

Study uncovers new cells in the urethra which may detect hazardous substances

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A recent study conducted by a group of German scientists revealed the presence of a previously unknown cell in the urethra of mice. These chemosensory cholinergic brush cells are in close contact to sensory neurons that express cholinergic receptors.

The authors suggest that in analogy to brush cells of the respiratory tract, the urethral brush cells may also serve as sentinels being able to detecting hazardous substances and preventing their further retrograde ingress.

The results of this investigation will be presented at the upcoming 28th Annual EAU Congress which will kick off this Friday in Milan. The study won 2nd Prize for Best Abstract in Non-Oncology.

"Urinary tract infections rate among the most common indispositions among out- as well as in-patients and are chiefly triggered by bacteria entering the body through the urethra. We here discovered a previously not recognised cell which surveils this portal of entry," commented the presenting author of the study, Ms. Katharina Filipski of the Anatomy and Cell Biology Department at Justus-Liebig-University Giessen in Germany.

"A further exploration of this [cell population](#) will provide insight into cellular interaction and defensive measures against pathogens."

According to the authors, cholinergic chemoceptive cells might play an

essential role in detecting and defending microorganisms invading the body through the urethra. The maintenance and support of their protective function could fortify the immune barrier and prevent [urinary tract infections](#) by initiating avoiding reflexes as micturition.

"It is also conceivable that dysfunction of this system might result in inappropriate urge, thereby being linked to [overactive bladder](#)," explained Ms. Filipski.

During the study, the detection and characterisation of chemosensory brush cells of the murine urethra was addressed by means of ultrastructural [immunohistochemistry](#), confocal laser scanning microscopy (CLSM) analysis and 3D-reconstruction, immunofluorescence, RT-PCR, and measurement of intracellular calcium concentration.

According to Ms. Filipski, the results of the study promote further research into the subject matter.

"Together with the urological clinic of our university, we now aim to unravel the reflexes initiated after the detection of bacteria by the chemoceptive cholinergic cells. This will be addressed by cystomanometry of mice after urethral exposure to bacterial components."

More information: K. Filipski et al., "A new cell in the urogenital tract - cholinergic chemosensory brush cells are sentinels of the urethra" Second Prize, Best Abstract (Non-Oncology), 28th Annual EAU Congress, 15 to 19 March 2013; Milan, Italy; Abstract Nr: 62.

Provided by European Association of Urology

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