

WEBINAR: Experimental Design for Chronic Telemetry Studies

Questions and answers from the October 8, 2020 webinar titled “Experimental Design for Chronic Telemetry Studies”

This document includes questions we received and answered during the webinar, as well as those that we did not have time to address. Questions have been grouped into relevant categories.

Can Kaha telemetry allow us to record ECG in swimming rats in a water maze?

Yes, the Kaha Sciences rat telemetry system can be used to measure physiological parameters away from the home-cage during behavioural tasks. The back-up battery of the rat telemeters supports recording up to 5m away from the TR181 SmartPad receiver for between 4-6 hours, depending on the telemeter model. Once the experiment is complete, the battery can then be fully recharged when the rat is back within the wireless power field of the SmartPad in its home-cage. In the specific example of the water maze, the water may reduce the transmission range of the telemeter, however this could be solved by positioning the SmartPad above the arena, so the signal is not transmitted through the water.

Is there GLP compliance?

The Kaha Sciences telemetry systems are all manufactured under the ISO 9001:2015 quality standards (certification available at <https://www.kahasciences.com/download/certifications/>) and there is no ability for modifying the data collected from the system using the Kaha Sciences TR190 Configurator System or ConfigSoft software. Kaha telemetry systems output analogue data for collection by data acquisition systems and there are options for GLP compliant data acquisition available. We are very happy to discuss possible incorporation of Kaha telemetry into your GLP framework.

How long would you recommend giving analgesia and antibiotics during the post-surgery recovery?

It would be important to discuss this with your Institution’s Veterinarian before starting any surgeries. Things to consider are the duration and invasiveness of the surgery performed on the animal and any predicted adverse effects that may result from the surgery. For instance, a long surgery will require longer recovery and may make the animal more prone to infection so you might dose with analgesia and antibiotics for 3-4 days post-surgery.

Ultimately, it is difficult to apply the same rule across all animals and you may need to make judgements based on the recovery of individual animals. It is also important to consider the effects of any drugs you

give on the physiological parameters that you wish to measure and adjust your recovery/baselining period accordingly to the dosing.

How would you go about scheduling recording for your data sampling if you only wanted to record files of a certain duration?

This depends on the data acquisition system that you are using, however most software has the capacity to schedule data collection for a predetermined duration (e.g. 5 mins waveform collected every hour). Most software packages also have a macro or scripting function which allows you to schedule regular file saving. As an example we have a pre-written macro, with instructions for use, to set up 12 hourly file saving in the ADInstruments LabChart software which can be freely downloaded from our website <https://www.kahasciences.com/download/labchart-macros/>.

My colleague, Dr. Sarah-Jane Guild, is presenting a webinar to give more detail on this topic on October 28th, 2020 and a recording will be available on our Knowledge Centre (www.kahasciences.com/knowledge-centre) soon afterwards.

Does the wireless power charging cause heating of the telemetry implant within the animal?

The short answer to this question is no and we are happy to provide data to support this which shows stable core temperature of implanted rats over several days. Our wireless power technology is smart enough that the field generated by the TR181 SmartPads and MT110 tBases is optimised based on feedback from the telemeter. The telemeters constantly monitor their internal temperature to ensure overheating doesn't occur. If for any reason telemeter temperature exceeds a certain value, the wireless power field is temporarily disabled.