

ITACA-COR GROUP

Arrhythmias are present in the life of a high percentage of the population not only in Spain, but in other countries too, with 1 in 3 middle-aged adults being in risk of developing cardiac arrhythmias. Furthermore, cardiac pathologies cause a worsening in daily life and life expectancy, given that it supposes limitations in patients' physical activity. The cardiovascular research group (**Cardiac Oriented Research, COR**), belonging to the ITACA University Institute, develops scientific research of excellence in the cardiovascular area, and promotes applied technological development initiatives and the transfer of biomedical technology to different medical and industrial sectors.

The COR group focuses on bridging engineering, health sciences and artificial intelligence with the common goal of preventing, diagnosing, and fighting cardiac arrhythmias through innovative and non-invasive methods based on 3D intracardiac mapping, which improve the effectiveness and appropriateness of treatments. The area is mainly composed of university staff specialising in bioelectromagnetic and biomedical engineering, with the assistance of contract researchers, predoctoral and postdoctoral researchers. Currently 7 people are full time working at the group.

COR group is coordinated by Dr María S. Guillem*¹, currently deputy director of I.U.I ITACA and Professor at the electronics Department. She has directed 4 doctoral thesis and has participated in more than 40 publications indexed in the Journal Citations Reports (JCR), with a total of 714 citations (H index of 21). She has also co-authored more than of 140 publications to international or national conferences.

COR develops its scientific and technological development activity within competitive programmes with regional, national, and European funding. Thus, the research group participates in national and international research projects, as well as in international medical technology consortiums. To name a few projects in which we participate at international level, the COR group coordinates the 4-year H2020-funded PersonalizeAF project (<http://www.personalizeaf.net/>), with a budget of approximately 4 million euros and involving 17 public and private entities from all over Europe. The group has also participated in the European project AFFINE (<https://eithealth.eu/project/7884/>), funded by the European Institute of Innovation and Technology (EIT), which involves 8 institutions with a budget of €750,000. In summary, the IP has led competitive projects: 2 from the National Plan, 2 European projects (one H2020 project as coordinator), 4 regional projects and 7 human resources projects. In addition, Dr Guillem has participated in 27 other projects. The group has been granted 3 patents, 1 of which is the subject of a Proof of Concept project with a licensing option.

The research team, with more than 15 years of activity, is now well established with close ties to leading national and international research centres (Oxford University, UK; Stanford University, CA, USA) as well as to national and international industry), and to international associations, such as Arrhythmia Alliance. In addition, the group has bi-directional relationships with renowned hospitals and clinicians, to bring and prove the efficacy and validity of the research results first-hand in patients suffering from heart disease: among others, Hospital Clinic in Barcelona, Hospital Gregorio Marañón and Hospital la Fe in Valencia.

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