

# Alfonso Trezza

Research Fellow in Computational  
Biochemistry

## Personal info

### Phone

+39 3483077438

### E-mail

alfonso.trezza2@unisi.it

trezzaalfonso@gmail.com

### pec

trezza.alfonso@pec.it

### Date of birth

1989-10-04

## Soft Skill

**Communication:** Listening, Public speaking, Writing reports and proposals

**Critical Thinking:** Critical observer, Problem solving, Willingness to learn

**Leadership:** Conflict resolution, Decision making, Supervising

**Positive Attitude:** Enthusiastic, Friendly, Respectful

Dr. Trezza, Research Fellow at the Department of Biotechnology, Chemistry and Pharmacy at the University of Siena, obtained his European Ph.D. in Biochemistry and Molecular Biology from University of Siena in 2019. Dr. Trezza has published his works in many renowned journals in the field of Structural and Molecular Biology and Computational Biology. His strong interest in molecular modelling, computational docking and molecular dynamics simulation led him to participate in many research projects globally.

## Education

**University of Siena, Department of Biotechnology, Chemistry and Pharmacy (Dept. of Excellence 2018-2022), Research Fellow in Computational Biochemistry**

Jul 2019 – To Present

Research Fellow

**University of Siena, Department of Biotechnology, Chemistry and Pharmacy (Dept. of Excellence 2018-2022), European PhD in Biochemistry and Molecular Biology**

Nov 2015 – Feb 2019

Thesis title: "A novel computational way to unlock drug targets deep and transient secreted"

**University of Essex, Department of Science of Life (UK)**

Sep 2017- Apr 2018

International partnership

**University of Siena, Department of Life Science, Master's Degree in Cellular and Molecular Biology, 110 upon 110 summa cum laude**

Nov 2013 - Sep 2015

Thesis title: "Innovative approach for the individuation of protein-protein interfaces active site potential involved in the onset of metastasis and rational small molecule disruptors drug design"

**Teamwork:** Accept feedback,  
Networking, Team player

**Work Ethic:** Motivated, Multitasking,  
Working well under pressure

## Languages

Italian

English

## Social



<https://www.linkedin.com/in/alfonso-trezza-ab01725b/>



<https://www.researchgate.net/profile/Alfonso-Trezza-2>



<https://www.scopus.com/authid/detail.uri?authorId=57190004949>

**University of Salerno, Department of Science of Life. Bachelor's Degree in Biological Science**

Sep 2009 - Sep 2013

Thesis title: "Linezolid and its analogues: Syntheses and mechanisms of action"

## Skill

- Expertise in Bioinformatics methods aimed in Target and Drug discovery, protein evolution and folding fields, such as:
  - classical, meta and accelerated Molecular Dynamics simulation of biological systems (Soluble, Transmembrane, Aggregates and Complexes)
  - Docking Simulation (Protein/Peptide/Small molecule/D.N.A./R.N.A.)
  - Molecular modeling (Homology modeling and structural optimization)
  - Sequence alignments (MSA and PSA)
  - Molecular Graphics Systems
  - Operating systems Proficient in Linux/Unix, Microsoft Windows, Linux shell scripting
  - Broad Computer Skills and Cluster use
  - Bash and Python Scripting

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# Teaching

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2020 -2021	<p><b>University of Siena, Department of Biotechnology, Chemistry and Pharmacy (Dept. of Excellence 2018-2022)</b></p> <p><b>Professor</b> in “Bioinformatics” in Hospital Pharmacy Master’s degree</p>
2020 – To date	<p><b>University of Siena, Department of Biotechnology, Chemistry and Pharmacy (Dept. of Excellence 2018-2022)</b></p> <p><b>Professor</b> in “Big data issues in computational biological chemistry” in Sustainable Industrial Pharmacological Biotechnology Master’s degree</p>
2020 –To date	<p><b>University of Siena, Department of Biotechnology, Chemistry and Pharmacy (Dept. of Excellence 2018-2022)</b></p> <p><b>Professor</b> in “Applied Biochemistry” in Pharmaceutical Technologies Chemistry degree course</p>
2018 -2019	<p><b>University of Siena, Department of Biotechnology, Chemistry and Pharmacy (Dept. of Excellence 2018-2022)</b></p> <p><b>Professor</b> in “Applied Biochemistry” in Pharmacy degree course</p>
2017 -To Date (Details available upon request)	<p><b>Professor</b> of “Technological and Scientific Skills” and “Bioinformatics” courses for ITS Vita (High Industrial Technology Institute for Industrial Biotechnology Industries)</p>

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## Organizational and Managerial Contribution

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2021-To present

**Reviewer** for Frontiers in Genetics, section Computational Genomics.

2021-To present

**Member** of organizing committee of Sciences@Si, a project aimed at providing participants from both Academia and Industry some of the most recent advances in the field of chemical and biological sciences through a multi- and trans-disciplinary approach.

2021-To present

**Founder and Organizing** of the scientific divulgation project “**D.B.C.F. DIVULGHIAMO BREVEMENTE CON FORZA**” at the Department of Excellence 2018-2022 of Biotechnology, Chemistry and Pharmacy at the University of Siena, Siena, Italy.

2021

**Guest Editor** for the Research Topic “Precision Medicine in Cancer and Cardiovascular Diseases: Emerging Computational and Biochemical Approaches” in “Frontiers in Molecular Biosciences - Section: Molecular Diagnostics and Therapeutics and Cross-listed in sections: Frontiers in Molecular Biosciences – Biological Modeling and Simulations & Frontiers in Bioinformatics – Drug Discovery in Bioinformatics”

2021

**Organizing** of the Symposium “Antibiotics & Bacterial Resistance: Infinity War” at the Department of Excellence 2018-2022 of Biotechnology, Chemistry and Pharmacy at the University of Siena, Siena, Italy.

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## Conferences and Seminars

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- 2021
  - Poster presentation at the Virtual Symposium "From Information to Function: a Systems biology view of the processes of life - A tribute to Anna Tramontano". (An integrated drug repurposing strategy for the rapid identification of potential SARS-CoV-2 viral inhibitors).
- 2020
  - Speaker at the *Lectio Magistralis* "Develop of novel drugs targeting viral diseases", at the Department of Excellence 2018-2022 of Biotechnology, Chemistry and Pharmacy, University of Siena, Siena, Italy.
- 2019
  - Speaker at the 11th International AKU workshop (An advanced Molecular Dynamics study to discover novel inhibitors of Human 4-hydroxyphenylpyruvate dioxygenase)
  - Speaker (Classical and Steered molecular dynamics for studying the mechanism of action and the binding/unbinding transition of soluble Epoxide Hydrolase inhibitors) at the 7th edition of the Tuscanian Bioinformatics and system biology, Siena.
- 2018
  - Speaker at the seminar "To the discovery of Bioinformatics", at the Department of Information Engineering and Mathematics, University of Siena, Siena, Italy.
  - National school of nuclear magnetic resonance (GIDRM). University of Torino
  - 14th Annual Meeting of the Bioinformatics Italian Society. Cagliari, Italy
- 2017
  - Speaker (Identification of Inhibitors Binding Site of Ebola L Polymerase Based on its Homology Mode) at the Fifth edition of the Tuscanian Bioinformatics and system biology, Florence, Italy.
  - 13th Annual Meeting of the Bioinformatics Italian Society University of Salerno, Italy.
- 2016
  - SGOF (Società de gènètica ophthalmologica francophone) convention. Florence, Italy.

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## Publications

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1. **Trezza, A.**; Mugnaini, C.; Corelli, F.; Santucci, A.; Spiga, O. In Silico Multi-Target Approach Revealed Potential Lead Compounds as Scaffold for the Synthesis of Chemical Analogues Targeting SARS-CoV-2. *Biology* 2022, 11, 465. <https://doi.org/10.3390/biology11030465>
2. **Trezza A**, Spiga O, Mugnai P, Saponara S, Sgaragli G, Fusi F. Functional, electrophysiology, and molecular dynamics analysis of quercetin-induced contraction of rat vascular musculature. *Eur J Pharmacol.* 2022 Mar 5;918:174778. doi: 10.1016/j.ejphar.2022.174778.
3. Antonella Brizzi, **Alfonso Trezza**, Ottavia Spiga, Samuele Maramai, Francesco Scorzelli, Simona Saponara, Fabio Fusi. 2-Hydroxy-5-(3, 5, 7-trihydroxy-4-oxo-4H-chromen-2-yl) phenyl (E)-3-(4-hydroxy-3-methoxyphenyl) acrylate: Synthesis, In Silico Analysis and In Vitro Pharmacological Evaluation. *Molbank* 2021, 2021(3), M1258; <https://doi.org/10.3390/M1258>.
4. Saponara S, Fusi F, Iovinelli D, Ahmed A, **Trezza A**, Spiga O, Sgaragli G, Valoti M. Flavonoids and hERG channels: Friends or foes? *Eur J Pharmacol.* 2021.
5. Carullo G, Ahmed A, **Trezza A**, Spiga O, Brizzi A, Saponara S, Fusi F, Aiello F. A multitarget semi-synthetic derivative of the flavonoid morin with improved in vitro vasorelaxant activity: Role of CaV1.2 and KCa1.1 channels. *Biochem Pharmacol.* 2021.
6. Bongini, P., **Trezza, A.**, Bianchini, M., Spiga, O., & Niccolai, N. Structural Bioinformatics to unveil weaknesses of coronavirus spike glycoprotein stability. In *In Silico Modeling of Drugs Against Coronaviruses - Computational Tools and Protocols*. Springer. 2021.
7. Caciolla J, Picone G, Farruggia G, Valenti D, Rampa A, Malucelli E, Belluti F, **Trezza A**, Spiga O, Iotti S, Gobbi S, Cappadone C, Bisi A. Multifaceted activity of polycyclic MDR revertant agents in drug-resistant leukemic cells: Role of the spacer. *Bioorg Chem.* 2021.
8. Carullo G, Ahmed A, **Trezza A**, Spiga O, Brizzi A, Saponara S, Fusi F, Aiello F. A multitarget semi-synthetic derivative of the flavonoid morin with improved in vitro vasorelaxant activity: Role of CaV1.2 and KCa1.1 channels. *Biochem Pharmacol.* 2021.
9. Benetti E, Tita R, Spiga O, Ciolfi A, Birolo G, Bruselles A, Doddato G, Giliberti A, Marconi C, Musacchia F, Pippucci T, Torella A, **Trezza A**, Valentino F, Baldassarri M, Brusco A, Asselta R, Bruttini M, Furini S, Seri M, Nigro V, Matullo G, Tartaglia M, Mari F; GEN-COVID Multicenter Study, Renieri A, Pinto AM. ACE2 gene variants may underlie interindividual variability and susceptibility to COVID-19 in the Italian population. *Eur J Hum Genet.* 2020.
10. **Trezza A**, Iovinelli D, Santucci A, Prischi F, Spiga O. An integrated drug repurposing strategy for the rapid identification of potential SARS-CoV-2 viral inhibitors. *Sci Rep.* 2020
11. Fusi F, Mugnai P, **Trezza A**, Spiga O, Sgaragli G. Fine tuning by protein kinases of Ca<sub>v</sub>1.2 channel current in rat tail artery myocytes. *Biochem Pharmacol.* 2020.

12. Carullo G, Ahmed A, **Trezza A**, Spiga O, Brizzi A, Saponara S, Fusi F, Aiello F. Design, synthesis and pharmacological evaluation of ester-based quercetin derivatives as selective vascular KCa1.1 channel stimulators. *Bioorg Chem*. 2020.
13. Bongini P, Nicolai N, **Trezza A\***, Mangiavacchi G, Santucci A, Spiga O, Bianchini M, Gardini S. Structural bioinformatic survey of protein-small molecule interfaces delineates the role of glycine in surface pocket formation. *IEEE/ACM Trans Comput Biol Bioinform*. 2020.
14. Bongini P, **Trezza A**, Bianchini M, Spiga O, Nicolai N. A possible strategy to fight COVID-19: Interfering with spike glycoprotein trimerization. *Biochem Biophys Res Commun*. 2020.
15. Fusi F, **Trezza A**, Sgaragli G, Spiga O, Saponara S, Bova S. Ritanserin blocks CaV1.2 channels in rat artery smooth muscles: electrophysiological, functional, and computational studies. *Acta Pharmacol Sin*. 2020.
16. Spiga O, Cicaloni V, Fiorini C, **Trezza A**, Visibelli A, Millucci L, Bernardini G, Bernini A, Marzocchi B, Braconi D, Prischi F, Santucci A. Machine learning application for development of a data-driven predictive model able to investigate quality of life scores in a rare disease. *Orphanet J Rare Dis*. 2020.
17. Cuong NM, Son NT, Nhan NT, Khanh PN, Huong TT, Tram NTT, Sgaragli G, Ahmed A, **Trezza A**, Spiga O, Fusi F. Vasorelaxing Activity of R-(-)-3'-Hydroxy-2,4,5-trimethoxydalbergiquinol from *Dalbergia tonkinensis*: Involvement of Smooth Muscle CaV1.2 Channels. *Planta Med*. 2020.
18. Fusi F, **Trezza A**, Tramaglino M, Sgaragli G, Saponara S, Spiga O. The beneficial health effects of flavonoids on the cardiovascular system: Focus on K(+) channels. *Pharmacol Res*. 2020.
19. **Trezza A.**, Cicaloni V., Pettini F., Spiga O. Potential Roles of Protease Inhibitors in Cancer Progression of the book: "Cancer-Leading Proteases: Structures, Functions and Inhibition" Elsevier 2020.
20. Teodori E, Contino M, Riganti C, Bartolucci G, Braconi L, Manetti D, Romanelli MN, **Trezza A**, Athanasios A, Spiga O, Perrone MG, Giampietro R, Gazzano E, Salerno M, Colabufo NA, Dei S. Design, synthesis and biological evaluation of stereo- and regioisomers of amino aryl esters as multidrug resistance (MDR) reversers. *Eur J Med Chem*. 2019.
21. Saponara S, Fusi F, Spiga O, **Trezza A**, Hopkins B, Brimble MA, Rennison D, Bova S. The Selective Rat Toxicant Norbormide Blocks K(ATP) Channels in Smooth Muscle Cells But Not in Insulin-Secreting Cells. *Front Pharmacol*. 2019.
22. Cicaloni V., **Trezza A.**, Pettini F., Spiga O. Applications of in Silico Methods for Design and Development of Drugs Targeting Protein-Protein Interactions. *Current Topics in Medicinal Chemistry*. 2019.
23. Silvia Dei; Laura Braconi; **Alfonso Trezza**; Marta Menicatti; Niccolò Chiaramonte; Dina Manetti; Maria Novella Romanelli; Chatchanok Udomtanakunchai; Gianluca Bartolucci; Ottavia Spiga; Milena Salerno; Elisabetta Teodori. Modulation of the spacer in N,N-bis(alkanol)amine aryl ester heterodimers led to the discovery of a series of high potent P-glycoprotein-based multidrug-resistance (MDR) modulators. *European Journal of Medicinal Chemistry*. 2019.

24. Cicaloni V., **Trezza A.**, Pettini F., Spiga O. Applications of in silico methods for design and development of Drugs Targeting Protein-Protein Interactions. CTMC Review report. 2019.
25. Spiga O, Cicaloni V, Zatkova A, Millucci L, Bernardini G, Bernini A, Marzocchi B, Bianchini M, Zugarini A, Rossi A, Zazzeri M, **Trezza A**, Frediani B, Ranganath L, Braconi D, Santucci A. A new integrated and interactive tool applicable to inborn errors of metabolism. *Comput Biol Med.* 2018.
26. Federica Pessina, PhD; Alessandra Gamberucci, PhD; Jialin Chen, PhD; Boyin Liu, PhD; Peter Vangheluwe, PhD; Beatrice Gorelli, Technician; Stefania Lorenzini, **PhD**; **Alfonso Trezza**; Ottavia Spiga; Giampietro Sgaragli. Negative chronotropism, positive inotropism and lusitropism of 3,5-di-*t*-butyl-4-hydroxyanisole (DTBHA) on rat heart preparations occur through reduction of RyR2 Ca<sup>2+</sup> leak. 2018. *Biochemical Pharmacology.*
27. **Alfonso Trezza**, Vittoria Cicaloni, Piera Porciatti, Andrea Langella, Fabio Fusi, Simona Saponara, Ottavia Spiga. From in Silico to in Vitro: a trip to reveal Flavonoid Binding on the *Rattus norvegicus* ATP-sensitive inward rectifier potassium channel 8 (Kir6.1). *PeerJ.* 2018
28. PN Khanh, TT Huong, O Spiga, **A Trezza**, TD Cuong, VT Ha, NM Cuong. In silico screening of anthraquinones from *Prismatomeris memecyloides* as novel phosphodiesterase type-5 inhibitors (PDE-5Is). *Revista Internacional de Andrología.* 2017.
29. Federico Galvagni, Federica Nardi, Ottavia Spiga, **Alfonso Trezza**, Giulia Tarticchio, Rosanna Pellicani, Eva Andreuzzi, Elena Caldi, Paolo Toti, Gian Marco Tosi, Annalisa Santucci, Renato V Iozzo, Maurizio Mongiat, Maurizio Orlandini. Dissecting the CD93-Multimerin 2 interaction involved in cell adhesion and migration of the activated endothelium. *Matrix Biology.* 2017.
30. **Alfonso Trezza**, Andrea Bernini, Andrea Langella, David B Ascher, Douglas EV Pires, Andrea Sodi, Ilaria Passerini, Elisabetta Pelo, Stanislao Rizzo, Neri Niccolai, Ottavia Spiga. A Computational Approach From. 2017.
31. Gene to Structure Analysis of the Human ABCA4 Transporter Involved in Genetic Retinal Diseases. *Investigative ophthalmology & visual science.* 2017.
32. Fabio Fusi, **Alfonso Trezza**, Ottavia Spiga, Giampietro Sgaragli, Sergio Bova. Cav1. 2 channel current block by the PKA inhibitor H-89 in rat tail artery myocytes via a PKA-independent mechanism: Electrophysiological, functional, and molecular docking studies. *Biochemical pharmacology.* 2017.
33. F Fusi, O Spiga, **A Trezza**, G Sgaragli, S Saponara. The surge of flavonoids as novel, fine regulators of cardiovascular Cav channels. *European journal of pharmacology.* 2016.
34. **A Trezza**, A Bernini, O Spiga. Identification of Inhibitors Binding Site of Ebola L Polymerase Based on its Homology Model. *Virology & Antiviral Research.* 2016.
35. PN Khanh, O Spiga, **A Trezza**, YH Kim, NM Cuong. Coumarins Isolated from *Murraya paniculata* in Vietnam and Their Inhibitory Effects against Enzyme Soluble Epoxide Hydrolase (sEH). *Planta Medica International Open.* 2016.
36. F Fusi, M Durante, O Spiga, **A Trezza**, M Frosini, E Floriddia, E Teodori, S Dei, S Saponara. In vitro and in silico analysis of the vascular effects of asymmetrical N, Nbis (alkanol) amine aryl esters,



novel multidrug resistance-reverting agents. NaunynSchmiedeberg's archives of pharmacology. 2016.

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## Honors and Awards

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Winner of the Seminar Project "Pianeta Galileo 2021-2022" - Bioinformatica Vs Covid-19: Una "scienza 2.0" a difesa dell'umanità. 2021.

Winner of the Grant n. 8/2019 – New statistical and experimental approaches to the design and preparation of sustainable papers from agroforestral waste materials for amount of 65000€ (Prot. N. 2019.0399). 2020.

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## Employments

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| 2021      | <ul style="list-style-type: none"><li>Voluntary work at "Circolo Arci Ravacciano", Via Duccio di Buoninsegna 35, 53100 Siena, Toscana</li></ul>  |
| 2018-2019 | <ul style="list-style-type: none"><li>Coordinator of Medical Informatics 4.0 course for ITS Vita (High Industrial Technology Institute for Industrial Biotechnology Industries).</li></ul> |
| 2005-2012 | <ul style="list-style-type: none"><li>Voluntary work at "A.S.A.D PEGASO" Red Cross Association, Via Dello Statuto 3, 84098 Pontecagnano Faiano (SA), Italy.</li></ul>                      |

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## References

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Available upon request

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## Interests

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Literature: I am a greedy reader, I have a passion for fantasy books and sagas.

Music, Photography and Theatre: I think that it is always a good moment to listen music or take a picture and during my leisure I use to attend theatre performances

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## Privacy

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I hereby authorize the use of my personal data in compliance with the Italian law N° 675/96 and 71 del DPR 445/2000

Siena, March 23, 2022

Signature

A handwritten signature in black ink, appearing to read 'Alfouso', followed by a long horizontal stroke.