

Supervitri device validation in the mouse model. Part I

Calculation of cooling and warming rates: METHODS

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Methods

Calculation of cooling and warming rates

Measurements were performed using a TC-08 data logger (Pico Technology) connected to a Type K thermocouple, which in turn was attached to the tip of the loading strip of the corresponding vitrification devices with the help of a copper wire. Temperature measurements were recorded in real-time every milliseconds (ms) in a computer connected to the data logger until reaching a temperature plateau. The point of drastic slope regression line was calculated to determine the cooling and warming rates. Cooling and warming rates determined for the test device (Supervitri) were compared to those obtained in a similar surface open system already available in the market (control). For the determination of the cooling rates, the test and control devices were attached a thermocouple at the tip of the loading strip and plunged directly in LN₂. For the warming rates, the vitrification devices were quickly plunged in a warming solution previously warmed and stable at 37°C. In this case, warming rates were determined in two different volumes of warming solution (4ml and 1ml), as both volumes are commonly used in the distinct vitrification protocols followed by human IVF laboratories (Figure 2).

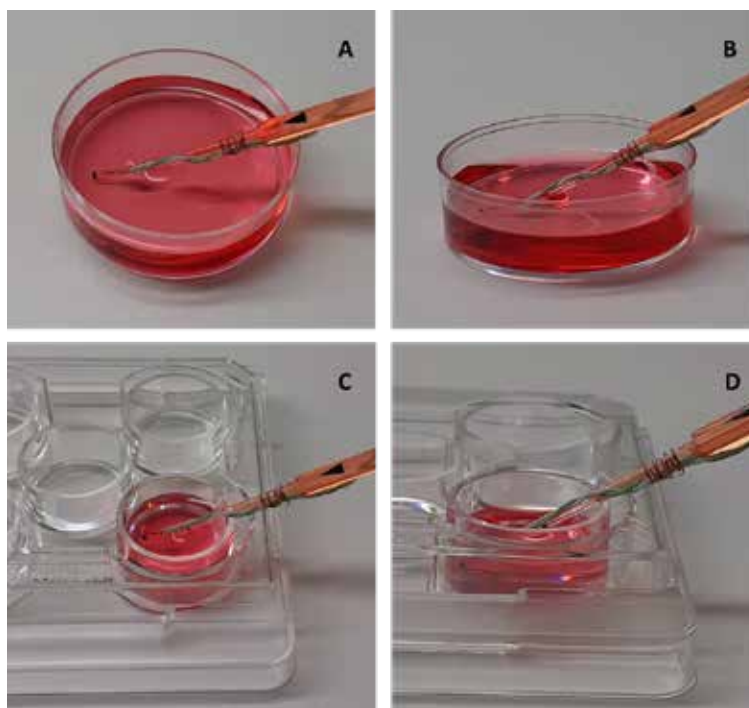


Figure 2. Warming set-up used to determine the warming rates in the Supervitri device. A-B) 4ml of warming solution in a 35mm dish; C-D) 1ml of warming solution in a 5-well dish.

A total of three replicates were performed to assess the cooling rates and six replicas to determine the warming rates. The read values obtained in the different replicates were pooled and used to calculate the mean and standard deviation (SD). A t-test was then used to calculate statistical differences between the test and control devices. A p value < 0.05 was considered statistically significant.

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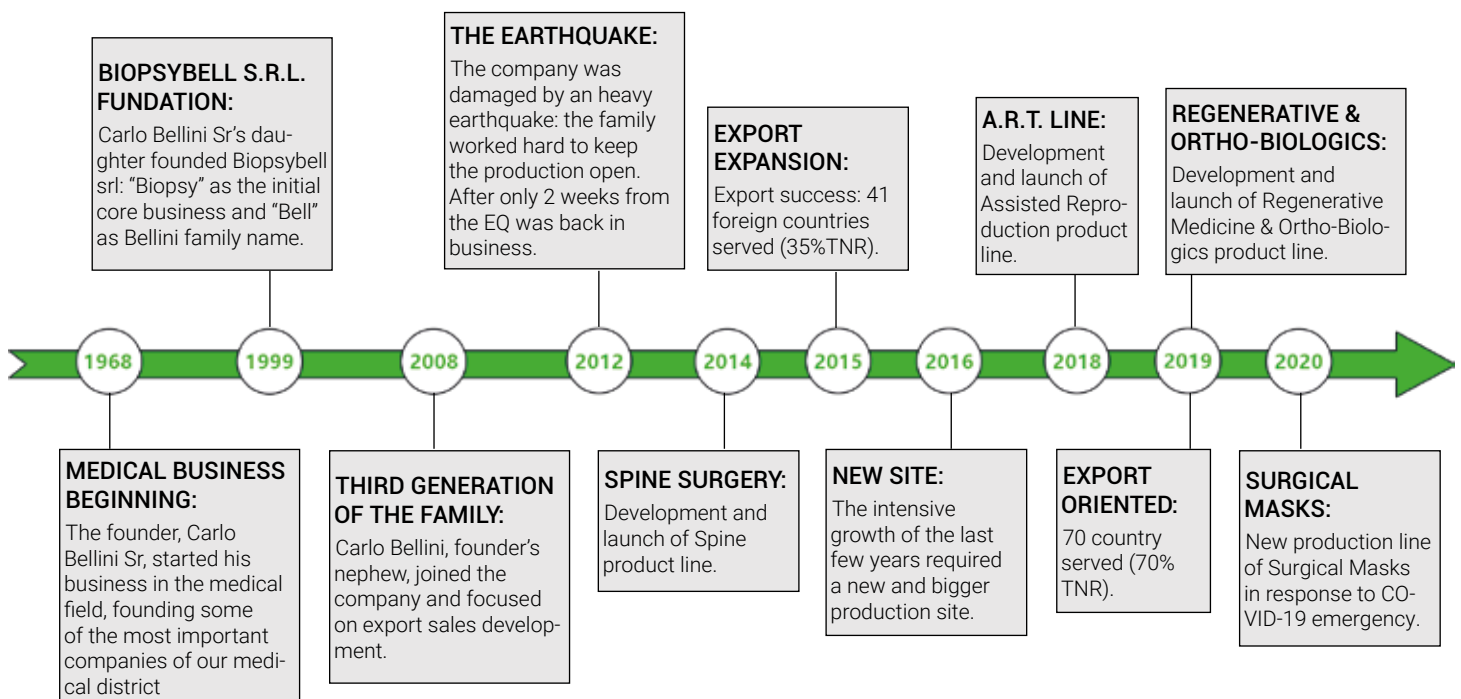


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