

**CURRICULUM VITAE**  
EUROPEAN FORMAT**PERSONAL INFORMATION**

Name, Surname	Giuseppina Rea
Work address	Institute of Crystallography, National Research Council of Italy Department of Chemical Sciences and Materials Technologies Via Salaria km 29.300, 00015 Monterotondo, Rome, Italy
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Sex	Female
Nationality	Italian
Place and Date of birth	Rome, July 23, 1969
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Researcher ID	B-9479-2015

**WORK EXPERIENCE**

2020-present	Senior researcher, Institute of Crystallography, CNR
2001-2020	Researcher, Permanent position, Institute of Crystallography, CNR
2000-2001	Post-Doc fellow, Dept. of Biology, University Roma Tre, Rome

**EDUCATION AND TRAINING**

1996-2000.	PhD in Biology, University Roma Tre, Rome
1995-1996	<i>Post Lauream Fellowship</i> , University of Tuscia, Dept. of Agrobiol. and Agrochem. Viterbo
1992-1994	MSc Degree in Biological Sciences, cum laude, Dept. of Botanical Sciences, University La Sapienza, Rome

**RESEARCH ACTIVITY**

Research sectors / Strategic areas	Biosensors, Food Safety, Environmental monitoring, Nanotechnology, Microalgae and Plant biotechnology, Nutraceuticals, Space biology.
Skills and Research interests	Long-lasting experience in molecular biology, biochemistry, biotechnology, and protein engineering applied to fundamental research and technological transfer. Fundamental research aims to study the molecular mechanisms and signal networks underlying improved phenotypes under stressful conditions. The research applies to biosensors for agri-food and environmental monitoring; nutraceuticals; sustainable energy production; space biology. Technical competences include: designing of miniaturised optical and electrochemical devices; surface functionalization and immobilization protocol set-up for development of biosensors. genetic transformation of plants, bacteria and yeasts; expression of recombinant proteins in heterologous systems; computational-aided bioengineering of photosynthetic proteins; site-directed and random mutagenesis targeted to the D1 reaction center protein; chloroplast transformation; isolation and expression profile of genes involved in different metabolic processes; metabolite profiling of photosynthesis functional metabolites.
Granted Funds / Project Responsibilities	2021-2023. ASI/ESA. COMET_ISS. Targeting the FGF23-Klotho axis for diagnostics of microgravity induced osteoporosis on ISS. Responsible of Research Unit, 40000€  2018-2021. POR-FESR 2014-2017. FACILE. Development of a sensitive and versatile electrochemical platform for advanced biosensor applications in the environmental and agrifood sectors. Coordinator, 150000€.

2013-2016. ASI/ESA. NATO. Nanoparticles based countermeasures for Treatment of microgravity induced Osteoporosis. Responsible of Research Unit, 70000€.

2014-2016. MIUR, PRNA. Physiological, biochemical, and transcriptomic adaptive responses to harmful UV radiation and temperature increases in Antarctic meiofaunal organisms: a walk from genes to organisms. Responsible of Research Unit, 10000€.

2011-2015. EU COST Action TD1102: PHOTOTECH Photosynthetic proteins for technological applications: biosensors and biochips. Coordinator, 400000€.

2010-2011. ASI/NASA. BOKIS-PHOTOEVOLUTION. BOKON in SPACE. Human Space flight on ISS. Responsible of Research Unit, 13000€.

2009-2011. EU FP7-SME-2008-1. SENSBIO SYN. Biosensors and Sensors for the industrial biosynthesis process of widely used commercial antioxidants: nutraceuticals as additives for food and aquaculture promoting public health and safety. Responsible of Research Unit, 370000€

2008-2010. EU/MAP Eurotransbio B01/0580/02/X10. MULTIBIOPLAT. A new Biotechnology Platform for multipurpose Biosensors. Responsible of Research Unit, 261630€

2006-2009. EU FP6 Food quality and safety. NUTRA-SNACK. Ready to eat food for breakfast and sport activity with high content of nutraceuticals reducing a disease risk and promoting public health. Responsible of Research Unit, 393837€

2006-2009. ASI/ESA. MoMa. From Molecules to Man: Space Research Applied to the improvement of the Quality of Life of the Aging Population. Responsible of Research Unit, 361227€.

#### Institutional Responsibilities

2016-present. Member of the Institute Council Board of the Institute of Crystallography, CNR.

2014-present. Responsible of the following laboratories: Biology, Photosynthesis, Molecular Analysis and biosensing at the Institute of Crystallography, CNR, Rome.

#### Participation to other projects

2016-2018. PRIN 2015. Ubiquitin E3 ligases as critical sensors in physiological and pathological conditions.

2015-2018. Bilateral Collaboration project CNR/RFBR. NANOBIO Nanobionics to empower photosynthesis and productivity of microalgae.

2011. MAE. LEGGE 401/90. SENSRAD Sensori complementari di radiazione ionizzante basati su film di diamante e recettori biologici fotosintetici per la sicurezza dell'uomo e dell'ambiente.

2009-2011. EU FP7-SME-2008-1. BEEP-C-EN. Biosensors for Effective Environmental Protection and Commercialization-Enhanced. Responsible of the technological transfer unit.

2009-2012. FILAS. BIOAL Sistema biosensoristico per la determinazione di contaminanti pericolosi per la salute umana in prodotti agroalimentari.

2005-2011. MIUR. AGROBIOSENS. Ricerca industriale per la realizzazione di bio/sensori per il monitoraggio dell'inquinamento da diserbanti in agroalimentare

2005-2009. MISE. MULTITASKS Innovazione di un prodotto biosensoristico nella realizzazione di un sistema base denominato Multitasks e sua applicazione in Agrofood basata su brevetto CNR.

2000-2001. PRIN 1999. Manipolazione dei sistemi di segnalazione redox per il miglioramento della resistenza delle piante ai patogeni

1998-2000. CNR Project. Biotecnologie vegetali, agrarie ed agroindustriali

1996-1998. MIUR 40%. La Riproduzione nei vegetali, Il ruolo delle proteine dell'apoplasto nei processi di differenziamento e riproduzione cellulare

Appointments	<p>2022. Board Member of the Thesis Jury for the evaluation of PhD candidates of the Doctorate School in Scienze e Ingegneria per l'Uomo e l'Ambiente, Università Campus Bio-Medico di Roma.</p> <p>2020-present. Board Member of Experts for the Italian Space Agency Thematic Tables: Life Sciences of Space interest, Radiation Table.</p> <p>2020-2014. External member of the Faculty Board of the Doctorate School in Molecular, Cellular and Environmental Biology. University Roma Tre.</p> <p>2019. Grant Advisory Panels, FONDECYT, Chilean Government National Commission for Scientific and Technological Development.</p> <p>2018. Grant Advisory Panels, The Netherlands Organisation for Scientific Research, Applied and Engineering Sciences domain, Veni Grant.</p> <p>2018. Member of National Committees for the comparative evaluation of candidates for permanent research positions. Bando N. 366.48-Biology Biotechnology, Bioresources.</p> <p>2018-present. Editorial board member of Frontiers in Sustainable Food Systems.</p> <p>2017-2013. Editorial board member of Frontiers in Chemistry.</p> <p>2012-2011. External member of the faculty board of the Doctorate School course in Plant Biotechnologies. University of Tuscia, Viterbo.</p> <p>2013. Grant Advisory Panels FIRB 2013, PRIN 2012. Settore ERC LS9_1.</p> <p>2013. External member of the faculty board of the Doctorate School in Sciences of Plants and Animal Productions. University of Tuscia, Viterbo.</p> <p>2011. Member of National Committees for the comparative evaluation of candidates for permanent research positions. Bando N. 364.96.</p> <p>2011. Grant Advisory Panels Agence nationale de la recherche, France, EQUIPEX 2010</p> <p>2010. Member of the Scientific Committee of the PtBio Italia Italian Technology Platform on Organic Food and Farming.</p> <p>2004. Integrative teaching course in Molecular Biology. Signal Transduction and oncogenes (10 hours), University of Tuscia, Viterbo</p> <p>1998-present. Reviewer: Food Chemistry, TRAC, Photosynth Res, Plant Sci, Sci Total Environ, PlosOne, Protein Expres Purif, J Mol Model, BMC Microbiol, Phys Status Solidi, Plant Physiol Bioch, Chem Sci</p>
Awards	<p>2010. CNR, Department of Agrofood, Projects Award 2009. Co-funding of research of excellence, Development of chlamydomonas/rhodobacter chimers by molecular dynamic simulations and protein engineering tools for biosensors addressing food health claims. Coordinator, 20000€.</p>
Bibliometrics	<p>SCOPUS H-index 24, Doc 60, Cit 2236 GOOGLE SCHOLAR H-index 29, Cit 3352</p>

## REPRESENTATIVE PUBLICATIONS

1. Montagna G, Pani G, Flinkman D, Cristofaro F, Pascucci B, Massimino L, Lamparelli LA, Fassina L, James P, Coffey E, **Rea G**, Visai L, Rizzo AM. (Accepted paper). Long-term osteogenic differentiation of human bone marrow stromal cells in simulated microgravity: novel proteins sighted. Cellular and molecular life sciences.

2. Cancelliere, R., Albano, D., Brugnoli, B., Buonasera, K., Leo, G., Margonelli, A., **Rea G.** (2021). Electrochemical and morphological layer-by-layer characterization of electrode interfaces during a label-free impedimetric immunosensor build-up: the case of ochratoxin A. *Applied Surface Science*, 567 150791.
3. Rahim HU, Qaswar M, Uddin M., Giannini C., Herrera ML, **Rea G.** (2021). Nano-enable materials promoting sustainability and resilience in modern agriculture. *Nanomaterials* 11(8), 2068.
4. S Orlanducci, G Fulgenzi, A Margonelli, **G Rea**, TK Antal, MD Lambreva (2020). Mapping single walled carbon nanotubes in photosynthetic algae by single-cell confocal raman microscopy. *Biophysical Journal* 116(9).
5. Antonacci A, Lambreva M.D., Margonelli A., Sobolev A.P., Pastorelli S., Bertalan I., Johanningmeier U., Sobolev V., Samish I., Edelman M., Havurinne V., Tyystjärvi E., Giardi M.T., Mattoo A.K., **Rea G.** (2018). Photosystem-II D1 protein mutants of *Chlamydomonas reinhardtii* in relation to metabolic rewiring and remodelling of H-bond network at QB site. *Scientific Reports* 8:14745.
6. Turemis M, Rodio G, Pezzotti G, Touloupakis E, Johanningmeier U, Bertalan I, Litescu SC, **Rea G**, Giardi MT (2017). A novel optical/electrochemical biosensor for real time measurement of physiological effect of astaxanthin on algal photoprotection. *Sensors and actuators. B, Chemical*, vol. 241, p. 993-1001,
6. Scognamiglio V, Antonacci A, Patrolecco L, Lambreva MD, Litescu SC, Ghuge SA, **Rea G.** (2016) Analytical tools to monitor endocrine disrupting chemicals. *Trends in Analytical Chemistry* 80, 555-567.
7. Fraceto, L. F., Grillo, R., De Medeiros, G. A., Scognamiglio, V., **Rea, G.**, Bartolucci, C. (2016). Nanotechnology in Agriculture: which innovation potential does it have? *Frontiers in Environmental Science*, 4, 20.
8. Penu, R., Litescu, S. C., Eremia, S. A., Vasilescu, I., Radu, G. L., Giardi, M. T., Pezzotti G, **Rea, G.** (2015). Application of an optimized electrochemical sensor for monitoring astaxanthin antioxidant properties against lipoperoxidation. *New Journal of Chemistry*, 39, 6428-6436.
9. Scognamiglio V, Antonacci A, Lambreva MD, Litescu SC, **Rea G** (2015) Synthetic biology and biomimetic chemistry as converging technologies fostering a new generation of smart biosensors. *Biosensors and Bioelectronics* 74, 1076-1086.
10. V Scognamiglio, F Arduini, G Palleschi, **G Rea** (2014) Biosensing technology for sustainable food safety. *Trends in Analytical Chemistry*, 62, 1-10.
11. P.J.D. Janssen, M.D. Lambreva, N. Plumeré, C. Bartolucci, A. Antonacci, K. Buonasera, R.N. Frese, V. Scognamiglio, **G. Rea** (2014). Photosynthesis at the forefront of a sustainable life. *Frontiers in Chemistry*, 2:36.
12. Lambreva MD, Giardi MT, Rambaldi I, Antonacci A, Pastorelli S, Bertalan I., Husu I., Johanningmeier U, **Rea G.** (2013) A Powerful Molecular Engineering Tool Provided Efficient *Chlamydomonas* Mutants as Bio-Sensing Elements for Herbicides Detection. *PLoS ONE* 8(4): e61851.
13. T. Lavecchia, **G. Rea**, A. Antonacci, and M.T. Giardi. Healthy and Adverse Effects of Plant-Derived Functional Metabolites- the Need of Revealing Their Content and Bioactivity in a Complex Food Matrix (2013). *Critical Review in Food Science and Nutrition* 53(2):198-213

## REPRESENTATIVE PATENTS

1. 2006. SensDNA. Sensore portatile ottico per la misura del DNA con la tecnica di marcatura con fluorofori RM2006A000683
2. 2001 Piante transgeniche esprimenti ammino ossidasi esogene e loro usi RM2001A000031

**ADDITIONAL INFORMATION**

Organizer of congress/training schools

2017. Organizer and Chair of the Symposium: Biotechnological applications of photosynthesis. 17th Congress of the European Society for Photobiology, Pisa, Italy.

2015. Organizer and Chair of the international COST conference Towards a photosynthesis bio-based economy, Rome, Italy.

2014. Co-chair and invited speaker. COST Training School: Advance Laser Spectroscopy in Green Phototechnology, Szeged, Hungary.

2013. Co-chair and Trainer. COST Training School: Phototech for Biosensors and Energy, Athens, Greece

Academics

2014. National Scientific Qualification as associate professor (sector 05/A2, Plant Physiology).

2004. Integrative teaching course in Molecular Biology. Signal Transduction and oncogenes (10 hours), University of Tuscia, Viterbo

2002-present: Tutorship of 9 CNR research fellowships; 6 MSc; 2 PhD theses (Roma Tre, Tuscia Universities).

BOOK EDITOR/SPECIAL ISSUES

2022-ongoing. Special Issue Cutting-Edge Research of Nanoscience and Nanomaterials Use in Biosciences, International Journal of Molecular Sciences. MDPI.

2014. Hot-Topic Special Issue Sensors and transducers in the photosynthetic landscape. Current Protein and Peptide Science. Bentham Science.

2016. Book. Biosensors for sustainable food: new opportunities and technical challenges. Comprehensive Analytical Chemistry Vol. 74. Elsevier. ISBN 9780444635792.

2010. Book. Bio-Farms for Nutraceuticals: Functional Food and Safety Control by Biosensors. Springer ISBN: 978-1-4419-7346-7.

**DATA TREATMENT**

According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this CV.

Date: Rome, November 11, 2022

Signature

