

BIOGRAPHICAL SKETCH

Sasha Mendjan

Group leader & Ass. Professor
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Personal Data

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<https://anatomie-zellbiologie.meduniwien.ac.at/en/our-departments/division-of-cell-and-developmental-biology/research-groups/sasha-mendjan/>

Education

2002-2006: Ph.D. EMBL & University of Heidelberg, Germany; Asifa Akhtar lab
2001-2002: Diploma thesis in Biochemistry, LMU, Munich, Germany; Rudolf Grosschedl lab
1997-2002: Diploma studies in Biology, LMU, Munich, Germany

Professional career

Since 2025, Tenured group leader IMBA & Ass. Professor, Medical University of Vienna (MUW, 2024)
2015-2025 Junior group leader, Institute of Molecular Biotechnology (IMBA), Austria
2013-2015: Senior postdoc, Vallier lab, Cambridge Stem Cell Institute, UK
2007-2013: Postdoc, Pedersen lab, LRM, University of Cambridge, UK

Personal statement

The lack of human cardiac models, which hinders the development of therapies and the prediction of patient responses, is the most significant bottleneck to much-needed treatments for cardiovascular disease. My mission is to address this key problem, causing more deaths than any other disease globally. The Mendjan team aims to recapitulate human heart development *in vitro* to uncover the underlying molecular mechanisms of heart formation, growth, vascularization, and regeneration, thereby combating cardiac disease. Our guiding principle is that mechanisms of heart development and disease in adults are intimately linked. Hence, to serve as predictive disease models, we are developing pluripotent stem cell-derived self-organizing heart organoids, known as "cardioids" ([Hofbauer et al., 2021](#); [Schmidt, Deyett, et al., 2023](#)).

We systematically apply principles of *in vivo* development, translate them *in vitro*, and dissect organogenesis from the tissue scale down to the cellular, molecular, and ultra-structural levels. Our lab benefits from my Ph.D. and postdoc experiences across biological scales, illuminating fundamental mechanisms of transcriptional regulation in Asifa Akhtar's lab at the EMBL in Heidelberg ([Mendjan et al., 2006](#)) and signaling control of the transcription factor, epigenetic, and mRNA machinery directing cell specification ([Mendjan et al., 2014](#); [Bertero et al., 2015](#); [2018](#)) in Roger Pedersen's and Ludovic Vallier's labs at Cambridge University. We combine organoid model development ([Hofbauer et al., 2021](#); [Schmidt, Deyett, et al., 2023](#)) with molecular analysis, single-cell proteomics ([Ctortecka et al., 2022a](#); [Ctortecka et al., 2022b](#)), genomics, electrophysiological, and EM ultra-structural methods to elucidate the mechanisms of cardiogenesis, heart growth, and regeneration *in vitro*, and how they are linked to adult heart disease.

By doing science, we learn how to teach, work in a team, communicate effectively, and apply the scientific method to the highest standards. As a lab head and teacher, I am committed to my students through dedicated supervision, mentoring, and an organizational framework that promotes asking critical questions, diverse perspectives, and having fun while learning, making discoveries, and benefiting patients & society.

Team size & structure

- 1 part-time lab manager, 3 postdocs, 4 Ph.D. students, 3 technicians, 2 master's students

Selected publications (links to all publications: [Scholar](#), [Pubmed](#))

[Hyaluronan underlies the emergence of form, fate, and function in human cardioids](#)

Research topics

- Human cardiogenesis across biological scales
- Cardiac growth, maturation, and regeneration
- Self-organized chamber-like organoids (cardioids)

Research achievements in numbers

- 4022 citations (Google scholar), h-index: 21
- 29 peer-reviewed publications in *Cell*, *Nature*, *Molecular Cell*, *Cell Stem Cell*, *Genes & Development*, *Science Advances*, *Stem Cell Reports and Development*; 4 as first-, 8 as corresponding author
- 4 patents on cardioids and LPM organoids
- > 50 invited talks at national and international conferences or institutions

Stefan M. Jahnel, Anna Dimitriadi, Julia Kodnar, Vasileios Gerakopoulos, Yajushi Khurana, Maximilian Mayrhauser, Tobias Ilmer, Keisuke Ishihara, **Sasha Mendjan**. *bioRxiv* 2026.01.26.700345; doi: <https://doi.org/10.64898/2026.01.26.700345>, under review

Multi-chamber cardioids unravel human heart development and cardiac defects. Clara Schmidt, Alison Deyett, Tobias Ilmer, Simon Haendeler, Aranxa Torres Caballero, Maria Novatchkova, Michael A Netzer, Lavinia Ceci Ginistrelli, Estela Mancheno Juncosa, Tanishta Bhattacharya, Amra Mujadzic, Lokesh Pimpale, Stefan M Jahnel, Martina Cirigliano, Daniel Reumann, Katherina Tavernini, Nora Papai, Steffen Hering, Pablo Hofbauer, **Sasha Mendjan**. *Cell*. 2023 Dec 7;186(25):5587-5605.e27. doi: 10.1016/j.cell.2023.10.030. PMID: 38029745

Cardioids reveal self-organizing principles of human cardiogenesis. Pablo Hofbauer, Stefan Jahnel, Nora Papai, Magdalena Giesshammer, Mirjam Penc, Katherina Tavernini, Nastasja Grdseloff, Christy Meledeth, Alison Deyett, Clara Schmidt, Claudia Ctorteka, Šejla Šalic, Maria Novatchkova, **Sasha Mendjan**. *Cell*. 2021 Jun 10;184(12):3299-3317.e22. doi: 10.1016/j.cell.2021.04.034. PMID: 34019794.

Coordination of cardiogenesis in vivo and in vitro.

Mendjan S, Deyett A, Yelon D. *Nat Rev Mol Cell Biol*. 2026 Jan;27(1):19-34. doi: 10.1038/s41580-025-00878-5. Epub 2025 Sep 24. PMID: 40993223

In vitro models of the human heart. Hofbauer P, Jahnel SM, **Mendjan S**. *Development*. 2021 Aug 15;148(16):dev199672. doi: 10.1242/dev.199672. PMID: 34423833. *Review*.

Quantitative Accuracy and Precision in Multiplexed Single-Cell Proteomics. Ctorteka C, Stejskal K, Krššáková G, **Mendjan S**, Mechtler K. *Anal Chem*. 2022 Feb 8;94(5):2434-2443. doi: 10.1021/acs.analchem.1c04174. PMID: 34967612

NANOG and CDX2 pattern distinct subtypes of human mesoderm during exit from pluripotency. **Mendjan S***, Mascetti VL, Ortmann D, Ortiz M, Karjosukarso DW, Ng Y, Moreau T, Pedersen RA*. *Cell Stem Cell*. 2014 Sep 4;15(3):310-25. doi: 10.1016/j.stem.2014.06.006. Epub 2014 Jul 18. PMID: 25042702. (* Co-corresponding)

The SMAD2/3 interactome reveals that TGFβ controls m6A mRNA methylation in pluripotency. Alessandro Bertero, Stephanie Brown, Pedro Madrigal, Nina C. Hubner, Anna Osnato, Daniel Ortmann, Edward Farnell, Jernej Ule, Hendrick G. Stunnenberg, **Sasha Mendjan**, and Ludovic Vallier. *Nature*. 2018 Mar 8;555(7695):256-259. doi: 10.1038/nature25784. PMID: 29489750.

Activin/nodal signaling and NANOG orchestrate human embryonic stem cell fate decisions by controlling the H3K4me3 chromatin mark. Bertero A, Madrigal P, Galli A, Hubner NC, Moreno I, Burks D, Brown S, Pedersen RA, Gaffney D, **Mendjan S***, Pauklin S*, Vallier L*. *Genes Dev*. 2015 Apr 1;29(7):702-17. doi: 10.1101/gad.255984.114. PMID: 25805847. (* Co-senior)

Activin/Nodal signalling maintains pluripotency by controlling Nanog expression. Vallier L, **Mendjan S**, Brown S, Chng Z, Teo A, Smithers LE, Trotter MW, Cho CH, Martinez A, Rugg-Gunn P, Brons G, Pedersen RA. *Development*. 2009 Apr;136(8):1339-49. doi: 10.1242/dev.033951. PMID: 19279133.

Nuclear pore components are involved in the transcriptional regulation of dosage compensation in Drosophila. **Mendjan S**, Taipale M, Kind J, Holz H, Gebhardt P, Schelder M, Vermeulen M, Buscaino A, Duncan K, Mueller J, Wilm M, Stunnenberg HG, Saumweber H, Akhtar A. *Mol Cell*. 2006 Mar 17;21(6):811-23. PMID: 16543150.

Synthetic organs for regenerative medicine. Pedersen RA, Mascetti V, **Mendjan S**. *Cell Stem Cell*. 2012 Jun 14;10(6):646-647. doi: 10.1016/j.stem.2012.04.003. PMID: 22704499.

Manuscripts under revision or to be submitted

Modeling human posterior lateral plate mesoderm and limb initiation to decipher developmental defects. Marie Leitner, Anna Bandura, Stefan Jahnel, Martina Cirigliano, Michael Mueller, Paulina Latos*, **Sasha Mendjan***. Revised, in resubmission.

Dissecting the human cardiac injury response in cardioids. Lavinia Ceci Ginistrelli, Tobias Ilmer, Lena Plank, and **Sasha Mendjan**. In preparation.

Patents

2020 – granted patent on cardioid technology; 2022 – pending patent on multi-chamber cardioids; two additional patents in preparation.

Fellowships and grants

2025	ERC Advanced Grant , 2.500.000€
2023	FWF Stand-alone grant 399.000€; Era4Health Consortium grant , 380.000€
2021	Additional Ventures Single Ventricle Fund collaborative grant, 330.000€ out of 660.000€
2021	VBA Life Science collaborative grant, 131.109€ out of 500.000€
2019	FWF DOC funds fellowship, stem cell & development Ph.D. program, 183.202€
2018	FFG NEAT consortium grant, 282.869€ out of 1.900.000€

Startup Company

- Co-founder of [HeartBeat.bio](https://www.heartbeat.bio/), an IMBA spin-off developing a cardioid drug discovery platform; scientific advisory board member. Raised 12 mil € in grants and private funding.

Teaching

- Teaching the **histology course for medical students** at the Center for Anatomy and Cell Biology (MUW)
- Co-initiator and co-organizer (with Prof. Florian Raible) of the **Stem Cell Biology Seminar** at the University of Vienna from 2016 to 2024. Highly positive student evaluation (ID: 19W-30-301277-01).
- Co-initiator and co-organizer of the **Stem Cell Journal Club** at IMBA/IMP since 2016.
- **Lectures** in the series “Model systems and concepts in stem cell biology and regeneration”, 2 ECTS (lecture ID: 301902), since 2018, University of Vienna.
- **Undergraduate student supervisor** for subjects: Biology of Cells, Biochemistry, Molecular & Developmental Biology, Homerton, Hughes Hall Colleges, 2010-2015, University of Cambridge.

Supervision and mentoring

- **Six graduated Ph.D. students:** Nora Papai (team leader at Bit.bio), Pablo Hofbauer (head of research at HeartBeat.bio), Claudia Ctordecka (postdoc, Broad Institute/MIT); Clara Schmidt (team leader at Bit.bio), Alison Deyett (postdoc, Uni Toronto), and Marie Leitner (postdoc, Uni Oslo); they produced **six first-authorships, at least one each**; Pablo and Alison won the prestigious **VBC best Ph.D. thesis award** in 2021 and 2024
- Former and current students presented at multiple international meetings and won poster awards.
- Currently supervising **four Ph.D. students**, member of **six Ph.D. thesis committees**, 15 master students;
- As a postdoc, **co-supervised three Ph.D. students** (Alessandro Bertero, Bowen Sun, Daniel Ortmann), who produced **seven first-author papers**
- Extensive **10-day VBC Leadership Program 2023**, strengthening mentorship and leadership skills

Selected talk invitations and scholarly activities

- Talk invitations: **2026:** Takeda Foundation Symposium Organoid 4D, Osaka, Japan; ISSCR – Annual Conference, Montreal, Canada; Human Development Conference, Warwick, UK; **2025:** BaCell3D Organoid Symposium, Basel; Cambridge Stem Cell Institute Cardiovascular Seminar, Cambridge UK; **2024:** Harvard Medical School Seminar; Human Development Symposium, Surrey/UK; *Cell* Symposium, San Diego/USA; New Cardiobiology, Heidelberg/GER; Cardioascona, Switzerland; **2023:** Mending Broken Hearts, University of Oxford/UK; ISSCR Principles of Development, Vienna/AUT; EMBL Organoid Conference, Heidelberg/GER; ISSCR Virtual – Next Generation Organoids; Hubrecht Institute, Utrecht/NL; RIKEN Symposium, Kobe/Japan; **2022** - CNIC Heart Regeneration Symposium, Madrid 2022, French Society of Cardiology, Tours/FRA; International Society for Stem Cell Research (ISSCR) - Annual Conference (plenary talk), San Francisco/USA; The Broad Institute/MIT, USA;
- Initiator and co-organizer of the first [International Stem Cell Symposium SYStem](https://www.heartbeat.bio/), Vienna, 2018/20/22/25
- Initiator and co-organizer of the first [Regional Meeting on Development and Stem Cells](https://www.heartbeat.bio/), 2018 and 2019
- Peer review: *Nature*, *Science*, *Cell Stem Cell*, *Nature Methods*, *Nature Cell Bio*, *Cell Reports*, *Development*, *Nature Comm.*, *Science Advances*, *Plos Biology*
- Funding review: ERC (Starting/Consolidator/Synergy/Advanced grants), ANR (France), AV-SVF (USA), BI Fellowships
- Institutional review: Infrastructure & research review of the MDC, Berlin/GER

Institutional responsibilities

- Developing the **future tissue culture & models strategy for IMBA & VBC**
- **SAB member** of the IMP/IMBA/GMI Core Facilities since 2023-2025, IMBA Core Stem Cell Facility Steering Committee (2016 - 2024), Proteomics Facility representative (2018-21)
- **Communication** with media (BBC, ORF), political & business representatives, donors, patient organizations

Most relevant collaborators

- Kate McDole (LMB, Cambridge), Valeria Orlova (Leiden University), Paulina Latos and Wolfgang Weninger (Anatomy and Cell Biology, Medical University Vienna), Daniel Zimpfer (Cardiac Surgery, MUW), Steffen Hering (Pharmacology, University of Vienna).
- Karl Mechtler (IMP/IMBA), Elly Tanaka (IMP/IMBA), Stefan Ameres (IMBA/University of Vienna), Josef Penninger (IMBA), Alessandro Bertero (University of Turin, Italy)