Partner search

Company/Entity: Universidad Autónoma de Madrid (UAM) **CIF:** Q2818013A	
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Short Company presentation

(R & D guidelines, international activities, etc.)

Universidad Autónoma de Madrid (UAM) & Prof. Edgad Gamero – Collaborative R&D Activities
The **Universidad Autónoma de Madrid (UAM)** is one of Spain's leading public research universities, internationally recognized for its excellence in biomedical research, innovation, and international collaboration. The **Faculty of Medicine** at UAM integrates multidisciplinary research groups with a strong focus on pharmacology, neuroscience, immunology, and translational medicine.

Among the faculty, **Dr. María Cano Abad** is an **experienced pharmacologist** specializing in **drug discovery for neurodegenerative diseases**. Her work focuses on identifying and characterizing novel molecular targets and bioactive compounds involved in neuroinflammation and purinergic signalling, with particular interest in the **P2X7 receptor** and **inflammasome pathways**. She has extensive expertise in preclinical models, mechanistic pharmacology, and high-throughput cellular screening platforms.

Professor ***Edgar J. P. Gamero, based in Mato Grosso do Sul, Brazil***, is an expert in natural product research, with a particular focus on the biochemical and pharmacological characterization of bioactive natural compounds from Brazilian biodiversity. His group provides access to unique, unexplored natural compounds with potential therapeutic applications.

This partnership combines complementary strengths:

- Brazil provides access to *novel natural products and advanced chemical isolation, characterization techniques, and preliminary experiments* (Dias et al., 2025)
- Spain contributes **cutting-edge screening technology** and **pharmacological expertise** in inflammatory and neurodegenerative disease pathways.(Calzaferri et al., 2020)

Together, this collaboration aims to accelerate the discovery of **new anti-inflammatory and neuroprotective agents**, particularly those targeting the **P2X7 receptor–inflammasome axis**, advancing therapeutic innovation through international cooperation. This partnership aligns with global R&D priorities in **biotechnology, drug discovery**, and **natural product-based innovation.**

Dias DA, Souza de Souza KF, Moslaves ISB, Buri MV, Basilio DCLS, Espinoça IT, Parisotto EB, Silva-Filho SE, Migliolo L, Jaques JAO, Franco DG, Chudzinski-Tavassi AM, Rita PHS, da Silva DB, Carollo CA, Toffoli-Kadri MC, ***Paredes-Gamero EJ****.* Identification of purinergic system components in the venom of Bothrops mattogrossensis and the inhibitory effect of specioside extracted from Tabebuia aurea. Purinergic Signal. 2025 21:317-329.

Calzaferri F, Ruiz-Ruiz C, de Diego AMG, de Pascual R, Méndez-López I**, Cano-Abad MF,** Maneu V, de Los Ríos C, Gandía L, García AG.
The purinergic P2X7 receptor as a potential drug target to combat neuroinflammation in neurodegenerative diseases. Med Res Rev. 2020; 40:2427-2465.

DESCRIPTION OF ITS TECHNOLOGY AND CAPABILITIES IN R & D

(Products, technologies, applications, services, etc.)

The **Department of Pharmacology at the Universidad Autónoma de Madrid (UAM)** possesses comprehensive infrastructure and technological capabilities to effectively support the proposed research project.

At the **research team laboratory level**, we are equipped with:

- ELISA plate readers
- FLUOstar plate reader
- High-speed and refrigerated centrifuges
- Equipment for small animal surgery, including stereotactic frames, microdrills, gas anesthesia systems, and complete surgical tools
- Refrigerators and deep freezers (-20ºC and -80ºC)
- Electrophoresis systems
- Cell culture facilities
- Conventional PCR and real-time PCR (rtPCR) equipment
- Two fluorescence microscopes
- Confocal microscopes
- HPLC

Additionally, the **Faculty of Medicine's core facilities** include:

- Two high-resolution confocal microscopes
- Three flow cytometers
- Access to an **animal facility** housing transgenic **P2X7(-) mouse models**, suitable for in vivo studies on purinergic diseases

One of our fluorescence microscopes is specifically optimized for **calcium imaging using Fura-2**, thanks to a **xenon light source** and **Cell R (Olympus) technology**, allowing real-time monitoring of intracellular calcium dynamics. This system is also equipped for **FRET (Förster Resonance Energy Transfer) experiments**, using an appropriate filter set on an upright microscope, enabling advanced investigation of molecular interactions and signalling pathways.

Together, these resources provide a robust platform for conducting advanced cellular, molecular, and in vivo experiments, particularly in the areas of **neuroinflammation**, **purinergic signalling**, and **drug discovery**.

PROPOSED COLLABORATIVE PROJECT IN R & D

(As much detail as possible, both in what it offers and what you want in a potential partner)

- **Technology offered to international partners:** We offer access to a unique collection of previously unstudied natural products, including extracts from Brazilian plants, endophytic fungi, and venoms from native species of the Cerrado and Pantanal regions, which together represent a rich source of potential modulators of inflammatory processes. Brazil has the technological capacity and expertise to isolate, purify, and chemically characterize bioactive compounds from these natural sources using advanced chromatographic and spectrometric methods. Chemical data will be aligned, statistically analyzed, and compared with preliminary findings targeting the P2X7 receptor–inflammasome axis to construct a molecular network, integrating chemical and pharmacological responses to identify the most promising molecules.
- **Technology looking for an international partner:** In Spain, we are equipped with high-throughput screening (HTS) platforms and HTS-compatible infrastructure, including a stable cell line that overexpresses the P2X7 purinergic receptor, enabling functional assays on inflammation-related pathways. To strengthen and expand these capabilities, we are seeking international partners with complementary expertise and advanced tools to jointly evaluate the biological activity of natural products, particularly in relation to the P2X7–inflammasome axis.
- **Other specifications, requirements, or comments:** We aim to establish a collaborative pipeline that integrates compound discovery and characterization in Brazil with functional screening and pharmacological validation in Spain. This partnership will accelerate the identification of novel anti-inflammatory agents with therapeutic potential. We welcome collaboration with research institutions and biotech/pharma partners interested in drug discovery, immunomodulation, or purinergic signaling.

- **PROPOSED COLLABORATIVE PROJECT IN R & D:**

This project aims to explore natural products as potential modulators of the P2X7 receptor and inflammasome pathways, focusing on compounds derived from Brazilian biodiversity**.** Inflammasomes are multiprotein complexes of the innate immune system that detect both pathogen-associated molecular patterns (PAMPs) and damage-associated molecular patterns (DAMPs), leading to the activation of caspase-1 and the subsequent maturation of pro-inflammatory cytokines IL-1β and IL-18. This process results in pyroptosis, a form of inflammatory cell death that plays a dual role in both host defense and pathological inflammation. Dysregulated inflammasome activation, particularly involving the P2X7 receptor, has been implicated in the pathogenesis of various chronic diseases, including cardiovascular, metabolic, oncological, and neurodegenerative disorders.

General comments:

- By sending this information authorizing its dissemination.
- A profile of the company could be attached. More information:

  Department of Pharmacology and Therapeutics

  https://www.uam.es/medicina/facultad/departamentos/farmacologia

  Center for Clinical Pharmacology.

  https://www.uam.es/medicina/en/medicina/cfc

  IIP-Biomedical Research Institute Hospital Universitario de la Princesa

  https://www.iis-princesa.org/

  https://www.iis-princesa.org/grupo/grupo-16/