

Edoardo Piombo



DATE OF BIRTH:
17/11/1992

SUMMARY STATEMENT

I am a PhD student skilled in bioinformatics and data mining, looking forward to gaining further experience in metagenomics and comparative genomics. I have experience in working with high-throughput sequencing data coming from genome, transcriptome or metagenome sequencing, extracting and presenting relevant information.

RESEARCH EXPERIENCE

10/2016 - Now

PhD student at the University of Turin.

Supervisor: Professor Davide Spadaro (davide.spadaro@unito.it)

Activities:

- Genome comparison of *F. fujikuroi* strains with different phenotype
- Expression analysis of key genes in *F. fujikuroi* early and late infection of rice, by Real Time PCRs.
- Sequencing of new *F. fujikuroi* strains
- Characterization and annotation of the first *Metschnikowia fructicola* genome.
- Transcriptome analysis on *Metschnikowia fructicola*
- Comparative genomics of *Penicillium* spp.
- Promoter analysis of key genes on *Penicillium griseofulvum*
- Analysis of amplicon-based and shotgun metagenomics data of apples and dates.
- Writing of user-friendly pipelines in python3 and R for automated analysis of shotgun metagenomics data. In particular, I wrote pipelines to:
 - Check data consistency
 - Data exploration
 - Perform enrichment analysis at taxonomic level of choice

Institutions visited:

- Centre for Genomic Regulation, Barcelona, Spain (3 months. Supervisor: Toni Gabaldon. toni.gabaldon@crg.eu)
- Volcani Center, Bet Dagan, Israel (3 months. Supervisor: Samir Droby. samird@volcani.agri.gov.il)

08/2015 - 11/2015

Internship at the Catholic University of Louvain

Supervisor: Professor Claude Bragard (claud.bragard@uclouvain.be)

Activities:

- Qualitative PCRs
- RNA extractions
- Growing and monitoring of beets
- Mechanical inoculation of viruses.

Internship at the University of TurinSupervisor: Professor Andrea Moglia (andrea.moglia@unito.it)

Activities:

- Qualitative PCRs
- Minipreps
- Transformation of *Escherichia Coli*

SKILLS

Bioinformatics:

- Coding in python3:
 - sequence data manipulation (Biopython).
 - accessing data on biological databases (Biopython)
 - data mining (pandas)
 - data visualization and plotting (seaborn and Matplotlib)
 - phylogenetics (ete3)
 - basic deep learning (TensorFlow)
- Coding in R:
 - data mining (dplyr)
 - transcriptomics and metagenomics (edgeR and DESeq2)
- Working with servers
- *De novo* and reference guided genome assembly (SPAdes, velvet, ABySS, Redundans, IMR-DENOM)
- Variant calling and evaluation (SAMtools mpileup, HaplotypeCaller)
- Structural variants analysis (BreakDancer)
- Gene prediction and annotation (AUGUSTUS, SNAP, MAKER)
- Comparative genomics (OrthoFinder, MCL, CAFE)
- Secondary metabolite cluster prediction (antiSMASH, SMURF)
- Metagenomics (QIIME, QIIME2)
- Binning (Metabat2)
- Trimming of reads (TrimGalore, Trimmomatic)
- Basic statistics (SPSS)
- Protein 3D structure prediction and comparison (RaptorX, UCSF Chimera)
- Primer writing (Primer3, Primer3Plus)

Laboratory:

- DNA and RNA extractions
- PCRs
- Gene expression analysis (DNase treatment, cDNA synthesis, qPCRs)
- Preparation of growth media for fungi and bacteria

Greenhouse:

- Growing and monitoring of rice plants inoculated with *Fusarium fujikuroi*

Social

- Presenting and summarising data.
- Working with colleagues from several backgrounds (statistics, chemistry, biology, agriculture).

Teaching:

- Organization of lessons for students
- Tutoring of MS students during their Master Thesis

EDUCATION

2014 - 2016

Master Degree in Plant Biotechnologies, University of Turin

- Research Thesis on comparative genomics of *Fusarium fujikuroi*

- Supervisors: Professors Alberto Acquadro (alberto.acquadro@unito.it) and Davide Spadaro (davide.spadaro@unito.it)
- Grade: 110/110 cum laude (maximum) with Special Mention

2011 - 2014

Bachelor Degree in Biotechnologies, University of Turin

Grade: 110/110 cum laude (maximum)

LANGUAGES

Italian

Mother tongue

English

Reading: excellent Writing: excellent Speaking: excellent

French

Reading: good Writing: basic Speaking: basic

CONFERENCES

Poster presentations:

- XXIV National Congress of the Italian Phytopathological Society, 09/2018
- 29th Fungal Genetics Conference, 03/2017

Oral presentations

- International Workshop The Fruit Microbiome: A New Frontier, 09/2019

ADDITIONAL EXPERIENCES AND AWARDS

- Travel award for attending to the 29th Fungal Genetics Conference, 03/2017
- Organization of 3 yearly seminars (2016-2017-2018) about plant biotechnologies at the highschool "Liceo Classico Statale Carlo Botta". The title was "Plant biotechnologies: from the birth of agriculture to modern GMOs". (Reference: Professor Manuela Pellegrinetti, manuela.pellegrinetti@istruzione.it).

PUBLICATIONS

ISI Journals

- Piombo, E., Bosio, P., Acquadro, A., Abbruscato, P., and Spadaro, D. (2019). Different phenotypes, similar genomes: three newly sequenced *Fusarium fujikuroi* strains induce different symptoms in rice depending on temperature. *Phytopathology*, (ja). <https://doi.org/10.1094/PHYTO-09-19-0359-R>
- Piombo, E., Sela, N., Wisniewski, M., Hoffmann, M., Gullino, M. L., Allard, M. W., Levin, E., Spadaro, D. and Droby, S. (2018). Genome sequence, assembly and characterization of two *Metschnikowia fructicola* strains used as biocontrol agents of postharvest diseases. *Frontiers in Microbiology* 9: 593. <https://doi.org/10.3389/fmicb.2018.00593>

Non-ISI Journals

- Piombo E., Acquadro A., Siciliano I., Gullino M.L., Garibaldi A., Spadaro D. (2019) Analisi dell'effetto della temperatura sui sintomi del bakanae del riso. *Protezione delle Colture* 12 (2), 68-69.
- Piombo E., Gullino M.L., Garibaldi A., Spadaro D. (2019) Analisi genomica di *Fusarium fujikuroi* per l'identificazione di geni chiave per la patogenesi su riso. *Protezione delle Colture* 12 (2) 69
- Spadaro D. Prencipe S., Valente S., Piombo E., Garibaldi A., Gullino M.L. (2019) Presenza di funghi micotossigeni e gestione del rischio di contaminazione da micotossine nella frutta secca. *Protezione delle Colture* 12 (2), 17-25.

- Valente S., Piombo E., Prencipe S., Meloni R.G., Gullino M.L., Garibaldi A., Gabaldòn T, Spadaro D. (2019) Genomica e HPLC-MS/MS per esplorare il potenziale micotossigeno di *Penicillium* spp. *Protezione delle Colture* 12 (2), 84-85.
- Piombo E., Sela N., Olari S., Wisniewski M., Hoffmann M., Gullino M.L., Wallard M., Levin E., Spadaro D., Droby S. (2018) Sequenziamento, assemblaggio e caratterizzazione di due ceppi di *Metschnikowia fructicola* usati nella lotta biologica alle malattie postraccolta. *Protezione delle Colture* 11 (2), 40