PRE-DOCTORAL CONTRACT ("SANTIAGO GRISOLÍA" PROGRAM): NEONATAL RESEARCH GROUP (GIP–IIS La Fe)

Research in analytical chemistry focused on the biomedical field, and more specifically on neonatology, plays a crucial role in improving medical care and the quality of life for newborns. Newborns are particularly vulnerable and require highly specialized medical attention. Analytical research in this discipline allows for a deeper understanding of neonatal disorders and the most effective therapeutic strategies. **GIP–IIS La Fe includes among its lines of work the study of extracellular vesicles (EVs)** to improve our knowledge about disease mechanisms and to enable the diagnosis, prevention, and treatment of neonatal diseases and physiological alterations.

The activities to be carried out by the pre-doctoral researcher contracted through the "Santiago Grisolía" Program funded by the regional government (*Generalitat Valenciana*) will be framed in two established lines of research of GIP-IIS La Fe:

1) **Administration of Extracellular Vesicles Isolated from Donor Human Milk (DHM) as a Nutritional Supplement for the Prevention of Necrotizing Enterocolitis (NEC) in Preterm Newborns**

The main objective of this line is to evaluate, through a clinical study, the tolerance and safety of the oral administration of EVs isolated from DHM between 14 and 28 days of life as a dietary supplement in preterm newborns at risk of developing NEC. Procedures for the isolation and quality control of DHM-EVs will be established to obtain sufficient quantities. During the study, we will thoroughly characterize the biochemical composition, specifically the lipid profile of the milk EVs, as well as their functionality and understand the link between environmental factors and the composition of human milk EVs. Additionally, the redox status and oxidative/nitrosative stress in treated newborns will be evaluated.

2) **Identification of Biomarkers for the Onset and Course of Neurodevelopmental Disorders in Preterm Infants**

The objective focuses on developing a dynamic model of intestinal microbiota variation in response to environmental factors (obstetric, neonatal, and pediatric conditions; type of breastfeeding and introduction of complementary feeding; psychosocial environment) that modify the risk of autism spectrum disorders (ASD) in preterm children during the first two years of life. Specific objectives include: (i) Characterization of the psychopathological development of those who evolve into ASD; (ii) Determination of intestinal microbiota profiles (composition and activity) and bacterial extracellular vesicles (BEVs); (iii) Identification of environmental risk and protection factors from the prenatal stage(iv) Analysis of the interaction between environmental factors and changes in intestinal microbiota and BEVs on the eventual onset of ASD.

One of the most notable advantages of this predoctoral project is that the researcher will have the opportunity to work with cutting-edge analytical techniques, not only in the field of analytical chemistry research but also in data analysis, significantly expanding their horizons in acquiring advanced skills. However, what truly makes this opportunity unique is the direct access to firsthand clinical research. This immersion in clinical research is essential for the professional development of the predoctoral researcher, as it allows them not only to complete their training in the development and application of bioanalytical methods but also to analyze the challenges posed by translating new developments into a real clinical environment as early diagnostic biomarkers of ASD in preterm infants. Working directly with patients and multidisciplinary health professionals (obstetricians, neonatologists, psychiatrists, clinical psychologists, and nurses) will provide a comprehensive perspective and a deep understanding of how research can translate into tangible health benefits.

OBJECTIVE AND CHARACTERISTICS OF THE PRE-DOCTORAL CONTRACT

a) Hiring by research centers of predoctoral research personnel who have obtained a Bachelor's or Master's university degree (or the equivalent in their country) issued by a university or institution outside the European Union. The grants aim to finance a one-year postdoctoral orientation period for those predoctoral hires who obtain their doctorate before the start of the final year.

b) The duration of the grants will be up to four years, with the starting date between November 2024 and January 2025.

c) The gross annual salary will be €19,716.90 during the first year, €21,292.88 during the second year, €23,231.46 during the third year, and €25,170.32 during the fourth year.

d) The grant includes an additional allocation of €1,600 in the first year for travel and establishment expenses in the Valencian Community, to be covered by the research organization to which the researcher is affiliated.

CANDIDATE REQUIREMENTS

a) Hold a Bachelor or Master university degree (or the equivalent in their country), issued by a university or institution outside the European Union, in the area of chemistry/biochemistry/biotechnology/biology, and have completed these studies after January 1, 2019.
b) Be admitted to a doctoral program at a university in the region of Valencia at the time of hiring.
c) Have knowledge of Spanish, Valencian, or English, at a conversational level, suitable for carrying out the research work.
d) Not hold a doctoral degree.
e) Not have previously received a grant from the “Santiago Grisolía” Program.

CONTACT

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ADDITIONAL INFORMATION (not available in English)

https://ceice.gva.es/documents/161863198/375808894/CONVOCATORIA+PUBLICADA+DOGV+2024.pdf/67dc33e9-162a-6d35-0013-643cf94a6878?t=1698130140809