

# Bee Semen Cryopreservation

## Research news:

**Prof. Dr. Guenter Kamp, CEO of the Laboratory for Applied Molecular Physiology (AMP-Lab GmbH) presents a Minimal Invasive Technique (MIT) of bee semen cryopreservation**

In cooperation with Prof. Bienefeld and Dr. Wegener (Institute for Bee Research, Hohen Neuendorf, Germany) and supported by funds of the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV), AMP-Lab developed a new Minimal-Invasive Technique (MIT) for bee semen cryopreservation (Wegener et al., 2014, Cryobiology, **69(2)**, 236-42). Frozen for 10 months, in vitro assays showed bee semen in good condition after thawing

(<http://www.amplab.de/de-DE/physiologische-medien.html#beecryo>).

After cryopreservation motility can be activated by dilution of thawed semen. Most of the sperm are propidium iodide negative, which indicates intact plasma membranes. Insemination of thawed/frozen bee semen has provided for more than 1 million spermatozoa in queen's spermatheca. In vivo tests showed a high percentage of female offspring.

In contrast to other cryotechniques, MIT uses a microdialysis chamber to add the new cryodiluent to bee semen. Short dialysis prevents severe inhomogeneities and shearing forces when diluent is mixed with the viscous semen. The native „Sperm-Clusters“ of immotile spermatozoa as already observed in undiluted semen by Lensky und Schindler (Ann. Abeille, 1967, **10**: 5-16) are preserved using MIT. Dilution disintegrates these „Sperm-Clusters“ and motile bee sperm are released (<http://www.amplab.de/de-DE/physiologische-medien.html#beecryo>).

For scientists working on bee semen cryobiology, AMP-Lab offers a Bee Semen CryoKit (BSCK) that contains the ready to use Bee Semen Cryodiluent, the microdialysis chamber, and cryotubes (<http://www.amplab.de/de-DE/physiologische-medien.html#beecryo>).

The user instruction explains MIT and the slow freezing protocol in detail.

For artificial insemination of pooled bee semen without cryopreservation we recommend our „Bee Semen Solution“ (BSS). This hyperosmotic bee diluent preserves bee spermatozoa during the washing/ centrifugation procedure. BSS is sterile too and colored which makes it easier to mix diluent and semen to homogeneity. BSS is also recommended for moistening and for filling dead volumes of syringe and tubes thus reducing sperm damage by air bubbles. Sterile BSS is storable for at least 6 month. Antibiotics (penicillin and streptomycin) are given as powder in a separate tube, which should be added to BSS before use. Sterile BSS is now available in 50 ml bottles ([info@amplab.de](mailto:info@amplab.de)) and next year also in 2.5 or 5 ml ampoules.

The Minimal Invasive Technique for bee semen cryopreservation will be presented during the annual conference of the Federal Office for Agriculture and Food (Innovationstage 2014) in Bonn on the 15th–16th of October ([www.innovationstage.ble.de](http://www.innovationstage.ble.de)). For further information: [physiological.liquids@amplab.de](mailto:physiological.liquids@amplab.de)