CURRICULUM VITAE

Elia Paula Alepuz Martínez

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Education

B. Sc., Chemistry (Area of concentration: Biochemistry and Molecular Biology), University of Valencia, 1991.

Ph. D. degree in Chemistry (specialization in Biochemistry and Molecular Biology), University of Valencia, date: 19 of December 1997 (Qualification: *Cum Laude*). Title of Thesis: Cloning and characterization of the *MSN5* gene of *Saccharomyces cerevisiae*. Supervisor: Dr. Francisco Estruch

Awards, Fellowships, Merits

Extraordinary Award for Graduates in Chemical Sciences, University of Valencia 1992.

Fellowship for Ph.D. students (F.P.I. program), 1993-1996, Spanish Government. At the Department of Biochemistry and Molecular Biology of the University of Valencia.

Short-term Fellowship for Ph.D. students at foreign research institutions (F.P.I. program), 1996, Spanish Government. At the Department of Biology of The Johns Hopkins University.

EMBO long-term fellowship, from 1 January 2000 until 30 September 2001. Post-doc research stay at the Department of Biochemistry and Molecular Cell Biology, of the University of Vienna.

FEBS Short-visit fellowship to visit Dr. Sunnerhagen laboratory at the University of Göteborg. Sweden. One week, June 2008.

Report of Outstanding Research Trajectory, Programa I3 (2007).

Habilitación Nacional as Professor in Biochemistry and Molecular Biology, Spain (2008).

4 sexenios (positive evaluation of 6-years periods of scientific research) (1996-2019).

Member of the Spanish Society in Biochemistry and Molecular Biology.

Positions

Present position:

Since December 2008. Professor in Biochemistry and Molecular Biology. Department of Biochemistry and Molecular Biology. University of Valencia, Spain.

Previous positions:

June 2011-December 2012. Invited Professor at the Department of Cell and Molecular Biology, Lundberg Laboratory, Göteborg University (GU), Sweden. Financed by the Guest Research Program of the GU.

November 2003-November 2008. Research Scientist, Ramón y Cajal Programme of the Spanish Government. Department of Biochemistry and Molecular Biology. University of Valencia, Spain.

January 2002-October 2003. Post-doctoral researcher at the laboratory of Dr. Francesc Posas. Departament de Ciències Experimentals i de la Salut. Cell Signalling Unit. Universitat Pompeu Fabra (UPF), Barcelona, Spain.

October 1998-December 2001. Post-doctoral researcher at the laboratory of Dr. Gustav Ammerer. Department of Biochemistry and Molecular Cell Biology, Vienna Biocenter, University of Vienna, Austria.

February 1998-September 1998. Lecturer at the University of Valencia, Spain.

February 1997-February 1998. Technical Assistant at the laboratory of Dr. Francisco Estruch. EUROFAN project. Department of Biochemistry and Molecular Biology, University of Valencia, Spain.

August 1996-December 1996. Visiting Pre-doctoral Fellow at the laboratory of Dr. Kyle Cunningham. Department of Biology, The Johns Hopkins University, Baltimore (USA).

1993-1996. Ph.D. student of the Department of Biochemistry and Molecular Biology, University of Valencia, and of the Food Technology Institute (I.A.T.A.), C.S.I.C., Spain.

Maternal leaves: 4 months in 2005-06, 5 months in 2010-11.

Research Projects funded

Project: Control of the mRNA stability by the MAPK Hog1. GV05/051. Group leader: Paula Alepuz. Period: 2005-2006. Grant: 30000 EUR. Funded by: Local Government of Valencia: Generalitat Valenciana, Conselleria d'Empresa, Universitat i Ciencia.

Project: Control of the mRNA stability by the MAPK Hog1 in response to environmental signals. BFU2005-08359. Group leader: Paula Alepuz. Period: 2006-2008. Grant: 99960 EUR. Funded by: Spanish Government, DGI, Ministerio de Educación y Ciencia.

Project: Molecular mechanisms involved in the regulation of mRNA stability and translation in response to external signals. BFU2008-02114/BMC. Group leader: Paula Alepuz. Period: 2009-2011. Grant: 133100 EUR. Funded by: Spanish Government, Ministerio de Ciencia e Innovación.

Project: Mecanismos moleculares implicados en la regulación de la estabilidad y la traducción de mRNA MAP en respuesta a señales ambientales. ACOMP/2010/172 y GVACOMP2011-105 Group leader: Paula Alepuz. Period: 2010-2011. Grant: 27000 EUR. Funded by: Local Government of Valencia: Conselleria d'Educaciò, Generalitat Valenciana.

Project: Regulación de la expresión génica a través de las modificaciones de las histonas y la estabilidad y traducción de los mRNAs en estrés y envejecimiento cronológico en la levadura *Saccharomyces cerevisiae*. UV-INV-AE13-139034 Group leader: Paula Alepuz. Period: 2013-2014. Grant: 10000 EUR. Funded by: Universitat de València.

Project: Estudio global de las estrategias transcripcionales y post-transcripcionales de regulación de la expresión génica en respuesta al estrés osmótico en *Saccharomyces cerevisiae*: un modelo de sistema eucariótico. PROMETEO 2011/088 Group leader: José Enrique Pérez-Ortín. Period: 2011-2014. Funded by: Local Government of Valencia: Conselleria d'Educaciò, Generalitat Valenciana.

Project: Regulación cruzada entre la transcripción y la estabilidad de los mRNAs. Aproximaciones genómicas y mecanismos implicados en la respuesta al estrés BFU2013-48643-C3-3-P. Group leader: José E. Pérez Ortín and Paula Alepuz. Period: 2014-2016. Grant: 229900 EUR. Funded by: Spanish Government, MINECO. Ministerio de Economía y Competitividad.

Project: Mecanismos moleculares y rutas participantes en la interconexión entre transcripción y degradación de mRNAs durante las respuestas al estrés en levaduras. PROMETEO II/2015/006. Group leader: José Enrique Pérez-Ortín. Period: 2015-2018. Funded by: Local Government of Valencia: Conselleria d'Educaciò, Generalitat Valenciana.

Project: Homeostasis molecular en el Dogma Central: recambio de mRNAs y proteínas y los mecanismos de comunicación cruzada entre ellos. BFU2016-77728-C3-3-P. Group leader: José E. Pérez Ortín and Paula Alepuz. Period: 2018-2020. Grant: 150000 EUR. Funded by: Spanish Government, MINECO. Ministerio de Economía y Competitividad.

Project: Estudio de la función de eIF5A en la síntesis de colágeno y en patologías asociadas a un déficit de colágeno. 37-COLAGEN5A-ALEPUZ-ZUÑIGA-2017-A. Group leader: Paula Alepuz and Ángel Zúñiga. Period: 2018-2019. Grant: 4000 EUR. Funded by: VLC-BIOMED (Univ. València-Instituto Investigación Sanitaria Hospital La Fé).

Project: Función del factor de elongación de la traducción eIF5A en el metabolismo de mRNAs y en la producción de colágeno durante el cierre de heridas, en colagenopatías y en fibrosis. AICO/2020/086. Group leader: Paula Alepuz. Period: 2020-2021. Grant: 40000 EUR. Funded by: Generalitat Valenciana.

Scientific Publications

Alepuz, P.M., Cunningham, K. W. and Estruch, F., 1997. Glucose repression affects ion homeostasis in yeast through the regulation of the stress activated *ENA1* gene. *Mol. Microbiol.*, **26** (1): 91-99.

de Alteriis, E., Alepuz, P.M., Estruch, F. and Parascandola, P., 1999. Clues to the origin of high invertase activity in immobilized growing yeast: prolonged *SUC2* transcription and less susceptibility of the enzyme to endogenous proteolysis. *Cann. J. Microbiol.*, **45**: 413-417.

Alepuz, P. M., D. Matheos, K. Cunningham and F. Estruch., 1999. The *Saccharomyces cerevisiae* RanGTP binding protein Msn5p is involved in different signal transduction pathways. *Genetics*, **153** (3): 1219-1231.

Blondel, M., P. M. Alepuz, L. S. Huang, S. Shaham, G. Ammerer and M. Peter., 1999. Nuclear export of Far1p in response to pheromones requires the export receptor Msn5p/Ste21p. *Genes & Development*, **13** (17): 2284-2300.

Alepuz, P. M., Jovanovic, A., Reiser, V. and Ammerer, G., 2001. Stress induced MAP kinase Hog1 is part of transcription activation complexes. *Mol. Cell*, **7**: 767-777.

de Nadal, E., Alepuz, P. M., and Posas, F., 2002. Dealing with osmo-stress through MAP kinase activation. *EMBO* Reports, **3** (8): 735-740.

Alepuz, P. M., de Nadal, E., Zapater, M., Ammerer, G. and Posas, F., 2003. Osmostress induced transcription by Hot1 depends on a Hog1-mediated recruitment of the RNA polymerase II. *EMBO* J., **22** (10): 2433-2442.

de Nadal, E., Zapater, M., Alepuz, P. M., Sumoy, L., Mas, G. and Posas, F., 2004. Regulation of gene expression by the Hog1 MAPK is mediated by the Rpd3 histone deacetylase. *Nature*, **427**: 271-274.

Jimeno-González, S., Gómez-Herreros, F., Alepuz, P. M. and Chávez, S., 2006. FACT requirement for transcription of yeast genes exhibiting nucleosomes positioned at the 5' end of their transcribed region. *Mol.Cell.Biol.*, **26** (23): 8710-21.

Pérez-Ortín, J. E., Alepuz, P. M. and Moreno, J., 2007. Genomics and gene transcription kinetics in yeast. *Trends in Genet.* **23**(5): 250-257.

Romero-Santacreu L, Moreno J, Pérez-Ortín JE and Alepuz P. 2009. Specific and global regulation of mRNA stability during osmotic stress in Saccharomyces cerevisiae. RNA. **15**(6):1110-20.

Romero-Santacreu, L., Orozco, H. and Alepuz, P. 2010. The bidirectional cytomegalovirus immediate/early promoter is regulated by Hog1 and the stress transcription factors Sko1 and Hot1 in yeast. *Mol. Gen. Genom.* **283**(5): 515-518.

J. Marín-Navarro, A. Jauhiainen, J. Moreno, P. Alepuz, J.E. Pérez-Ortín and P. Sunnerhagen. 2011. Global estimation of mRNA stability in yeast. *Methods Mol. Biol.*, (Yeast Genetics Networks). **734**: 3-23.

Garre, E., Romero-Santcreu, L., de Clerqc, N., Blasco-Angulo, N., Sunnerhagen, P. and Alepuz, P., 2012.Translation mediated by the yeast nuclear cap-binding protein Cbc1/Sto1 is necessary for the rapid reprogramming of translation after hyperosmotic shock. *Mol. Biol. Cell* **23**: 137-150.

Miguel A, Montón F, Li T, Gómez-Herreros F, Chávez S, Alepuz P, Pérez-Ortín JE. (2013). External conditions inversely change the RNA polymerase II elongation rate and density in yeast. *Biochim Biophys Acta.* **1829**(11):1248-55.

Gomar-Alba M, Alepuz P, del Olmo Ml. (2013). Dissection of the elements of osmotic stress response transcription factor Hot1 involved in the interaction with MAPK Hog1 and in the activation of transcription. *Biochim Biophys Acta.* **1829**(10):1111-25.

Ortín, J.E., Alepuz, P.; Chávez, S. y Choder, M. (2013). "Eukaryotic mRNA decay: methodologies, pathways, and links to other stages of gene expression". *J. Mol. Biol.* **425**, 3750-3755.

Garre E, Romero-Santacreu L, Barneo-Muñoz M, Miguel A, Pérez-Ortín JE, Alepuz P. (2013). Nonsense-mediated mRNA decay controls the changes in yeast ribosomal protein pre-mRNAs levels upon osmotic stress. *PLoS One.* **8**(4):e61240.

Li T, Belda-Palazón B, Ferrando A, Alepuz P. (2014). Fertility and polarized cell growth depends on eIF5A for translation of polyproline-rich formins in Saccharomyces cerevisiae. *Genetics*. **197**(4):1191-200.

Canadell, D.; García-Martínez, J.; Alepuz, P.; Pérez-Ortín, J.E. y Ariño, J. (2015). "Impact of high pH stress on yeast gene expression: A comprehensive analysis of mRNA turnover during stress responses. *Biochim Biophys Acta*. **1849**, 653-664.

Zuzuarregui A, Li T, Friedmann C, Ammerer G, Alepuz P. (2015). Msb2 is a Ste11 membrane concentrator required for full activation of the HOG pathway. *Biochim Biophys Acta.* **1849**(6):722-30.

Li T, De Clercq N, Medina DA, Garre E, Sunnerhagen P, Pérez-Ortín JE, Alepuz P. (2016). The mRNA cap-binding protein Cbc1 is required for high and timely expression of genes by promoting the accumulation of gene-specific activators at promoters. *Biochim Biophys Acta.* **1859**(2):405-19.

van Wijlick L, Geissen R, Hilbig JS, Lagadec Q, Cantero PD, Pfeifer E, Juchimiuk M, Kluge S, Wickert S, Alepuz P, Ernst JF. (2016). Dom34 Links Translation to Protein O-mannosylation. *PLoS Genet.* **12**(10):e1006395.

Ballester-Tomás L, Prieto JA, Alepuz P, González A, Garre E, Randez-Gil F. (2017). Inappropriate translation inhibition and P-body formation cause cold-sensitivity in tryptophan-auxotroph yeast mutants. *Biochim Biophys Acta.* **1864**(2):314-323.

Benet, M.; Miguel, A.; Carrasco, F.; Li, T.; Planells, J.; Alepuz, P.; Tordera, V. y Pérez-Ortín, J.E. (2017). Modulation of protein synthesis and degradation maintains proteostasis during yeast growth at different temperatures. *Biochim Biophys Acta. Gene Reg. Mech*. **1860**, 794–802.

Muñoz-Soriano V, Domingo-Muelas A, Li T, Gamero E, Bizy A, Fariñas I, Alepuz P* and Paricio N*. (2017) Evolutionary conserved role of eukaryotic translation factor eIF5A in the regulation of actin-nucleating formins. *Sci Rep*., 7, 9580.

*corresponding authors

Pelechano, V. and Alepuz, P. (2017). eIF5A facilitates peptide bond formation and peptide movement through the ribosome exit tunnel. *Nucleic Acids Research*. 45, 7326-7338.

Ramos-Alonso, L., Romero, A.M., Soler, M.A. Perea-García, A., Alepuz, P., Puig, S. and Martínez Pastor, M.T. (2018). Yeast Cth2 protein represses the translation of ARE-containing mRNAs in response to iron deficiency. *PLoS Genet.* 14(6):e1007476.

Desai, P.R., Lengeler, K., Kapitan, M., Janßen, S.M., Alepuz, P., Jacobsen, I. and Ernst, J.F. (2018). The 5´ untranslated region of the EFG1 transcript promotes its translation to regulate hyphal morphogenesis in *Candida albicans. mSphere. 3*(4). pii: e00280-18.

Garre, E., Pelechano, V., Sánchez del Pino, M. Alepuz, P. and Sunnerhagen, P. (2018). The Lsm1-7/Pat1 complex binds to stress-activated mRNAs and modulates the response to hyperosmotic shock. *PLoS Genet.* 14(7):e1007563.

Quilis I, Taberner FJ, Martínez-Garay CA, Alepuz P, Igual JC. (2019). Karyopherin Msn5 is involved in a novel mechanism controlling the cellular level of cell cycle regulators Cln2 and Swi5. *Cell Cycle*. **18**(5):580-595.

Pérez-Martínez M E., Benet M, Alepuz P* and Tordera V* (2020). Nut1/Hos1 and Sas2/Rpd3 control the H3 acetylation of two different sets of osmotic stress-induced genes. *Epigenetics* **15**(3):251-271. *corresponding authors

Téllez, S.R., Kanhonou, R., Bellés, C.C., Serrano, R., Alepuz, P., and Ros, R. (2020) RNA-binding proteins as targets to improve salt stress tolerance in crops. *Agronomy*, **10**(2), 250.

Romero A.M., Ramos-Alonso L., Alepuz P., Puig P. and Martínez-Pastor M.T. (2020). Global translational repression induced by iron deficiency in yeast depends on the Gcn2/eIF2a pathway. *Sci Rep*. **10**(1):233.

Begley V, Jordán-Pla A, Peñate X, Garrido-Godino AI, Challal D, Cuevas-Bermúdez A, Mitjavila A, Barucco M, Gutiérrez G, Singh A, Alepuz P, Navarro F, Libri D, Pérez-Ortín JE, Chávez S. (2020). Xrn1 influence on gene transcription

results from the combination of general effects on elongating RNA pol II and gene-specific chromatin configuration. *RNA Biol.* doi: 10.1080/15476286.2020.

García-Martínez J, Pérez-Martínez ME, Pérez-Ortín JE, Alepuz P. (2020). Recruitment of Xrn1 to stress-induced genes allows efficient transcription by controlling RNA polymerase II backtracking. *RNA Biol.* doi: 10.1080/15476286.2020.1857521.

Barba-Aliaga, M., Villarroel-Vicente, C. Stanciu, A., Corman A., Martínez-Pastor; M.T. and Alepuz, P. (2020). Yeast translation elongation factor eIF5A expression is regulated by nutrient availability through different signalling pathways. *Int. J. Mol. Sci.* **22**(1):219. doi: 10.3390/ijms22010219

Marina Barba-Aliaga, Paula Alepuz and José E. Pérez-Ortín (2021). Eukaryotic RNA polymerases: the many ways to transcribe a gene. *Front Mol Biosci*. In press.

Preprints:

Marina Barba-Aliaga, Adriana Mena, Vanessa Espinoza, Nadezda Apostolova, Mercedes Costell, Paula Alepuz. (2021). Hypusinated eIF5A is required for the translation of collagen. *bioRxiv.* doi: 10.1101/2021.02.23.432471

University teaching

Under-graduate teaching:

Lecturer in Biochemistry. University of Valencia, Spain. Course 1997-1998.

Lecturer in Biochemistry for Ph.D. students and in Biotechnology for undergraduate students in Biology. University Pompeu Fabra, Barcelona, Spain. Course 2002-2003.

Lecturer in Biochemistry and Molecular Biology. University of Valencia. Spain. From 2003 to 2007.

Professor in Biochemistry and Molecular Biology. University of Valencia. Spain. From 2008 to now.

Post-graduate teaching:

Master degree in Genetics and Molecular and Cellular Biology of the Universitat de València. Topic: Regulation of Gene Expression, epigenetic mechanisms. From 2006 to 2011.

Master degree in Introduction into Molecular Biology, Cellular Biology and Genetics Universitat de València. Topic: Regulation of Gene Expression, epigenetic mechanisms. From 2013 to now. Coordinator of the course. Member of the Academic panel of the Master (CCA).

Invited Professor in the Ph.D. course Yeast Genetics and Biology at the Göteborg University, 2012.

Advanced courses:

Specialized course in DNA Chips. Universitat de València. Director of the course: Dr. José E. Pérez-Ortín. 2007.

Supervision of Master and PhD students

Master Thesis: Lorena Romero Santacreu (2006), Elena Orozco Valverde (2007), Carlos Sanz García (2009), Nati Blasco-Angulo (2011); Vanessa Espinoza (2018), Pilar Soriano (2020), Lianqi Chi (2020).

Ph.D. Thesis: Lorena Romero Santacreu (2009), Tianlu Li (2015), María E. Pérez Martínez (expected 2021), Marina Barba (in progress).

University management

ERASMUS, SICUE and International Program coordinator for the studies of Biochemistry and Biomedicine (Faculty of Biology, UV). From September 2018 until now.

Present scientific collaborations

Dra. Nadezda Apostolova, Univ. Valencia, ES; Dr. José E. Pérez-Ortín, Univ. Valencia, ES; Dr. Sergi Puig, IATA-CSIC, ES; Dr. Paco Navarro, Univ. Jaén, ES; Dr. Sebastián Chávez, Univ. Sevilla, ES; Dr. Enrique Herrero, Univ. Lleida, ES; Dr. Per Sunnerhagen, Göteborg University, SW; Dr. Gustav Ammerer, University of Vienna, Austria; Dr. Vicent Pelechano, Karolinska Karolinska Institutet, SW; Dr. Thomas Dever, NIH, Bethesda, USA.

Experience in peer review of scientific projects and contracts

Evaluation of Research Project Proposals as Expert (remote referee) for the EU 6th Framework Programme.

Evaluation of Research Project Proposals and Contracts as Expert for the ANECA and ANEP, Spanish Ministry of Science and Innovation.

Expert Panel for the Belgium agency FWO (Fonds Wetenschappelijk Onderzoek Research Foundation-Flanders).

Evaluation for the CSIC, Universidad de la República (Uruguay).

Member of evaluation panel as Expert Advisor for the Faculty of Science, University of Gothenburg (Sweden).

Evaluation of Research Contracts as Expert for the Agencia Andaluza del Conocimiento (AAC) (Junta de Andalucía, Spain).

Experience in peer review of scientific projects and papers

Referee for the International Scientific Journals *Current Genetics, Molecular and Cellular Biology, PLOS One, Nature Communications, Nucleic Acids Research, BBA-Gene Regulatory Mechanisms, Biotechnology for Biofuels, AIMS Microbiology, Scientific Reports.*

Editorial Board of Cellular Biochemistry as Review Editor for Frontiers in Chemistry, Frontiers in Molecular Biosciences and Frontiers in Cell and Developmental Biology (since June 2020).

Experience in PhD evaluation committees

Member of 16 national and international Ph.D. evaluation Committees.