

The mission of **TecnATox** is to carry out research and development in the area of environmental and food protection at an European level, as well as to satisfy, from the University, the needs of the administration and the productive sectors, through actions of knowledge and technology transference, aiming to improve health and life quality of the population, to protect the environment and health protection. **TecnATox** is a specialized research center in the area of Technology Transfer in Toxicology, Food and Environmental Health, and member of the TECNIO Network of ACCIÓ.



Projects 2022

Industrial Doctorates:

- Fundació privada AJEM and Universitat Rovira i Virgili (2018-2022)
- Fundació privada ICEERS and Universitat Rovira i Virgili (2020-2023)



Projects 2023

MANGO: The chemical exposoMe of pregnAnt women with GestatiOnal diabetes mellitus -Montse Marquès
FIS: A comprehensive multiomics approach toward understanding the relationship between aging and dementia - Mònica Bulló

Project Type

- International
- National
- Local

Publications

1. Marquès, M. & Domingo, J. L. Positive association between outdoor air pollution and the incidence and severity of COVID-19. A review of the recent scientific evidences. *Environ Res* 203, (2022).
2. Marquès, M. et al. Long-term exposure to PM10 above WHO guidelines exacerbates COVID-19 severity and mortality. *Environ Int* 158, 106930 (2022).
3. Domingo, J. L. Call for Papers on potential toxic effects of COVID-19 vaccines. *Food Chem Toxicol* 160, (2022).
4. González, N. et al. Occurrence and dietary intake of food processing contaminants (FPCs) in Catalonia, Spain. *Journal of Food Composition and Analysis* 106, 104272 (2022).
5. Sabuz Vidal, O., Deepika, D., Schuhmacher, M. & Kumar, V. EDC-induced mechanisms of immunotoxicity: a systematic review. <https://doi.org/10.1080/10408444.2021.2009438> 51, 634–652 (2022).
6. Deepika, D. et al. Framework for risk assessment of PFAS utilizing experimental studies and in-silico models. *Environ Res* 208, 112722 (2022).
7. Balaguer-Trias, J., Deepika, D., Schuhmacher, M. & Kumar, V. Impact of Contaminants on Microbiota: Linking the Gut-Brain Axis with Neurotoxicity. *International Journal of Environmental Research and Public Health* 2022, Vol. 19, Page 1368 19, 1368 (2022).
8. Biton-Porsmoguer, S. et al. A study of trophic structure, physiological condition and mercury biomagnification in swordfish (*Xiphias gladius*): Evidence of unfavourable conditions for the swordfish population in the Western Mediterranean. *Mar Pollut Bull* 176, (2022).
9. Piscitelli, P. et al. The role of outdoor and indoor air quality in the spread of SARS-CoV-2: Overview and recommendations by the research group on COVID-19 and particulate matter (RESCOP commission). *Environ Res* 211, (2022).
10. Souza, J. M. O. et al. Levels of phthalates and bisphenol in toys from Brazilian markets: Migration rate into children's saliva and daily exposure. *Sci Total Environ* 828, (2022).
11. Herrero, M. et al. Health risk assessment of polychlorinated biphenyls (PCBs) in baby clothes. A preliminary study. *Environ Pollut* 307, (2022).
12. Expósito, N. et al. Levels of microplastics and their characteristics in molluscs from North-West Mediterranean Sea: Human intake. *Mar Pollut Bull* 181, 113843 (2022).
13. Herrero, M. et al. Early-Life Exposure to Formaldehyde through Clothing. *Toxics* 10, 361 (2022).
14. Marquès, M., Nadal, M. & Domingo, J. L. Human exposure to polybrominated diphenyl ethers (PBDEs) through the diet: An update of the scientific literature. *Food Chem Toxicol* 167, (2022).
15. Núñez-Delgado, A., Ahmed, W., Bontempi, E. & Domingo, J. L. The environment, epidemics, and human health. *Environ Res* 214, (2022).
16. Souza, M. C. O. et al. Legacy and emerging pollutants in Latin America: A critical review of occurrence and levels in environmental and food samples. *Sci Total Environ* 848, (2022).
17. Deepika, D. et al. Unravelling sex-specific BPA toxicokinetics in children using a pediatric PBPK model. *Environ Res* 215, (2022).
18. Domingo, J. L. An updated review of the scientific literature on the origin of SARS-CoV-2. *Environ Res* 215, 114131 (2022).
19. Biosca-Brull, J. et al. Prenatal, but not postnatal exposure to chlorpyrifos affects social behavior of mice and the excitatory-inhibitory balance in a sex-dependent manner. *Food Chem Toxicol* 169, (2022).
20. Deepika, D. et al. Chlorpyrifos, permethrin and cyfluthrin effect on cell survival, permeability, and tight junction in an in-vitro model of the human blood-brain barrier (BBB). *Neurotoxicology* 93, 152–162 (2022).
21. Dronjak, L. et al. Screening of microplastics in water and sludge lines of a drinking water treatment plant in Catalonia, Spain. *Water Res* 225, 119185 (2022).
22. Kumar, S., Deepika, D. & Kumar, V. Pharmacophore Modeling Using Machine Learning for Screening the Blood–Brain Barrier Permeation of Xenobiotics. *Int J Environ Res Public Health* 19, 13471 (2022).
23. Domingo, J. L. Dioxins and furans in cow milk and dairy products: A review of the scientific literature. *Int J Dairy Technol* (2022) doi:10.1111/1471-0307.12917.
24. Esplugas, R., Linares, V., Bellés, M., Domingo, J. L. & Schuhmacher, M. In vitro neurotoxic potential of emerging flame retardants on neuroblastoma cells in an acute exposure scenario. *Toxicology in Vitro* 87, 105523 (2023).
25. Martínez, M. Á. et al. Lack of association between endocrine disrupting chemicals and male fertility: A systematic review and meta-analysis. *Environ Res* 217, 114942 (2023).
26. Khoshakhlagh, A. H., Saberi, H. R., Gruszecka-Kosowska, A. & Kumar, V. Respiratory functions and health risk assessment in inhalational exposure to vinyl acetate in the process of carpet manufacturing using Monte Carlo simulations. *Environmental Science and Pollution Research* 2022 1, 1–13 (2022).

Scientific Dissemination

Conferences

SCB iec: Congress on micro- and nano-plastic pollution.

Joaquim Rovira: oral communication "Quins efectes tenen els micro- i nanoplàstics en ecosistemes marins?".

SETACCopenhagen:

• **Montse Marquès:** posters

- Is there any potential role of endocrine disruptors on development of gestational diabetes mellitus? A pilot study of INSULIN cohort (Catalonia, Spain)".
- Is There Any Potential Role of Essential and Toxic Trace Elements on COVID-19 Infection? An Observational Study in Catalonia (Spain)

• **Joaquim Rovira:** posters

- Indoor Concentration of Flame-Retardants in Spanish Environments: A Multimedia Modelling Approach".
- "Breastfeeding infants' exposure to endocrine disruptors and neurotoxic substances: Earlyfood

• **Lara Dronjak:**

- **Poster:** Innovative technology for in situ quantification of nano and microplastics in water media.
- **Oral presentation:** Following the fate of Microplastics: Why are WWTP two edged swords?

• **Nora Expósito:** posters

- Can Microplastics in Mollusks to have a potential risks for human health of Catalonia coast habitants
- Microplastics in Beach Sands and Sandy Sediments: Comparative Analysis of Infrared and Fluorescence Methods
- Sea Urchin Interaction With Nano-And Microplastics Particles: Size and Morphology Influence on Ingestion-Egestion

• **Roser Esplugas:** poster

- In Vitro Neurotoxic Effects of Emerging Flame Retardants at Non-Cytotoxic Concentrations on Neuroblastoma Cells

• **Marilia Souza:** poster

- Evaluation of Aromatic Amines Levels in Textile Products From Spain and Brazil



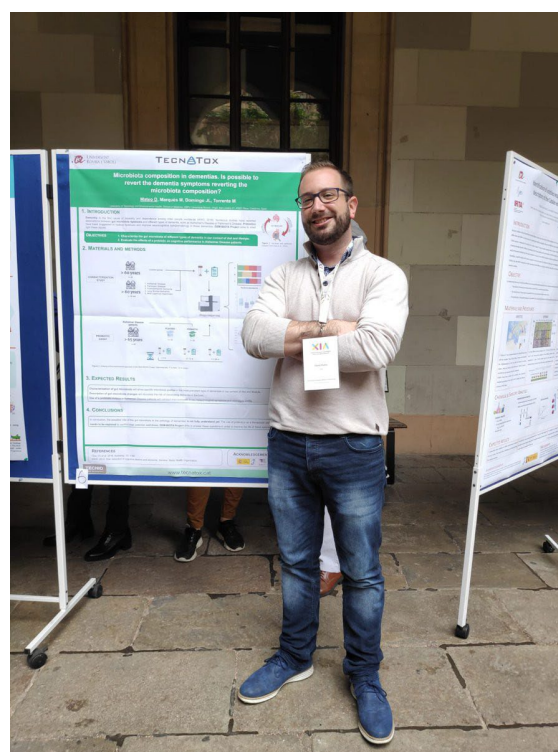
SEEDO 2022 Congress, Barcelona, Spain

Mònica Bulló: ¿Quién puede evitar la reganancia ponderal tras cambiar de hábitos?



Xianetwork, Barcelona, Spain.

Mònica Bulló, Jaume Folch and Josefina Ruiz de Azua



Meeting for the World Alzheimers Day, Reus, Spain.

Mònica Bulló and Jaume Folch

Networking session in the University of Wageningen, The Netherlands- XIANetwork.

David Mateo: Microbiota composition in dementias. Is it possible to revert the dementia symptoms reverting the microbiota composition?

Round Table in “La participació de les dones en projectes europeus de recerca i innovació” - Marta Schuhmacher

Efiaqua2022, Tecnoaqua 2nd Conference on Microplastics, Valencia, Spain.

Jordi Sierra: oral presentation “Los microplásticos: preocupación emergente en las aguas”.



Scientific Dissemination

Conferences

ICT2022: The XVth International Congress of Toxicology, Maastricht, The Netherlands

Scientific Poster

- Development of a gut microbiota-host in-vitro model for immunotoxicity (also presented in "AstraZeneca Student Award for Innovation 2022") - Óscar Sabuz
- Effect of endocrine disrupting chemicals on gut microbiota in the in-vitro model of enteric nervous system - Jordina Balaguer
- Evaluation of the generic physiologically based pharmacokinetic model (PBPK) for organophosphate flame retardants (OPFRs) and neurotoxic risk assessment in children - Deepika Deepika
- Integrated in-vivo and in-silico (PBPK) study for pharmacokinetic profiling of amorphous solid dispersion of riluzole - Deepika Deepika
- Deciphering blood-brain barrier permeability with pharmacophore enabled artificial intelligence (AI) - Saurav Kumar.



II Jornadas de Biología de la sección territorial de la Catalunya Sud de La Societat Catalana de Biología, Reus, España.

Oral Communication

- El microbioma en malalties metabòliques - Mònica Bulló
- Efecto del consumo de almendras en la composición y la actividad de las células mieloides innatas y en las células linfoides - Melina Rojas
- Microbiota and neurotoxicity: EMBrio Project - Jordina Balaguer
- Bioinformatic tools for microbioma analysis in mice models of the Alzheimer's Disease - Alex Folch
- Small RNA i miRNA com a potencials biomarcadors de la malaltia d'Alzheimer - Laia Gutiérrez
- Metabolitos derivados de la microbiota intestinal y riesgo cardiovascular - Wahiba Ahmed-Khodja
- Crosstalk between chemical-microbiota-immunotoxicity using integrated biology-based modeling - Óscar Sabuz

I Jornada Nutracéutica: compuestos bioactivos y nutracéuticos

Scientific Poster

- Interacción de la microbiota intestinal con el metabolismo del huésped y la salud cardiovascular en el síndrome metabólico - Melina Rojas
- Cambios en los metabolitos circulantes durante la pérdida de peso y el mantenimiento - Wahiba Ahmed-Khodja

Workshop en Emprendimiento para Investigadores, Santander, España

- Melina Rojas

XIII Congreso Internacional Dieta Mediterránea, Barcelona, España

- Mónica Bulló and Melina Rojas



Publications 2022: 26 articles**Doctoral Thesis: 1**

- **Deepika Deepika:** Quantitative Systems Toxicology Modeling for Neuronal Adverse Outcome.
Supervisors: Prof. Marta Schuhmacher and Dr. Vikas Kumar.

Welcome TecnATox new members:**Master Students**

- Dominique Thomas: Degree in Biology and Environmental Science (UVCU, USA).
- Nil Novau: Degree in Biotechnology (URV, Spain).

PhD Students

- Erika Torres: Degree in Environmental Science and Technologies (Universidad Santo Tomás, Colombia). Martí i Franquès COFUND.
- Ana Glez: Degree in Chemistry and Master's Degree in Food Safety

Postdoctoral Researcher

- Josefina Ruiz de Azua: PhD in Nutrition and Metabolism (URV, Spain).

And farewell to Mengmei Ni and Marilia Souza!**Special mention to...**

Lara Dronjak for her International Research Internship in the Department of Toxic Substances Control in California, USA.

Neus González for her Postdoctoral Stay and David Mateo for his International Research Internship in the Analysis and System Toxicology Group (ASTox) in the University of Sao Paulo, Brazil.

Roberta Carafa, Nora Exposito, Jordi Sierra and Jaume Folch for the "Premio a las mejores Invenciones" of the OEPM.

Vikas Kumar for the organization of the PARC WP5 Kick-of meeting in Tarragona.

And up to 3 researchers of TecnATox (Prof. Domingo, Prof. Schuhmacher and Martí Nadal) have been identified as career-long top-cited scientists, while two more (Mònica Bulló and Joaquim Rovira) are in the list of influential researchers of 2021.

Congratulations!



Scientific Dissemination

General population activities

Nit de la Recerca

- Som PLASTICÍvors!: Joaquim Rovirai, Jordi Sierra, Nora Expósito, Lara Dronjak, Erika Torres, Dominique Thomas.
- Bacteris i els seus misteris: Jordina Balaguer, Àlex Folch, Nuria Gayà, Laia Gutiérrez, Melina Rojas, Óscar Sabuz, Wahiba Ahmed-Khodja



Vols saber què investigo?

Star Wars: una nova esperança per a l'Alzheimer
- Laia Gutiérrez
- Second place.



Caixa Forum

- Som PLASTICÍvors!
- Lara Dronjak
- Una mirada al passat: Buscant els orígenes de la malaltia d'Alzheimer
- Laia Gutiérrez

Repte Experimenta y Fira Repte

- Jordina Balaguer, Roser Esplugas, Nuria Gayà, Melina Rojas

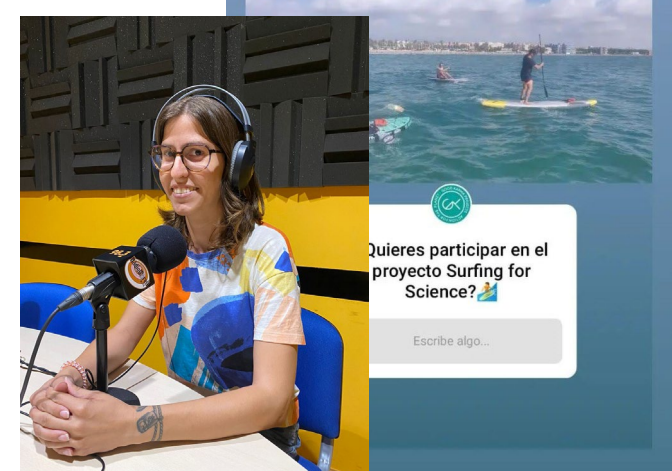
Day of Women and Girls in Science 2022

- Project #100tífiques

- Jordina Balaguer

Microplastic sampling in La Pineda Beach organized by Good Karma Project.

- Lara Dronjak, Óscar Sabuz



Informative interview about PETROMARKER project and volunteer recruitment.

- Nuria Gayà.

Recruiting volunteers in Plaça Prim for AlmondIS study.

- NUMEH students.

Scientific Dissemination

General population activities

Joaquim Rovira:

- Setmana de la Ciència: Benvinguts al Plasticocè, l'edat del plàstic.
- Interviewed by NTN24 about the problematic of increasing microplastic presence in seafood.
- Radio interview about consumption of microplastics-containing mollusks on adults.
- Dissemination of TecnAtox participation in the URV's scientific divulgation initiatives (Aperitius de ciència)
- Talk about microplastics' problematics in the "Trobada d'Escoles Verdes" in Cambrils.
- Dissemination about the microplastic studies in La Pineda beach organized by Good Karma Project.
- Online speech in "Aigua BCN" about exposure to emergent contaminants in Barcelona's water.

Montse Marquès:

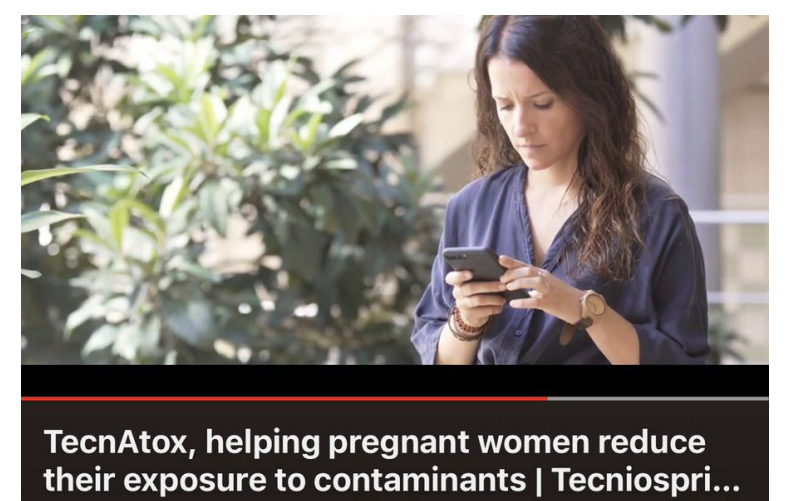
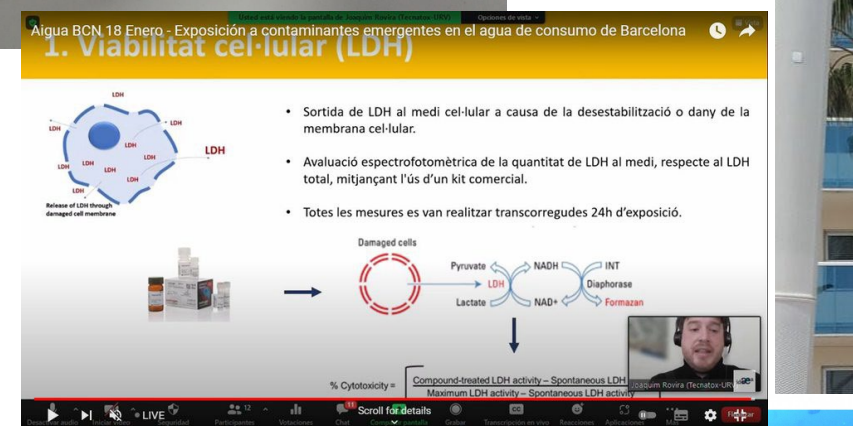
- Interview in Som-hi TV program
- Radio Interview about the role of environmental contaminants in severity of COVID19.
- TecnAtox, helping pregnant women reduce their exposure to contaminants (INSULIN dissemination).

Jaume Folch:

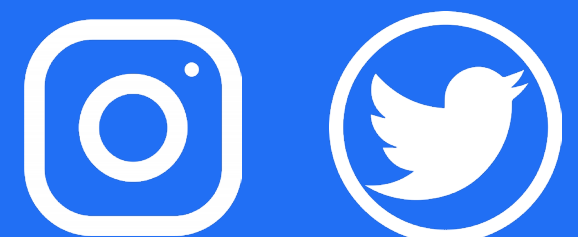
- Interview in "El Far" and presentation of the book "La mar de Tarragona".

Roser Esplugas:

- Participation in InspiraSTEAM project in CEIP Obispo Blanco.



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