Alessandro Bertucci, PhD

CURRICULUM VITAE

Date of birth: 26/04/1987
Nationality: Italian
Researcher unique identifier ORCID: 0000-0003-4842-9909

Education

Mar 2015	Ph.D. Chemical Sciences - Co-supervised Franco-Italian Doctorate Institut de Sciences et d'Ingénierie Supramoléculaires, University of Strasbourg, France. Department of Chemistry, University of Parma, Italy. Supervisors: Prof. Luisa De Cola, Prof. Roberto Corradini
Oct 2011	M.Sc. Chemistry (110/110 *cum laude*) Department of Chemistry, University of Parma, Italy.
Sep 2009	B.Sc. Chemistry (110/110 *cum laude*) Department of Chemistry, University of Parma, Italy

Appointments

Since Sep 2023	Associate Professor Department of Chemistry, Life Sciences and Environmental Sustainability University of Parma, Italy
Sep 2020 – Aug 2023	Tenure-Track Assistant Professor Department of Chemistry, Life Sciences and Environmental Sustainability University of Parma, Italy
Feb 2020 – Aug 2020	Fondazione Umberto Veronesi Research Fellow Department of Chemistry, University of Rome Tor Vergata, Rome, Italy
Jan 2017 – Jan 2020	Marie Skłodowska-Curie Global Research Fellow Department of Chemistry and Biochemistry, University of California San Diego, CA, USA. Department of Chemistry, University of Rome Tor Vergata, Rome, Italy
May 2016 – Nov 2016	Endeavour Research Fellow Department of Chemical and Biomolecular Engineering, The University of Melbourne, Victoria, Australia.
May 2015 – May 2016	Postdoctoral Researcher Department of Chemistry, University of Rome Tor Vergata, Rome, Italy.

Visiting academic positions

Feb 2022 - Feb 2022 Visiting Professor at Dpt of Fundamental Neurosciences, University of Lausanne, Switzerland
Sep 2015 - Jan 2016 Visiting Postdoc at Sanford Burnham Prebys Medical Discovery Institute, La Jolla, CA, USA
Jan 2015 - Mar 2015 Visiting PhD Student at Polytechnic University of Milan, Milan, Italy

Awards and Honors

2022 Habilitation as Associate Professor in Analytical Chemistry, Italian Ministry of Universities and Research
2021 International Galileo Galilei Prize for Young Scholars, Galileo Galilei and Rotary Club Foundation.
2021 Honorable Mention and Silver Medal, Primo Levi Award, Italian Chemical Society.
2020 Fondazione Umberto Veronesi Research Fellowship, Umberto Veronesi Cancer Foundation.
2018 Finalist of the 2018 ISSNAF Award for Young Investigators – Environmental Sciences, Astrophysics, and Chemistry - Winner in Chemistry - Italian Scientists and Scholars in North America Foundation.
2017 Marie Skłodowska-Curie Global Research Fellowship, European Commission.

2017 Habilitation II Grade as Maître de conferences in Theoretical, Physical, Analytical Chemistry, French Ministry of Education and Research.
2016 Endeavour Research Fellowship, Australian Government, Department of Education and Training.
2015 Best PhD Thesis in Science in France, Naturalia and Biologia Association, Paris, France.
2014 Travel Scholarship, the Marian Gertner Institute for Medical Nanosystems, Tel-Aviv University, Israel.
2013 PhD Scholarship "Scientific cooperation between France and Italy", French Embassy in Italy

Teaching

Since 2020 Bioanalytical Methods – MSc in Genomic, Molecular and Industrial Biotechnologies,
Department of Chemistry, Life Sciences and Environmental Sustainability, University of Parma, Italy
Since 2021 Laboratory of Instrumental Analytical Chemistry – BSc in Chemistry
Department of Chemistry, Life Sciences and Environmental Sustainability, University of Parma, Italy
Since 2023 Analytical Chemistry for Materials Science - BSc in Materials Sciences and Technologies
Department of Chemistry, Life Sciences and Environmental Sustainability, University of Parma, Italy

Research Grants

Year	Budget Euro	Funding Body / Grant ID	Role
2023	210000	PRIN 2022 Italian Ministry for University and Research Project: "CRISPR-Cas-based sensing platforms for the monitoring of clinically relevant antibodies". End date: 2025	Co-PI
2023	10800	FIL Giovani – Quota Incentivante (Seed Grant for Young Researchers) University of Parma and CARIPARMA Foundation. Project: "Theranostic nucleic acid-based nanodevices artificially regulated by proteolytic enzymes". End date: 2024	PI
2022	30000	Young Investigator Mini-Grant Guido Berlucchi Foundation Project: "DNA-based molecular sensors for the analysis of oncogenic zinc fingers – DNA-Fingers". End date: 2024	PI
2022	25000	Excellent Science Horizon Europe Italian Ministry of University. Project: "Hybrid healthcare materials actively controlled by biology". End date: 2023	PI
2021	15000	FIL Giovani – Quota Incentivante (Seed Grant for Young Researchers) University of Parma and CARIPARMA Foundation. Project: "Programmable chem-bio chimera translators as dynamic, functional probes for molecular sensing of informative protein markers". End date: 2022	PI
2017	250000	Marie Skłodowska-Curie Global Research Fellowship. European Commission Project: "Multifunctional miRNA-targeting nanodevices for pluripotent cancer theranostics - MIRNANO". End date: 2020	PI

Invited / Keynote / Plenary Lectures

Oct 2023 Nanobalkan2023, Tirana, Albania - Invited Lecture
Nov 2022 XV National Congress INBB "National Institute for Biosystems and Biostructures" - Invited Lecture
Oct 2021 Supramolecular Chemistry Days for Young Researchers, Bologna, Italy - Plenary Lecture

Sep 2021 XXVII Congress of the Italian Chemical Society, Primo Levi Award Invited Lecture
Feb 2020 Winter School in Advanced Technologies for Characterization and Sensing of Nanobiomaterials University of Rome Tor Vergata, Rome, Italy.
Oct 2018 ISSNAF Award for Young Investigators, Award lecture at the Italian Embassy in the United States, Washington DC, USA.

Oral presentations at international conferences and workshops

Oct 2022 AMYC-BIOMED 2022, Naples, Italy
Oct 2020 Functional DNA Nanotechnology workshop, Rome, Italy
Mar 2019 VI International Conference on Multifunctional, Hybrid and Nanomaterials, Sitges, Spain
Aug 2018 7th European Chemistry Congress EuCheMS, Liverpool, UK
Jun 2018 Biosensors 2018, Miami, FL, USA
Mar 2017 V International Conference on Multifunctional, Hybrid and Nanomaterials, Lisbon, Portugal
Sep 2013 MicroRNA: from basic research to therapeutic applications, Ferrara, Italy
and numerous oral presentations at national meetings (e.g., National Congress of the Italian Chemical Society).

Publication Record and bibliometric indicators

29 papers in ISI peer-reviewed journals + 2 Book chapters in international editions + 1 International Patent
h-index: 16 (Google Scholar, Oct 2023)
> 1230 total citations (Google Scholar, May 2023)

Publications

29. P. Picchetti, S. Volpi, M. Rossetti, M.D. Dore, T. Trinh, F. Biedermann, M. Neri, **A. Bertucci**, A. Porchetta, R. Corradini, H. Sleiman, L. De Cola. Supramolecular Nucleic Acid-Based Organosilica Nanoparticles Responsive to Physical and Biological Inputs. **J. Am. Chem. Soc.** 2023

28. P. Picchetti, S. Volpi, M. Rossetti, M.D. Dore, T. Trinh, F. Biedermann, M. Neri, **A. Bertucci**, A. Porchetta, R. Corradini, H. Sleiman, L. De Cola. Responsive Nucleic Acid-Based Organosilica Nanoparticles. **J. Am. Chem. Soc.** 2023, https://doi.org/10.1021/jacs.3c00393

27. S. Fortunati, C. Giliberti, M. Giannetto, **A. Bertucci**, S. Capodaglio, E. Ricciardi, P. Giacomini, V. Bianchi, A. Boni, I. De Munari, R. Corradini, M. Careri. A highly sensitive electrochemical magneto-genosensing assay for the specific detection of a single nucleotide variation in the KRAS oncogene in human plasma. **Biosens. Bioelectron.: X** 2023, 15, 100404.

26. M. Mattarozzi, E. Laski, **A. Bertucci**, M. Giannetto, F. Bianchi, C. Zoani, M. Careri. Metrological traceability in process analytical technologies and point-of-need technologies for food safety and quality control: not a straightforward issue. **Anal. Bionanal. Chem**. 2023, 415, 119-135.

25. S. Fortunati, F. Pedrini, E. Del Grosso, L. Baranda Pellejero, **A. Bertucci.*** Design of Specific Nucleic Acid-Based Biosensors for Protein Binding Activity. **Anal. Sens.** 2022, e202200037.

24. F. Curti, S. Fortunati, W. Knoll, M. Giannetto, R. Corradini, **A. Bertucci,*** M. Careri. A Folding-Based Electrochemical Aptasensor for the Single-Step Detection of the SARS-CoV-2 Spike Protein. **ACS Appl. Mater. Interfaces**. 2022, 14, 19204-19211.

23. S. Fortunati, I. Vasini, M. Giannetto, M. Mattarozzi, A. Porchetta, **A. Bertucci,*** M. Careri. Controlling Dynamic DNA Reactions at the Surface of Single-Walled Carbon Nanotube Electrodes to Design Hybridization Platforms with a Specific Amperometric Readout. **Anal. Chem**. 2022, 94, 5075-5083.
Featured in the Supplementary Cover of Analytical Chemistry

22. M. Mattarozzi, L. Toma, **A. Bertucci**, M. Giannetto, M. Careri. Aptamer-based assays: strategies in the use of aptamers conjugated to magnetic micro-and nanobeads as recognition elements in food control. **Anal. Bionanal. Chem**. 2022, 14, 63-74.

21. M. Neri, J. Kang, J.M. Zuidema, J. Gasparello, A. Finotti, R. Gambari, M.J. Sailor, **A. Bertucci,*** R. Corradini. Tuning the Loading and Release Properties of MicroRNA-Silencing Porous Silicon Nanoparticles by Using Chemically Diverse Peptide Nucleic Acid Payloads. **ACS Biomater. Sci. Eng.** 2022, 8, 4123-4131.

20. **A. Bertucci,*** A. Porchetta, E. Del Grosso, T. Patiño, A. Idili, F. Ricci.* Protein-Controlled Actuation of Dynamic Nucleic Acid Networks by Using Synthetic DNA Translators. **Angew. Chem. Int. Ed**. 2020, 59, 20577-20581.
Featured as "VIP Paper" in Angew. Chem. Int. Ed.

19. M. Rossetti,† **A. Bertucci,†** T. Patiño, L. Baranda Pellejero, A. Porchetta. Programming DNA-based systems through effective molarity enforced by biomolecular confinement **Chem. Eur. J.** 2020, 26, 9826-9834.
Featured in the Frontispiece of Chem. Eur. J.

18. A. Glab, **A. Bertucci**, F. Martino, M. Wojnilowicz, A. Amodio, M. Venanzi, F. Ricci, G. Forte, F. Caruso, F. Cavalieri. Dissecting the intracellular signalling and fate of a DNA nanosensor by super resolution and quantitative microscopy. **Nanoscale** 2020, 12, 15402-15143.

17. J.M. Zuidema, C.M. Dumont, J. Wang, W.M. Batchelor, Y. Lu, J. Kang, **A. Bertucci**, N.M. Ziebarth, L.D. Shea, M.J. Sailor. Porous Silicon Nanoparticles Embedded in Poly(lactic-co-glycolic acid) Nanofiber Scaffolds Deliver Neurotrophic Payloads to Enhance Neuronal Growth. **Adv. Funct. Mater**. 2020, 30, 2002560.

16. J. M. Zuidema,† **A. Bertucci,†** J. Kang, M. J. Sailor, F. Ricci. Hybrid polymer/porous silicon nanofibers for loading and sustained release of synthetic DNA-based responsive devices. **Nanoscale** 2020, 12, 2333-2339.
Included in the themed collection: 2020 Nanoscale HOT Article Collection

15. E. Piantanida, G. Alonci, **A. Bertucci**, L. De Cola. Design of Nanocomposite Injectable Hydrogels for Minimally Invasive Surgery. **Acc. Chem. Res.** 2019, 52, 2101-2112.

14. M. Rossetti, E. Del Grosso, S. Ranallo, D. Mariottini, A. Idili, **A. Bertucci,*** A. Porchetta.* Programmable RNA-based systems for sensing and diagnostic applications. **Anal. Bioanal. Chem**. 2019, 411, 4293-4302.

13. **A. Bertucci,** K-H. Kim, J. Kang, J.M. Zuidema, S. H. Lee, E.J. Kwon, D. Kim, S.B. Howell, F. Ricci, E. Ruoslahti, H-J. Jang, M.J. Sailor. Tumor-targeting, microRNA-silencing porous silicon nanoparticles for ovarian cancer therapy. **ACS Appl. Mater. Interfaces** 2019, 11, 23926-23937.

12. M. Wojnilowicz, A. Glab, **A. Bertucci**, F. Caruso, F. Cavalieri. Super-resolution imaging of proton sponge-triggered rupture of endosomes and cytosolic release of small interfering RNA. **ACS Nano** 2019, 13, 187-202

11. **A. Bertucci**, J. Guo, N. Oppmann, A. Glab, F. Ricci, F. Caruso, F. Cavalieri. Probing transcription factor binding activity and downstream gene silencing in living cells with a DNA nanoswitch. **Nanoscale** 2018, 10, 2034-2044

10. **A. Bertucci**, A. Porchetta, F. Ricci. Antibody-templated assembly of an RNA mimic of Green Fluorescent Protein. **Anal. Chem**. 2018, 90, 1049-1053.
Featured in the Front Cover of Analytical Chemistry

9. E. J. Kwon, M. Skalak, **A. Bertucci**, G. Braun, F. Ricci, E. Ruoslahti, M.J. Sailor, S.N. Bhatia. Porous silicon nanoparticle delivery of tandem peptide anti-infectives for the treatment of Pseudomonas aeruginosa lung infections. **Adv. Mater**. 2017, 29, 1701527.
Featured in the Frontispiece of Advanced Materials.
Featured in MIT News, EurekAlert, PhysOrg, Science Daily, and other news outlets.
Featured in Science Translational Medicine as Editor's Choice – "Resistance is Futile", STM 9, 2017.

8. A. Manicardi,† **A. Bertucci,**† A. Rozzi, R. Corradini. A bifunctional monomer for on-resin synthesis of polyfunctional PNAs and tailored induced-fit switching probes. **Org. Lett**. 2016, 18, 5452-5455.

7. R. Castagna, **A. Bertucci**, E. A. Prasetyanto, M. Monticelli, D. V. Conca, M. Massetti, P. P. Sharma, F. Damin, M. Chiari, L. De Cola, R. Bertacco. Reactive microcontact printing of DNA probes on (DMA-NAS-MAP) co-polymer-coated substrates for efficient hybridization platforms. **Langmuir** 2016, 32, 3308-3313.

6. E. A. Prasetyanto, **A. Bertucci**, D. Septiadi, R. Corradini, P. Castro-Hartmann, L. De Cola. Breakable Hybrid Organosilica Nanocapsules for Protein Delivery. **Angew. Chem. Int. Ed**. 2016, 55, 3323-3327.
Highlighted as "Hot Paper" and featured in the Inside Cover of Angew. Chem. Int. Ed.

5. **A. Bertucci**, E.A. Prasetyanto, D. Septiadi, A. Manicardi, E. Brognara, R. Gambari, R. Corradini, L. De Cola. Combined delivery of temozolomide and anti-miR221 PNA using mesoporous silica nanoparticles induces apoptosis in resistant glioma cells. **Small** 2015, 11, 5687-56

4. **A. Bertucci**, A. Candiani, S. Giannetti, A. Manicardi, A. M. Cucinotta, G. Spoto, M. Konstantaki, S. Pissadakis, S. Selleri, R. Corradini. Detection of unamplified genomic DNA by a PNA-based microstructured optical fiber (MOF) Bragg-grating optofluidic system. **Biosens. Bioelectron**. 2015, 63, 248-254.

3. **A. Bertucci**, H. Lülf, D. Septiadi, A. Manicardi, R. Corradini, L. De Cola. Intracellular delivery of Peptide Nucleic Acid and organic molecules using zeolite-L nanocrystals. **Adv. Health. Mater**. 2014, 3, 1812-1817.

2. H. Lülf, **A. Bertucci**, D. Septiadi, R. Corradini, L. De Cola. Multifunctional inorganic nanocontainer for DNA and drug delivery into living cells. **Chem. Eur. J**. 2014, 20, 10900-10904.
Featured in the Front Cover of Chemistry - A European Journal.

1. A. Candiani, **A. Bertucci**, S. Giannetti, M. Konstantaki, A. Manicardi, S. Pissadakis, A. Cucinotta, R. Corradini, S. Selleri. Label- free DNA bionsensor based on a peptide nucleic acid-functionalized microstructured optical fiber-Bragg grating. **J. Biomed. Opt.** 2013, 18, 057004.

Patents

1. L. De Cola, E. A. Prasetyanto, **A. Bertucci**, D. Septiady. Disintegratable core/shell silica particles for encapsulating and releasing bioactive macromolecules. US10821082B2, EP3154521B1, CN106456454B. 2020

Book Chapters

2. **A. Bertucci**, S. Silvestrini, R. Corradini, L. De Cola. Loading of PNA and other molecular payloads in inorganic nanostructures for theranostics. DNA Nanotechnology, Humana Press, New York, NY, USA, 2018.

1. **A. Bertucci**, A. Manicardi, R. Corradini. Advanced Molecular Probes for Sequence-Specific DNA Recognition. Detection of non-amplified Genomic DNA, G. Spoto, R. Corradini Eds., Springer, Dordrecht, Netherlands, 2012.