

CURRICULUM VITAE of PROF. CRISTINA PRANDI

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Education

Cristina Prandi was born in Bellinzago Nov. on October 4th, 1965. She graduated with full marks in Biological Science at the University of Turin on November 1988 with a thesis in organic chemistry entitled "2-Substituted 1,3-Benzodithiolium Tetrafluoroborates as Useful Acylating Agents of Pyrrole". Since November 1990 qualified in the profession of Biologist. In 1993 she took the title of PhD in Biotechnology with a thesis entitled "Characterization of polysaccharides extruded by fungi".

Career

On 1st July 1993 she became permanent researcher at the University of Turin, campus of Alessandria, since 1998 University of Piemonte Orientale. In 2005 she moved to the University of Turin, Department of Applied Organic Chemistry.

In 2006 she was appointed Associate Professor in Organic Chemistry at the University of Turin.

In 2017 she was appointed Full Professor in Organic Chemistry at the University of Turin.

Projects and consultancy activity

Her research topics have obtained several regional, national and international financing.

From 2009-2012 she was Head of the Chemistry Research Unit in the Bando Regionale Cipe 2007-Title BioBITS - Developing White and Green Biotechnologies by Converging Platforms from Biology and Information Technology towards Metagenomics, 3 million euros. (Chemistry Unit, 300.000 euros)

From 12-04-2014 to date Cost Action FA1206 Strigolactones: biological roles and applications, Chair and Grant Holder of the Action, http://www.cost.eu/COST_Actions/fa/FA1206, www.stream.unito.it.

From 2014-2016 Compagnia di San Paolo, SLEPS-Signaling role of Strigolactones at the interface between plants, microorganisms and a changing environment, (PI for the Chemistry Unit, 300.000 euros)

From 2015-2017 Compagnia di San Paolo CALL: ADDRESSING HORIZON 2020-Stritools, (PI for the Chemistry Unit, 100.000 euros).

She received a Grant from the Dragon STAR Association (Sustaining Technology and Research) EU-Collaboration and participated in 2nd EU-China Modern Agriculture Seminar, Chengdu October 21-23, 2014 dal 21-10-2014 al 23-10-2014 (5000 euros)

She is part of the project founded by Cassa di Risparmio di Torino entitled Carbon dioxide, from problem to opportunity: electrocatalytic and photocatalytic CO₂ reduction for a sustainable economy. 2017-2019

She is PI of the project founded by Cassa di Risparmio di Torino entitled BioPom. 2018-2020.

She is WG leader of the project DEMETRE, financed by MANUNET funding scheme, 2017-2020.

She has established collaborations and agreements with Syngenta Crop Protection AG (Switzerland) and Copia Ag & Food (Israel). In 2013 with colleagues of the University of Turin, she founded an academic start-up named Strigolab srl, whose mission is to synthesize and commercialize phytohormones and to produce natural extracts as biostimulants. Presently, she is scientific advisor of the company. In 2013 the company

won the award for innovation in the competition "Made in Research" (MIR). Strigolab is partner of the Eu Project TOM-RES (coordinator University of Turin).

Professional Society Membership:

She is member of the Italian Chemical Society (SCI), of the European Plant Science Organization (EPSO), of the Parasitic Plant Society.

Congress organization and attending

She is member of the Scientific Advisory Board of the International Congress of Strigolactones (ICS) since 2015, in 2017 she was Chair of the 2nd Edition of the ICS (International Congress of Strigolactones).

She was invited speakers in more than 20 national and international meetings and keynote speakers. She was session chairwoman in 25 meetings. She gave more than 70 oral communications in national and international meetings. She has also been invited to give seminars at the IRCOFF-CNRS institute of Rouen and at the University of Caen, France (2004-2005), at the Palacky University Olomouc, Czech Republic (2012), ARO Volcani Center-Bet Degan Israel (2012-17), at the Academy of Science, Budapest (2015), at the Spanish National Center for Biotechnology, Madrid CNB (2015), at Syngenta-Research Center, Stein Switzerland (2016 and 2017). CNRS Institut de Chimie des Substances Naturelles: Gif-sur-Yvette, Île-de-France, France (2018).

Editing and reviewing activity

She was editor of the topical collection: Strigolactones (13 articles), Planta, Springer, 2016, and of a Special Issue on Strigolactones on the Journal of Experimental Botany, Wiley 2017 (collecting 9 review articles and 20 research papers).

Over the years, she acted as a reviewer for the following journals of the *American Chemical Society*, *Royal Society of Chemistry*, *Elsevier*, *Wiley*, *Springer* and *Oxford Press* as *Journal of Organic Chemistry*, *Organic Letters*, *Journal of Natural Products*, *Organic & Biomolecular Chemistry*, *Tetrahedron Letters*, *Synthesis*, *Synlett*, *Dyes and Pigments*, *Chemistry an European Journal*, *European Journal of Organic Chemistry*, *Molecular Plant*, *Journal of Experimental Biology*.

Cristina Prandi acts as evaluator of research proposal for national (Regione Piemonte, MIUR) and international (Kaust, AgreenSkill, Cost Association) agencies.

Publications

She is coauthor of more than 100 scientific publications (1638 citations h-index 23, Scopus), (1849 citations, h-index 25 Google Scholar), data May 2019.

Visiting activity

She was also visiting scientist at the IRCOFF CNRS institute of Rouen (FR) in 2004-2005. Since 2012 she is visiting scientists at the ARO (Agricultural Research Organization) Volcani Center (IL) where she still pays short term visits twice a year.

Collaborations

Prof. Cristina Prandi is involved in many collaborations with Universities and Research Center at national and international level. More in detail: Prof. Hinanit Koltai e Prof. Yoram Kapulnik (ARO Volcani Center, HaMaccabim Road, Rishon LeTsiyon Israel, where every year she is hosted as visiting scientist), Prof. Binne Zwanenburg Dept of Organic Chemistry, Nijmegen, The Netherlands. Prof. Francois-Didier Boyer Institut de Chimie des Substances Naturelles, CNRS Département de Chemical Biology Sondes et Modulateurs pour Cibles Biologiques, Gif-sur-Yvette, Dr. Ronit Yarden George Town University, Washington, USA, Prof. Yukihiko SUGIMOTO Graduate School of Agricultural Science, Kobe University, Japan, Dr. Rosario Núñez Tenured Scientist ICMAB-CSIC Campus de la UAB 08193-Bellaterra.

In particular, she states that she is involved in the here below cited activities

Research Activities and Publications

The research activities and scientific commitments of the candidate have evolved over the years in the direction of progressive scientific autonomy, while remaining strictly consistent with the disciplinary field. The research started with a biennial thesis on organic chemistry that involved the synthesis and use of benzoxathiool and benzodiazole salts in organic synthesis. During her PhD studies, she worked on the production of chitosan from fungal biomass, the characterization of polysaccharides thus obtained by spectroscopic techniques, solid state NMR and HPLC-MS. In 1993, following the successful outcome of the research contest, the candidate came close to organic synthesis by developing research topics related to organometallic synthesis, catalyzed transition metal reactions, functionalization of heterogeneous systems as key intermediates in natural product synthesis, synthesis of natural products and their applications in sustainable agriculture and as antitumor agents.

More in detail, the research lines have developed, chronologically, according to these themes:

- a) *Organometallic synthesis*: synthesis of conjugated unsaturated systems. The study deals with the use of Li /K Mixed organic bases whose peculiarity is to associate a high basic strength with low nucleophilic power, thus allowing products to be obtained with high chemoselectivity. By using α , β -unsaturated acetal as a substrate, it is possible to obtain high-stereoselective alkoxydiene systems. The further metallation of the α -vinyl position enables the substrate to be functionalized with various types of electrophiles. Finally, a mere hydrolysis reaction under mild conditions leads to the restoration of the initial carbonyl function. From a general point of view, the entire synthetic sequence corresponds to the principle of "umpolung" or reversal reactivity. This type of approach is proposed as a complementary methodology to classical organic chemistry, for which it is possible to achieve the synthesis of a substrate in which ultimately an electron-carbonyl C carbonyl reacted with an electrophilic species as well. More recently her interest move towards the reactivity of organometallic reagents in unconventional green solvents.
- b) *Palladium-catalyzed coupling reactions*. Cross-coupling reactions have been applied by the candidate to the functionalization of heterocyclic systems. Triflate and phosphate derivatives of lactones, thiolactones or lactams have been used as coupling partners in palladium-catalyzed reactions with vinyl, dienyl, aryl, alkylboronates. Acyl functions have been introduced by carbonylative couplings.
- c) *Synthesis of fused bicyclic heterogeneous systems by Nazarov cyclization*. The synthetic strategy outlined in b) allows access to divinyl ketones: the latter can easily undergo a Nazarov electrocyclic reaction and form pentacyclic systems. The candidate studied in depth the reactivity and the diastereo-selectivity of the reaction.
- d) *Synthesis of molecules of biological interest*. The candidate has been dealing with the synthesis of plant hormones known as Strigolactones as well as their structural derivatives since 2011. Extensive activity-structure relationship (SAR) studies have allowed to extend the applications of these interesting molecules both in the agricultural and biomedical fields. In this area, the candidate has established intense international scientific collaborations, as well as links to industries in the agrochemical sector.

List of Publications (25 selected publications, highlighted where main author or corresponding author)

H. Koltai and **C. Prandi**, *Strigolactones-Biology and Applications*, Springer, **2019**.

C. Prandi and C. S. P. McErlean, in *Strigolactones - Biology and Applications*, eds. H. Koltai and C. Prandi, Springer International Publishing, Cham, **2019**, pp. 163-198.

C. Prandi and E. G. Occhiato, *Pest management science*, **2019**.

Prandi, C.; Sanchez, E.; Artuso, E.; Lombardi, C.; Visentin, I.; Lace, B.; Saeed, W.; Lolli, M.L.; Kobauri, P.; Ali, Z.; Spyrakis, F., *et al.* Structure-activity relationships of strigolactones via a novel, quantitative in planta bioassay. *Journal of Experimental Botany* **2018**, *69*, 2333-2343.

Prandi, C.; Parisotto, S.; Palagi, L.; Prandi, C.; Deagostino, A. Cooperative iodide pd(0)-catalysed coupling of alkoxyallenes and n-tosylhydrazones: A selective synthesis of conjugated and skipped dienes. *Chemistry - A European Journal* **2018**, *24*, 5484-5488.

Barbero, M.; Artuso, E.; **Prandi, C.** Fungal anticancer metabolites: Synthesis towards drug discovery. *Current Medicinal Chemistry* **2018**, *25*, 141-185.

Carlsson, G.H.; Hasse, D.; Cardinale, F.; **Prandi, C.**; Andersson, I. The elusive ligand complexes of the dwarf14 strigolactone receptor. *Journal of Experimental Botany* **2018**, *69*, 2345-2354.

C. Lombardi, E. Artuso, E. Grandi, M. Lolli, F. Spirakys, E. Priola, **C. Prandi**, *Organic & Biomolecular Chemistry* **2017**, *15*, 8218-8231. (IF: 3.564, corresponding author, cit. 0 Scopus, cit. 1 WOS).

S. Parisotto, B. Lace, E. Artuso, C. Lombardi, A. Deagostino, R. Scudu, C. Garino, C. Medana, **C. Prandi**, *Organic & Biomolecular Chemistry* **2017**, *15*, 884-893. (IF: 3.564, corresponding author, cit. 3 Scopus, cit. 3 WOS).

Lace, B.; **Prandi, C.**, Shaping Small Bioactive Molecules to Untangle Their Biological Function: A Focus on Fluorescent Plant Hormones. *Molecular Plant* **2016**, *9* (8), 1099-1118. (IF: 8.827, corresponding author, cit. 1 Scopus, cit. 1 WOS).

E. Artuso, E. Ghibaudi, B. Lace, D. Marabello, D. Vinciguerra, C. Lombardi, H. Koltai, Y. Kapulnik, M. Novero, E. G. Occhiato, D. Scarpi, S. Parisotto, A. Deagostino, P. Venturello, E. Mayzlish-Gati, A. Bier, **C. Prandi**, *Journal of Natural Products* **2015**, *78*, 2624-2633. (IF: 3.281, corresponding author, cit. 8 Scopus, cit. 8 WOS).

C. Prandi, G. Ghigo, E. G. Occhiato, D. Scarpi, S. Begliomini, B. Lace, G. Alberto, E. Artuso, M. Blangetti, *Organic & Biomolecular Chemistry* **2014**, *12*, 2960-2968. (IF: 3.564, corresponding author, cit. 7 Scopus, cit. 8 WOS).

C. Prandi, H. Rosso, B. Lace, E. G. Occhiato, A. Oppedisano, S. Tabasso, G. Alberto, M. Blangetti, *Molecular Plant* **2013**, *6*, 113-127. (IF: 8.827, corresponding author, cit. 15 Scopus, cit. 18 WOS).

Oppedisano, C. Prandi, P. Venturello, A. Deagostino, G. Goti, D. Scarpi, E. G. Occhiato, *Journal of Organic Chemistry* **2013**, *78*, 11007-11016. (IF: 4.849, cit. 14 Scopus, cit. 14 WOS).

M. Blangetti, H. Rosso, **C. Prandi**, A. Deagostino, P. Venturello, *Molecules* **2013**, *18*, 1188-1213. (IF: 2.681, corresponding author, cit. 56 Scopus, cit. 55 WOS)

C. Prandi, E. G. Occhiato, S. Tabasso, P. Bonfante, M. Novero, D. Scarpi, M. E. Bova, I. Miletto, *European Journal of Organic Chemistry* **2011**, 3781-3793. (IF: 2.834, cit. 41 Scopus, cit. 41 WOS)

M. De Paolis, H. Rosso, M. Henrot, C. Prandi, F. d'Herouville, J. Maddaluno, *Chemistry-a European Journal* **2010**, *16*, 11229-11232. (IF: 5.317, cit. 10 Scopus, cit. 8 WOS)

M. Blangetti, A. Deagostino, **C. Prandi**, S. Tabasso, P. Venturello, *Organic Letters* **2009**, *11*, 3914-3917. (IF: 5.582, corresponding author, cit. 16 Scopus, cit. 16 WOS)

C. Bhattacharya, P. Bonfante, A. Deagostino, Y. Kapulnik, P. Larini, E. G. Occhiato, **C. Prandi**, P. Venturello, *Organic & Biomolecular Chemistry* **2009**, *7*, 3413-3420. (IF: 3.564, corresponding author, cit. 43 Scopus, cit. 41 WOS).

Deagostino, P. Larini, E. G. Occhiato, L. Pizzuto, C. Prandi, P. Venturello, *Journal of Organic Chemistry* **2008**, *73*, 1941-1945. (IF: 4.849, cit. 35 Scopus, cit. 36 WOS)

Cavalli, A. Pacetti, M. Recanatini, C. Prandi, D. Scarpi, E. G. Occhiato, *Chemistry-a European Journal* **2008**, *14*, 9292-9304. (IF: 2.834, cit. 18 Scopus, cit. 20 WOS)

M. Blangetti, A. Deagostino, **C. Prandi**, C. Zavattaro, P. Venturello, *Chemical Communications* **2008**, 1689-1691. (IF: 6.319, corresponding author cit. 17 Scopus, cit. 17 WOS)

A. Deagostino, V. Farina, C. Prandi, C. Zavattaro, P. Venturello, *European Journal of Organic Chemistry* **2006**, 3451-3456. (IF: 2.834, cit. 31 Scopus, cit. 12 WOS)

A. Cavalli, M. Masetti, M. Recanatini, C. Prandi, A. Guarna, E. G. Occhiato, *Chemistry-a European Journal* **2006**, *12*, 2836-2845. (IF: 2.834, cit. 32 Scopus, cit. 30 WOS)

C. Prandi, A. Deagostino, P. Venturello, E. G. Occhiato, *Organic Letters* **2005**, *7*, 4345-4348. (IF: 5.424, corresponding author, cit. 33 Scopus, cit. 32 WOS)

E. G. Occhiato, C. Prandi, A. Ferrali, A. Guarna, *Journal of Organic Chemistry* **2005**, *70*, 4542-4545. (IF: 4.849, cit. 45 Scopus, cit. 45 WOS)

C. Prandi, A. Ferrali, A. Guarna, P. Venturello, E. G. Occhiato, *Journal of Organic Chemistry* **2004**, *69*, 7705-7709. (IF: 4.849, cit. 42 Scopus, cit. 41 WOS)

E. G. Occhiato, **C. Prandi**, A. Ferrali, A. Guarna, P. Venturello, *Journal of Organic Chemistry* **2003**, *68*, 9728-9741. (IF: 4.849, corresponding author, cit. 68 Scopus, cit. 62 WOS)

E. G. Occhiato, **C. Prandi**, A. Ferrali, A. Guarna, A. Deagostino, P. Venturello, *Journal of Organic Chemistry* **2002**, 67, 7144-7146. (IF: 4.849, corresponding author, cit. 29 Scopus, cit. 28 WOS)
P. B. Tivola, A. Deagostino, C. Prandi, P. Venturello, *Organic Letters* **2002**, 4, 1275-1277. (IF: 5.582, cit. 38 Scopus, cit. 32 WOS)
C. Prandi, P. Venturello, *Journal of Organic Chemistry* **1994**, 59, 5458-5462. (IF: 4.849, cit. 21 Scopus, cit. 22 WOS)
C. Prandi, P. Venturello, *Journal of Organic Chemistry* **1994**, 59, 3494-3496. (IF: 4.849, cit. 25 Scopus, cit. 23 WOS)

List of Patents

Patent 1. Cristina Prandi, Silvia Tabasso, Ernesto Occhiato, Maria Elena Bova, Paola Bonfante, Mara Novero (2011). Sintesi di analoghi strutturali di strigolattoni per applicazioni industriali nella lotta a piante infestanti. TO2011A000454, Cristina Prandi, Ernesto Occhiato dal 24-05-2011 a oggi.

Patent 2. Yoram Kapulnik, Hinanit Koltai, Ronit Yarden, Cristina Prandi (2011). Growth inhibition of human cancer cells and cancer treatment with natural and synthetic strigolactones analogues. US 61/537,062, USA dal 21-09-2011 a oggi.

Patent 3. Hinanit Koltai, Cristina Prandi, Ronit Yarden, Yoram Kapulnik (2012). Use Of Strigolactones And Strigolactone Analogs For Treating Proliferative Conditions. 30113-WO-12, ARO Volcani Center, George Town University dal 28-03-2013 a oggi.

Teaching activity

In more than twenty years of teaching activity she has taken numerous courses of Organic Chemistry, for the Bachelor Degrees in Chemistry, Biology, Natural Sciences, Environmental Science, Industrial Chemistry at the University of East Piedmont, Turin, campus of Verbania, Rouen (FR). Tutor of many Ph.D students. Examiner of PhD thesis of the University of Florence. Opponent of PhD thesis at the University of Rouen and Florence.

Prof. Cristina Prandi has carried out an intense teaching activity as a holder of Organic Chemistry courses over the years, with a degree of satisfaction from the students in the excellent band (edumeter data, attached documents for the last three academics years) for the courses of the Bachelor Degree and those of the Master Degree.

She did the following didactic activity at the University of Eastern Piedmont.

Starting at 1997/98 aa (and for the following 98/99, 99/00, 00/01, 01/02) she has been the holder of the Organic Chemistry Laboratory I Course for the Bachelor Degree Course in Chemistry.

Starting at 1998/99 (and for the subsequent 99/00, 00/01, 02/03 and 03/04) she has been the holder of the Organic Chemistry I course for the Degree Course in Chemistry and Biological Sciences.

In the academic year 2002/03 she has been the holder of the Organic Chemistry II Laboratory Course for the Chemical Degree Course.

Starting at 1996-97 and up to 01/02 has also held lessons for the Organic Chemistry Course II.

She did the following didactic activity at the University of Turin

From 2006 to 2016 she held the Organic Chemistry Course for the Degree in Biological Sciences (6 CFUs) at the University of Turin.

From 2011 to the present she has held the Course of Organic Chemistry I for the Degree in Chemistry and Chemical Technologies (10 CFU).

From 2011 to today she has been organizing the Course "New Trend in Organic Chemistry" for the Master's Degree Course in Chemistry (3 CFUs)

Since 2016 she has held the Course of Synthesis and Mechanism in Organic Chemistry (8 CFUs).

She has a third level teaching activity in the PhD courses in Applied Biology and Biotechnology and in Chemistry and Materials at the University of Turin.

Since 2006 she has mentored more than 45 bachelor thesis theses, more than 25 Master's degrees and 6 PhD theses, one co-tuted with the University of Rouen (FR).

Supervisor of the following PhD students:

Chiara Zavattaro, XXI Cycle, Chemical Sciences

Marco Blangetti, XXII Cycle, Chemical Sciences

Hélène Rosso, XXIII Cycle, Chemical Sciences co-tutor with the University of Rouen.

Paolo Larini, XXIV Cycle, Biological Sciences and Applied Biotechnologies.

Beatrice Lace, XXVII Cycle, Biological Sciences and Applied Biotechnologies.

Chiara Lombardi, XXX Cycle, Biological Sciences and Applied Biotechnologies.

Stefano Nejrotti, XXXII Cycle, Chemical Sciences

The candidate has been the Scientific Manager of numerous research grants and research grants related to public and private funding.

Institutional, Organizational and Sector Activities at the University

in a.a. 2001-2002 was a member of the integrated Academic Senate and participated in the work for the drafting of the Statute of the University of Eastern Piedmont.

since 2007 she has been a member of the PhD school of Biology and Applied Biotechnology.

from 2013 to 2016 she was the President of the Master of Science in Chemistry at the university of Torino.

from 2013-2016 she was responsible for the commission for European projects for the department of chemistry.

from 2013-2016 she was chairwoman of the Erasmus Commission for the Department of Chemistry.

since 2016, she is a representative for the University of Torino in the National Cluster of Green Chemistry.

Since 2015 she is deputy-director for Research at the Department of Chemistry at the University of Turin.

In 2019 she was appointed representative of the Turin University in the PNR (Piano Nazionale della Ricerca) for Green Technologies.