DATE	27/07/2018

Part A. Personal Information

Surname(s)	Cárdenas Mastrascusa	
Forename	Paula	
Social Security, Passport, ID number	49961277X	
Sex	Female	
Age	42	
Researcher codes	WoS Researcher ID *(*)*	I-2395-2017
	SCOPUS Author ID*(*)*	36747997500
	Open Researcher and Contributor ID (ORCID)	0000-0001-9054-8130

(*) At least one of these is mandatory

A.1. Current position

Post/ Professional Category	Postdoctoral researcher	
UNESCO Code	240300-Biochemistry; 241200-Immunology	
Key Words	Molecular biology, immunology, microbiology, T lymphocyte congenital immunodeficiencies, TCR.	
Name of the University/Institution	Universidad Complutense de Madrid	
	Department/Centre	Immunology, Ophthalmology and ENT/ School of Medicine
	Full Address	Calle Dr. Severo Ochoa, 9
	Email Address	paulcard@ucm.es
	Phone Number	913941630
Start date	06/11/2015	

A.2. Education *(title, institution, date)*

Year	*University*	*Degree*	*Title*
1999	*Pontificia Universidad Javeriana*	*First degree*	*Bachelor's degree in Bacteriology*
2004	*Universidad Nacional de Colombia*	*Master*	*M.Sc. in Microbiology*
2010	*Universidad Autónoma de Madrid*	*PhD*	*PhD in Molecular Biology*
2014	*Centro Estudios Superiores de la Industria Farmacéutica (CESIF)*	*CESIF*	*Master in Pharmaceutical and Parapharmaceutical Industries*

A.3. Indicators of Quality in Scientific Production *(See the instructions)*

PAPERS: 16 scientific papers; 6 first authorships; 87,5 % papers in Q1; 50 % in D1; 2 Book chapters; Total Citations: 377, h-Index: 13 (Google Scholar).

CONFERENCES: 15 externally-reviewed upon acceptance including oral and poster presentations in national and international meetings.

Part B. Free Summary of CV *(Max. of 3.500 characters, including spaces)*

My scientific career started with Dr. Manuel E. Patarroyo (Prince of Asturias laurate for Technical and Scientific Research, 1994) in the development of a second-generation vaccine against malaria caused by P. falciparum and P. vivax, To test the different malaria vaccine candidates, Aotus monkeys were used as animal model, and to extrapolate the results obtained after monkey's immunization to humans it was necessary to analyze different molecules of the Aotus immune system. (Suárez and Cárdenas et al., 2003; Cárdenas et al., 2005).

In 2005 I traveled to Spain to carry out my PhD thesis at the Centro Nacional de Biotecnología (CNB-CSIC) under the direction of Prof. Juan Carlos Alonso, studying the different mechanisms involved in DNA damage repair in Bacillus subtilis.. The conservation of DNA repair pathways from bacteria to humans is very impressive; such conservation has allowed for experimentally tractable bacteria such as B. subtilis to provide important mechanistic insights into processes critical for genome maintenance in more complex systems like humans. My first paper in this group determined by atomic force microscopy (AFM) the architecture of the complexes formed between ssDNA and B. subtilis RecN, one of the first proteins recruited to the DNA damage site in homologous recombination (HR) repair pathway and also stablished the effect of ATP during inter-complex assembly (Sanchez, Cárdenas et al., 2008).

Next, I dilucidated the role of Polynucleotide Phosphorylase (PNPase) in DNA repair after its identification in a homogeneus RecN purification (98%). (Cárdenas et al., 2009).

The next step was to study the biochemical modulation of PNPase functions by other proteins that regulate HR initial steps such as RecN, RecA and SsbA. (Cárdenas et al., 2011, Ayora et al., 2011, Alonso, Cárdenas et al., 2013).

Based on the biochemical activities of the proteins that participate in the early steps of HR we designed a silicon nanowire-based biosensor that detects resistance changes as the biomolecular reaction of strand exchange during HR proceed. This device could be used as a label-free biosensor to detect very small amounts of DNA (Chiesa, Cardenas et al., 2012).

Finally, thanks to the Juan de la Cierva fellowship I joined the UCM's Immunology department. Now my current research interest is mainly focused on immunodeficiencies, but also on their association with defects in DNA repair. For this purpose I actively collaborate with the research lines directed by Prof. José R. Regueiro and Dra. María J. Recio at the Immunology Department of Universidad Complutense de Madrid, exploring the mechanisms that overlap between DNA repair and immune development.

Part C. Relevant accomplishments

C.1. Publications (last 5 years)

1. Marín AV, **Cardenas PP,** Jimenez-Reinoso A, Muñoz-Ruiz M, Regueiro JR. Lymphocyte integration of complement cues. **Seminars in Cell and Developmental Biology**. **2018**. pii: S1084-9521(17)30135-0. doi: 10.1016/j.semcdb.2018.02.005 **(Q1, D1 IF: 6,614). Citas: 0.**
2. Bravo García-Morato M, Aracil Santos FJ, Briones AC, del Pozo Maté A, Domínguez-Soto A, Beato Merino MJ, del Pino Molina L, Blázquez Moreno A, Torres Canizales J, Marín AV, Vallespín García, E Feito Rodríguez M, Plaza López Sabando D, Mozo del Castillo Yasmina, Sanz Santaeufemia FJ, de Lucas-Laguna R, Jiménez-Reinoso A, **Cárdenas PP**, Casamayor Polo L, Coronel Díaz M, Roldán Santiago E, Ferreira Cerdán A, Nevado Blanco Julián, Corbí AL, Thomson Reyburn HT, Regueiro JR, López-Granados E, Rodríguez Pena R. New human combined immunodeficiency caused by interferon regulatory factor 4 (IRF4) deficiency inherited by uniparental isodisomy. **Journal of Allergy and Clinical Immunology**. **2018.** 141 (5), pp. 1924 - 1927.e18 DOI: https://doi.org/10.1016/j.jaci.2017.12.995 **(Q1, D1 IF: 13,081). Citas: 0.**
3. **Paula P Cardenas**; Carolina Gandara; Juan C Alonso. DNA double-strand break-end processing and RecA induce RecN expression levels in Bacillus subtilis. DNA repair. 2014; 14, pp. 1 – 8. **(Q2, IF: 3,11). Citas: 4.**

4. Juan C Alonso; **Paula P Cardenas**; Humberto Sanchez; James Henja; Yuki Suzuki, Kunio Takeyasu. Early steps of double-strand break repair in Bacillus subtilis. DNA repair. 2013; 12 (3), pp. 162 - 176. **(Q1, D2 IF: 3,36). Citas: 27.**
5. **Paula P Cardenas**; Miriam Kaufenstein; Begoña Carrasco; Clarisse Defeu Soto; Carolina E Cesar; Katharina Herr; Peter L Graumann. RecX facilitates homologous recombination by modulating RecA activities. PLOS Genetics. 2012; 8 (12), pp. 1 - 16.
(Q1, D1 IF: 8,51). Citas: 22.
Begoña Carrasco; Paula Cárdenas; Ester Serrano; Rubén Torres; Elena Seco; Silvia Ayora; Juan C. Alonso.Dynamics of DNA double- strand break repair in Bacillus subtilis. Bacillus: Cellular and Molecular Biology (Third edition). Caister Academic Press, 04/2017.
Begoña Carrasco; Paula P Cardenas; Cristina Cañas;; Tribhuwan Yadav; Juan C Alonso. Dynamics of DNA Double-strand Break Repair in Bacillus subtilis. Bacillus: Cellular and Molecular Biology (Second edition). Caister Academic Press, 02/2012.

C.2. Research Projects and Grants (no more than 7)

1. The Complement system in health and disease (Complemento II-CM), CAM, CIB CSIC, FJD, UCM, HULP, HU12O, 2018-21, 828.092 €, Rodriguez de Córdoba S (Regueiro JR), Ref. B2017/BMD3673
2. Red de Excelencia Complemento en salud y enfermedad, MINECO, Univ. Complutense, 2/2017-2/2019, 20.000 €, Rodríguez de Córdoba S (Regueiro JR), Ref. SAF2016-81876-REDT
3. Ayuda Juan de la Cierva- 152JA19262 (Universidad Complutense de Madrid). 06/11/2015-25/02/2018.
4. Surface and intracellular T lymphocyte activation physiopathology, MINECO 2014, Regueiro JR & Fdez.-Malavé E, Univ. Complutense, 01/2015-12/2017, 275.000€, Ref. SAF2014-54708-R.
5. Nuevos materiales y dispositivos biofuncionales híbridos en nanociencia CAM, DGUI S2009MAT-1507. Juan Carlos Alonso Navarro. (Centro Nacional de Biotecnología). 01/01/2010-30/12/2012.
6. TRANSBIO CSIC – PIF 08-008-02. Juan Carlos Alonso Navarro. (Centro Nacional de Biotecnología). 01/09/2008-31/08/2010.
7. Caracterización de los factores que afectan a la interrelación entre la recombinación y segregación cromosómica en B. subtilis BFU 2006-2009 (BFU2006-01062). Juan Carlos Alonso Navarro. (Centro Nacional de Biotecnología). 01/07/2006-30/06/2009.

C.3. Contracts

01/03/2018 - present: Postdoctoral fellow
06/11/2015 - 25/02/2018: Juan de la Cierva postdoctoral researcher
01/12/2010 - 30/09/2012: Postdoctoral fellow
20/01/2005 - 30/11/2010: Predoctoral student
01/12/1999 – 31/12/2004: Research assistant

C.4. Patents and other IPR

C.5 Book chapters

1. Begoña Carrasco; Paula Cárdenas; Ester Serrano; Rubén Torres; Elena Seco; Silvia Ayora; Juan C. Alonso.Dynamics of DNA double- strand break repair in Bacillus subtilis. Bacillus: Cellular and Molecular Biology (Third edition). Caister Academic Press, 04/2017.
2. Begoña Carrasco; Paula P Cardenas; Cristina Cañas;; Tribhuwan Yadav; Juan C Alonso. Dynamics of DNA Double-strand Break Repair in Bacillus subtilis. Bacillus: Cellular and Molecular Biology (Second edition). Caister Academic Press, 02/2012.