MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES

CURRICULUM VITAE (maximum 4 pages)

AGENCIA ESTATAL DE INVESTIGACIÓN

CV summary date	11/10/2023

I. PERSONAL DATA:

Name and surname	Juan Antonio García Ranea
WoS Researcher ID	AAR-9832-2021
ORCID code	0000-0003-0327-1837
PubMed keywords	"Ranea J OR Garcia-Ranea"

II. Current professional status:

Organization	UNIVERSITY OF MALAGA			
Dept./Centre	MOLECULAR BIOLOGY AND BIOCHEMISTRY			
Address				
Telephone		email	ranea@uma.es	
Professional category	Full Professor		Start date	
Keywords	Systems biology; Bioinformatics; protein-protein and drug-protein interaction, network modelling; Systems Medicine; systematic identification of phenotype-genotype associations of patients; rare diseases; Biomedicine; Clinical Bioinformatics.			

III. MOST RELEVANT MERITS (ordered by typology):

III.1. Profesional career:

Position	Institution	Dates
Full Professor	University of Málaga.	14/04/2020
Tenure Professor	University of Málaga.	25/06/15 – 13/04/2020
Ramón y Cajal Researcher	University of Málaga.	01/01/2008 – 24/06/2015
Senior Research Fellow	CIBER of Rare Diseases.	01/06/2007 – 31/12/2007
Senior Research Fellow	University College London.	01/10/2002 – 31/05/2007
Postdoctoral Fellow	National Center for Biotechnology (CSIC-Madrid).	16/11/2001 – 30/09/2002
Predoctoral Fellow	National Center for Biotechnology (CSIC-Madrid).	01/01/1997 – 31/12/2000
Predoctoral Fellow	Institute of Molecular Biology (CSIC-Madrid).	01/05/1996 – 31/12/1996

III.2. Relevant publications in biomedice (Last 5 years):

1. Corpas M, de Mendoza C, Moreno-Torres V, Pintos I, Seoane P, Perkins JR, **Ranea JAG**, Fatumo S, Korcsmaros T, Martín-Villa JM, Barreiro P, Corral O, Soriano V. Genetic signature detected in T cell receptors from patients with severe COVID-19. iScience. 2023 Aug 25;26(10):107735. doi: 10.1016/j.isci.2023.107735. eCollection 2023 Oct 20. PMID: 37720084.

2. Monterde B, Rojano E, Córdoba-Caballero J; Perkins JR; Ángel Medina M; **Ranea JAG**. Integrating differential expression, co-expression and gene network analysis for the identification of common genes associated with tumor angiogenesis deregulation. Journal of Biomedical Informatics, accepted with minor revision on 1st June 2023.
3. Alcalde M, Toro R, Bonet F, Córdoba-Caballero J, Martínez-Barrios E, **Ranea JA**, Vallverdú-Prats M, Brugada R, Meraviglia V, Bellin M, Sarquella-Brugada G, Campuzano O. Role of microRNAs in arrhythmogenic cardiomyopathy: translation as biomarkers into clinical practice. Transl Res. 2023 Apr 25:S1931-5244(23)00070-1. PMID: 37105319.
4. Castilla-Vallmanya L, Centeno-Pla M, Serrano M, Franco-Valls H, Martínez-Cabrera R, Prat-Planas A, Rojano E, **Ranea JAG**, Seoane P, Oliva C, Paredes-Fuentes AJ, Marfany G, Artuch R, Grinberg D, Rabionet R, Balcells S, Urreizti R. Advancing in Schaaf-Yang syndrome pathophysiology: from bedside to subcellular analyses of truncated MAGEL2. J Med Genet. 2023 Apr;60(4):406-415. PMID: 36243518.
5. Vega-Rioja A, Chacón P, Fernández-Delgado L, Doukkali B, Del Valle Rodríguez A, Perkins JR, **Ranea JAG**, Dominguez-Cereijo L, Pérez-Machuca BM, Palacios R, Rodríguez D., Monteseirín J, Ribas-Pérez D.Regulation and directed inhibition of ECP production by human neutrophils. Front Immunol. 2022 Nov 28;13:1015529. PMID: 36518751.
6. Moya-García AA, González-Jiménez A, Moreno F, Stephens C, Lucena MI, **Ranea JAG**. Identification of New Toxicity Mechanisms in Drug-Induced Liver Injury through Systems Pharmacology. Genes (Basel). 2022 Jul 21;13(7):1292.
7. **Ranea JAG**, Perkins J, Chagoyen M, Díaz-Santiago E, Pazos F. Network-Based Methods for Approaching Human Pathologies from a Phenotypic Point of View. Genes (Basel). 2022 Jun 17;13(6):1081.
8. Rojano E, Jabato FM, Perkins JR, Córdoba-Caballero J, García-Criado F, Sillitoe I, Orengo C, *__Ranea JAG__ and Seoane-Zonjic P. Assigning protein function from domain-function associations using DomFun. BMC Bioinformatics. 2022 Jan 15;23(1):43.
9. Raquel Pagano-Marquez, Jose Cordoba-Caballero,1 Beatriz Martinez-Poveda, Ana R. Quesada, Elena Rojano, Pedro Seoane, *__Ranea JAG__ and Miguel Angel Medina**.** Deepening the knowledge of rare diseases dependent on angiogenesis through semantic similarity clustering and network analysis. Brief Bioinform. Jul 18;23(4):bbac220. 2022. ***Last co-author**.
10. Pazos F, Chagoyen M, Seoane P and **Ranea JAG.** CoMent: Relationships Between Biomedical Concepts Inferred From the Scientific Literature. Journal of Molecular Biology. Available online 30 March 2022. Jun 15;434(11):167568.
11. Rojano E, Córdoba-Caballero J, Jabato FM, Gallego D, Serrano M, Pérez B, Parés-Aguilar Á, Perkins JR, *__Ranea JAG__, Seoane-Zonjic P. Evaluating, Filtering and Clustering Genetic Disease Cohorts Based on Human Phenotype Ontology Data with Cohort Analyzer. J Pers Med. 2021 Jul 27;11(8):730. PMID: 34442375. ***Last co-author**.
12. Jabato FM, Córdoba-Caballero J, Rojano E, Romá-Mateo C, Sanz P, Pérez B, Gallego D, Seoane P, *__Ranea JAG__, Perkins JR. Gene expression analysis method integration and co-expression module detection applied to rare glucide metabolism disorders using ExpHunterSuite. Sci. Rep. 2021 Jul 23;11(1):15062. PMID: 34301987. ***Last co-author**.
13. Díaz-Santiago E, Claros MG, Yahyaoui R, de Diego-Otero Y, Calvo R, Hoenicka J, Palau F, *__Ranea JAG__, Perkins JR Decoding Neuromuscular Disorders Using Phenotypic Clusters Obtained From Co-Occurrence Networks. Front Mol Biosci. 2021 Apr 19;8:635074. ***Last co-author**.
14. Pitarch B, **Ranea JAG**, Pazos F. Protein Residues Determining Interaction Specificity In Paralogous Families. Bioinformatics. 2020. Nov 2:btaa934. PMID: 33135068
15. Díaz-Santiago E, Jabato FM, Rojano E, Seoane P, Pazos F, Perkins JR, **Ranea JAG**. Phenotype-genotype comorbidity analysis of patients with rare disorders provides insight into their pathological and molecular bases. PLoS Genet. 2020 Oct 1;16(10):e1009054.
16. Jabato FM, Seoane P, Perkins JR, Rojano E, García Moreno A, Chagoyen M, Pazos F, **Ranea JAG**. Systematic identification of genetic systems associated with phenotypes in patients with rare genomic copy number variations. Hum Genet. 2021.
17. Chagoyen M, Juan A. G. **Ranea JAG**, Pazos F. Applications of Molecular Networks in Biomedicine**.** Biology Methods and Protocols, 2019, vol 4, bpz012.
18. Bueno A, Rodríguez-López R, Reyes-Palomares A, Rojano E, Corpas M, Nevado J, Lapunzina P, Sánchez-Jiménez F and **Ranea JAG**. Phenotype-loci associations in networks of patients

with rare disorders: application to assist in the diagnosis of novel clinical cases. European Journal of Human Genetics. (2018). 26(10):1451-1461.

19. Rojano E, Seoane P, **Ranea JAG**, Perkins JR. Regulatory variants: from detection to predicting impact. Brief Bioinform. 2018 Jun 8. doi: 10.1093/bib/bby039.
20. García-Vilas JA, Morilla I, Bueno A, Martínez-Poveda B, Medina MA and **Ranea JAG**. In silico prediction of targets for anti-angiogenesis and their in vitro evaluation confirm the involvement of SOD3 in angiogénesis. Oncotarget (2018). 9: 17349-17367.

III.3. Projects in biomedicine (Last 10 years as Principal Investigator):

1. Title: EUropean network for neurodevelopmental RASopathies (EURAS). Funding entity: HORIZON-HLTH-2022-DISEASE-06 (EU). Duration: 2023-2027. Amount: aprox. 390,000 euros (whole project funding, aprox. 8,5 M. euros). PI (Málaga): Juan Antonio García Ranea.
2. Title: Comprehensive Platform for the Sustainable Development of Therapies Based On Oligonucleotides. Funding entity: Center for Industrial Technological Development (State Business R&D&I Subprogram). Duration: 2022-2024. Amount: 246,752 euros. PI (Málaga): Juan Antonio García Ranea.
3. Title: IMPaCT-Data: IMPaCT Data Science Program. Research Program: IMPacT: Precision Medicine Infrastructure associated with Science and Technology. Funding entity: MICIN, ISCIII, EU-FERDER. Duration: 2021-2023. Amount: 112,249 euros. PI (Málaga): Juan Antonio García Ranea.
4. Title: Bioinformatic Identification of Compensatory Pathways in Rare Diseases and Cancer for Their Treatment. Funding entity: Junta Andalucía (PAIDI2020). Duration: 2020-2023. Amount: 102,605 euros. PI: Juan Antonio García Ranea.
5. Title: Systemic approaches based on phenotype-genotype associations to improve the diagnosis of patients with rare diseases. Financing entity: Ministry of Science and Innovation (National Plan). Duration: 2020- 2023. Amount: 121,000 euros. PI: Juan Antonio Garcia Ranea
6. Title: Systems Medicine Applied to the Precision Diagnosis of Patients With Undiagnosed Rare Diseases of Genetic Origin. Financing entity: Junta Andalucía (FEDER ANDALUCÍA 2014-2020). Duration: 2019-2023. Amount: 79,530 euros. PI: Juan Antonio García Ranea.
7. Title: Systems medicine applied to the identification of new therapeutic targets in rare genetic-based diseases. Funding entity: Ramón Areces Foundation. Duration: 2019-2022. Amount: 129,000 euros. PI: Juan Antonio Garcia Ranea
8. Title: Identification of Genes and Molecular Mechanisms of Patho-Phenotypes associated with Rare Diseases From Systems Biology. Financing entity: Ministry of Economy and Competitiveness (National Plan). Duration: 2017-2020. Amount: 90,000 euros. PI: Juan Antonio Garcia Ranea
9. Title: Models of Interaction Networks in the Identification of Therapeutic Targets and Drug Development for Angiogenesis-Dependent Diseases. Financing entity: Ministry of Economy, Innovation, Science and Employment (Junta de Andalucía). Duration: 2014- 2019. Amount: 124,274 euros. PI: Juan Antonio Garcia Ranea
10. Title: Interaction network models applied to the identification of New Rare Syndromes and Experimental Validation of Therapeutic Targets for Angiogenesis-Dependent Rare Diseases. Financing entity: Ministry of Economy and Competitiveness (National Plan). Duration: 2013-2015. Amount: 70,200 euros. PI: Juan Antonio Garcia Ranea
11. Title: Systems microscopy- a key enabling methodology for next-generation systems biology (Network of Excellence). Funding entity: European Community Seventh Framework Programme. Duration: 2011-2015. Amount: 910,821 euros. PI: Juan Antonio Garcia Ranea
12. Title: Prediction and Modeling of Protein Networks Applied to the Study of Rare Diseases and their Treatment. Financing entity: Ministry of Science and Innovation (National Plan). Duration: 2010-2012. Amount: 89,540 euros. PI: Juan Antonio García Ranea.

III.4. Patent: Inventors: Ranea JA, Medina MA, García-Vilas JAG, Juan Morilla JF. Title: Use of antibodies against the SOD-3 enzyme for the inhibition of the angiogenesis process and applications of said antibodies and of said SOD-3 enzyme. N. Patent: 201401058; Priority country: Spain.

IV. FREE SUMMARY:

Our group has successfully implemented methods for the prediction and modeling of complete interactomes and specific subnetworks, including the human one, based on biocomputational methods (PLoS ONE 2010 and 2013, BMC: Genomics, 2010; Plos Comp. Biol. 2010; Bioinformatics in Personalized Medicine. 2012; BMC Genomics 2015; Bioinformatics 2015; Mol Biol Cell. 2014; Oncotarget 2018; Bioinformatics 2020). We have also verified the usefulness of these network models to generate hypotheses and study the genetic and molecular principles underlying the functioning of various systems and their possible involvement with diseases (Oncotarget 2018; Oncotarget 2016; Amino Acids, 2011 ; Nucleic Acids Research 2011; New Biotech., 2010; JACI 2015; Clin Exp Allergy. 2014; Frontiers in Bioscience 2011 and 2021). Using the same methodology, we have successfully developed integrated platforms between biocomputational methods and experimental validation, which based on the prediction of new associations, has allowed the experimental identification of new components of the network of different biological systems (PLoS ONE 2012; Mol Biol Cell. 2014; Oncotarget 2018; Bioinformatics 2020). We have applied various metrics to measure semantic similarity in ontological spaces such as GO and HPO (Plos Comp. Biol. 2007, Plos Comp. Biol. 2010; PLoS ONE 2013; BMC Bioinformatics 2017; EJHG 2018; Human Genetics 2021). Our most recent results indicate the possibility of identifying the most specific domain-drug interactions based on protein-drug networks (Bioinformatics 2013; Scientific Report, 2017), envisioning a very promising opportunity to apply these predictions in the generation of hypotheses about the drug repositioning in general, and in studies of the genetic determinants underlying drug resistance (Mol Genet Genomics, 2017), with the possibility of preclinical validation for the treatment of angiogenesis-dependent rare diseases in particular (Patent number: 201401058; Oncotarget , 2018). Finally, we have a wide expirence working on the prediction of rare patient syndromes, and investigating the relationship between the pathologies and the mutations that produce them (Curr Opin Allergy Clin Immunol. 2014, PLoS One. 2013, Clin Exp Allergy. 2014, JACI 2015, BMC: Genomics 2016; EJHG 2018; Plos Genetics 2020; Human Genetics 2021; Frontiers in Bioscience 2021; Brief. Bioinformatics 2022; JMB 2022). We collaborate with institutions such as the DECIPHER consortium (Hinxton-Cambridge), the University College of London, as well as the spanish CIBER for Rare Diseases, the IBIMA Health Research Institute in Málaga, the Health Institute Carlos III, and form part of Spanish National Institute of Bioinformatics and the European Platform of Bioinformatics Resources For Life Science -ELIXIR.