

## CURRICULUM VITAE

### Part A. PERSONAL INFORMATION

<b>CV date</b>	10/02/2026
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First name	Paula		
Family name	Cárdenas Mastrascusa		
Gender (*)	Female	Birth date	
Social Security, Passport, ID number			
e-mail	paulcard@ucm.es	URL Web	
Open Researcher and Contributor ID (ORCID) (*)		0000-0001-9054-8130	
SCOPUS Author ID		36747997500	
WoS Researcher ID		I-2395-2017	

(\*) *Mandatory*

#### A.1. Current position

Position	Associate Professor		
Initial date	22/12/2022		
Institution	Universidad Complutense de Madrid		
Department/Center	Department of Immunology, Ophthalmology and ENT		
Country	Spain	Teleph. number	91 394 1630
Key words	Inborn errors of immunity, DNA repair, TCR		

#### A.2: Previous professional status

Period	Position/Institution/Country/Interruption cause
04.2022 – 12.2022	Interim Associate Professor. Universidad Complutense de Madrid
03.2019 – 04.2022	Assistant Professor. Universidad Complutense de Madrid
03.2018 – 12.2018	Researcher (Project-Associated). Universidad Complutense de Madrid
11.2015 – 02.2018	“Juan de la Cierva-Incorporación” Researcher. Universidad Complutense de Madrid
07.2014 – 09.2015	Quality Assurance Assistant. Laboratorios Alter S.A.
12.2010 – 09.2012	Postdoctoral Researcher. Centro Nacional de Biotecnología (CNB-CSIC). Spain
01.2005 – 11.2010	Predocctoral Researcher. Centro Nacional de Biotecnología (CNB-CSIC). Spain
12.1999 – 12.2004	Research Assistant. Fundación Instituto de Inmunología de Colombia. Colombia



### A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD in Molecular Biology	Universidad Autónoma de Madrid (Spain)	2010
Master's Degree in Pharmaceutical and Parapharmaceutical Industry	Centro de Estudios Superiores de la Industria Farmacéutica-CESIF (Spain)	2014
Master's Degree in Microbiology	Universidad Nacional de Colombia (Colombia)	2004
Bachelor's Degree in Bacteriology	Pontificia Universidad Javeriana (Colombia)	1999

### Part B. CV SUMMARY

Paula Cárdenas Mastrascusa obtained her Bachelor's degree in Bacteriology from the Pontificia Universidad Javeriana (1999) and a Master's degree in Microbiology from the National University of Colombia (2004). She was awarded a PhD in Molecular Biology by the Universidad Autónoma de Madrid in 2010.

Her early research career began in the group of Dr. Manuel E. Patarroyo (Prince of Asturias Award for Scientific and Technical Research, 1994), where she contributed to the development of vaccine candidates against malaria caused by *Plasmodium falciparum* and *P. vivax*. In this context, she focused on the immunogenetic characterisation of *Aotus* monkeys, demonstrating that their MHC class I molecules—despite being evolutionarily related to non-classical human HLA loci—display high peptide-binding polymorphism comparable to classical HLA-A, -B and -C molecules (*Tissue Antigens* 2003; *Immunogenetics* 2005).

In 2005, Dr. Cárdenas moved to Spain to begin her doctoral training in the Genetic Stability Group at the National Centre for Biotechnology (CNB-CSIC), led by Prof. Juan Carlos Alonso. During this period, she investigated the molecular mechanisms of DNA double-strand break repair in *Bacillus subtilis*, a model organism for genome stability. Using a combination of biochemical and biophysical approaches, she characterised early protein complexes involved in homologous recombination and identified novel DNA repair factors, elucidating their mechanisms of action. This work resulted in multiple high-impact publications in leading journals including *Nucleic Acids Research* 2009, 2011; *PLOS Genetics* 2012; *Nano Letters* 2012; and *DNA Repair* 2013.

In 2015, Dr. Cárdenas joined the Department of Immunology, Ophthalmology and Otorhinolaryngology at the Universidad Complutense de Madrid through a Juan de la Cierva–Incorporación contract, where she currently holds an Associate Professor position. Her research focuses on the molecular basis of primary immunodeficiencies, with work published in *Journal of Allergy and Clinical Immunology* (2018) and *Frontiers in Cell and Developmental Biology* (2021).

In particular, she has led work on disorders affecting T-cell receptor (TCR) expression and signalling, establishing a human in vitro cellular model of CD247 deficiency that enables functional validation and pathogenicity prediction of variants of uncertain clinical significance, thereby contributing to precision diagnostics in immunodeficiency. This research led her to co-supervise a PhD thesis (Alejandro Briones, 2019) and resulted in publications in *Journal of Allergy and Clinical Immunology* (2024) and *Journal of Clinical Immunology* (2025). Through international collaborations, she has also contributed to the characterization of the first patients described with pre-TCR $\alpha$  chain deficiency (*Science* 2024).

In parallel, Dr. Cárdenas investigates the mechanistic links between primary immunodeficiencies and defects in DNA repair pathways, integrating her expertise in genome stability and immunology. Two studies are currently under review: one describing the biochemical characterization of a novel *SMARCAL1* mutation associated with Schimke



immuno-osseous dysplasia, and another reporting the immunological characterization of a newly identified *NBN* mutation.

During the 2022/2023 academic year, Dr. Cardenas was awarded a faculty requalification fellowship that enabled her to join the group of Dr. Balbino Alarcón at the Centro de Biología Molecular Severo Ochoa (CBMSO-CSIC) for one year. During this period, she expanded her expertise in specialised techniques related to T-cell receptor biology and advanced immunological methodologies.

Over the course of her career, Dr. Cárdenas has authored more than 20 peer-reviewed publications, including multiple first-author and joint senior-author articles, with the majority published in Q1 journals. Her work has accumulated over 500 citations (h-index 15, Scopus). She is actively involved in student mentoring and teaching and participates regularly in research and academic activities in the field of immunodeficiencies. Since 2023, she has served on the board of the Sociedad de Inmunología de la Comunidad de Madrid (SICAM), where she plays an active role in organizing the annual congress and promoting outreach activities within the immunology community in Madrid.

## Part C. RELEVANT MERITS

### C.1. Publications (12 selected) CA: corresponding author. (nº x / nº y): position / total authors

1. Briones AC, Marin AV, Chaparro-García R,...Cardenas PP (9/10; CA), Regueiro JR. **2025**. Discordant Restoration of TCR Expression and Function by CD247 Somatic Reversions. **J Clin Immunol.** 45(1):116. **Q1, IF: 5,7**
2. Briones AC, Megino RF, Marin AV,...Cardenas PP (12/13; CA), Regueiro JR. **2024**. Nonsense CD247 mutations show dominant-negative features in T-cell receptor expression and function. **J Allergy Clin Immunol.** 154(4):1022-1032. **D1, IF:11,2**.
3. Materna M, Delmonte OM,..., Cardenas PP (48/99), Béziat V. **2024**. The immunopathological landscape of human pre-TCR $\alpha$  deficiency: From rare to common variants. **Science.** 383(6686):eadh4059. **D1, IF: 56,9**
4. Garcillán B, Fuentes P, Marin AV,..., Cardenas PP\* (10/13), Fernández-Malavé E\*, Toribio ML, Regueiro JR\*. **2021**. CD3G or CD3D Knockdown in Mature, but Not Immature, T Lymphocytes Similarly Cripples the Human TCR $\alpha\beta$  Complex. **Front Cell Dev Biol.**9:608490. **Q1, IF:6,6 \*Joint last author**
5. Bravo García-Morato M, Aracil Santos FJ, Briones AC,...,Cardenas PP (18/29), Rodríguez Pena R (CA). **2018**. New human combined immunodeficiency caused by interferon regulatory factor 4 (IRF4) deficiency inherited by uniparental isodisomy. **J Allergy Clin Immunol.** 141(5):1924-1927.e18. **D1, IF: 13,08**
6. Alonso JC, Cardenas PP, Sanchez H, Hejna J, Suzuki Y, Takeyasu K. **2013**. Early steps of double-strand break repair in *Bacillus subtilis*. **DNA Repair.** 12(3):162-76. **Q1, IF:3,36**
7. Chiesa M, Cardenas PP, Otón F, Martinez J, Mas-Torrent M, Garcia F, Alonso JC, Rovira C, Garcia R. **2012**. Detection of the early stage of recombinational DNA repair by silicon nanowire transistors. **Nano Lett.** 12(3):1275-81. **D1, IF:13,02**
8. Cardenas PP, Carrasco B, Defeu Soufo C, César CE, Herr K, Kaufenstein M, Graumann PL, Alonso JC. **2012**. RecX facilitates homologous recombination by modulating RecA activities. **PLoS Genet.** 8(12):e1003126. **D1, IF: 8,51**
9. Cardenas PP, Carzaniga T, Zangrossi S, Briani F, Garcia-Tirado E, Dehò G, Alonso JC. **2011**. Polynucleotide phosphorylase exonuclease and polymerase activities on single-stranded DNA ends are modulated by RecN, SsbA and RecA proteins. **Nucleic Acids Res.** 39(21):9250-61. **D1, IF:8,02**
10. Cardenas PP, Carrasco B, Sanchez H, Deikus G, Bechhofer DH, Alonso JC. **2009**. *Bacillus subtilis* polynucleotide phosphorylase 3'-to-5' DNase activity is involved in DNA repair. **Nucleic Acids Res.** 37(12):4157-69. **D1, IF:7,47**
11. Cardenas PP, Suarez CF, Martinez P, Patarroyo ME, Patarroyo MA. **2005**. MHC class I genes in the owl monkey: mosaic organisation, convergence and loci diversity. **Immunogenetics.** 56(11):818-32. **Q2, IF: 2,98**



12. Suarez CF\*, Cardenas PP\*, Llanos-Ballestas EJ, Martínez P, Obregón M, Patarroyo ME, Patarroyo MA. **2003**. Alpha1 and alpha2 domains of Aotus MHC class I and Catarrhini MHC class Ia share similar characteristics. **Tissue Antigens**. 61(5):362-73. **Q3 IF: 1,74\*** **Joint first author**

## C.2. Congress (selected communications)

1. Heterozygous nonsense CD247 mutations show dominant-negative features affecting both TCR expression and function *in vitro*. A.C. Briones, R.F. Megino, ..., P. P. Cárdenas (12/12). **Poster**. *Current Trends in Biomedicine: "Understanding TCR structure and signalling for effective immunotherapy"*. October 17–19, 2022. Baeza, Spain.
2. Heterozygous nonsense CD247 mutations show potentially pathogenic dominant-negative features affecting TCR expression and function. A.C. Briones, R.F. Megino, ..., P. P. Cárdenas (12/12). **Oral presentation**. 43rd Congress of the Spanish Society for Immunology. September 22–24, 2022. León, Spain.
3. Adult-onset diagnosis of Nijmegen breakage syndrome in two twins presenting with antibody deficiency. M.A. Mejía González, M.J. Recio, C. Rodríguez-Sainz, J. Egido, P.P. Cárdenas, E. Fernández-Cruz, J. Gil-Herrera. **Poster**. 19th Biennial Meeting of the European Society for Immunodeficiencies (ESID). October 14–17, 2020. Birmingham, UK.
4. Human CD247 germline and somatic mutations differentially modulate surface expression of the T-cell antigen receptor (TCR) complex in human and mouse T cells. A.C. Briones Contreras, R. Chaparro García, J.R. Regueiro, P.P. Cárdenas. **Selected for e-poster**. 18th Biennial Meeting of the European Society for Immunodeficiencies (ESID). October 24–27, 2018. Lisbon, Portugal.

## C.3. Research projects (selected projects)

1. **Title:** The Complement System in Health and Disease (B2017/BMD-3673). **Participant Institution:** Universidad Complutense de Madrid. **PI:** Santiago Rodríguez de Córdoba. **Role:** Postdoctoral Researcher. **Funding Institution:** Comunidad Autónoma de Madrid. **From:** 01/01/2018 **To:** 31/12/2021. **Total Amount:** €828.091.
2. **Title:** Pathophysiology of Extra- and Intracellular T Lymphocyte Activation (SAF2014-54708R). **Participant Institution:** Universidad Complutense de Madrid. **PI:** José R. Regueiro; Edgar Fernández Malavé. **Role:** Postdoctoral Researcher. **Funding Institution:** MINECO (2014 Retos Research Projects). **From:** 01/01/2015 **To:** 30/06/2019. **Total Amount:** €275.000.

## C.4. Languages

C1 level (CEFR). Cambridge C1 Advanced (Certificate in Advanced English, CAE). 2024.

## C.5. Teaching activity

### Teaching and other training courses received

1. Annual Meeting: "XVIII Encuentro anual de educación médica. Controversias y desafíos en educación médica" (6 hours). 2025.
2. Course: "Inglés, Certificate in Advanced English – Stage 2" (60 hours). 2024.
3. Course: "Inglés, Consolidación y conversación C1" (30 horas). CSIM-UCM. 2023.
4. Course: "Hablar en público" (20 hours). Plan de Formación del Profesorado de la UCM. 2023.

5. Meeting: “Educación médica: necesaria en la enseñanza de la medicina/medical education: necessary in the education of medicine (6 hours). Cursos de Verano de El Escorial. 2022.
6. Course: “La autoevaluación en el programa Docencia: análisis de fortalezas y debilidades (25 hours). Plan de Formación del Profesorado de la UCM. 2022
7. Workshop: Taller sobre dirección de tesis doctorales (4 hours). Facultad de Educación (UCM). 2021.
8. Course: “Microsoft Teams para Docencia” (3 hours). Plan de Formación del Profesorado de la UCM. 2021.
9. Course: “Ofimática en la nube con Google Drive” (46 hours). Plan de Formación del Profesorado de la UCM. 2020.
10. Course: “Competencias Básicas para la Educación Online” (8 hours). Plan de Formación del Profesorado de la UCM. 2020.
11. Course: “Presentaciones eficaces con PowerPoint”. (46 hours). Plan de Formación del Profesorado de la UCM. 2019.
12. Annual Meeting: “XIII Encuentro anual de educación médica 2019. Los actores en el escenario de la educación médica actual” (6 hours). Cursos de Verano de El Escorial. 2019.
13. Meeting: “13ª Jornada MEDES 2018. La información sobre medicina y salud que llega a la sociedad” (6 hours). Cursos de Verano de El Escorial. 2018.

<b>Teaching activity (since 2016)</b>		
<b>Course</b>	<b>Degree</b>	<b>Academic Year</b>
Inmunología (800807)	Grado en Medicina (Year 1)	2016-17, 2019-20 to present
Biología Celular e Inmunología (803971)	Grado en Nutrición Humana y Dietética (Year 1)	2016-17 to present
Biología Celular e Inmunología (901231)	Doble Grado en Farmacia-Nutrición Humana y Dietética (Year 1)	2018-19 to present
Práctica Clínica III (800843)	Grado en Medicina (Years 1 - 6)	2016-17, 2021-22 to present
Inmunología Clínica (802628)	Grado en Medicina (Years 2 - 6)	2016-17 to 2021-22
Prácticas Externas (803999)	Grado en Nutrición Humana y Dietética	2018-19, 2021-22
Human and Clinical Immunology (607654)	Máster Universitario en Investigación en Inmunología	2023-24 to present
Tecnologías Ómicas y Bioinformática (608766)	Máster Universitario en Investigación en Medicina Traslacional	2018-19 to present