

Alaa Badreddine

BIOINFORMATICIAN



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French

B permit (2028)

PROFILE

With **six years** of academic experience as a **bioinformatician**, I have coding expertise in **Bash**, **Python**, and **R** languages. I also administer **Linux** systems such as Debian/Ubuntu and CentOs.

I also have some experience in **Django**, **ReactJS**, and **AI**.

EXPERIENCES

EPFL - Switzerland Feb. 2023 - Present

LISP - Pr. Johan Auwerx's Lab

// System specialist in Bioinformatics

- R Shiny development for a gene report application presenting GWAS, PheWas, eQTL, and Omics data.
- Developed a Nextflow pipeline to parallelize gene processing for the Shiny application.
- RNA-seq analysis of mice data using Nextflow.
- System administrator of CentOs server.
- User support role for the team.

EGID, Lille - France Sep. 2018 - Jan. 2023

UMR1283 - Pr. Philippe Froguel's Lab

// Bioinformatician

- Development of automatic classification method of rare germinal mutations using ACMG criteria.
- In charge of developing and maintaining the laboratory's genomic DNA analysis pipeline compliant with ISO 15189 certification.
- In charge of configuring and maintaining the computing cluster with Slurm and dedicated Nvidia graphic cards of the laboratory.
- Development of bioinformatic web services (R/Shiny) for researchers.
- Contribution to research projects.

EDUCATION

// 2015 - 2017

Master's degree in Bioinformatics

Aix-Marseille University

Marseille, France

// 2008 - 2014

Bachelor's degree in Biology

Lebanese University

Beirut, Lebanon

SKILLS

- Analysis of RNA-seq, scRNA-seq, WES, WGS, GWAS.
- Knowledge and hands-on experience with operating Linux systems.
- Strong Ops skills and a support mindset.

LANGUAGES

English Fluent

French Fluent

Arabic Native

PIPELINE

Nextflow, Snakemake

CODING

Bash, Python, R, MySQL, MongoDB, Django, ReactJS

SYSTEMS

Linux, Docker, Slurm, Git

CERTIFICATION

AI Udemy with certificate

IGBMC, Strasbourg - France Feb. 2017 - Aug. 2018

PSCB - Pr. Hinrich Gronemeyer

// Bioinformatician

- Development of analysis pipelines for somatic DNA and differential expression RNA.
- Integration of analysis results to identify deregulated gene networks in patients.
- Contribution to the writing of the paper.

IPAZ, Giessen - Germany Feb. 2016 - Apr. 2016

Phytology Institute - Pr. Karl-Heinz Kogel

// Internship

- Development support of a small-RNA analysis pipeline for the Arabidopsis thaliana species.

SOFTWARES

Bioinformatics: bcftools, STAR, bedtools, bcl2fastq, bwa/bwa2, bedtools, GATK4, IGV, CrossMap, fastqc, SnpEff, seqkit, SnpSift, DESeq2, Multiqc, samtools, Cytoscape

Platform: SLIMS

ACTIVITIES

Gym, jogging, web browsing

PAST PROJECTS

Master's Project: Django

CV: ReactJS

PUBLICATIONS CONTRIBUTIONS

- **Functional genetics reveals the contribution of delta opioid receptor to type 2 diabetes and beta-cell function - Nature Communications**

DOI: [10.1038/s41467-024-51004-6](https://doi.org/10.1038/s41467-024-51004-6) | **Date:** 05/08/2024

Sarah Meulebrouck, Judith Merrheim, Gurvan Queniat, Cyril Bourouh, Mehdi Derhourhi, Mathilde Boissel, Xiaoyan Yi, **Alaa Badreddine**, Raphaël Boutry, Audrey Leloire, Bénédicte Toussaint, Souhila Amanzougarene, Emmanuel Vaillant, Emmanuelle Durand, Hélène Loisel, Marlène Huyvaert, Aurélie Dechaume, Victoria Scherrer, Piero Marchetti, Beverley Balkau, Guillaume Charpentier, Sylvia Franc, Michel Marre, Ronan Roussel, Raphaël Scharfmann, Miriam Cnop, Mickaël Canouil, Morgane Baron, Philippe Froguel & Amélie Bonnefond

- **Pharmacological HDAC inhibition impairs pancreatic β -cell function through an epigenome-wide reprogramming - iScience**

DOI: [10.1016/j.isci.2023.107231](https://doi.org/10.1016/j.isci.2023.107231) | **Date:** 21/07/2023

Frédéric Oger, Maeva Moreno, Mehdi Derhourhi, Bryan Thiroux, Lionel Berberian, Cyril Bourouh, Emmanuelle Durand, Souhila Amanzougarene, **Alaa Badreddine**, Etienne Blanc, Olivier Molendi-Coste, Laurent Pineau, Gianni Pasquetti, Laure Rolland, Charlene Carney, Florine Bornaque, Emilie Courty, Céline Gheeraert, Jérôme Eeckhoutte, David Dombrowicz, Julie Kerr-Conte, François Pattou, Bart Staels, Philippe Froguel, Amélie Bonnefond, Jean-Sébastien Annicotte

- **Biallelic mutations in P4HTM cause syndromic obesity - Diabetes**

DOI: [10.2337/db22-1017](https://doi.org/10.2337/db22-1017) | **Date:** 21/04/2023

Sadia Saeed, Lijiao Ning, **Alaa Badreddine**, Muhammad Usman Mirza, Mathilde Boissel, Roohia Khanam, Jaida Manzoor, Qasim M. Janjua, Waqas I. Khan, Bénédicte Toussaint, Emmanuel Vaillant, Souhila Amanzougarene, Mehdi Derhourhi, John F. Trant, Anna-Maria Siegert, Brian Y.H. Lam, Giles S.H. Yeo, Layachi Chabraoui, Asmae Touzani, Abhishek Kulkarni, I. Sadaf Farooqi, Amélie Bonnefond, Muhammad Arslan, Philippe Froguel

- **Heterozygous pathogenic variants in POMC are not responsible for monogenic obesity: implication for MC4R agonist use - Genetics in Medicine**

DOI: [10.1016/j.gim.2023.100857](https://doi.org/10.1016/j.gim.2023.100857) | **Date:** 20/04/2023

Lauriane Le Collen, Brigitte Delemer, Christine Poitou, Martine Vaxillaire, Bénédicte Toussaint, Aurélie Dechaume, **Alaa Badreddine**, Mathilde Boissel, Mehdi Derhourhi, Karine Clément, Jean Michel Petit, Frédéric Tran Mau-Them, Ange-Line Bruel, Christel Thauvin-Robinet, Alexandru Saveanu, Blandine Gatta Cherifi, Johanne Le Beyec-Le Bihan, Philippe Froguel, Amélie Bonnefond

- **Contribution of heterozygous PCSK1 variants to obesity and implications for precision medicine: a case-control study - The Lancet - Diabetes & Endocrinology**

DOI: [10.1016/s2213-8587\(22\)00392-8](https://doi.org/10.1016/s2213-8587(22)00392-8) | Date: 21/02/2023

Lise Folon, Morgane Baron, Bénédicte Toussaint, Emmanuel Vaillant, Mathilde Boissel, Victoria Scherrer, H el ene Loisel, Audrey Leloire, **Alaa Badreddine**, Beverley Balkau, Guillaume Charpentier, Sylvia Franc, Prof Michel Marre, Soulaymane Aboulouard, Prof Michel Salzet, Micka el Canouil, Mehdi Derhourhi, Prof Philippe Froguel, Am elie Bonnefond

- **Compound genetic etiology in a patient with a syndrome including diabetes, intellectual deficiency and distichiasis - Orphanet Journal of Rare Diseases**

DOI: [10.1186/s13023-022-02248-2](https://doi.org/10.1186/s13023-022-02248-2) | Date: 28/02/2022

Lauriane Le Collen, Brigitte Delemer, Marta Spodenkiewicz, Pascale Cornillet Lefebvre, Emmanuelle Durand, Emmanuel Vaillant, **Alaa Badreddine**, Mehdi Derhourhi, Tarik Ait Mouhoub, Guillaume Jouret, Pauline Juttet, Pierre Fran ois Souchon, Martine Vaxillaire, Philippe Froguel, Am elie Bonnefond, Martine Doco Fenyzy

- **Dominant negative mutation in oxalate transporter SLC26A6 associated with enteric hyperoxaluria and nephrolithiasis - Journal of Medical Genetics**

DOI: [10.1136/jmedgenet-2021-108256](https://doi.org/10.1136/jmedgenet-2021-108256) | Date: 03/02/2022

Nicolas Corni ere, R Brent Thomson, St ephane Thauvin, Bruno O Villoutreix, Sophie Karp, Diane W Dynia, Sarah Burlein, Lennart Brinkmann, **Alaa Badreddine**, Aur elie Dechaume, Mehdi Derhourhi, Emmanuelle Durand, Emmanuel Vaillant, Philippe Froguel, R egine Chambrey, Peter S Aronson, Am elie Bonnefond, Dominique Eladari

- **Patient-matched analysis identifies deregulated networks in prostate cancer to guide personalized therapeutic intervention - Diabetes**

PMID: [34873462](https://pubmed.ncbi.nlm.nih.gov/34873462/) | Date: 15/11/2021

Akinchan Kumar, Yasenya Kasikci, **Alaa Badreddine**, Karim Azzag, Marie L Quintyn Ranty, Falek Zaidi, Nathalie Aragou, Catherine Mazerolles, Bernard Malavaud, Marco A Mendoza-Parra, Laurence Vand el, Hinrich Gronemeyer

- **Genetic Causes of Severe Childhood Obesity: A Remarkably High Prevalence in an Inbred Population of Pakistan - Genetics in Medicine**

DOI: [10.2337/db19-1238](https://doi.org/10.2337/db19-1238) | Date: 29/04/2020

Sadia Saeed; Muhammad Arslan; Jaida Manzoor; Sadia M. Din; Qasim M. Janjua; Hina Ayesha; Qura-tul Ain; Laraib Inam; Stephane Lobbens; Emmanuel Vaillant; Emmanuelle Durand; Mehdi Derhourhi; Souhila Amanzougarene; **Alaa Badreddine**; Lionel Berberian; Stefan Gag et; Waqas I. Khan; Taeed A. Butt; Am elie Bonnefond; Philippe Froguel