

Marcos J. Araúzo-Bravo

Current employment

Position: Head of the Computational Biology and Systems Biomedicine Research Group
Head of the Computational Biology Data Analysis Platform
Ikerbasque Research Professor

Period: Since 16/January/2014

Institution: Biodonostia Health Research Institute

Group: Computational Biology and Systems Biomedicine

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Researcher ID: A-1706-2011

Scopus ID: 6602236898



CV summary

Graduated as an electronic and control engineer from the University of Valladolid, Spain. In 2001 he earned a Ph.D. in industrial technologies from the University of Cartagena, developing neuro-fuzzy algorithms for monitoring penicillin production. From 1998 to 2004 he was an associate professor in electrical engineering at Burgos University. In 2000 he received a scholarship from the Japanese Ministry of Education to work in the field of metabolic engineering at Kyushu Institute of Technology, Japan. In 2002 he earned a Ph.D. in information technology and biotechnology from the Kyushu Institute of Technology, Izuka, Japan. From 2004 to 2006 he was a Japan-Society-for-the-Promotion-of-Science (JSPS) postdoctoral research fellow at the Kyushu Institute of Technology, where he worked on the synergetic control of genetic networks through transcriptional regulators. From 2006 to 2014 he led the laboratory of Computational Biology and Bioinformatics at the Max Planck Institute for Molecular Biomedicine in Münster, Germany, developing tools for deciphering cellular reprogramming, methods to study transcription regulation, and algorithms for high-throughput data analysis. Since 2014 he is an Ikerbasque Research Professor, head of the group of Computational Biology and Systems Biomedicine and head of the Computational Biomedicine Data Analysis Platform at the Biodonostia Health Research Institute, San Sebastián, Spain. Since June 2019 Member of the CIBER network of Frailty and Healthy Ageing (CIBERfes) (Instituto de Salud Carlos III), Madrid, Spain. Since September 2019a Member of the Thematic Network of Excellence for Transitional Bioinformatics Network (TransBioNet) RED2018-102404-T, Barcelona Supercomputing Center. (Spain). Coordinator of the European project 4D-HEALING: Data-Driven Drug Discovery for Wound Healing (ERACoSysMed call 2017). Is principal investigator of FET European project CIRCULAR VISION: Circular DNA in diagnosis and disease models. He develops Big Data approaches for integrating omics, image and clinical history data to study the interaction of biological networks in terms of their topology, dynamics, and perturbations to interpret complex biological systems associated with neurodegenerative diseases, cancer, aging, stem cells and regenerative medicine. His high experience analyzing and deriving models from omics data produced more than 130 publications (113 since 2009), many of them very high impact such as **Science** (Moore *et al.*, 2015), **Nature**, 4 items (Knobloch *et al.*, 2013; Ko *et al.*, 2010; Kim *et al.*, 2009; Kim *et al.*, 2008), **Nature Cell Biology**, 3 items (Ohnishi *et al.*, 2014; Esch *et al.*, 2013; Han *et al.*, 2011), **Cell** 3 items (Han *et al.*, 2010; Singhal *et al.*, 2010; Kim *et al.*, 2009), **Cell Stem Cell** 6 items: (Adachi *et al.*, 2018; Song *et al.*, 2016; Rao *et al.*, 2016; Kubaczka *et al.*, 2015; Han *et al.*, 2012; Ko *et al.*, 2009), **Journal American Chemical Society**, 1 item (Araúzo-Bravo *et al.*, 2005) with more than 9500 citations in Google Scholar, h-index 46, i10-index 103 (June 2020).

Current job description

Leading a group for the study of diseases (neurodegenerative diseases, cancer and aging) applying the Mathematical Modelling and Artificial Vision techniques for the integrative analysis of biological big data sets. The group integrates three main lines of research:

- Study of the interaction of biological networks (genetic and epigenetic regulatory, metabolic, and protein- protein interaction networks) in terms of their topology, dynamics, and perturbations by combining concepts from different areas of mathematics, such as graph, information and game theories.
- Developing of Artificial Vision techniques based on Artificial Intelligence approaches for the analysis of biomedical and microscopic images.
- Developing and application of Machine Learning techniques for the analysis of patient medical histories.

The group approach involves interpretation of the complex biological systems associated to cellular reprogramming, diseases (neurodegenerative diseases and cancer) and aging as quantitative states of computational models used to understand the mechanism behind cellular reprogramming, to find factors for direct reprogramming, and to find markers to characterize, diagnose, prevent and treat disease.

Previous employment

1/August/2008 – 15/January/2014

Group leader

Laboratory of Computer Biology and Bioinformatics, Max Planck Institute for Molecular Biomedicine, Münster (Germany). *Leading a laboratory for the characterization of the properties of the genetic regulatory networks of the toti-, pluripotential stem cells. Computational programming of biological reprogramming. Development of computational methods for studying transcription regulation. Development of algorithms for high throughput data analysis.*

1/November/2006 - 31/July/2008

Postdoctoral researcher

Cell and Developmental Biology Department, Max Planck Institute for Molecular Biomedicine, Münster (Germany). *Developed computational tools for the analysis of regulatory networks in toti- and pluripotential cells.*

1/April/2006 - 30/October/2006

Research fellow

Research and Development Division, Fujirebio Inc., 51, Komiya-cho, Hachioji-shi, Tokyo (Japan) *Developed computer tools for the analysis of protein structure networks and for protein function prediction, as well as algorithms to predict target residues from molecular dynamics simulations in monoclonal antibodies in order to improve their binding affinity.*

1/June/2004 – 30/March/2006

Special postdoctoral researcher

Kyushu Institute of Technology, Dpt. of Bioscience and Bioinformatics, Iizuka-shi, Fukuoka-ken (Japan). *Analysed the synergetic control of genetic networks through transcriptional regulators. Developed computational tools to understand and analyse the interactions among transcription regulatory elements and to build models that allow prediction of the gene expression.*

The research was funded by Japan Society for the Promotion of Science (JSPS).

1/February/1998 – 30/May/2004

Associate professor

Polytechnic School, Dpt. of Electromechanical Engineering, University of Burgos (Spain) *Read lectures on Electricity and Theory of Circuits, and supervised practices in Electricity and Theory of Circuits, and Electrical Machines.*

21/December/1996 - 30/January/1998 Industrial engineer in the research department

Centre for Development of the Telecommunications of Castilla and León (CEDETEL), Spain

Developed a software package (CACSD) for identification and distributed control (DCS) of chemical and biochemical processes for the completion of the ISO9002 standards. Implemented and validated it in the factories for epichlorohydrine production (used in the poliuretane polymerisation process) of Solvay in Brussels, Belgium, and Reinberg, Germany. Implemented and validated it in the pilot plant for penicillin production of Antibióticos S.A.U in León (Spain).

1/December/1996 - 30/July/1998

Research engineer

Superior Technical School of Industrial Engineering, University of Valladolid (Spain)

Worked on research, development and implementation of neuro-fuzzy identifiers and controllers for chemical and biochemical processes.

The work was financed by the European Union (Program ESPRITE), ESPRITE-96-22416

1/August/1994 - 30/November/1996

Researcher

Superior Technical School of Industrial Engineering, University of Valladolid (Spain).

Worked on the research and development of neuro-fuzzy identifiers and controllers for non-linear systems. Developed the neuro-fuzzy architectures FasART and FasBack. Implemented the identification and control modules of non-linear systems. Validated the control of a penicillin bioreactor (Antibióticos S.A.U), a catalytic reformer column (NEREFCO) and a mobile robot (ROBUTER).

The work was financed by the European Union (Program BRITE), Brite/Euram BE 94-7686

Educational history

Industrial Engineer

(Specialised in electrical engineering, intensification in automatic control and electronics)

Faculty: Superior Technical School of Industrial Engineering

University: University of Valladolid (Spain)

Graduation date: 21/April/1996

First doctorate: Industrial Technologies

Institution: Polytechnic University of Cartagena (Spain)

Date: 29/June/2001

Supervisors: Prof. Juan López Coronado and Prof. José Manuel Cano Izquierdo

Thesis title: Monitoring of the penicillin production process using neuro-fuzzy techniques based on simplicial topology

Thesis description:

I have developed a new neuro-fuzzy system (named FLAS) based on simplicial topology, and demonstrated its stability properties with the application to the modeling of non-linear processes and to the monitoring of the penicillin production process.

Second doctorate: Information Technology

Institution: School of Computer Science and Systems Engineering, Kyushu Institute of Technology (KIT), Iizuka, Fukuoka-ken (Japan)

Date: 30/September/2003

Supervisor: Prof. Shimizu Kazuyuki

Thesis title: Development of metabolic flux analysis software and metabolic flux analysis of micro-organisms based on ¹³C-labeling experiments

Thesis description:

I have developed algorithms to estimate metabolic fluxes of biochemical networks based on processing of mass spectrometry and nuclear magnetic resonance information from tracer labelling experiments through non-linear optimization techniques. I integrated them in a graphic user interface and tested them on datasets from fermentations performed with wild and mutant strains under different environmental conditions.

Managerial Activities

Since January 2015. Member of the Research Committee of the BioDonostia Health Research Institute. The Research Committee held periodic meetings to discuss the research lines and project of the BioDonostia Health Research Institute and of the Donostia University Hospital.

Advisory Board Member Committee

Since 2012. Advisory Board Member of the International Cooperation Committee of the Systems and Synthetic Agrobiotech Center (SSAC). Next Generation Bio-Green 21 Program. Gyeongsang National University (GNU), Jinju, Republic of South Korea.

Since 2017. Computational Biologist Consultant of Indicate Solutions SL. Cancer Detection and Early Diagnosis Device. C/ Konkorrenean 52. 20012 Donostia-San Sebastian. CIF B75168252.

Since March 2020, External consultant of the project led by Prof. Rafat Zrieq: Epidemiology and Demographic Factors Associated with Common Infection Diseases in Ha'il, Kingdom of Saudi Arabia: A Step toward infection prevention and control.

Member of Research Networks

- CIBER of Frailty and Healthy Aging (CIBERfes), (Instituto de Salud Carlos III) Madrid, Spain. Since June 2019. CIBER's thematic area for Frailty and Healthy Ageing, set up in late 2016 with the aim of understanding, assessing and as far as possible palliating frailty and its main consequence, incapacity, as this is suffered by many older people. It has twenty research groups working on the study of the biological mechanisms of healthy ageing and the processes leading to frailty and incapacity; the use of cohorts for studying the interaction between chronic disease, ageing and functional deterioration; preventive and therapeutic interventions in frailty and functional deterioration and models of care.
- Thematic Network of Excellence. Transitional Bioinformatics Network TransBioNet, Barcelona Supercomputing Center. RED2018-102404-T. Since September 2019. Acciones de dinamización «Redes de Investigación» del **Subprograma Estatal de Generación de Conocimiento** correspondiente al programa estatal de generación de conocimiento y fortalecimiento científico y tecnológico del sistema de I+D+I. (Spain)

Prizes and honours

- Award: "Premio de Investigación Ernesto Viétez 2018" In the modality of best research for his work: "Targeting liver sinusoidal endothelial cells with miR-20a-loaded nanoparticles reduces murine colon cancer metastasis to the liver", Awarded by the Royal Academy of the Sciences of Galicia, Santiago de Compostela (Spain), 23/January/2019.

Grants

4. Postdoctoral grant from Japan Society for the Promotion of Science (JSPS)

Period: 1/June/2004 – 30/March/2006

Description: *Analysis of synergetic control of genetic networks through transcriptional regulators*
Development of bioinformatics methods for analysis of the interaction gene-molecule.

Host researcher: Prof. Akinori Sarai

Institution: School of Computer Science and Systems Engineering, Kyushu Institute of Technology (KIT), Iizuka, Japan

Department: Biosciences and Bioinformatics

Faculty: Computer Science and Systems Engineering

3. Doctoral grant from the Japanese Ministry of Education (Monbusho)

Period: 1/March/2000 - 30/September/2003

Description: *Ph.D. course*

- *Implement the control hardware for biochemical fermenters for trace labelling experiments and develop the ad hoc software for such controllers.*
- *Development of algorithms for control of bioreactors for mixed cultures *Rapsonia eutropha* and *Lactobacillus lacticus*, for production of PHB.*
- *Development of algorithms for Metabolic Flux Analysis (MFA) based on Carbon 13 techniques.*
- *Utilization of the developed software for analysis of the metabolic fluxes of the mutants of *Escherichia coli* under environmental perturbations.*

Institution: School of Computer Science and Systems Engineering, Kyushu Institute of Technology (KIT), Iizuka, Japan.

2. Grant from the European Union (EU) to participate in the international industrial project MONET for research, development and implementation of neuro-fuzzy identifiers and controllers for chemical and biochemical processes.

Period: 1/December/1996 - 30/July/1998

Financed by: European Union (Program ESPRITE), ESPRITE-96-22416

Institution: Centre for Development of the Telecommunications of Castilla and León (CEDETEL)

Description:

- *Development of a software package (CACSD) for identification and distributed control (DCS) of chemical and biochemical processes for the completion of the ISO9002 standards.*
- *Implementation and validation in the factories for epichlorohydrine production (used in the poliuretane polymerisation process) of Solvay in Brussels, Belgium and Reinberg Germany.*
- *Implementation and validation in the pilot plant for penicillin production of Antibióticos S.A.U in León, Spain.*

1. Grant from the European Union (EU) to participate in the international basic research project PSYCHO for research and development of neuro-fuzzy identifiers and controllers for non-linear systems.

Period: 1/August/1994 - 30/November/1996

Institution: Superior Technical School of Industrial Engineering, University of Valladolid, (Spain).

Description:

- *Development of the neuro-fuzzy architectures FasART and FasBack.*
- *Implementation of identification and control modules of non-linear systems.*
- *Validation on the control of a penicillin bioreactor (Antibióticos S.A.U), a catalytic reformer column (NEREFECO) and a mobile robot (ROBUTER)*

Financed by: European Union (Program BRITE), Brite/Euram BE 94-7686

Conference and symposium organization

Co-organizer of the 8th Biennial Congress of the Spanish Society for Gene and Cell Therapy

Url: <http://www.setgyc.es/Congresos.aspx#tab10024>

Place: San Sebastián, Spain

Date: 4-6 November 2015

Co-founder and co-organizer of the Bioinformatics Stem Cells Workshops

Url: http://www.ibima.med.uni-rostock.de/stemcellbioinf_2013/

Events: 2008 Dresden (Germany).

2009 Aachen (Germany).
2010 Dresden (Germany).
2011 Essen (Germany).
2013 Cologne (Germany).
http://www.ibima.med.uni-rostock.de/stemcellbioinf_2013/

Aim: Provide an interdisciplinary platform where different perspectives can meet, and discuss problems of stem cell data processing and analysis.
Sponsor: DFG Priority Program SPP 1356 "Pluripotency and Cellular Reprogramming".

Co-organizer of First Kyushu Institute of Technology Bioinformatics Symposium

Institution: Kyushu Institute of Technology (KIT)
Place: Faculty of Computer Science and Systems Engineering, Iizuka, Fukuoka (Japan)
Date: 11/Dec/2004.

Invited talks

Title: Computational Challenges in our European Project 4D-Healing: Data-Driven Drug Discovery for Wound Healing
Institution: High Performance Computing (HPC) Admintech
Place: Sevilla, Spain
Date: 4-6/March/2020

Title: Measurement of functional capacity by sitting analysis. Tools and interventions directed to maintenance of functional capacity in the elderly: valuation and intervention in fragility
Meeting: HAUSKOR meeting. Euskampus Fundaziona. Seminar Assessment and intervention in fragility.
Institution: University of the Basque Country (UPV/EHU)
Place: Bilbao, Spain
Date: 25/September/2019

Title: Big Data in health, fear of the unknown
Meeting: Summer course "Health and Industry 4.0"
Institution: University of the Basque Country (UPV/EHU)
Place: San Sebastián, Spain
Date: 20-21/June/2019

Title: Development of parallel algorithms for epigenomics applications
Institution: High Performance Computing (HPC) Admintech
Place: Valencia, Spain
Date: 22-24/May/2019

Title: Big data tools for understanding the cellular language of pluripotency, cancer and aging
Institution: Training program RIS3 Biosciences-health
Place: Zamudio Technological Park, Bilbao, Spain
Date: 23/February/2019

Title: Big data tools for understanding the cellular language of pluripotency, cancer and aging
Institution: Training program RIS3 Biosciences-health
Place: Miramon Technological Park, San Sebastian, Spain
Date: 23/January/2019

Title: Data from the health system for the people's health
Institution: Congress of Digital Health 2018: Connecting the health
Place: Donostia/San Sebastián, Spain

Date: 13/September/2018

Title: Epigenomics Tools for Understanding the Cellular Language of Pluripotency and Cancer

Institution: CIC bioGUNE

Place: Derio, Spain

Date: 12/January/2018

Title: Computational Epigenomics Tools to Understand the Cellular Language of Pluripotency and Reprogramming

Institution: Inserm CNRS, University Toulouse III, Hospital Paul Sebatier

Place: Toulouse, France

Date: 10/November/2017

Title: Epigenomics tools for Big Data analysis

Institution: Refbio Pyrenees Biomedical Network

Place: Bilbao, Spain

Date: 17/October/2017

Title: Computational Biology Analysis of Transcriptomics Dynamics Identifies Genes Specific to Primordial Germ Cells

Institution: 13th International Congress on Stem Cells Biology and Technology

Place: Tehran, Iran

Date: 1/September/2017

Title: Computational Epigenomics Tools to Understand the Cellular Language of Pluripotency and Reprogramming

Institution: 13th International Congress on Stem Cells Biology and Technology

Place: Tehran, Iran

Date: 30/August/2017

Title: Computational Epigenomics Tools for Regenerative Medicine

Institution: Institute of Biomedicine of Valencia IBV CSIC

Place: Valencia, Spain

Date: 8/March/2017

Title: BioDonostia initiatives in clinical Big Data and e-Health

Institution: Refbio Pyrenees Biomedical Network

Place: Toulouse, France

Date: 12/January/2017

Title: Extracellular vesicles, Moving towards a common Language.
Round table moderator

Institution: 3rd International Symposium of GEIVEX.
Therapeutic applications of extracellular vesicles

Place: San Sebastián, Spain

Date: 29/September/2016 - 30/September/2016

Title: Does Mouse Embryo Primordial Germ Cell Activation Start before Implantation as Suggested by Single-cell Transcriptomics?

Institution: Max Plank Institute for Molecular Medicine
Cell and Developmental Biology Retreat

Place: Sylt, Germany

Date: 30/May/2016 - 1/June/2016

Title: Computational Biology Powering the Use of Neural Stem Cells in Regenerative Medicine
Institution: Achucarro Basque Center for Neuroscience
Place: Parque Científico y Tecnológico de Bizkaia, Spain
Date: 6/May/2016

Title: Computational Biology Powering the Use of Neural Stem Cells in Regenerative Medicine
Institution: Euskampus, Campus of International Excellence
Place: San Sebastián, Spain
Date: 14/December/2015

Title: Computational Biology Powering the Use of Neural Stem Cells in Regenerative Medicine
Institution: Tecnun. CEIT-IK4
Place: San Sebastián, Spain
Date: 11/December/2015

Title: Computational Biology Powering the Use of Neural Stem Cells in Regenerative Medicine
Institution: Instituto Ramón y Cajal (CSIC)
Place: Madrid, Spain
Date: 27/November/2015

Title: Discovery of DNA methylation motifs in human pluripotent cells. One step towards disentangling the DNA methylation mechanism
Institution: Ulsan National Institute of Science and Technology (UNIST).
School of Life Sciences
Place: Ulsan, Rep. of South Korea
Date: 16/November/2014

Title: Discovery of DNA methylation motifs in human pluripotent cells. One step towards disentangling the DNA methylation mechanism
Institution: Pusan National University. School of Medicine
Place: Yangsan, Rep. of South Korea
Date: 14/November/2014

Title: Characterization of pluripotent cells using transcriptomics methods
Institution: Tecnun. CEIT-IK4
Place: San Sebastián, Spain
Date: 7/May/2014

Title: Discovery of DNA methylation motifs in human pluripotent cells.
One step towards disentangling the DNA methylation mechanism
Institution: Inbiomed
Place: San Sebastián, Spain
Date: 4/April/2014

Summer course “Healthy Aging. Challenge for Research and Innovation in Health”

Title: Bioinformatics of Aging Come to Age
Institution: University of the Basque Country
Place: San Sebastián, Spain
Date: 26-27/June/2014

**Conference: Cell Line Development and Engineering 2013
(Invited feature presentation)**

Title: Computational programming for biological reprogramming.
Answer from gene expression microarrays.
Organizer: Informa Life Science. www.informa-ls.com/celldev
Place: NH Danube City, Vienna, Austria
Date: 11-15/February/2013

Conference: Encounters in the Health Research Frontier

Title: How pluripotent are my reprogrammed cells?
Answer from gene expression microarrays.
Organizer: Progress and Health Foundation.
Andalusian Regional Ministry of Health (Spain)
Place: Edificio BIC Granada. Parque tecnológico de Ciencias de la Salud
Granada, Spain
Date: 26/November/2009

Conference: Stem Cells and Bioinformatics

Title: Towards modeling of the reprogramming process
Organizer: International Consortium of Stem Cell Networks (ICSCN)
Place: Our Dynamic Earth, Edinburgh, UK
Date: 21-22/September/2009

Workshop: First Kyushu Institute of Technology Bioinformatics Workshop

Title: Statistical and Computational Foundations of Bioinformatics
Organizer: Kyushu Institute of Technology
Place: Faculty of Computer Science and Systems Engineering, Iizuka,
Fukuoka-ken, Japan
Date: 9-10/December/2004

International summer course of the Polytechnic University of Cartagena

Title: Use of neural networks for the monitorization and control of chemical and
biochemical processes. Neurotechnology and intelligent control
Institution: Polytechnic University of Cartagena
Place: Cartagena, Spain
Date: 14-17/July/1999

Teaching experience

Lecturer University of Münster

January/2013. Official academic course for undergraduate students (Faculty of Biology). *Read lectures and supervised practices on Characterization of reprogrammed cells using high throughput data analysis.*

Lecturer University of Münster

January/2012. Official academic course for undergraduate students (Faculty of Biology). *Read lectures and supervised practices on Characterization of reprogrammed cells using high throughput data analysis.*

Instructor Max Planck Institute for Molecular Biomedicine

December/2011. Module of the 3rd North Rhine-Westphalia Stem Cell School for postgraduate students. *Characterization of reprogrammed cells using high throughput data analysis.*

Associate professor University of Burgos (Spain)

1/February/1998 – 30/May/2004. Polytechnic School, Department of Electromechanical Engineering
Read lectures on Electricity and Theory of Circuits, and supervised practices in Electricity and Theory of Circuits, and Electrical Machines.

Projects

CIRCULAR VISION: Circular DNA in diagnosis and disease models

Principal investigators: B Regenbergh & J:P Kutter (University of Copenhagen), **Marcos J. Araúzo-Bravo**, S. Kjaerulff (ChemoMetec), J.S Johansen (Herlev Gentofte Hospital), F. Scaldaferrri & A. Gasbarrini (Universita Cattolica del sacro Coure), Y. Luo (Aarhus University), Y. Barral (Eidgenössische Technische Hochschule Zürich), M. Mohiyuddin (Roche Sequencing Solutions).

Funding organization: Horizon 2020 Framework Programme, Call: H2020-FETOPEN-2018-2019-2020-01

Duration: 01/09/2020-31/03/2024

Contract: 899417

Funding: **3 998 822.50 €**

OncoFluDat II: Customized treatment of patients ONCOlogical through integration of DATA Analytics and MicroFLuidics

Principal investigators: **Marcos J. Araúzo-Bravo** (Project Coordinator), Maite Mujica, Eusebio Gainza, Maria Vivanco, Maria Begoña Garcia, Zapirain.

Funding organization: Health Department (European Union RIS3 call), Basque Government (Spain)

Duration: 01/01/2019-31/12/2019

Contract: 2019222019

Funding: 211.917 €

Next Generation RNA sequencing for the identification of molecular targets in pediatric patients with Imperfect osteogenesis

Principal investigators: Arantza Infante Martinez, Daniela Gerovska, **Marcos J. Araúzo-Bravo**

Funding organization: Health Department (European Union RIS3 call), Basque Government (Spain)

Duration: 01/01/2019-31/12/2019

Contract: 2019222044

Funding: 61.710 €

PluDeeLea: Design, implementation and evaluation of an Advanced Deep Learning model of care for pluripatological patients for the system based support for decision making

Principal investigators: **Marcos J. Araúzo-Bravo**, Marisa Merino Hernandez

Funding organization: Health Department (European Union RIS3 call), Basque Government (Spain)

Duration: 01/01/2019-31/12/2019

Contract: 2019222003

Funding: 39.899 €

EXAMINA: Pain and loss of functional capacity in old people: Development of procedures and technologies for its comprehensive assessment

Principal investigators: Itziar Vergara, **Marcos J. Araúzo-Bravo**

Funding organization: Health Department (European Union RIS3 call), Basque Government (Spain)

Duration: 01/01/2019-31/12/2019

Contract: 2019222016

Funding: 130.097 €

Prediction of rehospitalization in adults with Bipolar Affective Disorder, using Machine learning and other Artificial Intelligence techniques

Principal investigators: Jorge Mc Douall Lombana, Juan Carlos Rincón Acuña, Abel Ernesto González Vélez, Olga Valderrama Aya, Paola A. Rengifo Bobadilla, Andrés Cely Jiménez, **Marcos J. Araúzo-Bravo**.

Funding organization: National Program of Science, Technology and Innovation (Colombia).

Duration: 01/01/2020 to 31/12/2022

Contract: ColCiencias-67469

Funding: 532.389.145 Colombian Peso (COP)

MultiFRET: New advanced technology based on FRET for screening drugs for schizophrenia treatment
Discovery of new drugs for bone diseases

Principal investigators: Nerea Briz Izeta, **Marcos J. Araúzo-Bravo**, Javier Meana.
Funding organization: Industry Department, ELKARTEK 2018 Collaborative Fundamental Research Projects, Basque Government (Spain)
Duration: 01/01/2019 to 31/12/2021
Contract: MultiFRET
Funding: 301.937,43€

Chemical-centric network of environment in cancer context identified by computational mining of PubMed

Principal investigator: **Marcos J. Araúzo-Bravo**.
Funding organization: Spanish Association Against Cancer (AECC)
Duration: 01/07/2019-30/07/2021
Funding: 85.000€

OncoFluDat: Customized treatment of patients ONCOlogical through integration of DATA Analytics and MicroFLUídics

Principal investigators: Maite Mujica, Eusebio Gainza, Maria Vivanco, Maria Begoña Garcia, Zapiroain, **Marcos J. Araúzo-Bravo**.
Funding organization: Health Department (European Union RIS3 call), Basque Government (Spain)
Duration: 01/01/2018-30/11/2018
Funding: 119.116€

EFEKTO: Methodology for screening drugs for schizophrenia

Principal investigators: Daniela Gerovska, **Marcos J. Araúzo-Bravo**, Nerea Briz Iceta, Javier Meana
Funding organization: Health Department (European Union RIS3 call), Basque Government (Spain)
Duration: 01/01/2018-30/11/2018
Funding: 62.423€

Implication of the path of TGF-beta signaling in the development of new therapeutic strategies for Osteogenesis Imperfect

Principal investigators: Clara **Rodríguez**, Daniela Gerovska, **Marcos J. Araúzo-Bravo**
Funding organization: Health Department (European Union RIS3 call), Basque Government (Spain)
Duration: 01/01/2018-30/11/2018
Funding: 50.190€

MiFluDan: Microfluidics and data analytics for the creation of a system of to support the personalized treatment in oncology

Principal investigators: Maite Mújica Garmendia, **Marcos J. Araúzo-Bravo**, Daniela Gerovska, José Javier Aguirre Anda, María de Vivanco, Begoña García Zapiroain.
Funding organization: Industry Department, ELKARTEK 2018 Collaborative Fundamental Research Projects, Basque Government (Spain)
Funding: 110.500 €
Duration: 01/01/2018 to 31/12/2019
Contract: MiFluDan

Discovery of new drugs for bone diseases

Principal investigators: Clara Isabel Rodríguez, **Marcos J. Araúzo-Bravo**, Daniela Gerovska, Goran Bijelic, Luis Kabongo.
Funding organization: Industry Department, ELKARTEK 2018 Collaborative Fundamental Research Projects, Basque Government (Spain)
Funding: 82.000 €
Duration: 01/01/2018 to 31/12/2019

Contract: M4B

Data analytics of the injury to kidney repair in patients with chronic kidney disease (CKD)

Principal investigators: **Marcos J. Araúzo-Bravo (Project Coordinator)**, Daniela Gerovska, Loïc Fiévet, Frederic Deschaseaux.

Funding organization: European Union
Funding: 15.000 €
Duration: 01/02/2018 to 31/12/2018
Contract: DaAnaERC

Development and validation of a system of alarms of detection of adverse events in patients with hyperglycaemias based on predictive modeling

Principal investigators: Urko Aguirre (Project Coordinator), **Marcos J. Araúzo-Bravo**, Daniela Gerovska, Antonio Gimeno Miguel, Miren Orive Calzada, Alexandra Prados, Beatriz Poblador, Yolanda García

Funding organization: European Union
Funding: 34.000 €
Duration: 01/02/2018 to 31/12/2018
Contract: SAT-PREDIAB

Data-Driven Drug Discovery for Wound Healing

Principal investigators: Marcos J. Araúzo Bravo and Ander Izeta
Funding organization: Instituto de Salud Carlos III.
Duration: 01/06/2018 to 31/12/2020
Funding: 149.998,86 €. Coordinator
Contract: AC17/00012

4D-HEALING: Data-Driven Drug Discovery for Wound Healing

Principal investigators: **Marcos J. Araúzo-Bravo (Project Coordinator)**, Ander Izeta, Marta Bertolini. Radovan Komel, Branislav Novotny, Igor Adameyco, Rainer Riedl, Ardeshir Bayat, Sarah Teichmann.

Funding organization: European Union, EraCoSysMed Program
Funding: 1.477.000 €
Duration: 01/06/2018 to 31/12/2020
Contract: 30.06.2017ID23

Predicting the risk of progression of chronic kidney disease in a colombian population

Principal investigators: Claudia Colmenares Mejía, Adriana Robayo García, Camilo González González, Fredy O. Mendiviélso Duarte, Carlo E. Torres Torres, Isabel C. Suarez Mendoza, Mario A. Isaza Ruget, Olga V. Gómez Gómez, Nancy Yomayusa González, Catherine Alvarado Heine, Abel E. González Vélez, Paola A. Rengifo Bobadilla, Daniel R. Sandoval Serrano, **Marcos J. Araúzo-Bravo**.

Funding organization: National Program of Science, Technology and Innovation (Colombia).
Duration: 01/01/2018 to 31/12/2020
Contract: ColCiencias-58141
Funding: 647.710.550 Colombian Peso (COP)

New drugs for cognitive impairment associated with Alzheimer's disease based on reversion of synaptic depression induced by amyloid β

Principal investigators: **Marcos J. Araúzo-Bravo (Project Coordinator)**. Shira Knafo
Funding organization: Health Department (European Union RIS3 call), Basque Government (Spain)
Duration: 01/01/2017-30/11/2017
Funding: 85.184€

Cell therapy based on mesenchymal stem cells applied to pediatric patients with Osteogenesis Imperfecta: Mechanism of action

Principal investigators: Clara Isabel Rodríguez (**Project Coordinator**), Daniela Gerovska, **Marcos J. Araúzo-Bravo**

Funding organization: Health Department (European Union RIS3 call), Basque Government (Spain)

Duration: 01/01/2017-31/11/2017

Funding: 103.219,05€

PHAIKER: Development of a platform for the discovery of drugs targeting neuropsychiatric diseases

Principal investigators: Javier J. Meana Martínez, Shira Knafo, **Marcos J. Araúzo-Bravo**, Goran Bijelic.

Funding organization: Industry Department, ELKARTEK 2017 Collaborative Fundamental Research Projects, Basque Government (Spain)

Funding: 205.300 €

Duration: 01/01/2017 to 31/12/2018

Contract: KK-2017/00023

ONCOPRO: Development of probes of oligonucleotides for the diagnosis of cancer of pancreas, lung, prostate and colon

Leader company: SOMAprobes SL

Partners: **Marcos J. Araúzo-Bravo** (BioDonostia)

Funding organization: Industry Department, HAZITEK 2017. Support Program for R+D in Business. Basque Government (Spain)

Funding: 100.000 €

Duration: 01/01/2017 to 31/12/2017

Contract: ZL-2017/00428

IMPETUS: Technologies for the Impulse of Medicine Personalized for its Clinical Use

Leader company: Onkologikoa Fundazioa

Partners: **Marcos J. Araúzo-Bravo** (BioDonostia), Clínica Vicente San Sebastián SA Deusto Sistema SA, DNA Data SLP, Ibermatica SA, Instituto Oncológico IMQ Bilbao SL, LKS Ingeniería S.COOP, One Way Liver SL, Progenika Biopharma SA, STT Ingeniería y Sistemas, CIC Biogune. DS LABS, Vicontech (i3B), Mondragon GOI Eskola Politeknikoa JoseE Maria Arizmendiarieta SCOOP. Universidad de Deusto, Universidad de Navarra

Funding organization: Industry Department, HAZITEK 2017. Support Program for R+D in Business. Basque Government (Spain)

Funding: 361.841,15 €

Duration: 01/01/2017 to 31/12/2017

Contract: IMPETUS

Repositioning of drugs inhibiting the TGF-beta pathway for patients with osteogenesis imperfecta

Principal investigators: Clara I. Rodríguez López, **Marcos J. Araúzo-Bravo**

Funding organization: Fundación Mutua Madrileña (Spain), Rare Diseases Call. Research Projects

Funding: 126.000 €

Duration: 01/08/2017 to 31/08/2019

Optimization of cellular reprogramming by total reconstruction of the Waddington epigenetic landscape using "Big data" techniques

Principal investigator: **Marcos J. Araúzo-Bravo**

Funding organization: Ministry of Economy and Competitiveness (Spain)

Funding: 110.000€

Duration: 01/01/2017 to 31/12/2019
Contract: BFU2016-77987-P

Re-use of health and economic data generated in research projects for later clinical use and in future advanced analytical projects.

Funding organization: Health Department (European Union RIS3 call), Basque Government (Spain)
Duration: 01/01/2016-31/12/2016
Principal investigators: Roberto Bilbao Urquiola, **Marcos J. Araúzo-Bravo**
Funding: 130.000€
Application Number: DSAN16

INvitro Diagnostics for CAncer TESting INDICATE development of an economic, sensitive and rapid biosensor to detect mutations in blood associated with personalized medicine

Funding organization: Health Department (European Union RIS3 call), Basque Government (Spain)
Duration: 01/01/2016-31/12/2016
Principal investigator: Charle Lawrie
Funding: 360.000€
Application Number: DSAN16/222

Development of instruments for the identification of fragile older subjects

Funding organization: Health Department (European Union RIS3 call), Basque Government (Spain)
Start and finish date: 01/01/2016-31/12/2016
Principal investigator: Itziar Vergara
Funding: 90.715€
Application Number: DSAN16/226

Reconstruction of the Waddington landscape to identify molecular mechanisms of aging

Funding organization: Diputación Foral de Guipuzkoa (Spain)
Start and finish date: 01/07/2016-31/07/2017
Principal investigator: **Marcos J. Araúzo-Bravo**
Partners: Haritz Irizar Aguirre, Ana Gorostidi Pagola, M^a Pilar Camaño González, Maider Mateo Abad
Funding: 76.000€
Application Number: DFG16/020, 2016-CIEN-000036-01

FRAILTEKII: New strategies for the development of devices for identification and assessment of products for fragility syndrome

Funding organization: Industry Department (Elkartek call), Basque Government (Spain)
Start and finish date: 01/01/2016-31/12/2016
Principal investigator: TECNALIA, Ander Matheu
Partners: BIODONOSTIA (**Marcos J. Araúzo-Bravo**), CEIT-IK4, CIDETEC.IK4, IK4.TEKNIKER, VICOMTECH.IK4, MATIA INSTITUTE, UPV/EHU
Funding: 521.703€
Application Number: KK-2016/00106

FRAILTEK: New strategies for the development of devices for identification and assessment of products for fragility syndrome

Funding organization: Industry Department (Elkartek call), Basque Government (Spain)
Start and finish date: 01/01/2015-31/12/2015
Principal investigator: TECNALIA, Ander Matheu
Partners: BIODONOSTIA (**Marcos J. Araúzo-Bravo**), CEIT-IK4, CIDETEC.IK4, IK4.TEKNIKER, VICOMTECH.IK4, MATIA INSTITUTE, UPV/EHU
Funding: 421.703€
Application Number: KK-2015/00

Identification of molecular mechanisms associated with the onset of neurodegenerative diseases using a methodology integrative omics "Big Data"

Funding organization: Diputación Foral de Guizpuzkoa (Spain)

Start and finish date: 01/07/2015-31/07/2016

Principal investigator: **Marcos J. Araúzo-Bravo**

Partners: Haritz Irizar Aguirre, Ana Gorostidi Pagola, M^a Pilar Camaño González, Maider Mateo Abad

Funding: 65.000€

Application Number: Exp. 90/15, 2015-CIEN-000040-01

Development of a cellular therapy based mesenchymal stem cells to be applied on pediatric patients with osteogenesis imperfecta: Determination of the secretory profile associated to therapeutical effects.

Funding organization: Fundación Vasca de Innovación e Investigación Sanitaria. Iniciativa EITB maratona 2014

Start and finish date: 01/01/2014-31/12/2014

Principal investigator: Clara I. Rodríguez López

Funding: 45.200€

Application Number: BIO14/TP/007

Development of a European network for preclinical testing of interventions in mouse models of age and age-related diseases (MouseAGE)

Partners: Lene Juel Rasmussen, Mustapha Kassem, Sulev Koks, Peterson, Aare Martson, José Luis Trejo, **Marcos J. Araúzo-Bravo**, Ilaria Bellantuono, Paul Potter, Claudia Mazza, Marco Viceconti

Funding Agency: European Union, COST Program

Duration: 14/05/2014 to 13/05/2018

ID: BM-1402

Protective vaccination against blood-stage malaria: Gene expression and epigenetics of the liver

Principal Investigator: Prof. Saleh Al-Quraishy

Partners: Prof **Marcos J. Araúzo-Bravo**, Prof. Mohamed Dkhil, Prof. Frank Wunderlich

Funding Agency: National Program for Science and Technology (NPST) of Saudi Arabia

Place: King Saud University (Saudi Arabia)

Duration: 01/05/2014 to 31/04/2016

Funding: 350.000€

Contract: 12-BIO2661-02

Differential methylated miRNA loci in bladder cancer

Principal Investigator: Prof. James Adjaye

Funding Agency: Heinrich Heine University (Germany)

Funding: 300.000€

Duration: 01/01/2014 to 31/12/2016

Contract: HHU2014-Adj

Applications of MR imaging and spectroscopy techniques in neuromuscular disease: collaboration on outcome measures and pattern recognition for diagnostics and therapy development

Partners: **Prof. Volker Straub**, Dr. Pierre Carlier, Mathias Ziegler, Dr. Nathalie Goemans, Prof Dinko Mitrevic, Prof John Vissing, Prof Bjarne Udd, Dr. Paulo L. de Sousa, Dr. Luis María Escudero Cuadrado, Dr. María Luisa García Martín, **Prof. Marcos J. Araúzo-Bravo**

Funding Agency: European Union, COST Program

Duration: 02/12/2013 to 01/12/2017

ID: BM-1304

Epigenetic Diagnosis of Urological Malignancies

Principal Investigator: Dr. Simeon Santourlidis

Funding Agency: BMBF (Federal Ministry of Education and Research) (Germany)

Funding: 300.000€

Duration: 1/04/2012 to 30/05/2014

Contract: GN-1421

Measurement and modeling of climate and radiative variables for the optimization and design of photovoltaic facilities integrated in buildings

Principal Investigator: Dr. Monserrat Diez Mediavilla

Funding organization: Ministry of Science and Innovation (Spain)

Funding: 100.000€

Duration: 01/01/2012 to 31/12/2014

Contract: ENE2011-27511

Reprogramming by testosterone of gene expression in the anti-malaria effector sites spleen and liver

Principal Investigator: Prof. Saleh Al-Quraishy

Partners: Prof. Mohamed Dkhil, Prof. Frank Wunderlich

Funding Agency: National Program for Science and Technology (NPST) of Saudi Arabia

Place: King Saud University (Saudi Arabia)

Duration: 01/01/2011 to 31/12/2013

Funding: 350.000€

Contract: 10-BIO1212-02

Cell-based regenerative Medicine Pluripotent cells for heart therapies

Principal Investigator: Prof. Dr. Hans R. Schöler

Funding Agency: BMBF (Federal Ministry of Education and Research) (Germany),

Funding: 254.000€

Duration: 01/04/2009 to 29/02/2012,

Application Number: GN 0934,

Pluripotency and cellular reprogramming Identification of novel transcription factors necessary for pluripotency and reprogramming

Principal Investigator: Prof. Dr. Hans R. Schöler

Funding Agency: DFG (German Research Foundation)

Funding: 209.000€

Duration: 01/01/2008 to 31/12/2011

Contract: SPP 1356 – SCHO 340/5-1 (Priority Programme)

Disease-specific induced pluripotent stem cells

Principal Investigator: Prof. Dr. Hans R. Schöler

Funding Agency: BMBF (Federal Ministry of Education and Research) (Germany)

Funding: 468.000€

Duration: 01/11/2008 to 31/10/2011

Application Number: GN 0811

Germ Cell Potential In vitro derivation and maturation of oocytes from murine embryonic stem cells

Principal Investigator: Prof. Dr. Hans R. Schöler

Funding Agency: DFG (German Research Foundation),

Funding: 242.000€

Duration: 01/01/2008 to 31/07/2010

Contract: SCHO 340/7-1

Unrestricted somatic stem cells from umbilical cord blood

Principal Investigator: Prof. Dr. Hans R. Schöler
Funding Agency: DFG (German Research Foundation)
Funding: 225.000€
Duration: 01/01/2007 to 01/12/2009
Application Number: SCHO 340/4-1

Analysis the synergetic control of genetic networks through transcriptional regulators

Principal Investigator: Dr. Marcos J. Araúzo-Bravo
Funding Agency: MEXT (Ministry of Education, Culture, Sports, Science and Technology)
Type: Special Grant Project in Aid for Scientific Research (Tokubetsu Kenkyuin Shoreihi)
Funding: 2.400.000¥ (Japanese yen)
Place: Kyushu Institute of Technology, Iizuka, Fukuoka (Japan)
Duration: 01/06/2004 to 30/04/2006

Patents

Patent title: **Assessing the functional performance of an individual**
Date submission: 21/12/2018
ID: EP18382973.8
Type: European
Inventors: **Marcos J. Araúzo-Bravo**, Itziar Vergara Micheltoarena, Jaime Herran Planchuelo, Larraitz Añorga Gomez, Vrotsou Kalliop, Ander Matheu Fernández.
Holding institution: Fundacion CIDETEC (Spain)

Patent title: **Verfahren zur Bestimmung des DNA-Methylierungsgrads (Method to estimate the DNA methylation level)**
Date: 17/12/2013
ID: EP12199152.5
Type: International
Priority country: Germany
Inventors: Dr. Simeon Santourlidis, Prof. Dr. Peter Wernet, Dr. Agnes Beerman, Foued Ghajati, **Dr. Marcos J. Araúzo-Bravo**, Prof. Dr. Rolf Ackermann
Holding institution: Heinrich-Heine University (Düsseldorf)

Patent title: **Idioloale Normierung und epigenetische Biomarker des Harnblasen- und Prostakarzinoms (Normalization "Ideoloale" and epigenetic biomarkers for bladder and prostate cancer)**
Date: 21/12/2012
ID: PCT/EP2013/076992
Type: International
Priority country: Germany
Inventors: Dr. Simeon Santourlidis, Prof. Dr. Peter Wernet, Dr. Agnes Beerman, Foued Ghajati, **Dr. Marcos J. Araúzo-Bravo**, Prof. Dr. Rolf Ackermann
Holding institution: Life Science Inkubator (LSI)

Supervised Academic Training Activities

Basque Government postdoctoral grant supervision of Dr. Irizar Aguirre. 2015-2017. Project title: "Genomic profiling of solid tumors through next generation sequencing via network systems biology: Towards personalized cancer therapy".

Master thesis supervisor of Javier Cabau Laporta, dissertation date 2017. Thesis title: "Automatic annotation of transcriptomics data from GEO database for computational reconstruction of the Waddington landscape". University of the Basque Country (UPV).

Master thesis supervisor of Alex Martínez Ascensión, dissertation date 2018. Thesis title: “Peak finder: Integrative analysis of peak signals from NGS data”. University Autònoma of Barcelona (UAB)

Minor thesis project supervisor of Alex Martínez Ascensión, dissertation date: 2017. Thesis title: “NaviSE: Superenhancer Navigator integrating epigenomics signal algebra”. University of the Basque Country (UPV).

Minor thesis project supervisor of Marina Echeverría Ferrero, dissertation date: 2017. Thesis title: “Prediction of metabolic states associated with cancer dissemination based on the differential study of healthy cells in healthy tissue, and healthy cells confined in a tumoral microenvironment”. University of Navarra-Tecnun.

Minor thesis project supervisor of Mikel Arrospide Elgarresta, dissertation date: 2015. Thesis title: “Development of Big Data software for the automatic annotation and processing of omics data from the GEO database”. University of the Basque Country (UPV).

Minor thesis project supervisor of Iñigo García de las Cuevas, dissertation date: 2016. Thesis title: “Development of software for the automatic prediction of super-enhancers from chromatin signals. Application to study the dynamics of muscle specification during aging”. University of Navarra-Tecnun.

Thesis supervisor of Phuc-Loi Luu. Dissertation date: 2015. Thesis title: “Discovery of DNA methylation patterns and their implications in gene pluripotent regulatory networks”. Muenster University (Germany).

Thesis supervisor of Coloma Álvarez De Eulate López, PhD Candidate, dissertation date: 2018, Thesis title “Development of a liver simulator that resembles the nuclear magnetic resonance behavior of the human liver for different levels of iron and fat overloads”. University of the Basque Country (UPV).

List of publications

140. Kim K-P, Choi J, Yoon J, Bruder JM, Shin B, Kim J, **Araújo-Bravo MJ**, Han D, Wu G, Han DW, Kim J, Cramer P, Schöler HR. Permissive epigenomic states endow reprogramming competence to a broad range of transcriptional regulators. *Nature Chemical Biology*. In press, 2020.
139. Lee H, Lee HY, Lee BE, Gerovska D, Park SY, Zaehres H, **Araújo-Bravo MJ**, Kim J-I, Ha Y, Schöler HR, Kim JB. Sequentially induced motor neurons from human fibroblasts facilitate locomotor recovery in a rodent spinal cord injury model. *eLife*. 9.e52069 doi: 10.7554/eLife.52069, 2020.
138. Palomo-Irigoyen M, Pérez-Andrés E, Iruarrizaga-Lejarreta M, Barreira-Manrique A, Tamayo-Caro M, Vila-Vecilla L, Moreno-Cugnon L, Beitia N, Medrano D, Fernandez-Ramos D, Lozano JJ, Okawa S, Lavín JL, Martín-Martín N, Sutherland JD, Guitiérrez de Juan V, González-Lopez M, Macías-Cámara N, Mosén-Ansorena D, Laraba L, Hanemann CO, Ercolano E, Parkinson DB, Schultz CW, **Araújo-Bravo MJ**, Ascensión AM, Gerovska D, Iribar H, Izeta A, Pytel P, Krastel P, Provenzani A, Seneci P, Carrasco RD, Del Sol A, Martinez-Chantar ML, Barrio R, Serra E, Lazaro C, Flanagan AM, Gorospe M, Ratner N, Carracedo A, Aransay AM, Varela-Rey M, Woodhoo A. HuR/ELAVL1 drives malignant peripheral nerve sheath tumour growth and metastasis. *Journal of Clinical Investigation*. In press, 2020.
137. Erichsen L, Seifert HH, Schulz WA, Hoffmann MJ, Niegisch G, **Araújo-Bravo MJ**, Bendhack ML, Poyet C, Hermanns T, Beermann A, Hassan M, Theis L, Mahmood W, Santourlidis S. Basic Hallmarks of Urothelial Cancer Unleashed in Primary Uroepithelium by Interference with the Epigenetic Master Regulator ODC1. *Scientific Report*. 10(3808):1-10, 2020.
136. Delic D, Wunderlich F, Al-Quraishy S, Abdel-Baki AS, Dkhil MA, **Araújo-Bravo MJ**. Vaccination accelerates hepatic erythroblastosis induced by blood-stage malaria. *Malaria Journal*. 19(1):49, 2020.
135. Aldaz P, Otaegi-Ugartemendia M, Saenz-Antoñanzas A, Garcia Puga M, Moreno Valladares M, Flores JM, Gerovska D, **Araújo-Bravo MJ**, Sampron N, Matheu A, Carrasco-Garcia E. SOX9 promotes tumor progression through the axis BMI1-p21CIP. *Scientific Reports*. 9(8930):1-21, 2019.
134. Bernecker C, Ackermann M, Lachmann N, Rohrhofer L, Zaehres H, **Araújo-Bravo MJ**, van den Akker E, Schlenke P, Dorn I. Enhanced ex vivo generation of erythroid cells from human induced pluripotent stem cells in a simplified cell culture system with low cytokine support. *Stem Cells and Development*. 28(23):1540-1551. 2019.
133. Rodriguez RM, Suarez-Alvarez B, Lavín JL, Ascensión AM, González M, Lozano JJ, Raneros AB, Bulnes PD, Huidobro C, Martín-Martín C, Puig-Kröger A, Corbí AL, **Araújo-Bravo MJ**, Aransay AM, Lopez-Larrea C. Signal integration and transcriptional regulation of the inflammatory response mediated by the gm-/m-csf signaling axis in human monocytes. *Cell Reports*. 29(4):860-872.e5. 2019.
132. Park MR, Wong MS, **Araújo-Bravo MJ**, Lee H, Nam D, Park SY, Seo HD, Lee SM, Zeilhofer HF, Zaehres H, Schöler HR, Kim JB. *Oct4* and *Hnf4a*-induced hepatic stem cells ameliorate chronic liver injury in liver fibrosis model. *Plos ONE*. 12;14(8):e0221085. 2019.
131. Gerovska D, **Araújo-Bravo MJ**. Computational analysis of single-cell transcriptomics data elucidates the stabilization of Oct4 expression in the E3.25 mouse preimplantation embryo. *Scientific Reports*. 9(8930):1-21, 2019.

130. Rodríguez-Traver E, Rodríguez C, Díaz-Guerra E, Arenas F, **Araújo-Bravo MJ**, Orera M, Kulisevsky J, Moratalla R, Vicario C. Generation of an integration-free iPSC line, ICCSICi005-A, derived from a Parkinson's disease patient carrying the L444P mutation in the GBA1 gene. **Stem Cell Research**. 40:101578. 2019.
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128. Carrasco-Garcia E, Álvarez-Satta M, García-Puga M, Lima Ribeiro M, Arevalo S, Araújo-Bravo MJ, Matheu A. Therapeutic relevance of SOX9 Stem Cell Factor in Gastric Cancer. **Expert Opinion On Therapeutic Targets**. 23(2):143-152, 2019.
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121. Erichsen L, Beermann A, **Araújo-Bravo MJ**, Hassan M, Santourlidis S. Genome-wide hypomethylation of LINE-1 and Alu retroelements in cell-free DNA of blood is an epigenetic biomarker of human aging. **Saudi Journal of Biological Sciences**. 24:1220-1226, 2018.
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113. Al-Quraishy S, Dkhil M, Alomar S, Abdel-Baki AA, Denis Delic D, Ghanjati F, Santourlidis S, Wunderlich F, **Araújo-Bravo MJ**. Protective vaccination and blood-stage malaria modify DNA-methylation of gene promoters in the liver of Balb/c mice. *Parasitology Research*, 116(5):1463-1477, 2017.
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