

Curriculum vitae

Márcio Simão

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Adress: Rua Mateus Moreno, Lt 68 R/C esquerdo, 8100 Loulé,
Algarve, Portugal.

Date of birth: 14/03/1979

Nationality: Portuguese

Education:

-PhD in Biomedical Sciences, Universidade do Algarve, (2017). Thesis: “**Contribution to the molecular characterization of osteoarthritis and osteoporosis phenotypes associated with Hereditary Hemochromatosis**”. 24th of May, 2017.

-Final grade: Approved and classified with Muito bom (Very good) by unanimity

-Master: Molecular Biology and Microbiology- University of Algarve (2010) Thesis: “**Cloning, expression and characterization of Ferritin genes identified in clam R. decussatus and its role in the infection of parasite Perkinsus olseni.**”

-Final grade: 17 (0-20)

-Graduation: Biochemistry (Licenciatura PreBolonha, 4 years, 160 ECTS) – University of Algarve (2006) Thesis: **Molecular response of Ruditapes decussatus clam to Perkinsus olseni parasite infection and its relation with the iron biogeochemistry in inter-tidal sediments.**

-Final grade: 14 (0-20)

Skills:

Molecular biology methods: DNA and RNA extraction, PCR, qPCR, cDNA synthesis, DNA cloning.

Cell culture methods: Cell culture maintenance, handling and primary culture establishment (chondrocytes and osteoblasts). In vitro experimental design.

Proteomic methods: Isolation and purification of proteins. Expression in bacterial systems. Protein expression analysis (Western blot)

Micro-CT analysis: Bone Histomorphometric characterization by micro-CT. Practical formation in X-ray scans acquisition in micro-CT Skyscan 1272.

General histology techniques: Processing tissues for inclusion in paraffin and methylmetacrylate. Staining and histomorphometric analysis of mineralized tissues (Aniline blue, Trap activity, Toluidine blue). Histological characterization, (H&E, Safranin-O/Fast green/Mayers Hematoxylin, Perls staining). Immunohistochemistry assays.

Bioinformatic analysis: protein sequences and identification, analysis of functional features and motifs, protein modifications, protein structure, protein interactions. Gene structure analysis, transcription factor prediction, evaluation of pathogenic SNP's potential. DNA sequence analysis using available databases

Phylogenetic analysis: Multiple alignment methods and phylogenetic tree constructions using bayesian inference and maximum likelihood models. Software: RAxML, MrBayes, Concatenator, MEGA, FigTree.

Spectrophotometer methods (UV/VIS): Quantification of dissolved elements (Fe, Zn, NH₄, Cd, P...).

Experimental design using microcosmos: In vivo studies with bivalves.

Languages:

	Portuguese	English	French	Spanish
Written comprehension:	Excellent	Excellent	Excellent	Excellent
Written expression:	Excellent	Excellent	Average	Average
Oral expression:	Excellent	Excellent	Average	Good

Fellowships and positions:

-15/09/2018- Present- Invited Professor of department of Biomedical Sciences and Medicine (DCBM), University of Algarve, Lectures: **Cell differentiation and microenvironments; Cell Biology (Practical classes); Methods in Molecular and Cell Biology (Practical classes)**.

-01/03/2019-31/05/2019- Post-doc in project PTDC/MAR-BIO/4132/2014, **“Reversing the pathophysiology of Perkinsosis in clams hatcheries through the use of analogues of Artemisinin”**, Instituto Gulbenkian de Ciência (IGC) and Instituto Português do Mar e da Atmosfera (IPMA) at centro de Maricultura Tavira.

-01/09/2017-Present: Research collaborator **-Involved in research related with musculoskeletal complications associated with Hereditary Hemochromatosis and iron metabolism** at BIOSKEL- Comparative, Adaptive and Functional Skeletal Biology-CCMAR-Centre of Marine Sciences-University of Algarve.

-01/02/2012-31/03/2017- PhD fellowship funded by FCT (ref. SFRH/BD/77056/201-
" **Contribution to the molecular characterization of osteoarthritis and osteoporosis phenotypes associated with Hereditary hemochromatosis**"- BIOSKEL- Comparative, Adaptive and Functional Skeletal Biology-CCMAR-Centre of Marine Sciences-University of Algarve.

-01/02/2010-31/01/2012-Fellowship in project Lab-IT (Laboratório itinerante) – University of Algarve- **Project devoted to the divulgation of molecular biology and biotechnology principles and basic techniques in Algarve public high-schools.**

-04/05/2009-12/11/2009- Research fellowship in project entitled **“Characterization of isoprenoids biosynthesis and determination of potential therapeutic targets”**- (PI: Leonor Cancela) BIOSKEL- Comparative, Adaptive and Functional Skeletal Biology-CCMAR-Centre of Marine Sciences-University of Algarve.

-01/07/2008-31/03/2009- Professional internship with the objective of increase the knowhow in molecular biology and proteomic methods with emphasis on clam **Ruditapes decussatus iron metabolism** –BIOSKEL- Comparative, Adaptive and Functional Skeletal Biology-CCMAR-Centre of Marine Sciences-University of Algarve.

-01/11/2007-31/01/2008- Research fellowship in project entitled “CERATÓNIA” (PI: Henrique Gomes) **Development of method for in vitro cell culture mineralization and proliferation monitoring with microcircuits**, CEOT - Centro de Electrónica, Optoelectrónica e Telecomunicações da UAlg.

-01/06/2006-31/10/2007- Internship in project with the objective of **identifying the clam *Ruditapes decussatus* molecular response to environmental factors, temperature, metal toxicity (Cd, Cu, Zn) and its correlation with susceptibility for infection with parasite *Perkinsus olseni***.- BIOSKEL- Comparative, Adaptive and Functional Skeletal Biology-CCMAR-Centre of Marine Sciences-University of Algarve.

-02-/04/2005-20/04/2006- Research fellowship in project O-DOIS (PI: Carlos Rocha)- “**Oxygen dynamic coupled with organic carbon mineralization in intertidal sandy zones**.”-Biogeochemistry lab- CIMA- Center of Marine and Environmental Investigation- University of Algarve.

Publications:

M. Kyla Shea, Sarah L. Booth, Stephanie G. Harshman, Donald Smith, Cathy S. Carlson, Lindsey Harper, Alexandra R. Armstrong, Min Fang, M. Leonor Cancela, Márcio Simão, Richard F. Loeser (2020) **The effect of vitamin K insufficiency on histological and structural properties of knee joints in aging mice**, Osteoarthritis and Cartilage Open, <https://doi.org/10.1016/j.ocarto.2020.100078>. (100078, ISSN 2665-9131)

Simão M, Gavaia PJ, Camacho A, Porto G, Pinto IJ, Ea HK, Cancela ML. (2019) **Intracellular iron uptake is favored in Hfe-KO mouse primary chondrocytes mimicking an osteoarthritis-related phenotype**. *Biofactors*. 2019 Jul;45(4):583-597. doi: 10.1002/biof.1520. Epub 2019 May 27. PubMed PMID:31132316.

Erratum in: PLoS One. 2019 Apr 29;14(4):e0216377. PubMed PMID: 30427936; PubMed Central PMCID: PMC6241130.

Simão M, Camacho A, Ostertag A, Cohen-Solal M, Pinto IJ, Porto G, Ea HK, Cancela ML. (2018) **Iron-enriched diet contributes to early onset of osteoporotic phenotype in a mouse model of hereditary hemochromatosis**. PLoS One. 2018 Nov 14;13(11):e0207441. doi: 10.1371/journal.pone.0207441. eCollection 2018.

Camacho A, Simão M, Ea HK, Cohen-Solal M, Richette P, Branco J, Cancela ML. (2016) “**Iron overload in a murine model of hereditary hemochromatosis is associated with accelerated progression of osteoarthritis under mechanical stress. Osteoarthritis Cartilage**”. S1063-4584(15)01321-7

Camacho A, Funck-Brentano T, Simão M, Cancela L, Ottaviani S, Cohen-Solal M, Richette P. (2015) “**Effect of C282Y genotype on self-reported musculoskeletal complications in hereditary hemochromatosis**”. PLoS One. 30;10(3):e0122817 (doi: 10.1371/journal.pone.0122817)

Simão MF, Leite RB, Rocha C, Cancela ML (2010). “**Changes in Bioturbation of Iron Biogeochemistry and in Molecular Response of the Clam *Ruditapes decussatus* upon *Perkinsus olseni* Infection**”, Arch Environ Contam Toxicol. 59(3):433-43. doi: 10.1007/s00244-010-9490-9

Manuscripts Submitted:

Márcio Simão, Ricardo B. Leite, M. Leonor Cancela (2020). **Expression of four new ferritins from grooved carpet shell clam *Ruditapes decussatus* challenged with *Perkinsus olseni* and metals (Cd, Cu and Zn)** (J.Fish and Shellfish Immunology).

Manuscripts in preparation for submission:

Marcio Simão, Beatriz Estremores, Paulo J. Gavaia, M. Leonor Cancela (2020). **The molecular and phylogenetic characterization of Zinc transporter SLC39A14 in zebra-fish (*Danio rerio*)**.

Oral communications:

Márcio Simão, Graça Porto, I. Jorge Pinto†, Martine Cohen-Solal, Hang-Korng Ea, M. Leonor Cancela (2019) “**HFE loss of function is a susceptibility factor for bone loss and early osteoporosis onset**”. 11th Symposium in Metabolism, "Ageing & Metabolism", Porto, 30 October, Portugal.

Márcio Simão, António Camacho, Paulo Gavaia, I. Jorge Pinto, Graça Porto, Ea Hang Korng, M. Leonor Cancela (2018) “**Characterization of osteoarthritis associated with Hereditary Hemochromatosis using Hfe-KO mouse e model**”. II Jornadas do Algarve Biomedical Center (ABC), Olhão, 16 March, Portugal.

Camacho A, Simão M, Branco J, Richette P, Cancela ML (2014) “**Characterization of The Histological And Morphological Profile Of Articular Damage In A Hemochromatosis Mouse Model**”. 34th Congress of the Portuguese Society of Orthopaedics and Traumatology in Algarve | Herdade dos Salgados, Albufeira from 23 to 25 October, Portugal.

Mira S, Simão M, Conceição N, Cancela ML (2014),” **CSI and Prenatal Diagnosis to Teach Molecular Biology: Lab-it – itinerant laboratory.**” HSCI’2014: Science Education with and for Society, July 21st to 25th Aveiro, Portugal.

Simão M., Gomes H. L. Stallinga P, Leite R. B. Cancela M.L. and Ferreira M. (2008) “**Non-invasive monitoring of bone tissue growth in culture using polymer functionalized microelectrode arrays**”; International Conference on Science and

Tecnology of Synthetic Metals (ICSM), Porto de Galinhas Pernambuco Brazil 6-11 July.

Severino Ibánhez; Catarina Leote; Márcio Simão; Sérgio Pólvora; Catarina Moita; Carlos Rocha; (2006) “**Fontes de Poluição por Nitrato para a Ria Formosa com Origem nos Sedimentos Arenosos das Ilhas Barreira**” Apresentação II seminário sistemas lagunares Santo André, Portugal.

Poster communications:

M. Kyla Shea, Stephanie G Harshman, Sarah L Booth, Donald Smith, Cathy S Carlson, Lindsey Harper, M. Leonor Cancela, Márcio Simão, Richard F. Loeser. (2020). “**The effect of vitamin K insufficiency on the development of osteoarthritis in aging mice**” American Society of Nutrition meeting -NUTRITION 2020 LIVE ONLINE 1-4 June 2020

Felício, Daniela; Camacho, António; Cancela, M. Leonor; Simão, Márcio. (2020). “**Identification and characterization of polymorphisms in HLA-B*27 allele in ankylosing spondylitis patients**”. International Meeting of the Portuguese Society of Genetics, 23 and 24 January 2020, Faro, Portugal.

Silva, Joel; Cerqueira, Manuel; Simão, Márcio; Cancela, M. Leonor. (2020). “**Characterization of 5’ and 3’ UTRs from Bone morphogenetic protein receptor type 1A (Bmpr1A) transcripts under the context of bone metabolism**”. International Meeting of the Portuguese Society of Genetics, 23 and 24 January 2020, Faro, Portugal.

Daniela Felício, António Camacho, M. Leonor Cancela, Márcio Simão (2019) “**Bioinformatic analysis and characterization of pathogenic mutations on HLA-B27 alleles and its putative implications on protein structure**” III Jornadas do Algarve Biomedical Center (ABC), Albufeira, 29 March, Portugal.

Márcio Simão, António Camacho, Agnès Ostertag, Martine Cohen-Solal, I. Jorge Pinto, Graça Porto, Ea Hang Korng, M. Leonor Cancela. (2018) “**Iron enriched diet in association with Hfe loss of function promote iron toxicity mechanism and accelerate bone loss phenotype**” Free Radical Biology & Medicine biennial meeting: 4-7 June, Lisbon, Portugal.

Beatriz Estremores*, Márcio Simão*, Paulo J. Gavaia, M. Leonor Cancela (2018) “**Phylogenetic and molecular characterization of Slc39a14 (Zip14) zinc transporter in Danio rerio**”. Interdisciplinary Approaches in Fish Skeletal Biology (IAFSB), 5th Conference: April 16 to 19, Tavira, Algarve, Portugal

Márcio Simão, Jorge I. Pinto, Graça Porto, Ea Hang Korng, Martine Cohen-Solal, M. Leonor Cancela (2015) “**Iron enriched diet is a determinant factor for osteoporosis onset and progression in hereditary hemochromatosis mouse model (Hfe-KO)**”. 4th Barcelona PhD Students Symposium- Science fights back: Tackling disease to recover homeostasis. 12-13 November 2015- Barcelona, Spain

Márcio.F.Simão, Paulo J.Gavaia, Hang K. Ea, Jorge P. Pinto, M. Leonor Cancela (2014) “**Chondrocytes from a hemochromatosis mouse model reveal altered expression of**

genes associated to iron and cartilage metabolisms". December 17-20 XVIII Congress of the Portuguese Biochemical Society, Coimbra, Portugal

Marcio Simao, Paulo Gavaia, Jorge Pinto, Ea Korng & M Leonor Cancela (2013) **"Establishing an in vitro system to study chondrocyte phenotypes associated to human hereditary hemochromatosis and identify molecular players involved in chondrocyte related iron metabolism"** European Calcified Tissue Society (ECTS) Congress, 18-21 May, Lisboa-Portugal

Carvalho F.R.; Cardeira J.; Simão M.; Gavaia, P.J.; Cancela M.L. (2013) **"Inducing a transient diabetic phenotype in zebrafish: can this model be used to study insulin related changes in bone metabolism?"** Interdisciplinary Approaches in Fish Skeletal Biology (IAFSB) 4th Conference: April 27 to 29 (30) 2015, Tavira, Algarve, Portugal

Márcio F. Simão, Ricardo B. Leite, M. Leonor Cancela (2010) **"Identification and characterization of two Ferritin isoforms in clam R. decussatus and evaluation of their Fe²⁺ oxidation potential"** XVII Congresso Nacional de Bioquímica, 15-17 December, Porto – Portugal.

Ricardo B. Leite, Ricardo Afonso, Márcio Simão, Sandra Joaquim, Domitilia Matias, M. Leonor Cancela. (2007) **"Evaluation of Perkinsus infection levels within a Variable Range of Temperatures and Salinities in Clam Ruditapes decussatus. Effect on Clam Oxidative Stress and Expression of Antioxidant-related genes"**; WOPER (Workshop for the Analysis of the Impact of Perkinsosis to the European Shellfish Industry) 12-14 September, Vigo.

Márcio Simão; Ricardo B. Leite; Ricardo Afonso; Sandra Joaquim; Domitilia Matias; M. Leonor Cancela. (2006) **"Evaluation of Oxidative Stress Levels and Antioxidants mRNA Expression within a Variable Range of Temperatures in Clam Ruditapes decussatus"** XV Congresso Nacional de Bioquímica, 8-10 December, Aveiro – Portugal

Leite RB, Fonseca L, Afonso R, Simão M, Ascenso RM, Cancela ML; (2008) **"Clam Lectins: Species-specific patterns of expression upon perkinus exposure: Evolutionary considerations"**; Final Assembly of Marine Genomics Europe (MGE) Faro (Portugal), 13-16 May

Ricardo B. Leite; Ricardo Afonso; Rita Ascenso; Márcio Simão; M. Leonor Cancela. (2005) **"Effect of Perkinsus infection on expression of Ruditapes decussatus biomarkers genes in response to environmental pollutants."** Marine Genomics International Congress, 28 October to 1 November, Sorrento, Italy

Márcio Simão; Ricardo Leite; M. Leonor Cancela; Carlos Rocha. (2005) **"Effect of iron dynamics stress on the response of clam R. decussatus to an infection by the protozoan parasite Perkinsus olseni."** 2nd International Congress on Stress Responses in Biology and Medicine, September 24-28, Tomar, Portugal

Márcio Simão; Ricardo Leite; M. Leonor Cancela, Carlos Rocha. (2004) “**A preliminary study of the effect of benthic iron dynamics on the response of the clam *R. decussatus* to an infection by the protozoan parasite *Perkinsus atlanticus* /olseni**”. XIV Congresso Nacional de Bioquímica, 2-4 de Dezembro 2004, Vilamoura, Portugal

-Workshops and courses

-Course in laboratory aquatic animal sciences (CAL-AQUA), (2018), Certification for animal experiments. Lectured by Centro Interdisciplinar de Investigação Marinha e Ambiental (CIIMAR) in Faro, Universidade do Algarve, 2 a 6 June 2018.

-Introduction to Light microscopy (ILM) (2016) -Center for Biomedical Research (CBMR), Universidade do Algarve.

-Advance course in phylogenetic (2015)- Centre for Ecology, Evolution and Environmental Changes (CE3C) - Faculdade de Ciências da Universidade de Lisboa. Lectured by professor Octávio Paulo.

-Advance course: “European Calcified Tissue Society (ECTS) PhD training course”, 15-18 September 2013, University of Hamburg, Hamburg, Germany: Oral presentation of PhD project and main results.

-Advance course: “Human Genetics: From Basic Science to Clinics and Genetic Counseling” na universidade do Algarve, departamento de ciências biomédicas: 26 e 27 Outubro de 2012.

Scientific orientation of students:

Advisor (ongoing); Manuel Cerqueira, graduation conclusion, “Identification and characterization and phylogeny of *Bmpr1aa* and *Bmpr1ab* 3’ UTR alternative transcripts in *Danio rerio*”, (2019) Biology course , Universidade do Algarve.

Advisor (ongoing); Joel Mourato, Master thesis, “Characterization of 5’ and 3’ UTRs from Bone morphogenetic protein receptor type 1A (*Bmpr1A*) transcripts under the context of bone metabolism”, (2019) Master in Molecular and Microbial Biology , Universidade do Algarve.

Advisor; Daniela Felício, graduation conclusion, “Espondilite Anquilosante: Identificação de polimorfismos no alelo HLA-B27 e possíveis suscetibilidades dos hábitos alimentares”, (2019) Biomedical Sciences course, Universidade do Algarve.

Co-Advisor; Bernardo Barbosa Franco, graduation conclusion, “Associação entre Osteoartrose, Obesidade e Metabolismo do ferro, um estudo exploratório”, (2018). Biomedical Sciences course, Universidade do Algarve.

-Co-advisor; Xavier Guerreiro Anastácio, graduation conclusion, “Abordagem morfológica e molecular ao estudo de factores de desenvolvimento da osteoporose”,

(2017). Biomedical Sciences course, Universidade do Algarve.

- Co-advisor: Beatriz Estremores, graduation conclusion. "Caracterização da expressão do transportador de Zinco ZIP14 no peixe-zebra (*Danio rerio*) e sua validação para estudos biomédicos", (2016). Biomedical Sciences course, Universidade do Algarve.

- Co-advisor: Gabriela Carrasqueira, graduation conclusion." Caracterização de uma cultura de osteoblastos primária isolada a partir de ratinhos Hfe KO. Impacto do excesso de ferro na mineralização", (2015). Biomedical Sciences course, Universidade do Algarve.

- Co-advisor: Filipa Lourenço, practical project. "Avaliação da cartilagem articular em ratinhos Hfe-KO e Hfe-KO, modelos para hemocromatose hereditária", (2016), Integrated Master in Medicina, Universidade do Algarve.

Peer review papers for:

- Biosciences reports (Portland Press)
- Clinical science (Portland Press)
- Biochemical Society Transactions (Portland Press)
- Osteoarthritis and Cartilage (Elsevier)
- Gene (Elsevier)

Seminars lectured to Graduation and Master students:

Title: Hemocromatose e patologias das articulações, 30/10/2012.

Title: Hemochromatosis and articular defects, 28/02/2012.

Title: Hemochromatose and articular defects, Identification of the molecular players involved in Hereditary Hemochromatosis-related osteoarthritis, 12/03/2013.

·Title: Patologias multigénicas associadas ao metabolismo do ferro, 27/05/2013.

·Title: Patologia hereditárias associadas ao metabolismo do ferro, 28/05/2014.

·Title: Mouse as model for hemochromatosis associated bone defects, 17/10/2014.

·Title: O papel central da Biologia no desenvolvimento da Biomedicina, 30/10/2015.

·Title: Hereditary hemochromatosis: molecular basis and pathogenic phenotypes, 22/04/2016

Title: Isolation of primary chondrocytes cultures and possible biomedical applications, 25/10/2016

Title: Hereditary hemochromatosis: molecular basis and pathogenic phenotypes,
06/04/2018

Prizes and awards:

Best oral communication:

Grisp prize for best oral communication in the 11th Symposium in Metabolism, "Ageing & Metabolism" (2019), Porto, 30 October, Portugal.

Best poster:

Interdisciplinary Approaches in Fish Skeletal Biology (IAFSB), 5th Conference: April 16 to 19, Tavira, Algarve, Portugal

Scientific Career Synopsis

I have a Biochemistry degree (PreBolonha) and a specialization in Molecular Biology with a Master in Molecular Biology and Microbiology obtained at the University of Algarve (UALG). From 2013 to 2017, I was enrolled in the PhD programme in Biomedical Sciences in UALG.

I have initiated my scientific career with a fellowship in a biogeochemistry project about oxygen dynamic coupled to organic carbon in intertidal areas, where I have optimized and setup methods for chemical analysis of interstitial waters for several elements (Fe, Zn, NH₄, Cd, P) and organic matter, besides sample collections at intertidal sites, I was also responsible for lab manager activities related with the ordering of lab equipment and reagents. At the same time, I worked in my graduation thesis under supervision of Prof. Leonor Cancela (BIOSKEL Lab, at UALG), Prof. Carlos Rocha (Biogeochemistry lab, at UALG), and Dr Ricardo Leite (BIOSKEL Lab, at UALG), where we have established a microcosms system to analyse changes in bioturbation of iron biogeochemistry and in molecular response of the clam *Ruditapes decussates* upon *Perkinsus olseni* Infection". Besides iron biogeochemistry analysis, I have gained experience in several methods for UV/VIS quantification of dissolved elements and molecular biology techniques.

Between graduation and master I worked mainly in two different projects, one about Non-invasive monitoring of bone tissue growth in culture using polymer

functionalized microelectrode arrays, with Prof. Henrique Gomes (Opto-Electronics lab, CEOT, at UALG), where it was possible to gain experience in *in vitro* applications using bone derived cell cultures, which was followed by a fellowship in a project coordinated by Dr Ricardo Leite and Prof. Leonor Cancela (both from BIOSKEL Lab, at UALG) and related with the identification and characterization of genes involved in synthesis of isoprenoids in parasite *Perkinus olseni*. Meanwhile I started my master thesis under the supervision of Dr. Ricardo Leite and Prof. Leonor Cancela, entitled “Cloning, expression and characterization of ferritin gene isoforms in clam *Ruditapes decussatus*. During this period, I have gained considerable experience in methods of molecular biology like PCR, qPCR, DNA cloning, protein expression and bacteria transformation methods. I have also used several bioinformatic tools for the characterization of newly identified gene transcripts.

After finishing my Master thesis, I have worked in a public science awareness project named Lab-IT at University of Algarve, which consisted in developing simple molecular biology protocols and implementing them in High Schools in the region of Algarve, with the objective of providing high school students with hands on practical classes in the area of Molecular Biology. These methods were possible to apply because we could bring all the required lab equipment to the school using a specially equipped vehicle (the itinerary lab), thus allowing methods implementation directly in schools where students interacted directly with very specific lab equipment. My responsibilities in the project were to project and develop experimental protocols, responsible for practical classes in high schools, lectures about innovations related with molecular biology and representation of University of Algarve in public awareness events. Adding to this, I was also responsible for public relations between project direction (Prof. Leonor Cancela), schools and local authorities and responsible for the acquisition of lab equipment and reagents.

My PhD project was entitled “Contribution to the molecular characterization of osteoarthritis and osteoporosis phenotypes associated with Hereditary Hemochromatosis” and was done under the supervision of Prof. Leonor Cancela (BIOSKEL lab, at UALG), Prof. Ea Hang Korg (Inserm U1132, BIOSCAR at Hôpital Lariboisière, service de Rhumatologie, Université Paris 7 Denis Diderot, Paris, France) and Prof. Graça Porto (I3S research center at University of Porto, Portugal), which is related with the study of osteoarthritis and osteoporosis associated to hereditary hemochromatosis using mice models for the molecular characterization of musculoskeletal complications. In the last

years I have been accumulating experience in research of osteoarthritis and osteoporosis associated to iron overload phenotypes with knowhow in several histological approaches for the characterization of cartilage and bone tissues and micro computerized tomography (micro-CT) technique for bone histomorphometric analysis. I have also solid experience in the development of primary cultures of osteoblasts and chondrocytes and in molecular biology techniques. Part of this work was done also at INSERM U1132 group, BIOSCAR at Hôpital Lariboisière, Paris, France.