




PERSONAL INFORMATION



Isabella Guardamagna

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Sex Female | Date of birth 14/05/1991 | Nationality Italian

RESEARCH AND
MANAGEMENT ACTIVITY

Focus of my research activity is the study of ionizing radiation induced biological effects, with application to cancer biology, particularly on the resistance of cancer cells to therapeutical treatments, and to radiation protection. My experimental studies mainly concern: DNA damage and repair mechanisms, cell cycle perturbations, and more generally the characterisation of the molecular mechanisms of the radiation response, using, among other techniques, immunofluorescence, flowcytometry, electrophoresis. My everyday job also consists in taking care of the management of the laboratory with purchase orders, inventory of materials and maintenance of instruments. I take care of data management and correct data documentation and support the use of the instrumentation by external users and students after correct training on safety standards.

WORK EXPERIENCE

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- February 2023-present **Expert in the field of General Pathology**
"Cultore della materia in Patologia Generale nell'ambito del corso di laurea in Scienze Biologiche L-13"
 - December 2021-present **Expert in the field of Radiobiology and Medical Physics**
"Cultore della materia per il SSD FIS/07 nell'ambito del corso di Radiation biophysics and Radiobiology per il corso di laurea in Scienze Fisiche LM-17"
 - September 2019-present **Post-doc fellow ("Assegnista")**
Radiation Biophysics and Radiobiology group, Head of the group: G. Baiocco, Department of Physics, University of Pavia (UniPv), Pavia, Italy
 - October 2016-August 2019 **MIUR scholarship for PhD research**
Immunology and General Pathology unit, Head of the Group: L. A. Stivala, Department of Molecular Medicine, University of Pavia (UniPv), Pavia, Italy
 - 2017-present **Supervision/co-supervision of theses**
Bachelor's degree in Biotechnology (L-2) (First Level degree)

Bachelor's degree in Biology (L-13) (First Level degree)

Bachelor's degree in Physics (L-30) (First level degree)

Master's degree in Pharmaceutical, Veterinary and Medical Biotechnologies (LM-9) (Second Level degree)

Master's degree in Experimental and applied Biology (LM-6) (Second Level degree)

Master's degree in Physical Sciences (LM-17) (Second Level degree)

- 2022-2023 **Seminar for “Radiation Biophysics and Radiobiology”:** laboratory (LM-17) 2 hours
Head of the program: Prof. Giorgio Baiocco
- 2022-2023 **Seminar for General Pathology (L-13)** 10 hours
Head of the program: Prof. Perucca Paola
- 2021-2022 **Tutor for Immunology and general Pathology course (L-13)** 25 hours
Head of the program: Prof. Perucca Paola
- 2021-2022 **Seminar for Radiobiology: laboratory (LM-17)** 2 hours
Head of the program: Prof. Giorgio Baiocco
- 2020-2021 **Seminar for Radiobiology: laboratory (LM-17)** 2 hours
Head of the program: Prof. Andrea Ottolenghi
- 2019-2020 **Seminar for Radiobiology: laboratory (online) (LM-17)** 2 hours
Head of the program: Prof. Andrea Ottolenghi
- 2018-2019 **Tutor for Immunology and general Pathology course (LM-9)** 40 hours
Head of the program: Prof. Cazzalini Ornella
- 2017-2018 **Tutor for Immunology and general Pathology course (LM-9)** 30 hours
Head of the program: Prof. Cazzalini Ornella
- 2016-2017 **Tutor for Immunology and general Pathology course (LM-9)** 30 hours
Head of the program: Prof. Cazzalini Ornella

December 2015-September 2016 **Post-master’s degree Visitor**
Immunology and General Pathology unit, Head of the Group: L. A. Stivala, Department of Molecular Medicine, University of Pavia (UniPv), Pavia, Italy
Head of the Unit: Prof.ssa L. A. Stivala

EDUCATION AND TRAINING

- 27th October 2023 **Specialisation in Clinical Pathology and Clinical Biochemistry**
Specializzazione in Patologia clinica e Biochimica clinica Classe della Medicina diagnostica e di laboratorio (non medici)
Result:50/50
Department of Molecular Medicine, University of Pavia (UniPv), Pavia, Italy
Title: Characterisation and new therapeutic approaches to treat p53^{mut} colorectal cancers.
- 13th January 2020 **PhD in Genetics, Molecular Biology and Cellular Biology (XXXII cycle)**
Immunology and General Pathology unit, Head of the Group: L. A. Stivala, Department of Molecular Medicine, University of Pavia (UniPv), Pavia, Italy
Title: “A new functional *in vitro* cell-free assay to evaluate DNA repair mechanisms”
Scientific Supervisor: Prof.ssa L. A. Stivala
- June 2016 **Qualified as a Professional Biologist**
University of Pavia (UniPv), Pavia, Italy
- 24th November 2015 **Master’s degree in Pharmaceutical, Veterinary and Medical Biotechnologies**
Result: 106/110
Immunology and General Pathology unit, Head of the Group: L. A. Stivala, Department of Molecular Medicine, University of Pavia (UniPv), Pavia, Italy
Title: “Role of DDB2 protein in Nucleotide Excision Repair analysed by an *in vitro* cell-free system”
Scientific Supervisor: Prof.ssa L. A. Stivala

16th December 2013

Bachelor's degree in Biotechnologies

Department of Earth and Environment Sciences, Head of the Group: E. Capelli, University of Pavia (UniPv), Pavia, Italy

Title: "Bioinformatic sequence analysis of small-non coding RNA to identify microRNA"

Scientific Supervisor: Prof.ssa E. Capelli

2010

High school diploma

Liceo scientifico Galileo Galilei – Indirizzo Linguistico progetto Brocca, Voghera (Pavia, Italy)

PERSONAL SKILLS

Mother tongue Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	B2	B2	B2	B2
French	B1	B1	B1	B1	B1
Delf B1, 1 st June 2009					

Job-related skills

Cell cultures:

- maintenance and expansion of cultured cells;
- treatment of cells with damaging agents;
- evaluation of migration and proliferation with different techniques (wound-healing, Boyden's chamber etc.);
- transfection of cells with recombinant DNA (extracted from bacteria);
- quantification of proteins and DNA by spectrophotometry;
- use of fluorescence microscope;
- isolation of functional nuclei from human cells.

Molecular biology:

- protein analysis by Western Blot;
- zymography;
- DNA analysis on agarose gel;
- staining of acrylamide gel with Coomassie technique and / or silver staining;
- cell-free *in vitro* assay in isolated nuclei;
- immuno-reactions for fluorescence microscopy and flow cytometry;
- *E. Coli* cultures for plasmid DNA production;
- extraction of recombinant DNA from *E. Coli* bacteria (via MIDI and MINI protocol);
- Purification of recombinant human protein from *E. Coli* bacteria;
- PCR;
- multi-site direct specific mutagenesis;
- cloning of vectors;
- colony screening for analysis of mutagenesis;
- Purification of recombinant human proteins produced in bacteria (*E. coli*).

Setup of irradiation protocols:

- exposure of *in vitro* systems to different radiation sources (X-rays, particle beams, UV);
- evaluation of dose-response.

Other skills

- Image and data analysis (Image J, LasX, Prism-Graphpad);
- Microsoft Office tools (Word, Excel e PowerPoint);
- Molecular visualization system (PyMol);
- Prediction of secondary structures of single stranded RNA or DNA sequences (RNA fold).

Driving licence B

ADDITIONAL INFORMATION

- Conferences (selection)**
- Guardamagna I; Iaria O; Lonati L; Mentana A; Previtali A; Uggè V; Scotti C; Pessino G; Maggi M; Baiocco G. "L-Asparaginase alters ionizing radiation response, migration and adhesion in Caco-2 cells". EACR 2023 annual congress; 12-15 June 2023, Torino, Italy.
- Guardamagna I., Lonati L., Uggè V., Ottolenghi A., Savio M., Stivala L.A., Baiocco G. "Genomic instability markers in response to ionizing radiation-induced damage in colorectal adenocarcinoma Caco-2 cells". EACR-OECI Molecular Pathology Approach to Cancer, 23-24 March 2021, online.
- Guardamagna I., Lonati L., Pulimeno C., Ottolenghi A., Baiocco G. "Radiation-induced activation of matrix metalloproteases in colorectal adenocarcinoma cells". SIRR2020, 10-12 November 2020, online.
- Guardamagna I., Lonati L., Ottolenghi A., Savio M., Stivala L.A., Baiocco G. "Cell-cycle perturbation, atypical mitosis and micronuclei in Caco-2 cells as indicator of radiation-induced genomic instability". ERRS 2020, Lund-Sweden, 13-17 September 2020, online.
- Guardamagna I, Bassi E, Savio M, Perucca P, Cazzalini O, Prosperi E, Stivala LA. "DNA repair mechanisms evaluated by a new functional *in vitro* cell-free assay". PATHOBIOLOGY: A "YOUNG" POINT OF VIEW SIP MeT Young Meeting. Firenze 13th September 2019.
- Guardamagna I. "*Human cell-free DNA repair system analysed by flow cytometry*". First Italian Attune NxT User Meeting, Modena, 11 June 2019.
- Bassi E, Perucca P, Guardamagna I, Soprano P, Pisani I, Balduini A, Prosperi E, Stivala LA, Cazzalini O. "Exploring the role of DDB2PCNA- mutated protein in the acquisition of invasive phenotype". Pathobiology: a "young" point of view SIP MET Young Meeting. Firenze 13th September 2019.
- Guardamagna I, Bassi E, Iaria O, Perucca P, Prosperi E, Cazzalini O, Stivala LA. "A new functional *in vitro* "cell free" assay as a method to study the DNA repair synthesis". FISV 2018, 15th Annual congress. Roma, 18 - 21 September 2018.
- Bassi E, Perucca P, Guardamagna I, Iaria O, Prosperi E, Stivala LA, Cazzalini O. "A DDB2 mutated protein, unable to interact with PCNA, affects DNA repair and confers proliferation advantage". FISV 2018, 15th Annual congress. Roma, 18- 21 September 2018.
- Guardamagna I, Perucca P, Mocchi R, Bassi E, Sommatitis S, Nardo T, Prosperi E, Stivala LA, Cazzalini O. "*A DDB2 mutation disrupting interaction with PCNA affects DNA repair and confers proliferation advantage*". Presentation of the 2nd joint annual symposium of DBB, DMM and IGM-CNR. Pavia, 20 – 22 June 2018

Publications

1. Morciano P, Dini V, Berardinelli F, Baiocco G, Conte V, Udroui I, Barbato F, Marinaccio J, Anello P, Antoccia A, Tabocchini MA, Selva A, Canella S, Bianchi A, Guardamagna I, Lonati L, Scifoni E, Laubenstein M, Balata M, Ferella F, Grifoni D, Galante A, Maccarrone M, Tirelli V, Grasso F, Sanchez M, Sgura A. "Overview of DISCOVER22 experiment in the framework of INFN-LNGS Cosmic Silence activity: challenges and improvements in underground radiobiology". *Frontiers in Physics*; (2023); 11.
2. Mentana A, Orsière T, Malard V, Lamartiniere Y, Grisolia C, Tassistro V, Iaria O, Guardamagna I, Lonati L, Baiocco G. Gaining insight into genotoxicity with the comet assay in inhomogeneous exposure scenarios: The effects of tritiated steel and cement particles on human lung cells in an inhalation perspective. *Toxicol In Vitro*; (2023); 92: 105656.
3. Guardamagna I, Iaria O, Lonati L, Mentana A, Previtali A, Uggè V, Ivaldi GB, Liotta M, Tabarelli de Fatis P, Scotti C, Pessino G, Maggi M, Baiocco G. "Asparagine and glutamine deprivation alters ionizing radiation response, migration and adhesion of a p53null colorectal cancer cell line". *IJMS*; (2023); 24(3):2983.
4. Mentana A, Lamartinière Y, Orsière T, Malard V, Payet M, Slomberg D, Guardamagna I, Lonati L, Grisolia C, Jha A, Lebaron-Jacobs L, Rose J. "Tritiated Steel Micro-Particles: Computational Dosimetry and Prediction of Radiation-Induced DNA Damage for In Vitro Cell Culture Exposures". *Radiation research*; (2023); 199(1):25-38.
5. Maggi M, Pessino G, Guardamagna I, Lonati L, Pulimeno C, Scotti C. "A targeted catalytic nanobody (T-can) with asparaginolytic activity". *Cancers*; (2021); 13(22):5637.
6. Guardamagna I, Lonati L, Savio M, Stivala LA, Ottolenghi A, Baiocco G. "An Integrated Analysis of the Response of Colorectal Adenocarcinoma Caco-2 Cells to X-Ray Exposure". *Frontiers in Immunology*; (2021); 11: 688919.
7. Lonati L, Barbieri S, Guardamagna I, Ottolenghi A, Baiocco G. "Radiation-induced cell cycle perturbations: a computational tool validated with flow-cytometry data". *Scientific reports*; (2021); 11(1):925.
8. Baiocco G, George I, Garcia-Argote S, Guardamagna I, Lonati L, Lamartinière Y, Orsière T, Rousseau B, Ottolenghi A., Jha A, Lebaron-Jacobs L, Grisolia C, Malard V. "A 3D in vitro model of the human airway epithelium exposed to tritiated water: dosimetric estimate and cytotoxic effects". *Radiat. Res*; (2021); 195(3), pp. 265-274.
9. Guardamagna I, Bassi E, Savio M, Perucca P, Cazzalini O, Prosperi E, Stivala LA. "A functional in vitro cell-free system for studying DNA repair in isolated nuclei". *JCS*; (2020); 113(11).
10. Borsci G, Barbieri S, Guardamagna I, Lonati L, Ottolenghi A, Ivaldi GB, Liotta M, Tabarelli De Fatis P, Baiocco G, Savio M. "Immunophenotyping reveals no significant perturbation to PBMC subsets when co-cultured with colorectal adenocarcinoma Caco-2 cells exposed to X-rays". *Front Immunol*; (2020);11:1077.
11. Bassi E, Perucca P, Guardamagna I, Prosperi E, Stivala LA, Cazzalini O. Exploring new potential role of DDB2 by Host Cell Reactivation assay in human tumorigenic cells. *BMC Cancer*; (2019); 19(1):1013.
12. Perucca P, Mocchi R, Guardamagna I, Bassi E, Sommatì S, Nardo T, Prosperi E, Stivala LA, Cazzalini O. "A DDB2 mutation disrupting interaction with PCNA affects DNA repair and confers proliferation advantage". *BBA*; (2018); 1865(6):898-907.
13. Guardamagna I., Lonati L., Pulimeno C., Mentana A., Ottolenghi A., Baiocco G. "Matrix metalloproteases regulation in colorectal adenocarcinoma cells exposed to X-rays". *Nuovo Cimento della Società di Fisica*; (2020) 43(6):135.
14. Mentana A, Baiocco G., Guardamagna I., Lonati L., Ottolenghi A., Beninati S., Borromeo I., Di Fino L., Paci M., Romoli G., Sannita W.G., Narici L. "Visual system activation by ionizing radiation: Modelling the irradiation setup for whole rabbit eye exposures". *Nuovo Cimento della Società di Fisica*; (2020) 43(6):134.

Memberships/Affiliation

Member of the Italian Pathology Society (SIP) since 2019.

Member of the European Association of Cancer Research (EACR) since 2020.

Scientific Association at Istituto Nazionale di Fisica Nucleare (INFN) since November 2022

Courses

Normativa ADR: trasporto di merci pericolose e rifiuti, University of Pavia, online, June 2023.

IMARIS Applicative Workshop, "Qualitative analysis of 3D images", University of Pavia; October 2017.

Training course for tutoring activity, University of Pavia; October 2017.

Clinic Bioinformatics, University of Pavia; May-June 2017.

Awards

ERRS- Young Investigator Award, 2020.

Pavia, 10th November 2023