

europass Curriculum Vitae

Informazioni personali

Nome(i) / Cognome(i)	Alessandro Porchetta
Indirizzo(i)	Disponibile su richiesta
Telefono(i)	Cellulare: Disponibile su richiesta
E-mail	alessandro.porchetta@uniroma2.it
Cittadinanza	Italiana
Data di nascita	06/10/1984
Sesso	Male
Occupazione desiderata / Settore professionale	Associate Professor / Academic Researcher

Esperienza professionale

Date	Sep 2024 - current
Lavoro o posizione ricoperti	Member of the Academic Senate
Nome e indirizzo datore di lavoro	University of Rome, Tor Vergata, Italy
Date	Apr 2022 - current
Lavoro o posizione ricoperti	Associate Professor
Nome e indirizzo datore di lavoro	Chemistry Department, University of Rome, Tor Vergata, Italy
Date	Apr 2019 – Apr 2022

Lavoro o posizione ricoperti	Tenure Track Assistant Professor
Nome e indirizzo datore di lavoro	Chemistry Department, University of Rome, Tor Vergata, Italy
Date	Apr 2016 – April 2019
Lavoro o posizione ricoperti	Senior Researcher
Nome e indirizzo datore di lavoro	Chemistry Department, University of Rome, Tor Vergata, Italy
Date	Feb 2014 - Mar 2016
Lavoro o posizione ricoperti	Post-doctoral Researcher
Principali attività	Research Activity within the Laboratory of Prof. Giuseppe Palleschi
Nome e indirizzo datore di lavoro	Chemistry Department, University of Rome, Tor Vergata, Italy

Pubblicazioni

50. Ueno, K., Tsukakoshi, K., Takeuchi, N., Inaba, S., Idili, A., Porchetta, A., Ricci, F., Ikebukuro, K., (2025) Bright and pH-sensitive Baby Spinach aptamer with RNA triplex fusion Nucleic Acids Research , 53(11), gkaf151
49. Di Lena, D., Sisti, E., Brass, E., Belforte, E., Marini, B., Porchetta, A., Squarcia, L., Da Pozzo, E., Bertucci, A., Ippodrino R., (2025) Rapid, Single-Step Monitoring of Monoclonal Antibody Bioavailability by Using a TNF- α -Based Multiepitope DNA Nanoswitch Analytical Chemistry , 97(15), 8195–8201
48. Miceli, F., Bracaglia, S., Sorrentino, D., Porchetta, A. , Ranallo, S., Ricci, F., (2025) MAIGRET: a CRISPR-based immunoassay that employs antibody-induced cell-free transcription of CRISPR guide RNA strands Nucleic Acids Research , 53(6), gkaf238
47. Paialunga, E., Bagheri, N., Rossetti, M., Fabiani, L., Micheli, L., Chamorro-Garcia, A., Porchetta A.* , (2025) Leveraging Synthetic Antibody–DNA Conjugates to Expand the CRISPR-Cas12a Biosensing Toolbox ACS Synth. Biol. , 14(1), 171–178
46. Capelli, L., Pedrini, F., Di Pede, A.C., Chamorro-Garcia, A., Bagheri, N., Fortunati, S., Giannetto, M., Mattarozzi, M., Corradini, R., Porchetta, A. , Bertucci, A. (2024) Synthetic Protein-to-DNA Input Exchange for Protease Activity Detection Using CRISPR-Cas12a Anal. Chem. 96 (47), 18645-18654.

45. Rivero-Hernández, A. L. et al. (2024) Decoupling immunomodulatory properties from lipid binding in the α -pore-forming toxin Sticholysin II. *Int. J. Biol. Macromol.*, 280, 136244.
44. Del Giovane, S., Bagheri, N., Di Pede, A.C., Chamorro, A., Ranallo, S., Migliorelli, D., Burr, L., Paoletti, S., Altug, H Porchetta, A . * (2024). Challenges and perspectives of CRISPR-based technology for diagnostic applications. *TrAC Trends in Analytical Chemistry* , 117594.
43. Bagheri, N., Chamorro, A., Idili, A., Porchetta, A . * (2024). PAM - Engineered Toehold Switches as Input - Responsive Activators of CRISPR - Cas12a for Sensing Applications. *Angew. Chem. Int. Ed .*, 63(17), 29:e202319677.
42. Chamorro, A., Rossetti, M., Bagheri, N., Porchetta, A . * (2023). Rationally Designed DNA-Based Scaffolds and Switching Probes for Protein Sensing. In: *Advances in Biochemical Engineering/Biotechnology*. Springer, Berlin, Heidelberg.
41. Picchetti, P., Volpi, S., Rossetti, M., Dore, M.D., Trinh, T., Biedermann, F., Neri, M., Bertucci, A., Porchetta, A.* (co-corresponding author), Corradini, R. and Sleiman, H., (2023). Supramolecular Nucleic Acid-Based Organosilica Nanoparticles Responsive to Physical and Biological Inputs *J. Am. Chem. Soc.*, 145 (42), 22903–22912
40. Picchetti, P., Volpi, S., Rossetti, M., Dore, M.D., Trinh, T., Biedermann, F., Neri, M., Bertucci, A., Porchetta, A.* (co-corresponding author), Corradini, R. and Sleiman, H., (2023). Responsive Nucleic Acid-Based Organosilica Nanoparticles. *J. Am. Chem. Soc.*, 145 (42), 22896–22902
39. Luo, X., Saliba, D., Yang, T., Gentile, S., Mori, K., Garcia, P.I., Das, T., Bagheri, N., Porchetta, A . , Guarne, A. and Cosa, G., (2023). Minimalist Design of Wireframe DNA Nanotubes: Tunable Geometry, Size, Chirality, and Dynamics. *Angew. Chem. Int. Ed .* , p.e202309869.
38. Rossetti, M., Merlo, R., Bagheri, N., Moscone, D., Valenti, A., Saha, A., ... & Porchetta, A.* (corresponding author) (2022). Enhancement of CRISPR/Cas12a trans-cleavage activity using hairpin DNA reporters. *Nucleic Acids Res.* , 50(14), 8377-8391.
37. Fortunati, S., Vasini, I., Giannetto, M., Mattarozzi, M., Porchetta, A ., Bertucci, A. and Careri, M., (2022). Controlling dynamic DNA reactions at the surface of single-walled carbon nanotube electrodes to design hybridization platforms with a specific amperometric readout. *Anal. Chem.* , 94(12), 5075-5083.
36. Patino Diaz, A., Bracaglia, S., Ranallo, S., Patino, T., Porchetta, A . and Ricci, F. (2022). Programmable cell-free transcriptional switches for antibody detection. *J. Am. Chem. Soc.* 144(13), 5820-5826.
35. Zanut, A., Rossetti, M., Marcaccio, M., Ricci, F., Paolucci, F., Porchetta, A.* (co-corresponding author), & Valenti, G. (2021). DNA-Based Nanoswitches: Insights into Electrochemiluminescence Signal Enhancement. *Anal. Chem.*, 93(30), 10397-10402.
34. Rossetti, M., Stella, L., Morlà - Folch, J., Bobone, S., Boloix, A., Baranda, L., ... & Porchetta, A. (corresponding author) (2021). Engineering DNA - Grafted Quatsomes as Stable Nucleic Acid - Responsive Fluorescent Nanovesicles. *Adv. Funct. Mater.* , 2103511.
33. Bertucci, A., Porchetta, A., Del Grosso, E., Patiño, T., Idili, A., & Ricci, F. (2020). Protein - Controlled Actuation of Dynamic Nucleic Acid Networks by Using Synthetic DNA Translators. *Angew. Chem. Int. Ed .*, 55(46), 20577-20581.
32. Rossetti, M., Bertucci, A., Patiño, T., Baranda Pellejero, L., & Porchetta, A . (Corresponding Author) (2020). Programming DNA - based systems through effective molarity enforced by biomolecular confinement. *Chem. Eur. J.*, 26, 9826-9834.

31. Rossetti, M., Del Grosso, E., Ranallo, S., Mariottini, D., Idili, A., Bertucci, A., & Porchetta, A. (2019). Programmable RNA-based systems for sensing and diagnostic applications. *Anal. Bioanal. Chem.* , 411(19), 4293-4302.
30. Arrabito, G., Cavaleri, F., Porchetta, A., Ricci, F., Vetri, V., Leone, M., & Pignataro, B. (2019). Printing Life - Inspired Subcellular Scale Compartments with Autonomous Molecularly Crowded Confinement. *Adv. Biosystems* , 3(7), 1900023.
29. Mocenigo, M., Porchetta, A. (Co-first author), Rossetti, M., Brass, E., Tonini, L., Puzzi, L., ... & Ippodrino, R. (2020). Rapid, Cost-Effective Peptide/Nucleic Acid-Based Platform for Therapeutic Antibody Monitoring in Clinical Samples. *ACS sensors* , 5(10), 3109-3115.
28. Rossetti, M., Brannetti, S., Mocenigo, m., Marini, B., Ippodrino, R., Porchetta, A.* (corr. author) (2020) Harnessing Effective Molarity to Design an Electrochemical DNA-based Platform for Clinically Relevant Antibody Detection *Ang. Chem. Int. Ed.* 132 (35), 15083-15088.
27. Ranallo, S., Porchetta, A. * (co-corr. author) Ricci, F., 2018. DNA-based scaffolds for sensing applications. *Anal. Chem.* , 91(1), 44-59.
26. Nascetti, A., Mirasoli, M., Marchegiani, E., Zangheri, M., Costantini, F., Porchetta, A., Iannascoli, L., Lovecchio, N., Caputo, D., de Cesare, G. and Pirrotta, S., (2019) Integrated chemiluminescence-based lab-on-chip for detection of life markers in extraterrestrial environments. *Biosens. Bioelectron.* , 123, 195-203.
25. Mazzaracchio, V., Neagu, D., Porchetta, A., Marcoccio, E., Pomponi, A., Faggioni, G., D'Amore, N., Notargiacomo, A., Pea, M., Moscone, D. and Palleschi, G. (2019) A label-free impedimetric aptasensor for the detection of *Bacillus anthracis* spore simulant. *Biosens. Bioelectron.* , 126, 640-646.
24. Petropoulos, K., Bodini, S.F., Fabiani, L., Micheli, L., Porchetta, A., Piermarini, S., Volpe, G., Pasquazzi, F.M., Sanfilippo, L., Moschetta, P., Chiavarini, S. (2019) Re-modeling ELISA kits embedded in an automated system suitable for on-line detection of algal toxins in seawater. *Sens. Actuators B. Chem.* , 283, 865-872.
23. Patino, T., Porchetta, A. * (co-first author), Jannasch, A., Lladó, A., Stumpp, T., Schäffer, E., Ricci, F. and Sanchez, S. (2019) Self-sensing enzyme-powered micromotors equipped with pH responsive DNA nanoswitches. *Nano lett.* . doi:10.1021/acs.nanolett.8b04794 (Featured in the Front Cover)
22. Rossetti, M., Ranallo, S., Idili, A., Palleschi, G., Porchetta, A. * (co-corr. Author) Ricci, F. (2017). Allosteric DNA nanoswitches for controlled release of a molecular cargo triggered by biological inputs. *Chem. Sci.* , 8(2), 914-920.
21. Rossetti, M., Ippodrino, R., Marini, B., Palleschi, G., Porchetta, A. * (corr. author) (2018). Antibody-mediated small molecule detection using programmable DNA-switches. *Anal. Chem.* , 90 (13), 8196-8201.
20. Bertucci, A.,* Porchetta, A.* (co-first author), Ricci, F. (2018). Antibody-templated assembly of an RNA mimic of the Green Fluorescent Protein *Anal. Chem.* , 90(2), 1049-1053.
19. Porchetta, A., Ippodrino, R., Marini, B., Caruso, A., Caccuri F., Ricci F. (2018). Programmable nucleic acid nanoswitches for the rapid, single-step detection of antibodies in bodily fluids *J. Am. Chem. Soc.* , 140(3), 947-953.
18. Rossetti, M., Porchetta, A. * (corrisponding author) (2017) Allosterically Regulated DNA-based Switches: from Design to Bioanalytical Applications – A review *Anal. Chim. Acta* , 10.1016/j.aca.2017.12.046.
17. Ricci, F., Vallée-Bélisle, A., Simon, A., Porchetta, A., Plaxco, K. (2016) Using Nature's "tricks" to rationally tune the binding properties of biomolecular receptors. *Acc. Chem. Res.* , 49,1884–1892.

16. Porchetta A. , Idili A., Vallée-Bélisle A., Ricci F. (2015) A general strategy to introduce pH-induced allostery in DNA-based receptors to achieve controlled release of ligands. *Nano Lett.* , 15, 4467–4471.
15. Porchetta, A. , Vallée-Bélisle, A., Plaxco, K.W., Ricci, F. (2012). Using distal site mutations and allosteric inhibition to tune, extend and narrow the useful dynamic range of aptamer-based sensors. *J. Am. Chem. Soc.* , 134 (51), 20601-20604.
14. Porchetta, A. , Vallée-Bélisle, A., Plaxco, K.W., Ricci, F. (2013). Allosterically Tunable, DNA-Based Switches Triggered by Heavy Metals. *J. Am. Chem. Soc.* , 135 (36), 13238–13241.
13. Idili, A., * Porchetta, A.* (co-first author), Amodio, A., Vallée-Bélisle, A., Ricci, F. (2015) Controlling hybridization chain reaction using pH. *Nano Lett.* , 15 (8), 5539–5544.
12. Amodio, A. * , Zhao, B. * , Porchetta, A. * (co-first author), Idili, A.; Castronovo, M.; Fan, C.; Ricci. F. (2014) Rational design of pH-controlled DNA strand displacement. *J. Am. Chem. Soc.* , 136 (47), 16469–16472.
11. Ricci, F., Vallée-Bélisle, A., Porchetta, A., Plaxco, K.W. (2012) The rational design of allosteric inhibitors and activators using the population-shift model: in vitro validation and application to an artificial biosensor *J. Am. Chem. Soc.* , 134, 15177-15180 .
10. Kang, D., Vallée-Bélisle, A., Porchetta, A. , Plaxco, K.W., Ricci, F. (2012) Re-engineering electrochemical biosensors to narrow or extend their useful dynamic range. *Angew. Chem. Int. Ed.* , 51 (27), 6717-6721.
9. Rossetti, M., Ranallo, S., Idili, A., Palleschi, G., Porchetta, A. * (co-corresponding author), Ricci, F. * (2017) Allosteric DNA nanoswitches for controlled release of a molecular cargo triggered by biological inputs *Chem. Science* , 8 , 914-920.
8. Del Grosso, E., Idili, A., Porchetta A., Ricci, F. (2016) A modular clamp-like mechanism to regulate the activity of nucleic-acid target-responsive nanoswitches with external activators. *Nanoscale* , 2016, 8, 18057-18061.
7. Ranallo, S., Amodio, A., Idili, A., Porchetta, A. , Ricci, F. (2016) Electronic control of DNA-based nanoswitches and nanodevices. *Chem. Sci.* , 7, 66-71.
6. Adornetto, G., Porchetta, A., Palleschi, G., Plaxco, K.W., Ricci, F. (2015) A general approach to the design of allosteric, transcription-factor-regulated DNazymes. *Chem. Sci.* , 6, 3692-3696.
5. Venanzi, M., Gatto, E., Caruso, M., Porchetta, A. , Formaggio, F., Toniolo, C. (2014) Photoinduced Electron Transfer through Peptide-Based Self-Assembled Monolayers Chemisorbed on Gold Electrodes: Directing the Flow-in and Flow-out of Electrons through Peptide Helices. *J. Phys. Chem. A* , 118 (33), 6674–6684.
4. Gatto, E., Porchetta, A., Scarselli, M., De Crescenzi, M., Formaggio, F., Toniolo, C., Venanzi, M. (2012). Playing with Peptides: How to Build a Supramolecular Peptide Nanostructure by Exploiting Helix-Helix Macrodipole Interactions. *Langmuir* , 28 (5), 2817-2826.
3. Biagiotti, V., Porchetta, A. , Desiderati, S., Plaxco, K. W., Palleschi, G., Ricci, F. (2012). Probe accessibility effects on the performance of electrochemical biosensors employing DNA monolayers. *Anal. and Bioanalytic. Chem.*, 402(1), 413-421.
2. Gatto, E., Caruso, M., Porchetta, A., Toniolo, C., Formaggio, F., Crisma, M., et al. (2011). Photocurrent generation through peptide-based self-assembled monolayers on a gold surface: Antenna and junction effects. *Journ. of Pep. Science* , 17(2), 124-131.
1. Gatto, E., Porchetta, A., Stella, L., Guryanov, I., Formaggio, F., Toniolo, C., Kaptein, B., Broxterman, Q.B., Venanzi, M. (2008). Conformational effects on the

electron transfer efficiency in peptide foldamers based on α,α -disubstituted glycyl residues. Chem. Biodiv., 5, 1263-1278.

Istruzione e formazione

Date	Jan 2014
Titolo della qualifica	Ph.D. – Chemical Sciences
Principali tematiche	Supervisor: Prof. F. Ricci. Final mark: Excellent
Nome e tipo organizzazione	Chemistry Department, University of Rome Tor Vergata, Italy
Date	May 2010
Titolo della qualifica	Master degree – Chemistry (Physical Chemistry)
Principali tematiche	Supervisor: Prof. M. Venanzi. Final score: 110/110 cum laude
Nome e tipo organizzazione	Chemistry Department, University of Rome Tor Vergata, Italy

Capacità e competenze personali

Madrelingua(e)	Italiano
Altra(e) lingua(e)	Inglese
Autovalutazione (*)	Comprensione: Eccellente (C2) Parlato: Eccellente (C2) Scritto: Eccellente (C2) (* Quadro comune europeo di riferimento per le lingue)
Capacità e competenze sociali	Excellent communication and interpersonal skills acquired through academic teaching and international team coordination.
Capacità e competenze organizzative	Board member of the divisional group 'Bioanalytical Chemistry' (Società Chimica Italiana - SCI) [Sep 2022 - present]. Organization Committee Member for key scientific meetings: • Giornate di Bioanalitica 2025 (Rome, Italy) • Giornate di Bioanalitica 2024 (Bologna, Italy) • Giornate di Bioanalitica 2023 (Florence, Italy) • 2th Functional DNA Nanotechnology 2016 (Rome, Italy) • 1th Functional DNA Nanotechnology 2014 (Rome, Italy)

**Capacità e competenze
tecniche**

CRISPR-Cas technology, DNA Nanotechnology, biomolecular sensors, biomolecular condensates.

Teaching Activities: Biomolecular Sensors and Advanced Analytical Techniques (6 CFU); Applied Analytical Chemistry (6 CFU); Fundamentals of Analytical Chemistry (6 CFU).

Patente

Patente B (Automobilistica)

Ulteriori informazioni

Research Grants

- 2026: FIS3 'BioAct' (1.2 MEuro, P.I.)
- 2023: 'My First Airc Grant' 'REPAIR-NANO' (500 kEuro, P.I.)
- 2024: PNRR-THE 'Bio-SilicaThera' (310 kEuro, Coord.)
- 2024: EU MSCA IF 'CRINOVA' (188 kEuro, Coord.)
- 2023: PRIN 'Ab-CRISPR' (105 kEuro, Coord.)

Awards

- June 2018: 'The European Young Chemist Awards (EYCA)' (post-doc level).
- May 2014: 'Primo Levi Award' by the Italian Chemical Society.

Publications & Metrics

- 51 papers in ISI peer-reviewed journals
- H-index: 28 (Scopus) | 2299 total citations
- 21 papers in journals with IF > 10 (8 JACS, 6 Angew. Chem., 3 Nano Lett, 1 Acc. Chem. Res., 1 Adv. Funct. Mater.)

Autorizzo il trattamento dei miei dati personali ai sensi del Decreto Legislativo 30 giugno 2003, n. 196 'Codice in materia di protezione dei dati personali'.