

Giacomo Villani, Ph.D. Student (XXXIX cycle)

Project title:

“Genomica di popolazioni umane e animali”

“Genomics of human and animal populations”

Supervisors:

Professors Alessandro Achilli and Antonio Torroni

Reviewer:

Professor Anna Olivieri

Giacomo Villani: CV

Date of birth: 22/01/1999

Nationality: Italian

Email address: giacomo.villani02@universitadipavia.it

Work

03/10/2021 – 22/12/2021 Granarolo dell'Emilia, Italy

DATA COLLECTOR FOR PERMANENT CENSUS OF POPULATION AND HOUSING 2021 ISTAT

Surveying selected citizens and communicating survey and census purposes.

01/03/2023 – 30/09/2023 Bologna, Italy

TUTOR MATEMAGIA

Tutor for mathematics, physics, biology and chemistry for students ranging from the last year of middle school, high school (majority of the students) and first years of University. Employer: educational center Matemagia.

Education and training

09/2017 – 13/10/2020 Bologna, Italy

BACHELOR'S DEGREE IN BIOLOGICAL SCIENCES Alma Mater Studiorum, University of Bologna

Skills and methods acquired:

-Course: Human biology;

-Course: Quality and Safety in Laboratory;

-skills and methods of molecular phylogenetics laboratory (acquired from internship) (DNA extraction from animal tissues, PCR, agarose gel electrophoresis, use of automated Sanger DNA-sequencing);

-skills and methods of molecular phylogenesis (acquired from internship) (SeqTrace, BLASTn, use of NCBI database, MAFFT, AliView, use of CIPRES portal, Gblock, MEGA-X, IQ-TREE);

-skills and methods of microbiological laboratory (growth medium preparation, isolation of microorganisms from ambient and food samples; growth curve analysis of a bacteria culture; microscope observation of bacteria after Gram's stain; oxydase test; bacteria culture methods, identification of Gram positive and negative bacteria through BBL Crystal; standard technique for isolation of Legionella spp.; antibodies agglutination test for serological identification of Legionella spp.);

-restriction map determination of a recombinant plasmid;

-skills and methods of Biochemistry laboratory (Bradford method for proteins quantification; ion-exchange chromatography; SDS-page; determination of malate dehydrogenase (NADP+) activity; determination of lactate dehydrogenase activity);

-skills and methods of Plant Biology and Diversity laboratory (in vitro pollen germination; Alexander's stain for pollen vitality; extraction and quantitative analysis of chlorophyll in chloroplasts' suspension).

Internship in molecular phylogenetics with professor Barbara Mantovani as thesis supervisor and PhD student Jacopo Martelossi as co-supervisor.

Wet lab experience (~300 h): extracting stick insects (Phasmatodea) DNA, Sanger sequencing, gel electrophoresis.

Data analysis on DNA sequences: SeqTrace, BLASTn, use of NCBI, MAFFT, AliView, use of CIPRES portal, Gblock, Maximum parsimony phylogenetic tree with MEGA-X, Maximum Likelihood phylogenetic tree with IQ-TREE.

As a result, I wrote my thesis, with the title "Preliminary data on molecular phylogenetics about some families of order Phasmatodea (Insecta)".

Final grade 107/110

16/10/2020 – 13/12/2022 Bologna, Italy

TWO YEAR MASTER IN BIODIVERSITY AND EVOLUTION Alma Mater Studiorum, University of Bologna

Skills and methods acquired:

-Course: Human biodiversity and evolution;

-Course: Genome evolution;

-Course: Human genomic evolution;

-Course: Metagenomics;

-Course: Phylogenetics.

-ability to program in R through the course Evolutionistic and ecological biometry;

-proficiency in Bash through the course Comparative genomics laboratory;

-informatic tools used in molecular anthropology through the internship (PLINK, ADMIXTURE, ChromoPainter, VolcanoFinder);

-ability to display results both to the scientific community through papers and to the general public through divulgation articles (course: Divulgation and Scientific Journalism).

Internship in molecular anthropology under associate professor Marco Sazzini and postdoctoral fellow Paolo Abondio.

Analysis of Italian genomes to uncover adaptive introgression from archaic hominins and comparison with European population (Use of university servers through Linux command line, use of genomes from 1000 Genomes Project, use of PCA, PLINK, VolcanoFinder, STRING, KEGG, GeneCards).

Thesis written in english, with the title "Admixture between modern and archaic humans: biological impact on the evolution of the Italian population".

Final grade 110/110, summa cum laude

14/02/2023 – 27/02/2023 Bologna, Italy

BIOINFORMATICS AND DEEP LEARNING FOR BIODATA ANALYSIS - 24TH BOLOGNA WINTER SCHOOL Alma Mater Studiorum, University of Bologna

1/10/2023 – current Pavia, Italy

PHD PROGRAM IN GENETICS, MOLECULAR AND CELLULAR BIOLOGY University of Pavia

Project title: "Genomics of human and animal populations".

Other

LANGUAGE SKILLS

Mother tongue(s): ITALIAN

Other language(s): ENGLISH B2

DIGITAL SKILLS

Microsoft Word; Microsoft Excel; Bash (Linux); C programming; R programming.

PUBLICATIONS

Villani, Giacomo. "Un gambero per il Madagascar". Sapere, n. 6, feb. 2023, pp. 46–47. ISBN: 9788822094599.

ACADEMIC PRIZES

Recipient of the Merit Award for my master's degree, Alma Mater Studiorum University of Bologna, academic year 2021/2022.