

Part A. PERSONAL INFORMATION *

CV date

25/05/26

First name	Luis María		
Family name	Escudero Cuadrado		
Gender (*)		Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number			
e-mail		URL Web	
Open Researcher and Contributor ID (ORCID) (*)			

A.1. Current position

Position	Catedrático de Universidad (Associate Professor)		
Initial date	19/2/2026		
Institution	Universidad de Sevilla		
Department/Center	Cell Biology	Instituto de Biomedicina de Sevilla (IBiS)	
Country	Spain	Teleph. Number	
Key words	Scutoids, Computational Biology, Tissue organization, <i>Drosophila</i>		

A.2. Previous positions (research activity interruptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
Dec 2019 - Feb 2026	Profesor Titular de Universidad (Associate Professor)
Jan 2019 - Dec 2019	Prof. Contratado Doctor/ Universidad de Sevilla/Spain
Jan 2014 - Jan 2019	"Ramón y Cajal" researcher/ Universidad de Sevilla/Spain
Jan 2011 - Jan 2014	"Miguel Servet" researcher/ IBiS/Spain
Feb 2010 - Jan 2011	Senior postdoc/ IBiS/Spain
Oct 2004 - Feb 2010	Postdoctoral (AICR, Marie Curie, EMBO) Medical Research Council- Laboratory Molecular Biology/UK
Sep 1998 - Oct 2004	PhD student/CSIC-CBMSO/ Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Licenciado en Biología	Universidad de Sevilla	1998
Doctor en Ciencias Biológicas	Universidad Autónoma de Madrid	2004

Part B. CV SUMMARY

SCIENCE: I joined Prof Juan Modolell's lab at the Centro de Biología Molecular "Severo Ochoa" (CSIC, 1998-2004), to do my PhD in the development of the peripheral nervous system of *Drosophila melanogaster*. In October 2004 I started to work at the MRC-Laboratory of Molecular Biology (Cambridge, UK) under the supervision of Dr Matthew Freeman funded with both EMBO and Marie Curie fellowships. In February 2010, I joined the Instituto de Biomedicina de Sevilla (IBiS), where I later established the group "Complex Organization of Living Matter" affiliated to the Cell Biology Department of Seville University. Members: **Technician:** Ana M. Palacios. **PhD students:** Jesús A. Andrés-San Román, Elena Bellido, Laura Morato, Fernando Garrido. **Senior Postdoctoral:** Pedro J. Gómez-Gálvez. **Prof. Contratado Doctor:** Valentina Annese, María Jesús Gómez-Lamarca. **Prof. Titular:** Beatriz Estrada Martín.

I have an extensive publication record with 37 international journal articles. Since 2016, I have published 13 research papers and 3 reviews in highly recognized international journals, being the corresponding author in 11 of them. In addition, we have another article from the lab uploaded to bioRxiv that has been accepted in Nature Communications. Our publication record reflects our consistent role as project leaders in the studies we undertake. It is also worth noting that many of our publications have received a high number of citations compared with the overall citation standards in the fields of developmental biology and morphogenesis. Our group has been successful in securing over one million euros in funding in last years. ANECA has recognized four six-year research periods in my record.

Our multidisciplinary group works on the study of the organization of living tissues during development and disease using diverse model systems. Our studies aim to understand the mechanisms driving morphogenesis and how cells self-organize during development, in homeostasis and in pathological situations. Regarding the scientific contribution, we have made a significant discovery in the field of Cell and Developmental Biology: We have found that epithelial cells adopt a new geometrical shape that we name “**scutoids**”. This has become our primary research focus as it presents a fresh perspective on understanding the formation of organs. Our discovery was highlighted in Nature journal emphasizing the biological significance of the discovery of scutoids and their importance in future research on morphogenesis.

TRAINING: Six Thesis supervised, all “Sobresaliente cum laude”. Four of the PhD students continue in academia (2 postdoctoral stage in United Kingdom and 1 in France, 1 returned to our group). Five more Thesis in course in the lab. Recruitment researchers in the last seven years: 6 postdoctoral contracts; Margarita Salas, María Zambrano, Junta de Andalucía, Horizonte 2027 and 3 Juan de la Cierva Incorporación. 5 predoctoral fellowships.

SOCIETY: It is beyond doubt that our previous work has represented very high impact research at social level. Scutoids have become a pop-icon and this has helped me to increase the popularization of our research. Here I write down a list of several outreach activities and initiatives in which I have participated: I published on February, 2023 the **book:** Papá, ¿cómo se enroscan las caracolas? Editorial Crítica. Colección Drakontos. ISBN: 978-84-9199-489-3.

- **Newspapers and popular science articles:** Revista Jot Down (“El País”), Naukas, The Conversation, Anuario Joly, 2019, Diario de Sevilla, 2019. **Interview** in “Jot Down Kids”, the book “Ausencia el cáncer y yo”, “ANAYA: STEAM & CO”.

- **Radio shows:** Participation and interviews in “El radioscopio”, “Raiz de cinco”, “Dos trillones de átomos” “Las mañanas RNE1” and “Noosfera”.

- **Science outreach events:** Co-organizer of the event “Pint of Science” Sevilla 2017 and 2018, and organizer of the first course of scientific dissemination of the IBIS, October 2020.

- **Scientific dissemination Talks:** “Pechakucha nighth 14” Sevilla, 2013, “Ciencia en Bulebar” Sevilla, 2013, 2014, 2018, 2020. Desgranando Ciencia 6, 7 and 8 editions. NaukasBilbao 2022, 2023, 2025. NaukasValladolid 2024.

- Collaboration with **ANAYA** to create educational content on “ANAYA: STEAM & CO” webpage.

AWARDS: 1) “**Premio Nacional de Juventud en la modalidad de Ciencia y Tecnología**” by Pedro Gómez-Gálvez. Supervised by Luis M. Escudero. 2) “**Premio SEBD 2020 for excellence in doctoral theses in the field of Developmental Biology**” by Pedro Gómez-Gálvez. Supervised by Luis M. Escudero. 3) **Certamen Arquímedes 2019** award for the work presented by Carlos Capitán Agudo, supervised by Luis M. Escudero. 4) “**Premio a la Divulgación Científica de la Universidad de Sevilla 2023**”. Luis M. Escudero. 5) “**Premio Sociedad Española de Biología del Desarrollo de Difusión Científica 2024**”. Luis M. Escudero.

Part C. RELEVANT MERITS

C.1. Publications

1 Article. Garrido-García, J., Walther, R.F., Torres-Tirado, J., Andrés-San Román, J.A., Sanz-Herrera, J.A., Pichaud, F. #, Casares, F. #, Escudero, L.M. # (2026). A natural programmable metamaterial controls 3D curvature of compound eyes. Accepted in Nature Communications. bioRxiv <https://doi.org/10.1101/2025.11.25.689431> (# Corresponding authors).

2 Article. Franco-Barranco, D., Andrés-San Román, J.A., Hidalgo-Cenalmor, I., Backová, L., González-Marfil, A., Caporal, C., Chessel, A., Gómez-Gálvez, P., Escudero, L.M., Wei, D., Muñoz-Barrutia, A., Arganda-Carreras, I. (2025). BiaPy: Accessible deep learning on bioimages. Nature Methods 1-3. 10 citations

3 Article. Samira Anbari, A., Gómez-Gálvez, P., Vicente-Munuera, P., Escudero, L.M. #, Buceta, J. # (2025). Apico-basal intercalations enable the integrity of curved epithelia. Computational and Structural Biotechnology Journal 27 1204-1214. (# Corresponding authors). 2 citations

4 Article. Barone, V.[#], Tagua, A., Andrés-San Román, J.A., Hamdoun, A., Garrido-García, J., Lyons, D.C., Escudero, L.M.[#] (2024). Local and global changes in cell density induce reorganisation of 3D packing in a proliferating epithelium. *Development* 151 (20). ([#] Corresponding authors). 14 citations

5 Article. Andrés-San Román, J.A., Gordillo-Vázquez, C., Franco-Barranco, D., Morato, L., Tagua, A., Vicente-Munuera, P., Palacios, A.M., Gavilán, M.P., Annese, V., Gómez-Gálvez, P.[#], Arganda-Carreras, I.[#] and Escudero, L.M.[#] (2023). CartoCell, a high-throughput pipeline for accurate 3D image analysis, unveils cell morphology patterns in epithelial cysts. *Cell Reports Methods* Oct 23;3(10). ([#] Corresponding authors). 26 citations

6 Article. Gómez-Gálvez, P., Vicente-Munuera, P., Anbari. S., Tagua, A., Gordillo-Vazquez, C.M., Palacios, Franco-Barranco, D., A.M., Velasco, A., Capitan-Agudo, C., Grima, C., Annese, V., Arganda-Carreras, I., Robles, R., Márquez, A., Buceta, J.[#] and Escudero, L.M.[#] (2022). A quantitative biophysical principle to explain the 3D cellular connectivity in curved epithelia. *Cell Systems*, 13 (8). ([#] Corresponding authors). 18 citations

7 Review. Gómez-Gálvez, P., Vicente-Munuera, P., Anbari S., Buceta, J.[#], Escudero, L.M.[#] (2021). The complex three-dimensional organization of epithelial tissues. *Development*. Jan 6;148(1). ([#] Corresponding authors, Review). 38 citations

8 Article. Vicente-Munuera, P., Gómez-Gálvez, P., Tetley, R.J., Forja, C., Tagua, A., Letrán, M., Tozluoglu, M., Mao[#], Y. and Escudero, L.M.[#]. (2020). EpiGraph: an open-source platform to quantify epithelial organization. *Bioinformatics* 36 (4). ([#] Corresponding authors). 25 citations

9 Article. Gómez-Gálvez, P., Vicente-Munuera, P., Tagua, A., Forja, C., Castro, A.M., Letrán, M., Valencia-Expósito, A., Grima, C., Bermúdez-Gallardo, M., Serrano-Pérez-Higueras, O., Cavodeassi, F., Sotillos, S., Martín-Bermudo, M.D., Márquez, A., Buceta, J.[#] and Escudero, L.M.[#] (2018). Scutoids, a geometrical solution to three-dimensional packing of epithelia. *Nature Communications*, 9, 2960. ([#] Corresponding authors). 200 citations

10 Article. Sánchez-Gutiérrez, D., Tozluoglu, M., Barry, J.D., Pascual, A., Mao, Y., Escudero, L.M.[#] (2016). Fundamental physical cellular constraints drive self-organization of tissues. *EMBO Journal*. 35(1):77-88. ([#] Corresponding author). 140 citations

C.2. Congress

1 Conference: 18th Spanish Society for Developmental Biology Meeting. Invited Talk: Luis M: Escudero. Title: SciComm award talk. Place: Sant Feliu de Guixols, Gerona (Spain). October 2024.

2 Conference: 6th Spanish Conference on The Molecular, Cellular and Developmental Biology of Drosophila. Talk: Luis M: Escudero. Title: Programmable morphogenesis. Place: Begur, Spain. October 2024.

3 Conference: 9th European Congress of Mathematics. Invited Talk: Luis M: Escudero. Title: Scutoids and Voronoi tessellations to explain tissue organization. Place: Sevilla, Spain. September 2024.

4 Conference: BIRS-IMAG 2024. Invited Talk: Luis M: Escudero. Title: How scutoids explain 3D epithelial organization. Place: Granada, Spain. June 2024.

5 Conference: Cell Physics 2021. Invited Plenary Talk: Luis M: Escudero. Title: Biophysical approaches to explain the 3D cellular packing of epithelia. Place: Virtual meeting y Saarbrücken, Germany. September 2021.

6 Conference: CurvoBio workshop 2019. Invited Talk: Luis M. Escudero. Title: Scutoids, a Nature solution to curve epithelia. Place: Salzburg, Austria. February 2019.

C.3. Research projects

1 Research Project. Grant: MMT24-IBIS-01. Awarding Body: CSIC. Project title: Programa Momentum CSIC: Desarrolla tu talento digital. Principal investigator: Alberto Pascual. Co-PI: Luis M. Escudero. Amount: 4 years contract to a predoctoral researcher. Length: 2024-2028.

2 Research Project. Grant: FORT23/00013. Awarding Body: Instituto de Salud Carlos III. Project title: Marco de Oportunidades para Reforzar los Avances en Investigación Traslacional en el IBiS (FORTAIBiS). Principal investigator: Coordinated Project. Amount: Total: 2.499.995,52 Euro. 39000 Euro for our group. Length: 2024-2027.

3 Research Project. Grant: CA22153. Awarding Body: European COST Action. Project title: European Curvature and Biology Network (EuroCurvoBioNet). Principal investigator: John Dunlop. Luis M. Escudero is part of the Team and one of the Management Committee member. Amount: Networking and conferences expenses. Length: 2023-2027.

4 Research Project. Grant: PID2022-137101NB-I00. Awarding Body: Ministerio de Ciencia e Innovación. Project title: AI-based BioImage Analysis to uncover the Mechanisms driving Tissue Organization. Principal investigator: Luis M. Escudero. Amount: 250.000 Euro. Length: 2023-2026.

5 Research Project. Grant: US-1380953. Awarding Body: U. de Sevilla y Junta de Andalucía. Project title: Development of complex computational models to understand tissue organization. Principal investigator: Luis M. Escudero CoPI: Beatriz Estrada. Amount: 80.000 Euro. Length: 2021-2023.

6 Research Project. Grant: PID2019-103900GB-I00. Awarding Body: Ministerio de Ciencia e Innovación. Project title: Realistic analysis of 3D epithelial self-organization. Principal investigator: Luis M. Escudero. Amount: 217.800 Euro and PhD contract. Length: 2020-2023.

7 Research Project. Grant: PY18-631. Awarding Body: Junta de Andalucía. Project title: Dynamics and biophysics of scutoids during epithelial morphogenesis. Principal investigator: Luis M. Escudero. Amount: 119.750 Euro. Length: 2020-2023.

8 Research Project. Awarding Body: CIBERNED. Project title: "Investigación clínica en Esclerosis Lateral Amiotrofica (ELA) y otras enfermedades de las motoneuronas". Coordinator: Carmen Paradas. Pls: Carmen Paradas and Luis M. Escudero. Amount: 60.000 Euro per year. Length: 2020-no end date.

9 Research Project. Grant: BFU2016-74975. Awarding Body: Ministerio de Economía. Project title: Epithelial topology during development and at onset of tumour formation. Principal investigator: Luis M. Escudero. CoPI: Alberto Márquez. Amount: 205.700 Euro and PhD contract. Length: 2017-2019.

10 Research Project. Awarding Body: Fundación Asociación Española contra el Cáncer. Project title: "Búsqueda de dianas terapéuticas en los puntos de contacto de la célula tumoral en el neuroblastoma infantil con su matriz extracelular". Coordinator: Rosa Noguera. Pls: Rosa Noguera and Luis M. Escudero. Amount: 150.000 Euro. Length: 2015-2018.

C.4. Patent

Authors: LM Escudero, A Montero-Sánchez, C Paradas, E Rivas, A Pascual, A Sáez, C Serrano, B Acha. Title: Método para obtener información útil para el diagnóstico de enfermedades neuromusculares. Number: P201131840 Country: Spain. Date: 15 11 2011 Entity: Servicio Andaluz de Salud.