Marcos Sande-Melon, PhD

Pre-clinical Research Fellow

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Dynamic and innovative regenerative medicine and computational scientist with experience in pre-clinical research, project management, academic writing, teaching and public speaking. I pioneered the development of a novel pre-clinical model for heart/liver diseases and cancer, integrating cutting-edge technologies like scRNA-seq and Spatial Transcriptomics. I have cultivated valuable leadership, strategic thinking, and adaptability skills. I am excited to leverage my technical abilities, soft skills, and passion for scientific discovery to contribute to your esteemed organization's mission to improve human health.

Education

2022-2024	**MSc in Bioinformatics.** University of Vic
2016-2019	**PhD in Biomedical Sciences (GCB).** University of Bern
2014-2015	**PhD Program in Molecular Biosciences.** Autonomous University of Madrid
2013-2014	**MSc in Molecular and Cellular Biology.** Autonomous University of Madrid
2009-2013	**BSc in Biology.** University of Salamanca

Work Experience

Tittle	**Postdoctoral Research Fellow**
Location	**Peter MacCallum Cancer Research Center (Melbourne; Australia)**
Dates	**January 2021-Present**
Responsibilities	**Pre-clinical Model Development:** Pioneered and established a novel pre-clinical model to study liver diseases and cancer. **Technological Advancements:** Led the integration of scRNA-seq and Spatial Transcriptomics technologies, creating bioinformatics pipelines. **Data Management:** Next-Generation sequencing (NGS) management, ensuring integrity and accessibility within group. **Team Leadership:** Supervised junior staff, fostering an environment of collaboration and continuous learning.
Accomplishments	**Innovative research:** Developed a cutting-edge pre-clinical model for liver diseases in zebrafish, opening avenues for novel discovery in liver regenerative medicine and cancer field. **Methodological Breakthrough:** Established novel barcoding lineage tracing techniques, enhancing precision of cellular tracking. **Academic Contributions**: Contributed to impactful scientific publications in top-tier journals. **Communication Excellence:** Effectively communicated scientific activities in national and international committees and conferences. **Funding and Awards:** Recipient of prestigious grants and fellowships including Early. Postdoc Mobility Fellowship, 10X Discovery grant, Harold Mitchell Prize, and EMBO travel grant.

Tittle	**PhD Candidate**
Location	**University of Bern (Bern; Switzerland), CNIC (Madrid; Switzerland), and EMBL Heidelberg (Heidelberg; Germany)**
Dates	**January 2015-August 2019**
Responsibilities	**Stem Cell Research:** Spearheaded the discovery of a novel cardiomyocyte stem cell responsible for heart regeneration. **Bioinformatics Analysis:** Conducted thorough bioinformatics analyses of NGS(Bulk and scRNA-seq) datasets. **Staff Supervision:** Provided guidance and supervision to students, fostering an environment of learning and growth. **Zebrafish Colony Management:** Oversaw the management of the zebrafish colony, maintaining optimal conditions for research and experimentation.
Accomplishments	**Stem Cell Discovery:** Unearthed a novel source of heart stem cells, marking a significant breakthrough in regenerative medicine. **Educational Achievement:** Successfully completed the PhD, demonstrating commitment to academic excellence and specialized expertise. **Publication Success:** Authored and published papers in peer-reviewed journals in the field of heart regeneration, cancer, and immunology. **International Recognition:** Delivered oral presentations at international scientific meetings (Gordon Conference). **Awards and Fellowships:** Honoured with awards for best poster prize, travel fellowships, and scientific fellowships, reflecting excellence in research and contributions to the scientific community.

Tittle	**PhD Medical Laboratory Scientist**
Location	**University of Salamanca and University Hospital of Salamanca (Salamanca; Spain)**
Dates	**June 2010- July 2013**
Responsibilities	**Sample analysis:** Conducting various clinical laboratory tests on patient samples such as blood, urine, tissue, and other body fluids to identify abnormalities or diseases. **Instrumentation Maintenance and Quality control:** Regularly performing quality control checks on tests and equipment to ensure accuracy

Accomplishments and reliability. **Data Interpretation and Reporting:** Analyzing laboratory findings and reporting results to physician.
Compliance Excellence: Demonstrating commitment to maintaining regulatory compliance, contributing to successful audits or accreditations. **Patient Impact:** Directly impacting patient care through timely and accurate diagnoses, supporting effective treatment plans.

Skills and Languages

Microscopy Techniques
Light-Sheet Microscopy, Confocal Microscopy, Fixed and *in vivo* acquisition, 3D Imaging of cleared whole organs(heart, liver brain)
3D and 2D Image Analysis
Imaris, Fiji, Ilastik, Napari, and CellProfiler
Bioinformatics
Image analysis, Bulk and scRNA-seq analysis, database management
Sequencing Techniques
Bulk, scRNA-Seq, and ChIP-Seq library preparation
Molecular Imaging Techniques
Section-Immunofluorescence, WM-Immunofluorescence, Clearing imaging, *in situ* hybridization
Histology
Histological staining, Microtome and Cryostat
Animal Models
Zebrafish, and Mouse

General Techniques
Flow Cytometry, qPCR, Cell culture, Mass Spectrometry/Proteomics (RIME-Protein Complexes), CRISPR/Cas9 genome editing.
Zebrafish and Mouse techniques
Microinjection, Heart, liver, and optic nerve cryoinjury and resection, Bone-Marrow Extraction, Transplantation, Limb Dissection, Colony Maintenance
Communication
Public speaking, Video editing, Script writing
Soft Skills
Leadership, Strategic thinking, Mentoring, Decision making, Conflict resolution, Emotional intelligence, Teamwork, Negotiation skills, Project management, Time management, Effective communication
Languages
English (Full Working Proficiency), Spanish (Native Speaker), German (Limited Working Proficiency)

Academic Publications

Development of a hepatic cryoinjury model to study liver regeneration. Marcos Sande-Melón, David Bergemann, Juan Manuel Gonzalez-Rosa, Andrew G Cox. **BioRxiV 2023.** **Contribution:** Experimentation design, experiments, imaging, bioinformatic analysis, figure design, and manuscript writing.

Adult *sox10*$^{+}$ cells contribute to myocardial regeneration in the zebrafish Marcos Sande-Melón, et al., **Cell reports 2019.** **Contribution:** All the figures in the manuscript have been performed by myself. Including paraffin-cryosection IHC, whole-mount IHC in hearts, in situ hybridisation, RNA-Seq library,bioinformatics analysis, light-sheet and confocal microscopy, image analysis.

Prizes

EMBO travel grant. Melbourne, Australia 2022.

10X Genomics Grant. Melbourne, Australia 2022.

Harold Mitchell Prize. Melbourne, Australia 2021.

SNSF Postdoctoral Fellowship. Bern, Switzerland 2021. Swiss National Foundation.

Christian Boullin Fellowship. Heidelberg, Germany 2018. EMBL Heidelberg.

Master Excellence Fellowship Programme. Madrid, Spain 2014. Autonomous Univerisity of Madrid

Conferences

ANZebrafish meeting. Oral Presentation. Brisbane, Australia 2023

GRC Tissue Repair and Regeneration. Oral Presentation. New London, United States 2019

Swiss Cardiovascular Research Meeting. Oral Presentation. Fribourg, Switzerland 2019

Swiss Zebrafish Meeting. Best Poster Prize. Bern 2017

Scientific interest

Regenerative medicine, single cell omics, neuroscience, immunology, microscopy, image analysis, and bioinformatics.

References

Andrew G. Cox, Assistant professor (Peter MacCallum Cancer Research Center) andrew.cox@petermac.org

Rosario Arevalo Arevalo, Dean of Biology Faculty (University of Salamanca) mraa@usal.es

Nadia Mercader Huber, Professor (University of Bern and CNIC) nadia.mercader@ana.unibe.ch

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