STEFANO D. VIANELLO

ORCID:0000-0002-4152-8990

EPFL SV IBI-SV UPLUT, AI 1.112, 1015 Lausanne, CH

[+41 21 69]31614

stefano.vianello@epfl.ch

https://stefanovianello.github.io/

WHO AM I?

I am a PhD student with 6 years of experience in stem cell and mouse developmental biology, with expertise in embryonic stem cell culture, synthetic embryology, and bioengineering. My main academic interests resides in endoderm and gut tube development, as well as mechanobiology and mechanical inputs to development. I am an advocate for intersectional open science, preprints, and equitable publishing. Aside from my research projects, I am interested in data communication and visual storytelling in developmental biology. I resonate with knowledge equity movements of embodied knowledge and pedagogy.

EDUCATION

2017 – present **ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE (EPFL)** **Lausanne, CH**

- **PhD Doctoral Program** in Biotechnology and Bioengineering, with Teaching Assistantship
- Laboratory of Stem Cell Bioengineering, with Prof M. Lütolf
- "Endoderm development and morphogenesis in self-organising stem cell-based models of mouse embryogenesis"
- "Characterising the mechanical and geometrical inputs of early mammalian development through bioengineered models of patterning and morphogenesis"
- Swiss National Science Foundation Synergia Grant

2016-2017 **GIRTON COLLEGE, UNIVERSITY OF CAMBRIDGE** **Cambridge, UK**

- **MPhil in Biological Science (Genetics)**
- "Wnt and Notch (Wntch) interactions in in vitro models of preimplantation embryonic development", with Prof A. Martinez-Arias

2013 – 2016 **GIRTON COLLEGE, UNIVERSITY OF CAMBRIDGE** **Cambridge, UK**

- **BA Hons Natural Sciences**
- **3d year** (First Class Honours): Genetics (Human Genome, Genomics, SysBio; Developmental Genetics; Chromosomes & Cell cycle; Evolutionary Genetics; Plant & Microbial Genetics)
- **2nd year** (First Class Honours): Biochemistry and Molecular Biology, Cell and Developmental Biology, Pathology
- **1st year** (First Class Honours): Biology of Cells, Physiology of Organisms, Evolution and Behaviour, Mathematical Biology

PUBLICATIONS

doi: https://doi.org/10.1101/2020.06.07.138883

Vianello, Lutolf; "In vitro endoderm emergence and self-organisation in the absence of extraembryonic tissues and embryonic architecture", 2021

doi: https://doi.org/10.1101/2020.11.23.393991

Vianello; "Exploring and illustrating the mouse embryo: virtual objects to think and create with", 2020

PMID: 30913407

Vianello, Lutolf; "Understanding the Mechanobiology of Early Mammalian Development through Bioengineered Models", 2019

PUBLICATIONS (PROTOCOLS, DATA, SCRIPTS)

Protocol **doi: https://dx.doi.org/10.17504/protocols.io.bvgrn3v6**

Vianello; "Protocol to process Gastruloids for FACS". 2021

Protocol

doi: https://dx.doi.org/10.17504/protocols.io.9j5h4q6

Vianello, Girgin, Rossi, Lutolf; "Protocol to generate Gastruloids (LSCB, EPFL)". 2020

Protocol

doi: https://dx.doi.org/10.17504/protocols.io.7tzhnp6

Vianello, Girgin, Rossi, Lutolf; "Protocol to immunostain Gastruloids (LSCB, EPFL)". 2020

Protocol

doi: https://dx.doi.org/10.17504/protocols.io.7xbhpin

Vianello, Girgin, Rossi, Lutolf; "Protocol to culture mESCs (LSCB, UPLUT)". 2020

Script

doi: https://doi.org/10.5281/zenodo.4894121

Vianello; "RNotebook FACS pipeline". 2021

Script

doi: https://doi.org/10.5281/zenodo.3884237

Vianello, Sanchez, Bercowsky-Rama, Lutolf; "Gastruloid Intensity Profiler". 2020

Dataset

doi: https://doi.org/10.5281/zenodo.4284379

Vianello; "3D models of mouse embryonic development". 2020

PUBLICATIONS (OTHER)

PreLight posts

doi: https://doi.org/10.1242/prelights.29514

Vianello; ""English only please!" Real world effects of English-centred literature searches.". preLights, 2021

doi: https://doi.org/10.1242/prelights.29577

Vianello; "Bitter bites for a chocolate lover. Searching for RNAi targets to fight cocoa crop pests". preLights, 2021

doi: pending

Vianello*, Sanchez*; "Say "Aaaah!". Foregut development and toothed tongues in the black Katy chiton". preLights, 2021

doi: https://doi.org/10.1242/prelights.26953

Vianello*, Sanchez*; "Navigating change: sentinels of the sea tell about ocean health and disease.". preLights, 2021

doi: https://doi.org/10.1242/prelights.25860

Vianello*, Sanchez*; "Gastruloids, pescoids, caveoids, surfoids….In vitro embryonic models to study evo-eco-devo. New experimental approaches to cavefish development.". preLights, 2020

doi: https://doi.org/10.1242/prelights.16775

Vianello*, Sanchez*; "On the (h)edge: the germline precursors of a basal metazoa are induced at the interface between Hedgehog signalling domains". preLights, 2020

doi: https://doi.org/10.1242/prelights.9812

Vianello*, Sanchez*; "(Transiently) Comfortable in its own "skin": formation of epithelium-like multicellular structures in a unicellular organism through conserved actomyosin-dependent mechanisms". preLights, 2019

doi: https://doi.org/10.1242/prelights.6820

Vianello*, Sanchez*; "Mind the gap: epiblast geometry at its extraembryonic boundary constrains BMP localization and ensures robust gradient formation". preLights, 2019

Blogposts

tinyurl.com/yfsycuhb

"The "pre" in (my) "preprint" is for pre-figurative". September 2021

tinyurl.com/yeu28vja

"Preprint highlighting in a haunted house [Part 1]". August 2021

POSTERS

04/2020 **BIRS-CMO WORKSHOP: "MODELLING AND ENGINEERING THE MOUSE EMBRYO"** **Oaxaca, MX**
Cancelled due pandemic

09/2019 **EUROPEAN SUMMER SCHOOL ON STEM CELLS AND REGENERATIVE MEDICINE** **Hydra, EL**
"Studying the mechanobiology of early mammalian development using self-organising embryonic organoids"

07/2019 **EMBO SYMPOSIUM: MECHANICAL FORCES IN DEVELOPMENT** **Heidelberg, DE**
"Altering geometry and mechanics to coax the development of self-organising embryonic organoids"

03/2019 **EMBO SYMPOSIUM: SYNTHETIC MORPHOGENSIS** **Heidelberg, DE**
"Altering geometry and mechanics to coax the development of self-organising embryonic organoids"

03/2019 **EMBO WORKSHOP: VISUALIZING BIOLOGICAL DATA** **Heidelberg, DE**

- "Illustrating mouse development through 3D volumetric models" [https://vizbi.org/Posters/2019/D07]
- "Potential" (Art & Biology entry) [https://vizbi.org/Posters/2019/Y02]

TALKS

2021 **ASAPbio FELLOWS TRAINING PROGRAMME** **virtual**
Invited speaker: "Preprint highlighting in a haunted house: Matthew effect, bias, preprint curation"

2019 **PHYSICS OF LIVING SYSTEMS (INTERNAL)** **Lausanne, CH**
"Squeezing, pressing, and bounding Gastruloids: mechanics and symmetry-breaking in vitro"

2019 **EUROTECH SUMMER SCHOOL: OPEN SCIENCE IN PRACTICE** **Lausanne, CH**
Invited speaker: "PreLights: a community-driven effort to highlighting preprints"

2019 **EMBO WORKSHOP: IMAGING MOUSE DEVELOPMENT** **Heidelberg, DE**
"Elucidating the role of mechanical cues during peri-implantation mouse development"

OTHER WORK AND RESEARCH EXPERIENCE

01–03/2016 **UNDERGRADUATE RESEARCH**
DEPARTMENT OF GENETICS, UNIVERSITY OF CAMBRIDGE **Cambridge, UK**

- Wnt/Notch interactions in the control of mouse pre- and post-implantation development"; with Prof A. Martinez-Arias
- Investigated the role of Wnt- and Notch-signalling in early mouse embryonic development, and highlighted possible β-catenin dependent, CSL-independent, non-canonical interactions between the two pathways. Confirmed canonical roles in axial elongation and axial determination.
- Used small molecule inhibitors to generate GOF and LOF backgrounds on which to investigate signalling epistasis; strengthened expertise in 2D and 3D tissue culture, mouse Embryonic Stem Cells, live imaging of gene expression, in vitro models of early development, data processing and analysis

08 –10/2015 **SUMMER RESEARCH**
DEPARTMENT OF GENETICS, UNIVERSITY OF CAMBRIDGE **Cambridge, UK**

- "Role of signalling in tissue specification in patterned aggregates of mouse Embryonic Stem cells"; with Prof A. Martinez-Arias
- Investigated the validity of 2i-maintained stem cell population as representative models of embryonic populations
- Awarded Wellcome Trust Biomedical Vacation Scholarship (7 weeks)
- Gained familiarity with 2D and 3D tissue culture, mouse Embryonic Stem Cells, live imaging of gene expression, in vitro models ofearly development (i.e. gastruloids), Fluorescence-Activated Cell Sorting, data processing and analysis

2014 – 2017

VOLUNTEERING
UNIVERSITY MUSEUM OF ZOOLOGY CAMBRIDGE **Cambridge, UK**

- Actively participated in the packing, transfer, relocation, and restoration of more than 500 specimens of the museum's collections to allow for the large-scale renovation of the building.
- Effectively utilized time-management skills to evenly distribute the academic workload around more than 90 hours of volunteering, in order to successfully complete all extra-curricular tasks while obtaining First Class Honours
- Devised and introduced innovative packing techniques to deal with particularly delicate specimens of high historical, scientific, and economical value

COMMUNITY INVOLVEMENT & RESPONSIBILITIES

2020 – 2021

PREPRINT CURATOR
THE COMPANY OF BIOLOGISTS

- Created and curated the PreList (list of preprints) dedicated to Gastruloids on the community site of the Company of Biologists [tinyurl.com/ydvv59or]

2019 – 2021

PRELIGHTS CONTRIBUTOR
THE COMPANY OF BIOLOGISTS

- Highlighted preprints posted on bioRxiv, in collaboration with Paul Gerald Layague Sanchez (EMBL Heidelberg)
- Articles are posted on the Node, the community site for Developmental Biology

2016 – 2017

PROJECT LEADER
CAMBRIDGE UNIVERSITY SYNTHETIC BIOLOGY SOCIETY (CUSBS) **Cambridge, UK**

- Designed and planned experimental synthetic-biology projects for students from both scientific and non-scientific backgrounds
- Currently coordinating and supervising 20 other society student members over a one-year practical project (design and introduction of synthetic genetic networks in cell-free transcription-translation systems)
- Collaborated with local community to establish a Biomakespace (innovation space for biology and biological engineering) in the old Laboratory of Molecular Biology, Cambridge;
- Liaised with University and Departmental staff for laboratory space and other administrative matters

2016

MEMBER
CAMBRIDGE UNIVERSITY SYNTHETIC BIOLOGY SOCIETY (CUSBS) **Cambridge, UK**

- Participated in the design, construction, and assembly of a scanning automated microscope for high-throughput screening of multiple biological samples
- Built a Computerised Numerical Control (CNC) machine, designed 3D-printed microscope components
- Participated in the integration of Raspberry Pi/Arduino electronics, optimisation of existing software for image acquisition, and production of comprehensive hardware documentation for open access and reproducibility

2016; 2017

VOLUNTEER
CAMBRIDGE SCIENCE FESTIVAL, DEPARTMENT OF GENETICS **Cambridge, UK**

- 2017: Designed and introduced in the festival a new stand dedicated to Developmental Biology (zebrafish). Introduced Virtual Reality and Augmented Reality as pedagogical tools for outreach and public engagement (virtual mouse development).
- 2016: Worked as part of a team to organise and supervise activities for both children and adults on the theme "Genes and Heredity" (building DNA models with paper or gummy bears, climbing competitions between Drosophila strains, etc…)
- Engaged with the public and presented scientific posters on Human Evolution and Comparative Genomics
- Introduced children to the field of Genetics and to the wonders of Drosophila development and mutant phenotypes

TEACHING TRAINING/EXPERIENCE

2021 **EPFL ENG-629: LECTURING AND PRESENTING IN ENGINEERING** **Lausanne, CH**

- Practical course/workshop with theoretical component
- Informed by contemporary research on teaching engineering, designed lesson plans and practiced teaching in small classroom-like setting
- Articulation of own teaching philosophy

2020 **EPFL ENG-624: SCIENCE & ENGINEERING TEACHING AND LEARNING** **Lausanne, CH**

- Introduction of research-informed approaches to teaching and learning, and concrete strategies appropriate for higher education science and technology contexts

2021 **TEACHING ASSISTANT**
EPFL BIO-378 PHYSIOLOGY LAB 1 **Lausanne, CH**

- Practical course in animal physiology for second year undergraduate students. Taught and facilitated experiments on measures of cellular oxygen consumption, in small group settings.

2018-2021 **TEACHING ASSISTANT**
EPFL BIOENG-110 GENERAL BIOLOGY **Lausanne, CH**

- Introductory biology course, led weekly exercise sessions for first year students

24,25/10/2019 **COURSE INSTRUCTOR**
CAMBIOSCIENCE PRACTICAL COURSE: DISCOVERING GASTRULOIDS **Cambridge, UK**

- Invited instructor: gave lectures to workshop participants about fundamentals of mammalian embryonic development and current in vitro models used to study it
- Demonstrated mouse embryonic stem cell culture and Gastruloid generation protocol during wet lab practical sessions

10/2016; 02/2017 **DEMONSTRATOR**
UNIVERSITY OF CAMBRIDGE **Cambridge, UK**

- 2017 Introduced around 100 students over one week to zebrafish developmental biology (Biology of Cells course)
- 2017: In charge of first year students over one month of laboratory lessons (Biology of Cells course)
- 2016: Supervised undergraduate cohort during two sessions of practical experimental work (Cell & Developmental Biology course)
- Answered student questions and marked submitted work (lab write ups, reports, and answers)

LANGUAGES

Italian - native
French - fluent
English - fluent

AFFILIATIONS

PSDB (Philippine Society for Developmental Biology) member, **DORA** signatory

HOBBIES

Capoeira (acrobatic martial art; 9+ years; qualified to teach), **piano** (14 years), **swimming** (14 years)

IT SKILLS

Web Development: PHP, HTML, SQL, CSS **Programming**: R (e.g. Seurat scRNAseq analysis; FACS processing pipeline), Python/Jupyter notebooks, Binder **Software**: MS Office, OpenOffice, GIMP/Photoshop, Adobe Illustrator **Virtual Reality**: Unity, Blender, Google Cardboard (all self-taught) Familiarity with Unix environment