

**CURRICULUM VITAE ABREVIADO (CVA)**

**IMPORTANT** – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

**Part A. PERSONAL INFORMATION**

First name	José Luis		
Family name	Maestro		
Gender (*)	Male	Birth date (dd/mm/yyyy)	11/10/1967
Social Security, Passport, ID number	43416823E		
e-mail	jose Luis.maestro@ibe.upf-csic.es	URL Web	https://www.biologiaevolutiva.org/jmaestro/index.html
Open Researcher and Contributor ID (ORCID) (*)	0000-0001-6117-0458		

(\*) Mandatory

**A.1. Current position**

Position	Científico Titular del CSIC (Senior scientist)		
Initial date	16/06/2005		
Institution	Consejo Superior de Investigaciones Científicas		
Department/Center	Institute of Evolutionary Biology		
Country	Spain	Teleph. number	932309639
Key words	Entomology, Insect physiology, Insect endocrinology, Nutritional signaling		

**A.2. Previous positions (research activity interruptions, indicate total months)**

Period	Position/Institution/Country/Interruption cause
1991-1994	Pre-doctoral scholarship, CID (CSIC), Spain
1995-1996	Post-doctoral scholarship, Queen Mary and Westfield College. University of London. UK.
1997-2001	Researcher, Instituto de Biología Molecular de Barcelona, IBMB (CSIC), Spain
2002-2005	Ramón y Cajal Researcher, IBMB (CSIC), Spain

**A.3. Education**

PhD, Licensed, Graduate	University/Country	Year
BS Biology	Universidad de Barcelona (UB)	1990
PhD Biology	Universidad de Barcelona (UB)	1994

(Include all the necessary rows)

**Part B. CV SUMMARY (max. 5000 characters, including spaces)**

After obtaining my Biology BS degree and a collaboration with Prof. Joaquim Gutiérrez, Department of Physiology (UB), working on fish insulin, I joined Prof. Xavier Bellés' group at the IBMB (CSIC) to do my PhD thesis, where I started to work in the field of insect physiology, particularly with neuropeptides and vitellogenesis and oogenesis regulation. Among other achievements, we identified the cockroach *Blattella germanica* allatostatins and tested their activity on juvenile hormone (JH) production. During 1995 and 1996, I made a postdoctoral stage with Prof. Alan Thorpe at Queen Mary and Westfield College, University of London, continuing with studies on insect neuropeptides: purification, sequencing and biological activity. In 1997 I got a contract in Prof. Bellés' group and in 2002 I got a Ramón y Cajal contract that lasted until 2005. During this period I continued the identification and study of the activity of neuropeptides regulating reproduction, hormonal production and food intake. I highlight the identification of sulfakinins as satiety factors and food intake inhibitors.



After getting the CSIC “Científico Titular” position in 2005, my interests turned to the nutritional signaling pathways in insects. Already at the Institute of Evolutionary Biology (IBE, CSIC-UPF) I reported how the TOR and Insulin Receptor (InR) pathways regulate insect reproduction through regulation of JH and vitellogenin synthesis and the modulation of some metabolic enzymes.

Along with Dr. Maria Dolors Piulachs, we carried out a research project aimed at analyzing the functioning of the RNA interference (RNAi) pathway in *B. germanica*, the characteristics of the active double-stranded RNAs (dsRNAs), the enzymes involved in the process of RNAi and the small interfering RNAs (siRNAs) generated, in order to design high efficiency dsRNA for the control of cockroach populations. The obtained results showed that the siRNAs produced from a dsRNA mapped heterogeneously along the length of the dsRNA and that this arrangement depends on the dsRNA sequence.

In the context of the InR pathway we identified the *B. germanica* insulin-like peptides (ILP) and the regulation of their production. The identification of their synthesis sites and their regulation during starvation and by the effect of JH are especially relevant.

I recently led two AEI projects in collaboration with X Bellés as co-PI. The primary objective of the first one was to elucidate the functions of the three *B. germanica* InRs. The results indicate that the evolutionary outcome of the new InR copies is sub-functionalization rather than neofunctionalization. The second project focused on delineating the functions of bacterial endosymbionts in cockroaches.

Together with Dr. Piulachs we have recently finished an industrial doctorate in partnership with the environmental health company MYLVA S.A. aimed at developing new insecticide products based in biomolecules. We have also just begun a new industrial doctoral project with the same company to elucidate the genetic factors that determine glucose resistance in different cockroach populations in Spain.

Dr. Piulachs and I were also awarded a project in the latest AEI call to study piRNAs in the regulation of mRNA expression related to oogenesis and reproduction in cockroaches.

Summary and other activities:

Research projects: 24, 11 as PI.

Publications: 47 papers, 42 of them in the SCI. In the last 10 years: 15 papers, 14 in the SCI, 9 as corresponding author.

Training activities: 4 doctoral theses, 4 master and 9 undergraduate projects.

Associated Editor of Physiological Entomology journal.

Evaluator of scientific agencies: ANEP (Spain), FWO (Belgium), GACR (Czech Republic) and LE STUDIUM (France).

Sept 2019-July 2023: representative of the IBE Program Functional Genomics and Evolution (now called Complexity of Life) in the IBE Executive Board.

Sept 2013-Jan 2020 & Dec 2023 to now: IBE representative at the Working Group of Good Scientific Practices and Integrity of the Parc de Recerca Biomèdica de Barcelona (PRBB).

Outreach activities: Participation in the media as an expert (i.e. el País, Catalunya Ràdio, COPE, Radio Euskadi, among others). Jury member at the scientific fair Exporecerca Jove. IBE Open house activities. Volunteer in the Evoke BCN organization. Participation in the round table “Maternity in Science”, PRBB. Different outreach activities in IBE and CSIC websites.

## **Part C. RELEVANT MERITS** (sorted by typology)

### **C.1. Publications** (see instructions)

- Pagone, V., Pujal, D. and Maestro, J.L. (2025). An insulin-like peptide specific for a cockroach male reproductive gland. PLoS One 20(8): e0329852.

- Rey-Alfonso, A., Maestro, J.L., Chauvigné, F., Gómez-Garrido, J., Alioto, T., Bossier, P., Finn, R.N. and Cerdà, J. (2025). Co-opted and canonical glycerol channels play a major role during anhydrobiosis of an extremophile crustacean. *BMC Biology* 23: 151.

-Pujal, D., Escudero, J., Cabrera, P., Bos, L., Vargas-Chávez, C., Fernández, R., Bellés, X. and Maestro, J.L. (2024). Functional redundancy of the three insulin receptors of cockroaches. *Insect Biochem. Mol. Biol.* 172, 104161.

-Farrús, N., Maestro, J.L. and Piulachs, M.D. (2024). CHMP4B contributes to maintaining the follicular cells integrity in the panoistic ovary of the cockroach *Blattella germanica*. *Biology of the Cell* 2024:e00010.

-Belles, X., Maestro, J.L. and Piulachs, M.D. (2024). The German cockroach as a model in insect development and reproduction in an endocrine context. *Advances in Insect Physiology* vol 66, 1-47.

-Domínguez CV, Pagone V, Maestro JL. (2022). Regulation of *insulin-like peptide* expression in adult *Blattella germanica* females. *Insect Biochem Molec Biol* 141, 103706.

-Montañés JC, Rojano C, Ylla G, Piulachs MD, Maestro JL. (2021). siRNA enrichment in Argonaute 2-depleted *Blattella germanica*. *Biochim Biophys Acta: Gene Regul Mech* 1864, 194704.

-Castro-Arnau J, Marín A, Castells M, Ferrer I, Maestro JL. (2019). The expression of cockroach insulin-like peptides is differentially regulated by physiological conditions and affected by compensatory regulation. *J Insect Physiol* 114, 57-67.

-Domínguez CV. Maestro JL. (2018). Expression of juvenile hormone acid *O*-methyltransferase and juvenile hormone synthesis in *Blattella germanica*. *Insect Science* 25,787-796.

-Rubio M, Maestro JL, Piulachs MD, Bellés X. (2018). Conserved association of Argonaute 1 and 2 proteins with miRNA and siRNA pathways throughout insect evolution, from cockroaches to flies. *Biochim Biophys Acta: Gene Regul Mech* 1861, 554-560.

**C.2. Congress**, indicating the modality of their participation (invited conference, oral presentation, poster)

-Pagone, V., Escudero, J., Shirai, Y., Maestro, J.L., Daimon, T., Bellés, X. and Piulachs, M-D. Using DIPA-CRISPR to study the functions of *Krüppel-homolog 1* in *Blattella germanica* embryos. International Congress of Entomology (ICE2024 Kyoto). Kyoto, Japan. Agosto 2024. Oral.

-Farrús N, Gonzalvo J, Escudero J, Maestro JL, Pujal D, Bau J, Piulachs MD “piRNAs as a new level of regulation of insect oogenesis”. European Congress of Entomology 2023. Crete, Greece. October 2023. Poster.

-Escudero J, Vargas-Chavez C, Fernández R, Bellés X, Maestro JL. "Structure, Expression and Function of the Three Insulin Receptors of Cockroaches". International Insect Hormones Workshop 2023. Riverside, CA, USA. June 2023. Oral.

-Maestro JL “Insulin signal and function in *Blattella germanica*”. International Conference for Blattodea Research 2023. Münster, Germany. April 2023. Oral.

-Piulachs MD, Shirai Y, Pagone V, Escudero J, Maestro JL, Daimon T, Bellés X. “DIPA-CRISPR: A convenient method to edit cockroach genomes. *kr-h1* edition in *B. germanica*. International Conference for Blattodea Research 2023. Münster, Germany. April 2023. Oral

-Farrús N, Piulachs MD, Maestro JL “Shrub contributes to the follicular cell integrity in the panoistic ovary of *Blattella germanica*”. XXVI International Congress of Entomology. Helsinki, Finland, July 2022. Poster

-Escudero J, Bellés X, Maestro JL. “The three insulin receptors of cockroaches”. XXVI International Congress of Entomology. Helsinki, Finland, July 2022. Poster

-Domínguez CV, Pagone V, Maestro, JL. “Regulation of the expression of insulin-like peptides in *Blattella germanica*”. 4<sup>th</sup> International Insect Hormone Workshop. Kolymbari, Greece, July 2019. Oral.

-Montañés JC, Rojano C, Maestro JL., Piulachs MD. “Argonaute-2 role in dsRNA processing in cockroaches”. Eight International Symposium on Molecular Insect Science. Sitges, Spain, July 2019. Poster.



-Maestro JL, Marin A, Castells M, Ferrer I, Castro J, Dominguez CV. "Insulin-like peptides and reproduction in *Blattella germanica*". The 3<sup>rd</sup> International Insect Hormone Workshop. Nasu Siobara, Japan, July 2017. Oral.

**C.3. Research projects**, indicating your personal contribution. In the case of young researchers, indicate lines of research for which they have been responsible.

-Papel de los piRNAs en la regulación de la oogénesis de insectos. Aspectos básicos y aplicados al control de plagas. MICINN. 2025-2028. 181.250 €. PI.

-Estudio de los factores genéticos que determinan la aversión a la glucosa en la cucaracha *Blattella germanica* y de su prevalencia en poblaciones españolas. Doctorado industrial con la empresa Mylva S.A. AGAUR, Generalitat de Catalunya. 2025-2028. 37.800 €. PI.

-Non-polluting control of cockroach pests by eliminating their essential symbionts. Programa TED. MICINN. 2023-2024. 127.650 €. PI

-Development of new insecticidal technologies against urban pests based on biomolecules. Industrial doctorate in partnership of MYLVA S.A. AGAUR, Generalitat de Catalunya. 2021-2024. 33.960 €. PI.

-The third insulin receptor of cockroaches. MICINN. 2020-2023. 151.000 €. PI.

-Ayudas extraordinarias para la preparación de proyectos 2019. CSIC. 2020. 8.893 €. PI.

-Pon freno a las cucarachas. FECYT- Precipita. 2019-2020. Researcher.

-Control of cockroaches with tailored RNAi. MINECO. 2016-2020. 99.000 €. PI.

-Ajuts de suport a la recerca de Catalunya. AGAUR. 2014-2016. Researcher.

-Nutritional signals and reproduction in insects. The role of FOXO transcription factor. MICINN. 2011-2014. 106.000 €. PI.

**C.4. Contracts, technological or transfer merits**, Include patents and other industrial or intellectual property activities (contracts, licenses, agreements, etc.) in which you have collaborated. Indicate: a) the order of signature of authors; b) reference; c) title; d) priority countries; e) date; f) Entity and companies that exploit the patent or similar information, if any

- Identificación de posibles contaminantes en cultivos puros de ácaros. February 2023 to February 2024. Company: Diater. Researcher responsible: M.D. Piulachs. Total amount: unfinished contract. CSIC number: 249425.

-Identificación de ácaros con herramientas moleculares. July 2021 to July 2022. Company: Diater. Researcher responsible: M.D. Piulachs. Total amount: 31.104 €. CSIC number: 225555.

-Cría y suministro de *Blattella germanica*, *Periplaneta americana* y *Blatta orientalis*. May 2021 to May 2022. Company: Allergen Servilab, SL. Researcher responsible: M.D. Piulachs. Total amount: 7.206 €. CSIC number: 223462.

-Joves i Ciència 2018. Provision of services in education. Oct to Dec 2018. Company: Fundació Catalunya-La Pedrera. Researcher responsible: J.L. Maestro. Total amount: 2.500 €. CSIC number: 189301.

-Joves i Ciència 2017. Provision of services in education. Oct to Dec 2017. Company: Fundació Catalunya-La Pedrera. Researcher responsible: J.L. Maestro. Total amount: 2.800 €. CSIC number: 176212.

-Test of insecticidal products against the cockroach *Blattella germanica*. Different provision of services in technological support along the last 10 years. Company: Comercial Química Massó, S.A. Researcher responsible: J.L. Maestro. Total amount: 17.060 €.