

# Prof. Francesco Nardi

## Contact information:

Dept. of Life Sciences  
University of Siena  
Via Aldo Moro 2  
53100 Siena  
+39 0577 232128  
e-mail: [francesco.nardi@unisi.it](mailto:francesco.nardi@unisi.it)

## Education

1998 – **Degree in Biological Sciences, University of Siena**, 110/110 *cum laude*. Dissertation title: “Molecular phylogeny of apterygotan insects (Arthropoda: Insecta)” (in Italian). Supervisor: Prof. Francesco Frati.

2002 – **PhD in Animal Biology (Zoology), University of Siena**. Dissertation title: “The mitochondrial genome of *Tetrodontophora bielanensis* (Insecta: Collembola). Structure and phylogenetic significance” (in Italian). Supervisors: Prof. Francesco Frati and Prof. Romano Dallai.

2016 – Training course on teaching non linguistic subjects in a foreign language, 29/30. University for Foreigners of Siena.

## Professional experience

1999/2001 **PhD fellow**, University of Siena.  
2000/2001 Research assistant at the Dept. of Environmental Science, Policy and Management, U.C. Berkeley.  
2001, 2005 Visiting researcher at the DOE Joint Genome Institute (Walnut Creek, CA, USA).  
2002/2015 **Post doctoral fellow** and **Adjunct professor** at the University of Siena.  
2015/2018 High school teacher.  
2018/- **Associate professor of Genetics** at the Department of Life Sciences of the University of Siena.

## Habilitations

1999 Habilitation as professional biologist.

- 2014 National Scientific Habilitation **SC 05/B1, Associate and Full Professor level** (Zoology and Anthropology).  
2017 National scientific habilitation **SC 05/I1, Associate Professor level** (Genetics).

### Language certifications

- 2014 English certification IELTS (**CEFR C2 “mastery or proficiency”**; IELTS band 8.5).

### General management

- 2005/2010 Tutor of the **Master in Bioinformatics**, University of Siena.  
2011/2014 Member of the **Research Commission** of the University of Siena.  
2018/ - Member (Secretary from 2022) of the **Teaching Committee** for the Degree in Biological Sciences.  
2021/- Vice Director of the Master in Bioinformatics and Data Science, University of Siena

Coordinates **three major lines of research** in the Department of Life Sciences:  
“mitochondrial genomics in lower hexapods” (1999-2003, in collaboration hereafter);  
“phylogeography of the olive fly and other insects of economic importance” (2001-2014);  
“evolutionary bioinformatics” (2009-2014, 2018-).

### Scientific supervisor

Dr. Filippo Di Giovanni (RTDA, 2021/2023)  
Dr. Claudio Cucini (Post Doc, 2022/2024)  
Dr. Giovanni Marturano (Post Doc, 2022/2024)

### Technical skills

**Digital literacy:** Common desktop production software under Linux and Windows. Word, Excel Powerpoint, Photoshop. Basic LaTeX, basic html.

**Programming:** Perl and BioPerl, Bash, R. Some familiarity with supercomputing environments.

**Technical software:** BEAST, MrBayes, Structure, BAPS, PAUP\*, GeNorm, Blast, Mfold, RNAviz, Clustal, Mesquite, Sequencher, MegaHIT, NOVOPlasty, bbmap, samtools, bamtools, vcftools.

**Laboratory procedures:** DNA/RNA purification, cDNA synthesis, primer design, PCR, Long PCR, RT-PCR, cloning, construction of microsatellite libraries, DNA sequencing, shearing/shogun sequencing, microsatellite genotyping, RFLP genotyping.

**Data analysis:** population genetics (F-statistics, bayesian multilocus clustering, assignment tests, networks, coalescent simulations), molecular dating (bayesian statistics, linearized trees), molecular phylogenetics (maximum parsimony, likelihood and bayesian statistics), sequence assembly, sequence alignments, database search, sequence annotation, NGS sequence assembly.

## Research interests

Population genetics, mitochondrial genomics, molecular evolution, bioinformatics.

Starting with a strong background in DNA laboratory and genotyping procedures, Prof. Nardi specialized in the use of molecular markers to address key questions in population genetics and evolution. He has applied these procedures to issues stemming from his own research interests in population genetics, evolution and insect mitochondrial genomics, with special attention to species of economic importance, as well as more fundamental themes in molecular evolution. In the context of numerous collaborations, he has studied the evolution and molecular genetics of different biological entities, from fish to viruses. Following the latest trends in the field, that suggest a central role for data analysis, he focused on the development and application of novel approaches to the analysis of genetic variability and molecular dating using bioinformatic and genomic tools. Author of 77 publications, including *Science* and *Current Biology*.

## Support:

- 1999 **Young Researchers Program**, University of Siena. “The mitochondrial genome of *Tetrodontophora bielanensis*” (24 months, PI)
- 2003 **PRIN**. “The mitochondrial genome in basal hexapods: structural and molecular evolution, phylogenetic implications. (24 months, Participant).
- 2004 **Monte dei Paschi Foundation** grant. “Reproductive biology and genetic population structure in the olive fly: biological bases for eco-compatible control strategies”. (36 months, Participant).
- 2004 **United States Department of Agriculture** NRI grant. “Invasion genetics of the olive fruit fly (Tephritidae)” (36 months, Co-PI).
- 2005/2006/2008 **Monte dei Paschi Foundation** grant “Organization of the Master in Bioinformatics *Alberto del Lungo*”. (36 months, Participant).
- 2005 **PRIN**. “The mitochondrial genome of key arthropod taxa (basal hexapods and chelicerates)” (24 months, Participant).
- 2010 **Systematic Research Fund**. “Phylogenetic analysis of Protura using complete mitochondrial genomes” (12 months, PI).
- 2013 **ISCRA** class C grant for access to the CINECA-EURORA cyberinfrastructure. “Compositional biases in Metazoan mitochondrial genomes, an evolutionary perspective” (6 months, PI).
- 2020 **HORIZON2020** grant “Integrated Pest Management of the invasive Japanese Beetle, *Popillia japonica*” (48 months, vice-PI).
- 2022 **PRIN**. “MitoMicro: Mitochondrial MicroRNAs, a new perspective for mitochondrial function and their role in Eukaryotic evolution.”. (36 months, PI o local unit)
- 2022 **PNRR**. “Biological diversity in a fragmented landscape: interactions between man, agriculture and the environment” (36 months, proponent within National Diversity Future Center)

## Editorial activities

2012/2014 Associate Editor for the journal *Psyche* (Hindawi)  
2020 Co-Editor of special issue “Molecular evolution of the Mitochondrial DNA in Animals” for the journal *Genes*  
2020/ - **Associate Editor for the journal *Diversity*** (MDPI)  
2020/ - **Associate Editor for the journal *Genes*** (MDPI)

**Referee for journals:** *Gene*, *Genetica*, *Genome*, *Journal of Genetics and Genomics*, *Insect Molecular Biology*, *Insect Biochemistry and Molecular Biology*, *Pesticide Biochemistry and Physiology*, *Journal of Insect Systematics*, *Entomologia Experimentalis et Applicata*, *Bulletin of Entomological Research*, *Journal of Applied Entomology*, *Zoologica Scripta*, *Zoological Science*, *Molecular Phylogenetics and Evolution*, *Molecular Ecology*, *Canadian Journal of Zoology*, *BMC Genomics*, *International Journal of Molecular Sciences*, *PeerJ*, *Molecular Biology Reports*, *Bulletin of the National Research Centre*, *Insects*, *Journal of Biogeography*, *OBM Genetics*, *Journal of Economic Entomology*.

**Referee for financing agencies:** National Science Foundation (USA), NRF (South Africa), Marsden Fund (New Zealand), FWS (Austria).

### **Scientific Societies and Honors**

Member of **SIBE/ISEB**, the Italian Society for Evolutionary Biology (2006/2010).  
Member of **AGI**, Italian Association of Genetics (2018/ -) .  
Corresponding member of the **Accademia dei Fisiocritici** (2020/ -).

**Prize Città di Ponzano Romano for Science**, organized by the Department of Genetics and Molecular Biology of La Sapienza University (2009, ex aequo).

His research has received ample **media coverage**, including: BBC News, New Scientist, Berkeley Science Review, Nature science update, Science, Focus.it, La Pravda, Wissenschaft Berliner Zeitung, The Daily Californian, News in Science, Science Beat, The Scientist, Science Daily, Creation Update, Creation-Evolution Headlines, Bright Minds, Current Biology.

### **Invited lectures**

Mitochondrial genomes in lower hexapods: sequence, structure and phylogenetic implications. Vrije University, Amsterdam, 2003.

Evolutionary theory, a discourse on method (in Italian). University of Siena, 2004.

Domestication of olive fly through multiregional host shift to cultivated olives. Entomological Society of America, 2012 (video conference).

Evolution of a non native Mediterranean pest, the olive fly. South and East European Network on Invasive Alien Species, 2013 (video contribution).

Charles Darwin, or how to redesign the World from your armchair (in Italian).

University of Siena, 2014. Lectio Magistralis for “Per-Corsi di Qualità”.

### **Teaching activity**

**Genetics** for the degree in Biological Sciences (2018/2019 onward), University of Siena

Tutor for freshmen students (2020/ -)

Tutor of 7 undergraduate students (since 2019).

Past courses:

Entomological biotechnologies (2003)

Molecular evolution (2004-2006)

Computer science applied to biology (2005)

Mitochondrial genomics for the evaluation of genetic variability (2010)

Entomology and pathology of grapevine cultivations (2004-2005, half)

Introduction to biology (2005-2009, half)

Introduction to bioinformatics (2004-2009, half)

Phylogenetics (2004-2009)

Genomics (2004-2006, half)

Laboratory of biodiversity assessment and monitoring (2012, half)

Bio-App, bioinformatics tools for technicians (2006)

An introduction to molecular evolution (SIBE/ISEB Italian Workshop on Phylogenetic Methods and Applications, Modena 2012)

### **Bibliometry**

Publications (scopus): 71

Times cited (scopus): 2226

h-index (scopus): 24