# GIULIA DEGIACOMI - *CURRICULUM VITAE*

## PERSONAL DATA


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| Name and Surname | GIULIA DEGIACOMI |
| Office address | DEPARTMENT OF BIOLOGY AND BIOTECHNOLOGY "LAZZARO SPALLANZANI" - UNIVERSITY OF PAVIA (ITALY)<br>VIA FERRATA, 9<br>27100 PAVIA |
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## EDUCATION

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| • **January 2012** | **PHD** IN GENETICS AND BIOMOLECULAR SCIENCES,<br>University of Pavia<br>Thesis title: "A magic target and new promising drugs against tuberculosis"<br>**SUPERVISORS:** Prof. Giovanna Riccardi and Prof. Maria Rosalia Pasca |
| • **Luglio 2008** | **MASTER DEGREE** *CUM LAUDE* IN INDUSTRIAL BIOTECHNOLOGIES,<br>University of Pavia. |
| • **Novembre 2006** | **BACHELOR DEGREE** *CUM LAUDE* IN BIOTECHNOLOGIES,<br>University of Pavia, Italy |

## NATIONAL SCIENTIFIC QUALIFICATION

September 2018 National Scientific Qualification as Associate Professor of Microbiology (SSD: BIO/19).

## CURRENT POSITION

**1st December 2021-present** — ***RESEARCHER IN MICROBIOLOGY (CONTRACT RTD – TYPE B, SSD: BIO/19)***

## WORK EXPERIENCE

• **2021** — ***POST-DOCTORAL FELLOWSHIP* (ASSEGNO DI RICERCA DI TIPO A)**

Laboratory of Molecular Microbiology, Department of Genetics and Microbiology, University of Pavia – Via Ferrata, 9, 27100 Pavia, Italy

**SUPERVISORS:** Prof. Giovanna Riccardi and Prof. Maria Rosalia Pasca

**E-MAILS**: giovanna.riccardi@unipv.it; mariarosalia.pasca@unipv.it

• **RESEARCH TOPICS**

- **A molecular and microbiological approach to characterize a new antitubercular drug**

ERA4TB (European Regimen Accelerator for Tuberculosis) project is a public-private initiative (founded by EU) devoted to accelerating the development of new treatment regimens for tuberculosis. In this context, I have the responsibility to coordinate and perform the experiments needed to characterize the mechanisms of action of new compounds which have the potential to start the Phase I clinical trial.

- **New weapons against *Mycobacterium abscessus* and other nontuberculous mycobacteria (FFC#14/2020)**

I was also involved in projects funded by the Italian Cystic Fibrosis Foundation of Verona (FFC # 14/2020; FFC # 19/2018). Non-tuberculous mycobacteria (NTMs) are emerging as important pathogens in lung infections affecting cystic fibrosis (CF) patients. Among the subspecies of NTM, *Mycobacterium abscessus* is becoming the most widespread pathogen and the most difficult to eradicate in CF centers around the world (Degiacomi et al., 2019). As a result, there is an urgent need for new and effective drugs against this pathogen. In the previous FFC project # 19/2018, more than 700 compounds were synthesized by Dr. Makarov, of which only one molecule, named 11326083, was found to be active against the growth of *M. abscessus*, other NTM species and against clinical isolates of *M. abscessus* MDR.

The FFC # 14/2020 project continues the previous FFC # 19/2018 and is based on collaboration with the S. Raffaele Institute in Milan, the University of Moscow and the University of Zaragoza. In this project we characterized the active compounds selected in the previous project. Thanks to ongoing collaborations, we have shown that 11226084, which is the active metabolite of the hit compound 11326083 (MIC = 0.5 μg / ml), is active against the biofilm of *M. abscessus* and can be used in combination with the compounds currently used in therapy. *In vivo* tests are ongoing in a mouse model infected with *M. abscessus*.

In collaboration with Prof. Manetti, in the previous project, more than 276,000 compounds approved against other diseases were tested by molecular docking against the virtual structure of MmpL3, a therapeutic target of *M. abscessus* ("drug repurposing concept"). Of these 48 were evaluated for their activity against *M. abscessus* and three possible inhibitors of MmpL3 were selected, including mefloquine, a known antimalarial. In this project, MmpL3 was validated as the cellular target of these compounds.

Finally, new classes of molecules continue to be tested against the growth of *M. abscessus* with the hope of finding more active ones against this emerging pathogen.

**ACHIEVED PUBLICATIONS**

Chiarelli LR*, Degiacomi G*, et al. Drug Discov Today. 2021; 26:542-550.

Degiacomi G, Chiarelli LR, Recchia D, Petricci E, Gianibbi B, Fiscarelli EV, Fattorini L, Manetti F, Pasca MR. The Antimalarial Mefloquine Shows Activity against *Mycobacterium abscessus*, Inhibiting Mycolic Acid Metabolism. Int J Mol Sci. 2021. 22:8533.

**• October 2018 – October 2020** ***POST-DOCTORAL FELLOWSHIP*** **(ASSEGNO DI RICERCA DI TIPO B)**

Laboratory of Molecular Microbiology, Department of Genetics and Microbiology, University of Pavia – Via Ferrata, 9, 27100 Pavia, Italy

**SUPERVISORS:** Prof. Giovanna Riccardi and Prof. Maria Rosalia Pasca

**E-MAILS**: giovanna.riccardi@unipv.it; mariarosalia.pasca@unipv.it

**• RESEARCH TOPICS**

- **A molecular and microbiological approach to characterize a new antitubercular drug and to detect the bedaquiline resistance mechanisms**

In this project, I focused my research activity on the compound 11726172 (4-nitrobenzo [c] [1,2,5] thiadiazol-5-yl thiazolidine-3-carbodithioate), which has good antituberculous activity (MIC of 0.25 μg / ml). Through the transcriptomic analysis of cultures of *M. tuberculosis* treated with this compound, we have studied its possible mechanism of action.

We also validated CanB, a carbonic anhydrase (AC) as a cellular target of *M. tuberculosis*. AC are metalloenzymes that catalyze the reversible hydration reaction of $CO_2$ to form $HCO_3$- and $H^+$; in *M. tuberculosis*, CanB is the β-AC that shows greater catalytic activity for the hydration of $CO_2$ than the other two mycobacterial ACs. To validate CanB as a therapeutic target we constructed knock-down conditional mutants (TetR-PipOFF and PipON systems), demonstrating the essentiality of CanB for the survival of the pathogen *in vitro*. Furthermore, the conditional CanB mutants obtained with the Pip-ON system were used to find any CanB inhibitors, through a target-based screening by resazurin assay (REMA), in collaboration with Prof. Fabrizio Manetti. We

are currently characterizing a class of novel compounds with antitubercular activity affecting CanB.

A second part of the project focused on studying the mechanisms of resistance to bedaquiline (BDQ), approved in 2012 by the FDA for the treatment of multi-drug resistant TB (MDR) (WHO, 2018). Unfortunately, circulating BDQ-resistant strains of *M. tuberculosis* are already known.

To understand the spread of resistance to this drug, we generated BDQ-resistant *M. tuberculosis* mutants *in vitro* from MDR clinical isolates as parental cultures, as this drug is used to treat MDR TB patients. We also performed growth curves of the obtained mutants and of the parental MDR isolates to detect possible differences in the growth rate of strains with mutations in Rv0678, regulator of an efflux pump (MmpL5) or in AtpE, cellular target of BDQ. Mutations in rv0678 could give an advantage in the clinical setting even before treatment with BDQ. In addition, we have created a data set including BDQ-resistance associated mutations for the rapid and efficient detection of all these mutations and to ensure optimal monitoring of therapeutic treatment. The results obtained were the subject of a publication of which I am a corresponding co-author (Degiacomi G[§], et al, 2020).

- **New weapons against *Mycobacterium abscessus* and other nontuberculous mycobacteria (FFC#19/2018)**

I also participated in the FFC project # 19/2018, funded by the Cystic Fibrosis Foundation of Verona, previously described.

**ACHIEVED PUBLICATIONS**

Degiacomi G, et al. Front Microbiol. 2020;11:559469.

**• January 2016–September 2018**

**COLLABORATION WITH PROF. GIOVANNA RICCARDI AND PROF. MARIA ROSALIA PASCA**

**• RESEARCH TOPICS**

- **Target identification of new antitubercular drugs: 7947882, 7904688 and TP53**

This collaboration was possible in the framework of "More Medicines for tuberculosis" project funded by European Commission. This project had as objective the discovery of novel antituberculars and the validation of new targets.

Two leads active against *Mycobacterium tuberculosis* H37Rv were discovered by a phenotypic screening. As demonstrated, they were two prodrugs (7947882 and 7904688), activated by the monooxygenase EthA, targeting the CTP synthetase PyrG (Mori, *et al.*, 2015). Recently, by microbiological, biochemical, and *in silico* methodologies, a second target, the pantothenate kinase PanK, was identified for 7947882 and 7904688 (Chiarelli, *et al.*, 2018;). Moreover, the validated drug target PyrG was exploited to assess a target-based approach of commercially available, but untargeted, antimycobacterial compounds (Esposito, *et al.*, 2017).

Another research line of our collaboration was the identification of the mechanism of action of TP53 thienopyrimidine antitubercular drug: this was related to nitric oxide release mainly targeting protein synthesis (Chiarelli, et al., 2020, Mori, et al, 2020, Chiarelli, et al, 2021).

**ACHIEVED PUBLICATIONS**

Mori G, et al. Chem Biol. 2015;22:917-927.
Esposito M, et al. ACS Infect Dis. 2017;3:428-437.
Chiarelli LR, et al. Sci Rep. 2018;8:3187.
Chiarelli LR, et al. ACS Infect Dis. 2020;6:313-323.
Mori G, et al. Front Microbiol. 2020;11:292.
Chiarelli LR*, Degiacomi G*, et al. Drug Discov Today. 2021;26:542-550. *co-first author

**• January 2013–December 2015**

***POST-DOCTORAL FELLOWSHIP***

Department of Molecular Medicine, University of Padova, Via Gabelli, 63 35121, Padova
**SUPERVISOR:** Prof. Riccardo Manganelli
**E-MAIL**: riccardo.manganelli@unipd.it

**• RESEARCH TOPICS**

**1) Target identification of new antitubercular compounds**

This research was part of the already mentioned "More Medicine for Tuberculosis" project. My activity was to select and isolate *Mycobacterium tuberculosis* H37Rv mutants resistant to candidate compounds to finally find their target(s). Moreover, for target validation purpose we used inducible/repressible expression systems. The most important findings were:
-Identification of MmpL3 as target of spiropiperidines (Tantry *et al.*, 2015).
-Validation of PyrG as target of two prodrugs by using the TetR-PipOFF system to construct a *pyrG* conditional knock-down mutant (Mori *et al.*, 2015).
-Characterization of the thiopeptide micrococcin P1 as an antitubercular agent and identification of RplK as its target by recombineering approach (Degiacomi *et al*., 2016).

**2) Optimization of TetR-PipOFF system**

A regulated gene expression system was developed for mycobacteria to facilitate the study of essential genes (Boldrin *et al.*, 2010). The TetR/Pip-OFF repressible promoter system was successfully used in the last few years. In the first version of the system, the repressible promoter was $P_{ptr}$, a strong Pip-repressible promoter of *Streptomyces pristinaespiralis*, that might hamper effective downregulation of genes with a low basal expression level.
We improved the system allowing more effective control of genes expressed at low level. To this end, we subjected $P_{ptr}$ to targeted mutagenesis and produced 16 different promoters with different strength. Three of them were selected and characterized to improve the performances of TetR/Pip-OFF repressible system. Finally, we used these promoters to construct a series of bacterial biosensors with different sensitivity to DprE1 inhibitors and developed a whole-cell screening assay to identify inhibitors of this enzyme (Boldrin *et al.*, 2018).

**3) Characterization of MmpL3 transporter in *Mycobacterium tuberculosis***

MmpL3 membrane-transporter has recently emerged as a vulnerable and promiscuous target for antimycobacterial therapy. By construction of a knock-down mutant (TetR-PipOFF system), we confirmed essentiality of this protein *in vitro* and *ex vivo* and we studied the physiological role of MmpL3 and its interacting partners in *M. tuberculosis* H37Rv, in collaboration with Prof. Katarína Mikušová (Comenius University, Slovak Republic) and Dr. Claudia Sala (EPFL, Switzerland) (Degiacomi *et al*., 2017).

**4) GarA, an important metabolic regulator of *Mycobaterium tuberculosis***

In a framework of a collaboration with Dr. Helen O'Hare, University of Leicester (UK), and Prof. Pedro Alzari, Pasteur Institute (France), we analyzed the role of GarA enzyme and its requirement *in vitro* and in macrophages. We were able to highlight the importance of this enzyme in regulation of tricarboxylic acid cycle and glutamate synthesis through the binding to three different enzyme targets (Ventura *et al*., 2013). Then, we tried to understand the stimuli that lead to phosphorylation of GarA and its role, together with other regulatory enzymes. We found out that GarA is a cellular target of PknG and the metabolomics data demonstrated that the function of this signaling system is in metabolic regulation (Rieck *et al*., 2017).

**ACHIEVED PUBLICATIONS**

Ventura *et al*., Mol Microbiol. 2013; 90:356-366.
Tantry S*, Degiacomi G* *et al.*, Bioorg Med Chem Lett. 2015; 25:3234-3245. *co-first author
Degiacomi G, *et al*., Tuberculosis 2016; 100:95-101.
Rieck B*, Degiacomi G*, et al., PLoS Pathog. 2017;13: e1006399. *co-first author

Degiacomi G, et al., Sci Rep. 2017; 7:43495.
Boldrin F*, Degiacomi G*, et al., Microb Biotechnol. 2018; 11:238-247.

**• October 2011 - October 2012**

***POST-DOCTORAL FELLOWSHIP***

Department of Biochemistry Mlynska Dolina, Comenius University, 842 15 Bratislava, Slovak Republic

**SUPERVISOR:** Prof. Katarína Mikušová

**E-MAIL**: mikusova@fns.uniba.sk

**• RESEARCH TOPIC**

**- Study of an ABC-transporter and of PimA enzyme, both involved in cell-wall biosynthesis in *Mycobacterium tuberculosis***

The aim of my work was the analysis of the ABC transporter $(Rv3781)_2/(Rv3783)_2$. This transporter $(Rv3781)_2/(Rv3783)_2$, encoded by two genes from "arabinogalactan biosynthetic cluster", is the only ABC transporter suggested to be involved in the export of polysaccharides to the cell surface in *M. tuberculosis* H37Rv (Centárová *et al.*, 2012, poster at EMBO Conference, 2012).

Moreover, in collaboration with Prof. Manganelli, we studied the phosphatidyl-myo-inositol mannoside biosynthetic pathway in *M. tuberculosis* and confirmed that PimA is a novel target for future drug discovery programs (Boldrin *et al.*, 2014).

**ACHIEVED PUBLICATIONS**

Boldrin F, et al., J Bacteriol. 2014; 196: 3441-3451.

**• March 2011**

***RESEARCH STAGE DURING THE DOCTORATE***

Department of Biochemistry Mlynska Dolina, Comenius University, 842 15 Bratislava, Slovak Republic

**SUPERVISOR:** Prof. Katarína Mikušová

**E-MAIL**: mikusova@fns.uniba.sk

**RESEARCH TOPIC**

During the Doctorate, I spent one month at the laboratory of Prof. K. Mikušová to learn biochemical techniques aimed to analyze the biosynthesis of arabinogalactan in *M. tuberculosis*.

**• November 2008- October 2011**

**PHD STUDENT**

*Laboratory of Molecular Microbiology, Department of Genetics and Microbiology, University of Pavia – Via Ferrata, 1, 27100 Pavia, Italy*

**SUPERVISORS:** Prof. Giovanna Riccardi and Prof. Maria Rosalia Pasca

**E-MAILS**: giovanna.riccardi@unipv.it; mariarosalia.pasca@unipv.it

**RESEARCH TOPIC**

- **Identification of target of new antitubercular drugs using *Mycobacterium smegmatis* mc²155 as model organism**

This research was part of a "New medicines for tuberculosis" project funded by EC-VI framework (2006-2011). Two different classes of chemical series, the benzothiazinones (BTZ) and the dinitrobenzamide (DNB) derivatives were found to be highly active against *M. tuberculosis* H37Rv.

Because DprE1, coding an enzyme essential for the construction of cell wall components, was previously identified as the cellular target of BTZ (Makarov *et al*., 2009), we monitored the possible diffusion among *M. tuberculosis* circulating clinical isolates of mutations in the *dprE1* gene and for BTZ susceptibility (Pasca *et al.*, 2010).

Another mechanism of resistance to BTZ by NfnB nitroreductase was identified and characterized (Manina *et al*., 2010).

Moreover, we isolated several *M. smegmatis* spontaneous mutants resistant to DNB, harbouring a mutation in *dprE1*. Finally, we demonstrated that both DNB and BTZ share

common mechanisms of resistance and action in *M. smegmatis* (Ribeiro *et al.*, 2011).

**ACHIEVED PUBLICATIONS**

Pasca MR, *et al.*, Antimicrob Agents Chemother. 2010; 54: 1616-1618.
Manina G, *et al.*, Mol Microbiol. 2010; 77:1172-1185.
Ribeiro AL*, Degiacomi G*, et al., PLoS One. 2011; 6: e26675.

**November 2007 – July 2008**

**THESIS INTERNSHIP**

*Laboratory of Thin Films, Department of Chemistry, University of Pavia – Viale Taramelli, 16 27100 Pavia, Italy*

**SUPERVISOR:** Prof. Pier Carlo Mustarelli

## PARTICIPATION IN NATIONAL AND INTERNATIONAL RESEARCH PROJECTS

- Component of the Project funded by the European Commission ("Innovative Medicines Initiative 2" - Horizon 2020): "European Regimen Accelerator for Tuberculosis" (ERA4TB; 01/ 01/2020-31/12/2025; https://era4tb.org /).
- Member of the 1-year pilot project financed by the Italian Cystic Fibrosis Research Foundation "New weapons against *Mycobacterium abscessus* and other nontuberculous Mycobacteria "(FFC2020; from September 2020 to October 2021).
- Principal investigator in the 2-year project (type A post-doc fellowship) funded by the University of Pavia entitled: "A molecular and microbiological approach to characterize a new antitubercular drug and to detect the bedaquiline resistance mechanism" (Dipartimenti di eccellenza, from October 2018 to September 2020).
- Member of the 2-year project financed by the Italian Cystic Fibrosis Research Foundation "New weapons against *Mycobacterium abscessus* and other nontuberculous Mycobacteria "(FFC2018; from September 2018 to August 2020).
- Member of the project funded by the European Commission (FP7-HEALTH-2010-single-stage): More Medicines for Tuberculosis (MM4TB; Duration: 60 months; from 1 February 2011 to 30 June 2016).
- Member of the Project financed by the European Commission (FP6-2004-LIFESCIHEALTH-5): New medicines for tuberculosis (NM4TB; Duration: 60 months; from 1 January 2006 to 31 December 2010).

## TEACHING ACTIVITIES

**2008 – 2011** Assistant supervisor in three graduation theses (First level degree in Biology, University of Pavia) entitled:
- "Heterologous expression of *Mycobacterium tuberculosis* Rv3790 in *Rhodospirillum rubrum*"
- "Characterization of two *Mycobacterium smegmatis* mutants resistant to DNB antitubercular compound"
- "Heterologous expression of *Mycobacterium smegmatis* Rv3791 ortholog in *Escherichia coli*"

**2014** Assistant supervisor in graduation thesis (Master degree in Health Biology, University of Padova) entitled:
- "Analysis of MmpL3 membrane protein as possible therapeutic target against *Mycobacterium tuberculosis*"

Assistant supervisor in graduation thesis (First level degree in Molecular Biology, University of Padova) entitled:
- "MmpL3 is the cellular target of BM212 antitubercular compound".

Tutorial activity for "Microbiology" course, Biology degree, supervised by Prof. Roberta Provvedi, University of Padova.

**2015** Tutorial activity for "Microbiology" course, Biology degree, supervised by Prof. Roberta Provvedi, University of Padova.

**2019** Tutorial activity for "Molecular Biotechnology Lab" course, Biochemistry module, Biotechnologies degree, supervised by Prof. Laurent Roberto Chiarelli, University of Pavia

**2020** Assistant supervisor in three master degree theses (Master degree in Experimental and Applied Biology, University of Pavia) entitled:

"Study of the mechanism of action of new compounds active against *Mycobacterium tuberculosis* and *Mycobacterium abscessus*"
- "Validation of CanB as a therapeutic target of *Mycobacterium tuberculosis*"
- "*Mycobacterium tuberculosis* transcriptional response to a new antituberculous compound"

Bachelor degree thesis in Biological Sciences, University of Pavia, entitled:
- "Preliminary *in vitro* study of the mechanisms of resistance to the new antituberculous drug Bedaquiline"

Tutorial activity for “General and Applied Enzimology” course, Biotechnologies degree, supervised by Prof. Laurent Roberto Chiarelli, University of Pavia

Selected for Erasmus+ Teaching. The teaching activities would have been carried out for PhD students at the Comenius University, Bratislava, Slovack Republic in April 2020. This course did not take place due to Covid-19 pandemic**.**

**2021** Assistance in carrying out the laboratory module of the course of General and Applied Enzymology, Professor in charge: Laurent Chiarelli, University of Pavia (SSD: BIO / 10).
Cycle of seminars for the Microbiological Analysis course, Master Degree in Experimental and Applied Biology, Professor in charge: Maria Rosalia Pasca, University of Pavia (SSD: BIO / 19) (6 hours).

**AWARDS AND RECOGNITIONS FOR RESEARCH ACTIVITIES.**
- The importance of the following article was underlined by a "Focus" on the same issue (Cook GM, Heikal A. Bridging the gap between a TB drug and its target. Sci Transl Med. 4: 150fs33):
Neres J, Pojer F, Molteni E, Chiarelli L, Dhar N, Boy-Röttger S, Buroni S, Fullam E, Degiacomi G, Lucarelli AP, Read RJ, Zanoni G, De Rossi E, Pasca MR, Riccardi G, Mattevi A , Dyson PJ, Cole ST, Binda C. 2012. Structural basis for benzothiazinone-mediated killing of Mycobacterium tuberculosis. Science Translational medicine. 4: 150ra121.
- Award for the results achieved in the “More Medicines for Tuberculosis” project: best oral presentation, MM4TB meeting in Lille (France), 2014. Title of the presentation: “Improvement of TetR-PipOFF system and mutants update”.

## REFEREE’S ACTIVITY AND EDITORIAL BOARD

- Referee for the following journals: Microbial Drug Resistance; Cells (MDPI), Microbiology; PLoS ONE, International Journal of Molecular Sciences (IJMS).
- Guest Editor for "International Journal of Molecular Sciences" (IJMS; IF 4.556), special treatise entitled "New Drugs and Novel Strategies against Nontuberculous Mycobacteria". (2020; https://www.mdpi.com/journal/ijms/special_issues/NTM); thanks to its success, this Special Treaty was revived in 2021 (https://www.mdpi.com/journal/ijms/special_issues/NTM2).
- Currently Guest Editor for "International Journal of Molecular Sciences" (IJMS; IF 4.556), Special Treatise entitled "New Drugs and Novel Cellular Targets against Tuberculosis" (https://www.mdpi.com/journal/ijms / special_issues / Drug_Tuberculosis).

## PUBLICATIONS

I am author of 26 peer-reviewed articles (9 of which without the participation of the PhD supervisors). First author or co-first author of 12 papers, and co-corresponding author of one pubblication.
(* = First author o co-first author; § = corresponding author)

1. **Degiacomi G**, Chiarelli LR, Recchia D, Petricci E, Gianibbi B, Fiscarelli EV, Fattorini L, Manetti F, Pasca MR. The Antimalarial Mefloquine Shows Activity against Mycobacterium abscessus, Inhibiting Mycolic Acid Metabolism. Int J Mol Sci. 2021. 22:8533.

2. Farjallah A, Chiarelli LR, Forbak M, **Degiacomi G**, Danel M, Goncalves F, Carayon C, Seguin C, Fumagalli M, Záhorszká M, Vega E, Abid S, Grzegorzewicz A, Jackson M, Peixoto A, Korduláková J, Pasca MR, Lherbet C, Chassaing S. A Coumarin-Based Analogue of Thiacetazone as Dual Covalent Inhibitor and Potential Fluorescent Label of HadA in *Mycobacterium tuberculosis*. **ACS Infect Dis**. 2021. 7:552-565.

3. Monakhova N, Korduláková J, Vocat A, Egorova A, Lepioshkin A, Salina EG, Nosek J, Repková E, Zemanová J, Jurdáková H, Górová R, Roh J, **Degiacomi G**, Sammartino JC, Pasca MR, Cole ST, Mikušová K, Makarov V. Design and Synthesis of Pyrano[3,2-b]indolones Showing Antimycobacterial Activity. **ACS Infect Dis**. 2021. 7:88-100.

4. Hsu H, Boudova S, Mvula G, Divala TH, Rach D, Mungwira RG, Boldrin F, **Degiacomi G**, Manganelli R, Laufer MK, Cairo C. Age-related changes in PD-1 expression coincide with increased cytotoxic potential in Vδ2 T cells during infancy. **Cell Immunol**. 2021. 359:104244.

5. Chiarelli LR*, **Degiacomi G***, Egorova A, Makarov V, Pasca MR. Nitric oxide-releasing compounds for the treatment of lung infections. **Drug Discov Today**. 2021. 26:542-550.

6. **Degiacomi G*§**, Sammartino JC, Sinigiani V, Marra P, Urbani A, Pasca MR§. In vitro Study of Bedaquiline Resistance in *Mycobacterium tuberculosis* Multi-Drug Resistant Clinical Isolates. **Front Microbiol**. 2020. 11:559469. §co-corresponding author

7. Mori G, Orena BS, Chiarelli LR, **Degiacomi G**, Sammartino JC, Guerin M, Makarov V, Riccardi G, Pasca MR. Rv0579 is involved in the resistance to the TP053 antitubercular prodrug. **Front Microbiol.** 2020. 11:292.

8. **Degiacomi G***, Belardinelli JM, Pasca MP, De Rossi E, Riccardi G, Chiarelli LR. Promiscuous Targets for Antitubercular Drug Discovery: The Paradigm of DprE1 and MmpL3. **Appl Sci.** 2020. 10, 623.

9. Rodriguez F, Saffon N, Sammartino JC, **Degiacomi G**, Pasca MR, Lherbet C. First triclosan-based macrocyclic inhibitors of InhA enzyme. **Bioorg Chem.** 2020. 95:103498.

10. Chiarelli LR, Salina E, Mori G, Azhikina T, Riabova O, Lepioshkin A, Grigorov A, Forbak M, Madacki J, Orena B, Manfredi M, Gosetti Fabio, Buzzi A, **Degiacomi G**, Sammartino JC, Marengo E, Korduláková J, Riccardi G, Mikušová K, Makarov V, Pasca MR. New insights into the mechanism of action of the thienopyrimidine antitubercular prodrug TP053. **ACS Infect Dis.** 2020. 6:313-323.

11. **Degiacomi G***, Sammartino JC, Chiarelli LR, Makarov V, Pasca MR. *Mycobacterium abscessus*, an emerging and worrisome pathogen among cystic fibrosis patients. **Int J Mol Sci**. 2019. 20: 5868.

12. Chiarelli LR, Mori G, Orena BS, Esposito M, Lane T, de Jesus Lopes Ribeiro AL, **Degiacomi G**, Zemanová J, Szádocka S, Huszár S, Palčeková Z, Manfredi M, Gosetti F, Lelièvre J, Ballell L, Kazakova E, Makarov V, Marengo E, Mikusova K, Cole ST, Riccardi G, Ekins S, Pasca MR. A multitarget approach to drug discovery inhibiting *Mycobacterium tuberculosis* PyrG and PanK. **Sci Rep**. 2018 8:3187.

13. Boldrin F*, **Degiacomi G***, Serafini A, Kolly G, Ventura M, Sala C, Provvedi R, Palù G, Cole S, Manganelli R. Promoter mutagenesis for fine tuning expression of essential genes in *Mycobacterium tuberculosis*. **Microb Biotechnol**. 2017. doi: 10.1111/1751-7915.12875.

14. Rosado LA*, Wahni K*, **Degiacomi G***, Pedre B, Young D, G de la Rubia A, Boldrin F, Martens E, Marcos-Pascual L, Sancho-Vaello E, Albesa-Jové D, Provvedi R, Martin C, Makarov V, Versées W, Verniest G, Guerin ME, Mateos LM, Manganelli R, Messens J. The antibacterial prodrug activator Rv2466c is a mycothiol-dependent reductase in the oxidative stress response of *Mycobacterium tuberculosis*. **J Biol Chem**. 2017. pii: jbc.M117.797837.

15. Rieck B*, **Degiacomi G***, Zimmermann M*, Cascioferro A*, Boldrin F, Lazar-Adler NR, Bottrill AR, le Chevalier F, Frigui W, Bellinzoni M, Lisa MN, Alzari PM, Nguyen L, Brosch R, Sauer U, Manganelli R, O'Hare HM. PknG senses amino acid availability to control metabolism and virulence of *Mycobacterium tuberculosis*. **PLoS Pathog**. 2017. 13: e1006399.

16. Esposito M, Szadocka S, **Degiacomi G**, Orena BS, Mori G, Piano V, Boldrin F, Zemanová J, Huszár S, Barros D, Ekins S, Lelièvre J, Manganelli R, Mattevi A, Pasca MR, Riccardi G, Ballell L, Mikušová K, Chiarelli LR. A Phenotypic Based Target Screening Approach Delivers New Antitubercular CTP Synthetase Inhibitors. **ACS Infect Dis**. 2017. 3: 428-437.

17. **Degiacomi G***, Benjak A, Madacki J, Boldrin F, Provvedi R, Palù G, Kordulakova J, Cole ST, Manganelli R. Essentiality of *mmpL3* and impact of its silencing on *Mycobacterium tuberculosis* gene expression. **Sci Rep**. 2017. 7:43495.

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Quanto dichiarato corrisponde a verità ai sensi delle norme in materia di dichiarazioni sostitutive di cui agli artt. 46 e seguenti del D.P.R. 445/2000.

Autorizzo il trattamento dei dati personali ai sensi del D.Lgs. 196/03 e dell'art. 13 del Regolamento (UE) 2016/679.