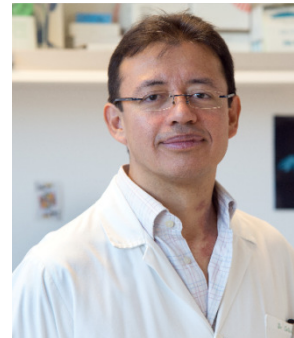


CURRICULUM VITAE

JORGE EDUARDO COLLAZOS-CASTRO
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Neural Repair and Biomaterials Laboratory
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EDUCATION

National University of Colombia	M.D.	1995	Medicine and Surgery
Cajal Institute of Neurobiology (CSIC) – Autónoma University of Madrid	Ph.D.	2003	Neurosciences

RESEARCH AND EXPERIENCE

Medical Internship	Developmental Medicine and Child Neurology Epilepsy Central Hospital, Bogotá, Colombia.	1995-1996
Research Fellowship	Department of Physiological Sciences National University of Colombia	1996-1997
Predoctoral Researcher	Cajal Institute of Neurobiology (CSIC) / UAM	1998-2003
Postdoctoral Fellow	National Hospital for Paraplegics, Toledo, Spain	2003-2004
Research Group Leader	National Hospital for Paraplegics, Toledo, Spain	2004-present

RESEARCH INTERESTS

Development of strategies to promote CNS repair.
Neural mechanisms of motor control.
Electrobiological systems.

PUBLICATIONS

RESEARCH PAPERS

Del Cerro P, Rodríguez-De-Lope Á, and **Collazos-Castro JE*** (2021) The Cortical Motor System in the Domestic Pig: Origin and Termination of the Corticospinal Tract and Cortico-Brainstem Projections. *Front. Neuroanat.* 15: 748050. **I.F. 3.856**

Cerro PD, Barriga-Martín A, Vara H, Romero-Muñoz LM, Rodríguez-De-Lope Á, and **Collazos-Castro JE.*** Neuropathological and motor impairments after incomplete cervical spinal cord injury in pigs. *J Neurotrauma.* 2021 38(21):2956-2977. **I.F. 5.269**

El Waly B, Escarrat V, Perez-Sanchez J, Kaur J, Pelletier F, **Collazos-Castro JE**, Debarbieux F. Intravital Assessment of Cells Responses to Conducting Polymer-Coated Carbon Microfibres for Bridging Spinal Cord Injury. *Cells.* 2021; 5;10 (1):73. **I.F. 6.6**

García-Fernández A, Lozano-Torres B, Blandez JF, Monreal-Trigo J, Soto J, **Collazos-Castro JE**, Alcañiz M, Marcos MD, Sancenón F, Martínez-Máñez R (2020) Electro-responsive films containing voltage responsive gated mesoporous silica nanoparticles grafted onto PEDOT-based conducting polymer. *J Control Release.* 323: 421-430. **I.F. 9.976**

Vara H, and **Collazos-Castro JE*** (2019) Enhanced spinal cord microstimulation using conducting polymer-coated carbon microfibers. *Acta Biomaterialia.* 90: 71-86. <https://doi.org/10.1016/j.actbio.2019.03.037> **I.F. 7.242**

González-Mayorga A, López-Dolado E, Gutiérrez MC, **Collazos-Castro JE**, Ferrer ML, Del Monte F, Serrano MC. (2017) Favorable biological responses of neural cells and tissue interacting with graphene oxide microfibers. *ACS Omega* 2(11):8253-8263. doi: 10.1021/acsomega.7b01354. **I.F. 2.584**

Alves-Sampaio A, García-Rama C, and **Collazos-Castro JE*** (2016) Biofunctionalized PEDOT-coated microfibers for the treatment of spinal cord injury. *Biomaterials* 89:98–113. DOI: 10.1016/j.biomaterials.2016.02.037. **I.F. 8.402**

Collazos-Castro JE*, García-Rama C, Alves-Sampaio A (2016) Glial progenitor cell migration promotes CNS axon growth on functionalized electroconducting microfibers. *Acta Biomater.* 35:42-56. DOI: 10.1016/j.actbio.2016.02.023. **I.F. 6.319**

Vara H, and **Collazos-Castro JE*** (2015) Biofunctionalized conducting polymer / carbon microfiber electrodes for ultrasensitive neural recordings. *ACS Appl Mater Interfaces*. 7:27016-27026. DOI: 10.1021/acsami.5b09594. **I.F: 6.723**

Serrano MC, Patiño J, García-Rama C, Ferrer ML, Fierro JLG, Tamayo A, **Collazos-Castro JE**, del Monte F, and Gutierrez MC. (2014) 3D free-standing porous scaffolds made of graphene oxide as substrates for neural cell growth. *J Mater Chem B*. 2:5698-5706. **I.F: 4.726**

Serrano MC, Nardecchia S, García-Rama C, Ferrer ML, **Collazos-Castro JE**, del Monte F, Gutiérrez MC (2014) Chondroitin sulphate-based 3D scaffolds containing MWCNTs for nervous tissue repair. *Biomaterials* 35: 1543-1551. **I.F: 8.557**

Barrios C, Pizá-Vallespir G, Burgos J, De Blas G, Montes E, Hevia E, **Collazos-Castro JE**, Correa C (2014) Influence of hypotension and nerve root section on the ability to mobilize the spinal cord during spine surgery. An experimental study in a pig model. *Spine J*. 14: 1300-1307. **I.F: 2.426**

Collazos-Castro JE*, Hernández-Labrado G, Polo JL, García-Rama C (2013) N-Cadherin and L1-functionalised conducting polymers for synergistic stimulation and guidance of neural cell growth. *Biomaterials* 34: 3603 - 3617. **I.F: 8.312**

López-Dolado E, Lucas-Osma A and **Collazos-Castro JE*** (2013) Dynamic motor compensations with permanent, focal loss of forelimb force after cervical spinal cord injury. *J Neurotrauma* 30: 191-210. **I.F: 3.968**

Cruz AM, Abad L, Carretero N, Moral-Vico J, Fraxedas J, Lozano P, Subías G, Padiál V, Carballo M, **Collazos-Castro JE** and Casañ-Pastor N (2012) Iridium oxohydroxide, a significant member in the family of iridium oxides. Stoichiometry, characterization and implications in bioelectrodes. *J. Phys. Chem. C*. 116: 5155-5168. **I.F: 4.814**

Hernández-Labrado GR, Contreras-Donayre RE, **Collazos-Castro JE** and Polo JL (2011) Subdiffusion behavior in poly(3,4-ethylenedioxythiophene): Polystyrene sulfonate (PEDOT:PSS) evidenced by electrochemical impedance spectroscopy *J. Electroanal. Chem.*

659: 201 - 204.

I.F: 2.905

Hernandez-Labrado GR, Polo JL, López-Dolado E and **Collazos-Castro JE*** (2011) Spinal cord direct current stimulation: finite element analysis of the electric field and current density. *Med. Biol. Eng. Comput.* 49: 417 – 429. **I.F: 1.878**

Collazos-Castro JE*, Polo JL, Hernández-Labrado G, Padial-Cañete V, García-Rama C (2010) Bioelectrochemical Control of Neural Cell Development on Conducting Polymers. *Biomaterials* 31: 9244 – 9255. **I.F: 7.882**

Lucas-Osma A. and **Collazos-Castro JE*** (2009) Compartmentalization in the Triceps Brachii Motoneuron Nucleus and Its Relation to Muscle Architecture. *J. Comp. Neurol.* 516: 226-239. **I.F: 3.718**

Carballo-Vila M., Moreno-Burriel B., Jurado JR. Chinarro E., Casañ-Pastor N. and **Collazos-Castro JE*** (2009) Titanium oxide as substrate for neural cell growth. *J Biomed Mater Res A.* 90; 94-105. **I.F: 2.816**

Collazos-Castro JE, Cruz AM, Carballo-Vila M, Lira-Cantú M, Abad LI, Pérez del Pino F, Fraxedas, San Juan A, Fonseca C, Pêgo A and Casañ-Pastor N. (2009) Neural Cell Growth on TiO₂ Anatase Nanostructured Surfaces. *Thin Solid Films*, 518 (1): 160-170. **I.F: 1.729**

Hernández-Labrado GR, **Collazos-Castro JE** and Polo JL (2008) Digital simulations to solve electrochemical processes involving a diffusion coefficient varying linearly with the concentration. *J. Electroanal. Chem.* 615 (1): 62 – 68. **I.F: 2.484**

Collazos-Castro JE*, López-Dolado E., Nieto-Sampedro M. (2006) Locomotor deficits and adaptive mechanisms after thoracic spinal cord contusion in the adult rat. *J. Neurotrauma* 23: 1-17. **I.F: 3.453**

Collazos-Castro JE*, Muñetón-Gómez V., Nieto-Sampedro M. (2005) Olfactory glia transplantation into cervical spinal cord contusion injuries. *J. Neurosurg. Spine.* 3: 308–317. **I.F: 1.222**

Collazos-Castro JE*, Soto VM, Gutiérrez-Dávila M, Nieto-Sampedro M. (2005) Motoneuron loss associated with chronic locomotion impairments after spinal cord contusion in the rat. *J. Neurotrauma* 22: 544-558. **I.F: 2.574**

Nieto-Sampedro M., **Collazos-Castro J.E.**, Taylor J.S., Gudiño-Cabrera G., Verdú-Navarro E., Pascual-Piédrola J.I., Insausti-Serrano R. (2002). Trauma en el sistema nervioso central y su reparación. *Rev. Neurol.* 35: 534 – 552. **I.F: 0.29**

Collazos-Castro JE, Nieto-Sampedro M. (2001) Developmental and reactive growth of dentate gyrus afferents: Cellular and molecular interactions. *Rest. Neurol. Neurosci.* 19: 169 – 187. **I.F: 0.68**

BOOK CHAPTERS AND OTHER PUBLICATIONS

Collazos-Castro JE. Biomaterial-based systems as biomimetic agents in the repair of the CNS. In: Salgado A. (Ed): *Handbook of Innovations in Central Nervous System Regenerative Medicine*. Elsevier, Amsterdam, 2020. ISBN: 978-0-128-18084-6.

Collazos-Castro JE. Lesión y reparación de la médula espinal: aspectos neuropatológicos y funcionales. En: Esclarín de Ruz A. (Ed): *Lesión medular, enfoque multidisciplinario*. Editorial Médica Panamericana. Madrid, 2020, p. 235-241. ISBN: 978-84-9110-632-6.

López-Dolado E, **Collazos-Castro JE.** Forelimb force deficits and whole body compensations after rat cervical spinal hemisection. En: Pons, Torricelli, Pajaro (Eds). *Converging Clinical and Engineering Research on Neurorehabilitation Biosystems & Biorobotics*. Volumen 1, pp 1071-1075. Springer-Verlag, Berlin, 2013. ISBN: 978-3-642-34545-6.

Collazos-Castro JE. Aspectos neuropatológicos y funcionales de la lesión y reparación de la médula espinal humana. En: Esclarín de Ruz A. (Ed): *Lesión medular, enfoque multidisciplinario*. Editorial Médica Panamericana. Madrid, 2009, p. 247-254. ISBN: 978-84-

9835-214-6.

Collazos-Castro JE, López-Dolado E., Nieto-Sampedro M. (2003) Correlation of kinematics and neuroanatomy in normal and thoracic spinal cord injured rats. In: Gantchev N. (Ed) From basic motor control to functional recovery III. St. Kliment Ohridski University Press, Sofia; 295 – 303.

Collazos-Castro JE, De Castro F., Gudiño-Cabrera G., Herreras O., Insausti R., Navarro X., Pascual J., Taylor S., Vidal J., Nieto-Sampedro M. (2002) Reparación del trauma medular. Boletín de la Sociedad Española de Neurociencia 12: 2 - 15.

GRANTS AWARDED

Title of the project: **NEUROFIBRES: Biofunctionalised Electroconducting Microfibras for the Treatment of Spinal Cord Injury.**

Sponsor: European Commission, FET-Proactive, Contract N° 732344.

European Coordinator: Jorge E. Collazos Castro, Hospital Nacional de Paraplégicos, SESCAM.

Partners: SESCAM (Spain), University of Cambridge (UK), AXON'Cable SAS (France), University of Trento (Italy), Aix-Marseille University (France), Royal Institute of Technology (Sweden), University of Saarland (Germany).

Period: 01/2017 - 06/2021.

Title: **Electroconducting microfibers for applications in Neurology: electric charge transport, electrochemical stability, and biological interactions.**

Funding body: Junta de Comunidades de Castilla-La Mancha, Convocatoria de la Consejería de Educación para la realización de proyectos de investigación, 2017.

Reference: SBPLY/17/180501/000452

Principal Investigator: J.E. Collazos-Castro.SESCAM

Date of start and end: 20/09/2018-19/09/2021

Title of the project: **Electroconducting microfibers as a multifunctional tool for repairing the spinal cord.**

Sponsor: Ministerio de Economía y Competitividad, Spain. Project N°: SAF2015-65236R

Principal Investigator: Jorge E. Collazos Castro, Hospital Nacional de Paraplégicos, SESCAM

Period: 2016-2019.

Title of the project: **Effects of rehabilitation on synaptic plasticity and functional recovery after cervical spinal cord injury. A preclinical study on minipigs.**

Sponsor: Fundación Mutua Madrileña, Spain

Principal Investigator: Jorge E. Collazos Castro, Hospital Nacional de Paraplégicos, SESCAM
Period: 2015-2017

Title of the project: **Spinal cord repair using electroconducting microfibers that promote and guide glial progenitor cell migration and axonal elongation.**

Sponsor: Ministerio de Economía y Competitividad, Instituto de Salud Carlos III, Spain.

Principal Investigator: Jorge E. Collazos Castro, Hospital Nacional de Paraplégicos, SESCAM
Period: 2013-2015

Title of the project: **Electrochemical modulation of neural cell growth**

Sponsor: Ministerio de Ciencia e Innovación, Spain

Principal Investigator: Jorge E. Collazos Castro, Hospital Nacional de Paraplégicos, SESCAM
Period: 2009-2011

Title of the project: **Nanostructured, polymeric electrodes for spinal cord stimulation**

Sponsor: Fundación para la Investigación Sanitaria en Castilla La Mancha - FISCAM

Principal Investigator: Jorge E. Collazos Castro (Hospital Nacional de Paraplégicos, SESCAM
Period: 2009- 2011

Title of the project: **Development of a Bioelectrochemical Device for CNS Repair**

Sponsor: **European Commission, FP6-028473**

European Coordinator: Jorge E. Collazos Castro (Laboratorio de Reparación Neural, Hospital Nacional de Paraplégicos, SESCAM).

Partners: SESCAM (Spain), University of Aberdeen (UK), CSIC (Spain), Foundation for Research and Technology Hellas (Greece), Castilla-La Mancha University (Spain), Institute of Biomedical Engineering (INEB, Portugal).

Period: 2006-2009.

Title of the project: **Effects of materials electroactivity on neuronal cell survival, differentiation and growth**

Sponsor: Ministerio de Educación y Ciencia, Spain.

Principal Investigator: Jorge E. Collazos Castro, Hospital Nacional de Paraplégicos, SESCAM
Period: 2005-2008.

Title of the project: **Study of voluntary and automatic forelimb movements after cervical spinal cord injury.**

Sponsor: Health Council of Castilla La Mancha, Spain

Principal Investigator: Jorge E. Collazos-Castro. Hospital Nacional de Paraplégicos, SESCAM
Period: 2005-2008.

INVITED LECTURES

Title: **Engineering human spinal cord repair: A translational approach in pigs.**
Satellite FENS meeting: Advances in biology and technology for spinal cord repair.
Paris, July 8th, 2022.

Title: **Therapeutic advances for spinal cord repair.**
XXIV meeting of the association of paraplegics and severely disabled people (ASPAYM)
Madrid, June 2, 2018.

Title: **Neurofibres: Biomaterials for spinal cord repair.**
Aix-Marseille University
Marseille, France, June 2017.

Title: **Investigación Traslacional en Reparación de la Lesión Medular Humana**
XX Symposium on Advances in Physical Medicine and Rehabilitation
Formigal, Spain, February 2016

Title: **Electroconducting biomaterials for the treatment of spinal cord injury.**
Cambridge Graphene Centre. Cambridge, UK. July 25, 2014

Title: **Locomotor deficits and adaptations after spinal cord injury.**
2nd International Spinal Cord Injury and Neurotrauma Summer School.
Toledo, Spain June 24, 2014.

Title: **Microimplants for the nervous system: applications and opportunities.**
Metromeet 2014. Bilbao, March 28, 2014.

Title: **Biomateriales electroactivos, una mirada al futuro.** *Brain Awareness Week.*
Toledo, Spain. March 15, 2012.

Title: **Development of an electrochemical device for stimulation of mammalian spinal cord repair.**
Gordon Research Conference on Bioelectrochemistry.
University of New England in Biddeford ME, USA. July 20 – 25, 2008.

Title: **Lesión y reparación del sistema nervioso central.**
Instituto de Ciencias de Materiales de Barcelona. Spain, January, 2007.

Title: **Development of a bioelectrochemical device for CNS repair.**
Foundation for Research and Technology, Institute of Chemical Engineering and High Temperature Chemical Processes (FORTH/ICE-HT).
Greece, September 2007.

Title: **Experimental spinal cord injury: Motor assessment and repair strategies.**
European Congress of Physical and Rehabilitation Medicine. Madrid, May, 2006.

Title: **Experimental spinal cord injury: Motor assessment and repair strategies.**
Institute of Medical Sciences, University of Aberdeen. UK, August 2005.

PATENTS

TITLE: Materials, methods and devices for promoting and directing neural progenitors migration and proliferation, and axonal and dendritic growth.

Inventors: **Jorge E. Collazos Castro**, José L. Polo Sanz, Gabriel R. Hernández Labrado, Concepción García Rama Pacheco

Organisms: Fundación Hospital Nacional de Paraplégicos para la Investigación y la Integración (65%), Universidad de Castilla La Mancha (35%).

Patent Number: P201231969 (Publication date 14-05-2015, Spain) – PCT/ES2013/070879

COMMUNICATIONS IN SCIENTIFIC MEETINGS

Del Cerro P, Romero L, Barriga A, Badajoz A, **Collazos-Castro JE**. Long-term neuropathological and motor impairments after cervical spinal cord injury in pigs. 18th Congress of the Spanish Society for Neuroscience (SENC). September 2019

Riquelme-Alacid G, **Collazos-Castro JE**. Astrocyte behavior in relation to the composition of the growing substrate. 18th Congress of the Spanish Society for Neuroscience (SENC). September 2019

Alves-Sampaio A, García-Rama C, **Collazos-Castro JE**.
Title: Biofunctionalized PEDOT-coated microfibers for the treatment of spinal cord injury. Spinal Cord Injury Iberian Symposium Estoril, Portugal, 2015

Alves-Sampaio A, García-Rama C, **Collazos-Castro JE**.
Title: Biofunctionalized PEDOT-coated microfibers for the treatment of spinal cord injury. 3rd ISCORE International Spinal Cord Repair Meeting Barcelona, 2015

Vara H, **Collazos-Castro JE**.
Title: Biofunctionalized microfibers for ultrasensitive neural recordings. Congreso de la Sociedad Española de Neurociencia Granada, España, 2015

Collazos Castro JE.
Title: Chemical mapping of the normal and injured spinal cord by infrared microspectroscopy. XIV Congreso Nacional de la Sociedad Española de Neurociencia. Salamanca, 2011

López-Dolado E, **Collazos Castro JE**.
Title: Permanent, focal loss of forelimb force and segmental synapses after cervical spinal

cord injury.

XIV Congreso Nacional de la Sociedad Española de Neurociencia.
Salamanca, 2011

Jovanovic K., Pastor A. and **Collazos Castro JE**.

Title: Use of circuit-specific spread of Pseudorabies virus (PRV Bartha 152) in the adult rat cervical cord to investigate interneuronal projection to the Triceps brachii muscle.

USA Society for Neuroscience Congress.

Washington, 2009

Collazos-Castro JE, Polo-Sanz J., Hernández-Labrado G., Padial V., García-Rama C.

Title: Bioelectrochemical control of neuronal cells using conducting polymers

XIII Congreso de la Sociedad Española de Neurociencia.

Tarragona, 2009.

Burgos Flores J, De Blas G, Montes Fernández E, Caballero A, **J. Collazos-Castro**, et al.

Title: Repercusión electrofisiológica del desplazamiento lateral de la médula espinal con y sin sección radicular. Estudio experimental en cerdos.

Congreso Nacional de la Sociedad para el Estudio de las Enfermedades del Raquis.

Las Palmas de Gran Canaria, 2009.

Lucas-Osma A, **Collazos-Castro JE**.

Title: Compartmentalization in the Triceps Brachii motoneuron nucleus and its relation with muscle architecture.

Federation of European Neuroscience Societies (FENS).

Geneve, 2008.

Collazos-Castro JE, Carballo M, Moreno B, Chinarro E, Casañ-Pastor N, Jurado J.

Title: Rutile Substrata for Neural Cell Growth.

USA Materials Research Society Congress.

San Francisco, 2007

A.C. Manikas, A. Soto Beobide, **J. Collazos-Castro** and G. A. Voyiatzis

Title: Quantitative Analysis of Drugs in Corporal Fluids Using Surface-Enhanced Raman Spectroscopy.

International Conference On Nanomedicine

Porto Carras Grand Resort, Chalkidiki, Greece. 2007

Collazos-Castro JE, López-Dolado E.

Title: Early gait adaptations with permanent impairments in forelimb function, after cervical spinal cord hemisection in the adult rat.

USA Society for Neuroscience Congress.

Atlanta, 2006.

Collazos-Castro JE, López-Dolado E, Hevia E, Burgos J.

Title: Modelos de lesión medular cervical en roedor: Trastornos motrices asociados y relevancia para el estudio de la lesión medular humana.

Congreso Nacional del Grupo Español de Estudio de Enfermedades del Raquis (GEER).

Valladolid, 2006.

Collazos-Castro JE, López-Dolado E, Nieto-Sampedro M.

Title: Locomotor deficits and adaptive mechanisms after thoracic spinal cord contusion in the adult rat

USA National Neurotrauma Society Symposium.

Washington, 2005.

Collazos-Castro JE.

Title: Contusion Injuries to the Spinal Cord: Motor Assessment and Repair Strategies.

COST Action B10, Brain Damage and Repair. European Commission.

Lisboa, Portugal, 2004.

Collazos-Castro JE.

Title: Correlation of kinematics and neuroanatomy in normal and thoracic spinal cord injured rats

Motor Control Conference.

Varna, Bulgaria, 2003.

Collazos-Castro JE, Soto VM, Gutiérrez M, Nieto-Sampedro M.

Title: Cervical Contusion in the Spinal Cord of the Rat: Chronic Locomotor Deficits and Effect of Ensheathing Glia Transplants.

3rd Deauville International Conference on Spinal Cord Injury.

Normandy, France, 2002

DIRECTOR OF PhD DISSERTATIONS

Title: **The pig (*Sus scrofa domestica*) as a research model in cervical spinal cord injury**

Author: Patricia del Cerro de Pablo

Universidad Autónoma de Madrid

Facultad de Medicina, Departamento de Anatomía, Histología y Neurociencia

7 de Abril de 2022.

Sobresaliente CUM LAUDE

Title: **Estrategias de ingeniería eléctrica en el diseño de electrodos avanzados para neuroestimulación.**

Co-directed with Prof. Dr. José Luis Polo Sanz (UCLM).

Author: Gabriel Hernández Labrado

Universidad de Castilla La Mancha

Facultad / Escuela: Ingeniería Eléctrica, Electrónica, Automática y Comunicaciones

25 de Enero de 2012.

Sobresaliente CUM LAUDE

Title: **Biomecánica de la locomoción en un modelo de lesión medular cervical tipo**

Brown-Séguard

Author: Elisa López Dolado

Universidad Autónoma de Madrid

Facultad de Medicina, Departamento de Medicina

25 de Marzo de 2012.

Sobresaliente CUM LAUDE

Title: **Anatomía de los circuitos neuronales que controlan el Tríceps braquial y su modificación tras una lesión medular**

Author: Ana María Lucas Osma

Universidad Autónoma de Madrid

Facultad de Medicina, Departamento de Anatomía, Histología y Neurociencia

17 de Febrero de 2011.

Sobresaliente CUM LAUDE

TEACHING

Human Spinal Cord Injury – Physiopathology and Translational Research

Spinal Cord Medicine Course for Physical Medicine and Rehabilitation Residents
National Hospital for Paraplegics, Toledo. 2003 – present.

Neural Damage, Repair and Plasticity

Master in Neurological Disability and Child Rehabilitation
Complutense University of Madrid, 2009 – 2015.

OTHERS

Chairman of the Clinical Research Committee.

National Hospital for Paraplegics, Toledo. January 2016 – 2018.

Grant reviewer

2021 - 2022

Expert reviewer in European Commission **Horizon Europe Framework Research and Innovation Programme (HORIZON)**.