

Simposio Internacional: Biointeractómica

International Symposium: Biointeractomics

Sevilla, 30 y 31 de octubre de 2012

Sevilla, October 30-31, 2012

CV- Francesc Xavier Aviles

Relevant Activities :

--228 scientific publications in public data bases (most, in peer-reviewed journals; see full CV) : 218 as Aviles FX + 4 as Aviles X.,

+6 as Aviles F.J. // total peer-reviewed = 228 //

--Index H for publications = 38 (ISI) (see graph at the end of this document)

--39 Ph.D. thesis and 35 Master thesis (or Tesinas) supervised and co-supervised (and passed). 3 more Ph.D. thesis under supervision, now.

--Patents : 7 (four at the international level), one active as PCT since 2008, and licensed.

--Evaluator/referee of different scientific journals and, particularly, of Eur. J. Biochem./ FEBS J./ Proteomics / J Biol Chem...etc... etc (1985- to now), and member of the Editorial Board of J. Protein Chem & The Protein Journal (2001- to now), Microbial Cell Factories (2004- to now) and J Biol Chem (1990-1994 & 2009- to now).

--Evaluator/referee of the 3rd, 4th, 5th and 6th EU/EC-framework programs, of the Spanish Evaluation Agency (ANEP, since 1987), of the Ministry of Science and Technology (MCYT), AQU (Generalitat Catalunya), of Wellcome Trust-UK, of Human Frontiers of Science ... etc

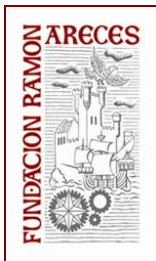
--Member of the ESF Working Groups (1999-2002).

--Member of the Executive Board of the Spanish Society for Biophysics-SBE (1993-96; & 2003-2008) and of the Spanish Society for Biochemistry and Molecular Biology-SEBBM (1998-2002). Coordinator of the Section for Genomics and Proteomics of SEBBM (2001-2005); the same for the Catalan Society for Biology-SCB (2007-to 2011)

--Invited participant (speaker, chairman, scientific committee...) in 98 scientific meetings at the international or national level.

--Main organizer or responsible of several Courses on Protein Sciences Research and many Workshops at the national level, one at the European level (FEBS Course 1992), and four International Workshops. Co-organizer/Vice-chair for the Europrotein2005 ("VIth European Symposium of the Protein Society", May2005, in Barcelona). Vicechair of the Symposium of the International Proteolysis Society (IPS; Patras, Greece, Oct.2007).

--Member of the Executive Council of the "Center of Reference for Biotechnology" (CeRBa, now XeRBa), Generalitat de Catalunya. (since 1995- to now)



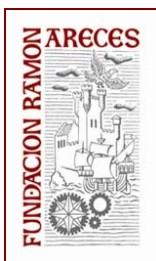
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- Intensively involved in institutional tasks at the UAB, since 1991: member of the "Gouvernement Council" (1992, 94, 96-97, 97-98, 98-99, 99-2000, 2001-02), member of the "Committee for Strategic Planification" (1993), member of the "Research Committee of UAB" (1998-2002).
- Head of the facility (S3) for "Proteomics and Bioinformatics" of the UAB (since 1992-until 2012), now part of the "National Institute for Proteomics" (Spain, Genoma España Foundation)
- Director of the Institute for Biotechnology and Biomedicine, IBB (formerly Institute for Fundamental Biology), Universitat Autònoma de Barcelona. (1991-2002). Elected in 1991. Reelected in 1993, 1995, 1997, 1999 and 2001.
- Director of the Dept. Biochemistry & Molecular Biology, UAB (since 2008- to now)
- Coordinator of the Network on "Genomics and Proteomics", at the Catalunya level (Xarxa Generalitat) (an. 2001- to 2011).
- Coordinator of the EC-EU project on "Chemogenomics of Proteolytic Enzymes" (STREP, ref. 18830), 2006-2009, 2.7 Meuros. Involving 8 academic institutions (UAB-Barcelona, MPI-Munich, EMBL-Hamburg, Univ.Zurich, J.S.Institute-Ljubljana, Carlsberg Inst.-Copenhagen, ETH-Switzerland, CSIC-Barcelona) and two industrial partners (Sanofi-Aventis & Arpida-SME). // IP member of the EC-EU project LIVIMODE (2010-2012).
- Member of the Committee for the Evaluation of Research of the Agency for the Quality of the University System in Catalonia, Generalitat de Catalunya; (AQU-, 2003-2005). IP member of the EC-EU project LIVIMODE (2010-2012).
- Founding member of the miniCommittee that launched the "Singular Facility- Center for Structural Biology and Proteomics, CBEP", approved in Dec 2006 by the Spanish Government, to be built nearby Synchrotron Alba (nearby Campus UAB, Barcelona) (in stand-by, because of lack of financial backing from the Generalitat de Catalunya).
- Prize "Ciutat de Barcelona-1998" (1999, in fact) in scientific research.
- Medal "Narcís Monturiol-2002" (Generalitat de Catalunya) in scientific excellence.
- Prize "Distinction for Research at the Catalonia Universities" 2004 (Generalitat de Catalunya).
- Distinguished Visiting Prof. of the University of LaPlata (Argentina), 2006.



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--Distinguished Invited Prof. and Member of the Cloister of University of La Habana (Cuba), 2007.

AREAS OF EXPERTISE AND INTEREST

-Proteomics, Protein-peptide profiling and screening, Interactomics, Mass spectrometry, Imaging.

-Proteases in parasite development and infection; proteases in *Plasmodium*-Malaria.

-Metalloproteases and protein inhibitors / proteolytic enzymes and their inhibitors, in general: structure, function, folding, phylogenetic relationships, genomics, proteomics, engineering, biotechnological and biomedical applications.

-Biochemical, biophysical and molecular biology-cellular-imaging approaches for characterizing the structure, function, folding-refolding, evolution, localization, interactions and, in general, functional roles of proteins, in vitro and in vivo (NMR, X-ray crystallography, MS, spectrometry, MD, bioinformatics, genomics- proteomics, interactomics/HTApp., fluorescent imaging...). Protein engineering and drug design.

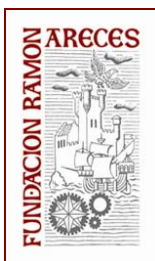
-Structure and function of histone proteins, complexes with DNA and chromatin (along PhD thesis and postdoctoral period)

PATENTS

Seven patents (three at international level). Two recent patents:

-Aviles F.X., Lorenzo J., Rodriguez Vega M., Querol E., Bautista M., Diez A., Bautista J.M. / "THERAPEUTIC AGENTS FOR THE MALARIA TREATMENT" / ref P20060325 / Priority: Spain, since 22/12/2006 / Owners: Universidad Autónoma de Barcelona y Universidad Complutense de Madrid / Extended as PCT for 1 year since Dec2007

-Salvador Ventura, Montserrat Morell, Francesc Xavier Avilés // LINKING PROTEIN AGGREGATION AND YEAST SURVIVAL // ref. PCT/EP2009/063213 // Priority: International (PCT), since 9-X-2008 // Owner : Universitat Autònoma de Barcelona // Licensed to the firm Abbot.



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PARTICIPATION IN R+D PROJECTS

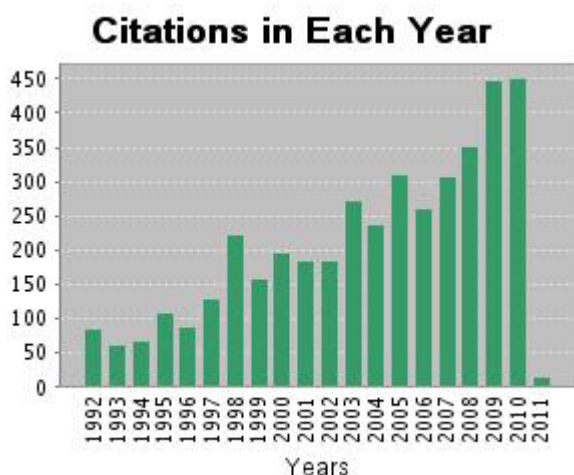
Our Group received financing through publically competitive projects from National and International-European (EC) Programs, in a continuous way, since 1983.

Very recent (last 4 years) Financing Grants-Projects of Plan Nacional de Investigación Científica y Técnica (MEC-Spain) and EC (as IP): BIO2010-22321-C02 (since 2011) // BIO2007-68046-C02-01 (present) // EC-Health-2009-241919-LIVIMODE (present) // EC-LSHG-2006-018830-CAMP // BIO2004-05879 // GEN2003-20642-C09-05 ...etc. As mentioned above, in fact our Group had continuously Grants of this kind since 1983 : i.e. BIO2001-2046 // FEDER-2FD97-0872 // BIO98-0362// ...etc.

PUBLICATIONS : HISTORY AND IN THE LAST FIVE YEARS (2007-2011)

Index H for publications = 38 (ISI)

Number : 65 peer-reviewed publications from January 2007-December 2011 . See PubMed (use Aviles F.X. for etracking). See graph below taken from ISI :

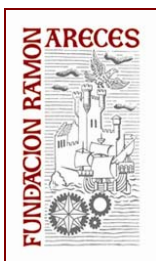


SELECTED PUBLICATIONS (30 selected among 223).

-Allan J., Hartman P.G., Crane-Robinson C. y Aviles F.X. "The structure of histone H1 and its location in chromatin." (1980)

Nature 288, 675-679.

-Vendrell J., Cuchillo C.M. & Aviles F.X. "The tryptic activation pathway of monomeric procarboxypeptidase A"" (1990) J. Biol. Chem. 265, 6949- 6953.



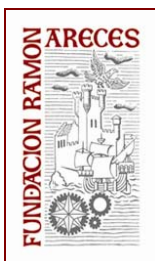
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- Gomis-Ruth F.X., Gómez M., Bode W., Huber R. & Avilés F.X. "The three-dimensional structure of the native ternary complex of procarboxypeptidase A with proproteinase E and chymotrypsinogen C". (1995). EMBO J. 14, 4387-4394.
- García-Saez I., Reverter D., Vendrell J. Avilés F.X. & Coll M. "The three-dimensional structure of human procarboxypeptidase A2. Deciphering the basis of the inhibition, activation and intrinsic activity of the zymogen" (1997). EMBO J. 16, 6906-6913.
- Reverter D., Villegas V., Ventura S., Vendrell J. & Avilés F.X. "Human procarboxypeptidase A2: overexpression in *Pichia pastoris* and detailed characterization of its activation pathway" (1998). J. Biol. Chem. 273, 3535-3541.
- Mas J.M., Aloy P., Marti-Renom M., Blanco-Aparicio C., Molina M.A., de Llorens R., Querol E. & Aviles F.X. "Protein similarities beyond disulphide bridge topology". (1998) J. Mol. Biol. 284, 541-548.
- Blanco-Aparicio C., Molina M.A., Fernandez-Salas E., Frazier M.L., Mas J.M., Querol E., Avilés F.X. & de Llorens R.
"Potatocarboxypeptidase inhibitor, a T-knot protein, is an epidermal growth factor antagonist that inhibits tumor cell growth" (1998). J. Biol. Chem. 273, 12370-12377.
- Ventura S., Villegas V., Sterner J., Larson J., Vendrell J., Hershberger C.L. & Aviles F.X.
"Mapping the proregion of
carboxypeptidase B by protein engineering". (1999) J. Biol. Chem. 27, 19925- 19933.
- Gomis-Ruth F.X., Companys V., Fricker L., Vendrell J., Aviles F.X. & Coll M. "The three-dimensional structure of the
carboxypeptidase#D domain II. A prototype for regulatory carboxypeptidases" (1999) The EMBO J. 18, 5817- 5826.
- Reverter D., Fernandez-Catalan C., Baumgartner R., Pfander R., Huber R., Bode W., Holak T. & Aviles F.X. "Three-dimensional structure of a novel leech carboxypeptidase inhibitor (LCI) determined free in solution and in complex with human carboxypeptidase A2". (2000) Nature Struct. Biol. .7, 322-328.
- Chang J.Y., Li L., Canals F. & Aviles F.X. "The unfolding pathway and conformational stability of potato carboxypeptidase inhibitor". (2000) J. Biol. Chem. 275, 14205-14211.



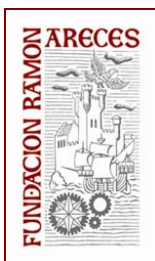
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- Venhudova G., Canals F. & Aviles F.X. "Mutations at the N- and C-terminal tails of potato carboxypeptidase inhibitor affect the folding process at the reshuffling stage". (2001) J. Biol. Chem., 276, 11683-11690.
- Aloy P., Querol E., Aviles F.X. & Sternberg M.J.E. "Automated structure-based prediction of functional sites in proteins –Application to assessing the validity of inheriting protein function from homology in genome annotation and protein docking-". (2001) J. Mol. Biol. 311, 395-408.
- Wei S, Segura S, Vendrell J, Aviles FX, Lanoue E, Day R, Feng Y, Fricker LD. "Identification and characterization of three members of the human metallocarboxypeptidase gene family". (2002) J. Biol Chem. 277, 14954-14964.
- Villanueva J, Villegas V, Querol E, Aviles FX, Serrano L. "Protein secondary structure and stability determined by combining exoproteolysis and Maldi-Tof MS". (2002) J Mass Spectrom. 37, 974-984.
- Gonzalez C., Neira J.L., Ventura S., Lorenzo J., Rico M. & Aviles F.X. "Structure and dynamics of the potato carboxypeptidase inhibitor by 1H and 15N NMR" (2003) PROTEINS, 50, 410-422.
- Villanueva J., Yanes O., Querol E., Serrano L. & Aviles F.X. "Identification of protein ligands in complex biological samples using Intensity-fading (IF-) MALDI-TOF Mass Spectrometry" (2003) Analyt. Chem. 75, 3385-3395.
- Ventura S, Zurdo J, Narayanan S, Parreno M, Mangues R, Reif B, Chiti F, Giannoni E, Dobson CM, Aviles FX & Serrano L. "Short amino acid stretches can mediate amyloid formation in globular proteins: The Src homology 3 (SH3) case". (2004) Proc Natl Acad Sci USA 101, 7258-7263.
- Yanes O., Villanueva J., Querol E. & Aviles F.X. "Intensity-fading MaldiTof MS. a novel screening for ligand binding and drug discovery" (2004) Drug Discovery Today: Targets 3 (sup), S23-S30.
- Espadaler J., Aragues R., Narayanan E., Marti-Renom M., Avilés F.X., Sali A. and Oliva B. "Protein-protein interactions as a tool for fold prediction and protein function annotation". (2005) Proc.Natl.Acad.Sci.USA. 102, 7151-7156.



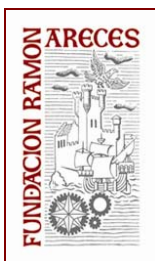
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- Yanes O, Villanueva J, Querol E, Aviles FX. "Functional Screening of Serine Protease Inhibitors in the Medical Leech *Hirudo medicinalis* Monitored by Intensity Fading MALDI-TOF MS". *Mol Cell Proteomics*. 2005;4(10):1602-13.
- Bayes A, Comellas M, Rodriguez de la Vega M, Bode W, Aviles FX, Jongsma MA, Beekwilder J, Vendrell J. "Structural basis of the resistance of an insect carboxypeptidase to plant protease inhibitors". (2005) *Proc Natl Acad Sci USA*. 102, 16602-16607.
- Arolas JL, Aviles FX, Chang JY, Ventura S. "Folding of small disulfide-rich proteins: clarifying the puzzle". (2006) *Trends Biochem Sci*. 31, 292-301.
- Yanes O, Nazabal A, Wenzel R, Zenobi R, Aviles FX. "Detection of noncovalent complexes in biological samples by intensity fading and high-mass detection MALDI-TOF mass spectrometry". (2006) *J Proteome Res*. 5, 2711-2719.
- Rodriguez de la Vega M, Sevilla RG, Tanco S., Diez A, Fricker LD, Bautista JM and Aviles F.X. "Nna1-like proteins are active metallocarboxypeptidases of a new and diverse M14 subfamily". (2007) *FASEB J*. 21, 851-865
- Yanes O, Villanueva J, Querol E & Aviles FX "Detection of non-covalent protein interactions by 'intensity fading' MALDI-TOF mass spectrometry: applications to proteases and protease inhibitors". (2007) *Nature Protoc*. 2, 119-130.
- Arolas JL, Pantoja-Uceda D, Ventura S, Blanco FJ, Aviles FX. The NMR structures of the major intermediates of the two-domain tick carboxypeptidase inhibitor reveal symmetry in its folding and unfolding pathways". (2008) *J Biol Chem*. 283, 27110-20.
- Anand K, Pallares I, Valnickova Z, Christensen T, Vendrell J, Wendt KU, Schreuder HA, Enghild JJ, Avilés FX. The crystal structure of thrombin-activable fibrinolysis inhibitor (TAFI) provides the structural basis for its intrinsic activity and the short half-life of TAFIa". (2008) *J Biol Chem*. 283, 29416-23.
- Morell M, Czihal P, Hoffmann R, Otvos L, Avilés FX, Ventura S. Monitoring the interference of protein-protein interactions in vivo by bimolecular fluorescence complementation: the DnaK case". (2008) *Proteomics*. 8, 3433-42.
- Sanglas L, Valnickova Z, Arolas JL, Pallarés I, Solà M, Kristensen T, Enghild JJ, Aviles FX, Gomis-Rüth FX. Structure of activated thrombin-activatable fibrinolysis inhibitor, a molecular link between coagulation and fibrinolysis" (2008) *Mol Cell*. 31,598-606.



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- Sanglas L, Aviles FX, Huber R, Gomis-Rüth FX, Arolas JL. Mammalian metallopeptidase inhibition at the defense barrier of *Ascaris* parasite. (2009) *Proc Natl Acad Sci U S A*. 106, 1743-1747.
- Morell M, Ventura S, Avilés FX. Protein complementation assays: Approaches for the in vivo analysis of protein interactions. (2009) *FEBS Lett*. 583, 1684-1691.
- Fernández D, Testero S, Vendrell J, Avilés FX, Mobashery S. The X-Ray Structure of Carboxypeptidase A Inhibited by a Thiirane Mechanism-Based Inhibitor. (2010) *Chem Biol Drug Des*. 75, 29-34.
- Van Damme P, Staes A, Bronsoms S, Helsens K, Colaert N, Timmerman E, Aviles FX, Vandekerckhove J, Gevaert K. Complementary positional proteomics for screening substrates of endo- and exoproteases. (2010) *Nat Methods*. 7, 512-515.
- Alonso Del Rivero M, Trejo SA, Reytor ML, Rodríguez de la Vega M, Delfin J, Diaz J, Gonzalez Y, Canals F, Chavez MA, Aviles FX. A tridomain bifunctional inhibitor of metalloproteases A and serine proteases isolated from the marine annelid *Sabellastarte magnifica*. (2012) *J Biol Chem*. 287, 15427-15438.
- Otero A, Rodríguez de la Vega M, Tanco S, Lorenzo J, Avilés FX, Reverter D. "The novel structure of a cytosolic M14 metalloprotease (CCP) from *P. aeruginosa*: a model for mammalian CCPs". (2012) *FASEB J*. 26, 3754-3764.
- Rodríguez de la Vega M., Lorenzo J, Tort O., Aviles FX & Bautista JM. "Functional Segregation and emerging role of cilia-related cytosolic carboxypeptidases (CCPs). (2012) *FASEB J*, in press, [Epub ahead of print].