



3.5.4 Oto-Neurosurgery Research

Publications: 14 | Q1: 6

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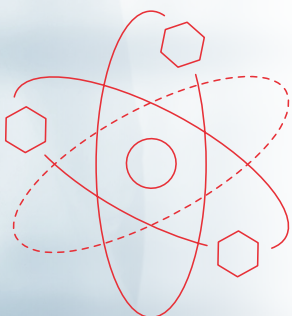


STRATEGIC OBJETIVES

- The systematic use of magnetic resonance imaging (MRI) has dramatically increased the diagnosis of patients with vestibular schwannoma (VS). The majority of patients with VS complain of hypoacusis or tinnitus, and very few present more debilitating symptoms. Therefore, the approach with a patient with VS is complex because the treatment of the tumour is directed towards avoiding complications arising from its growth and not necessarily towards improving the patient's quality of life. Currently, there are no factors that allow us to predict the growth of vestibular schwannoma.
- Recent advances in the field of oncogenetics have allowed us to better understand the development of VS.
- The study of the correlation between clinical variables related to the biological behaviour of VS and its genetic and epigenetic disorders aims to find the factors that predict the behaviour of VS. This will help us identify patients who need

active treatment of the tumour and avoid the morbidity associated with the treatment in those who do not need it.

- The cochlear implant (CI) is currently the only solution for relieving the condition in patients with severe or profound hypoacusis who do not benefit from a prosthetic adaptation with a conventional hearing aid. It is estimated that there are currently 120,000 adults in Spain with profound sensorineural hypoacusis. In recent years, new hearing implants have been developed including osseointegrated implants and active middle ear implants. It's excellent and often spectacular results and its low rate of complications have transformed CI from an innovative technology in the experimental phase to a routine, safe and effective procedure, capable of returning deaf individuals to the hearing world and ending their isolation, increasing their quality of life. Over the past decade the relationship between hearing loss and cognitive decline in the



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older population has become the subject of research. We also explore the relationships between the cognitive function and the audiometric performances in patients wearing a CI.

- Moderate to severe hypoacusis is one of the most prevalent medical problems. Ciliated sensory cells and neurons do not regenerate in mammals, which is the main cause of sensorineural hearing loss (SNHL). Mutations altering the levels of Insulin like growth factor type 1 (IGF-1) cause SNHL in humans and mice. IGF-1 is an essential factor in the postnatal development of mammals, and its level decreases with ageing. We are studying the participation of IGF-1 in the pathophysiology of SNHL, as well as the molecular signalling networks conferring specificity in the otic cellular response to IGF-1. We are studying the signals that regulate otic damage with the objective of identifying the key factors implicated in functional repair and regeneration of inner ear cells. In short, our work contributes to the study of auditory pathophysiology, with the ultimate objective of investigating the potential clinical usefulness of IGF-1 and downstream signalling in human sensorineural deafness.
- Bell's palsy is the most common diagnosis associated with facial nerve weakness or paralysis. However, not all patients with facial paresis / paralysis have Bell's palsy. Other common causes include treatment of
 - vestibular schwannoma, head and neck tumors, iatrogenic injuries, Herpes zoster, or trauma. The approach to each of these conditions varies widely. The addition of adjunctive major or minor facial procedures in
 - the context of a multidisciplinary Facial Paralysis Unit improves the final facial outcome.

RESEARCH LINES

- Tumors of the CNS: vestibular schwannoma, meningiomas, gliomas, and other: surgery, oncogenetics, quality of life, etc.
- Auditory implants: cochlear implants, middle ear implants, bone-conduction implants: surgical aspects, telephone use, quality of life, perception of music, cognitive decline, anatomy based fitting, etc.
- Hereditary hearing loss, including rare syndromic (IGF-I deficiency) and non syndromic human deafness.
- Neurobiology of hearing: molecular and cellular basis of hearing loss of different aetiology (genetic, noise exposure, malnutrition, and ototoxic drugs). Identification of transcriptional networks, possible therapeutic targets and potential markers for diagnosis.
- Development of experimental models of deafness (genetic, noise exposure, malnutrition, ototoxic drugs and surgery associated trauma) for pre-clinical studies and validation of potential therapeutic molecules.
- Head and Neck tumors and voice pathology.
- The role of cellular senescence in the development of the inner ear and the auditory pathology.
- Studies on three systems implicated in the development of tumor metastasis: the tyrosine kinase receptors EGFR/ErbB2; the non-receptor tyrosine kinase c-Src; and the adaptor protein Grb7.
- Facial paralysis: evaluation, diagnosis and surgery
- Thyroid cancer
- Vocal fold paresis and paralysis: evaluation, diagnosis and treatment options

RESEARCH ACTIVITY

Doctoral Theses

- Ramos Marques dos Santos J.** Ganancia auditiva, biocompatibilidad y extrusión de prótesis de titanio en la reconstrucción quirúrgica del oído medio [dissertation]. Madrid: Universidad Autónoma de Madrid: 2024(08/03/2024). Director: Gavilán Bouzas J.

Master Theses

- Pérez Troncoso JL.** Estudio del papel de la NADPH oxidasa 4 (NOX4) en la función auditiva y su evolución con la edad [dissertation]. Madrid: Universidad Autónoma de Madrid: 2024(01/06/2024). Director: Murillo Cuesta S. PID2020-THEARPY

Publications

- Alzhrani F, Aljazeera I, Abdelsamad Y, Alsanosi A, Kim AH, Ramos-Macías A, Ramos-de-Miguel A, Kurz A, Lorens A, Gantz B, Buchman CA, Tavora-Vieira D, Sprinzl G, Mertens G, Saunders JE, Kosaner J, Telmesani LM, Lassaletta L, Bance M, Yousef M, Holcomb MA, Adunka O, Thomasen PC, Skarzynski PH, Rajeswaran R, Briggs RJ, Oh SH, Plontke S, O'Leary SJ, Agrawal S, Yamasoba T, Lenarz T, Wesarg T, Kutz W, Connolly P, Anderson I, Hagr A.** International Consensus Statements on Intraoperative Testing for Cochlear Implantation Surgery. *Ear Hearing*. 2024; 45(6): 1418-26. Article. IF: 2.8; D1
- Andries E, Lorens A, Skarzynski PH, Skarzynski H, Calvino M, Gavilán J, Lassaletta L, Tavora-Vieira D, Acharya A, Kurz A, Hagen R, Anderson I, Koinig K, Abdelsamad Y, van de Heyning P, Van Rompaey V, Mertens G.** Holistic assessment of cochlear implant outcomes using the international classification of functioning disability and health model: data analysis of a longitudinal prospective multicenter study. *Eur Arch Oto-Rhino-L*. 2024; 281(8): 4161-73. Article. IF: 2.2; Q1
- Calvino M, Zuazua-González A, Gavilán J, Lassaletta L.** Objective and Subjective Assessment

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3.5. Cancer and Human Molecular Genetics Area

- of Music Perception and Musical Experiences in Young Cochlear Implant Users. *Audiol Res*. 2024; 14(1): 86-95. Article. IF: 1.8; Q2
- Domínguez-Ruiz M, Murillo-Cuesta S, Contreras J, Cantero M, Garrido G, Martín-Bernardo B, Gómez-Rosas E, Fernández A, del Castillo EJ, Montoliu L, Varela-Nieto I, del Castillo I.** A murine model for the del(GJB6-D13S1830) deletion recapitulating the phenotype of human DFNB1 hearing impairment: generation and functional and histopathological study. *Bmc Genomics*. 2024; 25(1): 359. Article. IF: 3.7; Q2
- Grau-van Laak C, Ruiz-García C, Lassaletta L, Morales-Puebla JM.** Chronic otorrhea and osteomyelitis of the external auditory canal by *Achromobacter xylosoxidans*: an uncommon diagnosis. *Eur Arch Oto-Rhino-L*. 2024; 281(4): 2031-5. Article. IF: 2.2; Q1
- Lassaletta L, Calvino M, Díaz M, Morales-Puebla JM, Sánchez-Cuadrado I, Varela-Nieto I, Gavilán J.** Intraoperative assessment of cochlear nerve functionality in various vestibular schwannoma scenarios: Lessons learned. *Hearing Res*. 2024; 446: 108997. Article. IF: 2.5; Q1
- Lassaletta L, Cervera LA, Altuna X, Cabeza EA, Ruiz MA, Caletrio AB, Rosario JBD, Farpon RC, Marcos MC, Escada P, Espinosa-Sánchez JM, Leal RG, Gavilán J, Martínez JG, González-Aguado R, Martínez-González V, Jiménez GG, Antón-Candela AH, García BJH, Dotu CO, López RP, Manrique M, Sanz EM, Álvarez RM, Martínez H, Martínez-Martínez M, Rey-Martínez J, Romero FR, Ruiz SS, Vallejo LA, Varela AS, Varela-Nieto I, Puebla JMM.** Clinical practice guideline on the management of vestibular schwannoma. *Acta Otorrinolaringol Esp*. 2024; 75(2): 108-28. Article. IF: 1.1; Q3
- Lassaletta L, Sánchez-Cuadrado I, Mato-Patino T, Peñarocha J, Rivera-Núñez MA, Santos-Olmo RMT, Gavilán J, Morales-Puebla JM.** Has Coronavirus Disease 2019 Changed the Incidence and Outcome of Bell's Palsy? *J Int Adv Otol*. 2024; 20(1): 19-25. Article. IF: 1.2; Q3

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- **Morales-Puebla JM, Fernández-Fournier M, Plana-Blanco A, Lassaletta L.** Variations in the treatment of acute peripheral facial paralysis. A nationwide survey. *Acta Otorrinolaringol Esp.* 2024; 75(1): 31-9. Article. IF: 1.1; Q3
- **Ruiz-García C, Lassaletta L, López-Larrubia P, Varela-Nieto I, Murillo-Cuesta S.** Tumors of the nervous system and hearing loss: Beyond vestibular schwannomas. *Hearing Res.* 2024; 447: 109012. Article. IF: 2.5; Q1
- **Ruiz-García C, Riesco LR, Mateos-Serrano B, Millán RB, Muñoz AJD, Gavilán J, Ramírez PP, Marcos PMR, Catalán AL, Lecumberri B, Álvarez-Escolá C, Castro A.** Disease-free survival and response to therapy of clinically node- negative papillary thyroid cancer treated without central neck dissection: Retrospective study of 321 patients. *Acta Otorrinolaringol Esp.* 2024; 75(4): 224-30. Article. IF: 1.1; Q3
- **Usami S, Nishio S, Gavilán J, van de Heyning P, Mertens G, Karltorp E, Skarzynski H, Hagr A, Manoj M, Staecker H, Zernotti ME, Rajan GP, Müller J, Simón F, Anderson I.** HEARING group genetic marker study: genetic background of CI patients. *Acta Oto-Laryngol.* 2024; 144(10): 542-51. Article. IF: 1.0; Q3
- **Usami SI, Nishio S, Gavilán J, Acharya A, Hagr A, Lassaletta L, Li YX, Maheshwari SS, Kameswaran M, Parzefall T, Raine C, Rak K, Selleck AM, Staecker H, Stöver T, Sugarova S, Topsakal V, Van Rompaey V, Mertens G, Volkenstein S, Völter C, Shehata-Dieler W, Zernotti ME, Van de Heyning P.** Testing for genetic and viral etiologies in congenital hearing loss based on a survey of cochlear implant centers: proposed HEARING group consensus and future directions. *Acta Oto-Laryngol.* 2024; 144(11-12): 602-9. Article. IF: 1.0; Q3
- **Zuazua-Gonzalez A, Calvino M, Postigo A, Domingo C, Gavilán J, Lassaletta L.** Spanish translation and validation of the Music-Related Quality of Life Questionnaire (MuRQoL) in postlingually deaf cochlear implant users. *Eur Arch Oto-Rhino-L.* 2024; 281(9): 4575-84. Article. IF: 2.2; Q1

Research projects

- **Castro Calvo A.** Caracterización multiómica del carcinoma escamoso de cabeza y cuello mediante biopsia gaseosa y líquida: aplicación diagnóstica,

pronóstica y de seguimiento. HN-OMICS. (PI-5761). ISCIII. 2023-2025. **Managment centre:** IDIBAPS

- **Castro Calvo A.** Estudio sobre la utilidad del tubo de derivación salivar ("by-pass") en la prevención de la fistula faringo-cutánea tras laringectomía total. (PI-5952). SEORL - CCC. 2022-2024. **Managment centre:** IDIBAPS
- **Castro Calvo A.** Towards A better paradigm for head and neck Cancer Treatment applying artificial Intelligence: an international Cohort study of electronic health records. HNC-TACTIC. (PI-5150). Head and Neck Cancer International Group y Savana. 2022-Ongoing. **Managment centre:** FIBHULP
- **García-López I.** Parálisis bilateral de las cuerdas vocales: epidemiología y posibilidades terapéuticas aplicadas (PI-3780). Med-El Elektromedizinische Geräte Gesellschaft M. B. H. 2019-Ongoing. **Managment centre:** FIBHULP
- **Isabel Varela Nieto.** CAM Investigo (09-PIN1-00004.3/2022). CAM. 2022-2023. **Managment centre:** CSIC
- **Isabel Varela Nieto; Silvia Murillo Cuesta.** Ayudas extraordinarias a realizar en el marco del plan estatal de I+D+I (2024AEP115). CSIC. 2024-2024. **Managment centre:** CSIC
- **Lassaletta Atienza L.** Análisis de las habilidades musicales y de la voz en niños y adultos con IC (PI21/0147). ISCIII. 2022-2024. **Managment centre:** FIBHULP
- **Lassaletta Atienza L.** Leespq en niños con implante coclear en español (PI-4725). Med-El Elektromedizinische Geräte GMBH. 2021-Ongoing. **Managment centre:** FIBHULP
- **Lassaletta Atienza L.** Implantes cocleares y función cognitiva en mayores de 55 años . Confederación Española de Familias de Personas Sordas. 2021-Ongoing. **Managment centre:** FIBHULP
- **Marco-Contelles JL.** MINA-CM Madrid Innovative Neurotech Alliance (P2022/BMD-7236). CAM. 2023-2026. **Managment centre:** UPM
- **Murillo Cuesta S.** Ayudas para a la adquisición de equipamiento científico-técnico de los laboratorios de la red de laboratorios e infraestructuras científico-técnicas de la Comunidad de Madrid (REDLAB) (2024 REDLAB/SAL 33887). CAM. 2024-Ongoing. **Managment centre:** CSIC
- **Murillo Cuesta S.** Nuevas estrategias terapéuticas para el tratamiento de enfermedades raras

neurosensoriales (SensoRare) (ER24P5AC761-ACCI2023-19-761). CIBERER. 2024-2026. **Managment centre:** CIBERER

- **Murillo Cuesta S.** Grupo de Trabajo CIBERER Modelos murinos para el estudio de enfermedades raras (ERP1PD1761). CIBERER. 2024-2026. **Managment centre:** CIBERER
- **Murillo Cuesta S; Varela Nieto I.** Hipoacusia neurosensorial y protección auditiva: explorando las bases genéticas y moleculares para desarrollar nuevas estrategias terapéuticas (PROHEAR) (PID2023-147347OB-I00). MICINN. 2024-Ongoing. **Managment centre:** CIBERER
- **Sánchez Cuadrado I.** Validación al español de la escala de valoración clínica eFACE y del sunnybrook facial grading system (PI20/01032). ISCIII. 2021-2024. **Managment centre:** FIBHULP
- **Varela Nieto I.** A sound proteome for a sound body: targeting proteolysis for proteome remodeling (ProteoCure). (CA20113). EU Framework Programme Horizon 2020. COST. 2021-2025. **Managment centre:** Centro de Investigación Príncipe Felipe
- **Varela Nieto I.** Conexión Nanomedicina del CSIC (NANOMED-CSIC). Agencia Estatal CSIC. 2021-2024. **Managment centre:** Instituto de Química Médica CSIC
- **Varela Nieto I.** Desarrollo e implementación de métodos alternativos en investigación auditiva (202320E217). CSIC. 2023-2024. **Managment centre:** CSIC
- **Varela Nieto I.** SENESENCE2030: Targeting Cell Senescence to Prevent Age-Related Diseases (CA23119). EU Framework Programme Horizon 2020. COST. 2024-2028. **Managment centre:** CSIC
- **Varela Nieto I .** Bench to bedside transition for pharmacological regulation of NRF2 in noncommunicable diseases (BenBedPhar) (CA20121). EU Framework Programme Horizon 2020. COST. 2021-2025. **Managment centre:** Department of Biochemistry and Institute of Biomedical Research.
- **Varela Nieto I, Murillo Cuesta S.** Addendum to the contract by and between Consorcio Centro de Investigación Biomédica en Red, M.P. (CIBER) and Spiral Therapeutics Inc (SPIRAL) on April 26 2017 for scientific research and development services in the field of hearing loss. (ER17PE12). Spiral Therapeutics. 2017-2025. **Managment centre:** CIBERER

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3.5.Cancer and Human Molecular Genetics Area

- **Varela Nieto I, Murillo Cuesta S.** Bases genéticas y moleculares de la sordera neurosensorial y del daño auditivo: exploración de nuevas dianas y estrategias terapéuticas (T-HEARPY) (PID2020-115274RB-I00). MCIN/AEI/10.13039/501100011033. 2021-2024. **Managment centre:** CSIC
- **Varela Nieto I, Murillo Cuesta S.** Contract by and between Consorcio Centro de Investigación Biomédica en Red, M.P. (CIBER) and Spiral Therapeutics Inc (SPIRAL) on April 26 2017 for scientific research and development services in the field of hearing loss and addendums (CIBERER-SPIRAL THERAPEUTICS ERP17PE12). Spiral Therapeutics. 2017-2024. **Managment centre:** CIBERER

Cibers and Retics

- **Varela Nieto I.** Centro de Investigación en Red de Enfermedades Raras. (CIBERer). ISCIII. (31/12/2024). CSIC

Patents and trademarks

- **Polak M, Roca-Ribas Serdá F, Gavilán Bouzas J, Lassaletta Atienza L, Miró Castillo N, Rodrigo Dacosta J, inventors; MED-EL Elektromedizinische Geräte GmbH, assignee.** Hearing treatment in patients with questionable cochlear nerve functionality. US2011275953, PCT/US2011/035312; 2010 May 05.
- **Cobo Parra P, Varela Nieto I, Murillo-Cuesta S, Navares Zaera R, Martínez Vega R, Cediell Algovia R, inventors; CSIC, UCM, assignees.** Anechoic acoustic chamber for evaluating the auditory function in laboratory animals. P201031720; 2010 November 23.
- **Cobo Parra P, Varela Nieto I, Murillo-Cuesta S, Cediell Algovia R, inventors; CSIC, UCM, assignees.** Method for designing a reverberating acoustic chamber for hearing test with animals. Procedimiento para diseñar una cámara acústica reverberante para ensayos auditivos con animales. P200802895, PCT/ES2009/070433; 2008 October 14.
- **Marco Contelles JL, Varela Nieto I, Murillo Cuesta S, Rodríguez de la Rosa L, Alcázar Gonzalez A, inventors; CSIC, CIBERER, FIBIOHRC, assignees.** Quinolynitron derivatives for use in the prevention and/or treatment of hearing loss. EP22382706.4; 2023 July 22