ImmunoTools IT-Box-Cy55M-Award 2013

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The Role of Notch Signaling in Intestinal Development, Homeostasis and Cancer

The scope of my study is the role of Notch signaling in intestinal stem cells during development, homeostasis and cancer. Throughout the second year of my PhD I am specially focused on the role that Notch signaling plays on the maintenance of adult intestinal stem cells. A widely used technique on the field is the 3D culture of intestinal stem cell as organoids, for which rmEGF and rmFGFb are commonly used, among other factors. Moreover, several studies suggest that inflammation is a driving force during oncogenic transformation of the intestinal epithelium. Hence, our projects, specifically the ones focused on tumor initiation from normal stem cells, will greatly benefit from using several of the proinflammatory cytokines in the kit (such as IFNgamma, IL1-7, IL9-11, IL21, or TNFalpha). Cancer stem cells can also be cultured in non-adherent 3D conditions and the role of these cytokines in their maintenance/expansion would also be addressed. For example, I will analyze their effect on NFκB signaling, in which our group has a large expertise. Furthermore, using the chemokines included in the kit (CCL2-5, CCL11, CCL19, CCL20, CXCL1, CXCL2, CXCL10, CXCL12) we will perform not only migration studies of cancer cells using in vitro techniques such as wound healing or transwell migration assays, but also in vivo approaches including tumor xenograts in immunodefficient mice. Together, these experiments would reveal the contribution of specific elements to the metastatic potential or invasiveness of different cancer cell populations. On the other hand, even if part of our research group is focused on intestinal stem cells or intestinal cancer and inflammation, other members work on projects delving in the role of Notch and Wnt signaling pathways in embryonic hematopoiesis. For these, all cytokines related to hematopoiesis (Flt3, G-CSF, GM-CSF, IL6, M-CSF, sCD40L, SCF, and VEGF) will also be extremely useful.

ImmunoTools *IT-Box-Cy55M* for **Erika López Arribillaga**
includes 55 recombinant mouse cytokines

rm EGF, rm Eotaxin / CCL11, rm FGF-a / FGF-1, rm FGF-b / FGF-2, rm FGF-8, rm Flt3L / CD135, rm G-CSF, rm GM-CSF, rm GRO-a / CXCL1, rm GRO-b / CXCL2, rm IFNgamma, rm IL-1alpha, rm IL-1beta, rm IL-2, rmIL-3, rm IL-4, rm IL-5, rm IL-6, rm IL-7, rm IL-9, rm IL-10, rm IL-11, rm IL-13, rm IL-15, rm IL-16, rm IL-17A, rm IL-17C, rm IL-17F, rm IL-19, rm IL-20, rm IL-21, rm IL-22, rm IL-25 / IL-17E, rm IL-27, rm IL-31, rm IL-33, rm IP-10 / CXCL10, rm LIF, rm MCP1 / CCL2, rm M-CSF, rm MIP-1α/ CCL3, rm MIP-1β / CCL4, rm MIP3α / CCL20, rm MIP3β / CCL19, rm NGF-beta, rm PDGF-AA, rm PDGF-BB, rm RANTES / CCL5, rm sCD40L / CD154, rm SCF, rm SDF-1α / CXCL12a, rm SDF-1β / CXCL12b, rm TNFα, rm TPO, rm VEGF DETAILS