ALESSANDRO ANTONIO MASI

Biomedical & Computational Scientist

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PROFILE

I am a biologist with multidisciplinary experience in **protein biochemistry**, molecular interaction analysis, **mass spectrometry**, and **structural/computational biology**. I have contributed to international projects in immunology, infectious diseases, and glycobiology, integrating experimental approaches (ITC, fluorescence assays, NMR, native MS) with molecular dynamics simulations and advanced data-analysis workflows.
Throughout my research career, I have developed a **hybrid scientific profile** capable of managing end-to-end workflows—from sample preparation to computational modelling. I have contributed to peer–reviewed publications in high-impact journals (Advanced Science, JACS Au) and performed structural analyses on numerous protein–ligand systems using multidisciplinary strategies.
Alongside my research activity, I gained experience in **laboratory organisation** and **training of junior researchers**, supporting PhD and MSc students in experiment planning, instrument usage, and troubleshooting.
I am currently expanding my background in clinical research, with growing interest in **GCP**, **GMP**, scientific documentation, and **regulatory processes**, as part of a career path toward Clinical Research Associate (CRA) roles and biotech/pharma/CRO environments.

RESEARCH EXPERIENCE

PhD Researcher — Computational & Quantitative Biology

University of Naples Federico II

2022 – 2025 Naples, Italy

- Structural and thermodynamic analysis of protein–glycan interactions (MD, ITC, fluorescence, NMR, native MS).
- Development of computational pipelines for MD trajectory analysis, docking, and glycan conformational sampling.
- Integration of experimental and in silico data to elucidate molecular recognition mechanisms (Siglec-7, gangliosides, bacterial glycans).
- Supervision and support of PhD and MSc students.

Visiting Researcher — ISPSO Institute

Université de Genève — Valerie Gabelica Lab

March 2025 – April 2025 Geneva, Switzerland

TECHNICAL SKILLS

Molecular Biology & Biochemistry

- Extraction and purification of LPS, Lipid A, oligosaccharides and proteins.
- Electrophoresis: agarose, SDS-PAGE (Coomassie/silver), Western Blot.
- Bacterial manipulation: transformation, vectors, heterologous expression.
- SEC, IMAC, ÄKTA Pure for biomolecule purification.
- Sample prep for GC-MS, MALDI-ToF, native ESI-MS.
- NMR: COSY, NOESY, TOCSY, HSQC, HMBC, STD-NMR.
- ITC: experiment execution and thermodynamic analysis.
- Native ESI-MS (Bruker timsTOF SCP) for affinity/stoichiometry.
- Fluorimetric titrations (Kb, KD, ΔH).

Microbiology

- Work with biosafety hoods, centrifuges, autoclaves, rotavapor.
- Rich and isotopically labelled media preparation.
- Aerobic microbial cultures (small/large scale).
- Optical and phase-contrast microscopy.

Computational Biochemistry & Modelling

- Linux/Windows environments; command-line workflows.
- Python (NumPy, Pandas, MDAnalysis, MDTraj, Matplotlib).
- Structural prediction: AlphaFold, RosettaFold.
- Visualization: PyMOL, ChimeraX, Maestro.
- Docking: AutoDock, Vina, Vina-Carb, HADDOCK, DiffDock.
- MD: AMBER, GROMACS, Desmond; ligand parametrization.
- Structural validation sequence conservation analysis.

- Quantification of association/dissociation kinetics for 21 protein–ligand systems using Bruker timsTOF SCP.
- Processing of high-resolution ESI-MS datasets (DataAnalysis, MATLAB).
- Modelling and interpretation of binding profiles based on IM-MS parameters.

EDUCATION

PhD in Computational and Quantitative Biology (38th Cycle)

University of Naples Federico II

2022 – 2025 (discussion 02/26) Naples, Italy

- Expected defense: February.
- Supervisor: Prof. Alba Silipo.

MSc in Biology (LM-06), Biomolecular Curriculum — 110/110 cum laude

University of Naples Federico II

2020 – 2022 Naples, Italy

- Thesis: *From hydrothermal vents to human: Comparative genomics and structural characterization of PrtC-like sheds light on the evolution of pathogenesis in Campylobacterota*.
- Supervisor: Prof. Angelina Cordone.

BSc in Biological Sciences (L-13)

University of Naples Federico II

2016 – 2020 Naples, Italy

- Thesis: *Production of an antibody for One cut like gene peptide and Western Blot on Danio rerio tissues*.
- Supervisor: Prof. Francesco Aniello.

PUBLICATIONS

- **Gerpe Amor, T.; Masi, A.A.; Silipo, A. et al.** *Molecular Basis of Siglec-7 Recognition by Neisseria meningitidis Serogroup Y CPS*. **JACS Au**, 2025. IF: 8.6.
- **Di Carluccio, C.; Masi, A.A.; Silipo, A. et al.** *Conformational Features of Fusobacterium nucleatum LPS O-Antigen Reveal a Novel Siglec-7 Binding Epitope*. **JACS Au**, 2025. IF: 8.6.
- **Di Carluccio, C.; Masi, A.A.; Silipo, A. et al.** *Insights into Siglec-7 Binding to Gangliosides: NMR Protein Assignment and the Role of Ligand Flexibility*. **Advanced Science**, 2025. IF: 14.6.

CONFERENCES & PRESENTATIONS

- **EuroCarb22 — International Symposium in Glycosciences** Flash oral + poster: *Molecular Exploitation of Neisseria gonorrhoeae LOS Recognition by mAb 2C7* (2025).
- **CSCC 2025 — Italian Carbohydrate Chemistry School** Oral: *Structural Clues to Target Neisseria gonorrhoeae* (2025).
- **SCI 2024 — Italian Chemical Society Meeting** Poster: *Antibody–Epitope Recognition in Neisseria gonorrhoeae* (2024).

SOFT SKILLS

- Mentoring and training of MSc/PhD students.
- Laboratory coordination and workflow optimisation.
- Troubleshooting in experimental and computational setups.
- Time management across parallel projects.
- Teamwork in multidisciplinary environments.
- Clear written and oral communication.
- Adaptability and fast learning.
- Interest in regulated environments (GCP, GMP).

ADDITIONAL TRAINING & CERTIFICATIONS

- Professional License — Biologist, Section A.
- International School on Mass Spectrometry — Ion Mobility MS (2024).
- HR-MS School — High-resolution MS and IM-MS (2024).
- GIDRM — National School of NMR (2024).
- Structural Glycoscience Summer School (ESRF & UGA, 2023).
- Advanced lab safety course (D.Lgs. 81/2008).
- MDPI Webinar: *Biological Activities and Applications of Phytotoxins* (2023).

AWARDS & SCHOLARSHIPS

- **A.D.I.S.U. Scholarship** (2016–2017) Merit-based award granted for outstanding academic performance.
- **A.D.I.S.U.R.C. Scholarships** (2017–2018 – 2021–2022) Recipient of four consecutive merit scholarships recognising consistent academic excellence.
- **A.D.I.S.U.R.C. Degree Award** (2018–2019) Awarded for academic distinction at the completion of the Bachelor's degree.
- **A.D.I.S.U.R.C. Degree Award** (2021–2022) Merit award received upon completion of the MSc degree for excellent academic results.

SCIENTIFIC REFERENCES

- **Prof. Alba Silipo** — University of Naples Federico II alba.silipo@unina.it

- **EuroCarb21 — International Glycoscience Symposium**
  Poster: *Siglecs and Sialylated Glycans Interactions* (2023).
- **IMYR23 — Young Researchers Meeting**
  Poster + flash oral: *Siglec-7 and Disialylated Gangliosides* (2023).

- **Prof. Antonio Molinaro** — University of Naples Federico II
  antonio.molinaro@unina.it
- **Prof. Angelina Cordone** — University of Naples Federico II
  angelina.cordone@unina.it
- **Prof. Donato Giovannelli** — University of Naples Federico II
  donato.giovannelli@unina.it