Giacomo Castagnetti

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Education

- **Bachelor of Genomics (International course)** – 3rd year 2021 – Present / Bologna, Italy
  Alma Mater Studiorum - University of Bologna
  This course prepares the student on mathematics, statistics, computer science, genetics and molecular biology knowledge useful to **bioinformatics**; it provides a wide bioinformatics knowledge: form the basics algorithms to all tools and skills useful in many different areas of bioinformatics and computational biology; the numerous hours of **wet and dry lab** allow to acquire remarkable practical skills.

- **High school** 2016 – 2021 / Reggio Emilia, Italy
  Lyceum of applied sciences Antonio Zanelli - Final grade: 100/100
  Applied sciences: **2 hours a week** of chemistry and biology **laboratory**, for all 5 years.

Work experience

- **Summer student at Biozentrum** (320 hours) Jul – Aug 2023 / Basel, Switzerland
  I was selected to participate in the Biozentrum Research Summer program together with other 12 excellent students across Europe, I joined the lab of Richard Neher, in which I worked on 3 projects:
  - **Nextstrain workflow**: I built a workflow for West Nile Virus, using Snakemake, trying to understand its evolution and spreading. I also built a GTR model, I quantified the dN/dS ratio over the genome, and I searched for possible secondary structures.
  - **Bacteriophage evolution analysis**: I built a **Snakemake pipeline** to analyse **Nanopore sequencing data** of phage genomes. The pipeline, run with HPC, performed genome assembly, read mapping and variant calling (through python scripts). I performed a biological function interpretation of the changes that were detected.
    I carried out an **exploratory analysis** to search for recombination evidence in phage population sequencing data. I planned the steps to reach the objectives, I kept track of the results, ensuring reproducibility, and I tailored by work based on the feedback of my supervisors.
  - Manual bacteriophage evolution experiment: I got confidence with all the wet lab procedures of **phage biology**, and I performed an Oxford Nanopore MinION run.

- **Student assistant at Centro Palmer** Jun 2019 / Reggio Emilia, Italy
  I worked in a **Medically Assisted Reproduction centre**, where I assisted Luigi Muzii. I got familiar with the lab environment and with all the most advanced MAR techniques and I had the chance to take on responsibility by performing spermiograms for the patients.

Skills

- Languages: Italian, English

- Programming: Python, bash, R, HTML, CSS, C++
- High power computing: tmux, SLURM, Snakemake
- Software: bioinformatics software (igv, Tablet, chimera, aliview), bioinformatics webapps (BLAST, UCSC, Nextstrain), Adobe Premiere Pro, Photoshop, Illustrator, Blender, Microsoft suite
- Wet lab: phage purification, serial dilution spotting, ONT library preparation, protein purification, protein quantification (Bradford essay), pcr, bacterial transformation, spermiograms

Extracurriculars

- Amazon Alexa skill development: I participated in a contest to develop applications for Alexa
- Volleyball (2010 – Present)
- Blood donor