

Abu Saadat

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About Me

Bioinformatician specializing in multi-omics data analysis, including methylation arrays, RNA-seq, WES/WGS, and omics data integration. With four years of experience, I use advanced statistical methods to uncover novel insights from complex datasets. Known for my problem-solving skills, adaptability, and rapid learning, I actively contribute to open-source projects on Git and have served as a Nextflow Ambassador, advocating for reproducible workflows. My ultimate goal is to drive meaningful contributions to translational research.

Education

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|---|----------------------|
| Ph.D University of Campania 'Luigi Vanvitelli' , Biomolecular Sciences | Mar 2021 – June 2024 |
| <ul style="list-style-type: none"> • Title: Genome-wide studies for the molecular characterization of Wilms Tumor | |
| M.Sc Pondicherry University , Biotechnology | May 2018 – Oct 2020 |
| <ul style="list-style-type: none"> • CGPA: 8.18/10 | |

Experience

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| Postdoctoral fellow , University of Campania Luigi Vanvitelli | Caserta, Italy
July 2024 – present |
| <ul style="list-style-type: none"> • Concluding my PhD project on Wilms tumor by validating results using external databases. • Preparing manuscripts. • Mentoring Ph.D. / Master students. | |
| External Collaborator , Josep Carreras Leukaemia Research Institute | Barcelona, Spain
May 2023 – Aug 2023 |
| <ul style="list-style-type: none"> • Analyzed WES data using the nf-core's Sarek pipeline using the on-campus HPC. • Worked on multi-omics data integration. | |
| Doctoral student , University of Campania 'Luigi Vanvitelli' | Caserta, Italy
Mar 2021 – June 2024 |
| <ul style="list-style-type: none"> • Project: Genome-wide studies for the molecular characterization of Wilms Tumor • The project involved characterizing Wilms tumor using multi-omics data including methylome, transcriptome and whole exome Sequencing. This approach aims to uncover novel molecular markers and pathways that underlie tumor development and progression. | |
| Masters Project student , Pondicherry University | Pondicherry, India
Sept 2019 – Apr 2020 |
| <ul style="list-style-type: none"> • Molecular dynamics study of human TRPV and u-Opioid receptors using AutoDock and Gromacs. • Review of the literature | |
| Intern , Indian Institute of Sugarcane Research- IISR | Lucknow, India
May 2019 – June 2019 |
| <ul style="list-style-type: none"> • DNA isolation, PCR and Gel documentation. | |

Skills

Computational Skills: R programming, Nextflow, Python (NumPy, Pandas, Keras), Methylation and SNP array analysis, RNA sequencing, WGS/WES analysis, Single-cell and Spatial transcriptomics,, Multi-omics data integration, Protein modeling, Molecular docking (AutoDock) and Molecular Dynamics simulation (GROMACS), Git, Docker, Bash scripting, and SLURM based HPCs.

Experimental Skills: DNA and RNA extraction, PCR, Pyro-sequencing and MS-MLPA.

Publications

Novel epigenetic signature, molecular subtypes and insights into IGF2/H19 dys-regulation in Wilms tumour revealed by methylomic and transcriptomic profiling

Manuscript under preparation

Abu Saadat, Francesco Cecere, Federica Rossetti, Andrea Riccio, Angela Sparago

Spatial Biology of Cancer of Unknown Primary Reveals Origin, Vulnerabilities, and Divergent Oncogene-Driven Stemness and Inflammatory-Immune Related Pathways

*Under Review
Cancer Discovery*

Marta Casado-Pelaez, Eva Musulen, Daniela Grases, Aleix Noguera-Castells, **Abu Saadat**, et. al

Highly variable genomic methylation in the Beckwith-Wiedemann syndrome associated with Multi-Locus Imprinting Disturbances

May 2025

Francesco Cecere, Laura Pignata, Emilia D'Angelo, Carlo Giaccari, **Abu Saadat**, Angela Sparago, Claudia Angelini, et. al

[10.1186/s13072-025-00612-7](https://doi.org/10.1186/s13072-025-00612-7) 

Identification of genetic and non-genetic modifiers of genomic imprinting through whole genome screening in humans

Apr 2025

Francesco Cecere, Raissa Relator, Michael Levy, Ankit Verma, Haley McConkey, Bruno Hay Mele, Laura Pignata, Carlo Giaccari, Emilia D'Angelo, Subham Saha, **Abu Saadat**, Angela Sparago, et. al

[10.1101/2025.03.27.645693](https://doi.org/10.1101/2025.03.27.645693) 

Molecular and Clinical Features of Adrenocortical Tumors in Beckwith–Wiedemann Spectrum

Nov 2024

Diana Carli, Federico Rondot, Maria Luca, Anna Campello, Stefano Gabriele Vallero, Elisa Tirtei, Andrea Gazzin, Simona Cardaropoli, Francesca Montanari, Claudio Graziano, Claudia Angelini, Paola Quarello, **Abu Saadat**, Angela Sparago, et. al

[10.3390/cancers16233967](https://doi.org/10.3390/cancers16233967) 

Co-Occurrence of Beckwith-Wiedemann Syndrome and Early-Onset Colorectal Cancer

Mar 2023

Francesco Cecere, Laura Pignata, Bruno Hay Mele, **Abu Saadat**, Emilia D'Angelo, et. al

[10.3390/cancers15071944](https://doi.org/10.3390/cancers15071944) 

Neurodegeneration and epigenetics: A review

Mar 2021

Puja Ghosh, **Abu Saadat** (equal contribution)

[10.1016/j.nrl.2021.01.016](https://doi.org/10.1016/j.nrl.2021.01.016) 

Git Projects

nf-core/alleleexpression

[nf-core website](#) 

- Authored alleleexpression, a nextflow pipeline designed for allele-specific expression analysis.

dbNSFPAnnotator

[GitHub Repository](#) 

- Developed dbNSFPAnnotator, a scalable R-based tool for variant annotation that

integrates local dbNSFP datasets with the MyVariant.info API. The package allows parallel processing to handle large datasets.

Ensemble VEP Plugin: GeneBe

[GitHub Repository](#)

- Enhanced the Ensembl VEP GeneBe plugin by implementing support for personal API keys, allowing users to extend daily API call limits for extensive data retrieval.

GIMP

[GitHub Repository](#)

- GIMP (Genomic Imprinting Methylation Patterns) is a ShinyApp build in R for analyzing imprinted differentially methylated regions. It provides a GUI for analyzing CpGs at imprinted loci. The app will be made available as a webserver soon.

Freelance Projects

Validate a technology that attempts to predict blood glucose level using spectrum data

- Developed a deep learning model to predict the patient's blood glucose level using spectral data from a wearable sensor.

Funding & Awards

CSIR-JRF (Council for Scientific and Industrial Research – Junior Research Fellowship): Secured an **All India Rank of 80** in one of India's most competitive research fellowship examinations (June 2019). This highly prestigious award recognizes exceptional scientific aptitude among thousands of candidates nationwide.

CSIR Lectureship Achieved an **All India Rank of 56** in this highly respected selection process (December 2018), identifying top researchers for leadership and teaching roles in scientific institutions in India.

Conferences

Novel epigenetic signature, molecular subtypes and insights into IGF2/H19 dys-regulation in Wilms tumour

Sep 2025

Abu Saadat, Francesco Cecere, Federica Rossetti, *et. al*
AGI Congress 2025 Bari Italy

GIMP: A Comprehensive R Package for exploring Genomic Imprinting Methylation Patterns in Imprinting Disorders (First prize in Poster Presentation)

Nov 2024

Cecere F*, **Saadat A***, Riccio. A, Angelini. C, (* equal contribution)
Bioinformatics and Computational Biology Conference 2024 Napoli Italy

Distinct profiles of epigenetic alterations are associated with Chr11p15.5 molecular defects in Wilms tumor (Poster Presentation and flash talk)

Apr 2023

Saadat A, Cecere F, Pignata L, De Álava A, Roma J, Verde G, Cerrato F, Riccio A, Sparago A
Genomic Imprinting - 'From Biology to Disease' 2023 Wellcome Genome Campus-Hinxton UK

Referees

Prof. Andrea Riccio, PhD Supervisor

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Prof. Angela Sparago, PhD Co-supervisor

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Prof. Manel Esteller, Supervisor during secondment

- Contact: [✉ mesteller@carrerasresearch.org](mailto:mesteller@carrerasresearch.org)

Josep Carreras Leukaemia
Research Institute
Barcelona, Spain