
Curriculum Vitae

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Total number of pages (excluding cover page): 40

Fernando Canovas, PhD

The signatory declares that all data and informations provided in this curriculum vitae are true, and otherwise assumes the responsibilities which should derive from the inaccuracies listed.

During the evaluation process, the applicant is fully available to expand and justify the information here contained, or an interview at convenience.

Personal data

Family name: **Cánovas**
Forename: **Fernando García**
ID/Passport n°: 34797843-Q / BA162342
Date of birth: June 12th, 1972
Gender: M
Nationality: Spanish
E-mail: fcgarcia@ualg.pt / fcanovas@um.es



Academic background

- **University of Murcia** Murcia, Spain
Ph.D. Experimental Sciences 2006
 - Advisors: José Serrano, José Galián and Pilar De la Rúa
 - Thesis: Spatial genetic variability and molecular ecology of *Apis mellifera iberiensis* Engel, 1999
 - Grade: magna cum laude
- **University of Murcia** Murcia, Spain
M.Sc. Biological Sciences 2003
 - Advisors: José Galián and Pilar De la Rúa
 - Thesis: Genetic characterization of *Apis mellifera iberica* (Hymenoptera, Apidae) populations from Galicia
 - Grade: magna cum laude
- **National Distance Education University** Spain
B.A.H. Mathematical Sciences *In progress*
- **University of Murcia** . Murcia, Spain
B.A.H. Veterinary Sciences 1998

Languages

| Language | Speaking | Reading | Writing | Certified Level |
|-------------------|----------|---------|---------|-----------------|
| <i>Spanish</i> | P | P | P | native |
| <i>English</i> | P | P | P | C1 |
| <i>Portuguese</i> | P | P | P | none |

(I = initial; N = normal; G = good; P = perfectly)

Computer languages and databases:

- *Bash Linux shell*
- *R*
- *Python*
- *C*
- *MySQL*
- *HTML*
- *GRASS, Mapserver*
- *Arduino*

Other qualifications

| | |
|------|---|
| 2016 | Collegiate Member in the Portuguese Order of Veterinary Medicine (Cédula 6624) |
| 2007 | Lifeguard (Red Cross) |
| 2003 | Prevention and Treatment of Diving Accidents (Spanish Navy) |
| 2002 | Recreational Skipper (motor and sailing; up to 49 feet and 12 miles from the coast) |
| 2002 | Advanced scuba diver (National Association of Underwater Instructors, NAUI) |
| 1999 | Collegiate Member in the Spanish College of Veterinary Medicine (Colegiado 893) |
| 1997 | Scuba Diver B1* (CMAS) |
| 1991 | Driving License |

Researcher IDs

| | | |
|-------------------|---------------------|----------------------|
| ORCID: | 0000-0002-8837-1927 | link |
| ResearcherID: | M-3457-2013 | link |
| Scopus Author ID: | 23395891600 | |

Academic positions, and past scientific and teaching experience

- **Postdoctoral fellowship** Centro de Ciências do Mar (CCMAR)
Marine Invertebrate Veterinary Medicine Oct. 2015 - Now
- **Invited Scientist fellowship** Centro de Ciências do Mar (CCMAR)
Ecological and evolutionary genomics in marine algae Sep. 2014 - Feb. 2015
- **Postdoctoral fellowship FCT** Centro de Ciências do Mar (CCMAR)
Ecological and evolutionary genomics in marine algae Sep. 2008 - Aug. 2014
- **Postdoctoral fellowship MEC-Fulbright** University of Balearic Islands
Underground adaptation in freshwater crustaceans Sep. 2007 - Aug. 2008
- **Research contract** Regional Institute of Agrarian Investigations (IMIDA)
Population genetics of crop plagues Nov. 2005 - Dec. 2005
- **Research contract** Regional Institute of Agrarian Investigations (IMIDA)
Crop colonization by insect plagues Jun. 2005 - Dec. 2005
- **Research contract** University of Murcia
Population genetics of managed honeybees Oct. 2004 - Feb. 2005
- **Research contract** Regional Institute of Agrarian Investigations (IMIDA)
Crop colonization by insect plagues May 2004 - Dec. 2005
- **Research contract** University of Murcia
Molecular ecology of Iberian honeybees May 2001 - Dec. 2003
- **Assistant student** University of Murcia
Department of Animal Biology Oct. 1995 - Jun. 1996
- **Assistant student** University of Murcia
Department of Genetic Oct. 1994 - Oct. 1995
- **Assistant student** University of Murcia
Department of Biochemistry and Molecular Biology Oct. 1992 - Nov. 1993
- **Assistant student** University of Murcia
Department of Applied Mathematics and Statistics Oct. 1991 - Jul. 1992

Positive assessment for activity at ***PhD Assistant Lecturer, PhD Assistant Professor and PhD Assistant Professor for Private Institutions***¹ level, by the *National Agency for Quality Assessment and Accreditation*, Spain (PAD n. 2009-82).

| | |
|------------------------|---|
| <i>2018</i> | R GIS |
| <i>Degree / year</i> | M. Sc. in Geography / postgraduate |
| <i>Number of hours</i> | 2 |
| <i>Institution</i> | University of Algarve |
| <i>2017</i> | Topics in Marine Biology (Fundamentals of Biostatistics) |
| <i>Degree / year</i> | Marine Biology / B.A.H |
| <i>Number of hours</i> | 10 |
| <i>Institution</i> | University of Algarve |
| <i>2016</i> | Training courses for postgraduate and PhD students (see <i>Organisation of scientific dissemination activities</i> section) |
| <i>Degree / year</i> | postgraduate / PhD |
| <i>Number of hours</i> | 24 |
| <i>Institution</i> | University of Barcelona |
| <i>2014</i> | GIS in biological sciences. In: Geomatics |
| <i>Degree / year</i> | M. Sc. in Geomatics / postgraduate |
| <i>Number of hours</i> | 20 |
| <i>Institution</i> | University of Algarve |
| <i>2010 - 2013</i> | Training courses for postgraduate and PhD students (see <i>Organisation of scientific dissemination activities</i> section) |
| <i>Degree / year</i> | postgraduate / PhD |
| <i>Number of hours</i> | 112 |
| <i>Institution</i> | University of Algarve |
| <i>2011</i> | GIS in biological sciences. In: Geomatics |
| <i>Degree / year</i> | M. Sc. in Geomatics / postgraduate |
| <i>Number of hours</i> | 10 |
| <i>Institution</i> | University of Algarve |
| <i>2008</i> | Genetics techniques. In: Evolution |
| <i>Degree / year</i> | B. A. H. Biological Sciences / 3 rd year |
| <i>Number of hours</i> | 80 |
| <i>Institution</i> | University of Balearic Islands |

¹To join the Spanish University Teaching Bodies, prior national assessment is required which, by assessing the merits and competences of the candidates, ensures quality when selecting university academic staff. The Academic Staff Recruitment Assessment Programme (PEP) set up by ANECA, assess academics teaching and researching performance.

| | |
|------------------------|---|
| <i>2005</i> | Data analysis for mitochondrial DNA. In: Molecular ecology techniques |
| <i>Degree / year</i> | B. A. H. Biological Sciences / 3 rd year |
| <i>Number of hours</i> | 20 |
| <i>Institution</i> | University of Murcia |

Advisor experience

| | |
|----------------------|---|
| <i>Student name:</i> | João Bioco |
| <i>Title:</i> | Suitability of Agent-Based Models (ABM) to predict spatio-temporal distribution of species |
| <i>Degree:</i> | PhD Thesis |
| <i>Year:</i> | In progress |
| <hr/> | |
| <i>Student name:</i> | Iarre Lafort |
| <i>Title:</i> | Sheltering behaviour of the sea cucumber <i>Holothuria arguinensis</i> in the Ria Formosa (Portugal) |
| <i>Degree:</i> | EMBC ² Master Thesis / grade (over 20) |
| <i>Year:</i> | January - June, 2016 |
| <hr/> | |
| <i>Student name:</i> | Tara Van Belleghem |
| <i>Title:</i> | Mapping the <i>Holothuria</i> populations information and update WebGIS access to data |
| <i>Degree:</i> | Credits on "lab methods" in EMBC ² |
| <i>Year:</i> | January - March, 2015 |
| <hr/> | |
| <i>Student name:</i> | Chiara Magliozzi |
| <i>Title:</i> | Old concept and new tools: habitat suitability maps to analyse the ecological niche |
| <i>Degree:</i> | EMBC ² Master Thesis / grade 17 (over 20) |
| <i>Year:</i> | July, 2014 |
| <hr/> | |
| <i>Student name:</i> | Julian Olaya |
| <i>Title:</i> | Mapping the <i>Holothuria arguinensis</i> populations from Ria Formosa (Portugal) |
| <i>Degree:</i> | EMBC ² Master Thesis / grade 17 (over 20) |
| <i>Year:</i> | September, 2014 |
| <hr/> | |
| <i>Student name:</i> | Andjin Siegenthaler |
| <i>Title:</i> | Spatial distribution patterns and population structure of <i>Holothuria mammata</i> and <i>H. arguinensis</i> in the Ria Formosa (Portugal) |
| <i>Degree:</i> | EMBC ² Master Thesis |
| <i>Year:</i> | July, 2013 |
| <hr/> | |

Student name: Alberto Mauro
Title: Aplicação WebGIS para análise do comportamento de substâncias prioritárias da DQA na bacia hidrográfica do Algarve
Degree: Geomatic Master Thesis / grade 17 (over 20)
Year: July, 2012

²EMBC: International Master of Science in Marine Biodiversity and Conservation

Publications

*International refereed journals (listed in SCI)**

* Impact Factor Indexes belongs to the year of publication

1. **Cánovas, F.** and Ritter, M. (in review). UVICam: open-source ultraviolet, visible, near and long wave infrared camera. *International Journal of Science Education*.
JCR area: Education Educational Research
Impact factor: 1.561
Third: 2 (101 of 231)
2. **Cánovas, F.**, Conduto, J. and González-Wangüemert, M. (in review). Micro Open Benthic Explorer (MOBE): open ROV with educational purposes in marine biology and technology. *Journal of Science Education and Technology*.
JCR area: Education, Scientific Disciplines
Impact factor: 1.253
Third: 2 (18 of 37)
3. Xavier, J., Vélez, N., Trathan, P., Cherel, Y., de Broyer, C., **Cánovas, F.**, Seco, J., Ratcliffe, N. and Tarling, G. (2018). Prey switching in non-breeding Gentoo penguins (*Pygoscelis papua*) related to a wintertime environmental anomaly around South Georgia. *Polar Biology*. (Waiting for DOI).
JCR area: Ecology
Impact factor: 1.815
Third: 2 (85 of 145)
4. **Cánovas, F.**, Domínguez-Godino, J. and González-Wangüemert, M. (2018). Short term approach to wildlife epidemiology of skin ulceration disease in the new target species of sea cucumber *Holothuria arguinensis*. *Diseases of Aquatic Organisms*. (Waiting for DOI).
JCR area: Veterinary Sciences
Impact factor: 1.594
Third: 1 (32 of 136)
5. **Cánovas, F.** and González-Wangüemert, M. (2018). Predation of a jellyfish by an anemone in the Mediterranean Sea. *Cahiers de Biologie Marine*. 59(4).
JCR area: Marine Freshwater Biology
RG Journal Impact: 0.60
Third: 3 (91 of 105)
6. Leitão, F., Relvas, P., **Cánovas, F.**, Baptista, V. and Teodósio, A. (2018). Long-term review of northerly wind trends along Iberian Peninsula marine coast. *Regional Environmental Change*. 113
JCR area: Environmental Sciences
Impact factor: 2.919
Third: 1 (74 of 229)

7. González-Wangüemert, M., Domínguez-Godino, J. and **Cánovas, F.** (2018). The fast development of sea cucumber fisheries in the Mediterranean and NE Atlantic waters: from a new marine resource to its over-exploitation. *Ocean and Coastal Management*. 151: 165-177.
JCR area: Water Resources
Impact factor: 1.994
Third: 1 (31 of 85)
8. González-Wangüemert, M., Domínguez-Godino, J. and **Cánovas, F.** (2017). New records of sea cucumbers inhabiting Mar Menor coastal lagoon (SE Spain). *Marine Biodiversity*. DOI 10.1007/s12526-017-0660-0
JCR area: Marine & Freshwater Biology
Impact factor: 1.915
Third: 1 (36 of 103)
9. Siegenthaler, A., **Cánovas, F.** and González-Wangüemert, M. (2017). Outlanders in a unusual habitat: *Holothuria mammata* behaviour on seagrass meadows from Ria Formosa (S Portugal). *Turkish Journal of Fisheries and Aquatic science*. 17: 1035-1042
JCR area: Marine & Freshwater Biology.
Impact factor: 0.715
Third: (of)
10. **Cánovas, F.**, Domínguez-Godino, J. and González-Wangüemert, M. (2016). Etiology and prevalence of skin disease in *Holothuria arguinensis*. *Frontiers in Marine Science*. DOI = 10.3389/conf.FMARS.2016.04.00118. ISSN=2296-7745.
11. **Cánovas, F.**, Jurado-Rivera, J., Cerro-Gálvez, E., Juan, C., Jaume, D. and Pons, J. (2016). DNA barcodes, cryptic diversity and phylogeography of a W Mediterranean assemblage of thermosbaenacean crustaceans. *Zoologica Scripta*, 45: 659-670.
JCR area: Zoology
Impact factor: 2.733
Third: 1 (12 of 160)
12. Mestre, F., **Cánovas, F.**, Pita, R., Mira, A. and Beja, P. (2016). MetaLandSim: Tools for simulating metapopulation persistence and range expansion under environmental change. *Environmental Modelling and Software*, 81: 40-44.
JCR area: Engineering, Environmental
Impact factor: 4.420
Third: 1 (6 of 47)
13. **Cánovas, F.**, Magliozzi, C., Mestre, F., Palazón-Ferrando, J.A. and González-Wangüemert, M. (2016). ENiRG: R-GRASS interface for efficiently characterizing the ecological niche of species and predicting habitat suitability. *Ecography*, 39: 593-598.
JCR area: Biodiversity Conservation
Impact factor: 5.565
Third: 1 (4 of 44)
14. Siegenthaler, A., **Cánovas, F.** and González-Wangüemert, M. (2015). Spatial distribution patterns and movements of *Holothuria arguinensis* in the Ria Formosa (Portugal). *Journal of Sea Research*, 102: 33-40.
JCR area: Ecology.

Impact factor: 2.148

Third: 1 (28 of 103)

15. Pearson, G.A., Lago-Lestón, A., **Cánovas, F.**, Cox, C., Verret, F., Lasternas, S., Duarte, C.M., Agusti, S. and Serrão, E.A. (2015). Metatranscriptomes reveal functional variation in diatom communities from the Antarctic Peninsula. *ISME Journal*, 9(10): 2275-2289.
JCR area: Ecology
Impact factor: 9.328
Third: 1 (9 of 149)
16. **Cánovas, F.**, De la Rúa, P. Serrano, J. and Galián, J. (2014). Analysing and describing a contact area of two distinct evolutionary units. An ecological perspective. *Journal of Insect Conservation*, 18 (5): 927-937.
JCR area: Entomology
Impact factor: 1.911
Third: 1 (18 of 92)
17. Sánchez, J.A., La Spina, M., Guirao, P. and **Cánovas, F.** (2013). Inferences of the population structure of *Myzus persicae* in diverse agroecosystems using microsatellite markers. *Bulletin of Entomological Research*, 103: 473-484.
JCR area: Entomology
Impact factor: 1.962
Third: 1 (14 of 90)
18. **Cánovas, F.**, Mota, C., Pearson, G.A. and Serrão, E.A. (2011). Driving south: a multi-gene phylogeny of the Atlantic brown algal family Fucaceae resolves the relationships within the recently-diverged genus *Fucus*. *BMC Evolutionary Biology*, 11: 371.
JCR area: Genetics and Heredity
Impact factor: 4.294
Third: 1 (49 of 156)
19. **Cánovas, F.**, Mota, C.F., Ferreira-Costa, J., Serrão, E.A., Coyer, J.A., Olsen, J.L. and Pearson, G.A. (2011). Development and characterization of 35 single nucleotide polymorphism markers for the brown alga *Fucus vesiculosus* L. *European Journal of Phycology*, 46(4): 342-351.
JCR area: Marine and Freshwater biology
Impact factor: 1.901
Third: 1 (29 of 92)
20. Zardi, G., Nicastro, K., **Cánovas, F.**, Pearson, G., Ferreira-Costa, J. and Serrão, E. (2011). Adaptive traits are maintained on steep selective gradients despite gene flow and hybridization in the intertidal zone. *PLoS ONE*, 6(6): e19402.
JCR area: Biology
Impact factor: 4.411
Third: 1 (12 of 85)
21. **Cánovas, F.**, De la Rúa, P. Serrano, J. and Galián, J. (2011). Microsatellite variability reveals beekeeping influence on Iberian honeybee populations. *Apidologie*, 42(3): 235-251.
JCR area: Entomology
Impact factor: 2.266

Third: 1 (19 of 74)

22. González-Wangüemert, M., **Cánovas, F.**, Pérez-Ruzafa, A., Marcos, C. and Alexandrino, P. (2010). Connectivity patterns inferred from the genetic structure of white seabream (*Diplodus sargus* L.). *Journal of Experimental Marine Biology and Ecology*, 383: 23-31.
JCR area: Marine and Freshwater biology
Impact factor: 2.074
Third: 1 (18 of 87)
23. Villacorta, C., **Cánovas, F.**, Jaume, D. and Juan, C. (2009). Isolation and characterization of microsatellite loci for the cavehopper *Palmorchestia hypogaea* (Amphipoda: Talitridae). *Conservation Genetics Resources*, 1(1): 401-404.
Impact factor: 1.136
24. González-Wangüemert, M., **Cánovas, F.**, Pérez-Ruzafa, A. and Marcos, C. (2009). Phosphoglucose isomerase variability of *Cerastoderma glaucum* as a model for testing the influence of environmental conditions and dispersal patterns through quantitative ecology approaches. *Biochemical Systematics and Ecology*, 37(4): 325-333.
JCR area: Ecology
Impact factor: 1.136
Third: 2 (78 of 116)
25. **Cánovas, F.**, De la Rúa, P. Serrano, J. and Galián, J. (2008). Geographical patterns of mitochondrial DNA variation in *Apis mellifera iberiensis* (Hymenoptera: Apidae). *Journal of Zoological Systematics and Evolutionary Research*, 46(1): 23-30.
JCR area: Evolutionary Biology
Impact factor: 1.633
Third: 1 (25 of 124)
26. Sánchez, J.A., **Cánovas, F.** and Lacasa, A. (2007). Thresholds and management strategies for *Aulacorthum solani* (Hemiptera: Aphididae) in greenhouse pepper. *Journal of Economic Entomology*, 100(1): 123-130.
JCR area: Entomology
Impact factor: 1.205
Third: 1 (21 of 66)
27. González-Wangüemert, M., Pérez-Ruzafa, A., **Cánovas, F.**, García-Charton, J.A. and Marcos, C. (2007). Temporal genetic variation in populations of *Diplodus sargus* from the SW Mediterranean. *Marine Ecology-Progress Series*, 334: 237-244.
JCR area: Oceanography
Impact factor: 2.315
Third: 1 (6 of 46)
28. **Cánovas, F.**, Lacasa, A. and Sánchez, J.A. (2006). Implementing a Geographical Information System (GIS) for pepper greenhouse natural enemy and pest management in Southeast Spain. *IOBC WPRS Bulletin*, 29(4): 25-30.
29. Gallego, D., **Cánovas, F.**, Esteve, M.A. and Galián, J. (2004). Descriptive biogeography of *Tomicus* (Coleoptera: Scolytidae) species: A study of limits of distribution by predictive models in Spain. *Journal of Biogeography*, 31: 2011-2024.

JCR area: Ecology
Impact factor: 2.804
Third: 1 (26 of 112)

30. **Cánovas, F.**, De la Rúa, P. Serrano, J. and Galián, J. (2002). Mitochondrial DNA variability in *Apis mellifera iberica* populations from Galicia. *Archivos de Zootecnia*, 51: 441-448.

Non-refereed journals

1. González-Wangüemert, M., Domínguez-Godino, J. and **Cánovas, F.** (2018). Problemática de las pesquerías de pepino de mar en Europa y Turquía. *Eubacteria* (in press).
2. De la Rúa, P., **Cánovas, F.**, Galián, J. and Serrano, J. (2006). Situación actual del estado de conservación de *Apis mellifera iberiensis*. *Vida Apícola*, 139: 40-53.
3. Sánchez, J.A., **Cánovas, F.** and Lacasa, A. (2005). Un sistema de información geográfica (SIG) para el manejo de enemigos naturales, plagas y enfermedades en los cultivo de pimiento del Campo de Cartagena (Murcia). *Agroinformación*.
URL:
4. **Cánovas, F.** (2005). Más que abejas, ... compañeras. *Eubacteria*, 15: 9-12.
5. **Cánovas, F.** and Galián, J. (2002). Análisis de paternidad en la raza Caprina Murciano-Granadina mediante microsatélites. *Federación de Asociaciones de Ganado Selecto (FEA-GAS)*, 21: 112-115.
6. Galián, J., Abramovich, A., **Cánovas, F.** and Atela, O. (2001). Caracterización molecular en poblaciones de abejas (*Apis mellifera* L.) de Argentina. *Ciencia y Abejas*, 38: 9-12.

Books and book chapters

1. Authors (in order of authorship): Serrano, J., **Cánovas, F.**, Hernández-García, R., Galián, J. and De la Rúa, P.
Chapter title: De África a Europa pasando por Iberia: historia evolutiva de la abeja ibérica
Book title: *Actas del VI Congreso Nacional de Apicultura*
Pages, start: 7; end: 22
Date: 2011
Editor: Padilla-Álvarez, F.
Publisher: Don Folio
Publisher place: Córdoba, Spain
ISBN: 84-1510-529-0

2. Authors (in order of authorship): De la Rúa, P., Muñoz, I., Piñero, A., Hernández-García, R., **Cánovas F.**, Galián, J., Serrano, J.
Chapter title: Historia evolutiva de la abeja ibérica
Book title: *Evolución y Adaptación. 150 años después del Origen de las Especies*
Pages, start: 162; end: 169
Date: 2009
Editors: Dopazo, H., Navarro, A.
Publisher: Obrapropia
Publisher place: Valencia, Spain
ISBN: 84-92910-06-9.

3. Authors (in order of authorship): **Cánovas, F.**, García, R., Jiménez, E., Navarrete, E., Pedraza, E.
Book title: *Seminarios sobre el Toro de Lidia*
Pages: 64
Date: 1998
Publisher: Servicio de Publicaciones de la Universidad de Murcia
Publisher place: Murcia, Spain.
ISBN: 84-7684-869-2

Research outputs

Software

- **ENiRG** R package
Ecological Niche in R-GRASS 2014
 - **Cánovas, F.**, Magliozzi, C., Mestre, F., Palazón-Ferrando, J.A. and González-Wangüemert, M. (2016). ENiRG: R-GRASS interface for efficiently characterizing the ecological niche of species and predicting habitat suitability. *Ecography*, 39: 593-598.
 - Hosted at [R cran](#)
- **MetaLandSim** R package
Tools to simulate species occupations in dynamic landscapes and range expansion 2014
 - Mestre, F., **Cánovas, F.**, Pita, R., Mira, A. and Beja, P. (2016). MetaLandSim: Tools for simulating metapopulation persistence and range expansion under environmental change. *Environmental Modelling & Software*, 81: 40-44.
 - Hosted at [R cran](#)
- **Workflow** scripting
Analysis of metatranscriptomic and metagenomic data 2014
 - Pearson, G.A, Lago-Lestón, A., **Cánovas, F.**, Cox, C., Verret, F., Lasternas, S., Duarte, C.M., Agusti, S. and Serrão, E.A. (2015). Metatranscriptomes reveal functional variation in diatom communities from the Antarctic Peninsula. *ISME Journal*, 9(10): 2275-2289.
 - Upon request
- **GRASS plugin** gedit
Syntax recognition for GRASS language 2010
 - Upon request
- **Spatial database** Under Windows CE plus GPS
Mobile spatial database for biological control 2005
 - Upon request

Hardware

- **UVICam** Robotics
Open source full spectrum camera 2015
 - **Cánovas, F.** and Ritter, M. (in review). UVICam: open-source ultraviolet, visible, near and long wave infrared camera. *International Journal of Science Education*.

- Maker of Merit at Makerfaire, Lisbon, 2015.
 - URL: [link](#)
 - Plans hosted at: [thingiverse](#)
 - **MOBE** Robotics
Underwater remotely operated vehicle (ROV) 2015
 - Cánovas, F., Conduto, J. and González-Wangüemert, M. (submitted). Micro Open Benthic Explorer (MOBE): open ROV developed with educational purposes in marine biology and technology. *American Journal of Science Education and Technology*.
 - URL: [link](#)
 - Plans hosted at: [thingiverse](#)
 - **Mini 3D desktop printer** Robotics
Mini Rep-Rap 3D desktop printer 2015
 - Maker of Merit at Makerfaire, Lisbon, 2015.
 - URL: [link](#)
 - **Prusa air 2** Robotics
Rep-Rap 3D printer for Science Communication Centre (Portugal) 2014
 - **Prusa i3** Robotics
Rep-Rap 3D printer for CCMAR (Portugal) 2013
-

Scientific WEB sites

- **Mapping seahorse populations** Web site and WebGIS
May/2014 to June/2014
 - Main results: GIS with information about *Hippocampus hippocampus* and *H. guttulatus* were implemented into a WebGIS application. Placed at the web page (also fully implemented together with the WebGIS), it contains all the information about distribution, sampling design and general complementary cartographic information collected in the project.
 - The application is hosted at (not available yet)
 - Number of hits: NA.
- **MaResMa Team** Web site
November/2015 to Now
 - Main results: Institutional website for the Marine Resources Management Team (MaResMa) located at the Centre of Marine Sciences (CCMar).
 - The application is hosted at <http://maresma.org>
 - Number of hits: 407 (November, 2015 - January, 2016).
- **Mapping sea-cucumber populations** Web site and WebGIS
December/2012 to January/2013

- Main results: GIS with information about *Holothuria* spp. were implemented into a WebGIS application. Placed at the web page (also fully implemented together with the WebGIS), it contains all the information about distribution (World wide), sampling design and general complementary cartographic information collected in the project CUMFISH (PTDC/MAR/119363/2010).
- The application is hosted at <http://ccmar.ualg.pt/cumfish>
- Number of hits: 3493 (January 20,2013 - January 20, 2015).

● **Biological control management**

WebGIS
June/2005

-
- Main results: GIS with information about insect-plague (*Aulacorthum solani* and *Myzus persicae*) and natural enemies (*Frankliniella occidentalis*, *Orius* spp. and *Amblyseius cucumeris*) were implemented into a WebGIS application. Placed at the web page of the IMIDA center, it contained all the information about temporal and spatial distribution, which were collected during Official Inspections of Plague's Control Department (Ministry of Agriculture in Regional Government of Murcia - 04PCCCI). This system was based on digital collection (using pocket PC plus GPS technologies) of plague and natural enemies data in sweet pepper crops.
- The application was hosted at <http://www.imida.es>
- Number of hits: NA.

Participation in research projects

As principal investigator

Project Title: Sex-biased evolution in multicellular brown algae (*evosexual*)

Financial entity: Fundação para a Ciência e a Tecnologia (FCT)

Reference: EXPL/BIA-EVF/2263/2013

Participants: CCMAR

Funds: 49,103.00 €

Length: 01/03/2014 to 31/08/2015

Topic: This proposal extended the study of sex-biased genes (SBG), to an unexplored and independent multicellular lineage, the brown algae. Major deliverables were to: 1) functionally characterize reproductive tissue transcriptomes in the brown algal family Fucaceae; 2) generate orthologous gene clusters between taxa and combine functional annotation of transcriptome data with expression patterns to explore phylogenomic variation; 3) conduct phylogenomic analyses of SBG to test evolutionary hypotheses of rapid divergence and adaptive evolution across different reproductive/mating systems, and divergence times/evolutionary distances.

As a member of the team

Project Title: Sustainable management of crustaceans fisheries in the Portuguese coast
Financial entity: MAR2020
Participants: CCMAR
Length: 2018 to 2020
PI: Francisco Leitão

Project Title: Sea CUcumber as new MARine reSoURce: potential for aquaculture
Financial entity: Fundação para a Ciência e a Tecnologia (FCT)
Participants: CCMAR
Length: 2016 to 2019
PI: Mercedes González-Wangüemert

Project Title: Extant or extinct tipping points - climate changes drive genetic diversity and dynamics of range edge populations as evolutionary hotspots
Financial entity: Fundação para a Ciência e a Tecnologia (FCT)
Participants: CCMAR
Length: 2013 to 2016
PI: Ester Serrão

Project Title: Adaptive potential at range edges: testing relationships between fitness-related traits and population structure near ecophysiological limits
Financial entity: Fundação para a Ciência e a Tecnologia (FCT)
Participants: CCMAR
Length: 2010 to 2014
PI: Katy Nicastro

Project Title: Molecular ecology and climate change: adaptative differentiation of *Cymodocea nodosa* and *Caulerpa prolifera* populations through environmental clines
Financial entity: Fundación Seneca
Participants: UMU, CCMAR
Length: 2010 to 2013
PI: Mercedes González-Wangüemert

Project Title: Landscape genetics of a coastal lagoon; an empirical and modeling approach using the seagrass *Zostera noltii* in Ria Formosa
Financial entity: Fundação para a Ciência e a Tecnologia (FCT)
Participants: CCMAR
Length: 2010 to 2013
PI: Filipe Alberto

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| <i>Project Title:</i> | Making edges meet: genetic signatures of climate-driven range shifts |
| <i>Financial entity:</i> | Fundação para a Ciência e a Tecnologia (FCT) |
| <i>Participants:</i> | CCMAR |
| <i>Length:</i> | 2010 to 2013 |
| <i>PI:</i> | Ester Serrão |

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| <i>Project Title:</i> | Patterns and processes of variation in the honey bee hybrid zone of the Iberian Peninsula |
| <i>Financial entity:</i> | Fundação para a Ciência e a Tecnologia (FCT) |
| <i>Participants:</i> | Instituto Politecnico de Bragança |
| <i>Length:</i> | 2010 to 2013 |
| <i>PI:</i> | Maria Alice da Silva Pinto |

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| <i>Project Title:</i> | Evolutionary and biogeographical factors in the adaptation to subterranean life: invertebrate case studies from the Balearic and Canarian archipelagos |
| <i>Financial entity:</i> | Spanish Ministry (MEC) |
| <i>Participants:</i> | UIB, IMEDEA |
| <i>Length:</i> | 2007 to 2009 |
| <i>PI:</i> | Carlos Juan Clar |

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| <i>Project Title:</i> | Aphid control in peeper greenhouses under an integrated management system |
| <i>Financial entity:</i> | National Institute for Agrarian Investigations (INIA) |
| <i>Participants:</i> | IMIDA, IRTA, IVIA |
| <i>Length:</i> | 2004 to 2007 |
| <i>PI:</i> | Juan Antonio Sánchez Sánchez |

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| <i>Project Title:</i> | Introgression and genic flow in the honeybee <i>Apis mellifera iberica</i> come from transhumance and queen trade. Molecular analysis (microsatellites and mitochondrial haplotypes) |
| <i>Financial entity:</i> | Spanish Ministry (MEC) |
| <i>Participants:</i> | University of Murcia |
| <i>Length:</i> | 2004 to 2006 |
| <i>PI:</i> | José Serrano Marino |

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| <i>Project Title:</i> | Molecular markers for analyzing gene diversity of insular and peninsular populations in <i>Apis mellifera iberica</i> |
| <i>Financial entity:</i> | National Institute of Agrarian Investigations (INIA) |
| <i>Participants:</i> | University of Murcia |
| <i>Length:</i> | 2001 to 2003 |
| <i>PI:</i> | José Galián Albaladejo |

Project Title: Molecular characterization of honeybee from Murcia: protection and improvement of local populations
Financial entity: Fundación Seneca
Participants: University of Murcia
Length: 2000 to 2002
PI: José Serrano Marino

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| Research contracts with companies and/or private or public funding bodies |
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| <i>Contract title:</i> | Genetic variability of <i>Myzus persicae</i> in Murcia |
| <i>Financial entities:</i> | IMIDA |
| <i>Length:</i> | November/2005 to December/2005 |
| <i>Principal investigator:</i> | Fernando Cánovas García |
| <i>Contract title:</i> | Implementation of a GIS for integrated and biological control of peppers crops |
| <i>Financial entities:</i> | IMIDA |
| <i>Length:</i> | June/2005 to December/2005 |
| <i>Principal investigator:</i> | Fernando Cánovas García |
| <i>Contract title:</i> | Introduction of technologies in integrated production of greenhouse pepper. Improve program of efficiency of agrarian systems |
| <i>Financial entities:</i> | Ministry of Agriculture in Regional Government of Murcia (04PCCCI) |
| <i>Length:</i> | May/2004 to May/2005 |
| <i>Principal investigator:</i> | Fernando Cánovas García |
| <i>Contract title:</i> | Paternity test in the Murciano-Granadina breed goat |
| <i>Financial entities:</i> | University of Murcia and Farmer Association of Murciano-Granadina Breed Goat (ACRIMUR) |
| <i>Length:</i> | June/2003 to June/2004 |
| <i>Principal investigator:</i> | José Galián Albaladejo |

Adaptation of facilities

Facilities: Makerspace
Participating entities: Centre of Marine Sciences (CCMAR)
Lenght: September/2013 to December/2013
Main results: Adaptation of a laboratory for developing open source-based technologies. Tools made: 3D printer and CNC, ROV, marine sensors

Facilities: Genetic laboratory
Participating entities: Agrarian and Food Research Center (IMIDA)
Lenght: March/2005
Main results: Adaptation of a laboratory for developing genetic studies

Invited lectures

- *aRe you Ready foR R?*
 - *Place (date)*: MARES Conference, Olhão, Portugal (2016)
 - *Topic*: MARES Conference Workshops
- *Non statistics with R*
 - *Place (date)*: MARES Conference, Olhão, Portugal (2016)
 - *Topic*: MARES Conference Workshops
- *R-GRASS: an interface for biological research*
 - *Place (date)*: University of Algarve, Faro, Portugal (2011)
 - *Topic*: Master on Geomatic
- *Using Generalized Additive Models (GAM) in biology*
 - *Place (date)*: University of Murcia, Murcia, Spain (2010)
 - *Topic*: CALDUM workshops
- *R for R users*
 - *Place (date)*: University of Murcia, Murcia, Spain (2009)
 - *Topic*: I Conferencia Hispana R-Project
- *Changing environmental conditions shape the genetic structure of coastal lagoon populations*
 - *Place (date)*: Centro de Ciências do Mar, Faro, Portugal (2009)
 - *Topic*: IV Ciclo de seminários do CCMAR
- *An introduction to R*
 - *Place (date)*: University of Murcia, Murcia, Spain (2008)
 - *Topic*: Master on Environmental Sciences
- *Molecular Ecology Techniques: Mitochondrial DNA analysis*
 - *Place (date)*: University of Murcia, Murcia, Spain (2005)
 - *Topic*: 3th year in Environmental Sciences Degree
- *R: a free tool for statistical processing agrarian information*
 - *Place (date)*: IMIDA, Murcia, Spain (2005)
 - *Topic*: Presenting R statistical software

- *R: una herramienta libre para el análisis estadístico de la información (R: a free tool for statistical processing information)*
 - *Place (date):* University of Murcia, Murcia, Spain (2005)
 - *Topic:* Meeting on free software
- *Taller de R (Workshop on R)*
 - *Place (date):* University of Murcia, Murcia, Spain (2004)
 - *Topic:* Meeting on Free Software: CALDUM Project
- *Interpretação ecológica da variabilidade genética das populações de Apis mellifera L.*
 - *Place (date):* São Miguel, Açores, Portugal (2003)
 - *Topic:* IV Congresso Nacional de Apicultura
- *Caracterização molecular das populações de abelhas Ibéricas: técnicas, resultados e futuro (Molecular characterization of the Iberian honeybee populations: techniques, results and future)*
 - *Place (date):* Instituto Politécnico de Bragança; Escola Superior Agrária, Bragança, Portugal (2003)
 - *Topic:* V National Forum of Bee-keeping

Presentations in congresses

Authors: M. González-Wangüemert, A. Díaz-Suárez, J. Domínguez-Godino, F. Cánovas
Title: Molecular tools to assess the stocks of *Holothuria arguinensis* and implications for its management
Type of presentation: Oral
Congress: 16th International Echinoderm Conference
Publication: Proceedings of the congress
Meeting place (date): Nagoya, Japan (2018)

Authors: A. Díaz-Suárez, F. Cánovas, M. González-Wangüemert
Title: Assessing the validity of ossicles as a taxonomic criteria for Mediterranean and North-Western Atlantic sea cucumbers
Type of presentation: Poster
Congress: 16th International Echinoderm Conference
Publication: Proceedings of the congress
Meeting place (date): Nagoya, Japan (2018)

Authors: F. Cánovas, J. Domínguez-Godino, M. González-Wangüemert
Title: Short term approach to epidemiology of skin disease in the new target species for aquaculture in Europe *Holothuria arguinensis*
Type of presentation: Oral
Congress: World Aquaculture 2017
Publication: Proceedings of the congress
Meeting place (date): Cape Town, South Africa (2017)

Authors: M. González-Wangüemert, J. Domínguez-Godino, F. Cánovas, M. Aydin, C. Conand
Title: Sea cucumbers: new marine resource for fisheries and aquaculture in the Mediterranean and NE Atlantic
Type of presentation: Oral
Congress: 9th European Conference on Echinoderms
Publication: Proceedings of the congress
Meeting place (date): Sopot, Poland (2016)

Authors: F. Cánovas, V. Reina, P. López-González, M. González-Wangüemert
Title: "Cool" sea cucumbers! Biogeography of Bransfield Strait in Antarctica
Type of presentation: Poster
Congress: 9th European Conference on Echinoderms
Publication: Proceedings of the congress
Meeting place (date): Sopot, Poland (2016)

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| <i>Authors:</i> | F. Cánovas, J. Domínguez-Godino, M. González-Wangüemert |
| <i>Title:</i> | Etiology and prevalence of skin disease in <i>Holothuria arguinensis</i> from Ria Formosa Natural Park (Southern Portugal) |
| <i>Type of presentation:</i> | Oral |
| <i>Congress:</i> | International Meeting on Marine Research |
| <i>Publication:</i> | Proceedings of the congress |
| <i>Meeting place (date):</i> | Peniche, Portugal (2016) |

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|------------------------------|---|
| <i>Authors:</i> | M. González-Wangüemert, J. Domínguez-Godino, F. Cánovas, N. Duque-Núñez, C. Conand, S. Purcell, X. Quiang |
| <i>Title:</i> | Holoturias como nuevo recurso marino: potencial para la acuicultura |
| <i>Type of presentation:</i> | Poster |
| <i>Congress:</i> | VIII Jornadas de Acuicultura del Litoral Suratlántico |
| <i>Publication:</i> | Proceedings of the congress |
| <i>Meeting place (date):</i> | Cartaya, Huelva (2016) |

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| <i>Authors:</i> | E.A. Serrão, F. Alberto, J. Assis, F. Cánovas, N. Coelho, J. Costa, J. Neiva, K. Nicastro, G.A. Pearson, P. Raimondi |
| <i>Title:</i> | Extant or extinct tipping points – range edge populations as evolutionary hotspots |
| <i>Type of presentation:</i> | Oral |
| <i>Congress:</i> | 10 th International Phycological Congress |
| <i>Publication:</i> | Proceedings of the congress (DOI: 10.2216/0031-8884-52.sp4.1) |
| <i>Meeting place (date):</i> | Orlando, Florida USA (2013) |

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|------------------------------|--|
| <i>Authors:</i> | A.M. Mahoque, F. Cánovas, M. Moreira, N. Atanasova, A. Rebelo |
| <i>Title:</i> | Aplicação WebGIS para análise do comportamento de substâncias prioritárias da dqa na Bacia Hidrográfica do Algarve |
| <i>Type of presentation:</i> | Oral |
| <i>Congress:</i> | VIII Congresso Ibérico sobre Gestão e Planeamento da Água |
| <i>Publication:</i> | Proceedings of the congress |
| <i>Meeting place (date):</i> | Lisbon, Portugal (2013) |

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|------------------------------|---|
| <i>Authors:</i> | M. González-Wangüemert, F. Cánovas, J. Martínez-Garrido, E.A. Serrão |
| <i>Title:</i> | Molecular ecology and climate change: adaptive differentiation of <i>Cy-modocea nodosa</i> populations through environmental clines |
| <i>Type of presentation:</i> | Poster |
| <i>Congress:</i> | XVII Simposio Ibérico de Estudios de Biología Marina (SIEBM) |
| <i>Publication:</i> | Proceedings of the congress |
| <i>Meeting place (date):</i> | Donostia - San Sebastián, Spain (2012) |

Authors: J. Martínez-Garrido, M. González-Wangüemert, F. Cánovas, E.A. Serrão
Title: Jardines olvidados bajo el mar: evaluación del estado de conservación de las fanerógamas *Ruppia cirrhosa* Petagna (Grande) y *Zostera noltii* (Hornemann) mediante su estudio genético
Type of presentation: Oral
Congress: III Congreso Nacional de Biodiversidad
Publication: Proceedings of the congress
Meeting place (date): Granada, Spain (2011)

Authors: F. Cánovas, C.F. Mota, E.A. Serrão, G.A. Pearson
Title: Southward bound: phylogenomics of the Atlantic brown algal family Fucaceae
Type of presentation: Oral
Congress: World Conference on Marine Biodiversity
Publication: Proceedings of the congress
Meeting place (date): Aberdeen, Scotland (2011)

Authors: M. González-Wangüemert, J. Martínez-Garrido, F. Cánovas, C. Vergara-Chen, E.A. Serrao
Title: In two waters: Contemporary evolution of lagoonal and marine populations
Type of presentation: Oral
Congress: World Conference on Marine Biodiversity
Publication: Proceedings of the congress
Meeting place (date): Aberdeen, Scotland (2011)

Authors: A. Ramos, E.A. Serrão, F. Cánovas, C. Cox, A. Lago-Leston, C. Duarte, S. Augusti, K. Valentin, G. Pearson
Title: Environmental genomics of polar phytoplankton communities
Type of presentation: Oral
Congress: International Workshop - Molecular Ecology of Sea Ice Communities in a changing world - the Genomic Perspective
Publication: Proceedings of the congress
Meeting place (date): Bremerhaven, Germany (2011)

Authors: G. Pearson, A. Ramos, F. Cánovas, C. Cox, A. Lago-Leston, S. Augusti, C. Duarte, E.A. Serrão
Title: Responses of key components of polar food-webs to environmental changes: an environmental genomics approach
Type of presentation: Oral
Congress: Conferência Portuguesa das Ciências Polares

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| <i>Publication:</i> | Proceedings of the congress |
| <i>Meeting place (date):</i> | Coimbra, Portugal (2011) |
| <i>Authors:</i> | G.A. Pearson, F. Cánovas, C.J. Cox, A. Lago-Leston, S. Agusti, C. Duarte, E.A. Serrão |
| <i>Title:</i> | Metatranscriptomics of diatom-dominated Antarctic communities: Establishing links between diversity and function |
| <i>Type of presentation:</i> | Oral |
| <i>Congress:</i> | ASLO 2011 Aquatic Sciences Meeting |
| <i>Publication:</i> | Proceedings of the congress |
| <i>Meeting place (date):</i> | SanJuan, Puerto Rico (2011) |
| <i>Authors:</i> | A. Ramos, E.A. Serrão, F. Cánovas, C. Cox, A. Lago-Leston, G. Pearson |
| <i>Title:</i> | Metatranscriptomic analysis of phytoplankton communities in distinct Barents Sea water masses |
| <i>Type of presentation:</i> | Oral |
| <i>Congress:</i> | ASLO 2011 Aquatic Sciences Meeting |
| <i>Publication:</i> | Proceedings of the congress |
| <i>Meeting place (date):</i> | SanJuan, Puerto Rico (2011) |
| <i>Authors:</i> | G.A. Pearson, A. Ramos, F. Cánovas, C. Cox, A. Lago-Leston, E.A. Serrão |
| <i>Title:</i> | Metatranscriptomic analysis of phytoplankton communities in distinct Barents Sea water masses |
| <i>Type of presentation:</i> | Oral |
| <i>Congress:</i> | Arctic Frontiers 2011) |
| <i>Publication:</i> | Proceedings of the congress |
| <i>Meeting place (date):</i> | Tromso, Norway (2011) |
| <i>Authors:</i> | G.A. Pearson, A. Ramos, A. Lago-Leston, F. Cánovas, C. Cox, S. Agusti, C. Duarte, E.A. Serrão |
| <i>Title:</i> | Genómica Ambiental de Comunidades Polares de Fitoplâncton |
| <i>Type of presentation:</i> | Oral |
| <i>Congress:</i> | 2ª Reunião Portuguesa de Ciências Polares: O Estado da Investigação Polar em Portugal no Final do IV Ano Polar Internacional |
| <i>Publication:</i> | Proceedings of the congress |
| <i>Meeting place (date):</i> | Lisboa, Portugal (2010) |
| <i>Authors:</i> | G.A. Pearson, A. Lago-Leston, F. Cánovas, S. Agusti, C. Duarte, E.A. Serrão |
| <i>Title:</i> | Exploring phytoplankton communities in the Southern Ocean using metatranscriptomics |

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| <i>Type of presentation:</i> | Oral |
| <i>Congress:</i> | ESF-COST High-Level Research Conference Marine Biotechnology: Future Challenges |
| <i>Publication:</i> | Proceedings of the congress |
| <i>Meeting place (date):</i> | Acquafredda di Maratea, Italy (2010) |
| <i>Authors:</i> | Bauzá-Ribot, M., Cánovas, F., Pons, J., Jaume, D., Oromí, P. y Juan, C. |
| <i>Title:</i> | Origin and phylogeography of the subterranean amphipod crustacean <i>Metacrangonyx</i> in islands |
| <i>Type of presentation:</i> | poster |
| <i>Congress:</i> | Annual Meeting of the Society for Molecular Biology and Evolution |
| <i>Publication:</i> | Proceedings of the congress |
| <i>Meeting place (date):</i> | Barcelona, Spain (2008) |
| <i>Authors:</i> | González-Wangüemert, M., Cánovas, F., Pérez-Ruzafa, A. y Marcos, C. |
| <i>Title:</i> | Aplicación de los GAM para establecer relaciones entre la composición genética de <i>Cerastoderma glaucum</i> y la variabilidad ambiental de la laguna costera del Mar Menor (SE de España) |
| <i>Type of presentation:</i> | poster |
| <i>Congress:</i> | II Congreso Ibérico en Ecología |
| <i>Publication:</i> | Proceedings of the congress |
| <i>Meeting place (date):</i> | Lisboa, Portugal (2006) |
| <i>Authors:</i> | Cánovas, F. and Sánchez, J.A. |
| <i>Title:</i> | Implementing a Geographical Information System (GIS) for pepper greenhouse natural enemy and pest management in Southeast Spain |
| <i>Type of presentation:</i> | oral presentation |
| <i>Congress:</i> | Meeting of the IOBC/WPRS WORKING GROUP on Integrated Pest Control in Protected Crops, Mediterranean Climate |
| <i>Publication:</i> | - |
| <i>Meeting place (date):</i> | Murcia, Spain (2006) |
| <i>Authors:</i> | Sánchez, J.A., Cánovas, F. and Lacasa, A. |
| <i>Title:</i> | Un Sistema de Información Geográfica (SIG) interactivo para el manejo de enemigos naturales y plagas en cultivos de pimiento |
| <i>Type of presentation:</i> | oral presentation |
| <i>Congress:</i> | IV Congreso Nacional de Entomología Aplicada, X Jornadas Científicas de la S.E.E.A. y I Jornadas Portuguesas en Entomología Aplicada |
| <i>Publication:</i> | Proceedings of the Congress |
| <i>Meeting place (date):</i> | Bragança, Portugal (2005) |

Authors: Cánovas, F., Sánchez, J.A. and Hermoso de Mendoza, A.
Title: Diversidad genética de poblaciones de *Myzus persicae* (Sulzer) (Hemiptera: Aphididae) de la Región de Murcia
Type of presentation: oral presentation
Congress: IV Congreso Nacional de Entomología Aplicada, X Jornadas Científicas de la S.E.E.A. y I Jornadas Portuguesas en Entomología Aplicada
Publication: Proceedings of the Congress
Meeting place (date): Bragança, Portugal (2005)

Authors: Sánchez, J.A., Cánovas, F. and Lacasa, A.
Title: Estrategias de manejo y umbrales de intervención para *Aulacorthum solani* (Hemiptera: Aphididae) en cultivos de pimiento en invernadero
Type of presentation: oral presentation
Congress: IV Congreso Nacional de Entomología Aplicada, X Jornadas Científicas de la S.E.E.A. y I Jornadas Portuguesas en Entomología Aplicada
Publication: Proceedings of the Congress
Meeting place (date): Bragança, Portugal (2005)

Authors: Cánovas, F., Sánchez, J.A. and Hermoso de Mendoza, A.
Title: Temporal and spatial variability of the genetic diversity of *Myzus persicae* (Sulzer) (Hemiptera: Aphididae) from Southeastern Spain
Type of presentation: poster
Congress: 7th International Symposium on Aphids
Publication: Proceedings of the Congress
Meeting place (date): Fremantle, WA, Australia (2005)

Authors: Cánovas, F., De la Rúa, P., Serrano, J. and Galián, J.
Title: An example of GIS analysis of the biogeography of *Apis mellifera iberiensis* (Engel, 1999)
Type of presentation: poster
Congress: Molecular Ecology and Evolutionary Genetics. Special Symposium in honour of Professor Godfrey Hewitt
Publication: -
Meeting place (date): Norwich, United Kingdom (2005)

Authors: Cánovas, F., De la Rúa, P., Serrano, J. and Galián, J.
Title: Relationship between genotype and environmental gradients: an example of GIS analysis of the biogeography of *Apis mellifera iberiensis* (Ruttner, 1988; Engel, 1999) from North-Western Spain
Type of presentation: poster
Congress: First European Conference of Apiculture (EurBee)
Publication: Proceedings of the Congress

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| <i>Meeting place (date):</i> | Udine, Italy (2004) |
| <i>Authors:</i> | Cánovas, F. and De la Rúa, P. |
| <i>Title:</i> | Interpretación ecológica de la variabilidad genética de las poblaciones de <i>Apis mellifera</i> (L.) |
| <i>Type of presentation:</i> | conferencia invitada |
| <i>Congress:</i> | IV Congreso Nacional de Apicultura |
| <i>Publication:</i> | Proceedings of the Congress |
| <i>Meeting place (date):</i> | São Miguel, Açores, Portugal (2004) |
| <i>Authors:</i> | Cánovas, F. and De la Rúa, P. |
| <i>Title:</i> | Caracterización molecular de las poblaciones de abejas ibéricas: técnicas, resultados y perspectivas |
| <i>Type of presentation:</i> | conferencia invitada |
| <i>Congress:</i> | V Forum Nacional de Apicultura |
| <i>Publication:</i> | Proceedings of the Congress |
| <i>Meeting place (date):</i> | Bragança, Portugal (2003) |
| <i>Authors:</i> | Cánovas, F., De la Rúa, P., Gallego, D., Serrano, J. and Galián, J. |
| <i>Title:</i> | Interpretación ecológica de la variabilidad genética de poblaciones de <i>Apis mellifera iberica</i> (Ruttner, 1988) del noroeste de la Península Ibérica |
| <i>Type of presentation:</i> | oral presentation |
| <i>Congress:</i> | III Congreso Nacional de Entomología Aplicada y IX Jornadas Científicas de la S.E.E.A. |
| <i>Publication:</i> | Proceedings of the Congress |
| <i>Meeting place (date):</i> | Ávila, Spain (2003) |
| <i>Authors:</i> | Gallego, D., Cánovas, F. and Galián, J. |
| <i>Title:</i> | Distribución de las especies de <i>Tomicus</i> (Scolytidae) en Spain. Un modelo predictivo basado en variables climáticas |
| <i>Type of presentation:</i> | oral presentation |
| <i>Congress:</i> | III Congreso Nacional de Entomología Aplicada y IX Jornadas Científicas de la S.E.E.A. |
| <i>Publication:</i> | Proceedings of the Congress |
| <i>Meeting place (date):</i> | Ávila, Spain (2003) |
| <i>Authors:</i> | Salamanca, G.G., Galián, J. and Cánovas, F. |
| <i>Title:</i> | Validación de un método analítico para la evaluación del ADN mitocondrial de <i>Apis mellifera</i> de diferentes zonas biogeográficas colombianas |
| <i>Type of presentation:</i> | |
| <i>Congress:</i> | XXXVII Congreso Colombiano de Ciencias Biológicas |

Publication: Proceedings of the Congress
Meeting place (date): Colombia (2002)

Organisation of scientific dissemination activities

Organising meetings, congresses, workshops, training courses, symposiums, conferences, seminars, . . .

- *Revolution VIII*
 - *Place (date)*: University of Barcelona, Barcelona, Spain
 - *Date*: May 2nd - May 5th, 2017
 - *Activities*: Organization and speaker
 - *Topic*: Revolution VIII: quantitative ecology and spatial prediction of species distribution
 - *Dedication*: 32 h

- *Revolution VII*
 - *Place (date)*: University of Barcelona, Barcelona, Spain
 - *Date*: November 7th - November 9th, 2016
 - *Activities*: Organization and speaker
 - *Topic*: Revolution VII: quantitative ecology and spatial prediction of species distribution
 - *Dedication*: 24 h

- *Revolution VI*
 - *Place (date)*: Centro de Ciências do Mar, Faro, Portugal
 - *Date*: April 4th - April 15th, 2016
 - *Activities*: Organization and speaker
 - *Topic*: Revolution VI: descriptive statistics, hypothesis testing, modelling and spatial analysis of species diversity
 - *Dedication*: 40 h

- *Revolution V*
 - *Place (date)*: Centro de Ciências do Mar, Faro, Portugal
 - *Date*: November 27th - Decembre 7th, 2014
 - *Activities*: Organization and speaker
 - *Topic*: Revolution V: quantitative ecology and spatial prediction of species distribution
 - *Dedication*: 40 h

- *I CUMFISH Workshop*
 - *Place (date)*: Centro de Ciências do Mar, Faro, Portugal
 - *Date*: May 14th - 15th, 2014
 - *Activities*: Organization committee
 - *Topic*: CUMFISH Workshop: a new resource for a hungry fishery
 - *Dedication*: -
- *Revolution IV*
 - *Place (date)*: Centro de Ciências do Mar, Faro, Portugal
 - *Date*: April 8th - 19th, 2013
 - *Activities*: Organization and speaker
 - *Topic*: Revolution IV: quantitative ecology and spatial prediction of species distribution
 - *Dedication*: 40 h
- *[OpenWorkshops]*
 - *Place (date)*: Centro de Ciências do Mar, Faro, Portugal
 - *Date*: February to June, 2013
 - *Activities*: Organization and speaker
 - *Topic*:
 - * Non statistic with R (February 6th - 7th)
 - * Open source GIS (March 1st)
 - * Introduction to web publishing: Drupal (April 5th)
 - * Statistical models in R (April 24th)
 - * Scientific writing using L^AT_EX: introduction (May 10th)
 - * Scientific writing using L^AT_EX advanced formatting of tables and figures, and bibliography management using B_IB_TE_X (June 7th)
 - *Dedication*: 28 h
- *[OpenWorkshops]*
 - *Place (date)*: Centro de Ciências do Mar, Faro, Portugal
 - *Date*: March to May, 2012
 - *Activities*: Organization and speaker
 - *Topic/s*:
 - * Introduction to R (March 22nd)
 - * Scientific writing using L^AT_EX and B_IB_TE_X (May 17th - 18th)
 - *Dedication*: 12 h

- *Revolution III*
 - *Place (date)*: Centro de Ciências do Mar, Faro, Portugal
 - *Date*: May, 2011
 - *Activities*: Organization and speaker
 - *Topic/s*: Non linear modelling using R
 - *Dedication*: 4 h
- *Revolution II*
 - *Place (date)*: Centro de Ciências do Mar, Faro, Portugal
 - *Date*: February 22nd - 26th, 2010
 - *Activities*: Organization and speaker
 - *Topic*: Management of R statistical software
 - *Dedication*: 20 h
- *Revolution I*
 - *Place (date)*: Centro de Ciências do Mar, Faro, Portugal
 - *Date*: April 19th - 21st, 2010
 - *Activities*: Organization and speaker
 - *Topic*: Management of R statistical software
 - *Dedication*: 12 h
- *I Conferencia R-Project Hispana*
 - *Place (date)*: University of Murcia, Murcia, Spain
 - *Date*: November 26th - 27th, 2010
 - *Activities*: Organization committee
 - *Topic*: R statistical software meeting
 - *Dedication*: -
- *Jornadas de Cría y Salud del Ganado Porcino*
(*Workshop on Breeding and Health of Pig*)
 - *Place (date)*: University of Murcia, Murcia, Spain
 - *Date*: April 9th - May 4th, 2003
 - *Activities*: Organization committee
 - *Topic*: Specialize in veterinary medicine of pigs
 - *Dedication*: -

Academic service and contributions

- Review and referee activities for the following journals:
 - Apidologie;
 - European Journal of Entomology;
 - Marine Ecology Progress Series;
 - Molecular Biology Reports;
 - PLoS one;
 - Environmental and Ecological Statistics.
- Evaluation of projects for:
 - [National Assessment Committee](#) (Spanish Government, Spain)
 - [The Rufford Foundation](#) (UK)
- Member of:
 - Veterinary Invertebrate Society. 2017 - Now
 - Distinguished Portuguese Order of Veterinary Medicine ([OMV](#)). 2016 - Now
 - Distinguished Official Spanish College of Veterinary Medicine ([COV](#)). 1999 - Now
 - University Club of Underwater Activities ([CUAS](#)). 1997 - Now
 - [E-lab Hackerspace](#) (University of Algarve). 2015 - Now
 - Centro de Investigação de Montanha ([CIMO](#)). 2006 - 2009
 - Spanish Society of Applied Entomology ([SEEA](#)). 2005 - 2009
- Representative of the University Club of Underwater Activities ([CUAS](#)):
 - Vice-president. 2007 - Now
 - Secretary. 2003 - 2007

Other achievements

Awards & Honors

- *Blue Ribbon*

Maker of Merit for UVI camera at Makerfaire

Lisbon, Portugal, 2015.

- *Blue Ribbon*

Maker of Merit for Mini small footprint 3D printer at Makerfaire (I)

Lisbon, Portugal, 2015.

- *Blue Ribbon*

Maker of Merit for Mini small footprint 3D printer at Makerfaire (II)

Lisbon, Portugal, 2015.

- *Best oral presentation*

III Congreso Nacional de Entomología Aplicada; IX Jornadas Científicas de la S.E.E.A.

Ávila, Spain, 2003.

Professional experience

| Date | Position | Company |
|-------------|------------|--|
| 1999 - 2001 | Veterinary | Sanitary Defence Association of Cattle |
| 1998 - 1999 | Veterinary | Fort Dodge Veterinaria, S.A. |

Professional experience with Educational purposes

| Date | Position | Entity | Description |
|-----------|------------|--|------------------------|
| 2007 | Instructor | Gesturmediterranea, S.A. | <i>Nautical sports</i> |
| 2002-2004 | Instructor | Universitary Club of Subacuatic Activities | <i>Marine mammals</i> |
| 2000 | Instructor | Regional Government of Murcia | <i>Coastal ecology</i> |
| 1999 | Instructor | Regional Government of Murcia | <i>Coastal ecology</i> |
| 1999 | Instructor | Regional Government of Murcia | <i>Coastal ecology</i> |
| 1998 | Instructor | Regional Government of Murcia | <i>Coastal ecology</i> |
| 1997 | Instructor | Universitary Club of Subacuatic Activities | <i>Apnea diving</i> |

Attendance at workshops and seminars

- 2016 Laboratory wastes management
University of Algarve. Portugal
- 2009 Evolutionary islands 150 years after Darwin
Naturalis. Netherlands
- 2005 I Seminar of proteomic
University of Alicante. Spain
- 2004 Workshop in spatial data infrastructure
Service of Information and Environmental Integration (SIGA). Spain
- 2004 XV Seminar of population genetics and evolution
Spanish Society of Genetic. Spain
- 2002 Laboratory safety
University of Murcia. Spain
- 2000 Workshop in applied statistics
University of Murcia. Spain
- 1994 Workshop in Reptiles and Amphibians
University of Murcia. Spain

Attendance at other training courses

2008. Education of the voice. University of Balearic Islands. Spain.
2006. Phylogenetic Analysis. CIBIO - University of Porto. Portugal.
2003. Prevention and Treatment of Diving Accidents. Spanish Navy. Spain.
2003. Introduction to R. University of Murcia, Spain.
2003. Diving Course. Advanced Scuba Diver. NAUI.
2002. Recreational Skipper. Motor and sailing boat.
2001. Speciation, Phylogeny and Phylogeography. University of Murcia, Spain.
2001. Restoration of Aquatic Ecosystems. University of Murcia, Spain.
2001. Management of coastal ecosystems. University of Murcia, Spain.
2001. Population genetics. University of Murcia, Spain.
2001. Molecular techniques in ecology and systematic. University of Murcia, Spain.
2001. Landscape ecology and biodiversity. University of Murcia, Spain.
1997. Diving B*. CMAS.
1997. Cetaceans. University of Murcia, Spain.
1996. Academic English I. University of Murcia, Spain.
1995. Advances in Molecular Genetic. University of Murcia, Spain.
1994. *In vitro* Embryos Management. Spanish Society of Anatomy. Spain.
1994. Study of Fishes. University of Murcia. Spain.

Methodologies and equipment

Technical Skills:

- Sampling design (wild/managed);
- Mammal blood cell cultures;
- Bacterial cultures;
- Histology stains;
- Fluorescence in situ hybridization;
- Primer design;
- PCR techniques;
- RFLP techniques;
- DNA sequencing;
- Microsatellite genotyping;
- Electrophoresis (acrylamide and agarose);
- Ethidium bromide and silver stains;
- Analysis of phylogenetics and evolution;
- Next generation sequencing data analysis;
- Transcriptomics data analysis;
- Geographic Information Systems (GIS);
- Geostatistics;
- Multivariate analysis;
- Linear and non-linear modelling;

- Land/sea-scape genetics;
- phylogenetic analyses;
- metatranscriptomic analyses;
- 3D parametric design;
- basic electronics.

Main equipment:

- Microscopes (optical and fluorescence);
- Stereo microscopes;
- Thermocyclers;
- Centrifuges;
- Autoclave;
- Vertical and horizontal electrophoresis;
- Micropipetting;
- Gel photodocumentation;
- GPS;
- Scuba diving equipment;
- Sailing and motor boats;
- 3D desktop printers;
- Open source microcontrollers.