

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	Demetrio		
Family name	Raldúa Pérez		
Gender (*)	Male	Birth date (dd/mm/yyyy)	22/03/1965
Social Security, Passport, ID number	29085582N		
e-mail	drpqam@cid.csic.es	URL Web	
Open Research and Contributor ID (ORCID)(*)	0000-0001-5256-1641		

(*) Mandatory

A.1. Current position

Position	Investigador Científico		
Initial date	22/05/2023		
Institution	AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS, CSIC		
Departament/Center	Instituto de Diagnóstico Ambiental y Estudios del Agua, IDAEA		
Country	Spain	Teleph. number	+34 934006138
Key words	Environmental toxicology, zebrafish model, neurotoxicity, endocrine disruption		

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

Period	Position/Institution/Country/Interruption cause
2009-2023	Científico Titular, IDAEA-CSIC
2004-2009	Ramón y Cajal contract, Universidad Politécnica de Catalunya, Spain
2002-2004	Associate Researcher in the Laboratory of Genetic of Reproduction of Fish, Center of Aquaculture-IRTA, Spain
2000-2002	Post-Doct research CSIC fellow, in the Department of Environmental Chemistry, IIQAB-CSIC, Spain
1998-2000	Associate Researcher, (Biotechnology and Biological Sciences Research Council) in the Department of Physiology, Medical School, University of Newcastle upon Tyne, UK
1996-1998	Post-Doct research University of Zaragoza fellow, in the Laboratory of Neurobiology-University of Zaragoza, Spain
1992-1995	Four years Ph.D. student research fellow at the Department of Toxicology, University of Zaragoza, Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD in Veterinary Sciences	University of Zaragoza, Spain	1995
Licensed in Veterinary Medicine	University of Zaragoza, Spain	1993
Graduate in Veterinary Medicine	University of Zaragoza, Spain	1990

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

Demetrio Raldúa, DVM, PhD, ERT (orcid.org/0000-0001-5256-1641), is Senior Scientist and Water Research (IDAEA) from the Spanish Research Council (CSIC) since 2023.



Postdoctoral at the Department of Physiology of the Medical School of the University of Newcastle upon Tyne (UK), Center of Aquaculture-IRTA (Sant Carles de la Ràpita, 2002-2004) and Ramón & Cajal researcher at Laboratory of Environmental Toxicology of the Universitat Politècnica de Catalunya (UPC). Specialized in several aspects of vertebrate physiology and toxicology, he focused to the identification of effects and the analysis of mechanisms of action of environmental pollutants and drugs in vertebrates, using the zebrafish as experimental model. Author of more than 100 papers and book chapters, including journals as *Science*, *Progress in Neurobiology*, *Archives of Toxicology*, and *Environmental Science and Technology*, (4277 citations, *h-index*=39, Scopus). He integrated into the Institute for Environmental Assessment and Water Research (IDAEA-CSIC) as Tenured Scientist (Científico Titular) in 2009, opening a research line on Fish Toxicology. He is the developer of the Zebrafish Eleutheroembryo Thyroid Assay currently under validation by the Reference Laboratory for Alternatives to Animal Testing (EURL ECVAM) in collaboration with the Network of Laboratories for Validation of Alternative Methods (EU-NETVAL). His current work at IDAEA-CSIC is devoted to increase the understanding of the molecular bases behind of neurotoxic effects of environmental pollutants and drugs. By using zebrafish as vertebrate model, Raldua's lab is trying to decipher the adverse outcome pathways of neurotoxicants by linking toxic effects at different levels of organization, from molecular to behavioral. On one hand, they are using zebrafish for assessing the effect of environmental concentrations of neurotoxic or neuroactive compounds in aquatic ecosystems. For example, they have found that after 24h exposure to environmental concentrations of different legacy (fenitrothion, carbaryl) and emerging pollutants (nicotine, cotinine, 6PPD-quinone), zebrafish larvae exhibit altered some essential behaviors. In the case of the carbaryl, they were able to demonstrate that the observed behavioral effects were led by its effect as antagonist of ADRA2B and HTR2B. In the case of nicotine and cotinine, the strongest effect of the later on the visual motor response was probably related with their agonistic activity on zebrafish $\alpha 7$ nAChR. Moreover, after 2 weeks exposure to environmental concentrations of glyphosate, adult zebrafish exhibit anxiety-like behavior and changes in monoaminergic neurotransmitter system, and these effects seem to be mediated by changes in the intestinal microbiota and the activation of the microbiota-gut-brain axis. On the other hand, they are interested in using zebrafish as a vertebrate model for assessing neurologic disorders, especially those induced by the exposure to toxicants. He was involved in a collaborative work with [INSERM U1211 Maladies Rares: Génétique et Métabolisme (MRGM)], using zebrafish embryos for the study of motor neuron diseases, including the neurodegenerative disease PHARC. More recently Raldua's lab is testing different thioredoxin-mimetic peptides as potential antidotes against the acute neurotoxicity of acrylamide and methylmercury. During the last years, Dr. Raldua has coordinated national (NeuroAquaTox, CTM2017-83242-R; CogniRisk, PID2020-113371RB-C21) and international (Science for Peace and Security Programme Projects, MD.SFPP 984777 and G5852, funded by NATO) projects about the effects of environmental and human risk of neurotoxic compounds. He has also led the Proof-of-Concept project VideoAquaLab (PDC2021-120754-I00), providing his know how on kinematic analysis of the movement of zebrafish for the development of a new in-house platform, patent pending, for the analysis of the acoustic startle response, its habituation and the sensorimotor gating in adult zebrafish. He is Editor in Chief of *Toxics* and Editorial Board Member of *Frontiers in Pharmacology* and *Scientific Reports*.

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (see instructions)

Bellot M., Manen L., Prats E., Bedrossiantz J., Barata C Gómez-Canela C., Antolin A.A., and **Raldua D.** (2023) Short-term exposure to environmental levels of nicotine and cotinine impairs visual motor response in zebrafish larvae through a similar mode of action: Exploring the potential role of zebrafish $\alpha 7$ nAChR. *Science of The Total Environment*



Ricarte M., Prats E., Montemurro N., Bedrossiantz J., Bellot M., Gómez-Canela C., and **Raldúa D.** (2023) Environmental concentrations of tire rubber-derived 6PPD-quinone alter CNS function in zebrafish larvae. *Science of The Total Environment*, 3;896:165240

Faria M, Bellot M, Bedrossiantz J,..., and **Raldúa D** (2022) Environmental levels of carbaryl impair zebrafish larvae behaviour: the potential role of ADRA2B and HTR2B. *Journal of Hazardous Materials*, 128563, ISSN 0304-3894

Bedrossiantz J, Bellot M, Dominguez-García P,, and **Raldúa D** (2021) A Zebrafish Model of Neurotoxicity by Binge-Like Methamphetamine Exposure. *Frontiers in Pharmacology* 12, 770319

Faria M., Prats E., Rosas-Ramirez J.R.,, and **Raldúa D.** (2021) Androgenic activation, impairment of the monoaminergic system and altered behavior in zebrafish larvae exposed to environmental concentrations of fenitrothion. *Science of The Total Environment* 775: 145671

Faria M., Bedrossiantz J., Rosas-Ramírez J.R., ..., and **Raldúa D.** (2021) Glyphosate targets fish monoaminergic systems leading to oxidative stress and anxiety. *Environment International* 146: 106253

Faria M., Prats E., Gómez-Canela C.,, and **Raldúa D.** (2019) Therapeutic potential of N-acetylcysteine in acrylamide acute neurotoxicity in adult zebrafish. *Scientific Reports* 9, 16467

Faria M., Valls A., Prats E., Bedrossiantz J., Orozco M., Porta J. M., Gómez-Oliván L.M, and **Raldúa D.** (2019). Further characterization of the zebrafish model of acrylamide acute neurotoxicity: gait abnormalities and oxidative stress. *Scientific Reports* 9(1), 7075

Faria, M, Garcia-Reyero N, Padrós F,..., and **Raldúa D.** (2015) Zebrafish Models for Human Acute Organophosphorus Poisoning. *Scientific Reports* 5, 15591

Babin P., Goizet C., **Raldúa D.** (2014) Zebrafish models of human motor neuron diseases: advantages and limitations. *Progress in Neurobiology* 118: 36-58.

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

Melissa Faria, Oscar Soto, Diana Manjarres, Nicola Montemurro, Cristian Gomez-Canela, Demetrio **Raldúa**. Environmental concentrations of sertraline impair zebrafish larvae key survival behaviors. QUO VADIS Life Sciences, Opole, 23-27 June 2021 (oral presentation)

Juliette Bedrossiantz, Melissa Faria, Marta Mayol, Eva Prats, Natalia Reyero, Cristian Gómez-Canela, Leobardo Manuel Gómez-Oliván, Demetrio **Raldúa**. Glyphosate Targets Fish Monoaminergic Systems Leading to Oxidative Stress and Anxiety. SETAC Europe 31st Annual Meeting. Virtual. 3-6 May 2021 (oral presentation)

K. Conrow, D. **Raldúa**, N. Garcia-Reyero, K.H. Watanabe. An Adverse Outcome Pathway of Acetylcholinesterase Inhibition Leading to Neurodegeneration for Chemical Toxicity Assessment. SETAC North America 41st Annual Meeting. Virtual, 15-19 November 2020 (oral presentation)

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



VideoAquaLab: Engineering prototypes of integrated systems for behavioral research in aquatic organisms. Contract financed by the Ministry of Science and Innovation, Spain, PDC2021-120754-I00 (2021-2023). Coordinated by **Demetrio Raldúa** and Carlos Barata, IDAEA-CSIC (115,000€)

COGNIRISK: New behavioral-based methodologies, metabolomics and non-target chemical analyses for identification of environmental and human health risks of neuroactive chemicals in water. Contract financed by the Ministry of Science and Innovation, Spain, PID2020-113371RB-C21 (2021-2024). Coordinated by Carlos Barata and **Demetrio Raldúa**, IDAEA-CSIC (199,000€)

New generation of drugs protecting against neurotoxic industrial chemicals. Project from the Science for Peace and Security Programme (NATO), G5852 (2021-2024). Coordinated by **Demetrio Raldúa**, IDAEA-CSIC (300,000€)

NeuroAquaTox: Development of medium- and high-throughput methodologies for chemical risk assessment in aquatic ecosystems: neurobehavioural effects and pathophysiological mechanisms in zebrafish and *Daphnia magna*. Contract financed by the Ministry of Economy and Competitiveness, Spain, CTM2017-83242-R (2018-2020). Coordinated by **Demetrio Raldúa** and Carlos Barata, IDAEA-CSIC (228,690€)

Knowing the enemy: a mechanistic approach to fight against OPIDN. Project from the Science for Peace and Security Programme (NATO), MD.SFPP 984777 (2015-2018). Coordinated by **Demetrio Raldúa**, IDAEA-CSIC (324,105€)