



# ANDREAS SANTAMARIA

## CURRICULUM VITAE



Born / 10/11/1994 Age / 26  
Place of birth / NAPOLI (NA)  
Nationality / citizenship / Italy  
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(FRANCIA)  
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### SOFT SKILL

Autonomy 9/10  
Self confidence 9/10  
Flexibility/Adaptability 7/10  
Resistance to stress 8/10  
Ability to plan and organize 10/10  
Managing information 10/10  
Precision/Attention to details 10/10  
Learn continuously 10/10  
Achievement of objectives 10/10  
Entrepreneurial spirit and initiative 10/10  
Communication 9/10  
Problem Solving 9/10  
Team work 10/10  
Leadership 10/10

### FOREIGN LANGUAGE SKILLS

MOTHER TONGUE(S): Italian



ENGLISH GOOD	B2	B2	B2	B2	B2
FRENCH FAIR	B1	B1	B1	B1	B1

### EXPECTATIONS AND FEATURES OF THE DESIRED JOB

INTENTION TO CONTINUE STUDIES: **Yes** /  
Doctoral studies

ECONOMIC SECTOR: **1.** education, training,  
research and development / **2.** chemical-  
pharmaceutical industry / **3.** chemistry

DESIRED JOB:  
**Researcher in biochemical field; expert on  
structural biology and biophysics.**

AVAILABILITY FOR BUSINESS TRAVELS:  
**Yes, including relocation**

AVAILABILITY TO RELOCATE ABROAD:  
**Yes, but only in Europe**

### Career Goal

*Researcher in biochemical field; expert on structural biology and  
biophysics.*



### ACADEMIC STUDIES

#### MASTER'S DEGREE 2016 - 2018 CERTIFIED TITLE



Università degli Studi di NAPOLI 'Federico II'  
Dipartimento di Scienze Chimiche  
Scienze chimiche

LM-54 - 2nd level degree in Chemistry

Dissertation/thesis title: Investigation and modulation of aptamer  
functionality by a combined use of click-chemistry and X-ray  
crystallography | Dissertation/thesis subject: CHIMICA FISICA |  
Thesis supervisor: SICA FILOMENA

Age at graduation: 23 | Official duration: 2 years

Final degree mark: **110/110 cum laude**

Graduation date: 25/10/2018

#### BACHELOR'S DEGREE 2013 - 2016 CERTIFIED TITLE



Università degli Studi di NAPOLI 'Federico II'  
Dipartimento di Scienze Chimiche  
Chimica

L-27 - 1st level degree in Chemistry

Dissertation/thesis title: Synthesis and characterization of new  
phosphorylating agents | Dissertation/thesis subject:  
Oligonucleotides design and synthesis | Thesis supervisor:  
ZARRELLI ARMANDO

Age at graduation: 21 | Official duration: 3 years

Final degree mark: **110/110 cum laude**

Graduation date: 14/07/2016

PHD  
2019 -  
ONGOING STUDIES  
SPAIN  
INSTITUT LAUE-LANGEVIN  
(FRANCE)

UNIVERSIDAD COMPLUTENSE DE MADRID  
Faculty: Facultad de Ciencias Químicas  
Química avanzada

SCIENTIFIC CERTIFICATE  
CASERTA  
2013

Scientific High School

ALESSANDRO MANZONI, CASERTA (CE)

School-leaving examination mark: **100/100 cum laude**

Kind of secondary school diploma: Italian secondary school diploma



### WORK EXPERIENCES

Undergraduate Internship  
UNIVERSITY 'FEDERICO II'  
Chemistry  
(NA)  
01/2016 - 03/2016

Main activities and responsibilities: Biomolecules crystallisation  
techniques

Employed as: intern/trainee - undergraduate internship | Company  
sector: R&D and patents



### FOREIGN LANGUAGE SKILLS

#### DIPLOMAS AND CERTIFICATES

English Cambridge English, First Certificate (FCE), Università di  
Cambridge, Jun 2017, Europass level B2



## INFORMATION TECHNOLOGY SKILLS

### BASIC DIGITAL COMPETENCE

Operating systems **Excellent**  
Word processing **Fair**  
Electronic spreadsheet **Good**  
Data base administrators **Fair**  
Internet skills **Excellent**  
Multimedia **Fair**

### SOFTWARE APPLICATIONS

Excell, Word, PowerPoint, MatLab, Origin, ChemDraw, WinCoot, Pymol, CCP4, SasView, AuroreNR, FloJo.



## STUDIES AND EXPERIENCES ABROAD

### GERMANY 2018

**Other experience acknowledged by the course of study (Erasmus Traineeship)**

**At:** LIMES Institute

Place: **Bonn (Germany)** | Language: English | Duration: 5 (months)

Completion of the thesis project.

Knowledge of instruments such as LCMS, freeze-drier and flow cytometer. Skill in performing click-reactions with oligonucleotides.

Rudiments of cell growth methodologies. Knowledge of the methodologies to perform anticoagulation tests (Thrombin Time and Activated Partial Thromboplastin Time).



## PROFESSIONAL ACCOLADES AND AWARDS

### PRIZE 01/06/2021

**PCCP presentation prize at: School of Physical Chemistry 2021**



## CONFERENCES AND SEMINARS

### CONFERENCES 01/09/2021

**35th CONFERENCE OF THE EUROPEAN COLLOID & INTERFACE SOCIETY**

Character: Poster presentation

[www.ecis2021.org/](http://www.ecis2021.org/)

### CONFERENCES 01/06/2021

**School of Physical Chemistry**, University of Naples Federico II

Character: ortal talk - winner

### CONFERENCES 07/04/2021

**7th European Joint Theoretical/Experimental Meeting on Membranes (EJTEMM 2021)**

Character: Poster presentation

### WORKSHOPS 05/04/2021

**ACS spring 21**

Character: Oral talk

### CONFERENCES 2021

**UK Neutron and Muon user meeting**

Character: Oral talk

### CONFERENCES 2021

**NSCIS21: Neutron Scattering in Colloid and Interface Science**

Character: Oral talk

### CONVENTIONS 01/12/2020

**V Simposio Anual en Química Avanzada (VSAQA)**, Madrid

Character: Oral talk

### WORKSHOPS 01/12/2020

**ILLPhD Seminar**, ILL, Grenoble

Seminar cycle of all ILL PhD students on neutron transport

### LECTURES 01/03/2020

**HERCULES school**, Grenoble

School specialized in the field of synchrotron and neutron radiation, focusing on the structure and dynamics of biological macromolecules (school session B)

## CONVENTIONS

2020

**XXIV International School of Pure and Applied Biophysics**, SIBPA, Venezia  
School of Pure and Applied Biophysics focusing on neutron and X-ray scattering techniques.  
[www.sibpa.it/index.php/scuola-internazionale-di-bi...](http://www.sibpa.it/index.php/scuola-internazionale-di-bi...)

## WORKSHOPS

01/12/2019

**ILLPhD Seminar**, ILL, Grenoble  
Cycle of Seminars of all ILL PhD students

## CONFERENCES

01/12/2019

**BILL2019**, ILL, Grenoble  
Cycle of conferences about lipid bilayers

## CONVENTIONS

04/07/2019

**Communication between thrombin exosites: structural effects of the simultaneous binding of two bimodular aptamers**, Naples  
Poster presented by ROMUALDO TROISI at the Fifth Meeting of the Italian and Spanish Crystallographic Associations (MISCA V). The research presented is partially based on my Master thesis project.



## PUBLICATIONS

### JOURNAL ARTICLES

2021

**Romualdo Troisi, Nicole Balasco, Andreas Santamaria, Luigi Vitagliano, Filomena Sica**, Structural and functional analysis of the simultaneous binding of two duplex/quadruplex aptamers to human  $\alpha$ -thrombin  
Review: International Journal of Biological Macromolecules  
Publisher: Elsevier  
The long-range communication between the two exosites of human  $\alpha$ -thrombin (thrombin) tightly modulates the protein-effector interactions. Duplex/quadruplex aptamers represent an emerging class of very effective binders of thrombin. Among them, NU172 and HD22 aptamers are at the forefront of exosite I and II recognition, respectively. The present study investigates the simultaneous binding of these two aptamers by combining a structural and dynamics approach.

### JOURNAL ARTICLES

2021

**Andreas Santamaria, Krishna C Batchu, Olga Matsarskaia, Sylvain F Prévost, Daniela Russo, Francesca Natali, Tilo Seydel, Ingo Hoffmann, Valerie Laux, Michael Haertlein, Tamim A Darwish, Robert A Russell, Giacomo Corucci, Giovanna Fragneto, Armando Maestro, Nathan R Zaccai**, Strikingly different roles of SARS-CoV-2 fusion peptides uncovered by neutron scattering  
Review: bioRxiv  
Publisher: Cold Spring Harbor Laboratory  
The understanding of the infection mechanisms by SARS-CoV-2 is of utmost importance. A critical stage in infection is the fusion between viral and host membranes. Here, we present an investigation of the role of the Spike protein, and the influence of calcium, in this fusion process. Structural information from neutron reflectometry and small-angle neutron scattering, together with quasi-elastic and spin-echo neutron spectroscopy, revealed different functions encoded in the Spike fusion domain.  
[www.biorxiv.org/content/10.1101/2021.08.30.4580...](http://www.biorxiv.org/content/10.1101/2021.08.30.4580...)

### JOURNAL ARTICLES

2021

**Alessandra Luchini, Samantha Micciulla, Giacomo Corucci, Krishna Chaithanya Batchu, Andreas Santamaria, Valerie Laux, Tamim Darwish, Robert A Russel, Michel Thepaut, Isabelle Bally, Franck Fieschi, Giovanna Fragneto**, Lipid Bilayer Degradation Induced by SARS-CoV-2 Spike Protein as Revealed by Neutron Reflectometry  
Review: Research Square  
SARS-CoV-2 spike proteins are responsible for the membrane fusion event, allowing the viral infection. This process starts with the binding of the spike extramembrane domain to the angiotensin-converting enzyme 2 (ACE2), a membrane receptor highly abundant in the lungs. In this study, results from neutron reflectometry and quartz crystal microbalance measurements showed that the presence of the SARS-CoV-2 spike protein produced a remarkable degradation of the lipid bilayer.  
[assets.researchsquare.com/files/rs-531349/v1\\_cov...](https://assets.researchsquare.com/files/rs-531349/v1_cov...)

**Javier Carrascosa-Tejedor, Andreas Santamaria, Daniel Pereira, Armando Maestro**, Structure of DPPC Monolayers at the Air/Buffer Interface: A Neutron Reflectometry and Ellipsometry Study  
Review: Coatings  
Publisher: MDPI  
Langmuir monolayers of DPPC are extensively used as model systems of biomembranes and pulmonary surfactant. Here, we report structural information obtained by using NR and ellipsometry on DPPC monolayers in the liquid condensed phase. On one side, NR can resolve the thickness of the aliphatic tails and the degree of hydration of the polar headgroups. On the other side, ellipsometry gives information on the refractive index and on the physical state of the monolayer  
[www.mdpi.com/2079-6412/10/6/507/htm](http://www.mdpi.com/2079-6412/10/6/507/htm)



## ATTACHMENTS

### **Lipid Bilayer Degradation Induced by SARS-CoV-2 Spike Protein as Revealed by Neutron Reflectometry**

SARS-CoV-2 spike proteins are responsible for the membrane fusion event, allowing the viral infection. This process starts with the binding of the spike extramembrane domain to the angiotensin-converting enzyme 2 (ACE2), a membrane receptor highly abundant in the lungs. In this study, results from neutron reflectometry and quartz crystal microbalance measurements showed that the presence of the SARS-CoV-2 spike protein produced a remarkable degradation of the lipid bilayer.  
[assets.researchsquare.com/files/rs-531349/v1\\_cov...](https://assets.researchsquare.com/files/rs-531349/v1_cov...)

### **Strikingly different roles of SARS-CoV-2 fusion peptides uncovered by neutron scattering**

The understanding of the infection mechanisms by SARS-CoV-2 is of utmost importance. A critical stage in infection is the fusion between viral and host membranes. Here, we present an investigation of the role of the Spike protein, and the influence of calcium, in this fusion process. Structural information from neutron reflectometry and small-angle neutron scattering, together with quasi-elastic and spin-echo neutron spectroscopy, revealed different functions encoded in the Spike fusion domain.  
[www.biorxiv.org/content/10.1101/2021.08.30.4580...](http://www.biorxiv.org/content/10.1101/2021.08.30.4580...)

### **Structural and functional analysis of the simultaneous binding of two duplex/quadruplex aptamers to human -thrombin**

The long-range communication between the two exosites of human -thrombin (thrombin) tightly modulates the protein-effector interactions. Duplex/quadruplex aptamers represent an emerging class of very effective binders of thrombin. Among them, NU172 and HD22 aptamers are at the forefront of exosite I and II recognition, respectively. The present study investigates the simultaneous binding of these two aptamers by combining a structural and dynamics approach.  
[www.sciencedirect.com/science/article/abs/pii/S01...](http://www.sciencedirect.com/science/article/abs/pii/S01...)

### **Structure of DPPC Monolayers at the Air/Buffer Interface: A Neutron Reflectometry and Ellipsometry Study**

Langmuir monolayers of DPPC are extensively used as model systems of biomembranes and pulmonary surfactant. Here, we report structural information obtained by using NR and ellipsometry on DPPC monolayers in the liquid condensed phase. On one side, NR can resolve the thickness of the aliphatic tails and the degree of hydration of the polar headgroups. On the other side, ellipsometry gives information on the refractive index and on the physical state of the monolayer  
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