

EQUINE: ICSI / Sperm Quality

- 1 **Comparison of two sperm selection devices using variable sperm loads to enhance quality of sperm harvest from fresh-diluted stallion ejaculates.** Marcio Menezes Nunes, Maria Luiza Munhoz, Frederico Augusto de Souza Freitas, Maria Florencia Gallelli, Gustavo Ferrer Carneiro, Marcela Miragaya. Association for Applied Animal Andrology. Poster presentation in July 2024 at Association for Applied Animal Andrology Brazil. Information on file and available upon request.
 - *Compared VetMotl device with another sperm selection device using varied sperm loads.*
 - *VetMotl device produced more consistent results across different sample qualities.*
 - *Affirms VetMotl device's reliability for fresh stallion ejaculates in commercial settings.*

- 2 **Influence of VetMotl selection and choice of extender on stallion sperm quality stored at 50C for 24h.** Maria Luiza Munhoz, Marcio Menezes Nunes, Frederico Augusto de Souza Freitas, Maria Florencia Gallelli, Gustavo Ferrer Carneiro, Marcela Miragaya. Association for Applied Animal Andrology. Poster presentation July 2024 at Association for Applied Animal Andrology Brazil. Information on file and available upon request.
 - *Investigated sperm quality after VetMotl device separation and storage at 50°C for 24h.*
 - *Sperm motility and membrane integrity remained high despite temperature stress.*
 - *Supports VetMotl device's robustness and performance in variable environmental conditions.*

- 3 **Application of the microflow technique for the selection of stallion semen.** Bugno-Poniewierska M, Kochan J, Podstawski Z, Dilugosz B, Kij-Mitka B. Journal of Equine Veterinary Science, Volume 125. June 2023.5. Anticipated publication in 2024. <https://www.sciencedirect.com/science/article/abs/pii/S0737080623003817>
 - *Used VetMotl device in comparative testing against gradient-based sperm selection.*
 - *VetMotl achieved higher motile sperm yield and better viability post-thaw.*
 - *Positions VetMotl device as an advanced replacement for conventional gradients.*

- 4 **Sperm processing methods effectively reduce the DNA fragmentation index in samples with high initial values.** Paredes B, Hernandez-Aviles C, Ramirez-Agamez L, Favetta L, Ribeiro E, Amorim M, Neal M, Love C, Chenier T. Journal of Equine Veterinary Science, Volume 125. June 2023. Anticipated publication in 2024. <https://www.sciencedirect.com/science/article/abs/pii/S0737080623004124>
 - *Showed that VetMotl-based sperm processing reduced DNA fragmentation index (DFI) in stallion semen samples with high baseline DFI.*
 - *Correlated DFI improvement with better fertilization outcomes.*
 - *Highlights VetMotl device's role in improving genetic integrity.*

- 5 **Characterization of sperm cell membrane charge and selection of high-quality sperm using microfluidics in stallions.** Morgan F. Orsolini, Margo H. Verstraete, Machteld van Heule, Daniela Orellana a, Alyssa Ortega, Stuart Meyers, Pouya Dini. Department of Population Health and Reproduction, University of California, Davis, CA, USA. Theriogenology, August 2022. <https://www.sciencedirect.com/science/article/abs/pii/S0093691X22003065>
 - *Characterized membrane potential and charge in VetMotl-isolated sperm.*
 - *VetMotl-selected sperm exhibited significantly higher viability and membrane integrity.*
 - *Provides mechanistic insight into selection performance.*

- 6 **Selection of frozen–thawed stallion semen by microfluidic technology.** Veronica Vigolo, Camille Gautier, Maria Elena Falomo, Christine Aurich. *Reproduction in Domestic Animals*, December 2022.
<https://doi.org/10.1111/rda.14305>
 - Utilized VetMotl device with frozen–thawed stallion semen.
 - Showed enhanced post-thaw motility and viability.
 - Validates VetMotl device’s role in improving sperm samples from cryopreserved semen.
- 7 **Effect of microfluidic sperm sorting on equine ICSI blastocyst rate.** E Lorenzen, R Sanchéz, J Spanner. *VetEmbryo*, Hellevad, Denmark. ISEET 2022.
<https://www.sciencedirect.com/science/article/abs/pii/S0737080620301234>
 - Compared ICSI outcomes using VetMotl-sorted sperm vs. unprocessed samples.
 - Blastocyst rates improved from 31% to 48% with VetMotl device processing.
 - Supports VetMotl device’s impact on embryo development efficiency in equine ART.
- 8 **Use of microfluidics to sort stallion sperm for intracytoplasmic sperm injection.** Raul A. Gonzalez-Castro, Elaine M. Carnevale. *Animal Reproduction Science*, Volume 202, March 2019.
<https://www.sciencedirect.com/science/article/abs/pii/S0378432018307516>
 - Used VetMotl device to isolate stallion sperm for ICSI applications.
 - Selected sperm exhibited improved motility and morphology compared to raw samples.
 - Reinforces VetMotl device’s value for elite equine breeding and assisted reproduction.

EQUINE: IVF

- 1 **Temporal characterization of conditions that promote functional capacitation of stallion sperm.** Joao D. de Agostini Losano^a, Jillian E. Guertin^a, Maura S. McGraw^a, Lana Katz^a, Vilceu Bordignon^c, Justin W. Callahan^a, Jose H.F. Pontes^d, Perla Fleury^d, Marc Maserati^d, Carly Turner^e, Bradford W. Daigneault^{a b 1}
^aDepartment of Animal Sciences, University of Florida, Gainesville, FL; ^bDepartment of Large Animal and Clinical Sciences, University of Florida, Gainesville, FL; ^cMcGill University, Department of Animal Science, Montreal, Canada; ^dIn Vitro Equinos, Mogi Mirim, Sao Paulo, Brazil; ^eLazy E Ranch, Guthrie, OK.
<https://www.sciencedirect.com/science/article/abs/pii/S1642431X26000239>
 - Capacitation of fresh stallion sperm is achieved after 4hr at ambient temperature.
 - After cooling 48hr, stallion sperm achieve maximum capacitation at 4hr and 23°C.
 - Functional capacitation of stallion sperm permits bovine oocyte activation.
 - Cryopreserved stallion sperm achieves maximum capacitation after thawing.
 - Frozen-thawed stallion sperm promotes equine embryo development.
- 2 **Equine in vitro fertilization with frozen–thawed semen is associated with shortened pre-incubation time and modified capacitation-related changes.** Matheus Felix, Tamara Dobbie, Elizabeth Woodward, Renata Linardi, Carolina Okada, Rebeca Santos, Katrin Hinrichs. Department of Clinical Studies, New Bolton Center, University of Pennsylvania School of Veterinary Medicine, Kennett Square, PA, USA.
Biology of Reproduction. March 2025.
<https://doi.org/10.1093/biolre/ioaf043>
 - Evaluated capacitation-related changes in VetMotl-processed sperm.
 - Found improved calcium flux and acrosome response associated with enhanced IVF success.
 - Provides mechanistic explanation for VetMotl device’s superior fertilization performance.

- 3 **Time of sperm pre-incubation affects fertilization rates after standard IVF with frozen-thawed semen in the horse.** M. Felix and K. Hinrichs. Department of Clinical Studies, New Bolton Center, University of Pennsylvania School of Veterinary Medicine, Kennett Square, PA, USA. *Reproduction, Fertility and Development* 37, RDv37n1Ab128. <https://www.publish.csiro.au/rd/Fulltext/RDv37n1Ab128>
 - Studied timing of sperm pre-incubation post-VetMotl device selection for IVF.
 - Demonstrated higher fertilization when using shorter pre-incubation time.
 - Validates optimized protocol for VetMotl-enhanced IVF efficiency.

- 4 **IVF with frozen-thawed sperm after prolonged capacitation yields comparable results to ICSI in horses: A morphokinetics study.** Soledad Martin-Pelaez^a, Alejandro de la Fuente^a, Kazuki Takahashi^a, Itzel Tirado Perez^a, Jazmin Orozco^a, Carolina T.C. Okada^b, Carlos Ramires Neto^c, Stuart Meyers^b, Pouya Dini^a. Departments of Population Health and Reproduction, School of Veterinary Medicine, University of California, Davis, CA, USA^a, Anatomy, Physiology, & Cell Biology, School of Veterinary Medicine, University of California, Davis, CA, USA^b, GeneTech USA, Purcell, OK, USA^c. <https://www.sciencedirect.com/science/article/pii/S0093691X24004461>
 - Compared IVF outcomes using VetMotl-prepared frozen sperm to ICSI.
 - No significant difference in embryo morphokinetics or development rates.
 - Confirms VetMotl device's ability to deliver ICSI-like performance in IVF.

- 5 **Selection of frozen-thawed semen for standard in vitro fertilization.** Felix M, Hinrichs K. *Journal of Equine Veterinary Science*, Volume 125. June 2023.76. Anticipated publication in 2024. <https://www.sciencedirect.com/science/article/abs/pii/S0737080623004513>
 - Demonstrated success using VetMotl-treated frozen-thawed semen in standard IVF.
 - Embryo cleavage and blastocyst development were comparable to ICSI.
 - Positions VetMotl device as a valuable tool for broadening IVF applications in horses.

EQUINE: Low-Dose AI

- 1 **A simplified fixed-time insemination protocol using frozen-thawed stallion spermatozoa stored at 17°C for up to 24h before insemination.** Lee Morris, Ria Hartevelde, Zamira Gibb. *Equine Veterinary Journal*. April 2024. <https://beva.onlinelibrary.wiley.com/doi/abs/10.1111/evj.14096>
 - Explored a simplified AI protocol using frozen-thawed semen stored at 17°C for 24h.
 - VetMotl-selected sperm retained high motility after prolonged storage.
 - Supports VetMotl device's practicality for field-ready equine AI applications.

BOVINE: IVF

- 1 **The use of microfluidic sperm sorting on bovine frozen-thawed semen for in vitro fertilization.** Bruna Lopes Cardoso^{1,2}, Mayra Fernanda Alves Borges², Luiz Felipe Fachin Pazianoto^{3,2} Luísa Anastácia Santos de Oliveira², Felipe Perein¹. ¹Universidade de São Paulo (FZEA), ²CPEX Embriões, ³Universidade de São Paulo - Faculdade de Medicina Veterinária e Zootecnia. August 2024. Information on file and available upon request.
 - Used VetMotl device with frozen-thawed bovine semen for IVF.

- *Reported a 15–20% improvement in fertilization and cleavage rates.*
 - *Highlights compatibility with cryopreserved bull semen and scalable IVF workflows.*
- 2 **Use of a sperm separation device as an alternative for sires with low outcomes using gradient selection for in vitro embryo production: preliminary results.** Marcelo Cunha Xavier^{1,2}, Maurício Antonio Silva Peixer¹, Luiz Gustavo Araújo Oliveira¹, Patrícia Furtado Malard², Rodrigo Moura Martins³, Rosângela Vieira Andrade², Joao Henrique Moreira Viana^{4,1}.¹Bio Biotecnologia da Reprodução Animal, Brasília, DF, Brasil; ²Universidade Católica de Brasília, Brasília, DF, Brasil; ³Universidade de Brasília, Brasília, DF, Brasil; ⁴Embrapa Recursos Genéticos e Biotecnologia, Brasília, DF, Brasil. August 2024 SBTE poster presentation. Information on file and available upon request.
- *Investigated VetMotl device use for sires with historically low outcomes using traditional methods.*
 - *Increased usable embryo rate from <30% to ~60% post-selection.*
 - *Suggests strong commercial relevance for genetic rescue applications.*
- 3 **Effect of bovine spermatozoa preparation on embryonic development in vitro.** Emma Lorenzen. VetEmbryo, Hellevad Denmark. April 2022. Information on file and available upon request.
- *Evaluated bovine embryo development following use of VetMotl-processed sperm.*
 - *Blastocyst development increased by ~22% compared to density gradient prep.*
 - *Demonstrates VetMotl device's potential for improving IVF outcomes.*