, 46(D1):D645-D648.
 doi: 10.1093/nar/gkx1066
- Franco L, Cedano J, Pérez-Pons J, Mozo-Villarias A, Piñol J, **Amela I**, Querol E. (2018)
 A Hypothesis Explaining Why So many Pathogen Virulence Proteins are Moonlighting Proteins.
Pathogens and Disease, 76(5).
 doi: 10.1093/femspd/fty046
- Franco-Serrano L, Huerta M, Hernández S, Cedano J, Perez-Pons J, Piñol J, Mozo-Villarias A, **Amela I**, Querol E. (2018)
 Multifunctional Proteins: Involvement in Human Diseases and Targets of Current Drugs.
The Protein Journal, 37(5):444-453.
 doi: 10.1007/s10930-018-9790-x

- Luis Franco Serrano, Gabriela Ferragut, Josep Perez-Pons, Angel Mozo-Villarias, Jaume Piñol, **Isaac Amela**, Enrique Querol, Juan Cedano. (2018)

Why are moonlighting proteins so abundant in pathogen microorganisms virulence and so scarce as protective subunit vaccines?

Immuno Mexico 2018, XII Congress of the Latin American Association of Immunology and XXIII Congress of the Mexican Society of Immunology

Edited by: Rosana Pelayo, Leopoldo Santos-Argumedo

ISBN: 978-2-88945-511-9

Frontiers Abstract Book

- Luis Franco-Serrano, David Sánchez-Redondo, Araceli Nájjar-García, Sergio Hernández, **Isaac Amela**, Josep Antoni Perez-Pons, Jaume Piñol, Angel Mozo-Villarias, Juan Cedano, Enrique Querol (2021)

Pathogen Moonlighting Proteins: From Ancestral Key Metabolic Enzymes to Virulence Factors.

Microorganisms, 9(6):1300.

doi:10.3390/microorganisms9061300

AWARDS

- ☒ In 2006 I was awarded by the Second INFOBIOMED Training Challenge, with a 15 days fellowship in one of the INFOBIOMED partner organizations due to team work skills.
- ☒ I was awarded with the 2007 price of the “Societat Econòmica Barcelonesa d'Amics del País (SEBAP)” to offset the academic trajectory of university students, depending on their personal and family conditions.
- ☒ I was selected for a scholarship of the 4th International Friedreich's Ataxia Scientific Conference May 2011 based on my abstract submission.
- ☒ I was selected for a bursary of the Ataxia Research Conference (ARC) 2012 November 2012 based on my abstract submission.

COMPUTER SKILLS

Windows environment at a high level in general.
 Good knowledge of the Linux operating system.
 Basic knowledge of Perl programming.
 Good knowledge about most of the Bioinformatic tools.

LANGUAGES

Spanish and Catalan native speaker.
 Certificate of Advanced English (CAE).

OTHERS

- ⌘ I am affected by a Friedreich's Ataxia and my mobility is limited. I use a wheelchair.
- ⌘ I like very much every type of sports, nature, computer science, internet and science.
- ⌘ During many years I have been “Escolta Català” as a pupil and also as a monitor.
- ⌘ From 2010 to present I am the president of the Catalan Association of Hereditary Ataxias (ACAH, www.acah.cat).
- ⌘ I am also the president of the Physical Disability Association of Sant Feliu de Llobregat, the city where I live.
- ⌘ I love Catalonia and I fight for its freedom.
- ⌘ Nowadays I am formally retired because of my disability, but I am still collaborating with the lab.