

- education and training of scientific and technical staff,
- creation of Technology-Based Companies (spin-offs).

The CSIC has more than 10 000 employees, including nearly 4 000 staff researchers. Currently, it has 120 institutes spread across the country, of which 67 of them are fully-owned institutes and 53 are Joint Research Units in partnership with other Spanish universities or research institutions. The CSIC supports research and training across a wide range of knowledge, from the most basic or fundamental aspects of science to the most complex technological developments; from human and social sciences to food science and technology, including biology, biomedicine, physics, chemistry and materials, natural resources and agricultural sciences. It carries out research in all fields of knowledge, distributed in three global areas: Life, Society and Materia. The CSIC produces 20% of the national scientific output (over 10 000 publications in high impact international journals in 2017) and remains the first institution in Spain in the generation of patents, with around 200 patent applications in 2017. The Vice-presidency for Technology Transfer assists the CSIC's researchers with patent evaluation and application processes, commercialization of the CSIC's technology offer and with the creation of start-ups. As of December 2019, the CSIC has obtained 643 projects in H2020, with a total EU financial contribution of 270 million euros and is listed as the 1st organization in Spain and the 4th participant by number of projects (E-CORDA).

Contributions to ROBHOOT

Miguel Fortuna and Victor Eguiluz work for CSIC in ROBHOOT. CSIC contributes to WP1 with evolving semantic algorithms (Miguel Fortuna, ESA) and multilayer network metrics (Victor Eguiluz) to decipher processes and patterns in the data knowledge discovery graphs. CSIC team has a wide experience in theoretical evolutionary ecology, computational biology and complex systems with particular attention to data-driven patterns in networks. In WP1, CSIC will lead the development of evolving semantic algorithms to translate the semantically annotated database to graph database to produce data knowledge discovery graphs.

Gender balance

Currently, VME is supervising a female PhD student, is responsible of a female junior postdoc and a male senior postdoc. Including the PI, the lab is gender balanced. The aim of the group is to keep a gender balance by attracting the application of female researchers and offering flexibility to the specific needs. The good ratio of female/male researchers, in a field where the ratio is very unbalanced, is an incentive to attract more women. Besides balance, our group hosts a female student from Iran, where she faces great issues to develop her research career and we are taking all the efforts to facilitate her a career in complex systems science.

EBD-CSIC

Dr. Miguel A. Fortuna (male) is an ecologist and evolutionary biologist turned network scientist who thinks differently about problem-solving. He conducts interdisciplinary research by combining mathematical models, computer simulations, and database analysis, to answer questions that go beyond the traditional boundaries among disciplines, merging ecology with evolution, sociology, genetics, software design, and artificial life. His current research line builds on his previous research and is among the few trying to understand how evolution in complex networks of interactions can help us control human diseases. This research line combines, with a solid methodology, community ecology and evolutionary biology in a new fresh way. It has implications in at least three burgeoning fields of biotechnological and biomedical research: 1) cancer research (i.e., recent advances have shown that tumours—like species striving for survival—harbor intricate population dynamics, which suggests the possibility to exploit the ecology of tumours for treatment), 2) phage therapy (i.e., recent findings are showing the success of using phage cocktails to fight antibiotic resistance), and 3) human microbiome (i.e., the manipulation of evolving interactions among bacteria to restore unbalanced human microbial ecosystems).