PERSONAL INFORMATION

Cristiana Lalli

cristianalalli@gmail.com

Sex Female | Nationality Italian

EDUCATION AND RESEARCH POSITIONS

Nov 2019-Present — *Research Grant category B2 at the Molecular Medicine Department* (University of Rome La Sapienza)

Laboratory of Prof. Angela Santoni. *Molecular Medicine Department of* University of Rome La Sapienza

Laboratory of Prof. Giorgio Morelli. Food and Nutrition Research Center (CREA), Rome (Italy)

Project: "Role of miRNA and plant exosomes in the modulation of inflammatory responses"

Mar 2016–Mar 2019 — *Research Scientist of Molecular Biology department and Infectious - Neglected Diseases therapeutic unit at the IRBM Science Park*

Laboratory of Dr. Giacomo Paonessa. National Collection of Chemical Compounds and Screening Center (CNCCS), IRBM Science Park, Pomezia, Rome (Italy)

Research of novel therapeutic targets and drugs for important parasitic and viral diseases such as Malaria, Human African trypanosomiasis (HAT), Zika virus and Hepatitis B virus (HBV).

Nov 2015–Mar 2016 — *Postdoctoral fellow at the National Research Council (CNR)*

Laboratory of Dr. Giovina Ruberti. Institute of Cell Biology and Neurobiology, CNR, Monterotondo, Rome (Italy).

Research title "Innovative drugs - development of functional models and studies for the schistosomicidal molecules research"

Nov 2012–Oct 2015 — PhD Student in Genetics and Molecular Biology (University of Rome La Sapienza)

Tutor: Dr. Giovina Ruberti, Institute of Cell Biology and Neurobiology, (CNR), Monterotondo, Rome (Italy)

Thesis project: "Hit Compounds Identification by Medium-Throughput Screening of a compounds collection for the discovery of novel targets and molecules involved in the *Schistosoma mansoni* parasite life cycle"

Jun 2015–Aug 2015 — Unipharma – Graduates Erasmus Traineeship

Laboratory of Prof. Christoph Grevelding. Institut für Parasitologie, BFS (Justus-Liebig-University-Giessen-Germany)

Traineeship title: "*Schistosoma mansoni in vitro*-culture and molecular biology

techniques".
By a grant of the University of Rome La Sapienza "Erasmus + Student Mobility Traineeship"

Apr 2013–Oct 2015

Traineeship and high-throughput screening of a collection of compounds on larval stage (schistosomula) of *Schistosoma mansoni* parasite
Laboratory of Dr. Alberto Bresciani. National Collection of Chemical Compounds and Screening Center (CNCCS) , IRBM Science Park, Pomezia, Rome (Italy)

Development and validation of a luminescent assay on schistosomula for the discovery of novel targets and molecules involved in the *Schistosoma mansoni* parasite life cycle

Nov 2010–Jul 2012

Master's Degree in Genetics and Molecular Biology 110 cum laude/110 (University of Rome La Sapienza)
Tutor: Dr. G. Ruberti, Institute of Cell Biology and Neurobiology, (CNR), Monterotondo, Rome (Italy)

Thesis title: "Role of Caspase-4 in the adhesion and migration of epithelial cancer cells"

Nov 2005–Jul 2010

Bachelor's Degree in Biological Sciences 101/110 (University of Rome La Sapienza)
Tutor: Dr. G. Ruberti, Institute of Cell Biology and Neurobiology, (CNR), Monterotondo, Rome (Italy)

Experimental thesis title: "Caspase-4 interacts with alfa-actinin and promotes the epithelial cells migration"

PERSONAL SKILLS

Mother tongue(s): Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B1	B2	B1	B2	B1
	Diploma Level B2 of British Council -Rome				
German	A1	A2	A1	A2	A1

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user
Common European Framework of Reference for Languages

Technical skills and competences

- *In vitro* cell culture, transient cell transfection with plasmid DNA, mRNA and siRNA oligonucleotides, proliferation and cell death assays, cell adhesion and cell migration assays;

- Caco-2 cells differentiation as a model of the human intestinal epithelium
- Immunofluorescence, protein electrophoresis (SDS-PAGE) and Western blotting analysis, protein immunoprecipitation, GST- fusion proteins purification and GST- pull down assays;
- *E.Coli* transformation, plasmid DNA preparation, cloning and mutagenesis, viral replicons preparation and generation of stable cell lines, gene sequencing and RT-PCR analysis;
- RNA extraction from culture cells and retrotranscription;
- Immunohistochemistry and confocal microscopy analysis on parasites and murine tissues;
- *In vitro* culture of the trypomastigote stage of *Trypanosoma brucei* for drug discovery studies;
- *In vitro* culture of *Plasmodium falciparum* asexual stages and production of gametocytes for drug discovery studies;
- Maintenance of the *S. mansoni* life cycle including the snail intermediate parasite host and the definitive laboratory host mice;
- Preparation and culture of schistosomula (larval stage), juvenile and adult worms for biochemical, immunological and drug discovery studies;
- High-throughput screening of compounds library by luminescent or fluorescent assay on cell lines and unicellular or multicellular parasites;
- *In vivo* experiments on murine model of schistosomiasis to evaluate the effect of selected compounds.
- *Broccoli sprout growth and extraction of plant exosomes from broccoli sprouts*
- Data and image processing and analysis

Communication skills	Good communication/presentation skills: able to present data clearly and confidently to both small and large groups, in Italian and in English, adapting style and content to the target audience.
Organisational / managerial skills	Design and planning of projects, efficient coordination of experimental work plans also in collaborations with students, technicians, post-doc fellow and senior scientists to achieve project goals on time, setting realistic objectives, capable of contributing to develop creative solutions to raised problems.
Job-related skills	Good collaboration and communication skills used to work with people from different origins and cultures and with different responsibility duties. Capable of working both independently and in team settings.
Digital competence	Excellent knowledge of:

- Operating Systems- Windows, Mac OSX.
- Software: Microsoft Office suite (Word, Power Point Excel), Adobe Photoshop

Good knowledge of specific Applications:

- ImageJ,
- Graph Pad Prism
- Vector NTI

ADDITIONAL INFORMATION

Scientific activity

Trained in cellular and molecular biology at Institute of Cell Biology and Neurobiology (CNR) (2009-2012), I acquired considerable expertise and experience in the study of complex biological processes including the study of apoptotic and non-apoptotic functions (cell cycle, cell adhesion and cell migration) of proteins of the Death Domain Fold family (FADD, TRADD and Caspases) (Papoff G. et al. 2015 and Papoff G. et al. 2018). During my PhD at Institute of Cell Biology and Neurobiology (2012-2015), I have been involved in multiple projects on both Schistosomiasis and cancer biology. In my PhD project, I have acquired expertise and competences to manage all *S. mansoni* life stages from the intermediate snail host to the definitive laboratory host mice, including skills in schistosomula preparation and culturing for biochemical, immunological and drug discovery studies. Moreover, in collaboration with the IRBM Science Park, I have developed and validated a luminescent medium-throughput system (384 well microtiter plate compatible) for reproducible, specific and sensitive detection of schistosomula viability (Lalli C et al., 2015). I also performed a medium-throughput screening on schistosomula. Subsequently, selected compounds were further investigated by using *in vitro* viability assays with juvenile and adult worms and *in vivo* studies in a murine model of disease (Guidi A. et al. 2016, Guidi A. et al. 2017 and Guidi A. et al. 2018). In the cancer biology area, I have been involved mainly in the immunohistochemistry studies and confocal analysis of xenograft and allograft node sections, obtained by athymic nude mice injected, respectively, with human non-small cell lung cancers (NSCLC) parental and EGFR-TKi-resistant cell lines (Presutti D. et al. 2015) and with Medulloblastoma cells explanted from Patched1 heterozygous mice (Presutti D. et al.2018)

More recently, at IRBM Science Park (2016 – 2019), I have been involved, in several parasitic and viral diseases projects such as malaria, human African trypanosomiasis (HAT), Zika virus and Hepatitis B virus (HBV).

Briefly, the goal of the malaria and HAT projects is to start a drug discovery program (high-throughput screening, functional studies and *in vivo* studies) to find potential drugs to combat specific life stages of parasites. In particular, I performed and coordinated the high-throughput screening of a library

compounds on the *Plasmodium falciparum* asexual stages and gametocytes and on the *Trypanosoma brucei* trypomastigote stage.

In Zika and HBV projects, instead, I have been involved in the production of the Zika virus replicons and HBV modified genomes, highly innovative and never used, that are able to measure viral replication in a specific and quantitative way, as to use the CNCCS collection to identify new active molecules.

Currently, I am working on characterizing the intestinal absorption mechanisms of plant miRNAs contained in microvesicles extracted from broccoli sprouts, studying the effect of these, *in vitro*, on the Caco-2 cell model, a human intestinal cell line widely used for studies of bioavailability of nutrients.

Courses

13-24 Apr 2015 FELASA (category C)- course on laboratory animal science European Molecular Biology Laboratory (EMBL), Monterotondo outstation

Feb 2013 – May 2015 English courses to British Council - Rome (Italy) English level attested: B2

Oct 2012 – Oct 2012 Confocal microscopy training to European Molecular Biology Laboratory (EMBL), Monterotondo outstation, Roma (Italy).
Tutor Dr. Giulia Bolasco

Feb 2013 - Mar 2013 Histology training to European Molecular Biology Laboratory (EMBL), Monterotondo outstation, Roma (Italy).
Tutor Dr. Emeral Perlas

Patents

WO2016/008977 Science Park SpA, CNCCS Scarl, CNR "Use of Perhexiline" Inventors: Ruberti G., Lalli C., Guidi A.(IBCN-CNR),Bresciani A., Gennari N., Paonessa G.,Nizzi E. (IRBM Science Park). Deposit date 16/07/2015

Publications

- Guidi A., Saccoccia F., Gennari N., Gimmelli R., Nizi E., **Lalli C.**, Paonessa G., Papoff G., Bresciani A., Ruberti G. (2018) Identification of novel multi-stage histone deacetylase (HDAC) inhibitors that impair Schistosoma mansoni viability and egg production. Parasit Vectors. 27;11(1):668. doi: 10.1186/s13071-018-3268-8.

- Papoff G., Presutti D., **Lalli C.**, Bolasco G., Santini S., Manelfi C., Fustaino V., Alemà S., Ruberti G. (2018) CASP-4 gene silencing in epithelial cancer cells leads to impairment of cell migration, cell-matrix adhesion and tissue invasion. Scientific reports Dec 7;8(1):17705. doi: 10.1038/s41598-018-35792-8

- Presutti D., Ceccarelli M., Micheli L., Papoff G., Santini S., Samperna S., **Lalli C**., Zentilin L., Ruberti G., Tirone F. (2018) Tis21-gene therapy inhibits

medulloblastoma growth in a murine allograft model. PLoS ONE 13(3): e0194206.

- Guidi A.**, Lalli C.**, Gimmelli R., Nizi E., Andreini M., Gennari N., Saccoccia F., Harper S., Bresciani A., Ruberti G. (2017) Discovery by organism based high-throughput screening of new multi-stage compounds affecting Schistosoma mansoni viability, egg formation and production. PLoS Negl Trop Dis 11(10): e0005994. https://doi. org/10.1371/journal.pntd.0005994

- Guidi A., **Lalli C.,** Perlas E., Bolasco G., Nibbio M., Monteagudo E., Bresciani A., Ruberti G. (2016) Discovery and characterization of novel anti-schistosomal properties of the anti-anginal drug, Perhexiline and its impact on *Schistosoma mansoni* male and female reproductive systems. PLoS Negl Trop Dis 10(8): e0004928. doi:10.1371/journal.pntd.0004928

- Presutti D., Santini S., Cardinali B., Papoff G., **Lalli C.**, Samperna S., Fustaino V., Giannini G., Ruberti G. (2015) MET gene amplification and MET receptor activation are not sufficient to predict efficacy of combined MET and EGFR inhibitors in EGFR TKI-resistant NSCLC cells. PLoS ONE 10(11): e0143333. doi:10.1371/ journal.pone.0143333

- Papoff G., Trivieri N., Marsilio S., Crielesi R., **Lalli C.,** Castellani L., Balog E.M., Ruberti G. (2015) N-terminal and C-terminal domains of calmodulin mediate FADD and TRADD interaction. PLoS ONE 10(2): e0116251. doi:10.1371/journal.pone.0116251.

- **Lalli C.,** Guidi A., Gennari N., Altamura S., Bresciani A., Ruberti G. (2015) Development and validation of a luminescence-based, medium-throughput assay for drug screening in *Schistosoma mansoni.* PLoS Negl Trop Dis 9(1):e0003484. doi:10.1371/journal.pntd.0003484.

Poster

- **Lalli C.**, Guidi A., Gennari N., Altamura S., Bresciani A., Ruberti G. Development and validation of a luminescence-based, medium-throughput assay for drug screening in Schistosoma mansoni. Poster 13. Molecular and cellular biology of helminths IX. Hydra (Greece) 31th August - 5th September 2015.

- Fustaino V., Presutti D.,Cardinali B., Colombo T., Papoff G., Santini S., **Lalli C.**, Giannini G., Brandi R., Arisi I., D'onofrio M., Ruberti G. (2014) Integrated analysis of DNA copynumber and gene expression data in lung cancer models of resistance to targeted therapy. Poster MGM-4, Bioinformatis Italian Society: Annual meeting 2014 Rome (Italy).

- Presutti D., Papoff G., Cardinali B., Santini S., **Lalli C**., Fustaino V., Colombo T., Giannini G., Perlas E., Brandi R., Arisi I., D'Onofrio M., Castellani L., Alemà S., Ruberti G. (2013) Establishment and characterization of EGFR Tyrosine Kinase

Inhibitor-resistant lung cancer cell lines. Poster P-77, Joint National Ph.D. Meeting, Pesaro10th -12th October 2013.

Conferences

- II° edition of Bioeconomy Rome International Conference - IRBM Science Park (Pomezia) 19/11/2012
- XII congress of Italian Federation of Life Sciences (FISV) 24-27/09/2012
- Conference of the Life Sciences Department Of The CNR "The CNR and the new biology" 11-12/10/2010
- CNR-EBRI-EMBL-ICGEB Monterotondo Workshop 18-19/03/2010

Rome, 26/10/2020

Signature
Cristiana Lalli