

CV Date	29/02/2024
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Part A. PERSONAL INFORMATION

First Name *	Mónica		
Family Name *	López Fanarraga		
Sex *		Date of Birth *	
ID number Social Security, Passport *		Phone Number *	
URL Web	http://mlfanarraga.wixsite.com/grupo-nanomedicina		
Email Address	monica.lopez@unican.es; fanarrag@unican.es		
Researcher's identification number	Open Researcher and Contributor ID (ORCID) *	0000-0003-4754-311X	
	Researcher ID	M-6177-2014	
	Scopus Author ID	6602172521	

* Mandatory

A.1. Current position

Job Title	Catedrática de Universidad/University Full Professor		
Starting date	2018		
Institution	Universidad de Cantabria		
Department / Centre	Biología Molecular / Facultad de Medicina-IDIVAL		
Country	Spain	Phone Number	(+34) 630258478
Keywords	Biomedicine; Nanobiotechnology		

A.2. Previous positions

Period	Job Title / Name of Employer / Country
2009 - 2018	Profesora Titular / Universidad de Cantabria
2013 - 2013	Directora del Departamento de Biología Molecular / Universidad de Cantabria
2005 - 2008	Investigadora Programa Ramón y Cajal / Univ de Cantabria
2001 - 2005	TEU Genética / Universidad de Cantabria
2000 - 2001	Investigador posdoctoral / European Molecular Biology Laboratory (EMBL)
1996 - 2001	Profesora Ayudante / Universidad de Cantabria
1995 - 1996	Investigadora Reincorporada MEC / Universidad de Cantabria
1994 - 1994	Investigadora posdoctoral / Universidad del País Vasco
1994 - 1994	Investigadora posdoctoral / Hubrecht Laboratorium (Holanda)
1989 - 1993	Investigadora predoctoral / Universidad de Glasgow (UK)
2020 -	Miembro del Comité Científico Interno / Instituto de Investigación Valdecilla-IDIVAL

A.3. Education

Degree/Master/PhD	University / Country	Year
Dr Med & Cirugía /Dr Med & Surgery	Universidad de Cantabria	1999
Doctor in Philosophy (PhD)	University of Glasgow (UK) / United Kingdom	1993
Lda Veterinaria/Bach Vet Sciences	Universidad de Zaragoza	1989

A.4. General quality indicators of scientific production

(26/02/2024) MLF is the founder and leader of the "Nanomedicine" research group, accredited by the Carlos III Health Institute and affiliated to the Valdecilla Health Research Institute

(IDIVAL). She has more than 70 peer-reviewed publications as correspondent/main/last author in the top quartile of JCR journals including prestigious journals such as Nature, JCB, ACS Nano, J. Nanobiotech, Angew Chem, or Bioactive Mat. MLF is a regular keynote/invited speaker at conferences in the field (i.e. NT18 in Beijing, China, SFNano, Strasbourg, France). With an h-index of 29 (approximately 2900 citations; i10 index of 53), MLF serves as a reviewer for leading journals in the field of nanomedicine (i.e. ACS Nano, Nature Nano, J Nanobiotechnol, Carbon, Nano Today, Mat Chem Physics, or Int J Nanomed) while being an evaluator for national (AEI, ANEP) and international research agencies (such as USIAS-CNRS France, National Science Centre Poland). MLF is a member of several scientific societies (Nanomedicine Platform, SEBBM, SEBD, etc.). As a Principal Investigator, MLF has received continuous funding from the National Plan and has led >20 national/international competitive projects (since 2013 = 9 national projects; 5 R&D projects).

MLF is also actively involved in the training of young researchers and regularly participates in PhD thesis committees at national and international universities (U Paris VII, U Porto, U Melbourne, KU Leuven, etc.). She has tutored postdoctoral researchers from numerous human resources projects/contracts (2 JdCierva, 2 Sara Borrell, 1 Marie Curie, 2 Margarita Salas, 1 M^a Zambrano), and has supervised 10 competitive PhD fellowships, including FPU, p-FIS, i-pFIS and Regional FPI). She is currently involved in a European Marie Curie Doctoral Network (HORIZON-TMA-MSCA-DN). To date, she has supervised over 22 undergraduate projects, 9 master's theses and 13 defended doctoral theses, 5 of which were awarded the "Extraordinary Prize" and 2 the "Juan M^a Parés Prize" for best thesis. Currently, the MLF has five periods of research merits (sexenios) and five of teaching merits (quinquenios). MLF is a member of the Valdecilla-IDIVAL Scientific Committee.

In recognition of her contributions, she is the recipient of the "Best Researcher Award" from the Spanish Platform for Innovation in Health Technology (Fenin) in 2022.

Part C. RELEVANT ACCOMPLISHMENTS

C.1. Publications

AC: corresponding author. (n^o x / n^o y): position / total authors. If applicable, indicate the number of citations

- 1 **Scientific paper**. A. Mateu-Roldán, et al. (7/8). 2022. Graphene-Encapsulated Magnetic Nanoparticles for Safe and Steady Delivery of Ferulic Acid in Diabetic Mice. Chemical Engineering Journal. 435, pp.134466. <https://doi.org/10.1016/j.cej.2021.134466>
- 2 **Scientific paper**. L García-Hevia ML Fanarraga (2/2);. 2020. Microtubule cytoskeleton-disrupting activity of MWCNTs: Applications in cancer treatment.J Nanobiotechnology. 18, pp.181. <https://doi.org/10.1186/s129510>
- 3 **Scientific paper**. Iturrioz-Rodríguez, et al. (8/8). 2017. A Biomimetic Escape Strategy for Cytoplasm Invasion by Synthetic Particles. Angewandte Chemie Int. Ed. 56:13736. <https://doi.org/10.1002/anie.201707769>
- 4 **Scientific paper**. L García-Hevia et al. (7/7). 2024. Carbon nanotubes targeted to the tumor microenvironment inhibit metastasis in a preclinical model of melanoma. Bioactive Materials 34:237-247. <https://doi.org/10.1016/j.bioactmat.2023.12.013>
- 5 **Scientific paper**. A Fernández-Borbolla et al. (3/3). 2024. Cell Membrane-Coated Nanoparticles for Precision Medicine: A Comprehensive Review of Coating Techniques for Tissue-Specific Therapeutics. Int. J. Mol. Sci. 25(4), 2071. 25 (4), pp.2071. <https://doi.org/10.3390/ijms25042071>
- 6 **Scientific paper**. A Rodríguez-Ramos, et al. (3/3). 2023. Enhanced inhibition of amyloid formation by heat shock protein 90 immobilized on nanoparticles. ACS Chem. Neurosci. 14:2811–17. <https://doi.org/10.1021/acschemneuro.3c00370>
- 7 **Scientific paper**. A Márquez-López ML Fanarraga (2/2). 2023. AB Toxins as High-Affinity Ligands for Cell Targeting in Cancer Therapy. Int. J. Mol. Sci. 24:11227. <https://doi.org/10.3390/ijms241311227>

- 8 **Scientific paper.** A Ramos-Valle, et al. (5/5). 2023. One-pot synthesis of compact DNA silica particles for gene delivery and extraordinary DNA preservation. *Materials Today Advances* 18:100357. <https://doi.org/10.1016/j.mtadv.2023.100357>
- 9 **Scientific paper.** Rodríguez-Ramos, A et. al., (4/4). 2023. Nanoparticle biocoating to create ATP-powered swimmers capable of repairing proteins on the fly. *Materials Today Advances* 17:100353. <https://doi.org/10.1016/j.mtadv.2023.100353>
- 10 **Scientific paper.** Ramos-Docampo, et al. (5/6). 2023. Magnetically Propelled Chained Nanocomposites for On-Demand Biologically Relevant Media Exploration. *Journal of Colloid and Interface Science.* 629, pp. 287-296. <https://doi.org/10.1016/j.jcis.2022.08.154>
- 11 **Scientific paper.** E Navarro-Palomares; L García-Hevia; J Galán-Vidal; et al; (9/9) ML Fanarraga (AC). 2022. Shiga toxin-B targeted gold nanorods for local photothermal treatment in oral cancer clinical samples. *Int J Nanomedicine*, 2022, 17:5747. <https://doi.org/10.2147/IJN.S381628>
- 12 **Scientific paper.** L García-Hevia et. al. (5/7). 2022. Magnetic lipid nanovehicles synergize the controlled thermal release of chemotherapeutics with magnetic ablation while enabling non-invasive monitoring by MRI for melanoma theranostics. *Bioactive Materials.* 8, pp.153-164. <https://doi.org/10.1016/j.bioactmat.2021.06.009>
- 13 **Scientific paper.** L. García -Hevia, et al., (7/7). 2022. GB3/CD77 is a predictive marker and promising therapeutic target for Head and Neck Cancer. *Biomedicines* 10(4), 732. <https://doi.org/10.3390/biomedicines10040732>
- 14 **Scientific paper.** E Navarro-Palomares, et al. (7/7). 2021. Targeting nanomaterials to head and neck cancer cells using a fragment of the Shiga toxin as a potent natural ligand. *Cancers* 13(19),4920. <https://doi.org/10.3390/cancers13194920>
- 15 **Scientific paper.** L García-Hevia, et al. (9/9). 2021. The unpredictable carbon nanotube biocorona and a functionalization method to prevent protein biofouling. *J Nanobiotechnology.* 19:129. <https://doi.org/10.1186/s12951-021-00872-x>
- 16 **Scientific paper.** L Valdivia, et al. (6/6). 2021. Solid Lipid Particles for Lung Metastasis Treatment. *Pharmaceutics* 13(1),93. <https://doi.org/10.3390/pharmaceutics13010093>
- 17 **Scientific paper.** N Iturrioz-Rodríguez, et al. (7/8). 2021. Free-labeled nanoclay intracellular uptake tracking by confocal Raman imaging. *Applied Surface Science* 537:147870. <https://doi.org/10.1016/j.apsusc.2020.147870>
- 18 **Scientific paper.** A Rodríguez-Ramos, et al. (8/8). 2020. Design of Polymeric and Biocompatible Delivery Systems by Dissolving Mesoporous Silica Templates. *Int J Molecular Sciences* 21(24),9573. <https://doi.org/10.3390/ijms21249573>
- 19 **Scientific paper.** L González-Legarreta, et al. (4/4). 2020. Development of an accurate method for dispersion and quantification of carbon nanotubes in biological media. *Analytical Methods* 12:5642. <https://doi.org/10.1039/D0AY01357A>
- 20 **Scientific paper.** E Padín-González, et al. (8/8). 2020. A custom-made functionalization method to control the biological identity of nanomaterials. *Nanomedicine.* 29, pp 102268. <https://doi.org/10.1016/j.nano.2020.102268>
- 21 **Scientific paper.** N Iturrioz-Rodríguez, et al. (4/4). 2020. Engineering Sub-Cellular Targeting Strategies to Enhance Safe Cytosolic Silica Particle Dissolution in Cells. *Pharmaceutics.* 12, pp 487. <https://doi.org/10.3390/pharmaceutics12060487>
- 22 **Scientific paper.** E Navarro-Palomares, et al. (9/11). 2020. Dye-doped biodegradable nanoparticle SiO₂ coating in zinc- and iron-oxide nanoparticles to improve biocompatibility and in vivo imaging studies. *Nanoscale.* 12, 6164-6175. <https://doi.org/10.1039/c9nr08743e>
- 23 **Scientific paper.** N Iturrioz-Rodríguez, et al. (3/3). 2019. Controlled drug delivery systems for cancer based on mesoporous silica particles. *Int. J. Nanomedicine.* 2019 pp. 7518482. <https://doi.org/10.2147/IJN.S198848>
- 24 **Scientific paper.** E González-Lavado, et al. (7/7). 2019. Multi-walled carbon nanotubes complement the anti-tumoral effect of 5-Fluorouracil. *Oncotarget.* 10 pp. 2022-2029. <https://doi.org/10.18632/oncotarget.26770>
- 25 **Scientific paper.** C Renero-Lecuna, et al. (8/9). 2019. Effect of Size, Shape, and Composition on the Interaction of Different Nanomaterials with HeLa Cells. *J Nanomaterials.* pp. 7518482. <https://doi.org/10.1155/2019/7518482>

- 26 **Scientific paper.** E González-Domínguez, et al. (9/9). 2017. Carbon nanotubes gathered onto silica particles lose their biomimetic properties with the cytoskeleton becoming biocompatible. *Int. J. Nanomedicine*. 2017 pp. 6317-6328. <https://doi.org/10.2147/IJN.S141794>
- 27 **Scientific paper.** E González-Lavado; E Padín; N Iturrioz; T Torroba; M L Fanarraga. 2017. Multi-walled carbon nanotubes (MWCNTs) as cytotoxic drug delivery systems in the treatment of cancer. *J Biotechnol Biomater*. DOI: 10.4172/2155-952X.C1.074. 7-2.
- 28 **Scientific paper.** 2017. Magnetic hyperthermia is more efficient than exogenous heating for killing neuroblastoma cells. *Biomaterials*. 114 pp.62-70. <https://doi.org/10.1016/j.biomaterials.2016.11.008>
- 29 **Scientific paper.** 2016. Nano-ZnO leads tubulin macrotube assembly and actin bundling triggering cytoskeletal catastrophe and cell necrosis. *Nanoscale*. 8 pp.10963. <https://doi.org/10.1039/c6nr00391e>
- 30 **Scientific paper.** L García Hevia; Fidel Fernández Fernández; Iñigo Casafont; Juan Carlos Villegas; Mónica L Fanarraga. 2016. A fast, reliable and cost-effective method to generate tumor organs for therapy screening in vivo. *Biomed. Phys. Eng. Express*. 2-035009, pp.1-8.
- 31 **Scientific paper.** 2016. Multiwalled Carbon Nanotubes Inhibit Tumor Progression in a Mouse Model. *Adv Healthc Mater*. 5 pp. 1080. <https://doi.org/10.1002/adhm.201500753>
- 32 **Scientific paper.** 2015. Inhibition of Cancer Cell Migration by Multiwalled Carbon Nanotubes. *Adv Healthc Mater*. 4 pp.1640. <https://doi.org/10.1002/adhm.201500252>
- 33 **Scientific paper.** 2015. Anti-Cancer Cytotoxic Effects of Multiwalled Carbon Nanotubes. *Curr Pharm Design*. 21 pp. 1920. <https://doi.org/10.2174/1381612821666150302144101>
- 34 **Scientific paper.** 2014. Multiwalled Carbon Nanotubes Hinder Microglia Function Interfering with Cell Migration and Phagocytosis. *Adv Healthc Mater*. 3 pp. 424. <https://doi.org/10.1002/adhm.201300178>
- 35 **Scientific paper.** 2014. Nanotube interactions with microtubules: implications for medicine. *Nanomedicine*. 9 pp. 1581. <https://doi.org/10.2217/nnm.14.92>
- 36 **Scientific paper.** 2012. Multiwalled carbon nanotubes display microtubule biomimetic properties in vivo, enhancing microtubule assembly and stabilization. *ACS nano*. 28 pp. 6614. <https://doi.org/10.1021/nn302222m>

C.2. Conferences and meetings

- 1 Keynote:Application of nanotechnology in the development of vaccines, diagnostic tests, and disease treatments. 10th International Sheep Veterinary Congress. ISVA. 2023. Spain.
- 2 Keynote:Customizing the nanomaterial's biocorona using natural ligand proteins. SF Nano Annual Meeting. French Society of Nanomedicine. 2022. France.
- 3 Keynote:Functionalization of nanomaterials with proteins to improve biomimetics. NanoMedicine International Conference - NanoMed 2022. SETCOR Conferences. 2022. Greece.
- 4 Organizing Committee NALS 2022. The 3rd International Conference on Nanomaterials Applied to Life Sciences. NALS Conferences. 2022. Spain. Conference.
- 5 M.L. Fanarraga. Invited:Nanopartículas en medicina. XXV Congreso Nacional de la SEIOMM. SEIOMM. 2021. Spain.
- 6 Oral: Antitumoral nanotherapies based on biodegradable carbon nanotubes. Conference On Nanomedicine And Nanobiotechnology 2018. ICONAN. 2018. Participatory - oral communication.
- 7 Invited:Customizing biodegradable CNT-coated therapeutic carriers. 18th International Conference on the Science and Applications of Nanotubes as Low-dimensional Materials. NT18. 2018. China.
- 8 Keynote:Customizing targeted biodegradable CNT-coated therapeutic carriers. 1st Spanish Conference on Biomedical Applications of Nanotechnology. SBAN. 2018.
- 9 Carbon nanotube-based targeting systems for cytoplasmic delivery. Nanospain. Phantoms Foundation. 2018.

- 10 **Keynote:**The qualitative/qualitative study of the biocorona in different MWCNTs and their exchange in presence of proteins of the biological medium.. International Conference on Nanomaterials applied to Lifesciences. NALS. 2017. Spain.

C.3. Research projects and contracts

- 1 **Project.** Combination therapy for the treatment of metastatic melanoma using magnetic nanoparticles. HORIZON-TMA-MSCA-DN (Ref 101073025). Comisión Europea. C. Menard-Moyon. (CNRS (France); Univ. Wien (Austria); Univ. IDIVAL (Spain); Univ. Oslo (Sweden); Univ. HF (Norway). 01/09/2022-30/09/2026. 2.771.855 €.
- 2 **Project.** Diseño de un nano-biosensor para el cribado y detección rápida del cáncer de cabeza-cuello. (Ref. PI22/00030). Instituto de Salud Carlos III. ML Fanarraga. (Instituto de Investigacion Valdecilla-IDIVAL). 02/01/2023-31/12/2025. 135.520 €. Principal investigador.
- 3 **Project.** Convoc.RRHH Juan de la Cierva Incorporación (Ref. IJC2020-043746-I). L García Hevia. (Instituto de Investigación Valdecilla-IDIVAL). 01/05/2022-30/04/2025. 97.800 €.
- 4 **Project.** Conv. Nacional RRHH Margarita Salas. Ref.: MARS21/71. Ministerio de Universidades, Europa-Next Generation EU. Ruth Prieto Montero. (Universidad del País Vasco). 01/02/2022-02/03/2025. 100.800 €.
- 5 **Project.** Waste to wealth strategy: Transforming dairy waste into carbon quantum dots for biomedical uses (WHEY4DOTs); Ref.TED2021-1292248B100. ML Fanarraga. (Universidad de Cantabria). 01/01/2023-31/12/2024. 430.000 €.
- 6 **Project.** Conv. Nacional RRHH María Zambrano. Ref.: RMZ15. Ministerio de Universidades, Europa-Next Generation EU. Henning Kirst. (Universidad de Cantabria). 01/02/2022-31/01/2024. 136.800 €.
- 7 **Project.** Conv. Nacional RRHH Margarita Salas Ref. REC-Salas21 UVigo. Ministerio de Universidades, Europa-Next Generation EU. Laura Marín Cava. (Universidade de Vigo). 01/01/2022-31/01/2024. 67.600 €.
- 8 **Project.** Conv. RRHH P-iFIS en Salud (Ref. FI20/00023, MICIN, ISCiii). Instituto de Salud Carlos III. Mahsa Saramiforoshani. (Instituto de Investigacion Valdecilla-IDIVAL). 01/01/2021-31/01/2024. 82.400 €. Principal investigador.
- 9 **Project.** Diseño y validación de nanopartículas portadoras de ácidos nucleicos como herramientas contra el ictus (Ref. INVAL 21/19). (Instituto de Investigacion Valdecilla-IDIVAL). 01/01/2022-31/12/2023. 15.000 €. Principal investigador.
- 10 **Project.** Conv. RRHH Sara Borrell (Ref. CD19/00035, MICIN, ISCiii). Instituto de Salud Carlos III. L García Hevia. (Instituto de Investigacion Valdecilla-IDIVAL). 01/01/2020-31/12/2023. 80.598 €.
- 11 **Project.** Engineering photoactivable cancer nanotheranostic precision tools based on carbon nanotubes. (Ref. PI19/00349, MICIN, ISCiii). Instituto de Salud Carlos III. (Instituto de Investigacion Valdecilla-IDIVAL). 01/01/2020-31/12/2023. 196.020 €. Principal investigador.
- 12 **Project.** Conv. RRHH Técnicos Apoyo UC (Biomed 2020). (Universidad de Cantabria). 01/12/2020-30/11/2023. Principal investigador.
- 13 **Project.** Desarrollo de un virus sintético SARS-CoV-2 basado en nanobiotecnología para el testado de fármacos y sistemas de detección del COVID-19. L Garcia Hevia. (Instituto de Investigacion Valdecilla-IDIVAL). 01/01/2021-31/12/2022. 30.000 €. Principal investigador.
- 14 **Project.** Diseño y Validación de un Sistema Avatar del SARS-CoV-2 para Desarrollos Industriales. (Conv. Fomento Transferencia Del Conocimiento Ref. 2020UIC22-PUB-0016).. (Instituto de Investigacion Valdecilla-IDIVAL). 01/12/2020-31/12/2021. 16.538 €. Principal investigador.
- 15 **Project.** Desarrollo de un dispositivo endoscópico para el tratamiento de cáncer de cabeza-cuello mediante hipertermia fotoinducida con nanopartículas multifuncionales (Ref. DTS19/00033, MICIN, ISCiii). Instituto de Salud Carlos III. (Instituto de Investigacion Valdecilla-IDIVAL). 01/01/2020-31/12/2021. 56.100 €. Principal investigador.
- 16 **Project.** Diseño y producción de pseudo-cápsides nanoteranósticas dirigidas al sistema nervioso. (Ref InnVal 19/12). (Instituto de Investigacion Valdecilla-IDIVAL). 01/01/2020-31/12/2021. 14.000 €. Principal investigador.

- 17 Project.** Diseño y evaluación antitumoral de nano-dispensadores multi-terapéuticos basados en nanotubos de carbono (PI16/00496, ISCiii). Instituto de Salud Carlos III. M L Fanarraga. (Instituto de Investigación Valdecilla-IDIVAL). 01/01/2017-31/12/2020. 195.415 €. Principal investigator.
- 18 Project.** Nano-transferencia biomimética dirigida para la reprogramación de neuronas motoras (EIN2019-103209). Ministerio de Ciencia e Innovación. ML Fanarraga. (Instituto de Investigación Valdecilla-IDIVAL). 01/10/2019-31/08/2020. 5.000 €. Principal investigator.
- 19 Project.** Conv. RRHH Juan de la Cierva-Formación (Ref. FJCI-2015-25306). MICINN. C Renero-Lecuna. (Instituto de Investigación Valdecilla-IDIVAL). 01/01/2018-31/12/2019. 50.000 €.
- 20 Project.** Conv. RRHH Sara Borrell (Ref. CD17/00105). Instituto de Salud Carlos III. L González-Legarreta. (Instituto de Investigación Valdecilla-IDIVAL). 01/01/2018-31/12/2019. 80.598 €.
- 21 Project.** “Quinosomas” para el tratamiento de la Leishmaniasis como modelo de enfermedad olvidada (INNVAL17/11). FUNDACION MARQUES DE VALDECILLA. Fanarraga M. L.(Instituto de Investigación Valdecilla-IDIVAL). 01/11/2017-31/12/2018. 12.000 €. Principal investigator.
- 22 Project.** Terapias dirigidas basadas en nanomateriales. (INNVAL15/15). FUNDACION MARQUES DE VALDECILLA. M L Fanarraga. (Instituto de Investigación Valdecilla-IDIVAL). 01/06/2016-31/12/2017. 20.000 €. Principal investigator.
- 23 Project.** Diseño de antineoplásicos basados en nanomateriales (02.H048.64003). Fundación Eugenio Rodríguez Pascual. M L Fanarraga. (Universidad de Cantabria). 11/12/2013-31/12/2014. 10.000 €. Principal investigator.
- 24 Project.** Conv. RRHH Marie Skłodowska-Curie Action. ERC (Horizont 2020). C Martín Gandúl. (Universidad de Cantabria). From 01/09/2019.
- 25 Project.** Bioaplicaciones De Nanopartículas (MAT2016-81955-REDT). MINECO Redes de Excelencia. M C Blanco López. (Varios centros de i+D). From 01/05/2017. 18.500 €. Team member.
- 26 Project.** Desarrollo de antineoplásicos basados en nanomateriales (PI13/01074, ISCiii). Instituto de Salud Carlos III. M L Fanarraga. (Universidad de Cantabria-IDIVAL). From 01/01/2014. 103.455 €. Principal investigator.
- 27 Contract.** Contrato de prestación de servicios entre Instituto IDIVAL y Nanovex Biotechnologies SL. Nanovex Biotechnologies SL. Lorena García-Hevia. 01/12/2020-01/02/2021. 3.448,5 €.
- 28 Contract.** Convenio Colaboración FREMAP-Grupo Nanomedicina IDIVAL en nanoprevisión FREMAP. Mónica López Fanarraga. (IDIVAL). 30/04/2016-30/04/2021.
- 29 Contract.** Caracterización óptica y estructural de nanomateriales para su uso en cosmética Industrial Farmacéutica Cantabria S.A. (IFC). 25/11/2013-25/11/2015. 1.970 €.
- 30 Contract.** Optimización de las condiciones biocidas para organismos multiresistentes Herlogas SA. 01/10/2013-01/04/2014. 4.958,68 €.
- 31 Contract.** Nuevas herramientas basadas en nano partículas antimicrobianas para la eliminación dirigida de bacterias en la reproducción ganadera Magapor, S.L.; Centro para el Desarrollo Tecnológico Industrial. From 01/07/2013.

C.4. Activities of technology / knowledge transfer and results exploitation

- 1 Patent of invention.** L García Hevia; M Fanarraga; M Correa Duarte; V Salgueiriño Maceira. P202430131. Nanoestructuras víricas sintéticas y sus usos Spain. 23/02/2024. Universidad de Cantabria/Universidad de Vigo.
- 2 Patent of invention.** ML .Fanarraga; L Marín-Caba. WO2023021230A1. Partículas de sílice para encapsulación de ácidos nucleicos Spain. 20/08/2021. Universidad de Cantabria-IDIVAL.
- 3 Patent of invention.** ML Fanarraga; E Padín-González; E Navarro-Palomares; JC Villegas Sordo; N Iturrioz-Rodríguez. ES201600210A. Método de recubrimiento proteico de materiales mediante bioconjugación electrostática Spain. 07/08/2019. Universidad de Cantabria-IDIVAL.

- 4 **Patent of invention.** E González Dominguez; M Lorenzo Pérez; ML Fanarraga; MA Correa Duarte. ES2577056B2. Cobertura de nanotubos de carbono para su empleo como sistema de anclaje de dispositivos nano y micrométricos con actividad terapéutica. Spain. 16/06/2016. Universidad de Cantabria/Universidad de Vigo.
- 5 **Patent of invention.** ML Fanarraga; R Valiente Barroso; J González Gómez. ES2478793B2. Composición de nanofilamentos para el tratamiento de tumores. Spain. 27/03/2014. Universidad de Cantabria.
- 6 **Patent of invention.** JC Villegas Sordo; JC Zabala Otaño; ML Fanarraga. ES2286911B1. Procedimiento de identificación de compuestos inhibidores del proceso de polimerización de filamentos tau tipo PHFs y sus aplicaciones. Solicitantes: Universidad de Cantabria y Consejo Superior de Investigaciones Científicas. Spain. 22/12/2003. Universidad de Cantabria/CSIC.

C.5. Stays in public or private R&D centres

- 1 CINBIO, Universidad de Vigo. Spain. Vigo. 01/09/2021-31/12/2021. Sabbatical year.
- 2 EMBL (European Molecular Biology Laboratory). Germany. Heidelberg. From 01/09/2000. 1 year - 1 day. Post-doctoral.
- 3 Wisconsin University. United States of America. Madison. From 01/01/1996. 4 months. Guest.
- 4 Glasgow University. United Kingdom. Glasgow. From 01/02/1995. 4 months - 7 days. Post-doctoral.
- 5 Universidad del País Vasco, Dpto Neurociencias. Spain. Lejona, Vizcaya. From 01/09/1994. 3 months. Post-doctoral.
- 6 The Netherlands Institute for Developmental Biology (Hubrecht Laboratorium). Holland. Utrecht. From 01/01/1994. 7 months - 29 days. Post-doctoral.
- 7 Universidad de Wisconsin. United States of America. Madison. From 01/06/1993. 3 months. Guest.
- 8 Glasgow University. United Kingdom. Glasgow. From 01/09/1989. 4 years. Doctorate.