

# Curriculum Vitae

## Personal Data

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**Name:** Emanuele

**Surname:** Bruni

## Education

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- **Ph.D. in Cellular and Molecular Biology, XXVI cycle**, successfully discussed on 14/01/2015 at the Faculty of Science, University of Rome "TOR VERGATA", Italy. Experimental thesis at the laboratory of Applied Biology under the scientific direction of Prof. Lina Ghibelli entitled: "MULTIPLE APOPTOTIC PATHWAYS ELICITED BY ETOPOSIDE". **January 2015.**

- **Master's Degree in Human and Evolutionary Biology**, achieved at the Faculty of Science, University of Rome "TOR VERGATA", Italy. 110/110 cum Laude. Experimental degree thesis at the laboratory of Applied Biology under the scientific direction of Prof. Lina Ghibelli entitled: "MAGNETIC FIELDS PROMOTES A NON-CAPACITATIVE CALCIUM INFLUX THROUGH PHOSPHOLIPASE C-MEDIATED SIGNAL TRANSDUCTION, DETERMINING AN ANTIAPOPTOTIC EFFECT". **May 2010.**

- **Bachelor's Degree CELLULAR AND MOLECULAR BIOLOGY, ex D.M. 509/99 (12-Class of degrees in biological sciences)** achieved at the Faculty of Science, University of Rome "TOR VERGATA", Italy. Experimental degree thesis at the laboratory of Applied Biology under scientific direction of Prof. Lina Ghibelli, entitled: "PHOSPHATIDYLSERINE EXPOSURE IN APOPTOSIS: MECHANISMS AND RELEVANCE". **February 2007.**

- **Secondary-school scientific diploma** achieved at the ISTITUTO TECNICO PER ATTIVITA' SOCIALI STATALE (ITAS) of SORA (FR), Italy. **July 2001.**

## Position and Work Experience

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**January 2024 – December 2024:**

- **Post-doc Research contract**, in the Laboratory of Experimental Immunology, Istituto Dermopatico dell'Immacolata, IDI-IRCCS, Rome, Italy, Grant title: "CARATTERIZZAZIONE DI NUOVI BIOINCHIOSTRI COMPOSTI DA PEPTIDI AUTO-ASSEMBLANTI PER LA BIOSTAMPA DI EQUIVALENTI CUTANEI".

**July 2023 – December 2023:**

- **Post-doc Research contract**, in the Laboratory of Experimental Immunology, Istituto Dermopatico dell'Immacolata, IDI-IRCCS, Rome, Italy, Grant title: "MECCANISMI DI RISPOSTA ALL'IMMUNOTERAPIA CON GLI INIBITORI DI CHECKPOINT IMMUNOLOGICO NEI TUMORI CUTANEI".

**January 2023 – June 2023:**

- **Post-doc Research contract**, in the Laboratory of Experimental Immunology, Istituto Dermopatico dell'Immacolata, IDI-IRCCS, Rome, Italy, Grant title: "LA RISPOSTA IMMUNITARIA NEI TUMORI CUTANEI: MECCANISMI MOLECOLARI E VALIDAZIONE DI NUOVE TARGET TERAPEUCI E MARCATORI PROGNOSTICI".

**September 2022 – December 2022:**

- **Post-doc Research contract**, in the Laboratory of Experimental Immunology, Istituto Dermopatico dell'Immacolata, IDI-IRCCS, Rome, Italy. Grant title: "3D BIOPRINTING DI CUTE UMANA E TUMORI SQUAMOCELLULARI QUALI MODELLI AVANZATI PER LA MEDICINA DI PRECISIONE".

**October 2019 – October 2020:**

- **Research fellowship SSD BIO/13**, in the Laboratory of Applied Biology, Department of Biology, University of Rome "Tor Vergata", Italy. Grant title: "EFFECT OF NATURAL COMPOUNDS AND METABOLIC MODULATORS IN POST-THERAPY TUMOR REPOPULATION".

**April 2016 – January 2017:**

- **Research fellowship**, in the Laboratory of Applied Biology, University of Rome "Tor Vergata". Grant title: "ROLE OF ETOPOSIDE AND CERIUM NANOPARTICLES IN THE DIFFERENTIATION AND APOPTOSIS OF TUMORS CELLS".

**February 2015 – December 2015:**

- **Research fellowship**, in the Laboratory of Applied Biology, University of Rome "Tor Vergata". Grant title: "BIOLOGICAL EFFECTS OF NANOPARTICLES: GRAPHENE AND CERIUM OXIDE".

**November 2013 – July 2014:**

- **Research fellowship**, in the Laboratory of Applied Biology, University of Rome "Tor Vergata". Grant title: "BIOCOMPATIBILITY OF GRAPHENE".

**Training internships abroad:**

- **May 2026:** stage in the laboratory of **Professor Jochen Grassinger, University Hospital of Regensburg, Germany**, to learn techniques of stroma/cells co-culture.

- **January 2013 – February 2013:** stage in the laboratory of **Professor Marc Diederich, Laboratoire de Biologie Moléculaire et Cellulaire du Cancer (LBMCC), Luxembourg**.

## Teaching Activity

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- **Didactic training service** on the methodology and specific language in the teaching of Biology for the benefit of Albanian teachers of the Italian language (Illiria Italian L2) operating in the schools hosting the Italian Bilingual Sections, through 2 training courses of 5 hours each on the **5th and 6 March 2024**, at the facilities of the **Italian Embassy in Tirana**.
- **Lecturer** at the **UNICAMILLUS** International University, Rome, for the **teaching of Applied Biology** in the Integrated Course of Biology and Genetics, for first year students of the Degree Course in Dentistry and Dental Prosthetics and active participation as a member of the examination commission: **A.A. 2020/2021, 2021/2022, 2022/2023, 2023/2024**.
- **Lecturer** at the **UNICAMILLUS** International University, Rome, for the **teaching of Applied Biology** in the Integrated Course of Applied Physical Biology, Biochemistry, for first year students of the Degree Course in Midwifery and active participation as a member of the examination commission: **A.A. 2023/2024**.
- **Lecturer** at the **UNICAMILLUS** International University, Rome, for the **teaching of Applied Biology** in the Integrated Course of Biological Bases and Biochemistry of Life, for first-year students of the Degree Course in Medical Radiology Techniques, Imaging and Radiotherapy and active participation as a member of the examination commission: **A.A. 2023/2024**
- **Didactic tutoring assignment** for students of master's degree courses in the health sector at the **UNICAMILLUS** International University. **A.A. 2022/2023, 2023/2024**.
- **Participation as a Member of the Graduation Commission in the Ordinary Graduation Session** for the **Degree Course in Medicine and Surgery** for the **academic year 2021-2022**, held on 02/28/2023 at the **Nostra Signora del Buon Consiglio Catholic University of Tirana**.
- **Lecturer** at the **University of Rome Tor Vergata**, for the teaching of Applied Biology in the Integrated Course of Biology and Physiology of psychological interest, for first year students of the Degree Course in General Psychology, of development, gender and social behavior and active participation as a member of the examination committee: **A.A. 2022/2023**
- **Lecturer** at the **Catholic University Nostra Signora del Buon Consiglio of Tirana** for the teaching of **Applied Biology** in the Integrated Course of Biology and Genetics, for first year students of the Degree Course in Medicine and Surgery and active participation as a member of the examination commission also in the academic year. 2016/2017 in addition to the subsequent years for which I had the teaching role:  
**A.A. 2017/2018, 2018/2019, 2019/2020, 2020/2021, 2021/2022, 2022/2023, 2023/2024**.

- Supplementary **teaching/seminar activities** as part of the "**Applied Biology**" teaching module for a total of 8 hours (4 hours for the 2015/2016 academic year) at the School of Specialization in Medical Physics of the **University of Rome " Tor Vergata"** with related certificates issued and active participation as a member of the examination commission: **A.A. 2015/2016, 2016/2017, 2018/2019, 2019/2020, 2020/2021, 2021/2022, 2022/2023, 2023/2024.**

- **Didactic support** and **participation as a member of the commission** in the exams for the English Course, **Nanobiotechnology** in the **Biotechnology Degree Course** at the **University of Rome "Tor Vergata": A.A. 2016/2017, 2017/2018, 2018/2019, 2019/2020, 2020/2021, 2021/2022, 2022/2023.**

## Scientific activity

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### Expertise:

- Physiological mechanisms of apoptotic induction
- Stress-induced apoptosis using chemotherapeutic agents both at high doses (cytotoxic therapies) and at low doses (metronomic therapy)
- Anti-tumoral effects of natural compounds
- Anti-apoptotic effects of static and pulsed magnetic fields on biological systems
- Role of calcium during apoptosis and analysis of calcium fluxes during magnetic fields exposure on biological system
- Biological effects of nanoparticles
- Repopulation of cancer cells after chemotherapeutic agents (either high or low doses)

### Technical skills and competences:

- Preparation and maintenance of human skin explants from tissues derived from surgical specimens from healthy individuals
- Decellularization techniques of human tissue samples derived from healthy individuals for the creation of decellularized and deep-dermalized scaffolds
- Establishment and maintenance of cell cultures of keratinocytes, fibroblasts and chondrocytes derived from human tissues of healthy individuals
- Processing of blood samples from patients for the separation of the various components: plasma, serum, post-ficoll plasma and peripheral blood mononucleated cells (PMBC)
- Extraction of the skin microbiome in samples derived from skin swabs of patients suffering from diabetic ulcers
- Using the 3D printer to create bioprints of human skin (constructs)
- Preparation of some matrices used in the bioprinting of human skin, through the processing of tissues derived from surgical sampling of healthy individuals, obtaining dermal and adipose extracts which, once freeze-dried, are used for the enrichment of the matrices used in the bioprints

- Seeding of cells (keratinocytes and squamous cell carcinoma cells) into bioprinted constructs, emerging growth and histological fixation of specimens
- Creation of spheroids from squamous cell carcinoma cell lines and development of alternative techniques for inserting such spheroids into bioprinted skin constructs
- Preparation and maintenance of cell culture
- Preparation and maintenance of stromal and tumoral cells co-culture
- Analysis of apoptosis
- Modulation of apoptosis
- Cytometry
- Nanoparticles manipulation
- Immunofluorescence
- Models of study in vitro of chemotherapy
- Anti-tumoral effect of natural compounds
- Calcium fluxes analysis
- Cell cycle analysis
- Clonogenicity assay

## Professionalizing Activities

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- **Inclusion in the teaching and educational staff at MIUR** in the teaching rankings of the III group of circles and institutes. Subsequently renamed GPS in 2020. **Years 2014, 2017, 2020, 2022.**
- **Second level Master in Personalized Nutrition: molecular and genetic bases**, achieved on 18/12/2017 at the Faculty of Medicine and Surgery, University of Rome "TOR VERGATA", Italy. 110/110 cum Laude. Title of thesis: "ANTITUMOR EFFECTS OF QUERCETIN: IN VITRO AND IN VIVO STUDY". **December 2017.**
- **Qualification to practice as a BIOLOGIST**: having taken and passed the exam during the second session of the year 2012, at the University of Rome "Tor Vergata", Italy. **October 2012.**

## International and National Congress Attendance and Organization

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- Participation in the Regional Congress entitled "La Dermatologia nelle regioni", held on 15 December 2023 in Rome in the A.Roma Lifestyle Hotel Congress Center. **December 2023.**
- Participation in the Third Sports Medicine and Science Conference, organized by the Unicamillus University, held on 12 December 2023 at the Auditorium of the Unicamillus University, Rome. **December 2023.**
- Participation and active collaboration as a member of the Scientific Secretariat in the Workshop entitled "**Nanotechnological applications to Dermatology**", organized by Prof. Lina Ghibelli of the University of Rome

Tor Vergata and Dr. Cristina Maria Failla of the IDI-IRCCS Experimental Immunology Laboratory, held at the Department of Biology of the University of Rome Tor Vergata, on 10/13/2023. **October 2023.**

- Participation in the closing conference of the BIOSQIN project entitled “**3D Bioprinting of human skin and squamous cell tumors (SCC) as advanced models for precision medicine-BIOSQIN**”, organized by the Department of Food Safety, Nutrition and Veterinary Public Health (SANV) of 'Istituto Superiore di Sanità (ISS), held at the ISS (RM), on 09/10/2023. **October 2023.**

- Participation in the IPAM 2022 Annual Conference, entitled “**3D Bioprinting, a possibility for Replacement**”, organized by the "IPAM Board of Directors", held in Milan, at the San Raffaele Hospital, on 01/12/2022. **December 2022.**

- Participation in the 7th Annual Meeting entitled “**New technologies and strategies to fight cancer**”, organized by the “ALLIANCE AGAINST CANCER (ACC)”, held in Rome at the Fondazione Policlinico Gemelli IRCCS Università Cattolica del Sacro Cuore, on 21-23/ 09/2022. **September 2022.**

- **Course on** “Principles and methods for university education.”, organized by Unicamillus University, held in Rome, Italy, **June 27<sup>th</sup> and 28<sup>th</sup>, 2022.**

- Active collaboration, as a member of the organizing committee and as a member of the scientific committee, in the creation of the third international symposium on ANAKOINOSIS “**AN INNOVATIVE ANTICANCER THERAPY TARGETING THE ABERRANT CANCER TISSUE HOMEOSTASIS, - a novel and long lasting opportunity for sustainable drug development -**” organized by Prof. Ghibelli Lina and Prof. Reichle Albrecht in Rome on 13-14-15 May 2020, **unfortunately canceled following the SARS-Cov-2 health emergency. May 2020.**

- **Invited speaker** with a presentation entitled: **Metronomic etoposide induces caspase-free apoptosis and differentiation** and active collaboration, as a member of the organizing committee, in the creation of the second international symposium on ANAKOINOSIS, entitled “**RE-ESTABLISHING APOPTOSIS COMPETENCE VIA COMMUNICATIVE REPROGRAMMING, a novel anticancer therapy**” organized by Prof. Ghibelli Lina and Prof. Reichle Albrecht in Rome on **April 19<sup>th</sup> and 20<sup>th</sup>, 2018.**

- Participation in the conference entitled “**Animal or vegetable proteins? A balance in progress**”, organized by SINU (Italian Society of Human Nutrition) held in Rome on 10/28/2017. **October 28<sup>th</sup>, 2017.**

- Participation in the course on “**labelling, promotion and advertising of food products**”, organized by ENPAB, Rome, Italy, **June 9<sup>th</sup> and 10<sup>th</sup>, 2017.**

- Participation in the final conference of TERRAVIVA project on “**Biodiversity, Territory and Nutrition: the sustainability of Italian agri-food**”, organized by the Research Council in Agriculture and Agrarian Economy Analysis (CREA), Rome, Italy, **June 8<sup>th</sup>, 2017.**

- Participation in the International 5° Symposium on **“Secondary leukemia and leukemogenesis”**, organized by Prof. Francesco Lo Coco, Prof. Livio Pagano and Prof. Maria Teresa Voso, Rome, Italy, **September 22<sup>nd</sup> to 24<sup>th</sup>, 2016.**

- **Invited speaker with a presentation entitled “Low doses of DNA damaging agents differentiate tumor cells: mechanisms and therapeutic strategies” and active collaboration in the scientific and organizing committee**, to the 1<sup>st</sup> International Symposium **“REPROGRAMMING CANCER CELLS VIA ANAKOINOSIS AS A NOVEL ANTICANCER APPROACH: FACTS, EXPECTATIONS AND OPEN QUESTIONS”**, organized by Prof. Ghibelli Lina and Prof. Reichle Albrecht in Rome, University of Rome “Tor Vergata”, Italy, **March 7<sup>th</sup> and 8<sup>th</sup>, 2016.**

- **Active collaboration in the organization** of the 1<sup>st</sup> Symposium on **“THERAPEUTIC POTENTIAL OF ACTIVE REDOX NANOPARTICLES AND NATURAL COMPOUNDS”**, organized by Prof. Ghibelli Lina in the University of Rome “Tor Vergata”, Italy, **April 23<sup>rd</sup>, 2013**

- **Invited speaker with a presentation entitled “Magnetic fields promote a pro-survival non-capacitative Ca<sup>2+</sup> entry via phospholipase C signalling”** to the XXI ABCD Annual Conference on **“CELLULAR STRESS: SURVIVAL AND APOPTOSIS”**, Urbino, Italy, **May 7<sup>th</sup> and 8<sup>th</sup>, 2010.**

## Personal skills and Computer Knowledge

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- Mother tongue: Italian
- Foreign language: English. Level 1B.
- Excellent knowledge of Microsoft Office Pack: Word, Excel, Power Point, Publisher
- Excellent knowledge and use of video and photo editing programs: Photoshop, GIMP, Moviemaker
- Excellent knowledge of Microsoft Windows operating system
- Excellent knowledge of platform WordPress
- Excellent knowledge and use of software for scientific data analysis (Image J, Flowing Software 2, WinMDI, ZEN)

## Publications

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- **Safe-Shields: Basal and Anti-UV Protection of Human Keratinocytes by Redox-Active Cerium Oxide Nanoparticles Prevents UVB-Induced Mutagenesis.** Authors: Corsi F., Di Meo E., Lulli D., Deidda Tarquini G., Capradossi F., Bruni E., Pelliccia A., Traversa E., Dellambra E., Failla C.M., Ghibelli L. Antioxidants, 2023 Mar 20;12(3):757. doi: 10.3390/antiox12030757. PMID: 36979005

- **Androgen Deprivation Freezes Hormone-Sensitive Prostate Cancer Cells in a Reversible, Genetically Unstable Quasi-Apoptotic State, Bursting into Full Apoptosis upon Poly(ADP-ribose) Polymerase Inhibition**, authors: Pelliccia A., Capradossi F., Corsi F., Deidda Tarquini G., Bruni E., Reichle A., Torino F. and Ghibelli L. International Journal of Molecular Sciences. 2023 Jan 20;24(3):2040. doi: 10.3390/ijms24032040. PMID: 36768364
  
- **Apoptosis as a Driver of Therapy-Induced Cancer Repopulation and Acquired Cell-Resistance (CRAC): A Simple In Vitro Model of Phoenix Rising in Prostate Cancer**, authors: Corsi, F., Capradossi, F., Pelliccia, A., ...Reichle, A., Ghibelli, L. International Journal of Molecular Sciences. 2022 Jan 21;23(3):1152. doi: 10.3390/ijms23031152. PMID: 35163077
  
- **Lowering Etoposide Doses Shifts Cell Demise From Caspase-Dependent to Differentiation and Caspase-3-Independent Apoptosis via DNA Damage Response, Inducing AML Culture Extinction**, authors: **Bruni E**, Reichle A, Scimeca M, Bonanno E, Ghibelli L. Front Pharmacol. 2018 Nov 13;9:1307. doi: 10.3389/fphar.2018.01307. eCollection 2018. PMID: 30483138
  
- **Biomodulatory Treatment With Azacitidine, All-trans Retinoic Acid and Pioglitazone Induces Differentiation of Primary AML Blasts Into Neutrophil Like Cells Capable of ROS Production and Phagocytosis**, authors: Klobuch S, Steinberg T, **Bruni E**, Mirbeth C, Heilmeyer B, Ghibelli L, Herr W, Reichle A, Thomas S. Front Pharmacol. 2018 Nov 27;9:1380. doi: 10.3389/fphar.2018.01380. eCollection 2018. PMID: 30542286
  
- **Slow release of etoposide from dextran conjugation shifts etoposide activity from cytotoxicity to differentiation: A promising tool for dosage control in anticancer metronomic therapy**, authors: Milena De Nicola, **Emanuele Bruni**, Enrico Traversa, Lina Ghibelli L. Nanomedicine. 2017 Aug;13(6):2005-2014. doi: 10.1016/j.nano.2017.05.004. Epub 2017 May 20. PMID: 28535989
  
- **Nanoceria protects from alterations in oxidative metabolism and calcium overloads induced by TNF $\alpha$  and cycloheximide in U937 cells: pharmacological potential of nanoparticles**, authors: González-Flores D, De Nicola M., **Bruni E.**, Caputo F., Rodríguez A.B, Pariente J.A., Ghibelli L. Mol Cell Biochem. 2014 Dec;397(1-2):245-53. doi: 10.1007/s11010-014-2192-2. Epub 2014 Aug 23. PMID: 25148872