MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA ESTATAL DE INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Nombre: SANCHEZ DE GROOT, NATALIA
Referencia: RYC2019-026752-I
Área Temática: **Biociencias y biotecnología**
Correo Electrónico: amiloida@gmail.com

Título:

Study of protein assemblies: biophysical and biological implications

Resumen de la Memoria:

Since I started my graduate studies, I have always been interested in protein unfolding, self-assembly and aggregation. This interest motivated me to start a PhD (UAB, 2010) in which I studied protein aggregation using a wide range of techniques and under three different perspectives: (i) in vitro, (ii) in silico and (iii) in vivo. Overall, this work allowed me to defined the physicochemical properties governing protein aggregation process. I applied this knowledge to develop one of the most used predictors on protein aggregation (AGGRESCAN, OMIC-03858, >620 cites), and to find compounds able to monitor and modulate the aggregation (JACS 2009).

However, I was interested in understanding why this phenomenon happens in the cell and which are their effects. With this aim, I obtained a FEBS short-term fellowship (ITQB, Portugal) to study the cell response against protein aggregation and showed that inside the cell there is an equilibrium between their toxic and beneficial effects (Open Biology, 2015).

Then I decided to move to LMB-MRC (Cambridge, UK; FEBS long & Marie Curie) where I worked in five different projects focused in study the regulation and effects of protein aggregation in the cell. At the first four works I collaborated to study different factors that influence the aggregation event: the presence of intrinsically disordered regions, the presence of tandem repeats (e.g. polyQ) and the regulation of gene expression levels (i.e. TATA-box binding, tRNA abundance). The fifth study was conceived and led by me and focussed on analyse how protein aggregation affects cell fitness. In this work I showed (i) that it is possible to mathematically isolate the different effects (e.g. gain vs loss of function) and (ii) that this process can enhance population variability and survival (Mol Syst Biol. 2019).

After many years centred on hydrophobic protein models, I was intrigued by how disordered proteins aggregate and how their assemblies have liquid-like properties. Whit this aim I came back to Spain (IBB-UAB) to study prion s sequential properties and found them in multiple species (Sci. Reports 2017). Later, I contacted Prof. Tartaglia to study how proteins and RNA phase separate into liquid-like assemblies: (i) I found (i) that the RNA secondary structure can control the material state of a protein aggregate (Nat. Commun. 2019), (ii) that the RNA molecules are important for the macromolecular organization of the phase-separated assemblies, and (iii) that prion and RNA binding domains cooperate to form liquid-like assemblies.

The molecular basis of the protein aggregation process is well known, but not what triggers it. Hence, I became intrigued by its origin, and due to my experience in use microorganisms as a cellular models, I wanted to understand how infection and inflammation influence protein aggregation. So, recently I started to investigate the interaction between host and pathogen, and showed that during infection pathogen fitness depends on the interactions that it makes with the host proteins (the host-pathogen interactome) (Nat. Commun. 2017). I would like to settle down my future research group on studying how pathogens affects host protein aggregation.
.

Resumen del Currículum Vitae:

At 2003 I worked in an industry partnership between Bioiberica S.A. and the Universitat Autonoma de Barcelona (UAB) investigating compounds with potential application in osteoarthritis treatment.

After that, I did a PhD at UAB (2010, FPI), under the supervision of Profs. Ventura and Vendrell, to study the physicochemical properties governing proteins aggregation process (14 articles). I developed one of the most used predictors on protein aggregation (>600 cites), and found compounds able to monitor and modulate the aggregation process (JACS 2009). I coordinated international collaborations and obtained my own funding to perform an internship at the Netherlands (UvA). I also worked as teacher of laboratory classes and codirected 2 end-career projects and 2 master theses.

After the PhD I obtained a FEBS short-term fellowship to study the cell response against protein aggregation at the ITQB, Portugal (Open Biology 2015). Then, I moved to LMB-MRC (Cambridge, UK) to study how protein aggregation affects cell fitness (Mol Syst Biol 2019). To do this I obtained a FEBS-Long (2010) and a Marie Curie (2012), two of the most competitive European fellowships (success rate 3.4% and 17%). My work was also awarded with the MRC Centenary Award. With this grant and the Marie Curie I performed as Principal Investigator to manage my own project and funding. At the LMB I also start-up and led the experimental section of the Systems Biology lab.

I came back to Spain (IBB-UAB, 2015, SUDOE/FEDER) to study prion s sequential properties and found them in multiple species (Sci

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Reports 2017). At the IBB I also supervised a master student. Later, I contacted Prof. Tartaglia (PRBB-CRG) to study how proteins and RNA phase separate into liquid-like assemblies (Nat Commun 2019). At the CRG I supervised 2 PhD students (January 2020, UPF), and 2 international graduate students (1 end-career Netherlands and 1 master Itally). Recently, I became intrigued by the causes that trigger the protein aggregation process, focusing on infection and inflammation. Hence, I started to investigate host-pathogen protein-protein interactions (Nat Commun 2017).

Overall, I have a productive research career, with strong international exposure, in which I obtained my own funding, conceived and managed research projects, led laboratories and supervised PhD students.

General quality indicators (WoS):
h-index: 23
i10-index: 34
Publications: 46
First/corresponding author: 21/6
First quartile (Q1): 29/ Top-decile: 11
Total citations: 2246
Cites/year (last 5 years): 230
Accumulated impact factor: 240
Average citations per article: 53.5
Projects: 5 international and 14 national
Congress presentations: 39, 10 as speaker

Selected publications: NatStructMolBiol (2017, 13.3 IF), NatCommun (2016/2017/2019, 12.1 IF), MolSysBiol (2019, 9.8 IF), CellRep (2014, 8.4 IF), TiBS (2009, 11.6 IF), JACS (2009, 11.5 IF), CurrOpinStructBiol (2011, 9.4 IF), ARS (2012, 7.2 IF), CelMolLifeSci (2010/2015, 7.0 IF), FASEB Journal (2010, 6.5 IF), Science Signaling (2018, 6.4 IF), RedoxBiol (2017, 6.3 IF)

Other merits:
2016 - Extraordinary Doctorate Award
2014 - Professor Agregat AQU
2013 - Yeast genetics and genomics course. CSHL, NY, USA
2012 - MRC Centenary Award. Cambridge, UK
2010 - AGGRESCAN software. OMIC-03858

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA
ESTATAL DE
INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Nombre: SANCHEZ ALCAÑIZ, JUAN ANTONIO
Referencia: RYC2019-026747-I
Área Temática: **Biociencias y biotecnología**
Correo Electrónico: juan.sanchez@umh.es

Título:

Chemosensory detection and integration in the invertebrate brain

Resumen de la Memoria:

My research career has focused on the study of the brain from different points of view. During my PhD I studied the development of the vertebrate cerebral cortex focusing on the migration of GABAergic interneurons. This research allowed me to discover a set of molecules that interacted coordinately to promote the proper migration and allocation of these group of neurons in the mammalian cortex. In order to understand how different sets of neurons interact to induce particular behaviors, I decided to use a different model system for my postdoctoral training, Drosophila melanogaster, due to small size, powerful genetics and capabilities of neuronal tracing. Using this system, I was able to demonstrate that flies exhibit sensitive discrimination of food texture, avoiding food that is too hard or soft. This ability requires the TRPN-related mechanosensory channel NOMPC. Analogously, we have found that flies show a clear preference for carbonated water (a non-nutritious product of fermentation). Carbonation sensing requires the variant ionotropic glutamate receptor IR56d, which is expressed in a set of specialized gustatory neurons.

This research provided me with the necessary knowledge and background in Drosophila genetics, behavior analysis and physiology, as to face the next step in my career as independent group leader, where I aim to dissect the genetic and neural circuits involved in sensory integration and decision-making using the Drosophila brain as model system. Specifically, we will study how gustatory information is integrated in the brain as gustatory cues evoke clear and opposing behaviors and gustatory neurons can be traced and modified genetically. The results obtained in the analysis of sensory information processing, integration and decision-making will impact the field of feeding and metabolism and it will provide a mechanistic explanation on how feeding decisions are made based on sensory information and internal states.

.

Resumen del Currículum Vitae:

2005 to 2012. PhD period and first postdoc. Trained as a Biochemist, I became fascinated by the complexity of the nervous system and about how a set of genes can drive the organization of such a great structure. For that reason, I decided to start my PhD in the field of developmental neurobiology at the laboratory of Prof. Óscar Marín in the Institute of Neurosciences (Alicante, Spain). While studying the migration of GABAergic interneurons through the cortex, I acquired a strong training in anatomy, molecular biology, cell culture and microscopy.

2012-2019. Postdoctoral period. I joined the laboratory of Prof. Richard Benton at the University of Lausanne (Lausanne, Switzerland). I decided to use Drosophila melanogaster as a model system to understand how neurons process information and produce specific behaviors. I worked on sensory perception in the gustatory system focusing on the mechanisms of texture and carbonation sensing in the gustatory system. This research has allowed me discover not only the neurons involved but the receptors responsible for the detection of this cues. During my postdoctoral training, I have acquired a new set of skills in a new field. I have been able to build custom made behavioral setups, computer programs for behavior analysis, and learn electrophysiology, in-vivo calcium imaging and to use D. melanogaster as a genetic model system from classic genetics to advance molecular genetics. After this postdoctoral period, I join the laboratory of Prof. Roman Arguello at the University of Lausanne to collaborate in a project to analyze the expression pattern of sensory receptors in the sensory appendages of several Drosophila species.

The line of research I have developed has set myself apart from my former PhD and postdoctoral advisor, indicating I am able to lead projects in a field different from the one of my basic training. I have also been able to fund most of my postdoctoral training by obtaining, in competitive calls, three different Long-Term Fellowships funded by the FEBS, EMBO and HFSP. In addition, I have been able to supervise one technician and several students, helping me acquire enough experience to supervise my own team in the future. The impact of my research in the field is reflected by the multiple times in which my research has been selected for oral presentations. During meetings, I have been able to stablish a strong scientific collaboration network, that is reflected in my publications, Prof. Simon Sprecher (University of Fribourg, Switzerland), Prof. Frederic Marion-Poll (CNRS, Paris, France) and Prof. Roman Arguello (University of Lausanne, Switzerland).

June 2019-present. Currently I am a principal investigator at the Institute of Neuroscience funded by a CIDEGENT (Generalitat Valenciana) project until December 2022 with the possibility of extending this period two extra years. My line of research will focus on the study of sensory integration and decision-making processes using as a model the gustatory system of Drosophila melanogaster, due to its accessibility to image, manipulate genetically and ease to study its behavioural output. By using the latest techniques in neural tracing, I plan to describe the neural connectivity of the gustatory system that will set the basis to understand how information flows from the periphery to the central brain and gets integrated.

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA ESTATAL DE INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Nombre: SANZ IGLESIAS, ELISENDA
Referencia: RYC2019-028501-I
Área Temática: **Biomedicina**
Correo Electrónico: elisenda.sanz@uab.cat

Título:

Novel approaches to unlock neuronal heterogeneity in health and disease

Resumen de la Memoria:

I obtained my PhD in the laboratory of Dr. Mercedes Unzeta at the Universitat Autònoma de Barcelona (Spain), exploring the mechanisms underlying the neuroprotective effects of a novel monoamine oxidase type B (MAO-B) inhibitor in several experimental models of neurodegeneration and neuroinflamation. My work in this field resulted in 9 publications in peer-reviewed journals, with first authorship in 4 of them (Sanz et al. (2004) Med Sci Monit. 10(12):BR477-84, Sanz et al. (2008) J Neurochem. 105(6):2404-17, Sanz et al. (2009) J Neurosci Res. 87(3):784-94, Sanz et al. (2009) Mol Cell Neurosci. 41(1):19-31). Funding for my doctorate work was provided by a predoctoral fellowship from the Spanish Ministry of Education and Science (FPU program), which also supported an international short stay at Dr. Iain Campbell s lab at the University of Sydney (Australia). There, I applied mouse genetics tools to understand the role of STAT1 in IL-6 signaling in the murine brain (Sanz et al. (2008) Glia 61(4): 587- 600). This raised my interest in the cellular complexity of the brain, and with the financial support of the postdoctoral mobility program of the Spanish Ministry of Innovation and Science (MICINN), I joined Dr. G. Stanley McKnight group at the University of Washington (USA) to develop a mouse genetics technique to unlock cell type heterogeneity (Sanz et al. (2009) Proc Natl Acad Sci U S A. 106(33):13939-44; Quintana, Sanz et al. (2012) Nat Neurosci. 15(11):1547 1555; Sanz et al. (2013) Plos One (2013) 8(6):e6617; Sanz et al. (2019) Curr Protoc Neurosci. 2019;88(1):e77). I also developed another approach for cell type-specific transcriptional profiling that allowed me to identify the potential neuronal pathway linking maternal nutrition to reproductive development in the offspring (Sanz et al. (2015) J. Neurosci. 35(14):5549-56). In 2014 I joined efforts with Dr. Albert Quintana at the Seattle Children s Research Institute (Seattle, USA), where I explored the role of mitochondrial defects in promoting neurodegeneration (Liu et al. (2015) Cell. 160(1-2):177-90), developed novel lines of research, mentored students and managed my own funds. One year later, I obtained a Marie Sklodowska-Curie award (MSCA-IF-2014- 658352-EF) that allowed me to return to the European research system and stablish my own research lines in Dr. Quintana s group now at the Universitat Autònoma de Barcelona (Spain). Here, I have developed novel molecular biology tools that allow for the identification of the molecular determinants of neuronal vulnerability in mitochondrial disease (Gella et al. (2019) bioRxiv 2019.12.29.890541; co-senior author) and identified the critical role of two genetically-defined susceptible neuronal populations driving the fatal phenotype in a mouse model of Leigh Syndrome, (Bolea, Gella, Sanz, et al. (2019) Elife. 2019;8:e47163; co-first author). I have also filled two patents (EP18382256.8 and EP19382053.7) and developed productive collaborations with other groups (Padilla et al. (2016) Nat. Neurosci. 19(5):734-41; Rainwater et al. (2017) J Neurosci. 37(33):7939-7947). In 2019, I was awarded a grant from the Programa Estatal de I+D+i (RETOS-JIN; RTI2018-101838-J-I00) to dissect the central mechanisms of maternal nutritional programming governing metabolic health, which has allowed me to lead a novel line of research in the lab.
.

Resumen del Currículum Vitae:

CURRENT POSITION
Research Scientist (RETOS-JIN fellow) at Universitat Autònoma de Barcelona (UAB; Spain)
PREVIOUS POSITIONS
2017-2019: Research Scientist at UAB (Spain)
2015-2017: Marie Sklodowska Curie Researcher at UAB (Spain)
2013-2015: Research Scientist at the Seattle Children's Research Institute (Seattle, USA)
2008-2013: Postdoctoral fellow at the University of Washington (Seattle, USA)
2004-2008: Becario predoctoral FPU (Graduate student) at the UAB (Spain)
GRANTS AND FUNDING
As Principal Investigator:
2019-2022: RETOS-JIN, MICIU; 169.400 EURO
2015-2017:MSCA-IF-2014-EF, European Commission; 170.122 EURO
2014: SCRI Intercenter grant, Seattle Children s Research Institute, USA; 50.000 USD
As participant:
2019-2020: European Research Council (ERC) PoC Grant. 150.000
2015-2020: European Research Council (ERC) Starting grant (ERC-StG, 1.500.000 EURO)
2008-2014: 5 National Institutes of Health (NIH, USA) grants: 2 RO1, 2 U54 and 1 R21)
2012-2014: 2 intramural grants (Seattle Children s Research Institute and University of Washington, USA)
2003-2007: 2 COST Actions (European Commission)

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA
ESTATAL DE
INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

2003-2018: 4 SAF grants (Biomedicine, MEC/MINECO, Spain)
SCHOLARSHIPS AND FELLOWSHIPS
Marie S. Curie award (MSCA-IF-2014-658352-EF, European Commission)
Grant for the recruitment of researchers to the Catalan Science and Technology System (2013 BP-B 00194, European Commission and AGAUR, Spain, renounced)
Postdoctoral mobility Program (-2008-0892, MICINN, Spain),
FPU program (Predoctoral, AP2003-0534, MEC, Spain),
PUBLICATION METRICS
25 Scientific papers (9 first author), one book chapter (senior author) and one technical report (first author).
9 publications in the first decile: Cell (2015), Nat Neurosci (2016; 2012), PNAS (2011; 2010, 2009), J. Neurosci (2015, 2017) and eLife (2019)
20 publications in the first quartile
Average impact factor (per publication): 7.52
1595 citations.
H-index: 16
CONFERENCES AND INVITED SEMINARS
9 international and 13 national (7 in the US, 6 in Spain) conferences and seminars (11 upon invitation)
PATENTS
2018: EP18382256.8
2019: EP19382053.7
ACADEMIC/TEACHING EXPERINCE
200+ hours of laboratory work and lectures
Member of PhD Thesis Defense committee (Neuroscience Program, UAB)
Member of the evaluation committee of the Master Theses (Neuroscience Program, UAB)
Member of the follow-up committee of PhD Theses (Neuroscience Program, UAB)
Research Accreditation AQU (Catalan University Quality Assurance Agency)
THESES AND PROJECT SUPERVISION
2019- (ongoing): Doctoral Thesis: Laura Sanchez Benito (co-supervision Neurocience; UAB, Spain)
2018- (ongoing): Doctoral Thesis: Kevin Aguilar (co-supervision Neurocience; UAB, Spain)
2017-2018: Master Thesis: Sara Herrera (co-supervision Neuroscience; UAB, Spain)
2016-2017: Master Thesis: Kelsey Montgomery (co-supervision Bioinformatics; UAB, Spain)
2016-2017: Master Thesis: Teresa Ximelis (co-supervision Neuroscience; UAB, Spain)
2016- (ongoing): Doctoral Thesis: Andrea Urpí (co-supervision Neurocience; UAB, Spain)
2015- (ongoing): Doctoral Theses: Patricia Prada and Pablo Machuca (co-supervision Neuroscience; UAB, Spain)
2014-2015: Final year project: Jessica Hui (Neuroscience; Seattle Children s Research Institute, USA)
2011: Rotation project: Jamie Levin (Pharmacology; University of Washington, USA)
2009-2010: Undergraduate research project: Stephanie Ngo (Pharmacology: University of Washington, USA)

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA
ESTATAL DE
INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Nombre: ZARZOSO FERNANDEZ, DAVID
Referencia: RYC2019-027924-I
Área Temática: **Ciencias físicas**
Correo Electrónico: david.zarzoso-fernandez@univ-amu.fr

Título:

Multiscale analysis of the mutual interplay of instabilities in fusion plasmas

Resumen de la Memoria:

My research activities centre around the study of instabilities in magnetised fusion plasmas within the framework of the international ITER project using a kinetic approach. After a MSc in Nuclear Fusion and two internships resulting in my first two peer-reviewed publications, I decided to do my PhD on the interaction between energetic particles and turbulence, which led to the ground-breaking result of the first demonstration of the modification of turbulence by energetic particles. I obtained a postdoctoral Fellowship at the Max-Planck Institute for Plasma Physics, which is the largest fusion institute in Europe, where I developed two activities in parallel. First, I started a new activity on the mutual interplay between magnetohydrodynamic (MHD) instabilities and turbulence, resulting in two additional publications. Second, I continued my previous work on energetic particles, improving the models, which resulted in another publication. At the end of my postdoctoral Fellowship, I drew up a revolutionary scientific project on the kinetic description of the mutual interplay between energetic particles, turbulence and MHD. I managed to obtain a funding of 400 k through an extremely competitive process, which allowed me to create my own research group at Aix-Marseille University until I obtained a permanent position as civil servant at the CNRS, the most prestigious scientific affiliation in France. I am currently orienting my research activities to the application of Artificial Intelligence to the modelling of instabilities in magnetised plasmas, both in laboratory and in space.
In addition, I have contributed to 3 European research projects as a collaborator and I have been PI of 6 High Performance Computing projects with an equivalent total budget of 3.5 M . As a result of my research activity, I have a total of 39 peer-reviewed publications (including 3 Physical Review Letters). With a total number of 956 citation, my H-index is 18, which is twice the H-index of a theoretician in nuclear fusion with the same experience as me.

.

Resumen del Currículum Vitae:

I got a double degree in 2008, from the Universidad Politécnica de Madrid and from the Ecole polytechnique (Palaiseau, France). For this, I studied Industrial Engineering at the Escuela Técnica Superior de Ingenieros Industriales (Madrid, Spain) from 2001 to 2005, where I was ranked 1st of year. In addition, to obtain the double degree, I had to obtain the degree of Ingénieur Diplômé de l Ecole polytechnique. For this purpose, I had to be admitted at the Ecole polytechnique, which is the most prestigious academic center for higher education in France. I had to pass the international exam, which is an extremely competitive public examination evaluating my level in Physics, Mathematics and scientific knowledge. After 3-year study at the Ecole polytechnique, I got the double degree and decided to study an MSc in Nuclear Fusion. I did the thesis of my master at the Culham Centre for Fusion Energy (Oxfordshire, UK), where I conducted experimental data analysis on the Joint European Torus (JET), the largest magnetic nuclear fusion device worldwide. Afterwards, I joined the Commisariat à l Energie Atomique, under a training contract within the framework of my PhD at the Ecole polytechnique. During my PhD, I focused on the interaction between energetic particles and turbulence in magnetic fusion plasmas. After my PhD, I decided to work as a post-doctoral Fellow at the Institute for Plasma Physics of the Max-Planck Society (Garching, Germany), where I studied the interaction between magnetic islands and turbulence and started a more ambitious analysis: the mutual and self-consistent analysis of the interplay between energetic particles, turbulence and magnetic islands. This is a multi-scale physics problem, where all the spatiotemporal scales must be solved, representing a major challenge in physics. My career as a researcher is now centered around the study of all these instabilities in magnetic fusion plasmas, from analytical and numerical points of view, using massively parallelised codes that model the behaviour of the plasma in a five-dimensional phase space. As a result of the high quality of my research, I was recruited as Rising Star Fellow, within the framework of the Initiative of Excellence of the Aix-Marseille University (A*Midex) with a 400k funding. I have been admitted in 2016 at the CNRS through a highly competitive international examination, where I was ranked 1st. I have been invited 13 times to international conferences, assumed institutional and organization responsibilities within the framework of scientific meetings. I have become expert of the International Tokamak Physics Activity (ITPA) on Energetic Particles and I participate as reviewer for high impact factor peer-reviewed journals. As recognition of my achievements, I have been awarded the Young Scientist Prize 2018 by the Conseil Départemental (France). Overall, I have participated in 3 European projects led by outstanding researchers and, in addition to my A*Midex project, I have led 4 European and 2 French HPC projects, with a total budget of 3.5 M . My current activity is focused on Aritificial Intelligence (AI) applied to plasma physics and my medium- and long-term goal is the establishment of my own group on this discipline, in order to apply the most advanced AI techniques to the understanding of plasma instabilities in fusion plasmas.

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA
ESTATAL DE
INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Nombre: FERNANDEZ MARIN, XAVIER
Referencia: RYC2019-028369-I
Área Temática: **Ciencias sociales**
Correo Electrónico: xavier.fernandez-i-marin@gsi.uni-muenchen.de

Título:

Methodology of Social Sciences: from Measurement to Explanation

Resumen de la Memoria:

My research is centered on the methodology of social sciences, developing innovative quantitative frameworks for the analysis of public policy. I have designed data-gathering processes and implemented and programmed large databases to hold the complexity of the objects of study. When analyzing data, my aim is always to develop new methods to extract as much knowledge as possible from the available information, being very strict with regards to scientific validity and theoretical innovation. To achieve this I have created innovative designs for the data collection phase, developed better software to manage the data, and created or adapted new techniques to analyze it. A pivotal aspect of my professional career has been my involvement with the Essex Summer School on Social Science Data Analysis, where I got my postgraduate in social science data analysis and collection and where I have been teaching fellow since 2004.The design and management of social-sciences and public-policy data bases has been a recurrent feature of my career. I have been working with large databases related to public policy issues since 2002, when I entered the PhD program at Universitat Pompeu Fabra. There, I designed and analysed a database for projects related to the Information Society. In my "Juan de la Cierva" position at IBEI, I designed a database for institutional features of regulatory agencies, and another one on Spanish regulators, for a research project I led on the independence Spanish regulatory agencies. Later, in my position at ESADEgeo (Center for Global Economy and Geopolitics, ESADE Business and Law Schools), I led a research project on the institutional design of International Governmental Organizations (IGOs).

I am currently assistant professor at the University of Munich (LMU), where I am amongst other projects- creating new research methodologies for the measurement of comparative public policies dealing with moral issues, and developing now forms of measurement to identify the administrative styles of international organizations.

My current publication portfolio includes 21 articles in peer reviewed journals. Most of the journals are first quartile and top journals, including Policy Studies Journal, Comparative Political Studies, Governance, Journal of Public Administration Research and Theory, Regulation & Governance (3). And also top ranked journals in Psychology (Frontiers in Psychology, 2), Computer Science (Journal of Statistical Software) and Mathematics (Frontiers in Applied Mathematics and Statistics). Several book chapters and an edited book by Palgrave complete the portfolio.

These publications have produced 659 citations (at the time of submitting the application) with an h-index of 11 according to Google Scholar.
.

Resumen del Currículum Vitae:

I am currently lecturer at the Geschwister-Scholl-Institut of the Department of Politics of the Ludwig-Maximilians-Universität (LMU) in Munich, since October 2016.

Previously I was senior researcher at ESADE Business School working on a research project (EU-InnovatE) on sustainable lifestyles in Europe, was assistant professor at the Department of Politics and Public Administration at the Universität Konstanz (Germany) and rearch fellow at ESADE's Center for Global Economy and Geopolitics (ESADEgeo) working on the determinants of the formal institutional cooperation amongst countries and Global Governance. I was "Juan de la Cierva" postdoctoral research fellow at IBEI (Institut Barcelona d'Estudis Internacionals), working with the "GlobalReg" research project on the diffusion of regulatory institutions. I presented my PhD dissertation on "Technology and Public Policy: An Evaluation of Internet and e-Government policies in Spain" in 2008 at the Political and Social Sciences Department of the Universitat Pompeu Fabra.

Main main research interests include the methodology of social sciences, from the empirical implications of theories and the design of data gathering processes to the analysis of the data. I have done my main contributions mainly in the fields of comparative politics, international relations and public policy, but have also worked on Internet and Public Administration.

I have published at "Policy Studies Journal", "Regulation & Governance", "Journal of Public Administration Research and Theory", "Comparative Political Studies", "Governance", "Policy Sciences", "Public Administration", "Frontiers in Psychology", "Journal of Statistical Software", "Frontiers and Applied Mathematics and Statistics" or "The Information Society", amongst others. I have also published a co-edited book on accountability and regulatory governance in 2014 with Palgrave-Macmillan.

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA
ESTATAL DE
INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

I have been actively involved in teaching activities since 2003. I got a mention to teaching quality in 2008 for the undergraduate course on "Theories of Collective Action" that I taught between 2003 and 2011, also giving seminars on teaching to Department colleagues. I have taught since 2004 at the Essex Summer School on Social Science Data Analysis and Collection as teaching fellow in a wide variety of methodological courses. I also teach Methods of Multivariate Analysis at a Master on International Relations at IBEI since 2009, and have taught in several postgraduate programmes "Data Analysis with R" (IN3-UOC PhD programme, ESADE PhD program). I have supervised several Master thesis (Master in International Management at ESADE and Master in International Relations at IBEI) and also Final Grade dissertations (at UPF).

I have presented my research in international forums such as the EPSA (European Political Science Association) Conferences, the ECPR (European Consortium for Political Research) Joint Sessions, General Conferences and Standing Group Biannual Conferences, the EGPA (European Group for Public Administration), or at the International Political Economy seminar at the School of Foreign Service at Georgetown University, where I was visiting fellow. I have also participated at the AECPA (Asociación Española de Ciencia Política) Congresses.

I was accredited as "Tenure-track lecturer and Collaborating Lecturer" in 2012 by the AQU.

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA
ESTATAL DE
INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Nombre: PFATTNER ·, RAPHAEL
Referencia: RYC2019-028474-I
Área Temática: **Ciencias y tecnologías de materiales**
Correo Electrónico: rpfattner@icmab.es

Título:

Molecular Electronics, RL4

Resumen de la Memoria:

Organic molecules and polymers are appealing materials for low-cost electronics and can be tailored for specific opto-electrical properties. Taking benefit from a large number of available materials and processing conditions we aim to further study materials and device physics. With that in mind, we strive to build Selective Sensors by merging molecular properties with processing and mechanical properties of polymers. Triggered by external stimuli such as temperature, pressure, deformation, radiation, a reliable sensor must be fully reversible, stable and as selective as possible, even in complex environments. This is possible starting from molecular design by choosing the most suitable active sensing materials. Device engineering must take care of conserving sensing mechanisms, possibly further amplifying it. Electrical tuning of charge carrier density in FETs allows for different working regimes, making differential sensing possible, crucial for reliable and stable sensors. The overall challenge is unraveling intrinsic material properties transferring them to sensors while maintaining functionality: Transferring Molecular Physics towards Device Physics.
.

Resumen del Currículum Vitae:

Dr. Pfattner accomplished the University degrees (B.Sc., M.Sc.; Dipl.-Ing.) Ing.) in Physics at Graz University of Technology, , Austria and holds a Ph.D. in Materials Science from the Instiut de Ciència de Materials de Barcelona (ICMAB-CSIC) CSIC) at the Universitat Autònoma de Barcelona, , Spain. Furthermore, he spent 40 months as a Visiting Researcher/Postdoctoral Fellow in Prof. Zhenan Zhena n Bao s lab at Stanford University, California.

The candidate has carried out his Masters Thesis (18 month full time) at the Solid State Physics Institute of TUGraz. Advanced Materials Science is one of the five fields of expertise at TUGraz and aims to understand the smallest components in their structure and function, function, to develop new materials and to assemble them in special processes.
Since his first contact with organic electronics, back in 2005 at the TUGraz, he has always been intrigued by the challenges and opportunities this rich class of materials offer. The candidate started to work on amorphous and semiconducting polymers, polymers which turned out to be electrically stable under ambient conditions.
Order is crucial for efficient charge transport, and that s why he moved on to single crystal devices to gain information about correlation between crystal structure and electrical performance. He learned that depending on molecular structure and chemical composition electrical properties can be tuned from semiconductors all the way to organic metals.
In this context, tetrathiafulvalene athiafulvalene derivatives are an interesting class of materials. Pure single crystals are challenging to process, but combining processing
conditions of polymers with the electrical properties of single crystalline materials in composites allow appealing applications. Each of these topics has led to at least one first author publication in high impact journals.
Increasing the complexity of environments for sensors, for instance to physiological relevant conditions, limit applicable voltage ranges and make considerable demands on material and device stability. High mobility semi-crystalline crystalline polymers allow for high performance at low voltages while maintaining easy processability. During his second postdoc at Stanford University, he had the great opportunity to work on several parallel projects in collaboration with very inspiring people from many different formations and countries.
From low voltage voltage FETs with rubbery dielectrics and their potential applications in sensors, he learned, that when using FETs to extract charge carrier mobility, one needs to be aware of eventual deviation from ideal systems. In this particular class of dielectric materials, double-layer double formations can lead to overestimation of mobility, but allow low voltage operation. Much can be learned from FET characteristics and used for the
development of selective BioSensors.

During his research at Stanford, he had the great opportunity to collaborate with people in a highly multidisciplinary environment leading to a total of 20 accepted papers (4 as first author) independent from PhD.supervisors. As a highlight, the importance of sp3 to sp2 hybridization by Mechanochemical unzipping of insulating polyladderene to semiconducting
polyacetylene (Science) for the very material that gave birth to the field of Organic Electronics back in 1977, was shown.

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA
ESTATAL DE
INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Nombre: NAVAS GUZMAN, FRANCISCO JESUS
Referencia: RYC2019-027519-I
Área Temática: **Ciencias y tecnologías medioambientales**
Correo Electrónico: francisco.navas@meteoswiss.ch

Título:

Characterization of the atmosphere using remote sensing techniques

Resumen de la Memoria:

My research career started in 2006 doing a Master of Science in Geophysics and Meteorology in the University of Granada (UGR, Spain). Afterward, the achievement of a fellowship funded by the Formación de Personal Universitario (FPU) program allowed me to do my PhD at the Andalusian Center for Environmental Research CEAMA-UGR. My research was focused on the investigation of aerosol and water vapour characterization using the Raman lidar technique. I defended my Ph.D. dissertation in 2012 being awarded with the maximum qualification. The quality of this thesis was recognized with the PhD extraordinary award in the field of Science by the University of Granada.

I started my postdoctoral stage in Switzerland in 2013. From 2013 to 2017 I was member of the Atmospheric radiometry group at the Institute of Applied Physics of the University of Bern (Switzerland). This research experience broadened my scientific field expertise to the microwave radiometry technique. I learnt novel techniques and I got a better understanding of different physical processes that take place in the troposphere and in the stratosphere. In particular, I was involved in the characterization of atmospheric temperature and water vapour using two microwave radiometers, which measure the thermal emission from oxygen and water vapour, respectively.

Since September 2017, I am project leader at the Swiss Federal Office of Meteorology and Climatology MeteoSwiss at Payerne (Switzerland). The project is funded through the highly prestigious Ambizione grant awarded by the Swiss National Science Foundation. The general objective of my project is to contribute to the advancement of the atmospheric aerosol research, in particular on those aspects related with the aerosol hygroscopicity and their effect on the scattering of the radiation. During the last year (2019), I have organized an international field campaign to evaluate the capability of remote sensing and in-situ techniques to characterize aerosol hygroscopic properties.

.

Resumen del Currículum Vitae:

I started my PhD in 2008 in the University of Granada (UGR) with a fellowship funded by the Formación de Personal Universitario (FPU) . My research was focused on the investigation of aerosol and water vapour characterization using the Raman lidar technique. I defended my Ph.D. dissertation in 2012 being awarded with the maximum qualification. During my pre-doctoral period, I was able to publish 24 papers (6 as first author) in peer-reviewed journals and more than 50 publications presented in national and international conferences. The quality of my PhD thesis was recognized with the PhD extraordinary award in the field of Science by the University of Granada.

I started my postdoctoral stage in Switzerland in 2013. From 2013 to 2017, I was member of the Atmospheric radiometry group in the University of Bern (Switzerland). This research experience broadened my scientific field expertise to the microwave radiometry technique. I was responsible of two microwave radiometers and I was involved in numerous studies where atmospheric temperature and water vapour measurements were evaluated. In addition, I investigated the effect of clouds on microwave measurements, which is crucial for atmospheric observations. I proposed a new approach to consider clouds in temperature retrievals. One of my paper was outstanding since I was able to measure the Zeeman effect in the oxygen line at 60 GHz, which is used for the retrieval of temperature profiles, using a ground-based microwave radiometer.

Since September 2017, I am project leader at the Swiss Federal Office of Meteorology and Climatology MeteoSwiss at Payerne (Switzerland) funded through the highly prestigious Ambizione grant awarded by the Swiss National Science Foundation. This project aims to contribute to the advancement of the atmospheric aerosol research, in particular on those aspects related with the aerosol hygroscopicity and their effect on the scattering of the radiation. This research has a clear impact on the improvement of weather and climate models. I am also the Principal Investigator and organizer of an international field campaign that took place at the aerological station of Payerne in 2019. This campaign aims to evaluate the capability and agreement of remote sensing and in-situ techniques to characterize aerosol hygroscopicity.

My Educational & Outreach activities include lectures of undergraduate and master courses in UGR and in University of Bern. This teaching experience allowed me to obtain certificates by the ANECA for the figures of Ayudante Doctor and Contratado Doctor .
I am currently guest editor of the journals Atmosphere and Remote Sensing . am also referee of many international journals such as

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA
ESTATAL DE
INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Atmospheric Chemistry and Physics, Science of the Total Environment, Atmospheric Measurement Techniques and reviewer of different call solicitations by international agencies. I have experience on the organization of international and national conferences. I have been the main convener of the session tilted Atmospheric applications in microwave radiometry in the European Geophysical Union General Assembly in 2016 and 2017.

Publication record: 54 papers, 45 indexed on the JCR (11 as first author, 36 of them on the first quartile, with a h index of 20) with more than 1080 citations. Participation in 21 national and international project (3 as Principal Investigator). 2 books and 19 chapter books. Supervision of two master thesis.