3.5.4 Oto-neurosurgery Research Group

Publications:15 | **Q1:**3

COMPOSITION

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- **Carolina Alfonso Carrillo.** Facultativo Especialista de Área en Otorrinolaringología. Hospital Universitario La Paz
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- **Isabel García López.** Facultativo Especialista de Área en Otorrinolaringología. Hospital Universitario La Paz
- **Javier Gavilán Bouzas.** Jefe de Servicio de Otorrinolaringología. Hospital Universitario La Paz. Catedrático. Departamento de Cirugía. Facultad de Medicina. Universidad Autónoma de Madrid
- **Teresa González Otero.** Facultativo Especialista de Área en Cirugía Maxilofacial. Hospital Universitario La Paz
- **Coloma Grau Van Laak.** Médico Interno Residente en Otorrinolaringología. Hospital Universitario La Paz
- **Ana María Jiménez Lara.** Investigador Titular. IIBM "Sols-Morreale"
- **Marta Mancheño Losa.** Facultativo Especialista de Área en Otorrinolaringología. Hospital Universitario La Paz
- **José Manuel Morales Puebla.** Facultativo Especialista de Área en Otorrinolaringología. Hospital Universitario La Paz
- **Silvia Murillo Cuesta.** Investigadora Postdoctoral. IIBM Sols-Morreale & CIBERER
- **María Fernanda Pedrero Escalas.** Facultativo Especialista de Área en Otorrinolaringología. Hospital Universitario La Paz
- **Carmen Ruiz García.** Facultativo Especialista de Área en Otorrinolaringología. Hospital Universitario La Paz
- **Isabel Pilar Sánchez Cuadrado.** Facultativo Especialista de Área en Otorrinolaringología. Hospital Universitario La Paz
- **María Isabel Varela Nieto.** Profesor de Investigación. IIBM Sols-Morreale & CIBERER
- **Antonio Villalobo Polo.** Profesor de Investigación. IIB "Alberto Sols"

STRATEGIC OBJECTIVE

- 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 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 declive, anatomy based fitting, etc.
- IGF-I deficiency: a rare syndromic human deafness.
- Neurobiology of hearing: molecular and cellular bases of hearing loss of different aetiology (genetic, noise exposure, malnutrition, and ototoxic drugs). Identification of transcriptional networks.
- Development of experimental models of deafness (genetic, noise exposure, malnutrition, ototoxic drugs and surgery associated trauma) for pre-clinical studies with potential therapeutic molecules, thus identifying possible therapeutic targets, potential markers for diagnosis and generation of vital guidelines.
- Head and Neck tumors and voice pathology.
- The role of celular senescence in the development of the inner ear and the audithory 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

- **García Mato A.** Mecanismos moleculares implicados en la regulación de la homeostasis coclear. Papel del IGF-1 y de la G6PD[dissertation]. Madrid: UAM: 2023(01/06/2023). Director: Varela Nieto I, Rodríguez de la Rosa L
- **Triana Pascual MAE.** Calidad de la voz cantada en sopranos, influencia del texto y el acompañamiento musical[dissertation]. Madrid: UAM: 2023(28/04/2023). Director: Gavilan Bouzas J, García López I.

Master Theses

- **Méndez Grande I.** Establecimiento de técnicas para la generación de esferoides a partir de células de schwannoma vestibular[dissertation]. Madrid: Universidad CEU San Pablo: 2023(01/07/2023). Director: Miguel Cosgaya J.

Final Degree Theses

- **Caballero Lombaña J.** Caracterización de la respuesta de células de schwannoma vestibular a agentes senogénicos y senolíticos [dissertation]. Madrid: UAM: 2023(30/06/2023). Director: Jiménez Lara AM
- **Pérez Ruiz I.** modelo de daño acústico por ruido blanco de banda ancha en rata[dissertation]. Madrid: UCM: 2023(01/09/2023). Director: Cediel R, Murillo Cuesta S
- **Merlano Castellanos S.** Factores predictivos de la función del nervio facial tras la cirugía del schwannoma vestibular[dissertation]. Madrid: UAM: 2023(13/06/2023). Director: Lassaletta Atienza L, Morales Puebla JM

Publications

- **Angulo JDZ, Labrador ML, Álvarez AES, Calvo AC, Prieto AFF, Heredero AF.** Carotid axis repair with autologous vein graft due to recurrent post-tonsillectomy bleeding in a child. Angiologia. 2023; 75(4): 268-72. Article. IF: 0.1; Q4
- **Calvino M, Sánchez-Cuadrado I, Gavilán J, Lassaletta L.** Long-term non-users of transcutaneous auditory implants: thirty years of experience at a single institution. Int J Env Res Pub He. 2023; 20(13): 6201. Article. Not indexed
- **Carlson ML, Lohse CM, Agazzi S, Babu SC, Barker FG, Barnett S, Bi WL, Biggs N, Boahene KD, Breen JT, Brown KD, Cayé-Thomasen P, Cosetti MK, Deep NL, Dey JK, Dornhoffer JR, Forner D, Gurgel RK, Hansen MR, Hunter JB, Kalamarides M, Kim IA, King AT, Kircher ML, Lassaletta L, Link MJ, Lloyd SKW, Lund-Johansen M, Marinelli JP, Matthies C, Mehta V, Moore EJ, Nassiri AM, Neff BA, Nelson RF, Olson JJ, Patel NS, Celda MP, Plitt AR, Price DL, Thomas Roland J , Sweeney AD, Tasche KK, Tatagiba M, Tveiten O, Van Gompel JJ, Vrabec JT, Wanna GB, Weisskopf PA.** Rationale for the development of a novel clinical grading scale for postoperative facial nerve function: results of a multidisciplinary international working group. Otol Neurotol. 2023; 44(10): E747-54. Article. IF: 1.9; Q3
- **de Lope C, García-Lucena R, Magariños M, León Y, Casa-Rodríguez N, Contreras N, Escudero-Iriarte C, Varela-Nieto I, Maire P, Palmero I.** Dysfunction of programmed embryo senescence is linked to genetic developmental defects. Development. 2023; 150(9): dev200903. Article. IF: 3.7; Q1
- **García-Mato A, Cervantes B, Rodríguez-de la Rosa LR, Varela-Nieto I.** IGF-1 Controls metabolic homeostasis and survival in hei-oc1 auditory cells through akt and mtor signaling. Antioxidants. 2023; 12(2): 233. Article. IF: 6.0; Q1
- **Lassaletta L, Calvino M, Sánchez-Cuadrado I, Skarzynski Piotr H, Cywka KB, Czajka N, Kutyba J, Tavora-Vieira D, Van de Heyning P, Mertens G, Staecker H, Humphrey B, Zernotti M, Zernotti M, Magele A, Ploder M, Zabeu JS.** QoL, CIs, QALYs, and Individualized rehabilitation: the clinical and practical benefits of regularly assessing the quality of life of adult cochlear implant recipients. Int J Env Res Pub He. 2023; 20(20): 6906. Article. Not indexed
- **Lassaletta L, Morales-Puebla JM, Molnar D, González-Otero T, Gavilán J.** Side-to-end intratemporal hypoglossal-to-facial transfer. Atlas Oral Maxillofac Surg Clin North Am. 2023; 31(1): 9-17. Review. Not indexed

- **Morales-Puebla JM, Gómez-Camacho H, Gavilán J, Lassaletta L.** Otorhynolaryngology image as supplementary teaching material. Rev Orl. 2023; 14(4): 235-45. Article. IF: 0.1; Q4
- **Morales-Puebla JM, Lassaletta L, Sánchez-Cuadrado I, Calvino M, Gavilán J.** Is age a limiting factor for audiological results in active middle ear implants? J Pers Med. 2023; 13(12): 1650. Article. IF: 3.0; Q2
- **Sánchez-Cuadrado I, Mato-Patino T, Morales-Puebla JM, Peñarrocha J, Díez-Sebastián J, Gavilán J, Lassaletta L.** Validation of the Spanish version of the Sunnybrook facial grading system. Eur Arch Oto-Rhino-L. 2023; 280(2): 543-8. Article. IF: 1.9; Q2
- **Sprinzl GM, Magele A, Schoerg P, Hagen R, Rak K, Kurz A, van de Heyning P, Calvino M, Lassaletta L, Gavilán J.** A novel representation of audiological and subjective findings for acoustical, bone conduction and direct drive hearing solutions. J Pers Med. 2023; 13(3): 462. Article. IF: 3.0; Q2
- **Triana-Pascual MA, García-López I, Gavilán-Bouzas J.** Quality of the singing voice in sopranos. Influence of the text and the musical accompaniment in the opera singing. Acta Otorrinolaringol Esp. 2023; 74(3): 160-8. Article. IF: 0.9; Q3
- **Valderrama PB, Calvo AC, Riesco LR, Zapata RR, Ramírez PP.** Fibrous variant of Hashimoto's thyroiditis as a sign of IgG4-related disease, mimicking thyroid lymphoma: Case report. Endocrinol Diabetes Nutr. 2023; 70: 60-2. Letter. IF: 1.8; Q4
- **Villalobo A.** Regulation of ErbB receptors by the Ca2+ sensor protein calmodulin in cancer. Biomedicines. 2023; 11(3): 661. Review. IF: 3.9; Q2
- **Villalobo A.** Ca2+ signaling and Src functions in tumor cells. Biomolecules. 2023; 13(12): 1739. Review. IF: 4.8; 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 fístula 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.** Programa CAM ayudas para la contratación de ayudantes de investigación y técnicos de laboratorio (PEJ-2020-TL/BMD-17631). CAM. 2022-2023. *Managment centre: CSIC*
- **Lassaletta Atienza L.** Análisis de las habilidades musicales y de la voz en niñoz 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 Gerate Gmbh. 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.** of Antisense RNA Therapeutics (DARTER) (CA 17103 Delivery). EU Framework Programme Horizon 2020. COST. 2023-2023. *Managment centre: CSIC*
- **Rey Herranz JA.** Contrato Miguel Servet Categoria A (CES05/027). ISCIII. 2006-2025. *Managment centre: FIBHULP*
- **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, 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. Spiral Therapeutics. 2017-Ongoing. *Managment centre: CIBERER*
- **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 addedums (CIBERER-SPIRAL THERAPEUTICS ERP17PE12). Spiral Therapeutics. 2017-2024. *Managment centre: CIBERER*
- **Varela Nieto I, Murillo-Cuesta S.** Plataformas ISCIII de apoyo a la I+D+I en Biomedicina y Ciencias de la Salud (PT20/00118). ISCIII. 2020-2023. *Managment centre: CSIC*
- **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, Valencia*
- **Varela Nieto I.** Ayuda para la realización de doctorado industrial para la Agencia Estatal Consejo Superior de Investigaciones Científicas y la empresa Alodia Farmaceutica S.L (IND2020/BMD-17454). Agencia Estatal CSIC. Aloda Farmaceútica S.L. 2020-2023. *Managment centre: CSIC*
- **Varela Nieto I.** Ayuda para la realización de doctorado industrial para la Agencia Estatal Consejo Superior de Investigaciones Científicas y la empresa Alodia Farmaceutica S.L (IND2020/BMD-17454). Agencia Estatal CSIC. Aloda Farmaceútica S.L. 2020-2023. *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. 2021-2024. *Managment centre: Department of Biochemistry and Institute of Biomedical Research.*
- **Varela Nieto I.** Conexion Nanomedicina del CSIC (NANOMED-CSIC). Agencia Estatal CSIC. 2021-2024. *Managment centre: Instituto de Química Médica CSIC*

Cibers and Retics

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

Clinical trials

- **Castro Calvo A.** Hacia un mejor paradigma para el tratamiento del cáncer de cabeza y cuello aplicando inteligencia artificial: un estudio de cohorte internacional de historias clínicas electrónicas.
  Type/Phase: No EPA
  Sponsored by: Savana Research, S.L
  Signed date: 05/02/2023
- **Sánchez Cuadrado IP.** Estudio multicéntrico, de dos brazos, doble ciego, doblemente enmascarado, de grupos paralelos, controlado con placebo para la evaluación de la eficacia y la seguridad de la ormulación de liberación prolongada de betahistina pr 48 mg una vez al día en comparación con la formulación de liberación convencional de betahistina ir 24 mg, enfermedad de meniere.
  Type/Phase: III
  Sponsored by: Intas Pharmaceuticals, Ltd
  Signed date: 30/05/2023

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 Geraete 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, Cediel 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, Cediel 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 González A, inventors; CSIC, CIBERER, FIBIOHRC, assignees.** Quinolylnitrone derivatives for use in the prevention and/or treatment of hearing loss. EP22382706.4; 2023 July 22