This project has received funding from the *European Union's Horizon 2020 research and innovation programme* under Marie-Sklodowska Curie grant agreement No 101034285

UNIVERSITY: University of Navarra

WIT AREA:

☐**Automotive, Mechatronics and Advance Manufacture**

☒**Health**

☐**Energy**

☐**IA**

WIT PROGRAMME´S RESEARCH LINE NAME:

Regenerative medicine: in vivo generation of pluripotent stem cells derived organs

DOCTORAL PROGRAMME:

Doctoral Program of applied medicine and biomedicine
https://en.unav.edu/web/doctoral-program-of-applied-medicine- and-biomedicine

COMPLETE DESCRIPTION OF THE LINE (max. 1000 characters)

The new frontier of regenerative medicine is the generation of whole organs from pluripotent stem cells (PSCs). In the last decade, blastocyst complementation has emerged as a promising approach to obtain such organs in vivo, using genetically modified embryos gestated in surrogate mothers. In our lab we have obtained intraspecies complemented mice with the heart and vascular system derived from exogenous PSCs. In a mouse-rat interspecies setting we have obtained complemented hearts at embryonic stage. https://www.biorxiv.org/content/10.1101/2022.10.04.510637v1.

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In this project, we will develop new strategies to allow the generation of adult rat hearts into mice.

RESEARCH GROUP NAME:

Stem cell biology

COORDINATOR:

- Last and first name; link to the "Portal of scientific production":
  Aranguren Xabier
  https://pubmed.ncbi.nlm.nih.gov/?term=aranguren_xl&sort=date
  https://www.biorxiv.org/content/10.1101/2022.10.04.510637v1
  https://www.biorxiv.org/content/10.1101/2022.03.06.482812v2
  (accepted in Stem Cell Reports)

- Department: Regenerative medicine programme
- Email: xlaranguren@unav.es
- Telephone number: +34-948194700 ext. 811024

MEMBERS OF THE LINE RESEARCH:

Giulia Coppiello, PhD,

Marta Moya, PhD student

Paula Barlabe, PhD student

Carolina Barreda, laboratory technician

ANOTHER RESEARCH LINES OF THE GROUP: list of them

- The Stem cell biology lab investigates the blastocyst complementation approach at different levels, from the study of rat and human iPSCs to obtain cells with higher chimeric potential, to the generation of

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genetically modified models for blastocyst complementation, to the generation of complemented animals.

- Entities involved in research lines and contact person:

✓ Academic entities:

The group has collaborated with Dr. Lopez-Andrés (Navarrabiomed), Dr. Mazo (CUN), Dr. Garcia-Vázquez (University of Murcia), Dr. Torres (CNIC, Madrid), Dr. Ordovás (University of Zaragoza), Dr. Luttun (KULeuven, Belgium).

✓ Industrial entities:

The group collaborates with "Los Alecos farm" for the generation of human-pig chimeras and transgenic pig models.

- Joint supervision of doctoral thesis with international universities or non-academic institutions:
  Non applicable

- Brief group overview (max. 1000 characters)

Dr. Aranguren's group started in 2014 with a Marie Curie scholarship after a long stay at KULeuven (Leuven, Belgium). Throughout this time, Dr. Aranguren has been recognized with "Ramón y Cajal" scholarship and Science-Ekaitza prize, and has obtained prestigious projects from the Science and Innovation Ministery and from Gobierno de Navarra-Estrategicos as project coordinator, between others. The group's strategic line focus on the development of the necessary technology to create humanized organs inside a pig. _During these years, Dr. Aranguren has been the (co)-director of 3 PhD students and 2 master thesis students and has published multiple articles in prestigious journals. The

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group members have presented their work in national and international scientific conferences.

- Link of the group to the "Portal of scientific production" https://cima.cun.es/investigacion/personal-investigacion/xabier-aranguren-lopez

- Pictures, links… to academic or industrial partners (if any)

ACADEMIC REQUIREMENTS:

Biological, veterinary or medical sciences master degree

ADDITIONAL REQUIREMENTS:

To be highly motivated and have high enthusiasm for science