OBJECTIVES:
1. Manage to introduce ototoxic drugs, such as kanamycin and furosemide, directly on the round window in rats.
2. Use a gelatin sponge as a proper deliver vehicle.
3. Assess the validity of this method to induce local ototoxicity.

MATERIAL AND METHODS:
A total of 18 male Wistar rats, 8 weeks old, weighting 250-300 g were used for the experimental study. They were distributed in three groups of 6 rats each, as follows:

1) Surgery control group (SHAM), where only the bullostomy was performed.
2) Saline control group (SALINE), where Gelfoam soaked in saline solution was directly applied on the round window after performing the bullostomy.
3) Ototoxic group (OTOTOXIC), where Gelfoam soaked in the ototoxic solution (kanamycin 200mg/ml + furosemide 50 mg/ml) was applied on the round window.

Figures 1 to 6 show the steps followed during the surgery. Operation was performed in the right ear.

Hearing function was assessed before the surgery and one week after the surgical procedure using Auditory Brainstem Responses (ABR). Rats were anaesthetized with an intraperitoneal injection of ketamine (100 mg/kg) and xylazine (10 mg/kg) and then placed on a heating pad in a sound-attenuating chamber. Sound stimuli (click and tone burst 4 to 40 kHz) were generated by a TDT System III (Tucker-Davies Technologies, FL, USA) R22.1 processor and PAS attenuator and delivered through an electrostatic TDT ESI free-field speaker, located at 5 cm from right pinnae. Electrical responses were recorded with three stainless steel needle electrodes subcutaneously placed at the vertex (active), contralateral to the right ear (reference) and in the lumbar region (ground) (figures 7 and 8). ABR threshold in response to click and tone burst stimuli, peak and interpeak latencies were determined. Statistical analysis was performed using SPSS (v.12) software, using Anova with bonferroni correction (p level=0.05).

Finally, rats were deeply anaesthetized and perfused transcardially with 4% paraformaldehyde in phosphate buffered saline (PBS; pH 7.4). Temporal bones containing the inner ear were removed and cochlea dissected, post-fixed in fresh fixative solution and decalcified. Cochleae were embedded in paraffin and sectioned at 5 μm. For general cytoarchitecture studies (Nissl-staining using 1% von Kossa).