ImmunoTools *special* Award 2016

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Analysing human small cell hypercalcemic ovarian carcinoma populations (SCCOHT-1)

One of the most lethal gynecologic malignancies is caused by ovarian cancer. A variety of different epithelial ovarian cancers have been categorized into two types, whereby type I tumors include low-grade serous, endometrioid, clear cell and mucinous carcinomas which appear clinically indolent. In contrast, type II tumors are characterized by high-grade serous, high-grade endometrioid and undifferentiated carcinomas, as well as malignant mixed mesodermal tumors (carcinosarcomas) with papillary, glandular, and solid patterns displaying highly aggressive cancer cells predominantly observed in advanced tumor stages.

This discrimination and histopathological categorization of ovarian tumor types is also supported by molecular differences. Thus, gene mutations including KRAS, BRAF, ERBB2, PTEN, CTNNB1, and PIK3CA are predominantly detected in type I ovarian tumors. Vice versa, type II tumors often display genetic instabilities with a high frequency of TP53 mutations and cyclin E1 amplifications which directly regulate the proliferative capacity and cell cycle progression.

Upon variations of malignant ovarian neoplasia, the small cell carcinoma of the ovary hypercalcemic type (SCCOHT) represents a rare form of an aggressive ovarian tumor which is predominantly diagnosed in young women between ages of 13 to 35. The SCCOHT has a poor prognosis and is associated in most cases with paraendocrine hypercalcemia. Following the initial histopathological evaluation of several clinical cases, the SCCOHT has been classified as a separate pathological entity. Sufficient therapeutics management is still unknown for this disease.

Our lab has developed and characterized several cellular model (SCCOHT-1) for this disease [1-3]. Cytogenetic analysis and high-resolution oligo-array comparative genomic hybridization (aCGH) demonstrated a stable karyotype including deletions of the PARK2, CSMD1, GRIN2B and ATF7IP genes. We used lentiviral transduction

with a GFP vector, the labeled SCCOHT-1-derived cells were subjected to centrifugal counterflow elutriation to separate distinct subpopulations as evidenced by cell cycle analysis. Subcutaneous injection of these subpopulations into NOD/SCID mice exhibited hypercalcemia and a tumor development in 100% of the mice. Re-cultivation of the mouse tumors revealed an outgrowth of SCCOHT-derived phenotypes and all cell populations expressed high telomerase activity. Moreover, histopathological evaluation demonstrated close similarities between the mouse tumors and the original patient tumor.

Using this established cellular model, SCCOHT-1 cells provide a study platform to further investigate this rare disease and to examine effective molecular therapeuties for this rather unknown type of cancer. Therefore, in my project I would like to use the antibodies from ImmunoTools to analyse some cell surface markers of SCCOHT-1 in comparison to other (ovarian cancer) cell types. The analysis of surface protein expression will allow further characterization of these tumor cells and will help to detect potential changes during tumor development and interactions with the tumor microenvironment.

References:

[1] Otte et al., Orphanet J Rare Diseases 9:126 (2014)

[2] Yang et al., Int J Oncol.47:244-252 (2015)

[3] Otte et al., Oncotarget. 6:31640-3158 (2015)

ImmunoTools *special* AWARD for **Yuanyuan Yang**

includes 25 reagents

PE - conjugated anti-human CD10, CD14, CD15, CD24, CD29, CD34, CD44, CD45, CD49d, CD56, CD105, CD147, HLA-ABC, IFN-gamma, IL-6, IL-8, TNFa, Control-IgG1, Control-IgG2a, Control-IgG2b, Annexin V

Multicolour combinations anti-human:

CD3 FITC / CD4 PE

CD3 FITC / CD8 PE

recombinant human cytokines: rh BMP-2, rh Galectin-1

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