

# CARD FERTIUP<sup>®</sup>

## Rat Sperm Cryopreservation Agent

### Product Outline

For laboratory use only

Conventional rat sperm cryopreservation methods are plagued with a number of issues. Notably, fertilisation rates using cryopreserved rat sperm are low, and frozen-thawed sperm have poor motility and so advanced techniques such as ICSI are required for in vitro fertilisation (IVF).

Preservation using CARD FERTIUP<sup>®</sup> Rat Sperm Cryopreservation Agent, on the other hand, enables researchers to obtain superior fertilisation and embryonic development rates in IVF carried out using frozen-thawed sperm.

\* Sperm freezing/thawing and IVF must be carried out according to the recommended method.

### Product characteristics

#### 1. Enables IVF using frozen-thawed rat sperm

CARD FERTIUP<sup>®</sup> Rat Sperm Cryopreservation Agent enables the cryopreservation of rat sperm while maintaining the sperm's fertilisation ability.

Even after thawing, CARD FERTIUP<sup>®</sup> Rat Sperm Cryopreservation Agent makes it possible to obtain superior IVF fertilisation and embryonic development rates.

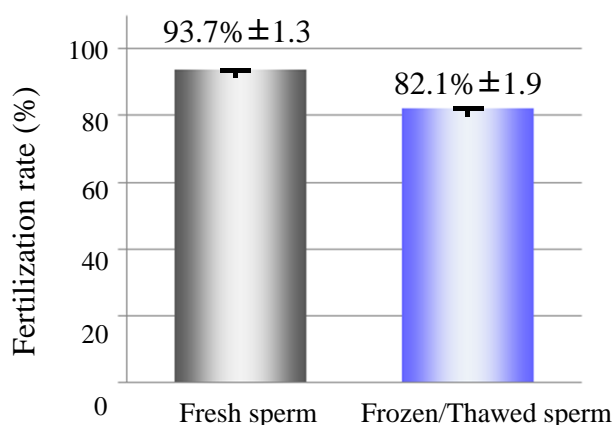


Fig. IVF fertilisation rates using fresh and frozen-thawed rat sperm.

| Sperm  | No.   | No. of 2-cell embryos | No. of blastocysts | Developmental rate(%) |
|--------|-------|-----------------------|--------------------|-----------------------|
| Fresh  | 1     | 100                   | 58                 | 58                    |
|        | 2     | 100                   | 63                 | 63                    |
|        | 3     | 100                   | 65                 | 65                    |
|        | 4     | 100                   | 71                 | 71                    |
|        | Total | 400                   | 257                | 64.3 ± 5.4            |
| Frozen | 1     | 100                   | 72                 | 72                    |
|        | 2     | 100                   | 57                 | 57                    |
|        | 3     | 100                   | 64                 | 64                    |
|        | 4     | 100                   | 53                 | 53                    |
|        | Total | 400                   | 246                | 61.5 ± 5.4            |

Table. Rate of development of fertilised oocytes derived from frozen-thawed rat sperm to the blastocyst stage

Bibliography ; Naomi Nakagata, Nobuyuki Mikoda, Satoshi Nakao, Ena Nakatsukasa & Toru Takeo, Establishment of sperm cryopreservation and in vitro fertilisation protocols for rats. SCIENTIFIC REPORTS, 10:93, 2020.

#### 2. Contributes to huge reductions in rat breeding costs

Anywhere between several to several dozen female rats per strain are required for the cryopreservation of rat embryos. The maintenance of so many female rats costs a considerable amount of money.

Rat sperm cryopreservation using CARD FERTIUP<sup>®</sup> Rat Sperm Cryopreservation Agent, however, can be carried out using only one male rat, and cryopreserved rat sperm can be used to obtain large numbers of embryos. This will lead to a massive reduction in breeding costs associated with the upkeep of live rats.

#### 3. Can be applied to genetically modified rats

CARD FERTIUP<sup>®</sup> Rat Sperm Cryopreservation Agent enables the cryopreservation of valuable genetically modified rat sperm, which can be easily thawed and subsequently returned to live rats via IVF and embryo transfer as and when required.

# Reproductive Engineering Reagent List

| For use in mouse reproductive engineering                          | STANDARD                  |
|--|---------------------------|
| CARD FERTIUP <sup>®</sup> Mouse Sperm Cryoroprotectant : CPA       | 0.13 mL / 0.5 mL / 1.0 mL |
| CARD FERTIUP <sup>®</sup> Mouse Sperm Preincubation Medium : PM    | 0.5 mL / 1.0 mL           |
| CARD MEDIUM <sup>®</sup> Mouse Fertilization Medium                | 1 kit                     |
| CARD FERTIUP <sup>®</sup> PM (0.5 mL) and CARD MEDIUM <sup>®</sup> | 1 set                     |
| CARD FERTIUP <sup>®</sup> PM (1.0 mL) and CARD MEDIUM <sup>®</sup> | 1 set                     |
| CARD HyperOva <sup>®</sup> Superovulation Reagent for Mice         | 0.6 mL / 1.0 mL           |
| CARD HyperOva <sup>®</sup> F.D.                                    | 1 kit                     |
| CARD mHTF  | 2.0 mL / 5.0 mL           |
| CARD KSOM  | 2.0 mL / 5.0 mL           |
| CARD 0.25 M Sucrose  | 2.0 mL / 5.0 mL           |
| CARD 1M DMSO   | 1.0 mL                    |
| CARD DAP213  | 0.5 mL / 1.0 mL           |
| CARD Cold Transport Kit  | 1 kit                     |

## New Products Reagents and equipment for use in rat reproductive engineering



| For use in rat reproductive engineering                         | STANDARD |
|---|----------|
| CARD FERTIUP <sup>®</sup> Rat Sperm Cryopreservation            | 1.5 mL   |
| CARD Rat IVF medium - A medium for rat in vitro fertilization - | 1.0 mL   |
| CARD Rat sperm freezing kit                                     | Kit      |

\* These products are for research use only. Use for diagnostic or therapeutic purposes is prohibited.

Information on these products are available on following website. Please visit the site below for more details.

<https://www.cosmobioussa.com/>

<http://www.kyudo.co.jp/>

<http://card.medic.kumamoto-u.ac.jp/card/english/sigen/manual/onlinemanual.html>

## References

For rat reproductive engineering

• Nakagata, N. SCIENTIFIC REPORTS, 10:93, 2020.

For mouse reproductive engineering

• Takeo, T., Hoshii, T., Kondo, Y., Toyodome, H., Arima, H., Yamamura, KI., Irie, T. and Nakagata, N. Biol Reprod. 78(3):546-51, 2008.

• Takeo, T and Nakagata, N. Lab Anim. 44 (2) : 132-, 2010.

• Nakagata N. Methods Mol Biol. 693: 57-734, 2011.

• Takeo, T. and Nakagata, N., PLOS ONE, 10 (5) , e0128330, 2015

• Takeo, T. and Nakagata, N., Theriogenology, 86 (5), 1341-6, 2016

Manufacturer



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Distributor



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