Antonio Collesei

Address: via A.Zacco, 12, Padua, Italy
Place of birth: Padua, Italy ✻ *Date of birth:* 16-11-1993
E-mail: antonio.collesei@gmail.com ✻ *Telephone number:* +39 340 152 1161
Personal website: antoniocollesei.github.io

Work experience

Veneto Institute of Oncology, IOV-IRCCS *2023 - ongoing*
Health Researcher *Padua, Italy*

- Project leader for single-cell and spatial transcriptomics
- Appointed as reference person for the Institute within the Alliance Against Cancer Network

Veneto Institute of Oncology, IOV-IRCCS *2020 - 2023*
Doctoral Researcher *Padua, Italy*

- Developed computational pipelines to integrate and analyse omics data
- Completed main doctoral project, as well as side projects according to reasearch interest (see specific section below)

Inventis srl *2018 - 2020*
Product Engineer & Scientific Liaison *Padua, Italy*

- Proposed substantial modifications to both product usability and design.
- Performed oral presentations in multiple countries and languages, to industry stakeholders, and university students.

Education

Ph.D. in Computational Oncology and Bioinformatics *2020 - 2023 (exp.)*
***Advisor(s)**: Fabio Vandin, Stefano Indraccolo* *University of Padua*
Part of VandinLab @ DEI & Cancer Genomics Lab @ IOV-IRCCS
Main Project: Inferring biological knowledge from omics data with graph theory and causal techniques

Professional Practice Exam *17th November, 2021*
Passed the qualifying exam to the Profession of Information Engineer

Master's degree in Machine Learning *2019 - 2020*
***Advisor**: Fabio Vandin* *University of Padua*
Degree with focus on ML and Big Data in precision medicine
Project: Multi-omic integrated ML model to predict drug efficacy in cancer patients

Master's degree in Biomedical Engineering *2015 - 2017*
***Advisor(s)**: Barbara Di Camillo, Francesca Finotello* *University of Padua / CCB Innsbruck*
Curriculum in biological data analysis and elaboration
Thesis: Quantifying immune contexture of tumors using sequencing and imaging data [link]

Bachelor's degree in Information Engineering *2012 - 2015*
***Advisor**: Gianna Maria Toffolo* *University of Padua*
Thesis: Mathematical Modeling of epidemic HIV Infection

Research Interests

- **Single-cell transcriptomics** This is the trend of the past few years. Pseudo-temporal models are interesting, but they are still a bit raw in terms of statistical explainability and guarantees.
- **Causality** Correlation is not Causation. With this in mind, I have recently developed `ALLSTAR` (see Github repository), a causally reliable tool for omics data, applying an Average Treatment Effect (ATE)-like framework.
- **Pharmacogenomics** Finding genetic relationships between patients and medicaments is pivotal to enable personalized medicine. I approached this field at the beginning of my PhD, but I am currently not working on this as much as I would want to.

Skills

Programming	Fluent in R; Python and Bash are recent additions.
STEM Degrees	Multidisciplinary formation ranging from informatics (clearly!), and machine learning to biology, and project management.
Leadership	Natural attitude when it comes to group projects.
Communication	Ability to present scientific topics in concise and entertaining way.
Adaptability	Resilience to work under pressure, and adjust to a fluid workflow.

List of Publications

2023	*Is Machine Learning Useful to Predict Flare During Pregnancy in Systemic Lupus Erythematosus?* **Under review**
2023 (∗)	*ALLSTAR: Inference of ReliAble CausaL RuLes between Somatic MuTAtions and CanceR Phenotypes.* **Under review**
2023	*Comorbidities in the Spondyloarthritis GISEA Cohort: an Average Treatment Effect analysis on patients treated with bDMARDs.* **Clinical and Exp. Rheumatology**
2023 (⋆)	*Which extra-renal flare is "difficult to treat" in systemic lupus erythematosus? A one-year longitudinal study comparing traditional and machine learning approaches.* **British Journal of Rheumatology**
2022 (∗)	*Multi-Design Differential Expression Profiling of COVID-19 Lung Autopsy Specimens Reveals Significantly Deregulated Inflammatory Pathways and SFTPC Impaired Transcription.* **Cells**

∗ = First Author, ⋆ = Last Author

Conferences

CIBB 2023	Ten-minute talk. [Padua, Italy]
ISMB/ECCB 2023	Twenty-minute talk in HiTSeq COSI. [Lyon, France]
RECOMB 2023	Poster presentation. [Istanbul, Turkey]
Lipari Summer School 2022	Three-minute presentation. [Lipari, Italy]
RECOMB 2021	Member of the Poster evaluation committee. [Padua, Italy (Virtual)]

Grants, Scholarships and Awards

2022	Best Ph.D. project presentation in the field of Medicine, Biomedical Sciences and Biotechnologies at University of Padua.
2020	Fully-funded 3-year Ph.D. scholarship at University of Padua
2017	Research Grant at the Medical University of Innsbruck (additional to Erasmus+ Scholarship)
2016	Erasmus+ Thesis Scholarship

Thesis students

Paola Donolato *2022 - 2023*
Co-Advisor
Master's Thesis: Investigation of the usage of Rademacher Averages for causal rule discovery

Language proficiencies

Italian	Native language
English	Fluent both in formal and informal setting. Level: C1 (IELTS)
Spanish	Informal and conversational level. Level: B1 (School course)
German	Basic conversational level. Level: A1/A2 (University course)

Extracurricular activities

Hidden Embers *2013 - ongoing*
Short movie production crew
Participated as actor and/or screen-writer in multiple prize-winning projects. Awards in 2013, 2015, 2017, 2018, 2019, 2021 and 2023.

RadioBue *2013 - 2015*
Radio speaker
Hosted a weekly sport-related radio program. Radio commentator for the football's Men World Cup 2014 in Brazil.

Football player *2010 - ongoing*
First team player
Regular in multiple teams at regional level. Experience abroad at Union Innsbruck.

References

- **Prof. Fabio Vandin**, fabio.vandin@unipd.it, *Technical research referee*
- **Prof. Stefano Indraccolo**, stefano.indraccolo@unipd.it, *Medical research referee*
- **Dr. Francesca Schiavi**, francesca.schiavi@iov.veneto.it, *Medical research referee*
- **Marco Turetta**, marco.turetta@inventis.it, *Industry referee*