

ERA-Net NEURON project: ELPIS (*Emergence of a spinal micturition reflex after SCI: abolition by silencing of hyper-excited C-fiber bladder afferents by gene therapy to restore continence and micturition*)

About 80% of people with spinal cord injury (SCI) are subject to bladder dysfunction with urinary incontinence due to neurogenic hyperactivity of the bladder detrusor muscle leading to: 1) incontinence; 2) inability to empty the bladder completely, which forces the patient to intermittent catheterization to avoid kidney damage and 3) urinary tract infections (UTI). Currently, one of the most widely used treatments in the dysfunctions of the bladder-sphincter apparatus caused by SCI is the use of botulinum toxin which, injected into the bladder muscle, causes its relaxation, increasing its capacity and reducing episodes of urinary incontinence. The aim of this project is to use gene therapy through viral vectors to treat urinary incontinence

GOALS

- to construct viral vectors based on HSV-1 expressing the light chain (LC) of different serotypes of botulinum neurotoxin (BoNT A, B, C, D, E, and F) or LC-chimeric proteins BoNT-SNARE (B-STX, C-VAMP)
- to analyse these vectors in primary cell cultures in order to characterize their biological mechanisms and select the most promising ones for future experiments in an animal model of neurogenic hyperactivity of the bladder detrusor muscle (NDO)
- to test these vectors in afferent nerve fibers to treat urinary incontinence from neurogenic hyperactivity of the bladder detrusor muscle.

INSTRUMENTS AND METHODS

Virology, molecular and cell biology techniques. The instrumentation used is the standard for molecular biology, virology and cell cultures.

SUBJECTS

Microbiology, molecular biology, molecular biology/biochemistry.

WORKING GROUP

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COLLABORATIONS

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