Abel Sánchez Jiménez has a degree in Biological Sciences and obtained his PhD in Neuroscience from the Complutense University of Madrid in 2008. Currently, and for the last fifteen years, he is assistant professor at the Biomathematics Unit of the Biodiversity, Ecology and Evolution Department of the UCM. He has been granted two six-year research periods and he has publish up to fifteen research papers indexed at JCR database and he has been member of the research team of three National Plan projects in the last ten years. His research activity quality indicators are:

Researcher ID: L-8032-2014   Orcid code: 0000-0002-7978-3436

Nº of six-year research periods: 2, last one granted in 2020 (in force)

Nº of supervised PhD thesis: 2 completed and 1 in progress

Nº of total cites: 244 (Web of Science), 384 (Google Scholar)

Average citations per item: 10.2 (Web of Science)

Average citations per year: 12.8 (Web of Science)

Q1 publications: 7 (Journal Citation Reports)

H index: 8 (Web of Science)

i10 index: 9 (Google Scholar)

His research activity is focus on the study, analysis and mathematical modelling (both deterministic and probabilistic) of complex biological process and systems such as wild-life microorganisms communities and cognitive processes in dynamic situations.

In relation to the study of free-living microorganisms, his research in recent years has focus on the analysis of the biodiversity of such communities in the environment of a protected area as well as the impact of human activities on both their structure and function. This research was carried out within the framework of the National Research Plan project MICROEPICS (reference CGL2013-40851-P) and he participated as a member of its research team. This work showed that this area had a great biodiversity of microbial eukaryotes especially in the dormant state. It revealed a differential composition of these communities at a very local level. Such biodiversity was highly affected by human activities so it could be used as bio-indicator of the environmental impact of these activities:

Pérez-Uz, B. et al. (2021). Rain-fed granite rock pools in a national park: extreme niches for protists. Limnetica, 40(1):1-18 IF: 1.431 (Q3).

Ismael Velasco-González et al. (2020) Rain-Fed Granite Rock Basins Accumulate a High Diversity of Dormant Microbial Eukaryotes. Microbial ecology, 79 (4): 882-897. IF: 3.356 Q1

Pablo Quintela-Alonso et al. (2018) Complexity of river ciliate communities at a national park highlights the need for microbial conservation. Aquatic Conservation: Marine and Freshwater Ecosystems,28(2): 408-421. IF: 2.935 Q1

Manuel Garcia-Rodriguez et al. (2017) Influence of temperature on the asymmetry of weathering pits in a granitic environment. Implementation of a linear regression model. BOLETIN DE LA SOCIEDAD GEOLOGICA MEXICANA, 69(2): 479-494 IF: 0.53 Q4

He has also explored the possible role of other organisms as bio-indicators, such as certain fern species. The dynamic of the germination of these ferns correlated with environmental variables such as forest defragmentation or temperature. This way, the germination process would be predicts of the effect of climate change in a certain region:

Jose María Gabriel y Galán et al. (2018) Germination fitness of two temperate epiphytic ferns shifts under increasing temperatures and forest fragmentation PLoS ONE, 13(5): e0197110. IF: 2.776 Q2

He has also studied the role of microbial communities within gut microbiota in phytoestrogen metabolism and their differential activity in adult and child gut:

Montenegro-Rodriguez, Cynthia et al. (2015) Biotechnology Letters, 37(7):1405-1413. IF: 1.639 (Q3)

Gaya, Pilar et al. (2016) Phytoestrogen Metabolism by Adult Human Gut Microbiota. Molecules, 21(8) Artículo nº 1034. IF: 2.465 (Q2)

Pilar Gaya, et al. (2018) Incomplete metabolism of phytoestrogens by gut microbiota from children under the age of three. International Journal of Food Sciences and Nutrition, 69(3): 334-343. IF: 2.792 Q2

Regarding the study of cognitive mechanisms in the central nervous system of mammals, his research has focused in the last years in the theoretical development and experimental proofment of a theory that explains brain's information processing in dynamical environments, i.e., how mammals brain deals with time information. This work has been carry out within the framework of two research projects of the National Research Plan (FIS2014-57090-P and FIS2017-82900-P) showing, by means of simulations with robots and visuospatial learning tasks with humans, that temporal information contained in a dynamic environment is condensed or compacted into static representations which are used by the brain to store this information, learn and generalize it and take decisions quickly, which is vitally important for the individual's survival:

José Antonio Villacorta-Atienza et al. (2021) Static internal representation of dynamic situations reveals time compaction in human cognition. Journal of Advanced Research, 28: 111-125. IF: 10.479 (Q1).

Carlos Calvo Tapia et al. (2020) Semantic knowledge representation for strategic interactions in dynamic situations. Frontiers in Neurorobotics, 14. IF: 2.574 Q2

de Santos-Sierra, Daniel et al. (2015) Frontiers in Computational Neuroscience, 9, artículo nº 144 IF: 1.460 (Q1)

Related with this research subject, he has also studied somesthetic information processing in the brainstem of mammals in order to design devices capable of connecting and communicating with the central nervous system in the development of neuroprosthesis:

Sanchez-Jimenez, A et al. (2013) Complementary processing of haptic information by slowly and rapidly adapting neurons in the trigeminothalamic pathway. Electrophysiology, mathematical modeling and simulations of vibrissae-related neurons. Frontiers in Cellular Neuroscience, 7. Artículo nº 79. IF: 4.175 (Q2)

Herrera-Rincon C, et al. (2012) Chronic electrical stimulation of transected peripheral nerves preserves anatomy and function in the primary somatosensory cortex. European Journal of Neuroscience, 36: 3679-3690. IF: 3.753 (Q2)

Panetsos, Fivos et al. (2011). Controlling selective stimulations below a spinal cord hemisection using brain recordings with a neural interface system approach. Journal Of Neural Engineering, 8(4). Article Number: 046008. IF: 2.628 (Q1).

Panetsos F; Sanchez-Jimenez, A. (2010) Single unit oscillations in rat trigeminal nuclei and their control by the sensorimotor cortex. Neuroscience 169(2): 893-905. IF: 3,215. (Q2).

Regarding his training capacity, He has been granted 3 five-year teaching periods, with up to five teaching evaluations evaluated as very positive or excellent. He has taught twelve different subjects in regulated university education during this time, seven of them obligatory in their respective degrees. The diversity of such subjects is evident both by the type of degree where they were taught (2 subjects in Master's degrees and 10 in different grades and bachelor's degrees) and by their subject matter within the field of Applied Mathematics (5 subjects with a deterministic perspective, 5 with a probabilistic perspective and 2 oriented to the training of graduates in Biology within their own professional field). Moreover, he has supervised up to ten research works amog graduation and master final works.

He has supervised two PhD thesis and He is currently directing one more. He has also member of four thesis boards and external reviewer of two more. He annually coordinates and teaches two PhD formative activities, one within the PhD in Biology of the Biological Sciences Faculty of the UCM and the other trough the PhD School of the UCM, both aimed at PhD students in the field of life and health sciences and oriented to the acquisition of the necessary competences for the analysis of the data that the enrolled students will obtain in the course of their research. He has been member of the Doctoral Teaching Committee of the PhD in Biology of the UCM for six years.