

**BIOGRAPHICAL SKETCH**

Elena Hernández Martínez-Lapiscina, M.D. PhD.

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**DATE and PLACE OF BIRTH** December 13th, 1963, Sabadell, Spain  
**CURRENT POSITION** Consultant Ophthalmologist  
**PRIMARY AFFILIATION** Institut Clinic d'Oftalmologia, Hospital Clinic de Barcelona.  
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**EDUCATION**

1987 Medicine, University Autonomous of Barcelona of Navarra, Spain M.D.  
1992 Ophthalmology, Santa Creu I Sant Pau Hospital, Spain

**INTERNSHIP, RESIDENCY AND FELLOWSHIP**

2005 Neuroophthalmology Consultant, Johns Hopkins Hospital  
1997 Neuroophthalmology Consultant, Wills Eye Hospital Philadelphia

**HONORS AND AWARDS**

- Member of the Spanish Multiple Sclerosis Network (RD12/0032/0001)
- Member of the Spanish Society of Ophthalmology
- Member of the Catalan Society of Ophthalmology and coordinator of the Work group of Neuro-ophthalmology of Catalunya (Spain)

**PROFESSIONAL ACTIVITIES**

2005-present Ophthalmology consultant in the Ophthalmology Institut of the Clinic Hospital of Barcelona, Spain  
1993-2006 Ophthalmology Consultant in the Ophthalmology Service of the Mutua Terrassa hospital, Spain  
1999-2003 Associate professor. Clinical Optometry and co-college in the Optic University of Terrassa, Spain

**TEACHING**

Associate Teacher Ophthalmology, Faculty of Medicine, University of Barcelona

**RESEARCH PROGRAM**

Keyword/Areas of Interest: Multiple Sclerosis, Neuroimmunology, Translational Research (Biomarker and therapeutic target R&D), Neuroimage and Visual Pathway, Telemedicine and Public Health (Mediterranean Diet).

Axonal damage in MS/AON: we aim to further understand the dynamics of axonal damage in Multiple Sclerosis and Optic Neuritis and its main contributors (oxidative stress, energetic failure). For this aim, we combined Imaging Modalities in animal models and patients with MS (MRI, OCT and Raman Spectroscopy). We have identified the role of Tran synaptic degeneration as contributor factor to extend neuroaxonal damage in Multiple Sclerosis. We aim also to evaluate the short and long-term dynamics of retinal atrophy after an acute episode of optic neuritis.

Biomarkers of Prognosis in MS/AON: we aim to develop and validate biomarkers of Multiple Sclerosis prognosis and to define pathogenic-related MS phenotypes to achieve the goal of tailored therapy. We have already evaluated the role of retinal periphlebitis in MS and color vision as makers of disease severity in Relapsing Remitting MS and will evaluate these and other visual outcomes (low contrast vision) in long-term cohorts and also for Progressive MS patients. We have also designed an optical device based on Raman Spectroscopy to evaluate molecular information of the retina in Multiple Sclerosis. Molecular changes associated to inflammation and neurodegeneration in MS are previous to structural and functional changes and can reveal differences in the pathogenesis between individuals. Molecular evaluation in retina by using Raman Spectroscopy will provide biomarkers of prognosis and response to therapy for patients and insights into MS pathogenesis, which will help in the development of new therapies for MS.

### **A) PEER-REVIEWED PUBLICATIONS**

1: Keller J, **Sánchez-Dalmau B**, Villoslada P. Lesions in the posterior visual pathway promote trans-synaptic degeneration of retinal ganglion cells. PLoS One. 2014 May 23;9(5):e97444. doi: 10.1371/journal.pone.0097444. eCollection 2014. PubMed PMID: 24857938; PubMed Central PMCID: PMC4032251.

2: Martínez-lapiscina EH, Fraga-pumar E, Pastor X, Gómez M, Conesa A, Lozano-Rubí R, **Sánchez-Dalmau B**, Alonso A, Villoslada P. Is the incidence of optic neuritis rising? evidence from an epidemiological study in barcelona (Spain), 2008-2012. j neurol. 2014 apr;261(4):759-67. doi: 10.1007/s00415-014-7266-2. epub 2014 feb 16. pubmed pmid: 24532201.

3: Martínez-lapiscina EH, Ortiz-Pérez S, Fraga-pumar E, Martínez-Heras E, Gabilondo I, Llufríu S, Bullich S, Figueras M, Saiz A, **Sánchez-Dalmau B**, Villoslada P. Colour vision impairment is associated with disease severity in multiple sclerosis. mult scler. 2014 jan 7. [epub ahead of print] pubmed pmid: 24399824.

4: Gabilondo I, Martínez-Lapiscina EH, Martínez-Heras E, Fraga-Pumar E, Llufríu S, Ortiz S, Bullich S, Sepulveda M, Falcon C, Berenguer J, Saiz A, **Sanchez-Dalmau B**, Villoslada P. Trans-synaptic axonal degeneration in the visual pathway in multiple sclerosis. Ann Neurol. 2014 Jan;75(1):98-107. doi: 10.1002/ana.24030. Epub 2014 Jan 2. PubMed PMID: 24114885.

5: Alvarez G, Rey A, **Sanchez-Dalmau B**, Muñoz E, Ríos J, Adán A. Optical coherence tomography findings in spinocerebellar ataxia-3. Eye (Lond). 2013 Dec;27(12):1376-81. doi: 10.1038/eye.2013.201. Epub 2013 Sep 13. PubMed PMID: 24037234; PubMed Central PMCID: PMC3869502.

6: Marro M, Taubes A, Abernathy A, Balint S, Moreno B, **Sanchez-Dalmau B**, Martínez-Lapiscina EH, Amat-Roldan I, Petrov D, Villoslada P. Dynamic molecular monitoring of retina inflammation by in vivo Raman spectroscopy

coupled with multivariate analysis. *J Biophotonics*. 2013 Sep 6. doi: 10.1002/jbio.201300101. [Epub ahead of print] PubMed PMID: 24019106.

7: Ortiz-Pérez S, Martínez-Lapiscina EH, Gabilondo I, Fraga-Pumar E, Martínez-Heras E, Saiz A, **Sanchez-Dalmau B**, Villoslada P. Retinal periphlebitis is associated with multiple sclerosis severity. *Neurology*. 2013 Sep 3;81(10):877-81. doi: 10.1212/WNL.0b013e3182a3525e. Epub 2013 Jul 31. PubMed PMID: 23902700; PubMed Central PMCID: PMC3885218.

8: Gabilondo I, Sepúlveda M, Ortiz-Perez S, Fraga-Pumar E, Martínez-Lapiscina EH, Llufríu S, Solá N, Saiz A, **Sanchez-Dalmau B**, Villoslada P. Retrograde retinal damage after acute optic tract lesion in MS. *J Neurol Neurosurg Psychiatry*. 2013 Jul;84(7):824-6. doi: 10.1136/jnnp-2012-304854. Epub 2013 May 28. PubMed PMID: 23715916.

9: Moizé V, Ibarzabal A, **Sanchez Dalmau B**, Flores L, Andreu A, Lacy A, Vidal J. Nystagmus: an uncommon neurological manifestation of thiamine deficiency as a serious complication of sleeve gastrectomy. *Nutr Clin Pract*. 2012 Dec;27(6):788-92. doi: 0.1177/0884533612453746. Epub 2012 Oct 5. PubMed PMID: 23042832.

10: Pelegrín L, Mesquida M, Rey A, **Sánchez-Dalmau B**, Frohman L. Blind runner. *Surv Ophthalmol*. 2012 Sep;57(5):486-94. doi: 10.1016/j.survophthal.2011.06.004. Epub 2011 Oct 21. PubMed PMID: 22018675

11: Noval S, Ortiz-Pérez S, **Sánchez-Dalmau B**, Ruiz-Ares G, Arpa J, Adán A. Neuro-ophthalmological features of primary diffuse leptomeningeal gliomatosis. *J Neuroophthalmol*. 2011 Dec;31(4):299-305. doi: 10.1097/WNO.0b013e31821ee5c2. PubMed PMID: 21623228.

12: Ortiz-Perez S, Fernandez E, Molina JJ, **Sanchez-Dalmau B**, Navarro M, Corretger X, Olver JM. Two cases of drug-induced orbital inflammatory disease. *Orbit*. 2011 Jan;30(1):37-9. doi: 10.3109/01676830.2010.535641. PubMed PMID: 21281079.

8: Mesquida M, Sanchez-Dalmau B, Ortiz-Perez S, Pelegrín L, Molina-Fernandez JJ, Figueras-Roca M, Casaroli-Marano R, Adán A. Oxaliplatin-Related Ocular Toxicity. *Case Rep Oncol*. 2010 Nov 22;3(3):423-427. PubMed PMID: 21151636; PubMed Central PMCID: PMC2999736.

9: Prat NM, Sánchez-Dalmau BF, Foroozan R. Not just for men. *Surv Ophthalmol*. 2011 Mar-Apr;56(2):173-7. doi: 10.1016/j.survophthal.2010.06.001. Epub 2010 Oct 30. PubMed PMID: 21035828.

10: Sánchez-Dalmau B, Llorenç V, Ortiz S, Martínez L. [Comparison of three optical coherence tomography devices, one time-domain and two fourier-domain, for the estimation of the retinal nerve fibre layer thickness]. *Arch Soc Esp Oftalmol*. 2010 May;85(5):165-73. doi: 10.1016/S0365-6691(10)55002-0. Spanish. PubMed PMID: 23010520.

- 11: Ortiz-Pérez S, Sánchez-Dalmau B, Molina J, Adán A, Candela S, Rumià J. Ocular tilt reaction as a delayed complication of deep brain stimulation for Parkinson disease. *J Neuroophthalmol*. 2009 Dec;29(4):286-8. doi: 10.1097/WNO.0b013e3181b2822d. PubMed PMID: 19952901.
- 12: Ortiz-Pérez S, Sánchez-Dalmau B, Mesquida M, Fernández E, Adán A. [Eight-and-a-half syndrome]. *Med Clin (Barc)*. 2010 Jan 23;134(1):45. doi: 10.1016/j.medcli.2009.05.039. Epub 2009 Sep 20. Spanish. PubMed PMID: 19767036.
- 13: Fonollosa A, Giralt J, Pelegrín L, Sánchez-Dalmau B, Segura A, García-Arumí J, Adan A. Ocular syphilis--back again: understanding recent increases in the incidence of ocular syphilitic disease. *Ocul Immunol Inflamm*. 2009 May-Jun;17(3):207-12. doi: 10.1080/09273940902741709. PubMed PMID: 19585365.
- 14: Bitrian E, Sanchez-Dalmau B, Gilbert ME, Adan A, Susac JO. Retinal infarcts in a patient with an acute confusional syndrome. *Surv Ophthalmol*. 2009 Jul-Aug;54(4):503-6. doi: 10.1016/j.survophthal.2009.04.001. PubMed PMID: 19539837.
- 15: Ortiz-Pérez S, Sánchez-Dalmau BF, Molina-Fernández JJ, Adán-Civera A. [Neuro-ophthalmological manifestations of pituitary adenomas. The usefulness of optical coherence tomography]. *Rev Neurol*. 2009 Jan 16-31;48(2):85-90. Review. Spanish. PubMed PMID: 19173206.
- 16: Barnés C, Sánchez-Dalmau BF, Vela D, Alarcón S. [Papilledema as an indicator of POEMS syndrome]. *Arch Soc Esp Oftalmol*. 2008 Dec;83(12):709-11. Spanish. PubMed PMID: 19085642.
- 17: Sánchez-Dalmau BF, Pascual L, Lao X, Maiz J. [Sinus syndrome, an uncommon cause of enophthalmos]. *Arch Soc Esp Oftalmol*. 2008 Feb;83(2):125-8. Spanish. PubMed PMID: 18260025.
- 18: Adán A, Casaroli-Marano RP, Gris O, Navarro R, Bitrian E, Pelegrin L, Sanchez-Dalmau B. Pathological findings in the lens capsules and intraocular lens in chronic pseudophakic endophthalmitis: an electron microscopy study. *Eye (Lond)*. 2008 Jan;22(1):113-9. Epub 2006 Oct 13. PubMed PMID: 17041575.
- 19: Sanchez Dalmau BF. Young boy with progressive double vision. *Surv Ophthalmol*. 1998 Jul-Aug;43(1):47-52. PubMed PMID: 9716192.
- 20: Aguilar-Barberà M, Calopa-Garriga M, Sánchez-Dalmau B. [Current indications of botulinum toxin treatment]. *Rev Neurol*. 1997 Feb;25(138):270-4. Review. Spanish. PubMed PMID: 9147756.
- 21: Sánchez Dalmau BF, Vela Payán MD. [Retinopathy caused by desferrioxamine]. *Med Clin (Barc)*. 1996 Nov 9;107(16):636. Spanish. PubMed PMID: 9064398.

22: de Córdoba JL, Balsells J, Sanchez-Dalmau B, Llonch JM, Bernal J. Retrobulbar versus peribulbar block: alfentanil in eye blocks. Reg Anesth. 1996 Mar-Apr;21(2):171. PubMed PMID: 8829413.

23: Sanchez-Dalmau B, Goñi FJ, Guarro M, Roig C, Duch-Bordas F. Bilateral homonymous visual field defects as initial manifestation of multiple sclerosis. Br J Ophthalmol. 1991 Mar;75(3):185-7. PubMed PMID: 2012791; PubMed Central PMCID: PMC1042305.

## **B) RESEARCH SUPPORT**

1. Estudio del daño axonal en esclerosis múltiple mediante estudios de neuroimagen de la vía óptica. Instituto de Salud Carlos III: PS09/00259. Desde 1/10 hasta 12/12. I.P. Pablo Villoslada.

2. Programa de Recerca en Docència Universitària, Instituto de Ciències de l'Educació (REDICE- 2008) (codigo: A0801-04). Programa interactivo de auto-evaluación continuada para el diagnóstico por imágenes en Oftalmología. Desde 2009 hasta 2012. Investigador Principal: Dr. Ricardo P. Casaroli-Marano.

3. Red Española de Esclerosis Múltiple. Entidad financiadora: Instituto de Salud Carlos III - Fondo de Investigaciones Sanitarias RD07/0060/0001. Duración, desde: 01/08 hasta: 12/11 Coordinador de la red: Pablo Villoslada. Investigador Principal: Pablo Villoslada

4. Estudio CFTY720D2319. EUDRACT 2011-001437-16. "Estudio multicéntrico de 3 años de duración para evaluar la tomografía de coherencia óptica como criterio de valoración en pacientes con esclerosis múltiple". Novartis. Desde 2012 hasta 2015. IP: Pablo Villoslada.

5. Estudio del daño axonal en esclerosis múltiple mediante estudios de neuroimagen de la vía óptica. FIS. Desde Enero 2010. Investigador colaborador. I.P: Pablo Villoslada

6. Protocolo: CMM-EM. Número EudraCT:2009-016642-74 Trasplante autólogo de células madre mesenquimales en esclerosis múltiple: ensayo clínico fase II, enmascarado y cruzado con placebo. 1/10 hasta 12/10. Instituto de Salud Carlos III: TRA-066. . Investigador colaborador. IP: Albert Saiz.

7. 27918. Motion. A phase III, double blind, placebo-controlled randomized trial to determine the efficacy and safety of a low (50 mg/day) and high (100 mg/day) dose of safinamide, as add on therapy in subjects with early idiopathic Parkinson's Disease treated with a stable dose of a single dopamine agonist. Quintiles for Merck- Serono. Desde Julio 2008. En activo. Investigador colaborador. I.P.: E Tolosa.

8. 27919. Settle. A phase III, double blind, placebo-controlled randomized trial to determine the efficacy and safety of a dose range of 50 to 100 mg/day dose

of safinamide, as add on therapy in subjects with idiopathic Parkinson's Disease with motor fluctuations, treated with a stable dose of levodopa and who may receiving concomitant treatment with stable doses of a dopamine agonist, and anticholinergic and/or amantadine Quintiles for Merck-Serono. Desde 2008-2011. I.P.: E Tolosa.

9. Protocol Number: A1481259 Case-Crossover study of PDE5 inhibitor exposure as a potencial "trigger factor" for acute Non Artheritic Ischemic Optic Neuropathy. Pfizer. 2010-2013..I.P.: Bernardo Sánchez 10. EMR 701165\_024. Cognition in Parkinson Disease.Merck Serono SA. 2009-2012. Investigador colaborador. I. P.: M. José Martí.

11. Estudio de incidencia y caracterización del síndrome de Charles-Bonnet. Aprobado por el Comité Ético de Investigación Clínica del Hospital Clínic. Sin financiación. desde Abril 2008 hasta fin 2012.. I. P. Bernardo Sánchez

12. Manifestaciones neurooftalmológicas de los tumores hipofisarios. El valor de la tomografía de coherencia óptica (OCT) como predictor de la recuperación visual tras el tratamiento de los tumores hipofisarios. Aprobado por el Comité Ético de Investigación Clínica del Hospital Clínic. Sin financiación. 2009-2012. I. P. : Bernardo Sánchez.

13. Revisión y caracterización de las manifestaciones neuro-oftalmológicas de la gliomatosis meníngea primaria. Aprobado por el Comité Ético de Investigación Clínica del Hospital Clínic. Sin financiación. 2009-2010.. I.P.:Bernardo Sánchez.

14. Project Title: Mechanisms of axonal damage in neuroinflammation: novel strategies for neuroprotection  
Organisation: Instituto de Salud Carlos III  
Project number: PI12/01823  
Years: 01/13-12/15  
Amount: 230,505 €  
Principal Investigator: Pablo Villoslada

15. Title: Red Española de Esclerosis Múltiple  
Financial Entity: Ministerio de Ciencia e Innovación. Fondo de Investigaciones Sanitarias RD07/0060/0001  
Duration 01 January 2008 - 31 December 2012  
Role: Investigator  
Budget: €131.576

16. Title: Red Española de Esclerosis Múltiple  
Financial Entity: Ministerio de Ciencia e Innovación. Fondo de Investigaciones Sanitarias RD12/0032/0001  
Duration 01 January 2008 - 31 December 2012  
Role: Investigator  
Budget: €131.576

