TAM RECEPTORS IN THE PATHOLOGY OF BLADDER CANCER: APPROACHES TO PERSONALISED MEDICINE

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Bladder cancer (BC) is a cancer of the lining epithelium of the bladder. In 75% of cases, it is presented as a non-muscle invasive disease (NMIBC), with a 5-year patient survival of more than 90%. However, 25% of BC patients develop an aggressive and chemoresistant muscle-invasive form of cancer (MIBC) with less than 50% 5-year survival, making BC the 13th deadliest cancer. Moreover, the treatment for MIBC, including cystectomy and bladder reconstruction, is costly and available only in developed countries, leaving patients in other countries without efficient treatment. So, there is an urgent need to develop and implement new personalised treatment schemes in Western and low – to middle-income countries with progressively ageing populations.

In our work, we study the regulatory role of the TAM Receptor Tyrosine kinases (AXL, MERTK, and TYRO3) in signalling in BC. It has been shown before that TAM receptors are activated in different cancer types, where they regulate drug resistance, immune evasion and metastasis. We analyse how TAM signalling contributes to the development of chemoresistance in BC and propose that interfering with these pathways may be a part of new combination therapy approaches.

We analyse TAM receptor expression and activation in primary patient materials (solid and liquid biopsies) and develop organoid cultures for testing anti-TAM inhibitors and chemotherapeutic agents. According to our recent data, soluble extracellular domains of TAMs are present in urine samples of BC patients and are suitable as urine predictive biomarkers to use in BC.