

Alise PONSERO

PostDoctoral research associate,

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EDUCATION

2017 M.S. Computer science, University of Rennes, France

Master « compétences complémentaires en informatique », Université de Rennes 1, France.

- Dissertation: *Computational methods for the detection of viral sequences in metagenomes*
- Dissertation Advisor: Bonnie Hurwitz, PhD.

2016 PhD, molecular and cellular biology, University Paris-Saclay, France

Doctorat de biologie moléculaire et cellulaire. École doctorale structure et dynamique des systèmes vivants, Université de Paris-Saclay / CEA, France.

- Dissertation: *Redox control of protein secretion in the yeast *Saccharomyces cerevisiae* and its implication in age-related diseases*
- Dissertation Advisor: Michel Toledano, PhD, MD.

2012 M.S., fundamental and applied microbiology, University of Rennes, France.

Master « microbiologie fondamentale et appliquée », Université de Rennes 1, France.

- Dissertation: *Study of the global viral and cyanophage production rate across environmental gradients in a marine ecosystem*
- Dissertation Advisor: Steven Wilhelm, PhD.

2010 B.S. cellular biology, University of Rennes.

Licence de biologie cellulaire, Université de Rennes 1, France.

RESEARCH POSITIONS

January 2021- Current: Post-Doctoral research associate

Faculty of Medicine. University of Helsinki, Finland.

Research interests: acquisition of the gut microbiome by infants and its impact on infant health

January 2021 – Current: Designated Campus Colleague, Associate

Department of Biosystems engineering, University of Arizona

Duties: Teaching duties and student mentoring

February 2020- December 2020: Data Science Institute Fellow

Data Science Institute. University of Arizona, Tucson.

Duties: workshops teaching and organization, data science community building, data science consulting

November 2017- December 2020: Post-Doctoral research associate

Principal investigator: Dr. Hurwitz.

Department of Agricultural and biosystems engineering. University of Arizona, Tucson.

Research interests: k-mer based metagenomic analysis, viral sequence retrieval in metagenomes, FAIR principles for biological datasets, cyberinfrastructures and large-scale computing services for metagenomics.

PUBLICATIONS

14 research articles (4 as first author), 1 conference article, and 4 review and opinion articles.

* denotes corresponding authorship, underline denotes a supervised/mentored student;

Article under review:

- Blumberg K.; Miller M.; Ponsoero A.J.; Hurwitz **B.L.** Ontology-Driven Analysis of Marine Metagenomics: What More Can We Learn from Our Data? *Gigascience - In review*
- Jokela R., **Ponsoero, A.J.**, Dikareva E., Wei X., Kolho K-L, Korpela K., de Vos W.M., Salonen A., (2023) Sources of Gut Microbiota Variation in a Large Longitudinal Finnish Infant Cohort. *In review in EBiomedicine*

Research articles:

1. Schackart III, K. E., Graham, J. B., **Ponsoero, A. J.***, & Hurwitz, B. L. (2023). Evaluation of computational phage detection tools for metagenomic datasets. *Frontiers in Microbiology*, 14.
2. Matharu D., **Ponsoero AJ**, Dikareva E, Korpela K, Kolho K-L, de Vos WM and Salonen A. Bacteroides abundance drives birth mode dependent infant gut microbiota developmental trajectories. (2022) *Frontiers in Microbiology*
3. Blumberg KL, **Ponsoero AJ**, Bomhoff M, Wood-Charlson EM, DeLong EF and Hurwitz BL. Ontology-Enriched Specifications Enabling FAIR Reuse of Marine Metagenomic Datasets in Cyberinfrastructure Systems.(2021) *Frontiers in Microbiology*
4. **Ponsoero, A.J.**, Hurwitz, B.L., Magain, N. *et al.* Cyanolichen microbiome contains novel viruses that encode genes to promote microbial metabolism. (2021) *ISME communications* . 1, 56
5. **Ponsoero J. A.**, Bomhoff M., Blumberg K., Youens-Clark K., Herz M. N., Wood-Charlson M. E., Delong F. E., Hurwitz L. B. Planet Microbe: a platform for marine microbiology to discover and analyze interconnected 'omics and environmental data. (2021) *Nucleic Acid Research*
6. Watts G, Thornton J. Jr., Youens-Clark K, **Ponsoero A.J.**, Slepian M.J., Menashi E., Hu C., Deng W., Armstrong D.G., Reed S., Cranmer L.D., and Hurwitz B.L. Identification and quantitation of clinically relevant microbes in patient samples: Comparison of three k-mer based classifiers for speed, accuracy, and sensitivity. (2019) *PLOS computational biology*
7. Connor R., Brister R., Buchmann J., Deboutte W., Edwards R., Martí-Carreras J., Tisza M., Zalunin V., Andrade-Martínez J, Cantu A., D'Amour M., Efremov A., Fleischmann L., Forero-Junco L., Garmaeva S., Giluso M., Glickman C., Henderson M., Kellman B., Kristensen D., Leubsdorf C., Levi K., Levi S., Pakala S., Peddu V, **Ponsoero A.**, Ribeiro E., Roy F, Rutter L., Saha S., Shakya M., Shean R., Miller M., Tully B., Turkington C., Youens-Clark K., Vanmechelen B., Busby B. NCBI's Virus Discovery Hackathon: Engaging Research Communities to Identify Cloud Infrastructure Requirements. (2019) *Genes*
8. Youens-Clark K, Bomhoff M., **Ponsoero, A.J.**, Wood-Charlson E., Choi I., Hartman J., Hurwitz B.L. iMicrobe: Tools and data-driven discovery platform for the microbiome sciences (2019). *Gigascience*
9. **Ponsoero A.J.**, Hurwitz B.L. The promises and pitfalls of machine learning for detecting viruses in aquatic metagenomes. (2019) *Frontiers in Microbiology*
10. Choi I., **A.J Ponsoero**, M. Bomhoff, K. Youens-Clark, J.H Hartman, B.L Hurwitz. Libra: scalable kmer based tool for massive all-vs-all metagenome comparisons. (2018) *Gigascience*
11. Lurthy T, Alloisio N, Fournier P, Anchisi S, **Ponsoero A**, Normand P, Pujic P, Boubakri H Molecular response to nitrogen starvation by *Frankia alni* ACN14a revealed by transcriptomics and functional analysis with a fosmid library in *Escherichia coli*. (2018) *Research in Microbiology*
12. **Ponsoero A.J**, Igbaria A., Darch M., Miled S., Outten C., Winther J.R., Benoit D'Autreaux, Delaunay A., Toledano M. Sec61-dependent transport of GSH into the ER is regulated by the ER chaperone Kar2 and by the activity of the ER oxidase Ero1 (2017) *Molecular Cell*.
13. **Ponsoero A.J.**, Chen F., Lennon J.T., Wilhelm S.W. Complete genome sequence of cyanobacterial siphovirus KBS2A. (2013) *Genome Announcement*.
14. Matheson A.R., Rowe J.M., **Ponsoero A.J.**, Pimentel T.M., Boyd P.W and Wilhelm S.W. High abundances of cyanomyoviruses in marine ecosystems demonstrate ecological relevance. (2013) *FEMS Microbiology ecology*.

Conference articles:

15. Choi I., **A.J. Ponsoero**, M. Bomhoff, K. Youens-Clark, J.H. Hartman, B.L. Hurwitz. Libra: Improved Partitioning Strategies for Massive Comparative Metagenomics Analysis (2018) Proceedings of the 9th Workshop on Scientific Cloud Computing

Review and opinion articles:

16. Liu C.; **Ponsoero A.J.**; Armstrong D.G; Lipsky B.A; Hurwitz B.L. The Dynamic Wound Microbiome. (2020) BMC Medicine.
17. **Ponsoero A.**, Bartelme R., De Oliveira Almeida G., Bigelow A., Tuteja R., Ellingson H., Swetnam T., Merchant N., Oxnam M., Lyons E. 10 simple rules to survive organizing a data science workshop. (2020) Plos computational biology
18. B.L. Hurwitz, **A.J. Ponsoero**, J. Thornton Jr., J.M. U'Ren. Phage Hunters: computational strategies for finding phages in large-scale 'omics datasets (2018) Virus research
19. Delaunay A., **Ponsoero A.J.**, Toledano M. Reexamining the function of glutathione in protein folding and secretion. (2017) Antioxid Redox Signal

Unpublished preprints:

Jokela R., Ponsoero, A.J., Dikareva E., Wei X., Kolho K-L, Korpela K., de Vos W.M., Salonen A., (2023) Sources of Gut Microbiota Variation in a Large Longitudinal Finnish Infant Cohort. Available at SSRN:

<https://ssrn.com/abstract=4409330> or <http://dx.doi.org/10.2139/ssrn.4409330>

TEACHING AND MENTORSHIP

Instructor

- Fall 2022 *Class:* Introduction to Biosystems Analytics & Technology using the CURE Approach, BAT102. University of Arizona. Co-instructor B. Hurwitz
- Fall 2020 *Class:* Course-based Undergraduate Research Experience (CURE) BE 199. University of Arizona. Co-instructor B. Hurwitz

Funding received for the development of teaching

2020: Course-based Undergraduate Research Experiences Institute - Training grant (*Amount: 7,000\$*)
Class developed: Introduction to Biosystems Analytics & Technology using the CURE Approach, BAT102. University of Arizona

Teaching assistant

- Spring 2020 *Class:* Biosystems analytics (BE 434), University of Arizona
Responsibilities: Helper for practical in-class exercises, prepared and supervised tutorials for python environment setup.
- Fall 2019 *Class:* Metagenomics: From Genes to Ecosystems (BE 487), University of Arizona
Responsibilities: Prepared and taught nine hour-long hands-on lectures covering the topic of metagenomic analysis. Prepared and supervised practical examples. Prepared graded assignments
- Fall 2018 *Class:* Metagenomics: From Genes to Ecosystems (BE 487), University of Arizona
Responsibilities: Prepared and supervised practical examples. Designed short student project and guided students through their project.

Student mentorship

Undergraduate students: Jessica Graham (2020-2022), Engineering design student team composed of 5 undergraduates (spring 2020), Nina Herz (2019-2020), Shelby Nelson (Summer 2019)

MSc students: Mickaël Nogueira (2016)

PhD students: Kenneth Schakard III (2021-2022), Kai Blumberg (2019-2022), Chunan Liu (2021-2022)

Other: Pierre Tomietto (Fall 2015, medical student)

Student supervision

Highschool students: Madison Sitkiewicz (summer 2017 KEYS program), Esha Mathur (summer 2020 KEYS program)

Master's degree students:

- Emilia Lahtinen (2021-2022) - <https://helda.helsinki.fi/handle/10138/343632>
- Xiaodong Wei (2021-2022) - <https://helda.helsinki.fi/handle/10138/347536>

PhD students:

- Roosa Jokela (2021 -)
- Dollwin Matharu (2021-)

AWARDS AND FUNDINGS

Fellowships:

Year	Designation	Amount	Source
2021	Academy of Finland, Postdoctoral award (3 years postdoctoral funding) PI: Alise Ponsero	283 852 E	Academy of Finland
2020	Data Science fellowship (1 year part-time funding) PI: Bonnie Hurwitz	27 500 \$	Health Science department, University of Arizona
2017	Fellowship for a 6 months abroad research experience		French ministry of Research and Education award
2016	Young researchers in cancer science fellowship (1 year doctoral funding) PI: Michel Toledano	20 219 E	Fondation ARC pour la recherche contre le cancer (ARC France)
2012	IRTELIS doctoral fellowship (3 years doctoral funding) PI: Michel Toledano	74 300 E	Commissariat à l'énergie atomique (CEA France)
2012	"Ulysse" fellowship for a 6 month abroad research experience		Brittany region, France

Awards:

2020	Postdoctoral Research Development Grant, University of Arizona Amount: 1470 \$
2011-12	Student excellency award, French ministry of Research and Education ("bourse de mérite")

REFERENCES

Anne SALONEN : anne.salonen@helsinki.fi

Department of Medicine, University of Helsinki, FINLAND

Bonnie L. HURWITZ : bhurwitz@email.arizona.edu

Department of Biosystems engineering, University of Arizona, USA

Agnès DELAUNEY-MOISAN : agnes.delaunay-moisan@cea.fr

Laboratoire stress oxydant et cancers, CEA Saclay, FRANCE