

**Neuro-anatomical tracing techniques**

**Objectives:**

Several anterograde and retrograde neuronal tracers have been developed for respectively evidencing afferent and efferent neural pathways. These tools have largely contributed to the understanding of neuroanatomical connections between different central or peripheral organs. Recently, a new class of neuronal tract tracers consisting of modified virus, have been efficaciously developed and used (Enquist, 2005).

**Summarized methodology:**

- The general procedure consists in injecting the neuronal tracers in the organs or regions of interest. When these injections are performed in the brain, animals are placed in a stereotaxic frame and brain canulae are used for the injection of the tracers. After a post-survival period depending on the properties of the neuronal tract tracer used, animals are sacrificed and the organs of interest are collected and sliced. Then, slices are directly examined using a microscope under epifluorescence if fluorescent tracers are used (cf. [Links to applicable experimental skills :confocal microscopy](#)), or after immunocytochemical labelling if the tracers have to be detected.

**Endpoints:**

- qualitative analysis of the localisation of the neuronal tract tracers in organs or regions of interest
- number and percentage of single, double or triple-labeled cells

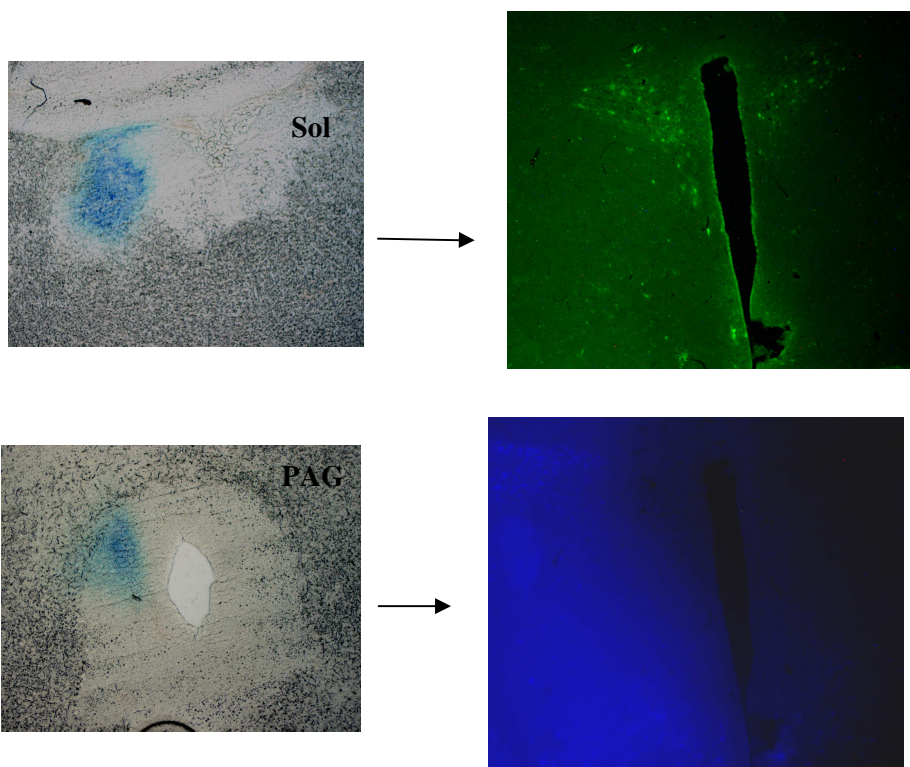


Figure1: Injection of a dye in two brain regions : nucleus of the tractus solitarius (Sol) and the periaqueductal gray (PAG) to check the placement of canulae used for trace injection.

Figure 2: Diffusion in the paraventricular nucleus of two retrograde neuronal tract tracers respectively injected in the Sol and the PAG.

**Related Pelvipharm bibliography:**

Gelez, H et al. **J Sex Med** (2010) – Accepted.

**Links to applicable therapeutic areas / targeted disorders:**

**- Sexual pharmacology**

- \* ED (Erectile Dysfunction)
- \* Ejaculatory Disorders
- \* FSD (Female Sexual Dysfunction)

**- Lower urinary tract**

- \* BPH (Benign prostatic Hyperplasia)
- \* SUI (Stress Urinary Incontinence)
- \* SCI (Spinal Cord Injury)
- \* NDO (Neurogenic Detrusor Overactivity)
- \* OAB (Overactive Bladder)
- \* IC (Interstitial Cystitis)

**- Cardiovascular and metabolism pharmacology**

- \* Hypertension
- \* Metabolic syndrome
- \* Atherosclerosis
- \* Diabetes Mellitus
- \* Myocardial infarction