The P2X7 receptor is a key determinant of tumor-host interaction

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Highlights:
The tumor microenvironment is rich in nucleosides and nucleotides. Very recent observations have highlighted the crucial role of adenosine in causing the highly immunosuppressive properties of the tumor interstitium. Mounting evidence suggests that also extracellular ATP heavily affects anti-tumor immunity, albeit effects of this nucleotide on host-tumor interaction are still incompletely understood. Nevertheless, convergent data from several laboratories point to the P2X7 receptor as the main candidate mediating host-tumor interaction in the tumor microenvironment. This receptor is heavily expressed by tumor cells as well as by host immune cells, myeloid-derived suppressor cells included. Thus it is hypothesized that its stimulation/inhibition should heavily affect tumor progression. In vivo data support this hypothesis showing that P2X7 blockers have a strong anti-tumor effect. However, mice genetically deleted of the P2X7 receptor exhibit a surprising tumor-promoting phenotype. I will provide a coherent explanation of these apparently paradoxical findings and show novel observations that further support the key role of the P2X7 receptor in cancer. It is anticipated that an in depth knowledge of the pharmacology, biochemistry and functional activity of the P2X7 receptor will allow a better understanding of host-tumor interaction and the development of innovative anti-cancer therapy.

References:
Di Virgilio and Adinolfi, 2016. Oncogene, submitted
Di Virgilio et al., 2016. Curr Opin Pharmacol in press
Adinolfi et al., 2015. Cancer Res 75:635-644
Adinolfi et al., 2012 Cancer Res 72:5441-5447
Pellegatti et al., 2008. PLoS ONE 3:e2599
Pellegatti et al., 2005. Mol Biol Cell 16:3659-3665

Host: Prof Fabio Mammano