MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES

CURRICULUM VITAE (maximum 4 pages)

AGENCIA ESTATAL DE INVESTIGACIÓN

CV date	10-01-2020

Part A. PERSONAL INFORMATION

First and Family name	Luis María Escudero Cuadrado		
Social Security, Passport, ID number	28747865G	Age	44
Researcher codes	WoS Researcher ID *(*)*		
	SCOPUS Author ID*(*)*	16030556200	
	Open Researcher and Contributor ID (ORCID) **	0000-0001-8030-1820	

(*) At least one of these is mandatory
(**) Mandatory

A.1. Current position

University/Institution	Universidad de Sevilla /Instituto de Biomedicina de Sevilla		
Department	Dept. Biología Celular		
Address. Country	Edif. IBIS. Lab 117 Avda. Manuel Siurot s/n. Spain		
Phone number	655772838	E-mail	lmescudero-ibis@us.es
Current position	Profesor Titular	From	12/12/2019
Key words	Scutoids, Computational Biology, Epithelia, *Drosophila,*		

A.2. Education

PhD	University	Year
Licenciado en Biología	Universidad de Sevilla	1998
Doctor en Biología	Universidad Autónoma de Madrid	2004

A.3. JCR articles, h Index, thesis supervised…

26 publications in international journals**.**

23 articles.

16 articles as main author.
5 first author**, 2** co-first author.
9 corresponding author.

3 reviews (1 corresponding author)

Publications in **Q1**: **20**
Publications in **D1**: **13**

Accumulated impact factor: **173**
Average Impact factor in Biology/Biomedicine publications: **7.5**

Number of citations: 851
Citations/year in las five years: 98.8
h index: 16
i10 index: 19

- 2 Thesis supervised, both “Sobresaliente cum laude”
  Daniel Sánchez-Gutiérrez. December 2015.
  Manuel A. Sánchez-García. October 2018. Co-directed with Dr. Alberto Pascual.

- Supervising 4 ongoing thesis.
  Premio Nacional de Juventud (Investigación y Tecnología) to the predoctoral researcher Pedro J. Gómez-Gálvez (PhD Thesis defense in March 2020).

Certamen Arquímedes. Premio Fundación ONCE to the work presented by Carlos Capitán Agudo, supervised by Luis M. Escudero.

PI of Complex Organization of living matter lab (www.scutoids.es).

To calculate the number of citations, we have used the “google scholar” as a reference.

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

I joined Prof. Juan Modolell's lab at the **Centro de Biología Molecular "Severo Ochoa" (CBMSO, CSIC)** from September 1998 to October 2004, to make my PhD in the development of the peripheral nervous system of *Drosophila melanogaster*. In October 2004 I started to work at the Medical Research Council, **Laboratory of Molecular Biology (MRC-LMB, Cambridge, UK)** under the supervision of Dr. Matthew Freeman. I worked mainly in the mechanisms that control cell shape and epithelial organization during the development of *Drosophila.* At the same time, I started a new investigation line in collaboration with Dr. Madan Babu (MRC-LMB). We developed a new method to analyse objectively any epithelium using computerized image analysis. In February 2010, I joined the **Instituto de Biomedicina de Sevilla (IBiS)** in the lab space of Dr. Alberto Pascual. This allowed me to start my independent research career and focus in the analysis of biological and biomedical images using Computational Biology methods.

Now, my group is focused in the understanding of the organization of living tissues during development and disease. We have formed the **Complex Organization of Living Matter Laboratory** at the Cell Biology Department of **Seville University** and the Instituto de Biomedicina de Sevilla (www.scutoids.es). In the last years I have been able to consolidate a multidisciplinary laboratory that currently is formed by a technician, 4 PhD students, a Postdoc, and a “Profesora Contratado Doctor”. In May a second postdoc will join the group.

In December 2019 I was promoted to the “Profesor Titular” position. Once I have obtained this permanent position, I have been named as a “Investigador Responsable” at the IBiS.

We apply computational methods for the study of complex organization of living tissues. Our general idea is that understanding how tissues are organized in homeostasis is key to uncover the causes and mechanisms of pathological variations. We combine Developmental Biology, Physics, Mathematics and Biomedical concepts to obtain relevant quantitative information from biological images.

Our group is pioneer analyzing epithelial tissues in a realistic way from an experimental and theoretical point of view. With the discovery of the **scutoids** last year, we set a new paradigm to explain and understand morphogenesis. This research line has become our main priority since it opens a completely new framework to approach to the all-important problem of how organs are formed. In the future, we plan to use our knowledge in epithelial organization to investigate biomedical problems using organoids cultures.

We also apply our methods in two other biomedical research lines:

- Neuromuscular diseases: Together with the neurologist Dr. Carmen Paradas, I am co-coordinating a multidisciplinary team formed by neurologists, pathologists, biomedical researchers and engineers (Team 613, PI Dr. Paradas, Ciberned). Working together, we have been able to investigate Neuromuscular disorders using the computerized image analysis.

- Topological analysis of neuroblastoma extracellular matrix: This is a project in collaboration with the lab of Dr. Rosa Noguera from INCLIVA (Valencia, Spain). Combining image analysis and graph theory, we identify new topological features of vitronectin that could potentially be used to improve patient pre-treatment risk stratification.

Part C. RELEVANT MERITS

C.1. Publications

1- Vicente-Munuera, P., Gómez-Gálvez, P., Tetley, R.J., **Forja, C., Tagua, A., Letrán, M.**, Tozluoglu, M., Mao[#], Y. and **Escudero, L.M[#].** (2019). EpiGraph: an open-source platform to quantify epithelial organization. **Bioinformatics**. In press. ([#] Corresponding authors) **IF 4.531**

2- Vicente-Munuera, P., Burgos-Panadero, R., Noguera, I., Navarro, S., Noguera, R. **[#], Escudero, L.M. [#]** (2019). The topology of Vitronectin: a complementary feature for neuroblastoma risk classification based on computer-aided detection. **International Journal of Cancer,** In press. **([#] Corresponding authors)**. I**F 4.982**

3- 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. **IF 11.878**

4- Sánchez-Gutiérrez, D., Sáez, A., **Gómez-Gálvez, P.,** Paradas, C., **Escudero, L.M.** (2017). Rules of tissue packing involving different cell types: human muscle organization. **Sci. Rep.** 7, 40444. **IF 4.122**

5- 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. **IF 9.792**

6- Sánchez-Gutiérrez, D., Sáez, A., Pascual, A., **Escudero, L.M.** (2013). Topological Progression in Proliferating Epithelia Is Driven by a Unique Variation in Polygon Distribution. **PLoS ONE** 8(11). **IF 3.530**

7- Sáez, A., Rivas, E., **Montero-Sánchez, A.**, Paradas, C., Acha, B., Pascual, A., Serrano, C., **Escudero, L.M.** (2013). Quantifiable diagnosis of muscular dystrophies and neurogenic atrophies through network analysis. **BMC Medicine** 11:77. **IF 7.280**

8- Aldaz, S*., **Escudero, L.M.*,** Freeman, M. (2013). Dual role of myosin II during *Drosophila* imaginal disc metamorphosis. **Nature Communications** 4:1761. **(* These authors contributed equally to this work). IF 10.742**

9- Escudero, L.M.[#], Costa, L. da F., Kicheva, A., Briscoe, J., Freeman, M. and Babu, M. M.[#] (2011). Epithelial organisation revealed by a network of cellular contacts. **Nature Communications** 2:526. ([#] Corresponding authors). **IF 7.396**

10- Aldaz, S*., **Escudero, L.M.*,** Freeman, M. (2010). Live imaging of *Drosophila* imaginal disc development. **PNAS** 107(32), pp. 14217-14222. (* These authors contributed equally to this work). **IF 9.771**

C.2. Research projects and grants

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

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

Grant: PI13/01347.
Project title: "Clinical and pre-clinical investigation of neuromuscular diseases through computerized image analysis".
Awarding Body: Carlos III Health Institute.

Principal investigator: Luis M. Escudero.
Length: 2014-2016**. Amount:** 69.575 Euro

Grant: RYC-2012-10373
Awarding Body: Spanish Economy Ministry. Ramón y Cajal Program.
Project title: Start up - Complex Organization of Living Matter
Principal investigator: Luis M. Escudero.
Length: 2014-2017. **Amount:** 40.000 Euro

Grant: BFU2011-25734
Project title: "*Drosophila* genetics and computerized image analysis for the study of neurological diseases".
Awarding Body: Spanish Ministry of Science and Innovation.
Principal investigator: Luis M. Escudero.
Length: 2012-2014. **Amount:** 91.960 Euro

Grant: CP10/00435.
Project title: "Search and selection of Parkinson's disease candidate genes and validation by human genetic analysis".
Awarding Body: Founded by the Carlos III Health Institute.
Principal investigator: Luis M. Escudero.
Length: 2011-2014. **Amount:** 120.000 Euro

C.3. Contracts

2019 **"Juan de la Cierva incorporación"** contract to Dr. Gómez-Lamarca (prov.).
2019 **"PIF predoctoral contract"** (4 years, Seville University) to Antonio Tagua.
2018 **"Juan de la Cierva incorporación"** contract to Dr. Annese.
2013 Awarded with a "**Ramón y Cajal**" contract.
2010 Awarded with a Spanish Ministry of Health, "**Miguel Servet"** contract.
2005 Awarded with an **EMBO** and **Marie Curie** Postdoctoral contract.

C.4. Patents

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

C.5. Other merits

2018 ANECA accreditation "Profesor Titular"
2013 Named member European Neuroscience Institute-NET Young investigator.
2013 Named member of the Management Committee of COST action BM1304: "Myo-MRI"

- Member of Sociedad Española de Bioquímica y Biología Molecular and Sociedad Española de Biología del Desarrollo.
- Member and founder of "Ciencia con futuro" organization (https://cienciaconfuturo.com/).

Science communication:

- Organization of events: Pint of Science Seville, 2017 and 2018.
- Talks: Desgranando Ciencia, Pint of Science, Ciencia en Bulebar.
- Articles: Jot Down, Diario de Sevilla, Anuario Joly 2019, The conversation, Naukas, The Science breaker.
- Interviews: BBC Mundo, The Scientist, El mundo, RNE, Onda Cero, Cadena Cope, Canal Sur TV and radio.