

## **Francesca Tassi**

### **Education**

- 2012-2014 Ph.D. student in Evolutionary Biology, University of Ferrara. (Supervisor: Prof. Guido Barbujani. Thesis: Genome-based multidisciplinary approaches to the reconstruction of human demographic history.).
- 2010 Master Degree in BioMolecular Science at University of Ferrara, with final mark 110/110 cum laude. (Supervisor: Prof. Guido Barbujani. Thesis (in Italian): Studio delle relazioni genetiche fra Neandertaliani, Cro-Magnon ed Europei moderni.).
- 2007 Degree in Biological Science at University of Ferrara, with final mark 110/110 cum laude. (Supervisor: Prof. Guido Barbujani. Thesis (in Italian): Polimorfismi STR X linked: rilevazione delle frequenze alleliche in un campione di popolazione ferrarese.).
- 2004 Diploma di Maturità Classica (High School Diploma in classical studies) with final mark 90/100 at "Liceo Ginnasio L. Ariosto" of Ferrara.

### **Work experiences**

- 2015-present European Research Council fellowship, University of Ferrara. "Meeting Darwin's last challenge: toward a global tree of human languages and genes (LANGELIN)".
- 2010-2011 Research fellowship at the Department of Biology and Evolution, University of Ferrara, "The impact of biotechnological innovation of individual rights. An interdisciplinary study".

### **Teaching experiences**

- AY 2016-2017 Teaching assistant of Genetics Bachelor degree in Biological Sciences (Prof Guido Barbujani). University of Ferrara
- AY 2016-2017 Teaching assistant of Genetics Bachelor degree in Biotechnology (Prof Chiara Scapoli). University of Ferrara
- AY 2015-2016 Teaching assistant of Genetics (Ex Art. 26 - D.P.R. 382/1980) Bachelor degree in Biological Sciences (Prof Guido Barbujani). University of Ferrara
- AY 2015-2016 Teaching assistant of Genetics (Ex Art. 26 - D.P.R. 382/1980) Bachelor degree in Biotechnology (Prof Chiara Scapoli). University of Ferrara
- AY 2015-2016 Teaching the Ph D. course in "Advanced course computing- specialization module for graduate students Unife of the Medical-Biological"
- AY 2013-2014 Teaching Assistant of Genetics (Prof Guido Barbujani). University of Ferrara
- AY 2013-2014 Teaching Assistant of Population Genetics (Prof Guido Barbujani). University of Ferrara
- Sep2013 – Jun2014 Academic Tutor of Population Genetics. University of Ferrara (Prof Guido Barbujani)
- Sep2013 – Jun2014 Academic Tutor of Genetics. University of Ferrara (Prof Guido Barbujani).
- Sep2012 – Jun2013 Academic Tutor of Genetics. University of Ferrara (Prof Guido Barbujani).

### **International fellowship**

- 2014 Research fellowship at the Institute of Evolutionary Biology, Barcelona (Spain). Supervisor: Professor Tomas Marques-Bonet.

2016 Visiting Researcher at the University of Cambridge – Department of Zoology, Cambridge (United Kingdom). Supervisor Andrea Manica

### Coursework

2016 Variant Analysis with GATK - University of Cambridge (Cambridge, UK)  
2015 *NGS for evolutionary biologists*. ELIXIR-ITA in collaboration with CINECA and Sapienza Università di Roma, CINECA HPC (Rome, Italy).  
2012 *Perl for Bioinformatics*. Courses and Schools, CINECA HPC (Bologna, Italy).  
2011 *Python for computational science*. Courses and Schools, CINECA HPC (Bologna, Italy).

### Attended Workshops

2017 Summer School - Department of Life Sciences and Biotechnology, University of Ferrara, Terzolas (TN), 4-7 September.  
2014 ERC LanGeLin Meeting. University of Bologna (Italy), 26-27 March.  
2013 Ancient DNA: the first three decades – Ancient DNA: applications in human evolutionary history. The Royal Society, London (UK), 18-23 November.  
2013 Associazione Genetisti Italiani 2013, Cortona (Italy). 25-27 September  
2013 Società Italiana di Biologia Evoluzionistica 2013, Trento (Italy), 28-31 August.  
2013 Advances in Phylogenetic Linguistics - International Workshop. Ragusa Ibla (Italy), 15-17 July.  
2013 Approximate Bayesian Computation in Rome. Rome (Italy), 30-31 May.  
2013 Genetic diversity and origin of Europeans. Geneva (Switzerland), 15-17 January.  
2012 Stephen J. Gould's Legacy: Nature, History, Society. Venice (Italy), 10-12 May.  
2011 A day with ancient DNA. Florence (Italy), 22 March.  
2011 Human evolution, migration and history revealed by genetics, immunity and infection. The Royal Society, London (UK), 5-6 June.

### Journal articles (\* equal contribution)

1. Solé-Morata N, Villaescusa P, García-Fernández C, Font N, Valverde L, Illescas MJ, **Tassi F**, Ghirotto S, Férec C, Roualt K, Jiménez-Moreno S, Martínez-Jarreta B, Maria Pinheiro MF, Zarrabeitia M, Carracedo A, de Pancorbo MM, Calafell F. Analysis of the R1b-DF27 haplogroup shows that a large fraction of Iberian Y-chromosome lineages originated recently in situ. *Scientific Reports*. 2017
2. Modi A\*, **Tassi F\*** Susca RR, Vai S, Rizzi E, De Bellis G, Lugliè C, Gonzalez Fortes G, Lari M, Barbujani G, Caramelli D\*, Ghirotto S\*. *Complete mitochondrial sequences from Mesolithic Sardinia*. *Scientific Reports*. 2017
3. Kampuansai J, Kutanan W., **Tassi F**, Kaewgahya M, Ghirotto S., Kangwanpong D. *Effect of migration patterns on maternal genetic structure: a case of Tai–Kadai migration from China to Thailand*. *Journal of Human Genetics*. 2016
4. Ghirotto S\*, **Tassi F\***, Barbujani G, Pattini L, Hayward C, Vollenweider P, Bochud M, Rampoldi L, and Devuyst O. *The Uromodulin Gene Locus Shows Evidence of Pathogen Adaptation through Human Evolution*. *Journal of the American Society of Nephrology*. 2016
5. **Tassi F.\***, Ghirotto S.\*, Mezzavilla M., Torres Vilaça S., De Santi L., and Barbujani G. Early modern human dispersal from Africa: genomic evidence for multiple waves of migration. *Investig Genet*. 2015;6:13.

6. Longobardi G., Ghirotto S., Guardiano C., **Tassi F.**, Benazzo A., and Barbujani G. 2014. *Across language families: Genome diversity mirrors linguistic variation within Europe*. *Am J Phys Anthropol.* 2015;157(4):630-40.
7. Vai S.\*, Ghirotto S. \*, Pilli E., **Tassi F.**, Lari M., Rizzi E., Lalueza-Fox C., Matas-Lalueza L., Ramirez O., Achilli A., Olivieri A., Torroni A., Giostra G., Bedini E., Pejrani Baricco L., Piazza A., Veeramah K., Geary P., Caramelli D., and Barbujani G.. 2015. *Genealogical relationships between early medieval and modern inhabitants of Piedmont*. *PLoS One.* 2015;10(1):e0116801.
8. Barbujani G., Ghirotto S., **Tassi F.** 2013. *Nine things to remember about human genome diversity*. *Tissue Antigens.* 2013;82(3):155-64.
9. **Tassi F.**, Ghirotto S., Caramelli D. and Barbujani G. 2013. *Genetic evidence does not support an Etruscan origin in Anatolia*. *Am J Phys Anthropol.* 2013;152(1):11-8.
10. Ghirotto S., **Tassi F.**, Fumagalli E., Colonna V., Sandionigi A., Lari M., Vai S., Petit M., Corti G., Rizzi E., De Bellis G., Caramelli D. and Barbujani G. 2013. *Origins and evolution of the Etruscans' mtDNA*. *PLoS One.* 2013;8(2):e55519.
11. Lari M., Rizzi E., Balsamo C., Ghirotto S., **Tassi F.**, Ronchitelli A., Fischetti A., Grugni V., Semino O., De Bellis G., Barbujani G., Caramelli D. 2012. *Genomic selection by oligo-capture and next generation sequencing for genetic characterization of ancient human remains from Italy*. *Journal of Biological Research (Italy).*85 (1), pp. 151-155
12. Ghirotto S., **Tassi F.**, Benazzo A., Barbujani G., 2011. *No evidence of Neandertal admixture in the mitochondrial genomes of early European modern humans and contemporary Europeans*. *Am J Phys Anthropol.* 2011;146(2):242-52.
13. Barbujani G. And **Tassi F.**, 2011. *Genetic data in forensic science: Use, misuse and abuse*. In *Biotech innovation and fundamental rights*, (Bin R., Lorenzon S., Lucchi N., eds.), pp. 243-259. Berlin: Springer.
14. Fabbri M., Gaudio R. M., Tarantino S., Venturi M., **Tassi F.**, Avato F. M., 2010 *Population study of X-STRs in an Italian population sample*. *Minerva Medico legale.* 130:139-44

### Contributed presentations

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|------|---|
| 2017 | <b>Francesca Tassi*</b> , Stefania Vai*, Silvia Ghirotto, Martina Lari, Alessandra Modi, Elena Pilli, Andrea Brunelli. Roberta Rosa Susca, Alicja Budnik, Damian Labuda, Federico SanchezQuinto, Federica Alberti, Carles Lalueza-Fox, David Reich, David Caramelli, Guido Barbujani. <i>The Kurgan migrations revisited: Genome diversity in the Globular Amphorae culture</i> . <b>Poster</b> in: "AGI: Associazione Genetisti Italiani 2017", Cortona (Italy).                           |
| 2017 | <b>Francesca Tassi*</b> , Stefania Vai*, Silvia Ghirotto, Martina Lari, Alessandra Modi, Elena Pilli, Andrea Brunelli. Roberta Rosa Susca, Alicja Budnik, Damian Labuda, Federico SanchezQuinto, Federica Alberti, Carles Lalueza-Fox, David Reich, David Caramelli, Guido Barbujani. <i>The Kurgan migrations revisited: Genome diversity in the Globular Amphorae culture</i> . <b>Poster</b> in: "SIBE 2017-7th congress of the Italian Society for Evolutionary Biology", Roma (Italy). |
| 2016 | Alessandra Modi*, <b>Francesca Tassi*</b> , Roberta Rosa Susca, Stefania Vai, Ermanno Rizzi, Gianluca De Bellis, Carlo Lugliè, Gloria Gonzalez Fortes, Martina Lari, Guido Barbujani, David Caramelli* and Silvia Ghirotto*. <i>Complete mitochondrial sequences from Mesolithic Sardinians suggest genetic discontinuity within the island</i> . <b>Oral Presentation</b> in: "FISV: Federazione Italiana delle Scienze della vita 2016", Rome (Italy).                                    |

- 2015 **Francesca Tassi**, Silvia Ghirotto, Massimo Mezzavilla, Sibelle Torres Vilaça, Lisa De Santi, and Guido Barbujani. *Early modern human dispersal from Africa: genomic evidence for multiple waves of migration*. **Oral Presentation** in: "SIBE 2015-6th congress of the Italian Society for Evolutionary Biology", Bologna (Italy).
- 2015 Giuseppe Longobardi, Silvia Ghirotto, Cristina Guardiano, **Francesca Tassi**, Andrea Benazzo, Andrea Ceolin and Guido Barbujani. *Across Language Families: Genome Diversity Mirrors Linguistic Variation within Europe* **Poster** in: "Society for Molecular Biology and Evolution 2015", Vienna (Austria).
- 2014 **Francesca Tassi**, Silvia Ghirotto, Massimo Mezzavilla, Sibelle Torres Vilaça, Lisa De Santi, and Guido Barbujani. *Early modern human dispersal from Africa: genomic evidence for multiple waves of migration*. **Poster** in: FISV: Federazione Italiana delle Scienze della vita 2014", Pisa (Italy).
- 2014 Giuseppe Longobardi, Silvia Ghirotto, Cristina Guardiano, **Francesca Tassi**, Andrea Benazzo, Andrea Ceolin and Guido Barbujani. *Across language families: Exploring the relationships between linguistic and genomic diversity in Europe*. **Poster** in: EMBO Conference on Human Evolution in the Genomic Era, Leicester (UK).
- 2013 Silvia Ghirotto, Massimo Mezzavilla, **Francesca Tassi**, Sibelle Torres Vilaça, Lisa De Santi, and Guido Barbujani. *Early human dispersal from Africa: A model-based test of two hypothesis*. **Poster** in: "AGI: Associazione Genetisti Italiani 2013", Cortona (Italy).
- 2013 Silvia Ghirotto, Cristina Guardiano, **Francesca Tassi**, Andrea Benazzo, Giuseppe Longobardi and Guido Barbujani. *Across language families: Exploring the relationships between linguistic and genomic diversity in Europe*. **Oral Presentation** in: "SIBE 2013- 5th congress of the Italian Society for Evolutionary Biology", Trento (Italy).
- 2013 Silvia Ghirotto, Massimo Mezzavilla, **Francesca Tassi**, Sibelle Torres Vilaça, Lisa De Santi, and Guido Barbujani. *Early human dispersal from Africa: A model-based test of two hypothesis*. **Poster** in: "Advances in Phylogenetic Linguistics - International workshop", Ragusa Ibla (Italy).
- 2012 Silvia Ghirotto, **Francesca Tassi**, Erica Fumagalli, Vincenza Colonna, Martina Lari, Ermanno Rizzi, David Caramelli, Guido Barbujani. *Origins and Evolution of the Etruscans' DNA*. **Oral presentation** in: "FISV: Federazione Italiana delle Scienze della vita 2012", Rome (Italy).
- 2012 Silvia Ghirotto, **Francesca Tassi**, Erica Fumagalli, Vincenza Colonna, Martina Lari, Ermanno Rizzi, David Caramelli, Guido Barbujani. *Origins and Evolution of the Etruscans' DNA*. **Poster** in: "MATHEMATICAL AND COMPUTATIONAL EVOLUTIONARY BIOLOGY 2012", Montpellier (France).
- 2011 **Francesca Tassi**. Ricerca genetica e tutela della persona. **Oral presentation** in: "Innovazioni biotecnologiche e diritti della persona", Congress FIRB 2011, Ferrara (Italy).

### Memberships

Associazione Genetica Italiana – AGI  
 Italian Society for Evolutionary Biology - SIBE  
 Society for Molecular Biology and Evolution – SMBE

### Public awareness of science

2017	Fondazione Faraggiana, Novara.
2015	Un pozzo di scienza: FOODING: Allenare la mente per nutrirti meglio.
2014	UTEF: Università per l'Educazione Permanente di Ferrara.
2014	Un pozzo di scienza: BE SMART! Città intelligenti e creatività scientifica.
2013	Museo archeologico "G. Ferraresi" di Stellata, Bondeno (FE)
2010	Identità Diffuse

### Master Thesis Tutoring

2015-2016	"Utilizzo di sequenze di DNA antico per lo studio della variabilità mitocondriale in sardi mesolitici". Candidato: Giuseppe Marasco. University of Ferrara
2012-2013	"Uscita dell'uomo moderno dall'Africa attraverso una rotta meridionale: analisi di dati genomici". Candidate: Marcella Buldini. University of Bologna

### Thesis Tutoring, Bachelor Program

2013-2014	"Evidenze genomiche di una uscita dell'uomo moderno dall'Africa attraverso una rotta meridionale". Candidate: Maria Teresa Vizzari University of Ferrara
2013-2014	"Una via meridionale di espansione dall'Africa delle popolazioni umane anatomicamente moderne". Candidate: Esteban Dario Garrido University of Ferrara
2012-2013	"LANGELIN: studio preliminare per confronti fra diversità genetica e linguistica europea". Candidate: Francesca Filippini University of Ferrara
2012-2013	"Struttura linguistica e diversità mitocondriale nell'uomo". Candidate: Luca Calderoni. University of Ferrara University of Ferrara
2010-2011	"Ricostruire le caratteristiche di una forma umana estinta". Candidate: Emanuele Casola University of Ferrara

### Grants and Awards

2017	SIBE prize for young researcher for the best published article on Evolutionary Biology in the period 2016-2017.
2016	Bando Giovani Ricercatori (5x1000 Year 2013)
2015	Travel grant SIBE, within the VI congress of the Italian Society for Evolutionary Biology - Bologna
2014	Best PhD Thesis in the field of Genetics (Premio AGI/Zanichelli 2014)
2014	Borse di studio per soggiorni all'estero, University of Ferrara
2014	Travel grant SIBE, within the XIII Congress of the Italian Federation of Life Sciences (FISV), Pisa

### Congress organization

2016	Workshop SIBE 2016 - Inferring Natural Selection using Genomic Data Ferrara (Italy), 16-18 December. <a href="http://www.sibe2016.it/">http://www.sibe2016.it/</a>
2012	SIBE 2012 - Simposio Evoluzione e Assemblea dei Soci. Ferrara (Italy), 15-16 December. <a href="https://www.sites.google.com/a/unife.it/sibe2012">https://www.sites.google.com/a/unife.it/sibe2012</a>

### Research Skills

Computer: Knowledge of Windows, iOS and Unix operating system. Deep knowledge of R statistical package. Good knowledge of Python and Perl. Experience in working on supercomputer (cluster of CPU) at Caspur (Roma, Italy) and own cluster (Ferrara, Italy). Good knowledge of CS6

of Adobe Suite. Bioinformatics and statistical analyses. Population Genetics: Arlequin, Clustal, DnaSp, Plink etc... Experience in phylogenetic and simulation programs, and in implementing ABC techniques (for contemporary and serial sampling). Experience in handling and working with large datasets. Experience in analysis of Next Generation Sequencing data and related tools (GATK, Samtool, Picard, Bedtools, etc). Simulation: Bayesian SerialSimcoal, ms.

### **Statement of Interests**

My main research interest regards the evolution of Human species. In particular I am interested in genealogical relationships between modern and ancient populations, in processes shaping modern human genetic diversity as the demographic processes involving human expansion Out of Africa.

Curriculum reso sotto forma di dichiarazione sostitutiva di atto di notorietà, ai sensi degli artt. 46 e 47 del D.P.R. 445/2000 (si allega fotocopia documento di identità valido).

Consapevole, secondo quanto prescritto dall'art. 76 del D.P.R. 445/2000, della responsabilità penale cui può andare incontro in caso di dichiarazione mendace, falsità negli atti ed uso di atti falsi, il sottoscritto dichiara sotto la propria la veridicità del proprio curriculum vitae. Il sottoscritto acconsente, ai sensi del D.Lgs. 30/06/2003 n.196, al trattamento dei propri dati personali.

Ferrara 05/11/2017