MINISTERIO DE CIENCIA E INNOVACIÓN

CURRICULUM VITAE (maximum 4 pages)

AGENCIA ESTATAL DE INVESTIGACIÓN

CV date	14/09/2022

Part A. PERSONAL INFORMATION

First and Family name	Pedro Roda Navarro		
ID number	50845938E	Age	50
Researcher codes	Open Researcher and Contributor ID (ORCID**)	0000-0003-3799-8823	
	SCOPUS Author ID (*)	6506645009	
	WoS Researcher ID (*)	E-1358-2014	

A.1. Current position

Name of University	Universidad Complutense de Madrid (UCM)		
Department	Immunology, Ophthalmology and ENT / Faculty of Medicine		
Address and Country	Av. Complutense s/n, 28040 Madrid		
Phone number	+34913941641	E-mail	proda@med.ucm.es
Current position	Associate Professor	From	01/06/2018
Key words	Immune receptors, immunological synapse, intracellular signalling, tyrosine phosphatase, cellular and molecular biology, micro-spectroscopy, BsAb, CAR-T cell, Immunotherapy		

A.2. Education

PhD, Licensed, Graduate	University	Year
Degree in Biology	Universidad Complutense de Madrid (UCM)	1995
PhD in Immunology	Universidad Autónoma de Madrid (UAM)	2003

A.3. General indicators of quality of scientific production *(see instructions)*

- Six-year research periods: **4 (1997-2002, 2003-2008, 2009-2014, 2015-2020).**
- Thesis supervised: **2 completed** (currently 3 Thesis in progress)
- Total publications: **45 in PubMed** (**18 corresponding author**).
  https://pubmed.ncbi.nlm.nih.gov/?term=Roda-Navarro+P.&sort=date&size=20
- Total cites in **Web of Science** (Thomson Reuters): **979**, **H-Index: 20**.
- Total cites in **Google Scholar**: **1530**, **H-Index: 21**
- Total cites in **Scopus: 1066, H-Index: 20**
- Journal quartile:
  - D1 ('JIF percentile' > 90): **13 (5 principal author, 7 collaborations)**
  - Q1 ($0 < Q \leq 0.25$): **31 (including D1 papers) (14 principal author, 16 collaborations)**
  - Q2 ($0.25 < Q \leq 0.50$): **13 (8 principal author, 5 collaborations)**
- **I3** certification obtained in 2015 (Evaluation of 'Ramón y Cajal' period: Excellent)

Part B. CV SUMMARY *(max. 3500 characters, including spaces)*

1997-2003: PhD studies at the Molecular Biology Unit, 'Hospital de la Princesa, Madrid, Spain' (MBU-HP). We characterized new genes in the human natural killer gene complex (*Genomics* and *Eur J. Immunol (EJI)* 2000; *Immunogenetics*, *BBA* and *EJI* 2001; *EJI* 2004).

2003-2006: MBU-HP and Department of Pathology, University of Cambridge (United Kingdom) (2004-2006). Postdoctoral research dedicated to study the assembly and topography of the cytotoxic Natural Killer cell immunological synapse (IS). We discovered the exchange of activating receptors and their ligands, and their relationship with cytotoxic capacity (*J Immunol* 2004, *PNAS* 2006, *FASEB J* 2007, *J Biol Chem* and *Front Biosci* 2009).

2007-2011: Department of Systems Cell Biology, Max Planck Institute of Molecular Physiology (Dortmund, Germany). Postdoctoral research (Marie Curie Fellow from 2018 to 2010) dedicated to the development of micro-spectroscopy methods to measure *in situ* the phosphorylated fraction of components of signalling networks (*Nat Methods* 2010, *Methods Enzymol* 2011). We also studied the spatial regulation of epidermal growth factor receptor activation by the classical tyrosine phosphatase PTPD1 (*PLoS One* 2014).

March 2011 - December 2011: Department of macromolecular structure at the 'Centro Nacional de Biotecnología-Consejo superior de investigaciones científicas (CNB-CSIC)'. Scientific staff of CSIC. We studied the dynamic distribution of Tim1 at the IS (*Traffic* 2015).

2012 - Present: UCM. 'Ramón y Cajal' contract (2012-2018) and Associate Professor (from 2018 June the 1st). I established a research group as principal investigator in 2012, getting the first research grant in 2013. In this 7 years with research grants, we have setup all the required biochemistry and

microscopy methods to develop our research lines and we have already obtained some results already published. It is described below our current research interest and associated publications obtained.

Current research interests and scientific objectives:

We are interested in: (i) investigating the mutual dynamic regulation between the signalling network and the components of the cytoskeleton and organelles during antigen recognition, IS assembly and lymphocyte activation and function (*Front Immunol* 2016 and 2018, *Dev Cell* 2018, *Int J Mol Sci* 2020 and *Front Cell Dev Biol* 2020); (ii) Investigating the alterations of protein tyrosine phosphatases and molecular dynamics in autoimmune pathologies (*J Immunol Res*, *Clin Exp Immunol* 2017, *Front Immunol* 2019); and (iii) investigating the molecular dynamics at the IS assembled in response to bispecific antibody-based therapies against cancer and the comparison with CAR-T cell strategy (*Oncoimmunology* 2017 and *Front Cell Dev Biol* 2020). We combine gain-of-function and loss-of-function approaches, proteomics, classical biochemistry and microscopy techniques with high spatial and temporal resolution that enable us to measure the rapid molecular mobility and the kinetics of biochemical reactions (*Integr Biol* 2013). To avoid drawbacks of overexpression, we propose to use genome edition by CRISPR / Cas9 (*Nat Biotech* 2013) to express fluorescent fusion proteins with endogenous levels (*Front Cell Dev Biol* 2020).

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

C.1. Publications (12 selected out of 22 in the last 10 years). 9 Corresponding author (CA)

IF: Impact Factor (journal discipline and rank)

1. Posición 27/30 autores. Overcoming CAR-Mediated CD19 Downmodulation and Leukemia Relapse with T Lymphocytes Secreting Anti-CD19 T-cell Engagers. ***Cancer Immunol Res***. 2022 Apr 1;10(4):498-511. **IF 11.151 D1** (Immunology 13/162)
2. Ramírez-Fernández Á, Aguilar-Sopeña Ó, Díez-Alonso L, Segura-Tudela A, Domínguez-Alonso C, **Roda-Navarro P (CA)**, Álvarez-Vallina L (CA), Blanco B (CA). Synapse topology and downmodulation events determine the functional outcome of anti-CD19 T cell-redirecting strategies. ***Oncoimmunology***. 2022 Mar 23;11(1):2054106. **IF 8.110 Q1** (Immunology 23/162)
3. Martín-Cofreces NB., Sanchez-Madrid F. and **Roda-Navarro P (CA)**. Editorial: Cytoskeleton Dynamics as Master Regulator of Organelle Reorganization and Intracellular Signaling for Cell-Cell Competition. ***Front. Cell Dev. Biol***., 28 October 2021. **IF 6.684 Q1** (Developmental Biology 6/41)
4. Castro-Sánchez P, Hernández Pérez S, Aguilar-Sopeña O, Ramirez-Munoz R, Rodriguez-Perales S (CA), Torres-ruiz R (CA) and **Roda-Navarro P (CA)**. Fast diffusion sustains plasma membrane accumulation of phosphatase of regenerating liver-1. ***Front Cell Dev Biol*** 2020 Dec 4;8:585842. **IF 6.684 Q1** (Developmental Biology 6/41)
5. Aguilar-Sopeña O, Hernández-Pérez S, Alegre-Gómez S, Castro-Sánchez P, Iglesias-Ceacero A, Lazo JS, **Roda-Navarro P (CA)**. Effect of Pharmacological Inhibition of the Catalytic Activity of Phosphatases of Regenerating Liver in Early T Cell Receptor Signaling Dynamics and IL-2 Production. ***Int J Mol Sci***. 2020 Apr 5;21(7):2530. **IF 5.923 Q1** (Biochemistry & Molecular Biology 67/297)
6. Castro-Sánchez P, Aguilar-Sopeña O, Alegre-Gómez S, Ramirez-Munoz R, **Roda-Navarro P (CA)**. Regulation of CD4+ T Cell Signaling and Immunological Synapse by Protein Tyrosine Phosphatases: Molecular Mechanisms in Autoimmunity. ***Front Immunol***. 2019 Jun 26;10:1447. **IF 5.085 Q1** (Immunology 38/158)
7. Castro-Sánchez P, Ramirez-Munoz R, Martín-Cófreces NB, **Roda-Navarro P (CA)** (11/11). Phosphatase of Regenerating Liver-1 (PRL-1) Regulates Actin Dynamics During Immunological Synapse Assembly and T Cell Effector Function. ***Front Immunol***. 2018 Nov;9:2655. **IF 4.716 Q2** (Immunology 43/158)
8. Stephen LA, ElMaghloob Y, McIlwraith MJ, Yelland T, Castro Sanchez P, **Roda-Navarro P**, Ismail S (CA). The Ciliary Machinery Is Repurposed for T Cell Immune Synapse Trafficking of LCK. ***Dev Cell.*** 2018 Oct 8;47(1):122-132.e4. **IF 9.190 D1** (Developmental biology 2/42)
9. Harwood SL, Alvarez-Cienfuegos A, Nuñez-Prado N, Alvarez-Vallina L (CA) (position 16/17). ATTACK, a novel bispecific T cell-recruiting antibody with trivalent EGFR binding and monovalent CD3 binding for cancer immunotherapy. ***Oncoimmunology***. 2017 Sep 27;7(1).e1377874. **IF 5.503 Q1** (Oncology 42/223)
10. Castro-Sánchez P, Ramírez-Munoz R, Lamana A, Ortiz A, González-Álvaro I, **Roda-Navarro P (CA)**. mRNA profiling identifies low levels of phosphatases dual-specific phosphatase-7 (DUSP7)

and cell division cycle-25B (CDC25B) in patients with early arthritis. ***Clin Exp Immunol***. 2017 Jul;189(1):113-119. **IF 3.542 Q2** (Immunology 63/155)

11. Ramirez-Munoz R, Castro-Sánchez P, **Roda-Navarro P (CA)**. Ultrasensitivity in the Cofilin Signaling Module: A Mechanism for Tuning T Cell Responses. ***Front Immunol***. 2016 Feb 19;7:59. **IF 6.420 Q1** (Immunology 21/151)
12. **Roda-Navarro P (CA)**, Bastiaens PI (CA). Dynamic recruitment of protein tyrosine phosphatase PTPD1 to EGF stimulation sites potentiates EGFR activation. ***PLoSOne***. 2014 Jul 25;9(7):e103203. **IF 3.234 Q1 (**Multidisciplinary Science 9/57)

C.2. Research projects

7 projects as principal investigator: 4 MINECO, 1 Synergy CAM and 1 European reintegration grant

1. *TITLE*: **Mecanismos reguladores y función de las fosfatasas de regeneración hepática y 'Slinghshots' durante las respuestas inmunitarias.** *AGENCY*: **Ministerio de Ciencia e Innovación (MICINN), PID2020-115444GB-I00.** *TOTAL AMAUNT* **121.000 Euros.** *START-END DATE*: **01/09/2021 - 31/08/2024.** *PRINCIPAL INVESTIGATOR*: **Pedro Roda Navarro.**
2. *TITLE*: **El núcleo celular: un encuentro entre la física y la biología en la últma frontera de la vida.** *AGENCY*: **CAM (REDES SINERGICAS Y2018/BIO-5207-4125100).** *TOTAL AMAUNT (UCM)*: **146,000 Euros (1ª+2ª years).** *START-END DATE*: **01/01/2019** – **31/12/2021.** *PRINCIPAL INVESTIGATOR (UCM)*: **Pedro Roda Navarro (since October 2020).**
3. *TITLE*: **Attack – Inmunoterápia del cáncer mediante anticuerpos biespecíficos que reclutan linfocitos T.** *AGENCY*: **MINECO (Attack-retos-colaboración 2017).** *TOTAL AMAUNT (UCM)*: **54.904 Euros.** *START-END DATE*: **01/2018 - 12/2020.** *PRINCIPAL INVESTIGATOR (UCM)*: **Pedro Roda Navarro.**
4. *TITLE*: **Mecanismos reguladores y función de las fosfatasas de especificidad dual en la respuesta inmunológica de los linfocitos T.** *AGENCY*: **Ministerio de Economía y Competitividad (MINECO) SAF2016-75656-P.** *TOTAL AMAUNT* **96.800 Euros.** *START-END DATE*: **12/2016 - 12/2020.** *PRINCIPAL INVESTIGATOR*: **Pedro Roda Navarro.**
5. *TITLE*: **Descubriendo la rápida dinámica molecular que gobierna las funciones celulares.** *AGENCY*: **MINECO SAF2013-49743-EXP.** *TOTAL AMAUNT*: **87.120 Euros.** *START-END DATE*: **09/2014** – **09/2016.** *PRINCIPAL INVESTIGATOR*: **Pedro Roda Navarro.**
6. *TITLE*: **Regulación dinámica de la señalización por citocinas en linfocitos durante la inflamación.** *AGENCY*: **MINECO SAF2012-33218.** *TOTAL AMAUNT:* **105.000 Euros (+1 FPI fellowship)**. *START-END DATE*: **01/2013 – 07/2016.** *PRINCIPAL INVESTIGATOR*: **Pedro Roda Navarro.**
7. *TITLE*: **Dynamic regulation of cytokine signalling in lymphocytes during inflammation.** *AGENCY*: **European Union FP7-PEOPLE-2012-CIG**. *TOTAL AMAUNT:* **100.000 Euros.** *START-END DATE*: **01/2013** – **12/2016.** *PRINCIPAL INVESTIGATOR*: **Pedro Roda Navarro.**

C.3. Contracts, technological or transfer merits

1. *TITLE:* **Coordinated function of protein tyrosine phosphatases in cancer-related inflammation.** *AGENCY:* **Ministerio de Ciencia y Tecnología. Ramón y Cajal (RYC-2011-08664).** *TOTAL AMOUNT*: **183.600.** *START-END DATE:* **01/2012** – **05/2018.** *PRINCIPAL INVESTIGATOR:* **Pedro Roda Navarro.**
2. *TITLE:* **Spatio-temporal regulation of growth factor signalling by protein tyrosine phosphatases in living cells.** *AGENCY:* **European Union. Marie Curie Intra-European fellowship (PEOPLE-2007-2-1-IEF).** *AMOUNT*: **151.820,80.** *START-END DATE:* **03/2008** – **02/2010.** *PRINCIPAL INVESTIGATOR:* **Pedro Roda Navarro**

C.4. Training of PhD students.

2 PhD students completed thesis: Patricia Castro Sánchez (**PCS**) y Rocío Ramírez Muñoz (**RRM**)

1. *TITLE*: **Role of phosphatase of regenerating liver 1 (PRL-1) during immunological synapse assembly and T cell activation.** *STUDENT*: **PCS**. *UNIVERSITY*: **UCM – Faculty of Medicine**. *START-END DATE*: **01/10/2013 – 19/12/2017.** *QUALIFICATION*: **EXCELLENT 'Cum Laude'. Doctor Europeus.** *PhD PROGRAM*: **Doctorado en Investigación Biomédica RD99/2011**. *RELEVANT TRAINING ACTIVITY:* **EMBO Short Term Fellowship** *PUBLICATIONS:* **1st author**: ***J. Immunol Res*** 2017 (Q2); ***Clin Exp Immunol*** 2017 (Q2); ***Front Immunol*** 2018 and 2019 (Q2 and Q1); ***Front Cell Dev Biol*** 2020 (Q1); Book Chapters: ***InTech Open Science*** Dec 2017(a) and

Amazing books, 2018(b); **2nd author**: ***Front Immunol*** 2016 (Q1); **4th author:** ***Int J Mol Sci*** 2020 (Q2); **5th author**: ***Dev Cell*** 2018 (D1).
PRESENT POSITION: Postdoctoral research at Rose Zamoyska lab (Institute of Immunology and Infection Research, Ashworth Laboratories, University of Edinburgh, Edinburgh, UK) since 8/01/2018. (a) 10.5772/intechopen.70239 (b) ISBN 978-84-17403-06-5

2. *TITLE*: **Papel regulador de Slingshot-1 en la activación de linfocitos T.** *STUDENT*: **RRM**. *GRANT*: **FPI fellowship** (**SAF2012-33218).** *UNIVERSITY*: **UCM – Faculty of Medicine.** *START-END DATE*: **01/10/2013 – 11/01/2018** *QUALIFICATION*: **Excellent 'Cum Laude'. Doctor Europeus.** *PhD PROGRAM*: **Doctorado en Investigación Biomédica RD99/2011**. *RELEVANT TRAINING ACTIVITY:* **EMBO Short Term Fellowship**
PUBLICATIONS: **1st author**: ***Front Immunol*** 2016 (Q1); **2nd author:** ***J. Immunol Res*** 2017 (Q2); ***Clin Exp Immunol*** 2017 (Q2); ***Front Immunol*** 2018 (Q1); **4th author**: *Front Immunol* 2019 (Q1) and *Front Cell Dev Biol* 2020 (Q1). ***CURRENT POSITION***: Lecturer at secondary school.

C.5. Editor and journal reviewer:

1. Associate Editor of ***Front Cell Dev Biol*** since 2022 march
2. Guest Associate Editor of ***Front Cell Dev Biol*** (2020), Research topic: 'Cytoskeleton Dynamics as Master Regulator of Organelle Reorganization and Intracellular Signaling for Cell-Cell Competition'. (https://www.frontiersin.org/research-topics/15571/cytoskeleton-dynamics-as-master-regulator-of-organelle-reorganization-and-intracellular-signaling-fo) and of ***Front Immunol*** (2016), Research Topic: 'Molecular dynamics at the Immunological synapse'. (http://journal.frontiersin.org/researchtopic/3408/molecular-dynamics-at-the-immunological-synapse). Journal Topic Board of ***Int J Mol Sci*** since 2019. Topic 'Signalling and organelle polarisation at the immunological synapse (https://www.mdpi.com/journal/ijms/topic_editors).
3. Coordinator of the section '*Visión de autor'* of ***'Sociedad Española de Inmunología (SEI)' journal*** since 2015 (https://www.inmunologia.org/).
4. Reviewer for Scientific Journals including ***CommsBiol***, or ***Blood*** among others.

C.6. Evaluator in funding agencies (ANEP, FIS, UE) and process

1. Expert evaluator for the 'Agencia Estatal de Investigación' since 2016
2. Expert evaluator for '*L'Agence nationale de la recherche*' in 2017.
3. Director of the research program of the UCM validated research group *Lymphocyte immunobiology* (Ref 920631, Imas12 associated, Ref IBL6) from 2017 (https://www.ucm.es/ioo//lymphocyte-immunobiology)
4. Director of the Department of Immunology, Oftalmology and ENT since 2022 january the 26th.

C.7. Teaching activities in university master and degree (Since 2012/2013, * Coordinator)

1. *Immunotechnology* subject of the Master in Investigation in Immunology (IM) – UCM certificated by ANECA (RD 1393/2007). https://www.ucm.es/mastereninmunologia/. (2018/2019 – 2021/2022).
2. *Molecular Immunology* subject of the IM (2012/2013 – 2021/2022)*
3. *Immunology* subject in the 1st course of the degree of Medicine (2018/2019 – 2020/2021)* and in 5th course at Pharmacy degree (2012/2013 – 2015/2016)*
4. *Clinical practise III* (2nd-6th courses) and immunology practices (1st course) at the degree of Medicine – UCM (2012/2013 – 2021/2022)
5. Director of 10 End of Master works (TFM) in the IM and (2 in progress in the course 2021-2022)

C.8. Teacher quality evaluation ("Docentia" UCM program)

1. 2017/2018 – 2019/2020: Global very positive evaluation of the three academic courses
2. 2015/2016 – 2017/2018: Global very positive evaluation of the three academic courses.
3. Old Docentia program - 2015/2016 and 2016/2017: Very positive and excellent evaluation, respectively. 'Molecular Immunology' subject of the IM. 2012/2013 and 2013/2014: Positive and very positive evaluation, respectively. 'Immunology' subject of Pharmacy degree 5th course. 2011/2012: Positive evaluation. 'Immunology' practices of the degree of Medicine 1st course.

C.9 Acreditations

2013. Associate professor accreditation ('Profesor Titular de Universidad y Profesor Contratado Doctor') by the *'Agencia Nacional de Evaluación de la Calidad y Acreditación* (ANECA)'.