

Contact information

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Academic degrees

- 2001** **BSc. Degree in Biology (Biomedicine)**
Universitat Autònoma de Barcelona, Spain
- 2004** **MSc. Degree and Research Aptitude (DEA) in Neuroscience**
Universitat Autònoma de Barcelona, Spain
- 2008** **PhD. Degree in Biology (Neuroscience program)**
Universitat Autònoma de Barcelona, Spain
Thesis Title: *Neuroprotective and anti-apoptotic effect of PF9601N, a non-amphetamine type MAO-B inhibitor in different cellular models of Parkinson's disease.*

Positions held

- 2001-2002** **Research collaborator**
Department of Biochemistry and Molecular Biology
Universitat Autònoma de Barcelona, Spain
Supervisor: Dr. Mercedes Unzeta
- 2003** **Associated professor level 2**
Department of Biochemistry and Molecular Biology
Universitat Autònoma de Barcelona, Spain
- 2002-2008** **Graduate student**
Department of Biochemistry and Molecular Biology
Universitat Autònoma de Barcelona, Spain
Supervisor: Dr. Mercedes Unzeta
- 2008-2013** **Postdoctoral fellow**
Department of Pharmacology
University of Washington, Seattle (WA)
Supervisor: Dr. G. Stanley McKnight and Dr. Paul S. Amieux

2013-Present Research Scientist III

Center for Integrative Brain Research and Center for Developmental Therapeutics
Seattle Children's Research Institute, Seattle (WA)

Fellowships

2004-2008 Predoctoral Fellowship (Ph.D)

FPU program. Ref. AP2003-0534
Ministry of Education and Science (MEC), Spain

2006 International short stay fellowship for PhD candidates

FPU program. Ministry of Education and Science (MEC), Spain
Hosting institution: University of Sydney, Australia

2008-2010 Postdoctoral Fellowship

Postdoctoral mobility program Ref. -2008-0892.
Ministry of Science and Innovation (MICINN), Spain

Research Experience

2001-2008 Research collaborator and graduate student

Department of Biochemistry and Molecular Biology
Universitat Autònoma de Barcelona, Spain
Project: *Monoamine Oxidase B inhibitors as neuroprotective drugs in neurodegenerative diseases.*
Supervisor: Dr. Mercedes Unzeta.

2006 Visiting research student

School of Molecular and Microbial Biosciences
University of Sydney, Australia.
Project: *Signal transduction mechanisms in interleukin-6-induced inflammation and injury in the central nervous system.*
Supervisor: Dr. Iain L. Campbell

2008-2013 Postdoctoral fellow

Department of Pharmacology
University of Washington, Seattle (WA)
Project: *Development of the RiboTag approach, a novel technique to profile cell type-specific gene expression, and its application to the study of the regulation of different cell populations in the testis and brain.*
Supervisor(s): Dr. G. Stanley McKnight and Dr. Paul S. Amieux.

2013-Present Research Scientist III

Center for Integrative Brain Research and Center for Developmental Therapeutics
Seattle Children's Research Institute, Seattle (WA)

Project: *Characterization of the mechanisms underlying neuronal susceptibility in mitochondrial disease.*

. Publications

- 1: **Sanz E**, Evanoff R, Quintana A, Evans E, Miller JA, Ko C, Amieux PS, Griswold MD, McKnight GS.
RiboTag analysis of actively translated mRNAs in Sertoli and Leydig cells in vivo.
PLoS One. 2013 Jun 11;8(6):e66179.
- 2: Popa SM, Moriyama RM, Caligioni CS, Yang JJ, Cho CM, Concepcion TL, Oakley AE, Lee IH, **Sanz E**, Amieux PS, Caraty A, Palmiter RD, Navarro VM, Chan YM, Seminara SB, Clifton DK, Steiner RA.
Redundancy in Kiss1 Expression Safeguards Reproduction in the Mouse.
Endocrinology. 2013 Jun 4. [Epub ahead of print]
- 3: Giralt M, Ramos R, Quintana A, Ferrer B, Erta M, Castro-Freire M, Comes G, **Sanz E**, Unzeta M, Pifarré P, García A, Campbell IL, Hidalgo J.
Induction of atypical EAE mediated by transgenic production of IL-6 in astrocytes in the absence of systemic IL-6.
Glia. 2013 Apr;61(4):587-600.
- 4: Quintana A, **Sanz E**, Wang W, Storey GP, Güler AD, Wanat MJ, Roller BA, La Torre A, Amieux PS, McKnight GS, Bamford NS, Palmiter RD.
Lack of GPR88 enhances medium spiny neuron activity and alters motor- and cue-dependent behaviors.
Nat Neurosci. 2012 Nov;15(11):1547-55.
- 5: Unzeta M, **Sanz E**.
Novel MAO-B inhibitors: potential therapeutic use of the selective MAO-B inhibitor PF9601N in Parkinson's disease.
Int Rev Neurobiol. 2011;100:217-36.
- 6: Gottsch ML, Popa SM, Lawhorn JK, Qiu J, Tonsfeldt KJ, Bosch MA, Kelly MJ, Rønnekleiv OK, **Sanz E**, McKnight GS, Clifton DK, Palmiter RD, Steiner RA.
Molecular properties of Kiss1 neurons in the arcuate nucleus of the mouse.
Endocrinology. 2011 Nov;152(11):4298-309.
- 7: Beutler LR, Wanat MJ, Quintana A, **Sanz E**, Bamford NS, Zweifel LS, Palmiter RD.
Balanced NMDA receptor activity in dopamine D1 receptor (D1R)- and D2R-expressing medium spiny neurons is required for amphetamine sensitization.
Proc Natl Acad Sci U S A. 2011 Mar 8;108(10):4206-11
- 8: Quintana A, Kruse SE, Kapur RP, **Sanz E**, Palmiter RD.
Complex I deficiency due to loss of Ndufs4 in the brain results in progressive encephalopathy resembling Leigh syndrome.
Proc Natl Acad Sci U S A. 2010 Jun 15;107(24):10996-1001.
- 9: Bellik L, Dragoni S, Pessina F, **Sanz E**, Unzeta M, Valoti M.

Antioxidant properties of PF9601N, a novel MAO-B inhibitor: assessment of its ability to interact with reactive nitrogen species.

Acta Biochim Pol. 2010;57(2):235-9.

10: **Sanz E**, Yang L, Su T, Morris DR, McKnight GS, Amieux PS.

Cell-type-specific isolation of ribosome-associated mRNA from complex tissues.

Proc Natl Acad Sci U S A. 2009 Aug 18;106(33):13939-44.

11: Quintana A, Müller M, Frausto RF, Ramos R, Getts DR, **Sanz E**, Hofer MJ, Krauthausen M, King NJ, Hidalgo J, Campbell IL.

Site-specific production of IL-6 in the central nervous system retargets and enhances the inflammatory response in experimental autoimmune encephalomyelitis.

J Immunol. 2009 Aug 1;183(3):2079-88.

12: **Sanz E**, Quintana A, Hidalgo J, Marco JL, Unzeta M, .

PF9601N [N-(2-propynyl)-2-(5-benzyloxy-indolyl) methylamine] confers MAO-B independent neuroprotection in ER stress-induced cell death.

Mol Cell Neurosci. 2009 May;41(1):19-31.

13: **Sanz E**, Quintana A, Valente T, Manso Y, Hidalgo J, Unzeta M, .

MAO-B activity is not involved in the neuroinflammatory response elicited by a focal freeze brain injury.

J Neurosci Res. 2009 Feb 15;87(3):784-94.

14: **Sanz E**, Quintana A, Battaglia V, Toninello A, Hidalgo J, Ambrosio S, Valoti M, Marco JL, Tipton KF, Unzeta M. Anti-apoptotic effect of Mao-B inhibitor

PF9601N [N-(2-propynyl)-2-(5-benzyloxy-indolyl) methylamine] is mediated by p53 pathway inhibition in MPP+-treated SH-SY5Y human dopaminergic cells.

J Neurochem. 2008 Jun 1;105(6):2404-17.

15: **Sanz E**, Hofer MJ, Unzeta M, Campbell IL.

Minimal role for STAT1 in interleukin-6 signaling and actions in the murine brain.

Glia. 2008 Jan 15;56(2):190-199.

16: Battaglia V, **Sanz E**, Salvi M, Unzeta M, Toninello A.

Protective effect of N-(2-propynyl)-2-(5-benzyloxy-indolyl) methylamine (PF9601N) on mitochondrial permeability transition.

Cell Mol Life Sci. 2006 Jun;63(12):1440-8.

17: Gimenez-Xavier P, Gomez-Santos C, Castano E, Francisco R, Boada J, Unzeta M, **Sanz E**, Ambrosio S.

The decrease of NAD(P)H has a prominent role in dopamine toxicity.

Biochim Biophys Acta. 2006 May;1762(5):564-74.

18: **Sanz E**, Romera M, Bellik L, Marco JL, Unzeta M.

Indolalkylamines derivatives as antioxidant and neuroprotective agents in an experimental model of Parkinson's disease.

Med Sci Monit. 2004 Dec;10(12):BR477-84

19: Gallardo-Godoy A, Hernandez M, **Sanz E**, Unzeta M.

Synthesis of 4-methyl-thio-phenyl-propylamine and the evaluation of its interaction with different amine oxidases.

Bioorg Med Chem. 2004 Jan 2;12(1):273-9.

Research Support

- 2012-2013** Project: *Understanding intercellular communication among somatic cells of the testis.*
Center: University of Washington, Seattle, USA
PI: Paul S. Amieux
Funding agency: University of Washington (Royalty Research Fund) Ref. A70411
- 2011-2012** Project: *Transcriptional Changes in Kiss1 Neuron Populations During Metabolic Challenges.*
Center: University of Washington, Seattle, USA
PI: Paul S. Amieux (Pilot project)
Funding agency: NICHD. Ref. U54 HD012629
- 2010-2011** Project: *Determining the FSH and Testosterone Regulated Translated Transcriptome in Sertoli Cells after Acyline Treatment.*
Center: University of Washington, Seattle, USA
PI: Paul S. Amieux (Pilot project)
Funding agency: NICHD. Ref. U54 HD042454-09
- 2009-2014** Project: *Regulation of cAMP-Dependent Protein Kinase Genes*
Center: University of Washington, Seattle, USA
PI(s): G. Stanley McKnight
Funding agency: NIH Ref. GM032875
- 2009-2014** Project: *Ribotag: a novel technique to profile cell type-specific gene expression and investigate translational regulation in the brain.*
Center: University of Washington, Seattle, USA
PI(s): G. Stanley McKnight and Paul S. Amieux
Funding agency: NIMH Ref. 1R01MH086386-02
- 2007-2010** Project: *In Vivo Ribosome Tagging in Neuroendocrine Cell Types.*
Center: University of Washington, Seattle, USA
PI: Paul S. Amieux
Funding agency: NICHD. Ref. R21 HD057798
- 2006-2009** Project: *Pharmacological evaluation of novel molecules for the treatment of Alzheimer's disease.*
Center: Universitat Autònoma de Barcelona, Spain.
PI: Mercedes Unzeta
Funding agency: Ministry of Education and Science (MEC). Ref. SAF2006-08764

- 2005-2010** Project: *Synthesis and assessment of novel polyfunctional compounds, based on a propargylamine structure for use in neurodegenerative conditions.*
Center: Universitat Autònoma de Barcelona, Spain
PI(s): Keith Tipton; F. Javier Luque; Laura Della Corte; Massimo Valoti; Maria Carreiras; Rona Ramsay; Agnieszka W. Fogel; Mercedes Unzeta Lopez
Funding agency: COST (European Cooperation in Science and Technology). Ref. D34/0003/05
- 2005-2007** Project: *Signal transduction mechanisms in interleukin-6-induced inflammation and injury in the central nervous system.*
Center: University of Sydney, Australia
PI: Iain L Campbell
Funding agency: NSW Government's Office for Science and Medical Research (OSMR).
- 2003-2006** Project: *Antiapoptotic effect of PF9601N and derivatives on human neuroblastoma cells treated with MPP+ as a model of dopaminergic toxicity: therapeutic implications on Parkinson's disease.*
Center: Universitat Autònoma de Barcelona, Spain.
PI: Mercedes Unzeta
Funding agency: Ministry of Education and Science (MEC). Ref. SAF2003-02725

Scientific meetings

- 2012** 8th FENS forum of Neuroscience
Barcelona (Spain)
Poster presentation
Title: *Isolation of polysome-associated transcripts from POMC neurons of the hypothalamus.*
Authors: E Sanz; A Quintana; RD Palmiter; PS Amieux; GS McKnight.
- 2007** 11th Meeting of the International Neurotoxicology Association (INA-11)
Pacific Grove (CA), USA
Oral communication
Title: *PF9601N-Mediated p53 Pathway Inhibition Confers Neuroprotection in MPP+-Induced Cell Death.*
Authors: E Sanz; A Quintana; J Hidalgo; JL Marco; M Unzeta.
- 2005** Fifth International Conference on Metallothionein: MT-2005
Beijing (China)
Poster presentation
Title: *Role of Metallothionein I+II in MPP+-induced cell death.*
Authors: E Sanz; J Hidalgo; M Unzeta.
- 2005** XI Meeting of the Spanish Society for Neuroscience
Torremolinos (Malaga), Spain

- Poster presentation
Title: *El tratamiento con PF9601N atenúa la toxicidad inducida por MPP+, Tunicamicina y Brefeldina A en células dopaminérgicas tipo SH-SY5Y.*
Authors: E Sanz; M Unzeta.
- 2005** 11th Symposium on Pharmacological Research in Catalonia
Barcelona, Spain
Oral communication
Title: *Efecte citoprotector i antiapoptòtic del PF9601N en diferents models de toxicitat en cèl.lules de neuroblastoma humà SH-SY5Y: implicacions terapèutiques en la malaltia de Parkinson.*
Authors: E Sanz; JL Marco; M Unzeta
- 2004** 11th Amine Oxidase Workshop
St Andrews, United Kingdom
Poster presentation
Title: *Antiapoptotic effect of PF9601N, a new MAO-B inhibitor, as neuroprotective agent in Parkinson's disease models.*
Authors: E Sanz; L Belik; M Valoti; JL Marco; M Unzeta.
- 2003** 6th International Conference on Alzheimer's disease and Parkinson's Disease
Sevilla, Spain
Poster presentation
Title: *Stimulation of IL/6 by PF 9601N a novel MAO/B inhibitor and its metabolite in mesencephalic primary cultures.*
Authors M Unzeta; JR Palacio; E Sanz; P Martinez; JL Marco.

Teaching Experience

- 2007** Clinical Biochemistry and Molecular Pathology Laboratory
4th year BSc. Biochemistry
Universitat Autònoma de Barcelona (Spain).
10 hours.
- 2006-2007** Biochemistry and Molecular Biology Laboratory
1st year Medical School
Universitat Autònoma de Barcelona (Spain).
45 hours.
- 2005-2006** Biochemistry and Molecular Biology Laboratory
1st year Medical School
Universitat Autònoma de Barcelona (Spain).
54 hours.
- 2004-2005** Biochemistry and Molecular Biology Laboratory
1st year Medical School
Universitat Autònoma de Barcelona (Spain).
54 hours.

2002-2003 Biochemistry and Molecular Biology Laboratory
1st year Medical School
Universitat Autònoma de Barcelona (Spain).
54 hours.

2002-2003 Biochemistry and Molecular Biology Lectures
1st year Medical School
Universitat Autònoma de Barcelona (Spain).
3 hours.

Mentoring

Undergraduate Mentoring

2009 Stephanie Ngo (Currently attending Medical School at Duke University)
Project: *Evaluation of RiboTag Technique on POMC and AgRP Neurons of the Arcuate Nucleus in the Hypothalamus.*

Graduate Students Mentoring

2010 Jamie Levin (Rotation student)
Pharmacology Program, University of Washington
Project: *Gene expression in Kiss1 neurons in the hypothalamus.*

Awards and Merits

2012 International Travel Grant Award. Meeting attendance
FENS (Federation of European Neuroscience Societies)

2005-2008 Graduate student representative at the Department of Biochemistry and
Molecular Biology
Universitat Autònoma de Barcelona, Spain

2005 Young scientist in the field of Metallothionein Award.
Metallothionein Society. Beijing, China

2005 Travel Grant Award. Meeting attendance
Spanish Society for Neuroscience