# Recording of bladder afferent firing in rats

**Objectives:**

- To explore bladder afferent nerve firing by measuring its frequency (spikes/s) while monitoring intravesical pressure concomitantly during bladder filling
- performed in either anaesthetized (isoflurane) or decerebrate animals to avoid the confounding factor of anaesthesia on bladder afferent nerve firing
- performed in either normal or pathophysiological animal models

**Species:** rat

**Summarized methodology:**

Rats are anaesthetized using isoflurane. To avoid confounding effect of anesthesia, rats can be decerebrated before the procedure. Alternatively, they are maintained under isoflurane anaesthesia. A bladder dome catheter is inserted allowing continuous filling of the bladder with saline and simultaneous measurement of intravesical pressure (IVP). Fine filaments are dissected from the L6 dorsal roots and placed across a bipolar electrode. Afferent nerve fibers originating from the bladder are identified by electrical stimulation of the pelvic nerve and by bladder distension. Then, bladders are filled and both bladder afferent nerve firing and intravesical pressure are recorded concomitantly.

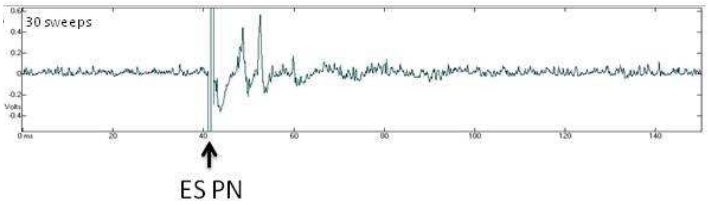


*Figure 1: Representative tracing of electrically-evoked action potentials on a bladder afferent fiber following electrical stimulations at 4 mA-0.5 ms of the pelvic nerve (ES PN)( 30 sweeps).*

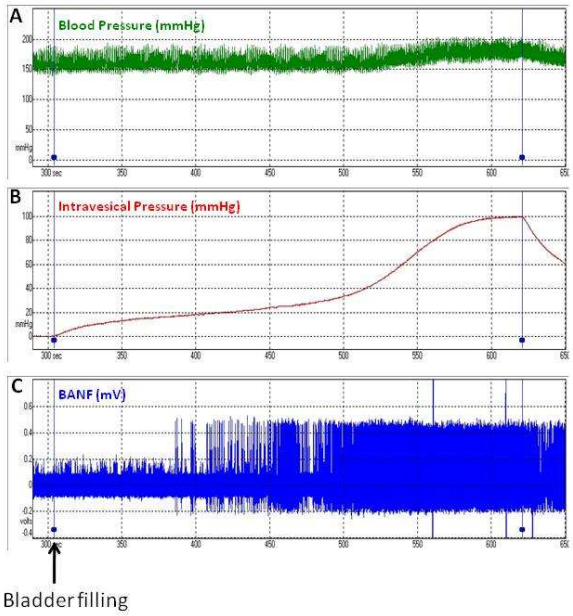


*Figure 2: Representative blood pressure (A) and cystometrogram tracings (B) and its concomitant recording of bladder afferent nerve firing (C) in a decerebrate unanesthetized normal rat.*

**Endpoints:**

- Frequency of bladder afferent nerve firing (BANF, spikes/s)
- Intravesical pressure (IVP, mmHg)
- Maximal bladder filling volume

For chronic pathophysiological models: non-voiding contractions during the bladder filling phase are also analyzed :

- Amplitude of non-voiding contractions for each bladder filling cycle (mm Hg),
- Frequency of non-voiding contractions for each bladder filling cycle (number of non-voiding contractions per min)
- Force generated by non-voiding contractions for each bladder filling (AUC, mmHg.s)

**Related Pelvipharm bibliography:**

Behr-Roussel, D. et al. J Urol (2010) : 183(4),supl1:e391 (AUA, 2010)

Behr-Roussel, D. et al. Eur Urol Suppl (2010) : 9(2):73 (EAU, 2010)

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

- **Lower urinary tract**
  - * BPH (Benign prostatic Hyperplasia)
  - * SCI (Spinal Cord Injury)
  - * NDO (Neurogenic Detrusor Overactivity)
  - * OAB (Overactive Bladder)
  - * IC (Interstitial Cystitis)