Arvind **Iyer**

PhD in Quantitative Biology

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Summary

A passionate researcher, recently obtained **PhD** at the ***University of Lausanne's*** Department of Computational Biology, specializing in **Computational Cancer Biology**, **Genomics**, and **Structural Biology** under the mentorship of **Prof Giovanni Ciriello**.

Enthusiastic about leveraging computational approaches to advance understanding of complex biological systems. A Proactive leader with a penchant for **problem-solving, mentoring,** and contributing to impactful research in **life sciences using computational methods**.

Education

University of Lausanne — *Lausanne, Switzerland*

Doctorate in Quantitative Biology — *July. 2019 - June. 2024*

- Worked on thesis titled as ***"Tale of Cancer of Evolution: Insights from Co-mutation Analysis."***
- Developed a **method** to find ***co-mutation patterns*** among somatic cancer-causing alterations.

Indraprastha Institute of Information Technology — *New-Delhi, India*

Master of Technology in Computational Biology — *July. 2016 - June. 2018*

- Had a **7.9/10** CGPA performance.
- Worked on master thesis titled as ***"Revealing the Dynamic Architecture of Lipidated Proteins"***
- Worked on understanding the *sequence and structural properties* of **lipidated proteins**, a class of post-translational modification.

Birla Vishvakarma Mahavidyalaya — *Gujarat, India*

Bachelor of Engineering in Information Technology — *July. 2012 - June. 2016*

- Had a **8.51/10** CGPA performance.
- Developed an *interactive software (web and android application)* to assist lawyers and law enforcement agencies as part of final year project.

Research Experience

Center for Computational Biology, IIITD — *Delhi, India*

Project Assistant — *2018 - 2019*

- Worked in the domain of **Computational Genomics (scRNA-seq)** & **Machine Learning** in the lab of **Prof Debarka Sengupta**
- I worked on a **Machine learning problem** to identify ***circulating tumor cells using sc-RNA seq datasets***.

CSIR-Institute of Genomics and Integrative Biology, IGIB — *Delhi, India*

Research Intern — *2017 - 2018*

- Worked in the domain of **Computational Structural biology** with focus on learning ***Molecular dynamic Simulations*** under the guidance of **Prof Lipi Thukral**
- Worked on understanding the effect of **cancer-related single nucleotide polymorphism** on *proteins* using molecular dynamics simulations.

Skills

DevOps	Docker
Back-end	fastAPI, REST API etc
Front-end	Hugo, Quatro, HTML5, CSS5, etc.
Programming Languages	Python, C, C++, Java, C#, Javascript, SQL, NoSQL, R, Cytoscape, Openbabel, PHP, Nextflow etc.
	English, Tamil, Hindi, Gujarati.

Publications

Published

Lambuta, Ruxandra A., Luca Nanni, Yuanlong Liu, Juan Diaz-Miyar, **Arvind Iyer**, Daniele Tavernari, Natalya Katanayeva, Giovanni Ciriello, and Elisa Oricchio. ***"Whole-genome doubling drives oncogenic loss of chromatin segregation."*** **Nature (2023)** Paper link

Mina, Marco, **Arvind Iyer**, and Giovanni Ciriello. ***"Epistasis and evolutionary dependencies in human cancers."*** **Current Opinion in Genetics & Development (2022)** Paper link

Mina, Marco, **Arvind Iyer**, Daniele Tavernari, Franck Raynaud, and Giovanni Ciriello. ***"Discovering functional evolutionary dependencies in human cancers."*** **Nature Genetics, (2020)** Paper link

Arvind Iyer*, Krishan Gupta*, Shreya Sharma, Kishore Hari, Yi Fang Lee, Neevan Ramalingam, Yoon Sim Yap, Jay West Ali Asgar Bhagat, Balaram Vishnu Subramani, Burhanuddin Sabuwala, Tuan Zea Tan, Jean Paul Thiery, Mohit Kumar Jolly, Naveen Ramalingam, and Debarka Sengupta.***"Integrative analysis and machine learning based characterization of single circulating tumor cells."** **Journal of Clinical Medicine (2020)** Paper link

Divyanshu Srivastava*, **Arvind Iyer***, Vibhor Kumar, Debarka Sengupta; ***"CellAtlasSearch: a scalable search engine for single cells"*** **Nucleic Acids Research, (2018)** Paper link

Neelansh Garg*, Apuroop Sethupathy*, Rudraksh Tuwani*, Rakhi NK*, Shubham Dokania*, **Arvind Iyer***, Ayushi Gupta*, Shubhra Agrawal*, Navjot Singh*, Shubham Shukla*, Kriti Kathuria*, Rahul Badhwar, Rakesh Kanji, Anupam Jain, Avneet Kaur, Rashmi Nagpal, Ganesh Bagler; ***"FlavorDB: a database of flavor molecules"***, **Nucleic Acids Research (2018)** Paper link

* Denotes first authorship

In Submission

Arvind Iyer, Miljan Petrovic, Debora Sesia, Luca Nanni, Maro Mina, and Giovanni Ciriello, ***"Evolving patterns of co-mutations from tumor initiation to metastatic progression"***

Honors & Awards

2023	**Best Poster Award**, Basel Computational Biology Conference (BC2)	*Basel, Switzerland*
2018	**Best Poster Award**, EMBO-INDIA Symposia	*New Delhi, India*
2017	**Best Teaching Assistant**, Algorithms in Computational Biology Course at IIITD	*New Delhi, India*
2016	**Qualified GATE**, Graduate Engineering Examination in Computer Science	*India*

Conference & Talks

Conference

2024: I presented a **poster** at **EMBO Workshop** on The Many Faces of Cancer Evolution held in Rimini, Italy

2023: I presented a **poster** and gave a **flash talk** at the **Basel Computational Biology Conference (BC2)** on Big Data in Biology held in Basel, Switzerland

2022: I presented a **poster** at the **ISREC-SCCL** on Horizons of Cancer Biology and Precision Oncology held in Lausanne, Switzerland.

2022: I presented a **poster** at **EMBO Workshop** on The Many Faces of Cancer Evolution held in Rimini, Italy

2018: I presented a **poster** at the **EMBO-INDIA Symposia** on Big Data in Biomedicine, which was held in New Delhi

Invited Talks

2023: I gave a **flash talk** at **Basel Computational Biology Conference (BC2)** on Big Data in Biology held in Basel, Switzerland.

2020: I recorded a **video tutorial** for performing scRNA seq analysis as part of **KeepScienceGoing** Initiative during the *COVID times* for others to learn doing *analysis of scRNA seq data from scratch*.

2018: I gave a **hands on session** on using Principal Componet Analysis (PCA) for performing dimensionality reduction of data in R.

Teaching & Mentorship Experience

Teaching

2019-2024 **Network Biology**, University Bachelor's Course — *UNIL, Switzerland*
2017-2018 **Algorithms in Computational Biology**, University Advanced Course — *IIITD, India*
2017-2018 **Design and Analysis of Algorithms**, University Bachelor's Course — *IIITD, India*
2016-2017 **Data Structures and Alogirthms**, University Bachleor's Course — *IIITD, India*
2016-2017 **System Programming**, University Bachleor's Course — *IIITD, India*

Mentorship & Supervison

2020-2021 **Master Thesis**, "Compute **gene signatures** from the scRNA seq dataset" — *EPFL, Switzerland*
2019-2020 **Internship Mentorship**, "Effect of **anti-cancer treatment** on lymphoma cells" — *EPFL, Switzerland*
2017-2018 **Capstone Project**, "Web service for **data analysis** of scRNA seq dataset" — *IITD, India*

References

1 **Prof Giovanni Ciriello**, Computational Systems Oncology Lab, University of Lausanne — *Switzerland*
2 **Dr. Marco Mina**, Director of Data Science and Computational Biology, HAYA Therapeutics — *Switzerland*
3 **Prof. Debarka Sengupta**, Indraprastha Institute of Information Technology — *India*
4 **Dr. Lipi Thukral**, Computational Structural Biology, CSIR-IGIB — *India*
5 **Prof. Elisa Oricchio**, ISREC, EPFL — *Switzerland*