NSET (Non-Surgical Embryo Transfer) Device for Mice #60010 Technical Support Letter

Before beginning any trials with the NSET Device please read carefully this Technical Support Letter, the NSET Instructions, NSET FAQs, and NSET Helpful Hints (PDFs). These important support documents have proven useful for success of the NSET device and technique. It is of upmost importance to read these documents thoroughly. Please contact us directly to answer any questions/comments you may have. We are always willing to help. These items, as well as NSET poster PDFs and NSET publications can be found on our website’s NSET Resource page. http://www.paratechs.com/nset-resource-page/.

Getting started with the NSET Device for Mice:
The following information is very helpful when just getting started with the NSET device. This information is specifically important for the correct stage of estrous the recipient mouse should be in for traversing the NSET tip through the cervical opening (regardless of what is transferred inside the NSET tip into the recipient; embryos, sperm, material or pathogens). We strongly encourage you to practice the technique several times with one of the devices without valuable embryos (or other substances) until you are successful traversing the cervix. ***Please see the red starred section below for further details.

About the NSET Device for Mice:
This plastic veterinary device is intended for research purposes only and not intended for therapeutic or diagnostic use. Each NSET device tip is packaged with 2 specula (with same specified length, yet of different diameters). All 3 are sealed in a pouch and there are 10 pouches per box. NSET is Ethylene Oxide (EtO) Sterilization processed. No further sterilization is necessary.

NSET Demonstration Video
The NSET technique is very quick, about a 2 minute procedure. Please view the NSET Demonstration video on ParaTechs’ NSET webpage, http://www.paratechs.com/nset/. This video demonstrates how easily mouse uterine embryo transfer can be accomplished using the NSET™ (Non-Surgical Embryo Transfer) Device for Mice. The demonstration video can be downloaded.

Visualizing the Mouse’s Cervix:
The image to the right is the cervical opening of a CD1 mouse (our recommended strain) as seen with good lighting through the larger of the two specula (as described above) that come with each device. This image is only intended as a guide to help the end-user know how to visually locate the opening before gently aiming the NSET tip. Of course each female mouse is a bit different and the cervix may not always appear “centered” as seen here. Also, your hand and the P2 (recommended) pipette will block your actual view of the cervix during the procedure.

NSET Recipient Mice
We recommend using CD1 female recipients starting at 8 weeks old. The litter size and pregnancy rate is improved at that age. Late stage morulae/blastocysts are important to use since the device delivers the embryos to the uterine horn and not the oviduct.

A key factor for success is to make sure the recipient mouse is in the right stage of estrous in order for the NSET tip to easily pass through the dilated cervix to a uterine horn. She needs to be 2.5dpc (days post coitum) pseudo-pregnant after mating with a vasectomized male, the copulatory plug has been visualized and has fallen out naturally. Do not force the plug out.

***It is important to point out “No. 2” of the “NSET Helpful Hints”. We suggest the initial practice of finding and traversing the NSET tip thru the cervical opening without valuable embryos, unless you have spare embryos for practicing. The thought behind this is that while a new end-user is getting use to the feel of the technique you could potentially lose some embryos in the vaginal opening if applying too much pressure against the vaginal wall while “finding” the cervix. Due to the extreme flexibility of the Teflon® NSET tip, embryos can get knocked out of the tip when too much pressure is applied and the tip bends too far. Once the NSET device technique is underway the researcher/technician is better poised for successful embryo transfer.
Gentle, calm, repeated attempts to locate the cervix is of most importance. If the tip simply won’t pass thru after several tries, place her back in the cage and begin with another 2.5dpc pseudo-pregnant female. As you are most likely aware, if the end-user exerts nervous energy it will transfer to the mice and could negatively affect their calm behavior and thus the trial(s) and results.

When depressing the pipette plunger to expel the embryos, we suggest count to 3 and then slowly remove the device and then the speculum from the mouse. However, do not release the plunger until after the NSET tip has been completely removed from the mouse. If released before removal, the suction could pull your embryos back into the tip.

ParaTechs does not recommend using an NSET device for more than one transfer. Repeated use will clog the NSET tip/catheter with cervical tissue from the mouse reproductive tract. Reuse also renders the catheter pliable and no longer rigid enough to pass the cervix, thus potentially depositing embryos in the vagina without the end-users knowledge of this occurring. When the device is used multiple times there may be a noticeable drop in success rate.


(Al) Artificial Insemination with the NSET Device
Dr. Barbara Stone, a Senior Research Scientist at ParaTechs and our Director of NSET Technology, has published a technical report in Transgenic Research, http://link.springer.com/article/10.1007%2Fs11248-015-9887-3. “A rapid and effective nonsurgical artificial insemination protocol using the NSET device for sperm transfer in mice without anesthesia”. The article is Open Access, http://link.springer.com/article/10.1007/s11248-015-9887-3/fulltext.html. If you are interested, and at your request, we can send you the actual protocol Dr. Stone has developed.

Material or Pathogen Transfer with the NSET Device
Innovative researchers have developed a protocol for the novel use of the NSET device for material or pathogen transfer to the uterine horn of female mice. We are currently underway of receiving such a protocol from a multi-published author/researcher. If you are interested in this protocol, please enquire with me directly and I will be happy to send it to you as soon as it becomes available.

It’s a lot of information, but we want your trials to be successful. As stated earlier, please don’t hesitate to contact us for any technical NSET support and we certainly look forward to hearing from you. Thank you again for your interest in the Non-Surgical Embryo Transfer device for mice!

Kindest regards,

Margo

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The NSET™ Device is manufactured in the USA by an FDA Registered Medical Device Manufacturer and ISO 13485:2003 registered company and is ETO (Ethylene Oxide) sterilization processed. Patent Information: Non-Surgical Embryo Transfer Method and Apparatus, United States Patent 9,615,903.