

Anna Sandionigi

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About me

I have a PhD in Biology and I'm specialized in bioinformatics and biostatistics methods for genomes reconstruction and species identification from metagenomics environmental data.

I'm currently involve in EIT project as Expert consultant for the development of a search engine operating on top of a centralized database based on SARS-COV2 genomics data.

I am fascinated by the rapidly growing technological opportunities to build an open knowledge commons. Throughout my career I have always tried to connect people and ideas, even from very different fields, because I firmly believe that only an integrated approach that looks at data considering the broad context (even in case studies focused on a single species) can allow to find pattern explanations in complex biological systems.

My current research interest is finding new bioinformatics approaches and methods for the analysis of genomics data, with a focus on connecting taxonomic annotation with metabolic specificities to gain a holistic and functional understanding of the collected data.

I'm an active member in the novel ELIXIR Biodiversity and Food and Nutrition communities where I'm contributing to find solutions for the harmonization of the biodiversity data present in public databases as an expert in genomics data management.

Current position

2020– **Data Analyst**, *Quantia Consulting srl*, Milan - Italy.

Genomics data analysis, biological databases, Specialized training on data management

2020– **Lecturer at Data Science Master Degree Making sense of biological Data Course**, *DISCo - Department of Informatics, Systems and Communication*, Univesity of Milan-Bicocca.

Teaching

Programming Languages

Python ●●●●● Machine learning, Phylogentic analysis, Amplicon and Shotgun metagenomics analysis, Visualization data, Database exploration, APIs

R ●●●●● Ecological modeling, Data exploration, Differential gene expression analysis

bash ●●●●● Systems administrator, Data management and manipulation, AWS

Knowledge Area

Genomics analysis	Amplicon and Shotgun metagenomics, Genome assembly and annotation, RNA-seq, RADseq analysis, phylogentic trees reconstruction
Supervised ML	Regression, decision trees, random forests, support vector machines, and neural nets (beginner)
Unsupervised ML	K-Means, dimensionality reduction methods (ordination and t-SNE), TFM
Others	L ^A T _E X, Git, iTool, inkScape, Tableau

Past Research Positions

- 2016-2020 **Postdoctoral fellow**, *ZooPlantLab*, Department of Biotechnologies and Bioscience, University of Milan-Bicocca, Milan - Italy.
e-DNA: an innovative way to study dynamics evolution of complex environmental systems. Bioinformatics. Supervisor: Prof. Maurizio Casiraghi
- 2014-2015 **Postdoctoral fellow**, *Zooplantlab*, University of Milan-Bicocca, Milan - Italy.
Complex microbiome studies of the gastrointestinal tract. Supervisor: Prof. Maurizio Casiraghi
- 2010 **Researcher assistant**, *Molecular Anthropology Lab*, University of Florence, Florence - Italy.
Ancient DNA, Molecular Anthropology, population genetics. Supervisors: Prof. David Caramelli, Prof.ssa Silvia Ghirotto
- 2009 **Researcher assistant**, *Natural history museum of Mediterranean area*, Livorno - Italy.
Ancient DNA, Molecular speciemment characterization. Supervisors: Prof. Francesco Mallegni, Alessandro Manfredini PhD

Education

- 2014 **PhD Dissertation**, *University of Milan-Bicocca*, Milan - Italy, *Metagenomics*, *biodiversity*, *Phylogeny*.
Title: "Biodiversity in the era of big data. On the problem of taxonomy assignment and the distribution of diversity in complex biological systems". Supervisors: Prof. Maurizio Casiraghi, Saverio Vicario PhD.
- 2009 **Master Degree in Biology**, *University of Pisa*, Pisa - Italy, *Anthropology*, *population genetics*, *Bayesian model*.
Title: "Paleogenetic analysis conducted on human remains found in Roman necropolis of Frizzone (Lucca, Italy)". Supervisors: Prof. Francesco Mallegni, Alessandro Manfredini Phd, Prof. David Caramelli.
- 2006-2007 **Socrates Erasmus fellow**, *Universidad Complutense de Madrid*, Madrid (Spain).

Awards

- 2019 **Young Talents Award 2019 Edition**, *Third position*, Committee: Accademia Nazionale dei Lincei, shorturl.at/nsvwV.
- 2015 **SIBE Best Evolutionary Biology article prize**.
Assigned by SIBE - Italian Society for Evolutionary Biology Sandionigi A, et al (2015). doi: 10.1111/1755-0998.12341
- 2015 **EMBnet attending grant**, *Bari - Italy*, NETTAB2015.
- 2014 **FISV travel grant**, *Pisa - Italy*, FISV 2014.

Roles in Research Project

- 2020-now **COVID-19 ViruSurf** Funding: The European Institute of Innovation & Technology funding. Role: Data analyst and Business consultant.
- 2018-2020 **SASS, Sistemi Alimentari e Sviluppo Sostenibile** Funding: Fondo integrativo speciale per la ricerca (FISR). Role: Involved as bioinformatics expert in the microbiome analysis of local African populations involved in the project.
- 2017-2020 **FoodNET, Food Social Sensor Network** Funding: Regione Lombardia (POR-FESR 2014-2020). Role: Involved as bioinformatics expert in analysis of microbiome data.
- 2018-2019 **Naturha: Natural Actives and Technologies Under Research for Healthy Aging** Funding: Regione Lombardia. Role: Responsible of the bioinformatics task for of metagenomics data of human gut microbiome samples from patients treated with pre and probiotics.
- 2016-2018 **Xenogenetics of drinking water: Microbiome and Resistome analyses for the improvement of water safety assessment tools** Funding: Fondazione Cariplo. Role: Responsible of the bioinformatics task for the analysis of metagenomics data from bacterial communities characterizing the drinking water treatment plan of Milano.
- 2016-2017 **Extinction. An exhibition, a genetic database and research on the collections of extinct and endangered vertebrates in Italian natural history museums.** Funding: MIUR - Ministero dell'Istruzione, dell'Università e della Ricerca. Role: Responsible of the bioinformatics task for the analysis RADseq data applied on museum specimens.
- 2016-2017 **ProBioPlus 4 Food. The project coordinated by ROELMI HPC (formerly Principium Europe) shares efforts to develop new high-tech and high-quality probiotic foods (or supplements) in order to reach a high market attractiveness.** Funding: Industrial company. Role: Involved as data analysis expert for the statistical analysis of the clinical trial.
- 2015-2016 **MetaFOOD - Design, development and implementation of standardized bioinformatics workflows for applied food traceability** Funding: Galileo Grant 2016. Role: Responsible for the implementation of bioinformatics tools for the analysis of omic's data in foodtracking.
- 2014-2016 **Environmental monitoring and early assessment of any spread of alien organisms in order to reduce or eliminate the impact of genetic pollution on native biodiversity on the occasion of the Universal Exposition in Milano (EXPO2015)** Funding: Ente finanziatore EXPO S.p.a. Role: Responsible of the bioinformatics task for the analysis of metagenomics data for the early detection of alien species.

Teaching

- 2018-now "Data Science Lab in Biosciences, module: Making sense of biological data". Master Course, Master in Data Science, University of Milan - Bicocca, Milano, Italy
- 2012-now *Teacher assistant* Zoology. Corso di Laurea Triennale in Scienze Biologiche. University of Milan-Bicocca. Prof. Maurizio Casiraghi
- 2015-2016 *Teacher assistant* Bioinformatica e analisi dei genomi. Corso di Laurea magistrale in Biologia, University of Ferrara. Prof. Silvia Fuselli

Exam committee member

Evoluzione molecolare Prof. Maurizio Casiraghi

Evoluzione dei genomi Prof. Maurizio Casiraghi
Zoologia Prof. Maurizio Casiraghi

Thesis (Co)Supervisor

- 2019 **Adam Chahed** Data mining and representation of biological data through ExTaxsl, a bioinformatic tool for biodiversity data exploration
- 2019 **Marigianna Kotta** Marine environmental DNA: tools, knowledge and perspectives
- 2018 **Giulia Agostinetto** Optimization of a bioinformatics workflow of metabarcoding data in biomonitoring studies
- 2018 **Lorenzo Bernabovi** Design and application of a bioinformatics workflow in food traceability case studies with metagenomic data

Editor and Reviewer

- Editor Biodiversity Data Journal - Pensoft Publisher
- Editor Metabarcoding and Metagenomics (MBMG) - Pensoft Publisher
- Reviewer Bioinformatics, Scientific Report, PLoS ONE, Peer J, Frontiers in Plant Science, Frontiers in Genetics, Foods, Applied Sciences, Journal of Zoological Systematics and Evolutionary, Genes, Frontiers Microbiology

Roles in scientific societies and infrastructures

- 2019-now Member of Food and Nutrition Community - ELIXIR
- 2019-now Member of Biodiversity Community - ELIXIR
- 2017-now Member of ISEB Board as Councilor - Elected by the shareholders' meeting

Talks, Invited Talks, Tutorials, and Seminars

- 2020 **Biodiversity omics-data: where you can find them, how they are organized and what you need to explore them**, Seminar in Master class of Biogeography course, University of Milan-Bicocca.
Milano, Italy
- 2019 **Omics Data in Food Traceability**, Short Talk, ELIXIR Innovation and SME Forum: Data management in the life sciences.
Milano, Italy
- 2019 **Food traceability using Omics data. What we need from ELIXIR infrastructure.**, Selected short Talk, SME forum ELIXIR.
Milan, Italy
- 2019 **Milan-Bicocca data resources in food traceability. Omics data case studies.**, Invited Talk, ELIXIR Food and Nutrition Community Workshop .
The Hague, Netherlands
- 2019 **The Dark Side of Biodiversity. Possibilities and Limits to the Estimation and Classification of Living Organism**, Invited Talk, NGS day2019.
Milano, Italy

- 2018 **The role of microbiome in the insect health and disease: the case of honey bee and its invasive Varroa parasite**, Invited Talk in Invasive insects and social behavior: an evolutionary approach workshop, University of Bologna.
Bologna, Italy
- 2017 **Follow the flow: hypothesis of symbiotic interactions between ultra-small bacteria and stable community in drinking water treatment plant**, Talk, ISEB - Italian Society for Evolutionary Biology Congress 2017.
Roma, Italy
- 2015 **Next-gen monitoring strategies. A warning system for EXPO2015.**, Talk, ISEB - Italian Society for Evolutionary Biology Congress 2015.
Bologna, Italy
- 2015 **Exploring complex microbial dynamics. The case study of drinking water treatment plant**, Invited Talk, NIOZ - Royal Netherlands Institute for Sea Research.
Yerseke, Netherlands
- 2014 **Metagenomic: new perspective in the ecology field**, Seminar in Master class of Macroecology course, University of Pisa.
Pisa, Italy
- 2013 **An Introduction to bioinformatic tools for metagenetic and population genomic data analysis**, Invited Talk, in International workshop "An Introduction to bioinformatic tools for metagenetic and population genomic data analysis".
Goteborg, Sweden
- 2013 **A hypothesis on the interactions between microbiomes in a parasitic relationship: The case of Apis mellifera and its parasite Varroa destructor**, Talk, ISEB - Italian Society for Evolutionary Biology Congress 2013.
Trento, Italy

(Co)organization of Conferences, Courses, and Workshops

- 2020 **Biohackathon2020, selected section proposal:"CAB: Computer Aided Biodiversity"**, *Barcelona, Spain*, Lead of section.
- 2020 **ELIXIR Biodiversity Community Workshop**, *Milan, Italy*, (co)Organizer.
- 2019 **8th Congress of the Italian Society for Evolutionary Biology**, *Padua, Italy*, (co)Organizer and member of the scientific committee.
- 2019 **ICME10, International Course in Microbial Ecology: Hands-on training in Prokaryotic and Eukaryotic metagenomics**, *University of Milan-Bicocca, Milan, Italy*, Course (co)organizer.
- 2018-2019-2020 **Metabarcoding of microbial communities**, *Physallia courses, Berlin, Germany*, Course (co)organizer and main Instructor.
- 2018 **Primo corso teorico-pratico di sequenziamento HTS**, *Fondazione Minoprio - Centro Lombardo per l'incremento della floro-orti-frutticoltura Vertemate con Minoprio (CO)*, Course (co)organizer and Instructor.
- 2017 **A Field Trip into Metagenomics**, *University of Milan-Bicocca, Milan, Italy*, Course (co)organizer and Instructor.
- 2013 **Basic course of DNA barcoding**, *University of Modena, Modena, Italy*, Course (co)organizer.

Bibliometry index

Citations: 367 by 339 documents

h-index: 12

Documents 22

co-authors: 74

Academic 7 year - To be correct considering two maternity leaves (07/2016 - 01/2017 | 02/2018
seniority: - 08/2018)

The * symbol identifies the works with first name equivalence

The ** symbol identifies the works as the corresponding author

References

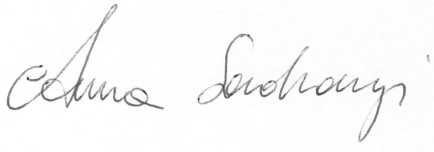
1. Scolari, F., Sandionigi, A., Carlassara, M., Bruno, A., Casiraghi, M. & Bonizzoni, M. Exploring Changes in the Microbiota of *Aedes albopictus*: Comparison Among Breeding Site Water, Larvae, and Adults. *Frontiers in Microbiology* **12**, 23 (2021).
2. Agostinetto, G., Sandionigi, A., Chahed, A., Brusati, A., Parladori, E., Balech, B., Bruno, A., Pescini, D. & Casiraghi, M. ExTaxsl: an exploration tool of biodiversity molecular data. *bioRxiv* (2020).
3. Frigerio, J., Agostinetto, G., Sandionigi, A., Mezzasalma, V., Berterame, N. M., Casiraghi, M., Labra, M. & Galimberti, A. The hidden 'plant side' of insect novel foods: A DNA-based assessment. *Food Research International* **128**, 108751 (2020).
4. Pecoraro, C., Crobe, V., Ferrari, A., Piattoni, F., Sandionigi, A., Andrews, A. J., Cariani, A. & Tinti, F. Canning Processes Reduce the DNA-Based Traceability of Commercial Tropical Tunas. *Foods* **9**, 1372 (2020).
5. Biella, P., Tommasi, N., Akter, A., Guzzetti, L., Klecka, J., Sandionigi, A., Labra, M. & Galimberti, A. Foraging strategies are maintained despite workforce reduction: A multidisciplinary survey on the pollen collected by a social pollinator. *PloS one* **14** (2019).
6. Bruno, A., Sandionigi**, A., Agostinetto, G., Bernabovi, L., Frigerio, J., Casiraghi, M. & Labra, M. Food Tracking Perspective: DNA Metabarcoding to Identify Plant Composition in Complex and Processed Food Products. *Genes* **10**, 248 (2019).
7. Balech, B., Sandionigi, A., Manzari, C., Trucchi, E., Tullo, A., Licciulli, F., Grillo, G., Sbisà, E., De Felici, S., Saccone, C., *et al.* Tackling critical parameters in metazoan meta-barcoding experiments: a preliminary study based on cox1 DNA barcode. *PeerJ* **6**, e4845 (2018).
8. Bruno, A., Sandionigi*, A., Bernasconi, M., Panio, A., Labra, M. & Casiraghi, M. Changes in the drinking water microbiome: effects of water treatments along the flow of two drinking water treatment plants in a Urbanized Area, Milan (Italy). *Frontiers in microbiology* **9**, 2557 (2018).
9. Leonardi, M., Sandionigi, A., Conzato, A., Vai, S., Lari, M., Tassi, F., Ghirotto, S., Caramelli, D. & Barbujani, G. The female ancestor's tale: Long-term matrilineal continuity in a nonisolated region of Tuscany. *American journal of physical anthropology* **167**, 497–506 (2018).

10. Mezzasalma, V., Sandionigi*, A., Guzzetti, L., Galimberti, A., Grando, M. S., Tardaguila, J. & Labra, M. Geographical and cultivar features differentiate grape microbiota in Northern Italy and Spain vineyards. *Frontiers in microbiology* **9**, 946 (2018).
 11. Bruno, A., Sandionigi, A., Galimberti, A., Siani, E., Labra, M., Cocuzza, C., Ferri, E. & Casiraghi, M. One step forwards for the routine use of high-throughput DNA sequencing in environmental monitoring. An efficient and standardizable method to maximize the detection of environmental bacteria. *MicrobiologyOpen* **6**, e00421 (2017).
 12. Bruno, A., Sandionigi, A., Rizzi, E., Bernasconi, M., Vicario, S., Galimberti, A., Cocuzza, C., Labra, M. & Casiraghi, M. Exploring the under-investigated “microbial dark matter” of drinking water treatment plants. *Scientific reports* **7**, 44350 (2017).
 13. Cardoso, D. C., Sandionigi, A., Cretoiu, M. S., Casiraghi, M., Stal, L. & Bolhuis, H. Comparison of the active and resident community of a coastal microbial mat. *Scientific reports* **7**, 1–10 (2017).
 14. Mezzasalma, V., Sandionigi, A., Bruni, I., Bruno, A., Lovicu, G., Casiraghi, M. & Labra, M. Grape microbiome as a reliable and persistent signature of field origin and environmental conditions in Cannonau wine production. *PLoS One* **12** (2017).
 15. Casiraghi, M., Galimberti, A., Sandionigi, A., Bruno, A. & Labra, M. Life with or without names. *Evolutionary Biology* **43**, 582–595 (2016).
 16. Mezzasalma, V., Manfrini, E., Ferri, E., Sandionigi, A., La Ferla, B., Schiano, I., Michelotti, A., Nobile, V., Labra, M. & Di Gennaro, P. A randomized, double-blind, placebo-controlled trial: the efficacy of multispecies probiotic supplementation in alleviating symptoms of irritable bowel syndrome associated with constipation. *BioMed research international* **2016** (2016).
 17. Comtet, T., Sandionigi, A., Viard, F. & Casiraghi, M. DNA (meta) barcoding of biological invasions: a powerful tool to elucidate invasion processes and help managing aliens. *Biological Invasions* **17**, 905–922 (2015).
 18. Galimberti, A., Sandionigi, A., Bruno, A., Bellati, A. & Casiraghi, M. DNA barcoding in mammals: what’s new and where next? *Hystrix, the Italian Journal of Mammalogy* **26**, 13–24 (2015).
 19. Galimberti, A., Sandionigi, A., Bruno, A., Bruni, I., Barbuto, M., Casiraghi, M. & Labra, M. Towards a universal molecular approach for the quality control of new foodstuffs. *Advances in Food Biotechnology; Wiley Blackwell: New York, NY, USA*, 37 (2015).
 20. Sandionigi*, A., Vicario, S., Prosdocimi, E., Galimberti, A., Ferri, E., Bruno, A., Balech, B., Mezzasalma, V. & Casiraghi, M. Towards a better understanding of *Apis mellifera* and *V. arroa* destructor microbiomes: introducing ‘phyloH’ as a novel phylogenetic diversity analysis tool. *Molecular ecology resources* **15**, 697–710 (2015).
 21. Galimberti, A., Labra, M., Sandionigi, A., Bruno, A., Mezzasalma, V. & De Mattia, F. DNA barcoding for minor crops and food traceability. *Advances in Agriculture* **2014** (2014).
 22. Ghirotto, S., Tassi, F., Fumagalli, E., Colonna, V., Sandionigi, A., Lari, M., Vai, S., Petiti, E., Corti, G., Rizzi, E., *et al.* Origins and evolution of the Etruscans’ mtDNA. *PloS one* **8**, e55519 (2013).
 23. Sandionigi*, A., Galimberti, A., Labra, M., Ferri, E., Panunzi, E., De Mattia, F. & Casiraghi, M. Analytical approaches for DNA barcoding data—how to find a way for plants? *Plant Biosystems—An International Journal Dealing with all Aspects of Plant Biology* **146**, 805–813 (2012).
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Le dichiarazioni del presente curriculum sono da ritenersi rilasciate ai sensi degli artt. 46 e 47 del D.P.R. 445/2000. Il curriculum qui presente non contiene dati sensibili e dati giudiziari di cui all'art. 4, comma 1, lettere d) ed e) del D.Lgs. 30/06/2003, n. 196. Inoltre con la presente sottoscrizione dichiaro di essere consapevole che, nel rispetto delle regole di trasparenza previste dalla legge e come stabilito dal bando di concorso (art. 13), i dati forniti saranno trattati solo per le finalità connesse e strumentali alla procedura ed eventuale nomina, nel rispetto delle disposizioni vigenti.

Milano, 02.05.2020

Anna Sandionigi Ph.D

A handwritten signature in black ink, reading "Anna Sandionigi". The signature is written in a cursive, flowing style. The first name "Anna" is written with a large, stylized 'A' that loops around. The last name "Sandionigi" is written in a more straightforward cursive script. The signature is positioned on a light-colored, slightly textured background.