RAPID-i VITRIFICATION SYSTEM

Closed system for simple and successful vitrification.
WORKING TOGETHER FOR YOU

Rapid-i Vitrification System™ puts you in control. The method, media, device and accessories have all you need to simplify your workflow – from dehydration and storage to warming.

Loading the Rapid-i is as simple as it is smart. By holding embryos with surface tension in a micro droplet, vitrification in super-cooled air is done in a flash without contact with liquid nitrogen. The storage straw is hermetically sealed to ensure that your samples are stored with absolute safety. The SmartBox™ keeps straws organised and in place before storage. The ready-to-use media are designed for your safety and optimal cryosurvival with the lowest possible toxicity.

METHOD

Minimised exposure
The Rapid-i method and workflow moves quickly and smoothly. Exposure to cryoprotectants is minimised by a series of short dehydration and rehydration steps performed at 37°C.

An unbroken cold chain
The method has fast and effective handling steps. From vitrification to storage embryos and oocytes are constantly submerged in liquid nitrogen to prevent unintentional warming.

A smoother workflow
The method and hardware provide a convenient solution for an uncluttered workflow. No unstable thermos canisters, no unnecessary time critical activities.

Less stress
The method and SmartBox are arranged to maximize focus on each task without stress. For example, Rapid-i is sealed after vitrification making it simpler to keep critical timing.
MEDIA

Optimised formulation
Our vitrification media are buffered with MOPS to maintain stable pH during the vitrification and warming procedures. Moreover, they contain hyaluronan for optimised cryosurvival and amino acids to support embryo metabolism.

Convenient and reliable
The media are ready-to-use to save time. Performing all steps of vitrification and warming at 37°C reduces exposure time to cryoprotectants and provides reliable results.

DEVICE AND ACCESSORIES

Unique, consistent & aseptic
The Rapid-i device enables simple and rapid loading of embryos in sub-microliter droplets. The patented design gives consistent vitrification results in a safe aseptic workflow.

SmartBox
The SmartBox keeps you well organised and safe. As an “extra hand”, it increases working comfort and reduces the risk of unintentional warming. The top slots and magnetic holders keep Rapid-i straws upright and in order during vitrification, sealing and opening.

Seal without heat
After vitrification, the straws containing oocytes or embryos must be safely sealed. The Rapid-i system includes an ultrasonic sealer, meaning that no heat is emitted to the straw and the oocytes or embryos remains safe.
IT’S JUST PHYSICS

Rapid-i combines effective vitrification and instant warming without any contact with liquid nitrogen.

The Rapid-i system vitrifies and warms oocytes and embryos with minimal risk of cryodamage. The system also complies with many regulatory directives. By isolating oocytes and embryos from liquid nitrogen, an aseptic vitrification method, combined with a closed storage is achieved.

Rapid-i facilitates effective vitrification in super-cooled air. The combination of a controlled minimal volume together with super cooled air results in safe vitrification. Combined with the sufficiently high warming rates this yields excellent clinical results.²

Effective vitrification

Instant warming

Pre-cooled straw
The pre-cooled straw guarantees that the embryo is never in contact with liquid nitrogen.

Consistent volume
The embryo is held by surface tension in the “eye” and vitrifies in super-cooled air. This simplifies loading while securing reproducible results.

Easy to locate
The embryo is easy to locate and is quickly released from the “eye”.

Speed where it’s needed
Direct contact with sterile medium at +37°C gives instant warming for the best possible result.
Numerous publications and trials have shown that the closed system Rapid-i provides successful outcomes after vitrification. There is now an increasing opinion that the warming or “devitrification rate” is more critical to overall success.3

Rapid-i system complies with directives that recommend a closed system to avoid contamination risks. Many independent studies that compare open vitrification systems with Rapid-i indicate that Rapid-i provides successful vitrification and safe storage for embryos at all developmental stages.4, 5, 6, 7, 8, 9, 10, 11, 12, 13 Typical results from post-warming include: survival rates at ≥95%, good blastocyst development, implantation rates ranging from 31-52%, and clinical pregnancy rates of 52-57%.

Two recent comparative studies clearly show that Rapid-i can perform equally well as an open vitrification system. In the first study14, no significant differences were found between CryoTop and Rapid-i when in vitro developmental competence (Fig 1), cell damage (Fig 2), and developmental outcome after transfer to patients (Fig 3) were compared. The second study found Rapid-i to be as effective as the Cryoloop system for vitrification at both the blastocyst and cleavage stage (Fig 4).11

**Fig 1. Developmental competence – as good**

<table>
<thead>
<tr>
<th>Survival rate</th>
<th>Blastulation rate after 120 h</th>
<th>Good blastocysts 120 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed system (Rapid-i)</td>
<td>100</td>
<td>68</td>
</tr>
<tr>
<td>Open system (CryoTop)</td>
<td>97</td>
<td>56</td>
</tr>
</tbody>
</table>

**Fig 2. Cell membrane damage – as safe**

<table>
<thead>
<tr>
<th>Rapid-i (n=20)</th>
<th>CryoTop (n=20)</th>
<th>Non-revitrifed embryos (n=20)</th>
</tr>
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<td>CryoTop</td>
<td>53</td>
<td>38</td>
</tr>
<tr>
<td>Non-revitrifed embryos</td>
<td>41</td>
<td>32</td>
</tr>
</tbody>
</table>

**Fig 3. Implantation and pregnancy rates – as successful**

<table>
<thead>
<tr>
<th>Survival after vitrification and warming</th>
<th>Implantation rate</th>
<th>Ongoing pregnancy rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed system (Rapid-i)</td>
<td>97</td>
<td>54</td>
</tr>
<tr>
<td>Open system (CryoTop)</td>
<td>97</td>
<td>53</td>
</tr>
</tbody>
</table>

**Fig 4. Successful outcomes at different stages of embryo development**

<table>
<thead>
<tr>
<th>Rapid-i</th>
<th>Cryoloop</th>
<th>Rapid-i</th>
<th>Cryoloop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleavage</td>
<td>37</td>
<td>35</td>
<td>38</td>
</tr>
<tr>
<td>Blastocyst</td>
<td>47</td>
<td>49</td>
<td>46</td>
</tr>
</tbody>
</table>
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