

# **BRACCO FELLOWSHIPS EDUCATION IN RESEARCH ENROLMENT FORM**

**Name of Institution**\_\_\_\_\_HOSPITAL DE LA SANTA CREU I SANT PAU

**City and Country of Institution**\_\_\_\_\_BARCELONA (SPAIN)

## **RESEARCH GROUP**

Brief description of the research group and of its mission:

The purpose of this multidisciplinary research group study is to explore the common characteristics of otosclerosis which may be misdiagnosed, and develop a deep learning model for the diagnosis of otosclerosis based on temporal bone high-resolution computed tomography scans. Few parameters can help to predict the degree of hearing loss, but the latest radiological improvements have opened up the possibility of predicting the degree and type of hearing loss.

## **TITLE OF PROPOSED RESEARCH PROJECT**

Deep learning analysis in diagnosing otosclerosis on temporal bone CT scans.

## **OBJECTIVES**

- To explore radiomics in otosclerosis on temporal bone CT images
- To explore the ability to correlate radiomics with audiometry before stapedial surgery, and the ability to predict post-surgical audiometric results

## **APPLICANT'S DUTIES**

- To learn CT temporal bone anatomy and temporal bone disease related to otosclerosis.
- Classification of CT temporal bone cases following the current qualitative classifications according to each disease (fenestral and retrofenestral).
- Database curation (radiological data).
- Correlation analysis between manual and automatic segmentation.

## **APPLICANT'S BENEFITS**

- Participation on scientific outcomes of the project i.e. presentations to congresses or publications of papers

- A specific one-to-one training in post-processing tools and python programming is offered to create an image classifier using AI.
  - Mentoring by a senior radiologist specialist in head and neck imaging.
  - Participate in the committees of neuroradiology, and head and neck (including otology-radiology correlation) of the hospital during the stay.
  - Access for study to a database of more than 250 patients diagnosed and surgically confirmed with otosclerosis.
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- Project Leader: Esther Granell
  - Members: Josep Munuera, Júlia de Juan, César Orús, Andrea Lozano, Jorge Eliecer Méndez