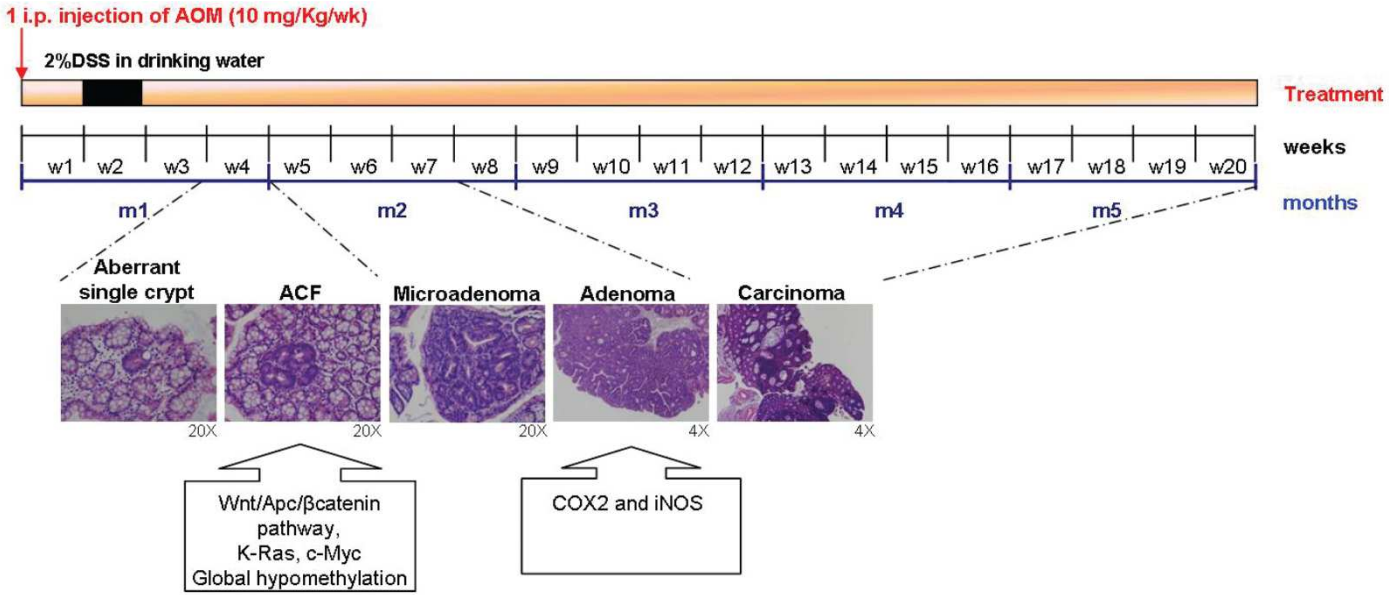
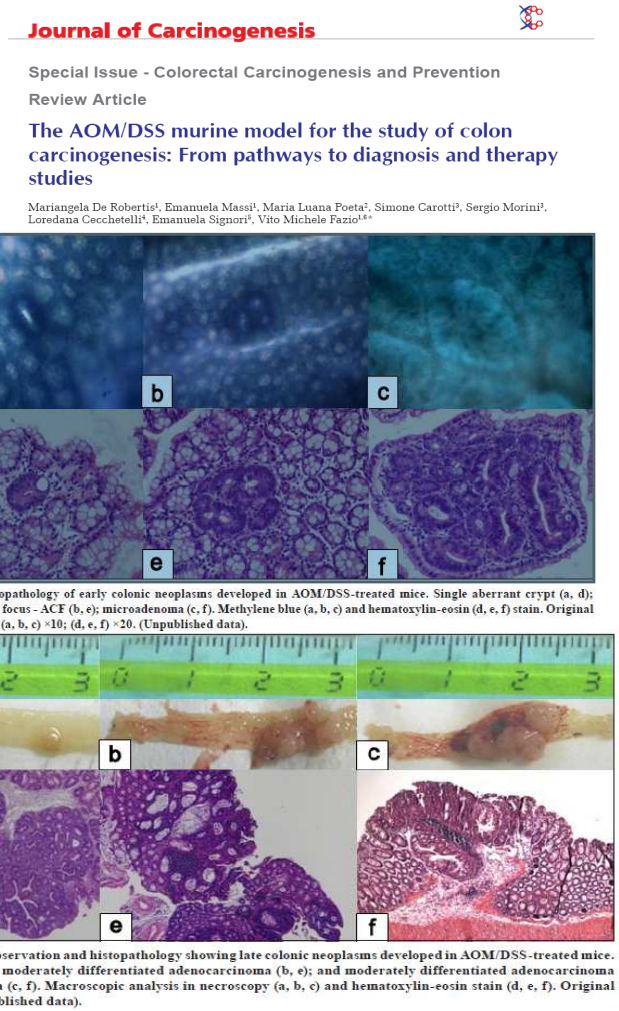
In collaboration with:

http://www.unicampus.it/ricerca/unita-di-ricerca/medicina-molecolare-e-biotecnologie

we are carrying out studies on a Predictable Mouse Model of Colon Cancer useful for

- Studies of mechanisms of cancerogenesis
- Identification of Biomarkers
- Validation of therapeutic protocols





Journal of Carcinogenesis

Special Issue - Colorectal Carcinogenesis and Prevention

Review Article

The AOM/DSS murine model for the study of colon carcinogenesis: From pathways to diagnosis and therapy studies

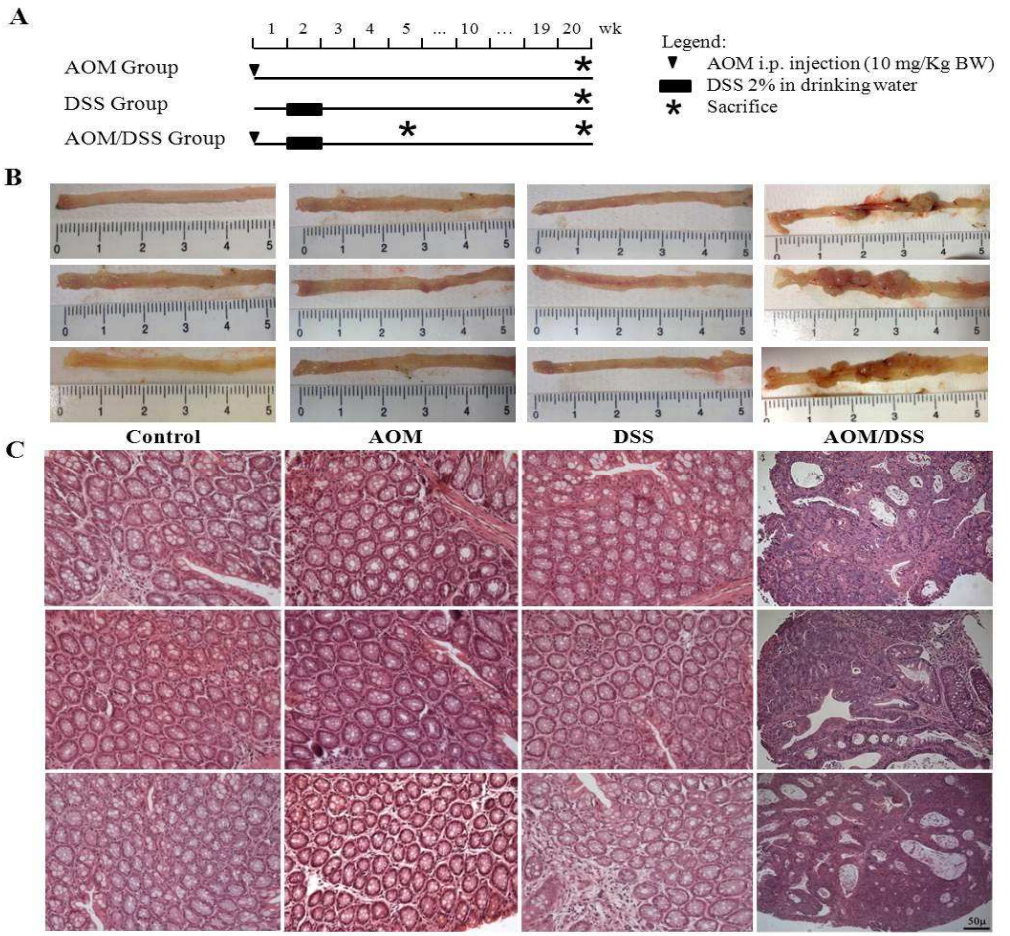
Mariangela De Robertis[1], Emanuela Massi[1], Maria Luana Poeta[2], Simone Carotti[3], Sergio Morini[3], Loredana Cecchetelli[4], Emanuela Signori[2], Vito Michele Fazio[1,5,*]

Figure 3: Histopathology of early colonic neoplasms developed in AOM/DSS-treated mice. Single aberrant crypt (a, d); aberrant crypt focus - ACF (b, e); microadenoma (c, f). Methylene blue (a, b, c) and hematoxylin-eosin (d, e, f) stain. Original magnification, (a, b, c) ×10; (d, e, f) ×20. (Unpublished data).

Figure 4: Macroscopic observation and histopathology showing late colonic neoplasms developed in AOM/DSS-treated mice. Tubular adenoma (a, d); moderately differentiated adenocarcinoma (b, e); and moderately differentiated adenocarcinoma invading into the mucosa (c, f). Macroscopic analysis in necroscopy (a, b, c) and hematoxylin-eosin stain (d, e, f). Original magnification ×4. (Unpublished data).

Colorectal cancer (CRC) is the third most common neoplastic disease worldwide and is the second leading cause of cancer death in the western world. It develops via a multistage process that involves the accumulation of genetic and epigenetic alterations. In humans, colon carcinogenesis is a long, chronic process that is thought to occur over 10 to 20 years. Experimental models that mimic the disease in rodents by chemical induction in less than a few months provide a means to understand the molecular alterations that arise in human CRC.

Our model can be considered a valuable platform in which perform gene profiling studies, for the recognition of new biomarkers and identification of candidate genes to select for treating colon cancer. Furthermore, it can be employed in promising translational preventive and/or therapeutic gene therapy protocols.



(A) Schematic experimental procedure for groups treated with AOM-alone and/or DSS. Control group (untreated littermate controls) not represented. (B) Macroscopic observation of the distal regions of colons from control, AOM-, DSS- and AOM/DSS-treated mice at the end of the 20th week (only 3 of 6 animals per group are shown). Evident macroscopic lesions detectable only in AOM/DSS-treated colons. (C) Hematoxylin/eosin staining of tumors and normal colons. Colon mucosae of AOM-only and DSS-only treated mice show the same histological characteristics of the control group. Adenocarcinomas with a high degree of dysplasia are detectable in AOM/DSS-treated mice. 20x original magnification.

In collaboration with:

Medical University of Plovdiv

University of Torino, Molecular Biotechnology Center

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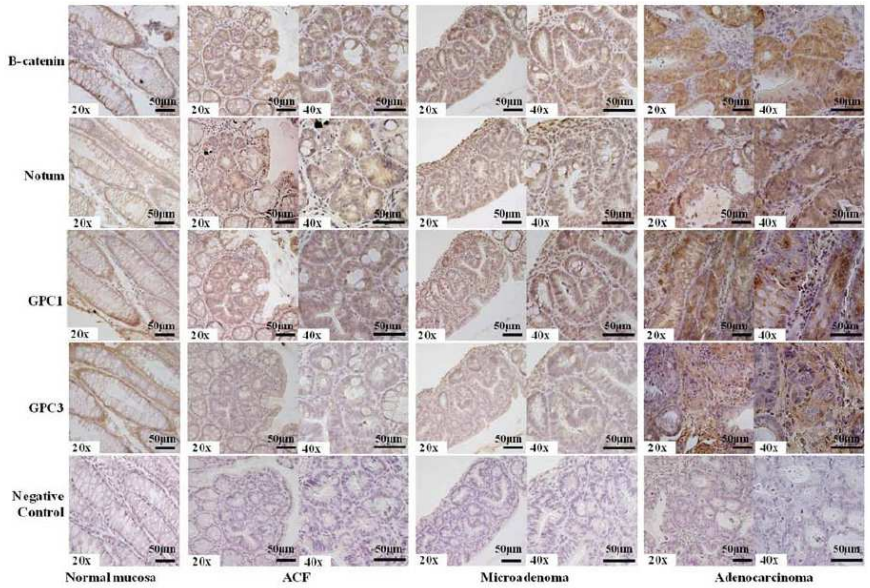
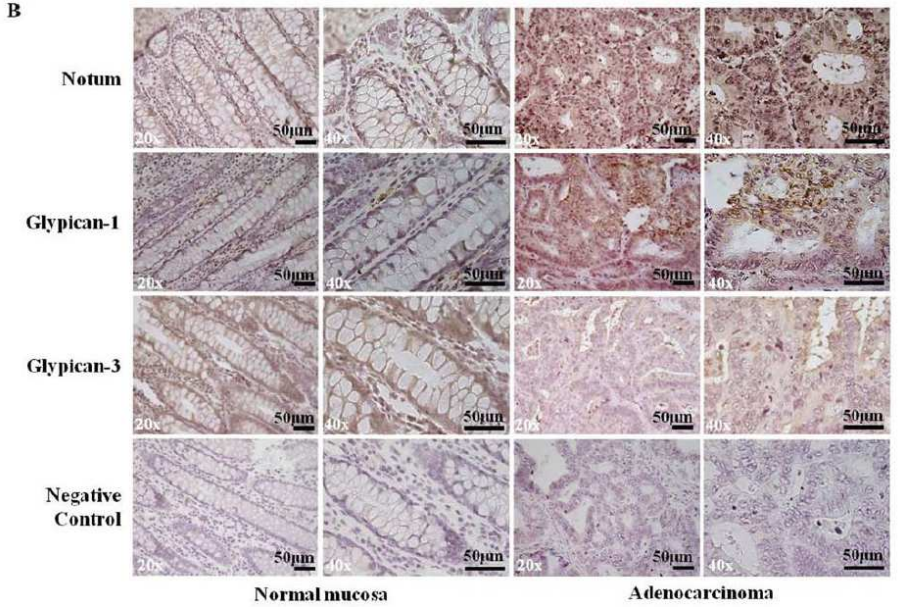
Novel insights into Notum and glypicans regulation in colorectal cancer

Mariangela De Robertis[1,2], Maddalena Arigoni[3], Luisa Loiacono[4,5], Federica Riccardo[3], Raffaele Adolfo Calogero[3], Yana Feodorova[6,7], Dessislava Tashkova[8], Vesselin Belovejdov[8], Victoria Sarafian[6,7], Federica Cavallo[3], Emanuela Signori[1,2]



IHC in mouse tissues



IHC in human tissues