

LUIGI D'ASCENZO, PH.D.

Citizenship: Italian

Birth: 3 April 1988 - Termoli (Italy)

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Research interests

Nucleic acids, RNA, structural biochemistry, mass spectrometry, data mining, computational techniques, molecular dynamics, informatics tools development, molecular biology, chemical biology, chemistry, machine learning

Education

- 2013–2016 **PhD.** *Atomic-scale investigation of recognition networks in RNA and RNA/protein systems.* **PhD supervisor:** Dr Pascal Auffinger. Institut de Biologie Moléculaire et Cellulaire (IBMC) “[Architecture et réactivité de l'ARN](#)” – Prof. Eric Westhof's group, University of Strasbourg, France.
Thesis committee: Prof. Neocles Leontis, Prof. Eric Westhof, Prof. Giovanni Bussi and Dr Albert Weixlbaumer.
- 2011–2013 **Master's Degree in Chemistry and Biology** (2 years)
University of Strasbourg, (France)
Mention: “*Très Bien*” (First class honor).
- First internship** (3 months). *Protonation of nucleic acid base pairs.*
Supervisor: Dr Pascal Auffinger. [IBMC \(CNRS\)](#), Strasbourg (France).
- Second internship** (7 months). *Study of anion- π interactions in nucleic acids.* **Supervisor:** Dr Pascal Auffinger. [IBMC \(CNRS\)](#), Strasbourg (France).
- 2007–2011 **Bachelor's Degree in Chemistry** (3 years)
[Tor Vergata University](#), Rome (Italy)
Final degree mark: 110/110 *cum laude*.
Thesis (3 months in organic chemistry lab). *Study of the synthesis reaction of polycyclic quinones.* **Supervisors:** Prof. Barbara Floris and Dr Pierluca Galloni.

Scientific Experience

- Apr 2017–present **Postdoctoral Research Associate**, [The Scripps Research Institute](#) – [Department of Integrative Structural and Computational Biology](#), La Jolla, CA (USA) – Prof. [James Williamson](#) group. Research goals: *molecular movie of ribosome biogenesis, Mass Spectrometry of ribosomal RNA modifications, Proteomics analysis of bacteria*
- Nov–Dec 2016 **Research Assistant** (2 months). [IBMC \(CNRS\)](#), Strasbourg (France) - Dr [Eric Ennifar](#) group. Tasks: *analysis of RNA folding motifs and metal coordination to nucleic acids.*
- Jun 2015 **Visiting PhD** (2 weeks). Bowling Green State University (USA) - Dr [Neocles Leontis](#) group. Topic: *nucleic acid/nucleic acid and nucleic acid/protein interactions.*
- Aug 2014 **International Summer School** (3 days). Purdue University (USA) for [ACLS International Summer School 2014](#) organized by ACLS, Tokyo Institute of Technology (Japan). Theme: *Protein structure and functions.*

- Jun–Jul 2012 **Internship** (2 months). *Development of a website for structural analysis of nucleic acids*. **Supervisor:** Dr Pascal Auffinger. [IBMC \(CNRS\) “Architecture et réactivité de l’ARN”](#), Strasbourg (France).
- Jul–Aug 2006 **Physics Summer school** (5 weeks). Princeton University (USA) for the project *Gran Sasso – Princeton physics summer school*.
- Jul 2006 **Internship** (2 weeks). *Analytical chemistry and proteomics of blood samples* Cattolica University of Campobasso (Italy).

Peer reviewed publications

D’Ascenzo L., Leonarski F., Vicens Q. and Auffinger P. (2017) *Revisiting GNRA and UNCG folds: U-turns versus Z-turns in RNA hairpin loops*. **RNA**, 23, 259–69 ([PubMed](#)).

Leonarski F., D’Ascenzo L., and Auffinger P. (2017) *Mg²⁺ ions: do they bind to nucleobase nitrogens?* **Nucleic Acids Res.**, 45, 987-1004 ([PubMed](#)).

D’Ascenzo L., Leonarski F., Vicens Q. and Auffinger P. (2016) *“Z-DNA like” fragments in RNA: a novel structural motif with implications for folding and RNA/protein recognition and immunology*. **Nucleic Acids Res.**, 44, 5944-56 ([PubMed](#)).

Leonarski F., D’Ascenzo L. and Auffinger P. (2016) *Binding of metals to purine N7 nitrogen atoms and implications for nucleic acids: a CSD survey*. **Inorg. Chim. Acta**, 452, 82-9 ([Link](#)).

D’Ascenzo L. and Auffinger P. (2015) *A comprehensive classification and nomenclature of carboxyl-carboxyl(ate) supramolecular motifs and related catemers: implications for biomolecular systems*. **Acta Cryst.**, B71, 164-75 ([PubMed](#)).

Book chapters

D’Ascenzo L. and Auffinger P. (2016) *Anions in nucleic acid crystallography*. **Methods Mol. Biol.**, 1320, 337-51 ([PubMed](#)).

Auffinger P., D’Ascenzo L., and Ennifar E. (2016) *Sodium and potassium interactions with nucleic acids*. **Met. Ions Life Sci.**, 16, 167-201 ([PubMed](#)).

Papers in redaction

D’Ascenzo L., Leonarski F. and Auffinger P. *Cation- π versus anion- π interactions – biomolecules can’t have both*.

D’Ascenzo L., Vicens Q. and Auffinger P. *Z-turn receptors for UUCG and GAAA tetraloops in ribosomes*.

Leonarski F., D’Ascenzo L., and Auffinger P. *Nucleobases are poor Mg²⁺ binders*.

Oral presentations/Seminars

20 Sep 2017 D’Ascenzo L. – *Ribosome biogenesis “molecular movie”: a novel integrative structural tool* – The Scripps Research Institute Society of Fellows, Lightning talk competition. TSRI. **La Jolla (CA), USA**.

16 Oct 2016 D’Ascenzo L. – *How can atomic-scale analysis of RNA motifs help structure prediction?* – [1st RNA Puzzle meeting](#). IBMC. **Strasbourg, France**.

4 Jul 2016 D’Ascenzo L. – *How does environment affect stacking interactions and RNA motifs?* – [Theoretical Molecular Science Laboratory](#), RIKEN. **Wako, Japan**.

- 29 Jun 2016 [D'Ascenzo L.](#), Leonarski F., Vicens Q. and Auffinger P. – “Z-DNA like” fragments in RNA: implications for folding, protein recognition and immunology response – [RNA 2016: 21st RNA Society Meeting](#). **Kyoto, Japan.**
- 7 May 2015 [D'Ascenzo L.](#) – “Rare” noncovalent interactions in RNA recognition networks – PhD mid-term presentation, IBMC. **Strasbourg, France.**
- 3 Dec 2013 [D'Ascenzo L.](#) – Study of biomolecular recognition networks for RNA and RNA/Protein systems at the atomic scale – IBMC seminar. **Strasbourg, France.**

Posters

- 28 Jun – 2 Jul 2016 [D'Ascenzo L.](#), Leonarski F., Vicens Q. and Auffinger P. – Only two folds for tetraloops – [RNA 2016: 21st RNA Society Meeting](#). **Kyoto, Japan.**
- 9–13 June 2015 [D'Ascenzo L.](#) and Auffinger P. – Ion- π interactions in biomolecular systems – [19th Conversation](#). **Albany, New York (USA).**
- 9–13 June 2015 Sydow D., Leonarski F., [D'Ascenzo L.](#) and Auffinger P. – Stabilization effects induced by modified nucleotides in tRNA T-loop motifs – [19th Conversation](#). **Albany, New York (USA).**
- 10–13 May 2015 [D'Ascenzo L.](#) and Auffinger P. – Carboxyl-carboxyl(ate) interaction modes in the CSD: structural aspects and biomolecular implications – [Multi-Pole approach for Structural Science](#). **Warsaw, Poland.**
- 19–20 Jan 2015 [D'Ascenzo L.](#) and Auffinger P. – From carboxyl-carboxyl(ate) supramolecular motifs to complex biomolecular systems – [Chemical complexity and Biology](#). **Illkirch, France.**
- 20–22 Nov 2014 [D'Ascenzo L.](#) and Auffinger P. – Electron density misattributions in RNA crystallographic structures – [Joint meeting LabEx MitoCross NetRNA](#). **Bischenberg, France.**
- 7–10 Sep 2014 [D'Ascenzo L.](#) and Auffinger P. – Electrostatic potential dissimilarities between aromatic amino acids and nucleobases lead to anion- π stacking in nucleic acids – [ECCB'14](#). **Strasbourg, France.**
- 30 Aug – 4 Sep 2014 [D'Ascenzo L.](#) and Auffinger P. – Neutral and anionic forms of aspartic and glutamic acid interacting with RNA and DNA nucleotides – [FEBS-EMBO Meeting](#). **Paris, France.**
- 24–28 Aug 2014 [D'Ascenzo L.](#) and Auffinger P. – Electron density misattributions in RNA crystallographic structures: Mg²⁺ or anions in ribozymes? – [12th European Biological Inorganic Chemistry Conference](#). **Zurich, Switzerland.**
- 14–16 Aug 2014 [D'Ascenzo L.](#) and Auffinger P. – Differences in ion stacking properties of protein and nucleic acid aromatic groups – [ACLS International Summer School](#). **West Lafayette, Indiana (USA).**
- 3–8 Jun 2014 [D'Ascenzo L.](#) and [Auffinger P.](#) – Asp/Glu residues interacting with electronegative hydrogen bond acceptors in RNA – What sorcery is that? – [19th RNA Society Meeting](#). **Québec City, Canada.**
- 18–20 Nov 2013 Auffinger P. and [D'Ascenzo L.](#) – Anion- π interactions in nucleic acids – [9th SifrARN Meeting](#). **Bischenberg, France.**
- 11–16 Jun 2013 [Auffinger P.](#) and [D'Ascenzo L.](#) – Anion- π or cation- π interactions in nucleic acids? – [18th RNA Society Meeting](#). **Davos, Switzerland.**

Workshops

- 4-7 Nov 2015 *The attentive brain, the deluded brain – what is reality?* ([Workshop page](#)) - **Mittelwihr, France.**

5-7 Oct 2015

Effective writing course (Doctoral school training) – **Strasbourg, France.**

Language skills

Italian	Native Language
English	Writing/Speaking/Listening Fluent/Fluent/Fluent Certification: Test of English for International Communication (TOEIC) Overall Score: 985/990, C1 level of CECR Date: 28/05/2015 Certification: International English Language Testing System (IELTS) Overall Score: 7.0, C1 level of CECR Date: 09/01/2013
French	Writing/Speaking/Listening Very Good/Fluent/Fluent Certification: Test de connaissance du français (French knowledge test) Date: 17/06/2011

Computer skills

Programming	Python, HTML, SQL, Shell Script, MATLAB, Octave
Operating Systems	Linux, Microsoft Windows
Software	Amber, PyMOL, Chimera, MySQL

Affiliations

2016–Present	The RNA Society
2015–Present	AAAS (American Association for the Advancement of Science)
2014–2016	SBIC (Society of Biological Inorganic Chemistry)
2013–2016	SFBBM (Société Française de Biochimie et Biologie Moléculaire – Biochemical and Molecular Biology French Society)

Prizes and awards

<i>Thesis prize</i>	Jun 2017 – attributed by SAUAS (Society of friends of the Strasbourg University Academy)
<i>“Article du mois” (Article of the month)</i>	Aug 2016 – attributed by SFBBM (Biochemical and Molecular Biology French Society) for the paper “ <i>Z-DNA like</i> ” fragments in RNA: a novel structural motif with implications for folding and RNA/protein recognition and immunology. Nucleic Acid Res. , 44, 5944-56
<i>Travel Grant “Jean-Pierre EBEL”</i>	2016 – attributed by SFBBM (Biochemical and Molecular Biology French Society)
<i>Selected Poster for Flash Oral presentation</i>	12 th European Biological Inorganic Chemistry Conference – August 27, 2014 – Zurich, Switzerland.
<i>Best Research Award (Protein Structure)</i>	ACLS International Summer School 2014 – August 16, 2014 – Purdue University. West Lafayette, Indiana (USA).