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UNIVERSITÀ DEGLI STUDI DI PADOVA

Prof. M. Onisto

Born in Padua on August 27, 1959.

1983-1985: Internal student attending the Institute of Biological Chemisty of the University of Padova

1985: Graduation in Biological Sciences at the University of Padova presenting the thesis on the topic "Expression of the mitochondrial gene OXI3 in Saccharomyces cerevisiae: mRNA maturation".

1987: Study premium of the University of Padova for the study of the atherosclerosis.

1988-1992: Ph.D. in Molecular and cellular biology and pathology at University of Padova.

1992: Assistant Professor at the Institute of Histology and Embryology (from 2000 at the Dept.of Experimental Biomedical Sciences), School of Medicine of the University of Padova.

2017: Associate Professor

Research experience abroad:

1989-1990: Visiting Fellowship at National Cancer Institute (NIH) of Bethesda,MD, (USA)

1997: FIRC Fellowship at National Cancer Institute (NIH)of Bethesda,MD, (USA)

Research interests and career highlights

The research work carried out by Prof. M. Onisto began in 1983 at the Inst of Biological Chemistry, University of Padua, where he served his internship and where he graduated with the thesis titled: "Expression of the oxi3 discontinuous mitochondrial gene in S.cerevisiae : mRNA maturation ".

Later, he moved to the Ist. of Histology and Gen. Embryology , following the research topics:
a) the evaluation of soluble elastinic peptides in biological fluids in a project coordinated by Profs. L. Gotte and M. Spina;
b) the study of enzymatic processes involved in the degradation of some components of the extracellular matrix (ECM) in collaboration with Prof. S. Garbisa.
In particular, until 1996 the main research project involved the study of matrix metalloproteinases (MMP-2 or Gelatinase A), specific for type IV collagen of basement membranes, and its relative tissue inhibitor TIMP-2 ,whose cDNA he cloned at National Cancer Inst. of Bethesda (JBC 1990, Int.J. Cancer 1995, EMBO J. 1997).

Since 1997, he coordinates a research group continuing to study ECM remodeling and starting, at the same time, the study of genes and proteins involved in spermatogenesis. In particular he has cloned and characterized a new human protein associated with spermatogenesis initially named PD1 and then renamed SPATA2 (spermatogenesis-associated protein 2) in agreement with the Gene Nomenclature Committee and with the NCBI (National Center for Biotechnology Information) (Exp.Cell Res.1999).

He currently deals with the study of heparanase, the unique and specific endoglycosidase capable of cleaving heparan sulfate (HS) chains. HS cleavage results in remodelling of ECM as well as in regulating the release of many HS-linked molecules such as growth factors, cytokines and enzymes involved in inflammation, wound healing and tumour invasion (Curr.Cancer Drug Target 2014, BBA-MCR 2014, Sc.Reports 2017, Faseb J. 2018, Oncotarget 2018, Sem Cancer Biol. 2019).

The research activity has resulted in 95 publications of which:
- 87 papers on international journals surveyed by ISI.
- 8 book chapters.

Most recent publications

Masola V, Zaza G, Bellin G, Dall'Olmo L, Granata S, Vischini G, Secchi MF, Lupo A, Gambaro G, **Onisto M.**
Heparanase regulates the M1 polarization of renal macrophages and their crosstalk with renal epithelial tubular cells after ischemia/reperfusion injury.
FASEB J. 2018 Feb;32(2):742-756. doi: 10.1096/fj.201700597R.

Masola V , Zaza G , Gambaro G, Franchi M , **Onisto M.**
Heparanase in Extracellular Matrix (ECM) remodeling during tumor progression: molecular aspects and therapeutic options.
Seminars Cancer Biology May 2020, 62, 86-98. doi.org/10.1016/j.semcancer.2019.07.014

Karamanos NK, Theocharis AD, Piperigkou Z, Manou D, Passi A, Skandalis SS, Vynios DH, Orian-Rousseau V, Ricard-Blum S, Schmelzer CEH, Duca L, Durbeej M, Afratis NA, Troeberg L, Franchi M, Masola V, **Onisto M.**
A guide to the composition and functions of the extracellular matrix.
FEBS J. 2021 Dec;288(24):6850-6912. doi: 10.1111/febs.15776.

Masola V, Franchi M, Zaza G, Atsina FM, Gambaro G, **Onisto M**.
Heparanase regulates EMT and cancer stem cell properties in prostate tumors.
Front Oncol. 2022 Jul 27;12:918419. doi: 10.3389/fonc.2022.918419.

Masola V, Greco N, Tozzo P, Caenazzo L, **Onisto M.**
The role of SPATA2 in TNF signaling, cancer, and spermatogenesis.
Cell Death Dis. 2022 Nov 19;13(11):977. doi: 10.1038/s41419-022-05432-1.

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