

A Micro stage for time lapse imaging and high/low temperature mediated cellular studies.

Cells derived from mammals have an optimum *in vitro* growth rate between 36°C to 37°C as their *in vivo* physiological temperature ranges between 36.5–37.5 °C (97.7–99.5 °F) in a normal individual. Homeostasis processes maintain the constancy of the organism’s internal environment in response to changes in external conditions. Thermoregulation is part of the aforementioned process as controlled by the organism’s circadian rhythm.

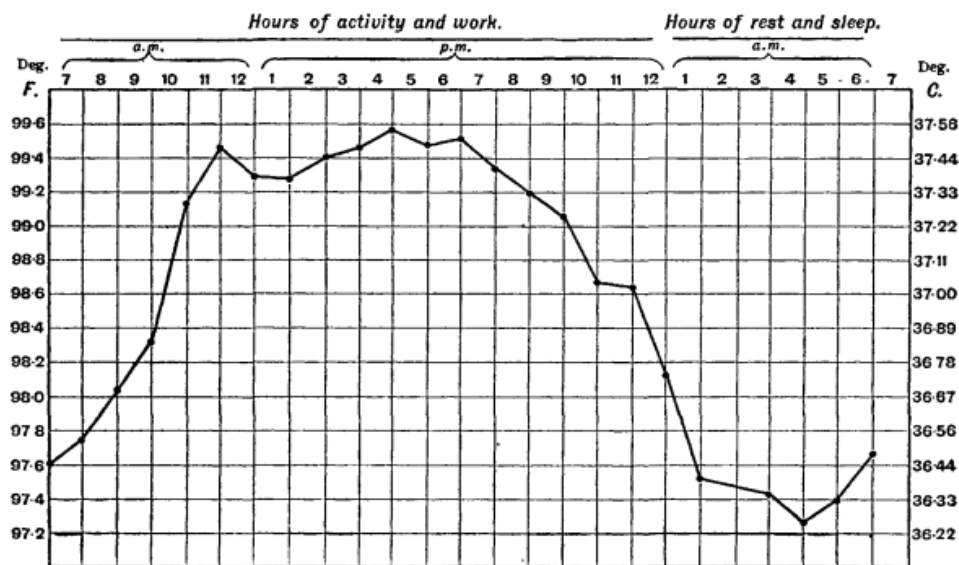


Figure 1: Diurnal temperature variation chart

However there are cell types which have optimum growth at different temperatures to that of human cell types i.e. insect, avian, amphibians and cold water fish cells. Ectotherms or cold blooded animal cells can grow within a temperature range between 15°C and 26°C. Insect cells have an optimal growth at 27°C and can grow between 27°C and 30°C. Avian cells have an optimal growth at 38.5°C, however they can be cultured at temperature ranging between 37°C to 38°C. All of the above cell types can be cultured *in vitro* at their optimal growth condition including biological gas flow using nanoT - AnyCell™.



Figure 2: nanoT - AnyCell™

MCF 7 cells were seeded on Day 0 and maintained within the nanoT - AnyCell™

up to Day 3, i.e. 72 hours at 37 °C, 5 % CO₂, and 7.4 pH as shown in figure 3.

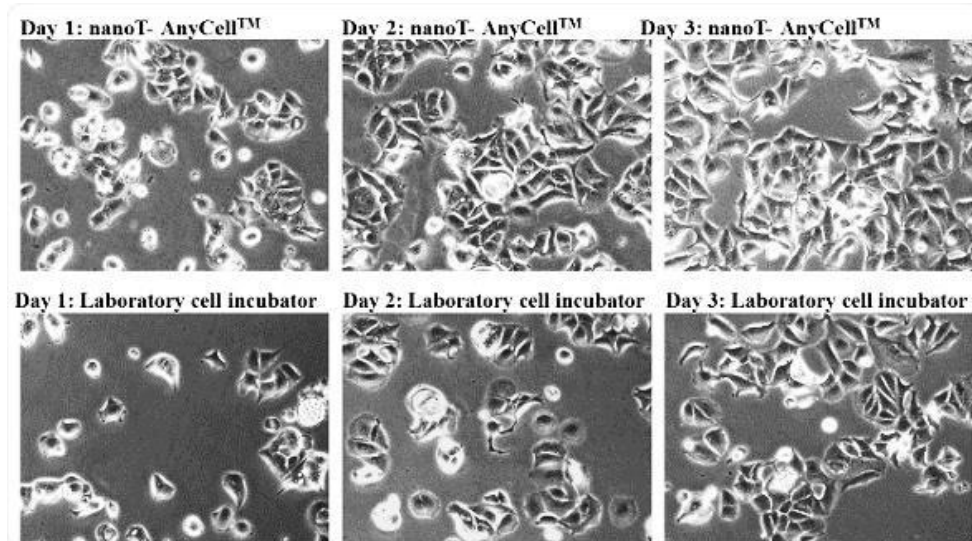


Figure 3: Time lapse imaging of MCF 7 cells maintained at 37 °C, 5 % CO₂, and 7.4 pH for 3 days incubated within nanoT - AnyCell™.

A very important feature is that no other similar time lapse imaging setup, includes time lapse imaging in cold temperature incubations. Researchers can maintain their cells from -15 °C with constant biological gas supply with the nanoT - AnyCell™. This feature allows researchers to perform protein experiments which require cold temperatures. nanoT - AnyCell™ can accommodate 35 mm petri dish with compartments (figure 4) to perform simultaneous time lapse imaging for more than 1 condition.



Figure 4: nanoT - AnyCell™ can accommodate 35 mm petri dish with 2, 3, and 4 compartment.

Specifications of nanoT - AnyCell™

Temperature	-15 °C to 50 °C
Biological gas flow connections	Yes
Perfusion connections	Possible
Temperature feedback	Yes
Humidity	Yes
Dimensions	127 x 85 x 29 mm
Recirculating water bath/ laboratory chiller output	320 ml / minute
Temperature stability	+ /- 0.2 degrees C
Tissue culture plate	35mm tissue culture dish



For more information or to request a quotation please visit
www.nanotherics.com.