

NEW TECHNOLOGY & QC DETAILS IN PLASTIC WARE THAT CAN MAKE A DIFFERENCE

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Introduction

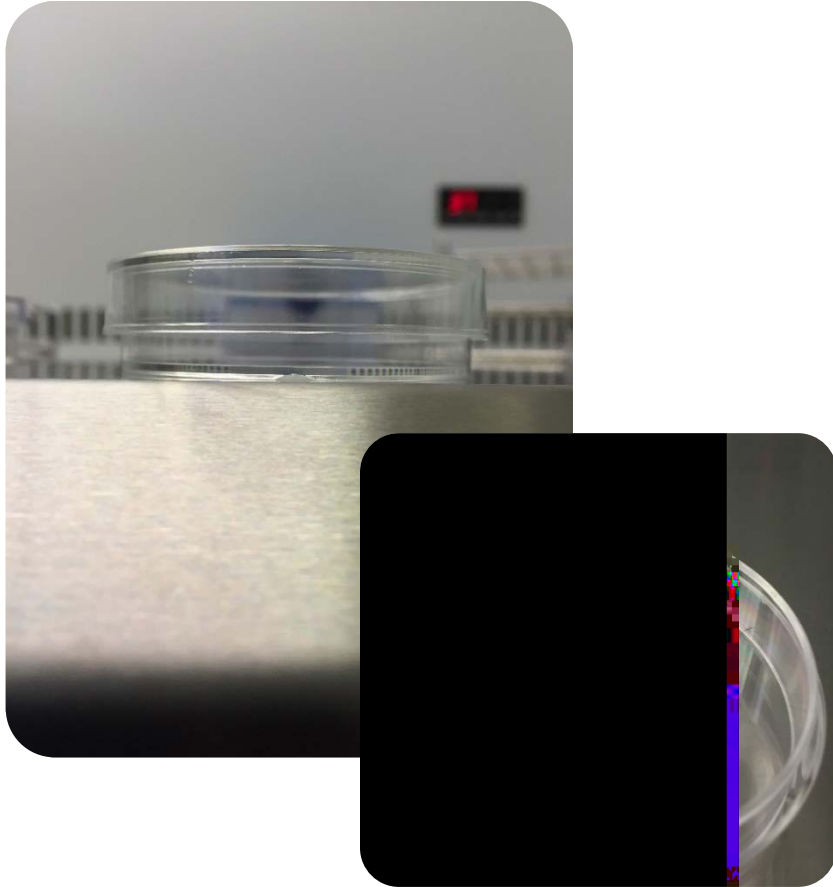
- All human gamete and embryo culture model systems require a temperature-controlled environment to avoid abnormal development in vitro.
- To maintain this controlled environment, IVF laboratories use different strategies:
 - Warming surfaces
 - Mineral Oil
 - Different plastic dishware

Aim of the study

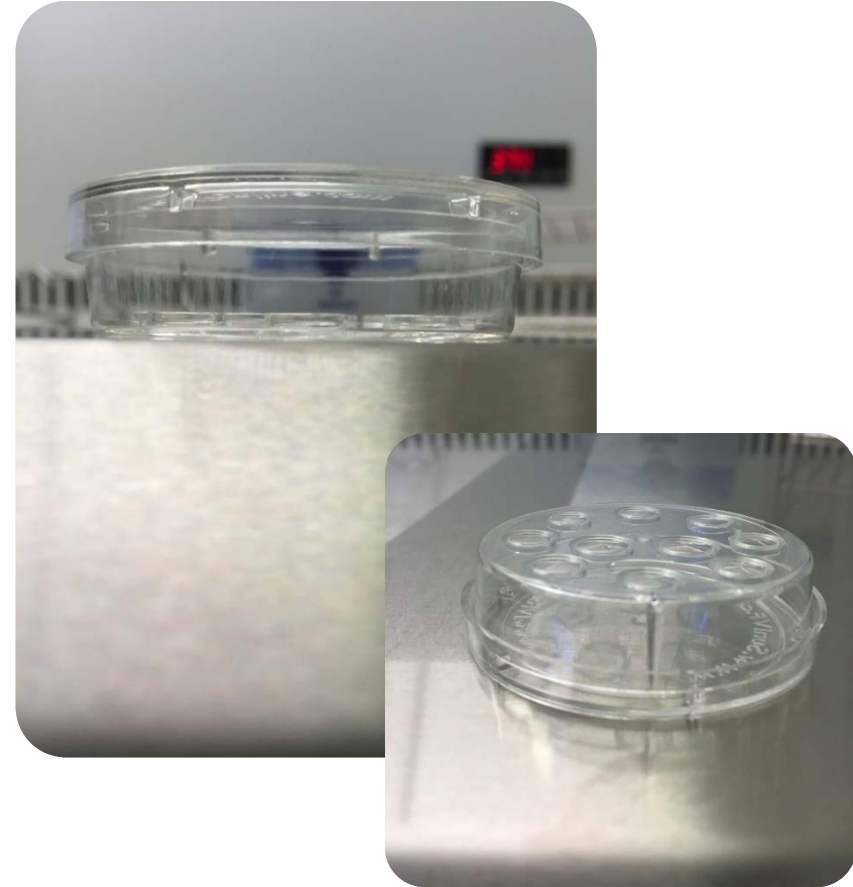
To assess how different set-up conditions may have an impact on medium droplets' temperature when dishes are taken out of the incubator

Studied variables			
Type of dish	Heated surface set-point	Droplet distribution	Type of oil
<ul style="list-style-type: none">• 60mm Nunc• 35mm Nunc• Embryo GPS® 60mm dish• μDrop GPS® 35mm dish	<ul style="list-style-type: none">• 37°C• 40°C	<ul style="list-style-type: none">• Peripheric• Central	<ul style="list-style-type: none">• LifeGuard®• LiteOil®

Methodology: Differences in plasticware



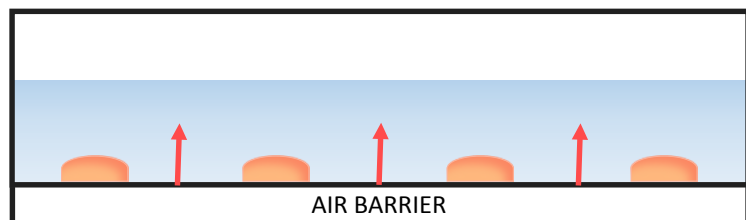
Nunc dishes



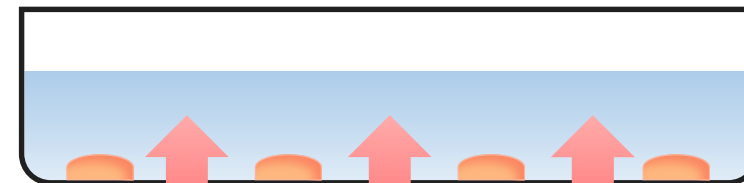
GPS® dishes

Methodology: Differences in plasticware

Nunc dishes



GPS[®] dishes



HEATED SURFACE

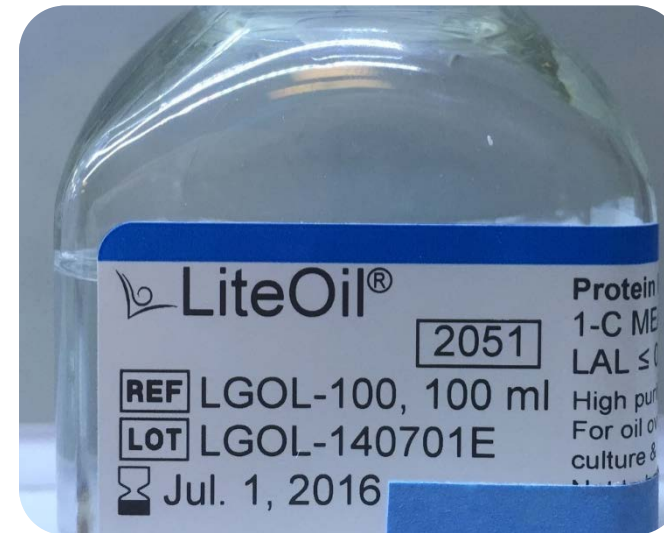
37.0°C

40.0°C

Methodology: Types of oil used

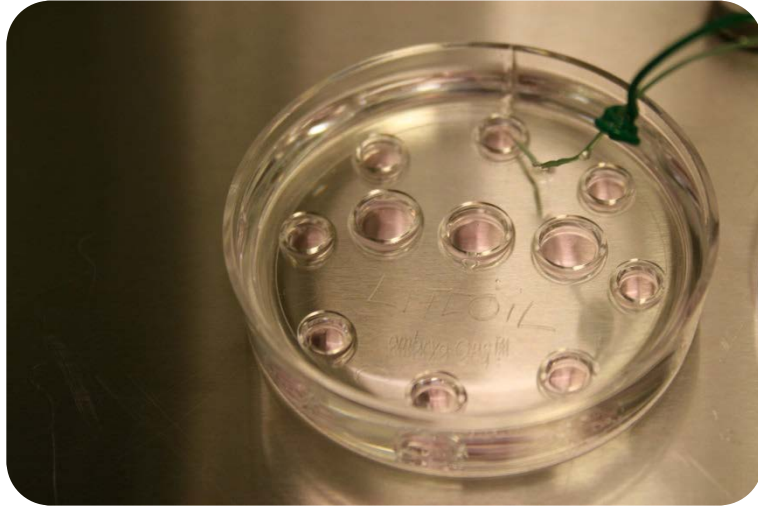


LifeGuard® Oil
High density mineral oil



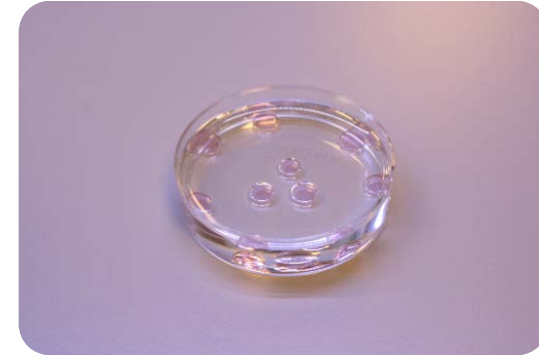
LiteOil®
Low density mineral oil

Methodology: Droplet distribution

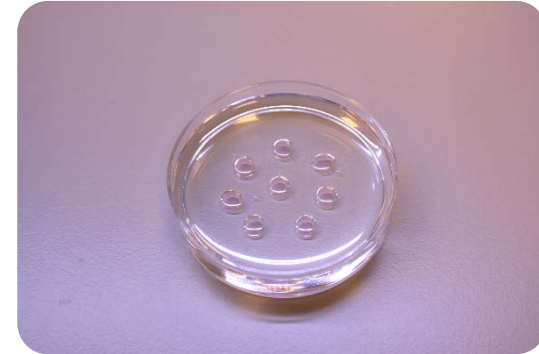


Continuous **in-drop**
temperature measurement,
using a fine-gauge
thermocouple ($\pm 0.01^\circ\text{C}$)

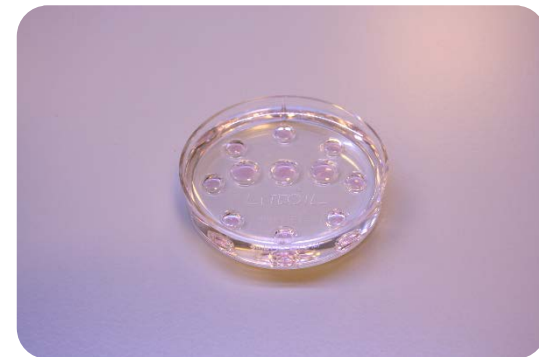
Peripheric
distribution



Central
distribution



GPS[®] dish



Methodology: temperature measurement



Temperature of the heated surface was monitored with external probes ($\pm 0.07^{\circ}\text{C}$ iButtons, Thermodata), to ensure temperature stability.



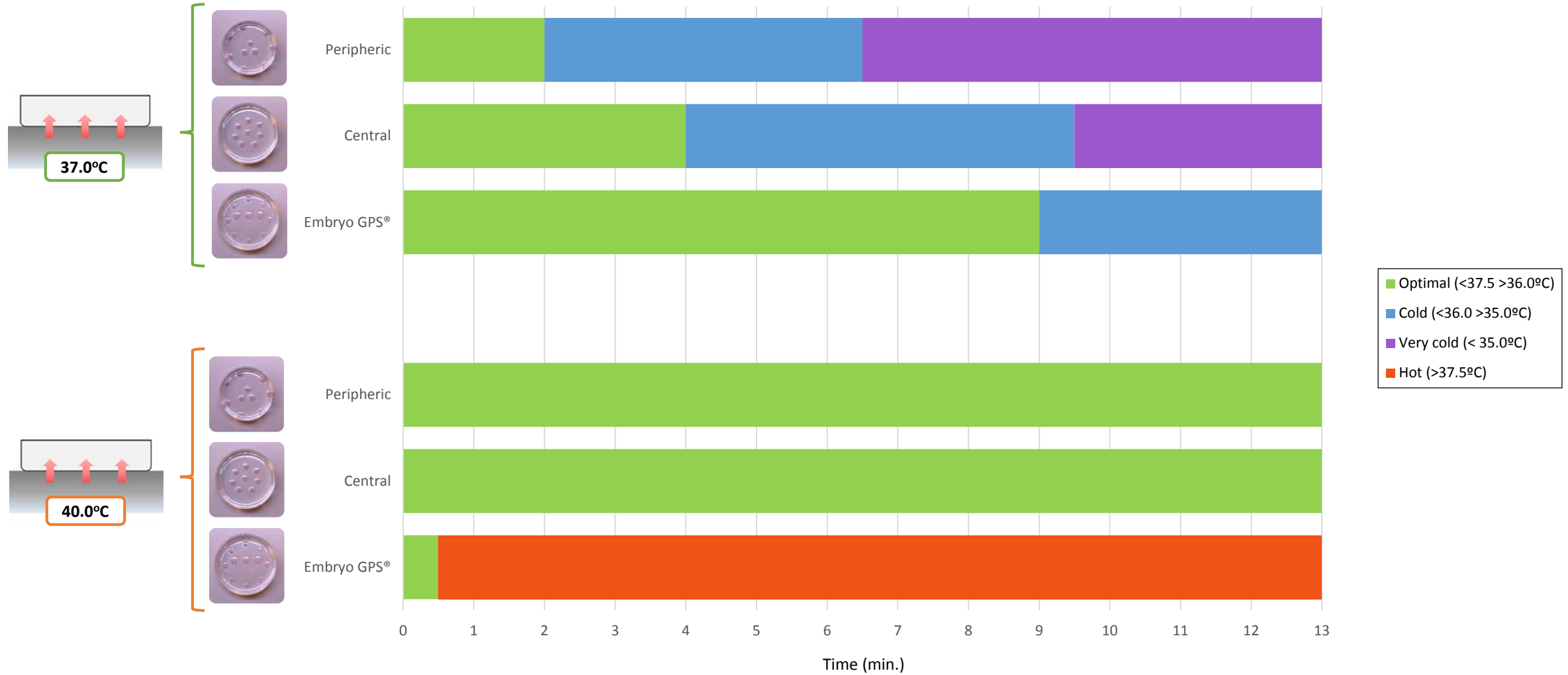
In-drop temperature recorded every 30 seconds.

$$\Delta < 0.5^{\circ}\text{C}$$

At least 2 different measurements were performed for each combination of tested conditions. If replicas differed more than 0.5°C , measurements were repeated.

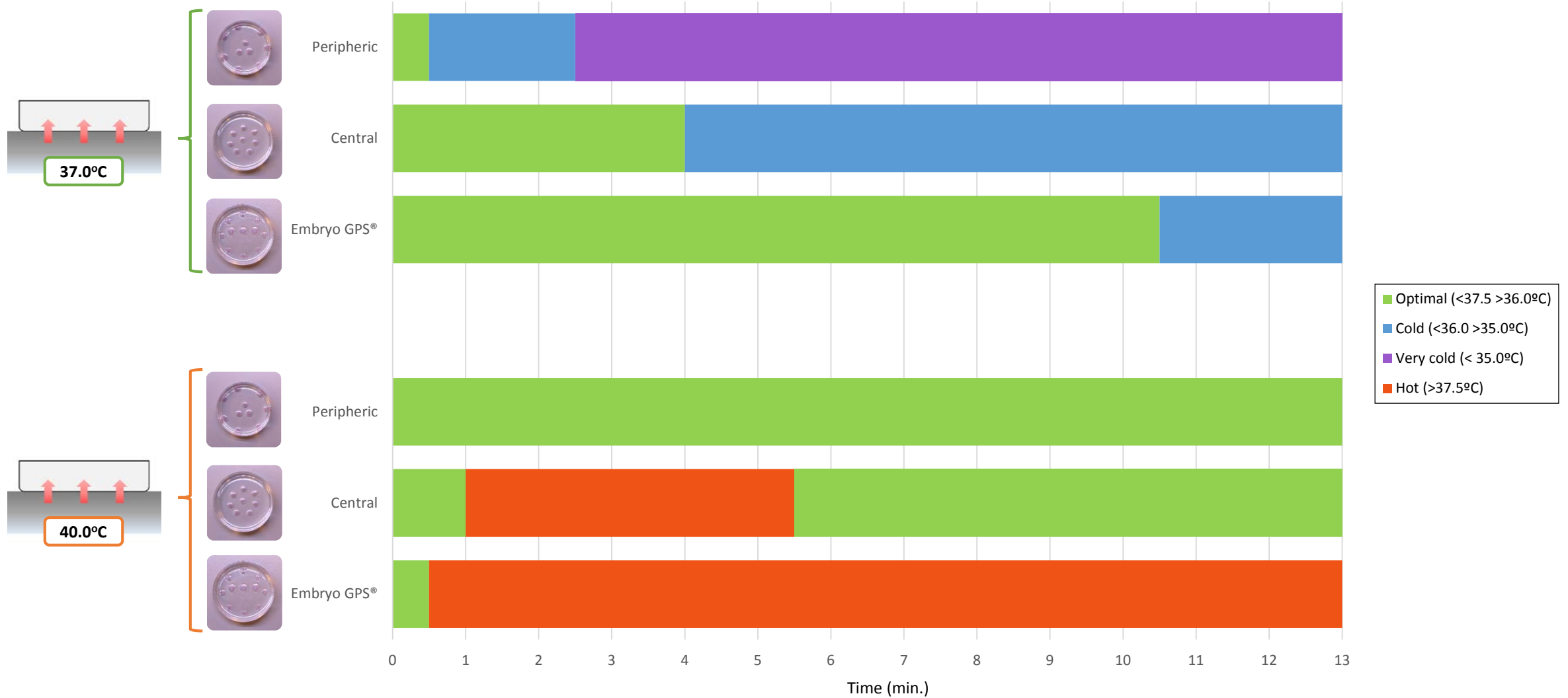
Results

60mm dishes with LifeGuard®



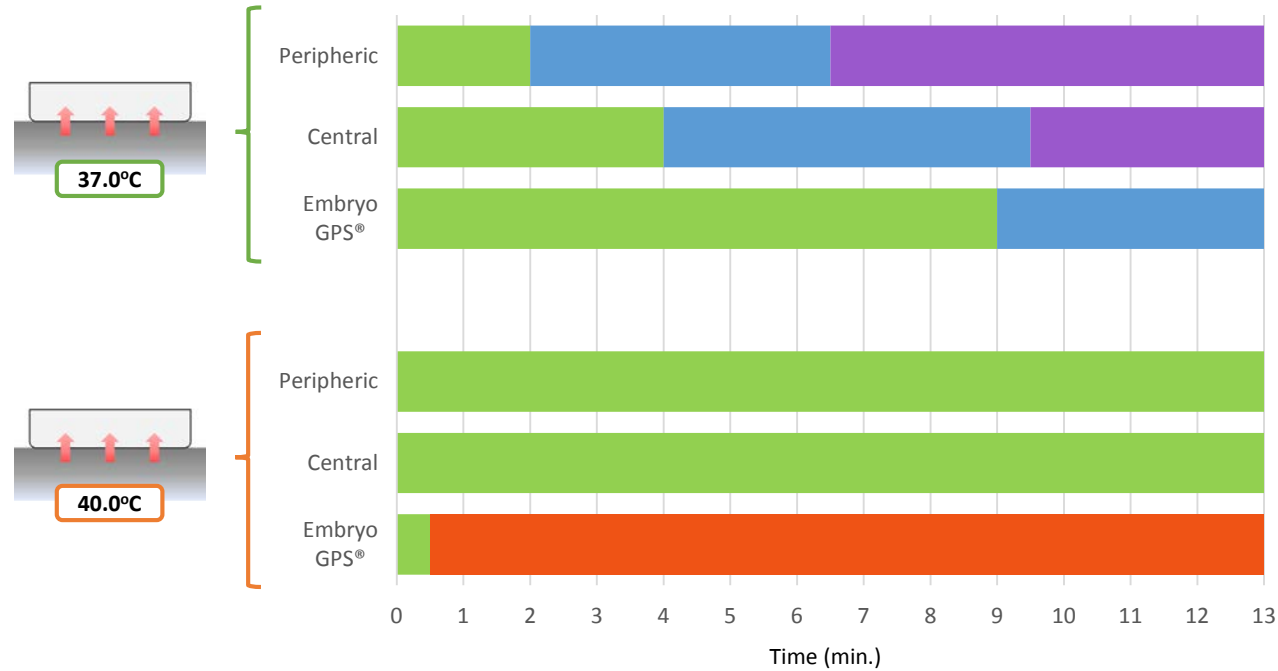
Results

60mm dishes with LiteOil®

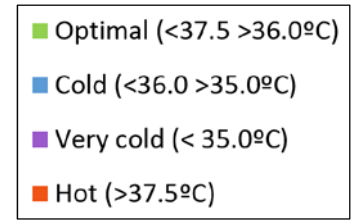
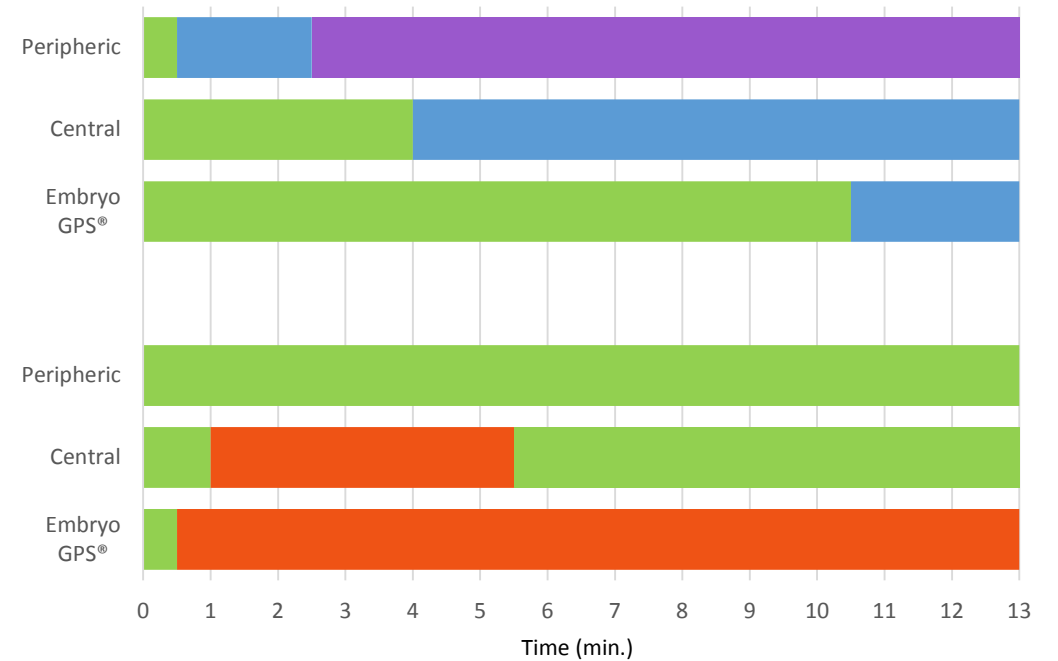


Results

60mm dishes with LifeGuard®



60mm dishes with LiteOil®



Methodology: 35mm dishes



Peripheric
distribution



Central
distribution



μDrop GPS dish
w/ 3ml mineral oil

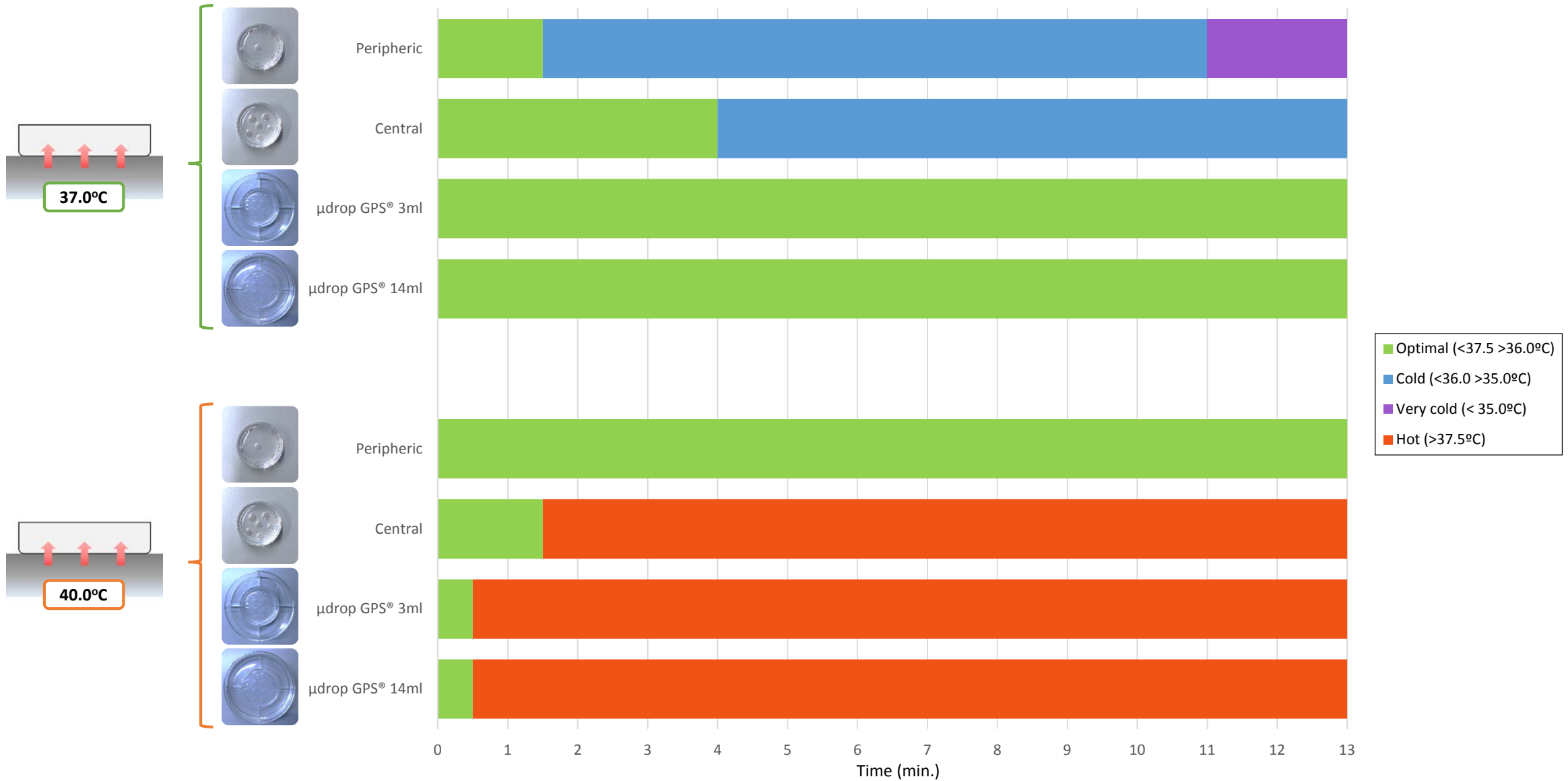


μDrop GPS dish
w/ 14ml mineral oil

Continuous **in-drop**
temperature measurement,
using a fine-gauge
thermocouple ($\pm 0.01^\circ\text{C}$)

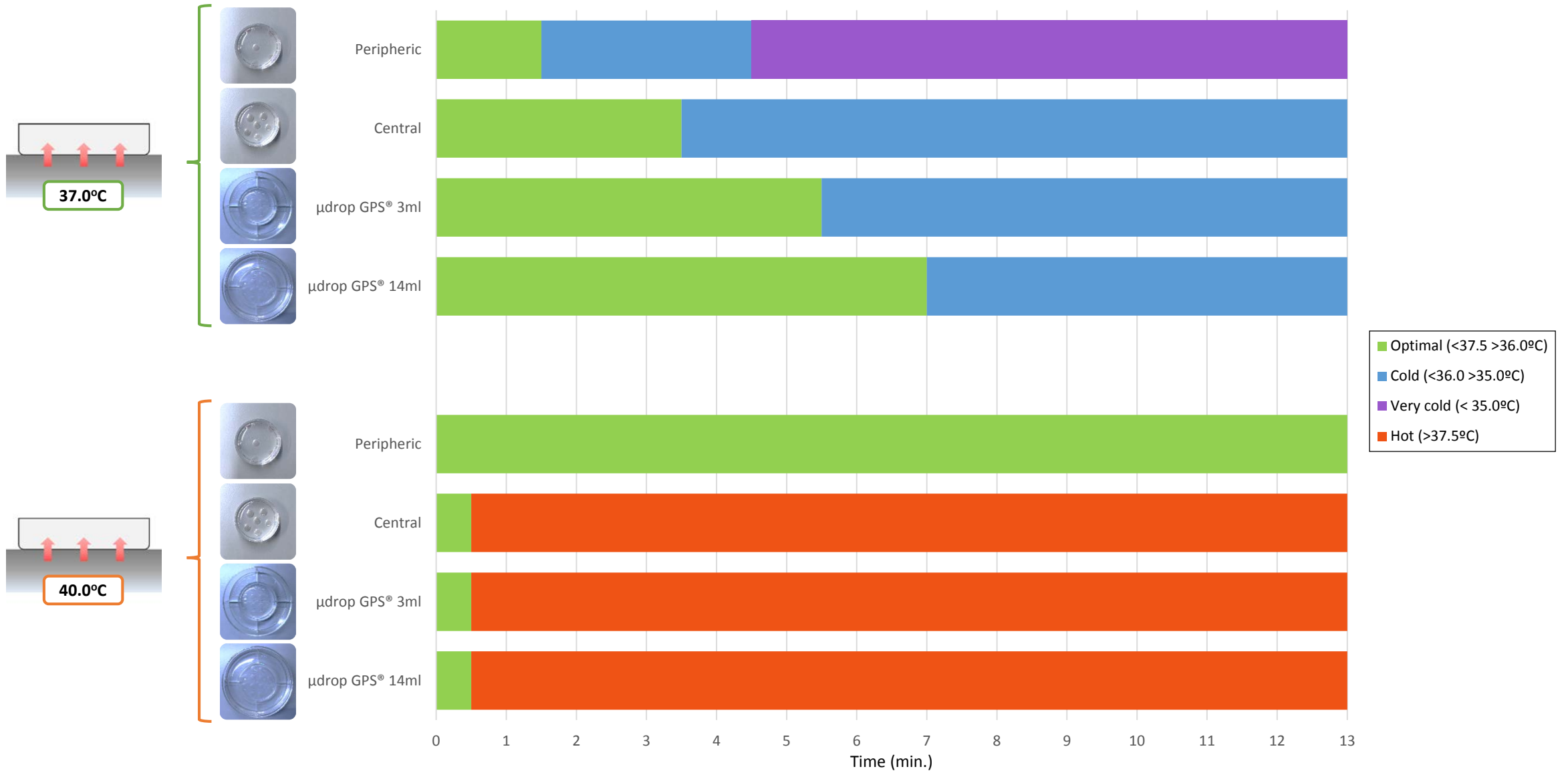
Results

35mm dishes with LifeGuard®



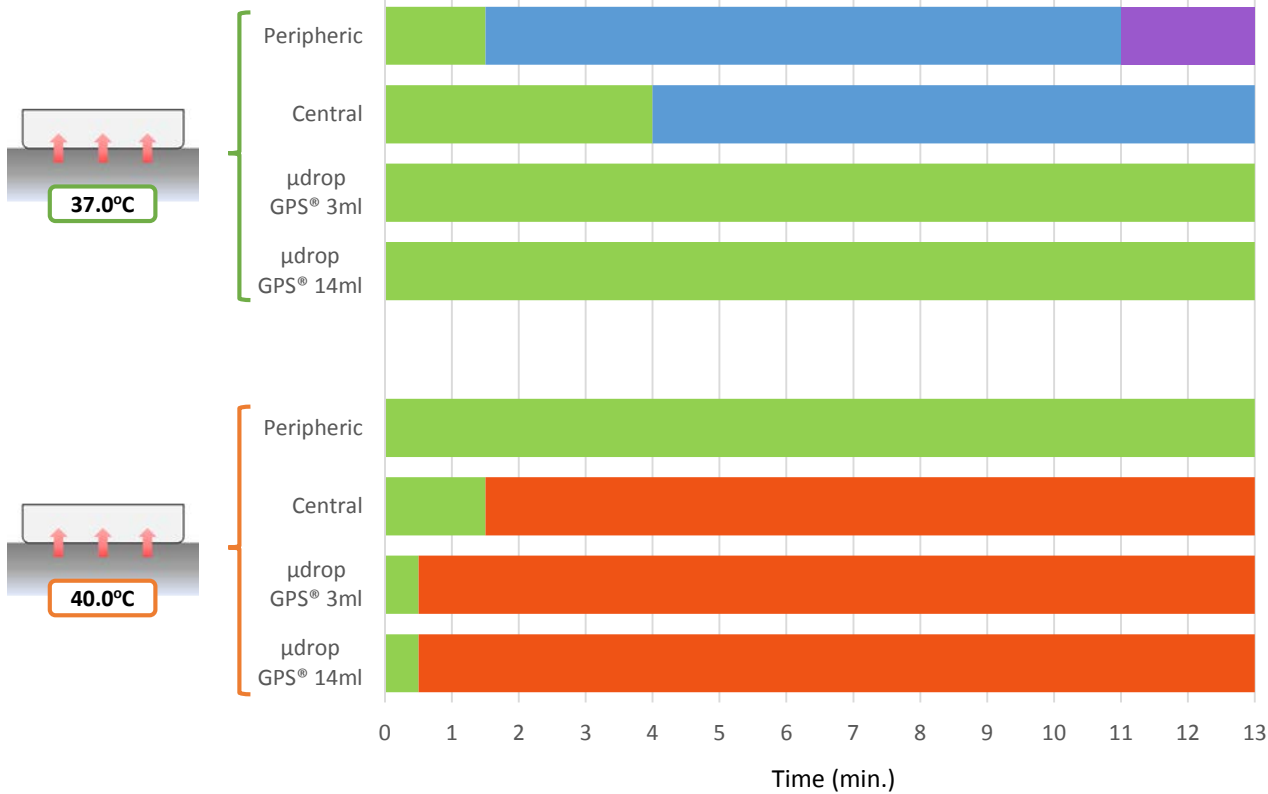
Results

35mm dishes with LiteOil®

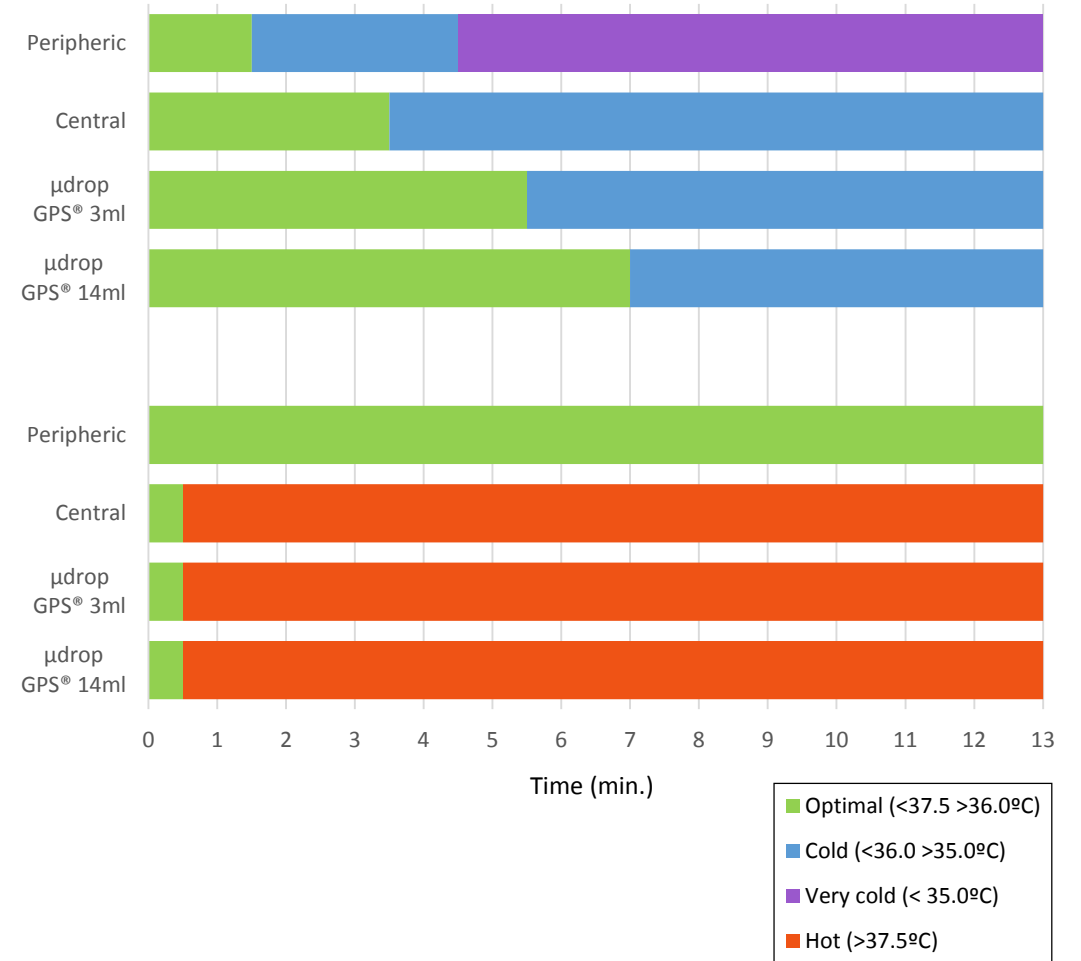


Results

35mm dishes with LifeGuard®



35mm dishes with LiteOil®



Conclusions

- With a 37°C warm surface:
 - In NUNC dishes, peripheric droplets should be avoided, but a central distribution may be used.
 - LifeGlobal GPS® dishes are more efficient in maintaining the temperature, regardless of the type of oil used.
- With a 40°C warm surface:
 - In NUNC dishes, a peripheric droplet distribution maintains the temperature in an optimal range for over 13 minutes. A central distribution is only recommended in 60mm dishes.
 - LifeGlobal GPS® can be used at 37°C avoiding to overheat surfaces.
 - HOWEVER, setting up the heated surfaces at 40°C can produce overheating of the lab, deriving in an overwork of the AC system and other equipment.

Each lab should study and optimize their own set-up conditions, combining them in the right way.

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for better results



Thank you for your attention

See you in Barcelona!

Contact us in info@embryotools.com

