

# Stellar Telemetry Webinar Q&A Report

## 1. How can this system be used to measure LV pressure?

The small solid state pressure tipped lead is ideally suited for secure implantation and solid anchoring in the left ventricle. An approach from apex is preferred using a small gauge needle to prepare the insertion. The pressure lead is very small (ca 500 microns). A purse string suture on the muscle tissue should be prepared so that the pressure lead can be secured immediately following insertion of the pressure tip. Overall, this will be similar to insertion of a PV catheter.

## 2. What is the memory capacity of the implant?

Mouse implant memory will be 512mb and the rat and larger animals will have 1GB.

## 3. A 1-year battery life for the 170g device is specified. How much data can you collect during that 1-year period? What if you want 3 month battery life, how does the amount of data you can collect change?

If one parameter is measured e.g pressure then a protocol that measures 10sec every 10 min. at 500 samples per second with an upload every 30 minutes would give a battery life of 11 months. For two parameters (pressure and ECG) it would be 9 months.

## 4. How long can you continuously collect data from research animals?

If continuous measurements are needed the rat implant can take 39 hours of data measuring pressure at 500 samples/sec before an upload would be required. If 2 parameters are to be measured then the time would be 19.5 hours. Keep in mind that measuring continuous data will shorten the battery life.

## 5. You have a YouTube video that highlights a mouse product, but it is not referenced in this webinar. Is it currently available?

We are not aware of a YouTube video featuring Stellar

## 6. You mentioned solid state sensors that are drift-free, what type of data have you acquired to validate this and over what period of time? In which species?

No sensor is drift free but validation was in rats for up to 4 weeks with no significant drift (less than 2 mmHg) in 24hr MAP readings.

**7. Is it easier to implant a solid-state sensor lead than a regular fluid filled catheter?**

Yes, significantly easier since you will be handling a reinforced solid wire, rather than a fluid filled piece of silicone tubing.

**8. Can you acquire an essentially continuous recording? If not, how long are the non-recorded gaps?**

If continuous measurements are needed the rat implant can take 39 hours of data measuring pressure at 500 samples/sec before an upload would be required. If 2 parameters are to be measured then the time would be 19.5 hours. Keep in mind that measuring continuous data will shorten the battery life. The time to upload a full memory is approximately 45 minutes.

**9. How hard is it to clean (sterilize?) and reuse the Stellar implant?**

Reuse is very easy, after cleaning to remove protein and other debris the unit can be chemically or gas sterilized. Instructions are provided in the manuals that come with the product.

**10. Does the radio signal interfere with other implantable devices?**

We have tested the device against several frequencies used in mobile phones, RFID based temperature and activity monitoring systems and found as of yet no interference at our selected frequencies.

**11. After the battery is dead, what happens to the implant and sensor? Do we have to buy a new one?**

Yes, the Stellar implant should be returned to the manufacturer for proper disposal. It is a one-use device. Once the battery is empty it cannot be recharged or reused.

**12. Can you process or analyze data while the device is still recording?**

Yes, you can analyze while the scheduled recording is running in the background. The recording is controlled by the protocol sent to the microprocessor in the implant and independent of the computer. The computer does not need to be near the animals unless you want to upload data.

**13. Is this retroperitoneal surgical approach for implantation of the transmitter a requirement and what makes this surgical approach particularly advantageous in the non-human primate?**

No it is not a requirement but avoids entry into the abdominal cavity. Since NHP regulations often involve restrictions on the number of time a body cavity may be opened (once), this procedure with less risk of infections also allows to revisit the implant site. Jeff?

**14. In your opinion, what is the most critical limitation of the use of the Stellar Telemetry system in the non-human primate? What is the greatest advantage?**

The limitation would lie in the ability to perform longer continuous recordings of a single or more parameters. While continuous recording will absolutely work well with this system, collection and downloading of very large data files will significantly decrease the battery lifespan. The advantage is that the system is fully programmable recording including variable recording rate and different time intervals. You can choose to record more data points at critical times (interventions, first period after a drug application etc.) and less at other times e.g when the animal is sleeping. Furthermore, given the data storage platform, the system will allow for ultra-long term data collection in free ranging animals for the assessment of physiological parameters in an animal's natural behavioral setting.

**15. What types of pathological problems have been encountered in non-human primates with long-term implantation of the Stellar Telemetry transmitter?**

Thus far we have not encountered any pathological problems and we still monitor all implanted animals for signs of infection, encapsulation, growth and rejection (by Echo since we have not had any deceased animals)

**If you have additional questions for TSE Systems regarding content from their Webinar or wish to receive additional information about Stellar Telemetry, please contact them by phone or email:**

**Toll Free (USA / Canada):** 1-866-466-8873

**Europe:** +49-(0)6172-789-0

**Email:** [Info@TSE-Systems.com](mailto:Info@TSE-Systems.com)

**Web:** <http://www.tse-systems.com/contact/index.htm>

