

Alfonso Valencia, Ph.D.

Current Positions

- Vice-Director of Basic Research and Director of the Structural Biology and Biocomputing Programme, Spanish National Cancer Research Centre (CNIO)
- Director of Spanish Bioinformatics Institute (INB-ISCIII)
- President of the International Society for Computational Biology (ISCB) 2015-.
- Executive Editor of Bioinformatics (OUP) since 2006.
- Director of the Master “Bioinformática y Biología Computacional ENS-ISCIII”, now it is XII edition.

Previous Positions

- Ph.D. Biochemistry and Molecular Biology, U. Autonoma Madrid, 1988.
- EMBO Post-doctoral fellow, EMBL- Heidelberg, Chris Sander’s lab. 1989-1994.
- Group Leader, National Centre for Biotechnology Spanish (Research Professor CSIC 2004)

Selected Committees and professional activities

- EMBL Scientific Advisory Committee since 2006-2012. Biozentrum U. Basel SAB 2006-2014. Swiss Institute for Bioinformatics SAB 2008 -. KU Lueven Center for Human Genetics 2012-. IRBB Barcelona 2014-, Bioinformatics Unit Curie Institute since 2011-. Intepro database SAB since 2008-2013. EBI Chemical databases since 2013- IRB Barcelona since 2014.
- Coordinator of the Evaluation Committee of the Spanish Network of High-Performance Computing (2006-2011). Member of the jury of the Elsevier Grand Challenge, 2008-2009. Assessor of the CASP protein structure competition in the 9 and 10th editions. Evaluation Panel of the ERC Advance Grant schema 2008, 2010, 2012, 2014. Spanish Committee for Grant Evaluation (ANEP) 2009-2012. EMBO postdoc Fellowship committee 2009-2012. Member of various EC evaluation panels. DFG “cluster of excellence initiative (2007 and 2011). EPSFR grant committee, as ad hoc member. -Founder member of the Science and Art “e-biolab” initiative. Ad-hoc reviewer for the main scientific journals and Bioinformatics/computational Biology conference/conference committees.
- Founder and organizer of the BioCreative Challenges (meetings in 2004, 2007, 2011 and 2013, ESF and NSF funding). Organizer of the Biolink Text mining workshop link to ISMB since 2002.
- EMBO member since 2006.
- Professor Honoris Causa of the Danish Technical University DTU (2010)

Current Funding

Spanish Government (2013-2017), INB infrastructure/ ELIXIR ISCIII (2014-2018), CLL / ICGC (2009-2014), RTIC FIS (2008-2014), GENCODE /ENCODE (2009-2012, 2013-2016), e-TOX IMI (2009-2014), Open Phacts IMI (2011-/2015), ASSET EU 7thFP (2010-2015), RD-Connect / IRDiRC (2013-2018), BLUEPRINT / IHEC (2012-2016).

Scientific Accomplishments

I have published over 300 papers in biological journals (included in Medline) and computational journals (i.e. IEEE). In terms of impact my H-index is approximately 60 with more than 7000 citations evenly distributed (not due to a single very quoted papers and in a few cases in large consortiums). My most quoted papers include analysis of biological problems related with evolution, information extraction, as well as collaborations with experimental biologists. I have published papers that are considered the foundation of areas of bioinformatics, such as: co-evolution based prediction of protein contacts and protein networks, prediction of subfamily specific residues and application of text mining to molecular biology.

Top 10 publications during the last 10 years as senior author

1.- Hoffmann R, Valencia A. 2004 A gene network for navigating the literature. **Nat Genet.** 36(7):664.

ihop is possibly the most used text-mining systems including the automatic incorporation of text mining in genome analysis pipelines

2.- Leitner, F., Chatr-aryamontri, A., Cesareni, Valencia A 2010. The FEBS Letters/BioCreative II.5 experiment: making biological information accessible. **Nature biotechnology**, 28(9), 897–899.

Realistic description of the possibilities of information extraction from text based on the detailed comparison of human annotators, authors of paper and automatic annotation systems.

3.- Juan D, Pazos F, Valencia A. 2008 High-confidence prediction of global interactomes based on genome-wide coevolutionary networks. **PNAS** 105(3):934-993.

The most accurate description of a co-evolutionary network at the molecular level.

4.- Rausell, A., Juan, D., Pazos, F., & Valencia, A. 2010. Protein interactions and ligand binding: from protein subfamilies to functional specificity. **PNAS**, 107(5), 1995–2000.

The best approach for the detection of protein residues related with functional specificity in protein families.

5.- Juan D, Pazos F, Valencia A. 2013. Emerging methods in protein co-evolution. **Nat Rev Genet.** 14:249-261.

This is to my understanding the most important review article on molecular co-evolution. It introduces many of the problems addressed in this proposal and condenses our philosophy on this area.

6.- Tress ML, Valencia A. 2007. The implications of alternative splicing in the ENCODE protein complement. **PNAS** 104(13):5495-500.

First exhaustive of proteins product of splicing. This paper is on the basis for our current work in ENCODE (i.e. Birney et al., Nature 2007 and ENCODE Nature 2012) and Genome Res Harrow et al., 2012)

7.- Frenkel-Morgenstern M, Lacroix V, Ezkurdia I, Levin Y, Gabashvili A, Prilusky J, Del Pozo A, Tress M, Johnson R, Guigo R, Valencia A (2012) Chimeras taking shape: potential functions of proteins encoded by chimeric RNA transcripts. **Genome Res.** 22:1231-1242.

Systematic assessment of the existence of chimeric RNAs and proteins in cancer and normal cells.

8.- Puente et al. ... Valencia A ... Campo E (2011) Whole-genome sequencing identifies recurrent mutations in chronic lymphocytic leukaemia. **Nature** 475: 101-105.

This paper and the follow-ups in which my group participated (Quesada Nat Genet 2011, Kulis et al., Nat Genet 2012, Ferreria et al., Genome Res 2013, Martens et al., Submitted) are the core of the genomic/ epigenomics analysis of CLL project, part of the ICGC effort.

9.- Valencia A, Hidalgo M (2012) Getting personalized cancer genome analysis into the clinic: the challenges in bioinformatics. **Genome Med.** 4:61-.

Critical analysis of the possibilities and limitations of cancer genomics applied to clinical problems in oncology

10.- Ibáñez K., Boullosa C., Tabarés-Seisdedos R., Baudot, A., Valencia A. (2014) Molecular Evidence for the Inverse Comorbidity between Central Nervous System Disorders and Cancers detected by Transcriptomic Meta-analyses. **Plos GenetB** 10:31004173.

Our latest paper in the new topic of molecular basis of comorbidity leading to drug repurposing.