

CURRICULUM VITAE (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

CV date 13/06/2022

| | | | |
|--|---------------------|-------------------------|---|
| First name | Miguel Angel | | |
| Family name | Burguillos García | | |
| Gender (*) | Male | Birth date (dd/mm/yyyy) | 23/03/1979 |
| Social Security, Passport, ID number | 28929909A | | |
| e-mail | maburguillos@us.es | URL Web | https://investigacion.us.es/sisius/ |
| Open Researcher and Contributor ID (ORCID) (*) | 0000-0002-3165-9997 | | |

(*) Mandatory

A.1. Current position

| | | | |
|-------------------|---|----------------|--------------|
| Position | Ramón y Cajal Fellow | | |
| Initial date | 09/01/2019 | | |
| Institution | University of Seville/Institute of Biomedicine of Seville (IBiS) | | |
| Department/Center | Dept. of Biochemistry and Molecular Biology. Faculty of Pharmacy | | |
| Country | Spain | Teleph. number | +34955420826 |
| Key words | Microglía, caspase, neuroinflammation, neurodegeneration, Parkinson´s disease, Alzheimer´s disease, Epigenetics, ischemia, galectin-3, glioma, TLRs | | |

A.2. Previous positions (research activity interruptions, art. 14.2.b))

| Period | Position/Institution/Country/Interruption cause |
|-------------|---|
| 2018 - 2018 | Research Associate/ Department of Biochemistry/ University of Cambridge / UK |
| 2017 | Paternity leave (2 weeks) |
| 2016 - 2018 | Research Associate/ Cambridge Institute of Medical Research (C.I.M.R) / University of Cambridge/ UK |
| 2016 - 2016 | Post doc/ Queen Mary University of London/UK |
| 2014 - 2016 | Senior Research Fellow / Queen Mary University of London / UK |
| 2011 - 2013 | Postdoc / Karolinska Institute / Sweden |
| 2009 - 2011 | Postdoc / Lund University / Sweden |

A.3. Education



| PhD, Licensed, Graduate | University/Country | Year |
|-------------------------|-------------------------------|------|
| PhD in Biochemistry | University of Seville / Spain | 2009 |
| Bsc in Biology | University of Seville / Spain | 2003 |

Part B. CV SUMMARY (*max. 5000 characters, including spaces*)

I am a Ramon y Cajal Fellow in the University of Seville since January 2019.

My research focuses on various aspects of microglia activation in neurodegenerative diseases and comprises three lines of work (control of microglial activation through “executioner” caspases, role of galectin-3 in microglia activation and epigenetic control of microglia activation). One of our main achievements has been to be one of the first groups to describe a non-apoptotic role for caspase-3/7 and -8 in the regulation of microglia activation, which we published in a full article in the journal **Nature** (Burguillos MA et al., 2011 PMID: 21389984) and commentaries afterwards in Nature Review Neuroscience, Science Signaling, Nature Review Immunology and Science-Business eXchange. This study opened a new line of research in the field of non-apoptotic roles for caspase-3, which other research groups have followed. Later on, we also started a new line of work exploring the role that galectin-3 played in microglia activation during PD, ischemic and traumatic conditions. We also started a new line of research by investigating how different epigenetic modifiers such as the DNA demethylase TET2 regulate positively the proinflammatory response of microglia independently of its oxidase activity.

In the ten years since my PhD defence, I have benefited from postdoctoral positions in a number of labs abroad. In Dr. Tomas Deierborg’s group in Lund University, Sweden, I investigated the function of galectin-3 in neuroinflammation under ischemic conditions. Following this, in Dr. Bertrand Joseph’s group at Karolinska Institute, Stockholm, Sweden, I obtained a highly competitive fellowship from the Vetenskapsrådet (Swedish Research Council) to study microglial caspase-3 in glioma expansion. In 2014 I moved to the United Kingdom where I continued my research on galectin-3 in neuroinflammation after head trauma at the Blizard Institute, Queen Mary University of London in Dr. Adina Michael-Titus’s group. It was there that I developed interest in the epigenetic mechanisms that govern microglial activation under pathological conditions. At the University of Cambridge, UK, I investigated TREM2 dependant mechanisms in AD in the group of Dr. Peter StGeorge-Hyslop at the Cambridge Institute of Medical Research (C.I.M.R.). Finally, in the group of Dr. Guy Brown in the Department of Biochemistry, University of Cambridge, I developed a new technique to transfect the normally difficult to transfect primary microglia cell cultures with siRNA.

I have participated in 10 funded projects as main applicant, and I have been invited as an external reviewer in several occasions for grant proposal in the UK for Medical Research Council (MRC) and the Biotechnology and Biological Sciences Research Council (BBSRC) and in Spain for the Ministerio de Ciencia y Tecnología. I have also reviewed articles in multiple journals including Cell Death and Disease, Cell Reports, Alzheimer's Research & Therapy, among others.

I have published 33 papers in international journals (mostly Q1 journals), with an h-index of 20 and 1786 citations (Google Scholar). I am the first author on 7 papers, second author on 9 papers and on 10 papers as last and corresponding author.

I have taught at several levels of graduate and postgraduate courses in Sweden, UK and Spain, directed 5 PhD theses (including one current PhD candidate) and several TFG and TFM in UK and Spain.

I have organised the annual Cancer Centrum Karolinska congress (CCK Kick-OFF) in Winterviken (2012), Stockholm (Sweden) with 180 participants.

Part C. RELEVANT MERITS (*sorted by typology*)



C.1. Publications *(in chronological order)*

- 1.Review article:** (8/9). García-Revilla J, Boza-Serrano A, Espinosa-Oliva A, Sarmiento M, Deierborg T, Ruiz R, Martínez R, **Burguillos MA** and Venero JL. Galectin-3, a rising Star in modulating microglia activation under conditions of neurodegeneration. *Cell Death and Disease* 2022. Accepted for publication.
- 2.Review article:** **Corresponding author** (6/6). Bahatyrevich-Kharitonik B, Medina-Guzman R, Flores-Cortes A, García-Cruzado M, Kavanagh E and **Burguillos MA** Cell Death Related Proteins Beyond Apoptosis in the CNS. *Frontiers in Cell and Developmental Biology* 2022 10.3389/fcell.2021.825747 WOS (0). **First author is my current PhD student.**
- 3.Review article:** **Corresponding author** (10/10). Rodríguez-Gómez JA, Kavanagh E, Engskog-Vlachos P, Engskog MKR, Herrera AJ, Espinosa-Oliva AM, Joseph B, Hajji N, Venero JL, **Burguillos MA**. *Cells*. 2020 Jul 17;9(7):1717 doi: 10.3390/cells9071717 WOS (42).
- 4.Research article:** **Corresponding author** (25/25). Carrillo-Jimenez A, Deniz Ö, Niklison-Chirou MV, Ruiz R, Bezerra-Salomão K, Stratoulis V, Amouroux R, Yip PK, Vilalta A, Cheray M, Scott-Egerton AM, Rivas E, Tayara K, García-Domínguez I, García-Revilla J, Fernández-Martin JC, Espinosa-Oliva AM, Shen X, St George-Hyslop P, Brown GC, Hajkova P, Joseph B, Venero JL, Branco MR, **Burguillos MA**. TET2 Regulates the Neuroinflammatory Response in Microglia. *Cell Rep*. 2019 Oct 15;29(3):697-713.e8. doi: 10.1016/j.celrep.2019.09.013. WOS (27) **First author was my PhD student.**
- 5.Research article:** **Corresponding author** (7/7). Carrillo-Jimenez A, Puigdemívol M, Vilalta A, Venero JL, Brown GC, StGeorge-Hyslop P, **Burguillos MA**. Effective Knockdown of Gene Expression in Primary Microglia With siRNA and Magnetic Nanoparticles Without Cell Death or Inflammation. *Front Cell Neurosci*. 2018 Sep 21;12:313. doi: 10.3389/fncel.2018.00313. eCollection 2018. WOS (6) **First author was my PhD student.**
- 6.Review article:** **Corresponding author** (4/4). Shen X, Venero JL, Joseph B, **Burguillos MA**. Caspases orchestrate microglia instrumental functions. *Prog Neurobiol*. 2018 Dec;171:50-71. doi: 10.1016/j.pneurobio.2018.09.007. Epub 2018 Oct 2 WOS (15). **First author was my PhD student.**
- 7.Research article:** **Corresponding author** (17/17). Carrillo-Jimenez A*, Yip PK*, King P, Vilalta A, Nomura K, Chau CC, Egerton AM, Liu ZH, Shetty AJ, Tremoleda JL, Davies M, Deierborg T, Priestley JV, Brown GC, Michael-Titus AT, Venero JL, **Burguillos MA**. Galectin-3 released in response to traumatic brain injury acts as an alarmin orchestrating brain immune response and promoting neurodegeneration. *Sci Rep*. 2017 Jan 27;7:41689. doi: 10.1038/srep41689. WOS (71) **First author was my PhD student.**
- 8.Research article:** ***shared first authorship** (1/20). **Burguillos MA***, Shen X*, Osman AM, Frijhoff J, Carrillo-Jiménez A, Kanatani S, Augsten M, Saidi D, Rodhe J, Kavanagh E, Rongvaux A, Rrakli V, Nyman U, Holmberg J, Östman A, Flavell RA, Barragan A, Venero JL, Blomgren K, Joseph B. Glioma-induced inhibition of caspase-3 in microglia promotes a tumor-supportive phenotype. *Nat Immunol*. 2016 Nov;17(11):1282-1290. doi: 10.1038/ni.3545. Epub 2016 Sep 12. WOS (47) **I shared first authorship with my former PhD student.**
- 9.Research article:** ***corresponding author** (1/20). **Burguillos MA***, Svensson M, Schulte T, Boza-Serrano A, García-Quintanilla A, Kavanagh E, Santiago M, Viceconte N, Oliva-Martin MJ, Osman AM, Salomonsson E, Amar L, Persson A, Blomgren K, Achour A, Englund E, Leffler H, Venero JL, Joseph B, Deierborg T. Microglia-Secreted Galectin-3 Acts as a Toll-like Receptor 4 Ligand and Contributes to Microglial Activation. *Cell Rep*. 2015 Mar



10;10(9):1626-1638. doi: 10.1016/j.celrep.2015.02.012. Epub 2015 Mar 5. WOS (150)
10. Research article: (9/10) Boza-Serrano A, Reyes JF, Rey NL, Leffler H, Bousset L, Nilsson U, Brundin P, Venero JL, **Burguillos MA**, Deierborg T. The role of Galectin-3 in α -synuclein-induced microglial activation. Acta Neuropathol Commun. 2014 Nov 12;2:156. doi: 10.1186/s40478-014-0156-0. WOS (65) **First author was my PhD student.**
11. Research article: (1/11) **Burguillos MA**, Magnusson C, Nordin M, Lenshof A, Augustsson P, Hansson MJ, Elmér E, Lilja H, Brundin P, Laurell T, Deierborg T. Microchannel acoustophoresis does not impact survival or function of microglia, leukocytes or tumor cells. PLoS One. 2013 May 27;8(5):e64233. doi: 10.1371/journal.pone.0064233. Print 2013. WOS (86)

C.2. Congress

Invited as a speaker in the 2nd Cell Death Network at Nynäshavsbad (2010). Stockholm, Sweden.

C.3. Research projects

- 1. Project.** Beca Contrato perteneciente al subprograma Ramon y Cajal (RYC) (España) 09/01/2019-09/01/2024. 161.320 €. **Principal investigator**
- 2. Project.** Contribución de las caspasas 3 y 7 en la etiología de la enfermedad de Alzheimer. Ministerio de Ciencia e Innovación (Universidad de Sevilla). 01/06/2020-31/05/2023. 142.780 €. **Principal investigator.**
- 3. Project.** Study of the caspase-3 dependent mechanisms governing microglial activation in Parkinson's disease. (Universidad de Sevilla). 01/01/2020-31/01/2022. 30.000 €. **Principal investigator**
- 4. Project.** Generation of a new method for gene silencing in primary microglia cellcultures. Alzheimer Research UK (ARUK) Cambridge Network Pump Priming Grant.01/06/2017-31/12/2017. 5.483 €. **Principal investigator.**
- 5. Project.** Epigenetic control of the neuroinflammatory response in microglia. Wellcome Trust Institutional Strategic Support Fund (ISSF) Early Career Stage Researchers(ECR) Bridging Fund. Miguel Angel Burguillos Garcia. (Queen Mary University of London). 01/09/2015-31/01/2016. 25.108 €. **Principal investigator**
- 6. Project.** Differential Toll like receptor (TLR)-4 response in microglial cells stimulated with Galectin-3 as compared with HMGB1 or LPS. Molecular and Cellular Medicine Research Stimulus. (Blizard Institute. Queen Mary University of London). 01/04/2014-31/12/2014. 5.093 €. **Principal investigator**
- 7. Project.** Caspase signaling controls microglia activation and glioma invasion. (Karolinska Institute). 01/01/2013-31/12/2013. 4.393 €. **Principal investigator**
- 8. Project.** Caspases in neuroinflammation. Kungliga Fysiografiska Sällskapet i Lund. (Lund University). 01/01/2010-31/12/2010. 7.921 €. **Principal investigator**
- 9. Project.** Role of Caspases in Neuroinflammation-Regulation of microglial activation by galectin 3. Lars Hiertas mine. (Lund University). 01/01/2010-31/12/2010. 5.280 €. **Principal investigator**

C.4. Contracts, technological or transfer merits

- 1. Project.** Investigation of the effects of target gene modulation on neuroinflammation and neurodegeneration. **Principal investigator** (ref. 4048/1081; Cerevance Limited). 01/02/2021-31/03/2023. 187.720,55€

