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Fragments of Collagen allow discrimination of superficial and invasive bladder cancer tumors

Mosaiques diagnostics and an international network of renowned scientists revealed urinary fragments of collagen alpha-1(I) and alpha-1(III) to distinguish between superficial and invasive bladder cancer tumors.

Hannover - Bladder cancer (BCa) is a common malignancy worldwide. At initial presentation, approximately 70% of tumors do not invade the bladder muscle wall while the remainder present with muscle invasive disease. The standard method used to determine the local stage of the neoplasm is histological examination subsequent to transurethral resection of the bladder tumor. While this procedure provides treatment for patients with superficial disease, it exposes patients with invasive tumours to risk and additional morbidity. Many of these patients are ultimately treated with radical surgery or radiotherapy and were shown to benefit from neoadjuvant chemotherapy. Thus immediate initiation of such treatment after tumor diagnosis is advantageous by minimizing delays.

Researchers of mosaiques diagnostics, the Academy of Athens (Athens, Greece), Technische Universität München (Munich, Germany), University of Leipzig (Leipzig, Germany), and University of Virginia (Charlottesville, USA) identified Collagen alpha-1 (I) and alpha-1 (III) fragments, such as Collagen alpha-1 (I) [651-668] and its post-translational modifications, to discriminate between superficial and cancer tumors. Both Collagen alpha-1 (III) and Collagen alpha-1 (I) are substrates of collagenases, members of the matrix metalloproteinases (MMP) family, a group of zinc finger

endopeptidases with partially overlapping substrate specificity. Deregulations of Collagens or of MMP-activity have been found for different cancers. These data support the hypothesis that with increasing stage, the tumor displays increasing protease activity, resulting in an increased degradation of collagens that are usually present in body fluids under benign and/or superficial tumor conditions.

Currently, these novel non invasive protein biomarkers to urothelial bladder cancer staging are clinically validated in multi-centre studies with the aim to establish a clinical routine test. Such a test will have significant clinical and economic implications for the management of bladder cancer.

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About mosaiques diagnostics & therapeutics AG

Mosaiques diagnostics & therapeutics AG was established in Hannover, Germany. The company's core competence is the early and reliable detection of diseases enabling personalized medicine during therapy and drug development. The company utilizes diagnostic polypeptide patterns (DiaPat) derived from the fast and accurate analysis of proteins and polypeptides in body fluids (e.g. urine and cerebrospinal fluid). For this purpose, mosaiques has developed a unique technology on the basis of clinical proteome analysis, enabling the early and differential detection of cardiovascular, renal, and urogenital diseases. Diagnosis of bladder and prostate cancer, chronic renal diseases, diabetic nephropathy, graft-versus-host disease, ureteropelvic junction obstruction in newborn, and infarct risk is already marketed in Germany through the subsidiary DiaPat GmbH. Mosaiques' polypeptide pattern technology has been proven in multiple blinded clinical studies on over 14,000 qualified patient samples from different pathological alterations.