

Curriculum vitae:

RACHELE FRANCESE

Personal details

Born in: Turin, Italy

Nationality: Italian

Email: rachele.francese@unito.it

Website: https://www.dscb.unito.it/do/docenti.pl/Show?_id=rafrance#tab-profilo

ORCID ID: <https://orcid.org/0000-0003-4723-6996>

Scopus ID: 57193061831

ResearcherID: CPJ-2347-2022

Educations

- 2021: PhD in Experimental Medicine and Therapy, University of Turin, Italy.
- 2015: Master's degree in Medical Biotechnology, University of Turin, Italy.
- 2013: Bachelor's degree in Biotechnology, University of Turin, Italy.

Professional experiences and current position

Current position: Assistant Professor of Microbiology at the University of Turin, Department of Clinical and Biological Sciences.

May 2023 – October 2023: Maternity leave

Previous positions:

- April 2022 – February 2023: Post-doc Researcher at the University of Turin, Dept. of Clinical and Biological Sciences, Laboratory of Molecular Virology and Antiviral Research (head: Professor David Lembo) (VIRMOLAB). Project: "Research and Development of new antiviral molecules and materials"
- December 2020 – April 2022: Scholarship recipient at VIRMOLAB. Research project: "Study of the antiviral activity of vitamin D receptor modulating molecules against emerging flaviviruses".
- October 2016 - November 2020: PhD Student in Medicine and Experimental Therapy at the Doctoral School in Life and Health Sciences, University of Turin. Projects: Study of the antiviral activity of human milk and its components against viruses of pediatric interest and emerging viruses; Study of new molecules with antiviral activity against Zika virus and Usutu virus; Search for new antiviral materials. Thesis title: "New antiviral approaches against known and emerging viruses".

- April 2016 - July 2016: Scholarship holder at the University of Turin, VIRMOLAB. Research project: “Antimicrobial-coupled nanodroplets for skin and soft tissue infections: in vitro models”.
- November 2015 - March 2016: volunteer at VIRMOLAB. Active contribution in the finalization experiments and in the writing of the article "In vitro screening for antiviral activity of Turkish plants revealing methanolic extract of *Rindera lanata* var. *lanata* active against human rotavirus” BMC Complement Altern Med (2017).
- September 2012 - October 2015: Internship at VIRMOLAB.

Honors

- Winner of the incentive for publications by young researchers (euro 1000) in the context of the Local Research call 2022 (Department of Clinical and Biological Sciences, University of Turin).
- Co-author of the Poster entitled “Antiviral Activity of Peptide A-3302-B Isolated from a Marine Bacterium *Micromonospora* sp. Against Herpes Simplex Virus Type 2" winner of the 2nd prize in the category graduate students at the “35th International Conference on Antiviral Research” (ICAR, Seattle, 21-25 March 2022).
- Winner of the Travel Award for participation to the 32nd International Congress on Antiviral Research (ICAR), held in Baltimore (Maryland), May 2019.
- In the context of the European project "European Virus Archive goes global (EVAg)" aimed at the exchange of viral material among the scientific community and funded by Horizon 2020, Dr. Rachele Francese was the winner of 2000€ for the purchase of an aliquot of Usutu virus (2018).
- Co-author of the Poster entitled "Comparison effects of holder pasteurization and high temperature short time pasteurization on antiviral activity of human milk" winner of the “Prof. Luciano Tatò Prize” at the 14th International Workshop on Neonatology & Satellite Meetings "(Cagliari, October 2018).

Financed research projects

Dr. Rachele Francese is a member of one of the research teams included in the project "Antiviral, Antibacterial & Antifungal Nanocoating Platform - NANOBLOC®" funded by the "Horizon Europe Framework Programme". Call number: HORIZON-CL4-2021-RESILIENCE-01; Total funding: € 5.727.386 of which € 516.917 for the UNITO partner composed by Prof. Lembo David, Prof. Donalisio Manuela, Dr. Civra Andrea and Dr. Francese Rachele. Year: 2022.

Teaching activity:

- May 2023 – October 2023: Maternity leave

- ***Previous teaching activity as teaching assistant (since 2019):***

- Microbiology and Clinical Microbiology at degree courses in Nursing (in Beinasco and Cuneo), University of Turin;
- Microbiology at the degree course of Psychiatric Rehabilitation Techniques, University of Turin;
- Cell and virus cultivation techniques at the II level Master in Environmental Virology, University of Turin;

Research main topics

- Research and development of antiviral small molecules, investigation of their mechanism of action and preclinical development;
- Studies on virus-cell interactions in order to deepen the knowledge on the viral pathogenesis and to identify new pharmacological targets;
- Antiviral studies in the fields of Ethnomedicine, Phytomedicine and Nutraceuticals in order to discover bioactive compounds in plants, natural sources and dairy products;
- Studies on the antiviral properties of human milk to unravel novel mechanisms underlying the protective role of this biofluid and study the impact of milk processing on its antiviral activity;
- Research of new antiviral materials to develop novel strategies counteracting the diffusion of respiratory viruses;
- Study of the neutralization activity of human serum samples against pseudovirions.

Currently involved in the project PNRR PE13 - One Health Basic and Translational Research Actions addressing Unmet Needs on Emerging Infectious Diseases, MUR identification code: PE00000007 – CUP ENTITY: D53C22002570007, SPOKE 5 – Therapies

Bibliometry (2017-present)

Dr. Francese is the author of 16 publications in high-ranked scientific international journals.

List of publications (*co-first author, IF= impact factor, Q=quartile):

1. Luceri A*, Francese R*, Lembo D, Ferraris M, Balagna C. Silver Nanoparticles: Review of Antiviral Properties, Mechanism of Action and Applications. *Microorganisms*. 2023 Feb 28;11(3):629. doi: 10.3390/microorganisms11030629. PMID: 36985203; PMCID: PMC10056906. (IF: 4.926, Q2)
2. Chen R*, Francese R*, Wang N, Li F, Sun X, Xu B, Liu J, Liu Z, Donalisio M, Lembo D, Zhou GC. Exploration of novel hexahydropyrrolo[1,2-e]imidazol-1-one derivatives as antiviral agents against ZIKV and USUV. *Eur J Med Chem*. 2023 Feb 15;248:115081. doi: 10.1016/j.ejmech.2022.115081. Epub 2023 Jan 3. PMID: 36623328. (IF: 7.088, Q1)
3. Francese R*, Ceccone C*, Costantino M, Hoti G, Bracco P, Lembo D, Trotta F. Identification

of a β CD-Based Hyper-Branched Negatively Charged Polymer as HSV-2 and RSV Inhibitor. *Int J Mol Sci.* 2022 Aug 4;23(15):8701. doi: 10.3390/ijms23158701. PMID: 35955832; PMCID: PMC9369026 (IF: 6.208, Q1)

4. Francese R*, Donalisio M*, Rittà M, Capitani F, Mantovani V, Maccari F, Tonetto P, Moro GE, Bertino E, Volpi N, Lembo D. Human milk glycosaminoglycans inhibit cytomegalovirus and respiratory syncytial virus infectivity by impairing cell binding. *Pediatr Res.* 2022 May 5. doi: 10.1038/s41390-022-02091-y. Epub ahead of print. PMID: 35513714. (IF: 3.756, Q1)

5. Sureram S, Arduino I, Ueoka R, Rittà M, Francese R, Srivibool R, Darshana D, Piel J, Ruchirawat S, Muratori L, Lembo D, Kittakoop P, Donalisio M. The Peptide A-3302-B Isolated from a Marine Bacterium *Micromonospora* sp. Inhibits HSV-2 Infection by Preventing the Viral Egress from Host Cells. *Int J Mol Sci.* 2022 Jan 15;23(2):947. doi: 10.3390/ijms23020947. PMID: 35055133; PMCID: PMC8778767 (IF: 5.924, Q1)

6. Balagna C, Francese R, Perero S, Lembo D, Ferraris M. Nanostructured composite coating endowed with antiviral activity against human respiratory viruses deposited on fibre-based air filters. *Surf Coat Technol.* 2021 Mar 15; 409:126873. doi: 10.1016/j.surfcoat.2021.126873. Epub 2021 Jan 17. PMID: 33814662; PMCID: PMC8010378. (IF: 4.865, Q1)

7. Civra A*, Francese R*, Donalisio M, Tonetto P, Coscia A, Sottemano S, Balestrini R, Faccio A, Cavallarin L, Moro GE, Bertino E, Lembo D. Human Colostrum and Derived Extracellular Vesicles Prevent Infection by Human Rotavirus and Respiratory Syncytial Virus in Vitro. *J Hum Lact.* 2021 Feb; 37(1):122-134. doi: 10.1177/0890334420988239. Epub 2021 Feb 3. PMID: 33534629. (*Civra and Francese: co-first authors) (IF: 2.665, Q1)

8. Acquadro S, Civra A, Cagliero C, Marengo A, Rittà M, Francese R, Sanna C, Berteau C, Sgorbini B, Lembo D, Donalisio M, Rubiolo P. *Punica granatum* Leaf Ethanolic Extract and Ellagic Acid as Inhibitors of Zika Virus Infection. *Planta Med.* 2020 Dec; 86(18):1363-1374. doi: 10.1055/a-1232-5705. Epub 2020 Sep 16. PMID: 32937663. (IF: 3.356, Q1)

9. Francese R, Civra A, Donalisio M, Volpi N, Capitani F, Sottemano S, Tonetto P, Coscia A, Maiocco G, Moro GE, Bertino E, Lembo D. Anti-Zika virus and anti-USutu virus activity of human milk and its components. *PLoS Negl Trop Dis.* 2020 Oct 7; 14(10):e0008713. doi: 10.1371/journal.pntd.0008713. PMID: 33027261; PMCID: PMC7571670. (IF: 4.411, Q1)

10. Donalisio M, Cirrincione S, Rittà M, Lamberti C, Civra A, Francese R, Tonetto P, Sottemano S, Manfredi M, Lorenzato A, Moro GE, Giribaldi M, Cavallarin L, Giuffrida MG, Bertino E, Coscia A, Lembo D. Extracellular vesicles in human preterm colostrum inhibit infection by human cytomegalovirus in vitro. *Microorganisms.* 2020 Jul 21;8(7):1087. doi: 10.3390/microorganisms8071087. PMID: 32708203; PMCID: PMC7409124. (IF: 4.128, Q2)

11. Civra A, Colzani M, Cagno V, Francese R, Leoni V, Aldini G, Lembo D, Poli G. Modulation of cell proteome by 25-hydroxycholesterol and 27-hydroxycholesterol: A link between cholesterol metabolism and antiviral defense. *Free Radic Biol Med.* 2020 Mar; 149:30-36. doi:

- 10.1016/j.freeradbiomed.2019.08.031. Epub 2019 Sep 13. PMID: 31525455; PMCID: PMC7126780. (IF: 6.170, Q1)
12. Civra A, Altomare A, Francese R, Donalisio M, Aldini G, Lembo D. Colostrum from cows immunized with a veterinary vaccine against bovine rotavirus displays enhanced in vitro anti-human rotavirus activity. J Dairy Sci. 2019 Jun; 102(6):4857-4869. doi:10.3168/jds.2018-16016. Epub 2019 Apr 10. PMID:30981494 (IF 3.333, Q1)
13. Francese R, Civra A, Rittà M, Donalisio M, Argenziano M, Cavalli R, Mougharbel AS, Kortz U, Lembo D. Anti-zika virus activity of polyoxometalates. Antiviral Res. 2019 Mar; 163:29-33. doi: 10.1016/j.antiviral.2019.01.005. Epub 2019 Jan 14. PMID:30653996 (IF 4.101, Q1)
14. Civra A, Francese R, Gamba P, Testa G, Cagno V, Poli G, Lembo D. 25-Hydroxycholesterol and 27-hydroxycholesterol inhibit human rotavirus infection by sequestering viral particles into late endosomes. Redox Biol. 2018 Oct; 19:318-330. doi: 10.1016/j.redox.2018.09.003. Epub 2018 Sep 5. PMID: 30212801; PMCID: PMC6138790 (IF 7.793, Q1)
15. Donalisio M, Rittà M, Francese R, Civra A, Tonetto P, Coscia A, Giribaldi M, Cavallarin L, Moro GE, Bertino E, Lembo D. High Temperature-Short Time Pasteurization Has a Lower Impact on the Antiviral Properties of Human Milk Than Holder Pasteurization. Front Pediatr. 2018 Oct 16;6:304. doi: 10.3389/fped.2018.00304. PMID: 30460212; PMCID: PMC6232822 (IF 2.349, Q2)
16. Civra A, Francese R, Sinato D, Donalisio M, Cagno V, Rubiolo P, Ceylan R, Uysal A, Zengin G, Lembo D. In vitro screening for antiviral activity of Turkish plants revealing methanolic extract of Rindera lanata var. lanata active against human rotavirus. BMC Complement Altern Med. 2017 Jan 24; 17(1):74. doi: 10.1186/s12906-017-1560-3. PMID: 28118832; PMCID: PMC5260038 (IF: 2.109, Q2)

Scientific revision activity

Starting from February 2019, Dr. Rachele Francese has revised Virology works for the following journals:

- International Journal of Antimicrobial Agents
- Scientific Reports
- Antiviral Research

Membership

- European Society of Clinical Microbiology and Infectious Disease (ESCMID)
- International Society for Antiviral Research (ISAR)
- European Milk Bank Association (EMBA)
- Italian Society of Microbiology (SIM)
- Italian Society of Virology (SIV)

Last update 20.04.2023