August 2017

MiniCube PCR

Application note - calorimetry

Minicube PCR - a quality product from GNAcode

Minicube PCR can due to its fine thermal recording circuits be used for calorimetric studies of the metabolism of small populations of cells

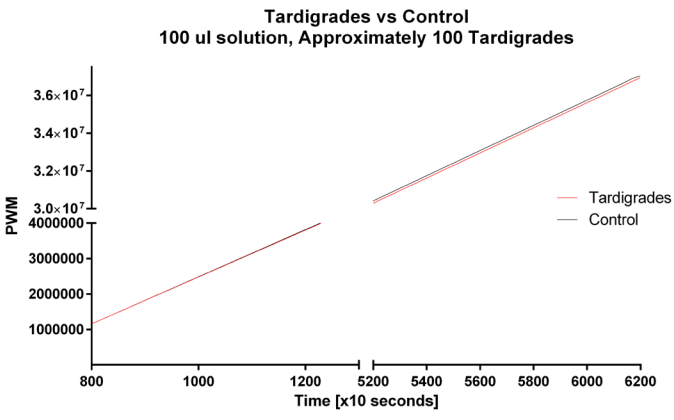
Richtersius coronifer Tardigrades consists of estimated 3000 cells

Protocol :

100 ul of tap-water (preferred liquid for Tardigrades) was dispensed in a 0.2 ml flatcap AB-0620 PCR tube (Thermo Scientific) and utilized as reference. A second 0.2 ml PCR tube were filled with 100 Tardigrades (Richtersius coronifer, Øland, Sweden) and total volume 100 ul tap water. The Minicube PCR was setup via its "Swagger interface" to 5.0 °C at the cooling block and 20.0 °C at the midheater. The lid was left open to prevent heat leaking down in the tube which we previously has shown overvelmes the recording. The thermal noise of the wells are an estimated 2.5 mW pr well. A single temperature step to 20 °C was setup via the GNAPCR app and run for 10 min. Two experiments were recorded. One of the control and subsequent one with the Tardigrades.

Results:

We integrate the heat flow over a period of 10 minutes from both the water control and the Tardigrade containing tube in order to accumulate a signal stronger than the background noise. After 10 minutes (6000) we can see that the tube with the 100 animals uses less energy to maintain the 20 °C compared to the control.



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