

Irene Lo Cigno

Curriculum vitae

PERSONAL DATA

Birth: November 19th, 1987

Citizenship: Italian

Work address: University of Piemonte Orientale, Department of Translational Medicine, Via Solaroli 17, 28100 Novara

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BIO AND EDUCATION

2011: Master's degree in Medical Biotechnology, University of Turin, Italy, working in the laboratory of Viral Pathogenesis (Head: Prof. Santo Landolfo). Title: The intracellular DNA sensor IFI16 gene acts as restriction factor for Human Cytomegalovirus replication.

2015: PhD in Clinical and Experimental Medicine, Novara Medical School, Italy, working in the laboratory of Molecular Virology (Head: Prof. Marisa Gariglio). Title: The Nuclear DNA Sensor IFI16 Acts as a Restriction Factor for Human Papillomavirus Replication through Epigenetic Modifications of the Viral Promoter.

UNIVERSITY CAREER

2019-	Assistant Professor of Medical Microbiology, University of Piemonte Orientale, School of Medicine.
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MAIN FIELDS OF INTEREST

1. Alpha-HPV and innate immune response
2. HPyV and carcinogenesis

CURRENT ISSUES OF RESEARCH

1. **Dissecting the impact of HPV infection on the innate immune response in target cells.** Her current research focuses on the interplay between high-risk HPV infection (e.g. HPV16 and HPV18) and the innate immune response in keratinocytes. She has demonstrated that HPV18 persistence in keratinocytes inhibits both type I and III IFN production in response to DNA ligands, and that this effect is due to suppression of the cGAS–STING and RIG-I pathways (Albertini et al., 2018). She has provided new evidence that the E7 oncoprotein plays a central role in dampening host innate immunity through the induction of the H3K9-specific methyltransferase SUV39H1, the human homolog of the Drosophila Su(var)3-9 histone methyltransferase, which triggers histone H3Lys9 trimethylation (H3K9me3), inducing a chromatin conformational transition from an open to a closed state in RIG-I, STING, and cGAS promoters (Lo Cigno et al., 2020). She is currently working on targeting the histone deacetylase SIRT1, known to be strongly upregulated in HPV-

infected/transformed cells, as a viable strategy to treat HPV-associated cancers. Her hypothesis is that SIRT1 inactivation and/or drug-targeted activation of the RIG-I pathway can induce cell death in HPV-infected/transformed cells (Patent submitted October 2nd, 2020). She is currently testing whether RIG-I agonists in combination with SIRT1 inhibitors can enhance ICD in HPV-transformed cell lines and improve the effectiveness of existing anticancer therapies in HPV-associated tumors in vivo.

- 2. Role of Cancer-Associated Fibroblasts During Virus-induced Skin Carcinogenesis in the Elderly.** Her laboratory studies the role of cancer-associated fibroblast during virus-induced skin carcinogenesis. In particular the project aims to isolate and characterize the Merkel Cell Carcinoma (MCC)-derived CAFs to determine their potential correlation with patients' clinical outcome.

CURRENT FUNDED PROJECTS

PROGRAMME	FUNDED PROJECT
Bando DiMet per il finanziamento di progetti di ricerca: Fondi di ateneo 2017	Role of Cancer-Associated Fibroblasts During Virus-induced Skin Carcinogenesis in the Elderly.

TOP FIVE PAPERS

- Lo Cigno I, Calati F, Albertini S, Gariglio M. Subversion of Host Innate Immunity by Human Papillomavirus Oncoproteins. *Pathogens*. 2020;9(4):292. doi:10.3390/pathogens9040292.
- Lo Cigno I, Calati F, Borgogna C, Zevini A, Albertini S, Martuscelli L, De Andrea M, Hiscott J, Landolfo S, Gariglio M. Human Papillomavirus E7 Oncoprotein Subverts Host Innate Immunity via SUV39H1-Mediated Epigenetic Silencing of Immune Sensor Genes. *Journal of Virology*. 2020 Jan 31;94(4).
- Albertini S.*, Lo Cigno I.*, Calati F., De Andrea M., Borgogna C., Dell'Oste V., Landolfo S., and Gariglio M. HPV18 Persistence Impairs both Basal and DNA Ligand-Mediated IFN- β and IFN- λ 1 Production Through Transcriptional Repression of Multiple Downstream Effectors of Pattern Recognition Receptor Signaling. *Journal of Immunology*. 2018; 200 (6): 2076-2089. doi: 10.4049/jimmunol.1701536. * These authors contributed equally to this work.
- Lo Cigno I, De Andrea M, Borgogna C, Albertini S, Landini MM, Peretti A, Johnson KE, Chandran B, Landolfo S, Gariglio M. The Nuclear DNA Sensor IFI16 Acts as a Restriction Factor for Human Papillomavirus Replication through Epigenetic Modifications of the Viral Promoters. 2015. *Journal of Virology*. 2015; 89:7506 –7520. doi:10.1128/JVI.00013-15.
- Dell'Oste V, Gatti D, Gugliesi F, De Andrea M, Bawadekar M, Lo Cigno I, Biolatti M, Vallino M, Marschall M, Gariglio M, Landolfo S. Innate Nuclear Sensor IFI16 Translocates into the Cytoplasm during the Early Stage of In Vitro Human Cytomegalovirus Infection and Is Entrapped in the Egressing Virions during the Late Stage. *Journal of Virology* 2014; Jun;88(12):6970-82. doi: 10.1128/JVI.00384-14.

AWARDS

2018: Winner of a “EMBL Advanced Training Centre Corporate Partnership Programme Fellowship” for participating to the meeting “EMBO | EMBL Symposium: Innate Immunity in Host-Pathogen Interactions”, Heidelberg 24th-27th June, 2018.

MODELLO **B** — versione  del modello A

2018: In the Issue - Journal of Immunology (doi: 10.4049/jimmunol.1890002). “HPV18 Persistence Impairs both Basal and DNA Ligand-Mediated IFN- β and IFN- λ 1 Production Through Transcriptional Repression of Multiple Downstream Effectors of Pattern Recognition Receptor Signaling” (Albertini*, Lo Cigno* et al., J Immunol 2018).

2017: Winner of an “International Centre for Genetic Engineering and Biotechnology Grant” for participating to the “ICGEB DNA Tumour Virus Meeting 2017”, Birmingham (UK), 17th-22nd July, 2017