



# Horizon scanning prioritisation of issues.

---

## Annex B: Horizon Scanning Reference List

### Extension to the 14-day rule

- Aach, J. *et al.* (2017) 'Addressing the ethical issues raised by synthetic human entities with embryo-like features', *eLife*. Elife, 6. doi: 10.7554/ELIFE.20674.
- Appleby, J. B. and Bredenoord, A. L. (2018) 'Should the 14-day rule for embryo research become the 28-day rule?', *EMBO molecular medicine*. EMBO Mol Med, 10(9). doi: 10.15252/EMMM.201809437.
- Blackshaw, B. P. and Rodger, D. (2021) 'Why we should not extend the 14-day rule', *Journal of Medical Ethics*. BMJ Publishing Group, 47(10), pp. 712–714. doi: 10.1136/medethics-2021-107317.
- Castelyn, G. (2020) 'Embryo experimentation: is there a case for moving beyond the "14-day rule"', *Monash bioethics review*. Monash Bioeth Rev, 38(2), pp. 181–196. doi: 10.1007/S40592-020-00117-X.
- Cavaliere, G. (2017) 'A 14-day limit for bioethics: the debate over human embryo research', *BMC Medical Ethics*. BioMed Central Ltd., 18(1). doi: 10.1186/s12910-017-0198-5.
- Chan, S. (2017) 'How to Rethink the Fourteen-Day Rule', *Hastings Center Report*. John Wiley and Sons Inc., 47(3), pp. 5–6. doi: 10.1002/hast.698.
- Clark, A. T. *et al.* (2021) 'Human embryo research, stem cell-derived embryo models and in vitro gametogenesis: Considerations leading to the revised ISSCR guidelines', *Stem Cell Reports*. Cell Press, 16(6), pp. 1416–1424. doi: 10.1016/j.stemcr.2021.05.008.
- Daoud, A. M. P. *et al.* (2020) 'Modelling human embryogenesis: embryo-like structures spark ethical and policy debate', *Human reproduction update*. Hum Reprod Update, 26(6), pp. 779–798. doi: 10.1093/HUMUPD/DMAA027.
- Davis, C. (2019) 'The Boundaries of Embryo Research: Extending the Fourteen-Day Rule: Australasian Association of Bioethics and Health Law John McPhee (Law) Student Essay Prize 2018', *Journal of Bioethical Inquiry*. Springer Netherlands, 16(1), pp. 133–140. doi: 10.1007/s11673-018-09895-w.
- Hengstschläger, M. and Rosner, M. (2021) 'Embryoid research calls for reassessment of legal regulations', *Stem Cell Research and Therapy*. BioMed Central Ltd, 12(1). doi: 10.1186/s13287-021-02442-2.
- Hyun, I., Wilkerson, A. and Johnston, J. (2016) 'Embryology policy: Revisit the 14-day rule', *Nature*. Nature Publishing Group, 533(7602), pp. 169–171. doi: 10.1038/533169a.
- International Society for Stem Cell Research, T. (2021) 'ISSCR Guidelines for Stem Cell Research and Clinical Translation'. Available at: <https://www.isscr.org/policy/guidelines-for-stem-cell-research-and-clinical-translation> (Accessed: 8 December 2021).
- Lovell-Badge, R. (2021) 'Stem-cell guidelines: why it was time for an update', *Nature*. NLM (Medline), 593(7860), p. 479. doi: 10.1038/D41586-021-01387-Z.
- Lovell-Badge, R. *et al.* (2021) 'ISSCR Guidelines for Stem Cell Research and Clinical Translation: The 2021 update', *Stem Cell Reports*. Cell Press, 16(6), pp. 1398–1408. doi: 10.1016/j.stemcr.2021.05.012.
- Matthews, K. R. W. *et al.* (2021) 'Rethinking Human Embryo Research Policies', *Hastings Center Report*.

McCully, S. (2021) 'The time has come to extend the 14-day limit', *Journal of medical ethics*. J Med Ethics. doi: 10.1136/MEDETHICS-2020-106406.

John Wiley and Sons Inc, 51(1), pp. 47–51. doi: 10.1002/hast.1215.McCully, S. (2021) 'The time has come to extend the 14-day limit', *Journal of medical ethics*. J Med Ethics. doi: 10.1136/MEDETHICS-2020-106406.

Nicolas, P., Etoc, F. and Brivanlou, A. H. (2021) 'The ethics of human-embryoids model: a call for consistency', *Journal of molecular medicine (Berlin, Germany)*. J Mol Med (Berl), 99(4), pp. 569–579. doi: 10.1007/S00109-021-02053-7.

Pera, M. F. (2017) 'Human embryo research and the 14-day rule', *Development (Cambridge)*. Company of Biologists Ltd, 144(11), pp. 1923–1925. doi: 10.1242/dev.151191.

Sawai, T. et al. (2021) 'Promises and rules: The implications of rethinking the 14-day rule for research on human embryos', *EMBO reports*. EMBO, 22(9), p. e53726. doi: 10.15252/embr.202153726.

Williams, K. and Johnson, M. H. (2020) 'Adapting the 14-day rule for embryo research to encompass evolving technologies: 14 day rule', *Reproductive Biomedicine and Society Online*. Elsevier Ltd, 10, pp. 1–9. doi: 10.1016/J.RBMS.2019.12.002.

## Artificial Intelligence

'On Artificial Intelligence-A European approach to excellence and trust White Paper on Artificial Intelligence A European approach to excellence and trust' (no date). Available at: [https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission\\_en.pdf](https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission_en.pdf). (Accessed: 5 December 2021).

Abbasi, A., Miah, E. and Mirroshandel, S. A. (2021) 'Effect of deep transfer and multi-task learning on sperm abnormality detection', *Computers in Biology and Medicine*, 128, p. 104121. doi: 10.1016/j.combiom.2020.104121.

Ada Lovelace Institute (2021) 'Regulate to Innovate: a route to regulation that reflects the ambition of the UK AI strategy'. Elsevier BV. doi: 10.2139/ssrn.2744593.

Alegre, L. et al. (2021) 'Assessment of embryo implantation potential with a cloud-based automatic software', *Reproductive BioMedicine Online*, 42(1), pp. 66–74. doi: 10.1016/j.rbmo.2020.09.032.

Barnett-Itzhaki, Z. et al. (2020) 'Machine learning vs. classic statistics for the prediction of IVF outcomes', *Journal of Assisted Reproduction and Genetics*, 37(10), pp. 2405–2412. doi: 10.1007/s10815-020-01908-1.Bori, L. et al. (2021) 'An artificial intelligence model based on the proteomic profile of euploid embryos and blastocyst morphology: a preliminary study', *Reproductive BioMedicine Online*, 42(2), pp. 340–350. doi: 10.1016/j.rbmo.2020.09.031.

Bori, L. et al. (2021) 'An artificial intelligence model based on the proteomic profile of euploid embryos and blastocyst morphology: a preliminary study', *Reproductive BioMedicine Online*, 42(2), pp. 340–350. doi: 10.1016/j.rbmo.2020.09.031.

Bori, L. et al. (2020) 'Novel and conventional embryo parameters as input data for artificial neural networks: an artificial intelligence model applied for prediction of the implantation potential', *Fertility and Sterility*, 114(6), pp. 1232–1241. doi: 10.1016/j.fertnstert.2020.08.023.

Bormann, C. L. et al. (2020) 'Performance of a deep learning based neural network in the selection of human blastocysts for implantation', *eLife*, 9. doi: 10.7554/eLife.55301.

Bormann, C. L. et al. (2021) 'Deep learning early warning system for embryo culture conditions and embryologist performance in the ART laboratory', *Journal of Assisted Reproduction and Genetics*, 38(7), pp. 1641–1646. doi: 10.1007/s10815-021-02198-x.

Bormann, C. L. et al. (2020) 'Consistency and objectivity of automated embryo assessments using deep neural networks', *Fertility and Sterility*, 113(4), pp. 781–787.e1. doi: 10.1016/j.fertnstert.2019.12.004.

Buldo-Licciardi, J. et al. (2020) 'SECOND GENERATION ARTIFICIAL INTELLIGENCE TECHNOLOGY FOR PREIMPLANTATION GENETIC TESTING (PGT) IMPROVES PREGNANCY OUTCOMES IN SINGLE THAWED EUPLOID EMBRYO TRANSFER CYCLES (STEET)', *Fertility and Sterility*, 114(3), p. e71. doi: 10.1016/j.fertnstert.2020.08.218.

Centre for Data Ethics and Innovation (2021) *The roadmap to an effective AI assurance ecosystem*. Available at: <https://www.gov.uk/government/publications/the-roadmap-to-an-effective-ai-assurance-ecosystem> (Accessed: 9 December 2021).

Centre for Data Ethics and Innovation (CDEI) (2020) *Review into bias in algorithmic decision-making*.

Chavez-Badiola, A. et al. (2020) 'Predicting pregnancy test results after embryo transfer by image feature extraction and analysis using machine learning', *Scientific Reports*, 10(1), p. 4394. doi: 10.1038/s41598-020-61357-9.

Chavez-Badiola, A. et al. (2020) 'Embryo Ranking Intelligent Classification Algorithm (ERICA): artificial intelligence clinical assistant predicting embryo ploidy and implantation', *Reproductive BioMedicine Online*, 41(4), pp. 585–593. doi: 10.1016/j.rbmo.2020.07.003.

Chen, Z. et al. (2021) 'Artificial Intelligence in the Assessment of Female Reproductive Function Using Ultrasound', *Journal of Ultrasound in Medicine*. doi: 10.1002/jum.15827.

Cohen, I. G. et al. (2020) 'The European artificial intelligence strategy: implications and challenges for digital health', *The Lancet Digital Health*. Elsevier, 2(7), pp. e376–e379. doi: 10.1016/S2589-7500(20)30112-6.

Fitz, V. W. et al. (2021) 'Should there be an "AI" in TEAM? Embryologists selection of high implantation potential embryos improves with the aid of an artificial intelligence algorithm', *Journal of Assisted Reproduction and Genetics*, 38(10), pp. 2663–2670. doi: 10.1007/s10815-021-02318-7.

Fukunaga, N. et al. (2020) 'Development of an automated two pronuclei detection system on time-lapse embryo images using deep learning techniques', *Reproductive Medicine and Biology*, 19(3), pp. 286–294. doi: 10.1002/rmb2.12331.

Geller, J. et al. (2021) 'An artificial intelligence-based algorithm for predicting pregnancy success using static images captured by optical light microscopy during intracytoplasmic sperm injection', *Journal of Human Reproductive Sciences*, 14(3), p. 288. doi: 10.4103/jhrs.jhrs\_53\_21.

Gerke Sara, Minssen Timo and Cohen Glenn (2020) 'Artifical Intelligence in Healthcare Chapter - Ethical and legal challenges of artificial intelligence-driven healthcare', in. Academic Press, pp. 295–336. doi: 10.1016/B978-0-12-818438-7.00012-5.

Giscard d'Estaing, S. et al. (2021) 'A machine learning system with reinforcement capacity for predicting the fate of an ART embryo', *Systems Biology in Reproductive Medicine*, 67(1), pp. 64–78. doi: 10.1080/19396368.2020.1822953.

Goyal, A., Kuchana, M. and Ayyagari, K. P. R. (2020) 'Machine learning predicts live-birth occurrence before in-vitro fertilization treatment', *Scientific Reports*, 10(1), p. 20925. doi: 10.1038/s41598-020-76928-z.

Halai Dina and Cirkovic Stevan (2019) *Case Study 4: AI in the fertility clinic*.

Hariton, E. et al. (2021) 'A machine learning algorithm can optimize the day of trigger to improve in vitro fertilization outcomes', *Fertility and Sterility*, 116(5), pp. 1227–1235. doi: 10.1016/j.fertnstert.2021.06.018.

Lainas, G. et al. (2020) 'A decision-making algorithm for performing or cancelling embryo transfer in patients at high risk for ovarian hyperstimulation syndrome after triggering final oocyte maturation with hCG', *Human Reproduction Open*, 2020(3). doi: 10.1093/hropen/hoaa013.

Letterie, G. and Mac Donald, A. (2020) 'Artificial intelligence in in vitro fertilization: a computer decision support system for day-to-day management of ovarian stimulation during in vitro fertilization', *Fertility and Sterility*, 114(5), pp. 1026–1031. doi: 10.1016/j.fertnstert.2020.06.006.

Liu, R. et al. (2021) 'Multifactor Prediction of Embryo Transfer Outcomes Based on a Machine Learning Algorithm', *Frontiers in Endocrinology*, 12. doi: 10.3389/fendo.2021.745039.

Minssen, T. et al. (2020) 'Regulatory responses to medical machine learning', *Journal of Law and the Biosciences*. Oxford Academic, 7(1), pp. 1–18. doi: 10.1093/JLB/LSAA002.

Nayot D et al. (2020) 'O-285 An oocyte assessment tool using machine learning; Predicting blastocyst development based on a single image of an oocyte', *Human Reproduction*, 35(Supplement\_1), pp. i129–i130. doi: 10.1093/humrep/35.Supplement\_1.1.

Noor, N. et al. (2020) 'Three-Dimensional Automated Volume Calculation (Sonography-Based Automated Volume Count) versus Two-Dimensional Manual Ultrasonography for Follicular Tracking and Oocyte Retrieval in Women Undergoing in vitro Fertilization-Embryo Transfer: A Randomized Controlled Trial', *Journal of Human Reproductive Sciences*, 13(4), p. 296. doi: 10.4103/jhrs.JHRS\_91\_20. Office for AI (2021) *National AI Strategy*, Office for AI.

Office for AI (2021) *National AI Strategy*, Office for AI.

Price, W. N. et al. (2019) 'Shadow health records meet new data privacy laws', *Science (New York, N.Y.)*, Science, 363(6426), pp. 448–450. doi: 10.1126/SCIENCE.AAV5133.

Rad, R. M. et al. (2020) 'Trophectoderm segmentation in human embryo images via inceptioned U-Net', *Medical Image Analysis*, 62, p. 101612. doi: 10.1016/j.media.2019.101612.

Raef, B., Maleki, M. and Ferdousi, R. (2020) 'Computational prediction of implantation outcome after embryo transfer', *Health Informatics Journal*, 26(3), pp. 1810–1826. doi: 10.1177/1460458219892138.

Riegler, M. A. et al. (2021) 'Artificial intelligence in the fertility clinic: status, pitfalls and possibilities', *Human reproduction (Oxford, England)*. Hum Reprod, 36(9), pp. 2429–2442. doi: 10.1093/HUMREP/DEAB168.

Riordon, J., McCallum, C. and Sinton, D. (2019) 'Deep learning for the classification of human sperm', *Computers in Biology and Medicine*, 111, p. 103342. doi: 10.1016/j.combiomed.2019.103342.

Sawada, Y. et al. (2021) 'Evaluation of artificial intelligence using time-lapse images of IVF embryos to predict live birth', *Reproductive BioMedicine Online*, 43(5), pp. 843–852. doi: 10.1016/j.rbmo.2021.05.002.

Targosz, A. et al. (2021) 'Semantic segmentation of human oocyte images using deep neural networks', *BioMedical Engineering OnLine*, 20(1), p. 40. doi: 10.1186/s12938-021-00864-w. The Alan Turing Institute (2019) 'Understanding artificial intelligence ethics and safety'. doi: 10.5281/zenodo.3240529.

The Alan Turing Institute (2019) 'Understanding artificial intelligence ethics and safety'. doi: 10.5281/zenodo.3240529.

Tran, D. et al. (2019) 'Deep learning as a predictive tool for fetal heart pregnancy following time-lapse incubation and blastocyst transfer', *Human Reproduction*, 34(6), pp. 1011–1018. doi: 10.1093/humrep/dez064.

Tsai, V. F. et al. (2020) 'Web- and Artificial Intelligence-Based Image Recognition For Sperm Motility Analysis: Verification Study', *JMIR Medical Informatics*, 8(11), p. e20031. doi: 10.2196/20031.

Ueno, S. et al. (2021) 'Pregnancy prediction performance of an annotation-free embryo scoring system on the basis of deep learning after single vitrified-warmed blastocyst transfer: a single-center large cohort retrospective study', *Fertility and Sterility*, 116(4), pp. 1172–1180. doi: 10.1016/j.fertnstert.2021.06.001. UK AI Council (2021) *UK AI Council AI Roadmap*.

VerMilyea, M. et al. (2020) 'Development of an artificial intelligence-based assessment model for prediction of embryo viability using static images captured by optical light microscopy during IVF', *Human Reproduction*, 35(4), pp. 770–784. doi: 10.1093/humrep/deaa013.

Vollmer, S. et al. (2020) 'Machine learning and artificial intelligence research for patient benefit: 20 critical questions on transparency, replicability, ethics, and effectiveness', *BMJ*. British Medical Journal Publishing Group, 368. doi: 10.1136/BMJ.L6927.

Wang, R. et al. (2019) 'Artificial intelligence in reproductive medicine', *Reproduction (Cambridge, England)*. Bioscientifica Ltd., 158(4), p. R139. doi: 10.1530/REP-18-0523.

WHO (2021) 'Ethics and Governance of Artificial Intelligence for Health: WHO guidance', *World Health Organization*, pp. 1–148. Available at: <http://apps.who.int/bookorders>. (Accessed: 10 December 2021).

Xi, Q. et al. (2021) 'Individualized embryo selection strategy developed by stacking machine learning model for better in vitro fertilization outcomes: an application study', *Reproductive Biology and Endocrinology*, 19(1), p. 53. doi: 10.1186/s12958-021-00734-z.

Zhao, M. et al. (2021) 'Application of convolutional neural network on early human embryo segmentation during in vitro fertilization', *Journal of Cellular and Molecular Medicine*, 25(5), pp. 2633–2644. doi: 10.1111/jcmm.16288.

## **Artificial wombs (ectogenesis)**

*The artificial womb: What is the next step? - ClinicalKey* (no date). Available at: <https://www.clinicalkey.com/#!/content/playContent/1-s2.0-S0022346818307280?returnurl=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0022346818307280%3Fshowall%3Dtrue&referrer=https%3A%2F%2Fpubmed.ncbi.nlm.nih.gov%2F> (Accessed: 6 December 2021).

Davis, D. S. (2019) 'Could We Be Marsupials? Very Premature Babies and Artificial Wombs', *Hastings Center Report*. John Wiley & Sons, Ltd, 49(1), pp. 3–3. doi: 10.1002/HAST.968.

De Bie, F. R. et al. (2021) 'Artificial placenta and womb technology: Past, current, and future challenges towards clinical translation', *Prenatal diagnosis*. Prenat Diagn, 41(1), pp. 145–158. doi: 10.1002/PD.5821.

Fallon, B. P. and Mychaliska, G. B. (2021) 'Development of an artificial placenta for support of premature infants: narrative review of the history, recent milestones, and future innovation', *Translational Pediatrics*. AME Publications, 10(5), p. 1470. doi: 10.21037/TP-20-136.

Nick, O. and Megan, E. (2012) 'Construction and test of an artificial uterus for ex situ development of shark embryos', *Zoo biology*. Zoo Biol, 31(2), pp. 197–205. doi: 10.1002/ZOO.20422.

Ozawa, K. et al. (2021) 'Evaluation of umbilical venous flow volume measured using ultrasound compared to circuit flow volume in the EXTra-uterine Environment for Neonatal Development (EXTEND) system in fetal sheep', *Prenatal diagnosis*. Prenat Diagn. doi: 10.1002/PD.6041.

Partridge, E. A. et al. (2017) 'An extra-uterine system to physiologically support the extreme premature lamb', *Nature Communications* 2017 8:1. Nature Publishing Group, 8(1), pp. 1–16. doi: 10.1038/ncomms15112.

Romanis, E. C. (2020) 'Artificial womb technology and clinical translation: Innovative treatment or medical research?', *Bioethics*. Bioethics, 34(4), pp. 392–402. doi: 10.1111/BIOE.12701.

Segers, S. (2021) 'The path toward ectogenesis: looking beyond the technical challenges', *BMC Medical Ethics* 2021 22:1. BioMed Central, 22(1), pp. 1–15. doi: 10.1186/S12910-021-00630-6.

Segers, S., Pennings, G. and Mertes, H. (2020) 'The ethics of ectogenesis-aided foetal treatment', *Bioethics*. John Wiley & Sons, Ltd, 34(4), pp. 364–370. doi: 10.1111/BIOE.12715.

Usuda, H. et al. (2019) 'Successful use of an artificial placenta to support extremely preterm ovine fetuses at the border of viability', *American Journal of Obstetrics & Gynecology*. Elsevier, 221(1), pp. 69.e1-69.e17. doi: 10.1016/J.AJOG.2019.03.001.

## **COVID-19 for fertility and early pregnancy**

Achua, J. K. et al. (2021) 'Histopathology and Ultrastructural Findings of Fatal COVID-19 Infections on Testis', *The world journal of men's health*. World J Mens Health, 39(1), pp. 65–74. doi: 10.5534/WJMH.200170.

Aitken, R. J. (2021) 'COVID-19 and human spermatozoa-Potential risks for infertility and sexual transmission?', *Andrology*. Andrology, 9(1), pp. 48–52. doi: 10.1111/ANDR.12859.

Allotey, J. et al. (2020) 'Clinical manifestations, risk factors, and maternal and perinatal outcomes of coronavirus disease 2019 in pregnancy: living systematic review and meta-analysis', *BMJ*. British Medical Journal Publishing Group, 370, p. 3320. doi: 10.1136/BMJ.M3320.

Anifandis, G. et al. (2021) 'SARS-CoV-2 vs. human gametes, embryos and cryopreservation', *Systems biology in reproductive medicine*. Syst Biol Reprod Med, 67(4), pp. 260–269. doi: 10.1080/19396368.2021.1922537.

Ardestani Zadeh, A. and Arab, D. (2021) 'COVID-19 and male reproductive system: pathogenic features and possible mechanisms', *Journal of molecular histology*. J Mol Histol, 52(5), pp. 869–878. doi: 10.1007/S10735-021-10003-3.

Arora, D. et al. (2021) 'Assessment of materno-foetal transmission of SARS-CoV-2: A prospective pilot study', *Medical journal, Armed Forces India*. Med J Armed Forces India, 77(Suppl 2), pp. S398–S403. doi: 10.1016/J.MJAFI.2021.01.007.

Atyeo, C. et al. (2021) 'Compromised SARS-CoV-2-specific placental antibody transfer', *Cell*. Elsevier, 184(3), p. 628. doi: 10.1016/J.CELL.2020.12.027.

- Barragan, M. et al. (2021) 'Undetectable viral RNA in oocytes from SARS-CoV-2 positive women', *Human Reproduction* (Oxford, England). Oxford University Press, 36(2), pp. 390–394. doi: 10.1093/HUMREP/DEAA284.
- Bentov, Y. et al. (2021) 'Ovarian follicular function is not altered by SARS-CoV-2 infection or BNT162b2 mRNA COVID-19 vaccination', *Human reproduction* (Oxford, England). Hum Reprod, 36(9), pp. 2506–2513. doi: 10.1093/HUMREP/DEAB182.
- Best, J. C. et al. (2021) 'Evaluation of SARS-CoV-2 in Human Semen and Effect on Total Sperm Number: A Prospective Observational Study', *The world journal of men's health*. World J Mens Health, 39(3). doi: 10.5534/WJMH.200192.
- Bhattacharya, S. et al. (2021) 'Prioritizing IVF treatment in the post-COVID 19 era: a predictive modelling study based on UK national data', *Human Reproduction*. Oxford Academic, 36(3), pp. 666–675. doi: 10.1093/HUMREP/DEAA339.
- Carto, C., Nackeeraan, S. and Ramasamy, R. (2021) 'COVID-19 vaccination is associated with a decreased risk of orchitis and/or epididymitis in men', *Andrologia*. Andrologia. doi: 10.1111/AND.14281.
- Chandi, A. and Jain, N. (2021) 'State of assisted reproduction technology in the coronavirus disease 2019 era and consequences on human reproductive system', *Biology of Reproduction*. Oxford Academic, 105(4), pp. 808–821. doi: 10.1093/BIOLRE/IOAB122.
- Chen, F. et al. (2021) 'Effects of COVID-19 and mRNA vaccines on human fertility', *Human reproduction* (Oxford, England). Hum Reprod. doi: 10.1093/HUMREP/DEAB238.
- Corda, V. et al. (2021) 'Induced abortion and COVID-19 as contributing factors to declining fertility in Sardinia', *Journal of perinatal medicine*. J Perinat Med. doi: 10.1515/JPM-2021-0289.
- Cribiù, F. M. et al. (2021) 'Severe SARS-CoV-2 placenta infection can impact neonatal outcome in the absence of vertical transmission', *The Journal of clinical investigation*. J Clin Invest, 131(6). doi: 10.1172/JCI145427.
- Demirel, C. et al. (2021) 'Failure to Detect Viral RNA in Follicular Fluid Aspirates from a SARS-CoV-2-Positive Woman', *Reproductive sciences* (Thousand Oaks, Calif.). Reprod Sci, 28(8), pp. 2144–2146. doi: 10.1007/S43032-021-00502-9.
- Engels Calvo, V. et al. (2021) 'Perinatal outcomes of pregnancies resulting from assisted reproduction technology in SARS-CoV-2-infected women: a prospective observational study', *Fertility and sterility*. Fertil Steril, 116(3), pp. 731–740. doi: 10.1016/J.FERTNSTERT.2021.04.005.
- Engjom, H. et al. (2021) 'COVID-19 in pregnancy—characteristics and outcomes of pregnant women admitted to hospital because of SARS-CoV-2 infection in the Nordic countries', *Acta Obstetricia et Gynecologica Scandinavica*. John Wiley and Sons Inc, 100(9), pp. 1611–1619. doi: 10.1111/aogs.14160.
- Erbay, G. et al. (2021) 'Short-term effects of COVID-19 on semen parameters: A multicenter study of 69 cases', *Andrology*. Andrology, 9(4), pp. 1060–1065. doi: 10.1111/ANDR.13019.
- Essahib, W. et al. (2020) 'SARS-CoV-2 host receptors ACE2 and CD147 (BSG) are present on human oocytes and blastocysts', *Journal of Assisted Reproduction and Genetics*. Springer, 37(11), p. 2657. doi: 10.1007/S10815-020-01952-X.
- Esteves, S. C. et al. (2021) 'SARS-CoV-2 pandemic and repercussions for male infertility patients: A proposal for the individualized provision of andrological services', *Andrology*. Wiley-Blackwell, 9(1), pp. 10–18. doi: 10.1111/ANDR.12809.
- Falahieh, F. M. et al. (2021) 'Effects of moderate COVID-19 infection on semen oxidative status and parameters 14 and 120 days after diagnosis', *Reproduction, fertility, and development*. Reprod Fertil Dev, 33(12), pp. 683–690. doi: 10.1071/RD21153.
- Flynn, A. C. et al. (2021) 'The Impact of the COVID-19 Pandemic on Pregnancy Planning Behaviors', *Women's health reports* (New Rochelle, N.Y.). Womens Health Rep (New Rochelle), 2(1), pp. 71–77. doi: 10.1089/WHR.2021.0005.
- Gacci, M. et al. (2021) 'Semen impairment and occurrence of SARS-CoV-2 virus in semen after recovery from COVID-19', *Human reproduction* (Oxford, England). Hum Reprod, 36(6), pp. 1520–1529. doi: 10.1093/HUMREP/DEAB026.

Garg, I. et al. (2021) 'COVID-19 Vaccine in Pregnant and Lactating Women: A Review of Existing Evidence and Practice Guidelines', *Infectious disease reports*. Infect Dis Rep, 13(3), pp. 685–699. doi: 10.3390>IDR13030064.

Gonzalez, D. C. et al. (2021) 'Sperm Parameters Before and After COVID-19 mRNA Vaccination', *JAMA*. JAMA, 326(3), pp. 273–274. doi: 10.1001/JAMA.2021.9976.

Gul, A. et al. (2021) 'Do SARS-CoV-2 Infection (COVID-19) and the Medications Administered for Its Treatment Impair Testicular Functions?', *Urologia internationalis*. Urol Int, 105(11–12), pp. 944–948. doi: 10.1159/000517925.

Guo, L. et al. (2021) 'Absence of SARS-CoV-2 in semen of a COVID-19 patient cohort', *Andrology*. Andrology, 9(1), pp. 42–47. doi: 10.1111/ANDR.12848.

Guo, T. H. et al. (2021) 'Semen parameters in men recovered from COVID-19', *Asian journal of andrology*. Asian J Androl, 23(5), pp. 479–483. doi: 10.4103/AJA.AJA\_31\_21.

Gupta, P. et al. (2021) 'Detection of SARS-CoV2 virus using the real-time reverse transcriptase polymerase chain reaction in semen and seminal plasma from men with active COVID-19 infection - A pilot study', *Indian journal of urology : IJU : journal of the Urological Society of India*. Indian J Urol, 37(4), pp. 331–334. doi: 10.4103/IJU.IJU\_117\_21.

Hamarat, M. B. et al. (2021) 'Effect of SARS-CoV-2 infection on semen parameters', *Canadian Urological Association journal = Journal de l'Association des urologues du Canada*. Can Urol Assoc J, 16(3). doi: 10.5489/CUAJ.7292.

Herrero, Y. et al. (2022) 'SARS-CoV-2 infection negatively affects ovarian function in ART patients', *Biochimica et biophysica acta. Molecular basis of disease*. Biochim Biophys Acta Mol Basis Dis, 1868(1), p. 166295. doi: 10.1016/J.BBADIS.2021.166295.

Kolanska, K. et al. (2021) 'Mild COVID-19 infection does not alter the ovarian reserve in women treated with ART', *Reproductive biomedicine online*. Reprod Biomed Online, 43(6). doi: 10.1016/J.RBMO.2021.09.001.

Lifshitz, D. et al. (2021) 'Does mRNA SARS-CoV-2 vaccine detrimentally affect male fertility, as reflected by semen analysis?', *Reproductive biomedicine online*. Reprod Biomed Online. doi: 10.1016/J.RBMO.2021.09.021.

Ma, X. et al. (2020) 'Pathological and molecular examinations of postmortem testis biopsies reveal SARS-CoV-2 infection in the testis and spermatogenesis damage in COVID-19 patients', *Cellular & Molecular Immunology 2020* 18:2. Nature Publishing Group, 18(2), pp. 487–489. doi: 10.1038/s41423-020-00604-5.

Maleki, B. H. and Tartibian, B. (2021) 'COVID-19 and male reproductive function: a prospective, longitudinal cohort study', *Reproduction (Cambridge, England)*. Reproduction, 161(3), pp. 319–331. doi: 10.1530/REP-20-0382.

Massarotti, C. et al. (2021) 'SARS-CoV-2 in the semen: Where does it come from?', *Andrology*. Andrology, 9(1), pp. 39–41. doi: 10.1111/ANDR.12839.

Morhart, P. et al. (2021) 'Maternal SARS-CoV-2 infection during pregnancy: possible impact on the infant', *European journal of pediatrics*. Eur J Pediatr. doi: 10.1007/S00431-021-04221-W.

Morris, R. S. (2021) 'SARS-CoV-2 spike protein seropositivity from vaccination or infection does not cause sterility', *F&S reports*. F S Rep, 2(3), pp. 253–255. doi: 10.1016/J.XFRE.2021.05.010.

Nana, M. and Nelson-Piercy, C. (2021) 'COVID-19 in pregnancy', *Clinical medicine (London, England)*. Clin Med (Lond), 21(5), pp. E446–E450. doi: 10.7861/CLINMED.2021-0503.

Orvieto, R. et al. (2021) 'Does mRNA SARS-CoV-2 vaccine influence patients' performance during IVF-ET cycle?', *Reproductive biology and endocrinology : RB&E*. Reprod Biol Endocrinol, 19(1). doi: 10.1186/S12958-021-00757-6.

Orvieto, R., Segev-Zahav, A. and Aizer, A. (2021) 'Does COVID-19 infection influence patients' performance during IVF-ET cycle?: an observational study', *Gynecological endocrinology : the official journal of the International Society of Gynecological Endocrinology*. Gynecol Endocrinol, 37(10), pp. 895–897. doi: 10.1080/09513590.2021.1918080.

Paoli, D. et al. (2021) 'Sperm cryopreservation during the SARS-CoV-2 pandemic', *Journal of endocrinological investigation*. J Endocrinol Invest, 44(5), pp. 1091–1096. doi: 10.1007/S40618-020-01438-8.

- Pazir, Y. et al. (2021) 'Impaired semen parameters in patients with confirmed SARS-CoV-2 infection: A prospective cohort study', *Andrologia*. Andrologia, 53(9). doi: 10.1111/AND.14157.
- Peirouvi, T. et al. (2021) 'COVID-19 disrupts the blood-testis barrier through the induction of inflammatory cytokines and disruption of junctional proteins', *Inflammation research : official journal of the European Histamine Research Society ... [et al.]*. Inflamm Res, 70(10–12), pp. 1165–1175. doi: 10.1007/S00011-021-01497-4.
- Rajput, S. K. et al. (2021) 'Human eggs, zygotes, and embryos express the receptor angiotensin 1-converting enzyme 2 and transmembrane serine protease 2 protein necessary for severe acute respiratory syndrome coronavirus 2 infection', *F&S Science*. Elsevier, 2(1), pp. 33–42. doi: 10.1016/J.XFSS.2020.12.005.
- Rjely, W. A. et al. (2021) 'Outcomes of SARS-CoV-2 infected pregnancies after medically assisted reproduction', *Human reproduction (Oxford, England)*. Hum Reprod, 36(11), pp. 2883–2890. doi: 10.1093/HUMREP/DEAB218.
- Rotshenker-Olshinka, K. et al. (2021) 'COVID-19 pandemic effect on early pregnancy: are miscarriage rates altered, in asymptomatic women?', *Archives of gynecology and obstetrics. Arch Gynecol Obstet*, 303(3), pp. 839–845. doi: 10.1007/S00404-020-05848-0.
- Ruan, Y. et al. (2021) 'No detection of SARS-CoV-2 from urine, expressed prostatic secretions, and semen in 74 recovered COVID-19 male patients: A perspective and urogenital evaluation', *Andrology. Andrology*, 9(1), pp. 99–106. doi: 10.1111/ANDR.12939.
- Scropotto, F. I. et al. (2021) 'COVID-19 disease in clinical setting: impact on gonadal function, transmission risk, and sperm quality in young males', *Journal of basic and clinical physiology and pharmacology. J Basic Clin Physiol Pharmacol*, 0(0). doi: 10.1515/JBCPP-2021-0227.
- Setti, P. E. L. et al. (2021) 'First trimester pregnancy outcomes in a large IVF center from the Lombardy County (Italy) during the peak COVID-19 pandemic', *Scientific reports. Sci Rep*, 11(1). doi: 10.1038/S41598-021-96134-9.
- Smith, A. D. A. C. et al. (2020) 'Population implications of cessation of IVF during the COVID-19 pandemic', *Reproductive BioMedicine Online*. Elsevier, 41(3), pp. 428–430. doi: 10.1016/J.RBMO.2020.07.002.
- Temiz, M. Z. et al. (2021) 'Investigation of SARS-CoV-2 in semen samples and the effects of COVID-19 on male sexual health by using semen analysis and serum male hormone profile: A cross-sectional, pilot study', *Andrologia. Andrologia*, 53(2). doi: 10.1111/AND.13912.
- Wainstock, T. et al. (2021) 'Prenatal maternal COVID-19 vaccination and pregnancy outcomes', *Vaccine. Vaccine*, 39(41), pp. 6037–6040. doi: 10.1016/J.VACCINE.2021.09.012.
- Wang, M. et al. (2021) 'Investigating the impact of asymptomatic or mild SARS-CoV-2 infection on female fertility and in vitro fertilization outcomes: A retrospective cohort study', *EClinicalMedicine. EClinicalMedicine*, 38. doi: 10.1016/J.ECLINM.2021.101013.
- Wesselink, A. K., Hatch, E. E., Rothman, K. J., Wang, T. R., Willis, M. D., Yland, J., Crowe, H. M., Geller, R. J., Willis, S. K., Perkins, R. B., Regan, A. K., Levinson, J., Mikkelsen, E. M., & Wise, L. A. (2022). A prospective cohort study of COVID-19 vaccination, SARS-CoV-2 infection, and fertility. *American Journal of Epidemiology*. <https://doi.org/10.1093/AJE/KWAC011>
- Weatherbee, B. A. T., Glover, D. M. and Zernicka-Goetz, M. (2020) 'Expression of SARS-CoV-2 receptor ACE2 and the protease TMPRSS2 suggests susceptibility of the human embryo in the first trimester', *Open Biology*. The Royal Society , 10(8). doi: 10.1098/RSOB.200162.
- Yao, Y. et al. (2021) 'COVID-19 and male reproduction: Current research and unknown factors', *Andrology. Andrology*, 9(4), pp. 1027–1037. doi: 10.1111/ANDR.12970.

## Germline genome editing

- Ai, D. et al. (2021) 'Embryo Microinjection and Knockout Mutant Identification of CRISPR/Cas9 Genome-Edited *Helicoverpa Armigera* (Hübner)', *Journal of visualized experiments : JoVE. J Vis Exp*, (173). doi: 10.3791/62068.
- Averina, O. A. et al. (2021) 'Comparative analysis of genome editors efficiency on a model of mice zygotes microinjection', *International Journal of Molecular Sciences*. MDPI, 22(19), p. 10221. doi: 10.3390/IJMS221910221/S1.

- Banan, M. (2020) 'Recent advances in CRISPR/Cas9-mediated knock-ins in mammalian cells', *Journal of biotechnology*. J Biotechnol, 308, pp. 1–9. doi: 10.1016/J.JBIOTEC.2019.11.010.
- Bosch, J. A., Birchak, G. and Perrimon, N. (2021) 'Precise genome engineering in Drosophila using prime editing', *Proceedings of the National Academy of Sciences of the United States of America*. Proc Natl Acad Sci U S A, 118(1). doi: 10.1073/PNAS.2021996118.
- Greenfield, A. (2021) 'Making sense of heritable human genome editing: Scientific and ethical considerations', *Progress in Molecular Biology and Translational Science*. Academic Press, 182, pp. 1–28. doi: 10.1016/BS.PMBTS.2020.12.008.
- Jacinto, F. V., Link, W. and Ferreira, B. I. (2020) 'CRISPR/Cas9-mediated genome editing: From basic research to translational medicine', *Journal of Cellular and Molecular Medicine*. John Wiley & Sons, Ltd, 24(7), pp. 3766–3778. doi: 10.1111/JCMM.14916.
- Kantor, A., McClements, M. E. and Maclaren, R. E. (2020) 'CRISPR-Cas9 DNA Base-Editing and Prime-Editing', *International Journal of Molecular Sciences 2020*, Vol. 21, Page 6240. Multidisciplinary Digital Publishing Institute, 21(17), p. 6240. doi: 10.3390/IJMS21176240.
- Kaur, A. and Border, P. (no date) 'Human germline genome editing'. Available at: <https://post.parliament.uk/research-briefings/post-pn-0611/> (Accessed: 6 December 2021).
- Leonova, E. I. and Gainetdinov, R. R. (2020) 'CRISPR/Cas9 technology in translational biomedicine', *Cellular Physiology & Biochemistry*. Cell Physiol Biochem Press GmbH & Co KG, 54(3), pp. 354–370. doi: 10.33594/000000224.
- Mizuno-Iijima, S. et al. (2021) 'Efficient production of large deletion and gene fragment knock-in mice mediated by genome editing with Cas9-mouse Cdt1 in mouse zygotes', *Methods*. Academic Press, 191, pp. 23–31. doi: 10.1016/J.YMETH.2020.04.007.
- Molla, K. A. and Yang, Y. (2020) 'Predicting CRISPR/Cas9-Induced Mutations for Precise Genome Editing', *Trends in Biotechnology*. Elsevier, 38(2), pp. 136–141. doi: 10.1016/J.TIBTECH.2019.08.002.
- Naeem, M. et al. (2020) 'Latest Developed Strategies to Minimize the Off-Target Effects in CRISPR-Cas-Mediated Genome Editing', *Cells 2020*, Vol. 9, Page 1608. Multidisciplinary Digital Publishing Institute, 9(7), p. 1608. doi: 10.3390/CELLS9071608.
- Papathanasiou, S. et al. (2021) 'Whole chromosome loss and genomic instability in mouse embryos after CRISPR-Cas9 genome editing', *Nature communications*. Nat Commun, 12(1). doi: 10.1038/S41467-021-26097-Y.
- WHO (2021) 'Human genome editing: recommendations', p. 49. Available at: <https://www.who.int/publications/i/item/9789240030381> (Accessed: 10 January 2022).
- Yip, B. H. (2020) 'Recent Advances in CRISPR/Cas9 Delivery Strategies', *Biomolecules 2020*, Vol. 10, Page 839. Multidisciplinary Digital Publishing Institute, 10(6), p. 839. doi: 10.3390/BIOM10060839.
- Zhan, X. et al. (2021) 'Genome editing for plant research and crop improvement', *Journal of integrative plant biology*. J Integr Plant Biol, 63(1), pp. 3–33. doi: 10.1111/JIPB.13063.
- Zuccaro, M. V. et al. (2020) 'Allele-Specific Chromosome Removal after Cas9 Cleavage in Human Embryos', *Cell. Cell*, 183(6), pp. 1650-1664.e15. doi: 10.1016/J.CELL.2020.10.025.

### Health outcomes in children conceived by ART (including the impact of culture media)

- Allen, C. P. et al. (2021) 'Outcomes of pregnancies using donor sperm compared with those using partner sperm: systematic review and meta-analysis', *Human Reproduction Update*. Oxford Academic, 27(1), pp. 190–211. doi: 10.1093/HUMUPD/DMAA030.
- Andreadou, M. T. et al. (2021) 'Association of assisted reproductive technology with autism spectrum disorder in the offspring: an updated systematic review and meta-analysis', *European Journal of Pediatrics 2021* 180:9. Springer, 180(9), pp. 2741–2755. doi: 10.1007/S00431-021-04187-9.
- Arian, S. E. et al. (2021) 'Neonatal and maternal outcomes among twin pregnancies stratified by mode of conception in the United States', *Fertility and Sterility*. Elsevier, 116(2), pp. 514–521. doi: 10.1016/J.FERTNSTERT.2021.03.032.

- Barberet, J. et al. (2021) 'Do assisted reproductive technologies and in vitro embryo culture influence the epigenetic control of imprinted genes and transposable elements in children?', *Human Reproduction*. Oxford Academic, 36(2), pp. 479–492. doi: 10.1093/HUMREP/DEAA310.
- Bick, L., Nielsen, A. S. and Knudsen, U. B. (2021) 'Embryo Culture Media Influence on Live Birth Rate and Birthweight after IVF/ICSI: A Systematic Review Comparing Vitrolife G5 Media to Other Common Culture Media', *JBRA Assisted Reproduction*. Brazilian Society of Assisted Reproduction, 25(3), p. 480. doi: 10.5935/1518-0557.20200099.
- Canovas, S. et al. (2021) 'Culture Medium and Sex Drive Epigenetic Reprogramming in Preimplantation Bovine Embryos', *International Journal of Molecular Sciences 2021, Vol. 22, Page 6426*. Multidisciplinary Digital Publishing Institute, 22(12), p. 6426. doi: 10.3390/IJMS22126426.
- Chen, H. et al. (2021) 'Laser-assisted selection of immotile spermatozoa has no effect on obstetric and neonatal outcomes of TESA-ICSI pregnancies', *Reproductive Biology and Endocrinology*. BioMed Central Ltd, 19(1), pp. 1–9. doi: 10.1186/S12958-021-00835-9/TABLES/5.
- Chen, X. H. et al. (2021) '辅助生殖技术双胎妊娠对新生儿结局的影响', *Chinese Journal of Contemporary Pediatrics*. Xiangya Hospital, Central South University, 23(1), p. 37. doi: 10.7499/J.ISSN.1008-8830.2009021.
- Cheung, S. et al. (2021) 'Assessing the cognitive and behavioral development of 3-year-old children born from fathers with severe male infertility', *American Journal of Obstetrics & Gynecology*. Elsevier, 224(5), pp. 508.e1–508.e11. doi: 10.1016/J.AJOG.2020.11.030.
- Conforti, A. et al. (2021) 'Perinatal and obstetric outcomes in singleton pregnancies following fresh versus cryopreserved blastocyst transfer: a meta-analysis', *Reproductive BioMedicine Online*. Elsevier Ltd, 42(2), pp. 401–412. doi: 10.1016/J.RBMO.2020.09.029/ATTACHMENT/21623299-7DD8-4604-8A93-A16712A2346E/MMC6.DOCX.
- Cozzani, M., Aradhya, S. and Goisis, A. (2021) 'The cognitive development from childhood to adolescence of low birthweight children born after medically assisted reproduction—a UK longitudinal cohort study', *International Journal of Epidemiology*. Oxford Academic, 50(5), pp. 1514–1523. doi: 10.1093/IJE/DYAB009.
- Dieamant, F. et al. (2021) 'Impact of Intracytoplasmic Morphologically Selected Sperm Injection (IMSI) on Birth Defects: A Systematic Review and Meta-Analysis', *JBRA Assisted Reproduction*. Brazilian Society of Assisted Reproduction, 25(3), p. 466. doi: 10.5935/1518-0557.20210030.
- Farhi, A. et al. (2021) 'How Are They Doing? Neurodevelopmental Outcomes at School Age of Children Born Following Assisted Reproductive Treatments', *Journal of Child Neurology*. SAGE Publications Inc., 36(4), pp. 262–271. doi: 10.1177/0883073820967169.
- Hallamaa, M. et al. (2021) 'Pregnancy potential and perinatal outcomes of embryos cryopreserved twice: a case-control study', *Reproductive BioMedicine Online*. Elsevier Ltd, 43(4), pp. 607–613. doi: 10.1016/J.RBMO.2021.06.028/ATTACHMENT/095C5FC5-F9B9-4055-AC33-134709248903/MMC1.DOCX.
- Hawkins, J. et al. (2021) 'Biophysical optimization of preimplantation embryo culture: what mechanics can offer ART', *Molecular Human Reproduction*. Oxford Academic, 27(1). doi: 10.1093/MOLEHR/GAAA087.
- Henningsen, A. A. et al. (2020) 'Imprinting disorders in children born after ART: a Nordic study from the CONARTAS group', *Human Reproduction*. Oxford Academic, 35(5), pp. 1178–1184. doi: 10.1093/HUMREP/DEAA039.
- Iacusso, C. et al. (2021) 'Assisted Reproductive Technology and Anorectal Malformation: A Single-Center Experience', *Frontiers in Pediatrics*. Frontiers Media S.A., 9, p. 779. doi: 10.3389/FPED.2021.705385/BIBTEX.
- Jiang, F. et al. (2021) 'Obstetric outcomes for twins from different conception methods – A multicenter cross-sectional study from China', *Acta Obstetricia et Gynecologica Scandinavica*. John Wiley & Sons, Ltd, 100(6), pp. 1061–1067. doi: 10.1111/AOGS.14116.
- Jin, X. et al. (2020) 'Pregnancy Outcome Difference between Fresh and Frozen Embryos in Women without Polycystic Ovary Syndrome: a Systematic Review and Meta-Analysis', *Reproductive Sciences 2020 28:5*. Springer, 28(5), pp. 1267–1276. doi: 10.1007/S43032-020-00323-2.
- Lee, I. et al. (2021) 'Cytokines in culture media of preimplantation embryos during in vitro fertilization: Impact on embryo quality', *Cytokine*. Academic Press, 148, p. 155714. doi: 10.1016/J.CYTO.2021.155714.

Li, C. et al. (2021) 'Perinatal outcomes of neonates born from different endometrial preparation protocols after frozen embryo transfer: a retrospective cohort study', *BMC Pregnancy and Childbirth*. BioMed Central Ltd, 21(1), pp. 1–12. doi: 10.1186/S12884-021-03791-9/TABLES/4.

Li, J. et al. (2021) 'Multiple regression analysis of perinatal conditions, physical development, and complications in assisted reproduction singletons', *Translational Pediatrics*. AME Publishing Company, 10(9), pp. 2347354–2342354. doi: 10.21037/TP-21-400.

Libby, V. et al. (2021) 'Obstetric outcomes in pregnancies resulting from in vitro fertilization are not different in fertile, sterilized women compared to infertile women: A Society for Assisted Reproductive Technology database analysis', *Fertility and Sterility*. Elsevier Inc., 115(3), pp. 617–626. doi: 10.1016/J.FERTNSTERT.2020.09.163/ATTACHMENT/C6611DA9-FD9D-4F01-8D31-DB8C0A2FE311/MMC1.DOCX.

Lin, D. et al. (2021) 'Association between IVF/ICSI treatment and preterm birth and major perinatal outcomes among dichorionic-diamnionic twin pregnancies: A seven-year retrospective cohort study', *Acta Obstetricia et Gynecologica Scandinavica*. Wiley-Blackwell, 100(1), pp. 162–169. doi: 10.1111/AOGS.13981/FORMAT/PDF.

Liu, Y. et al. (2021) 'Association between serum oestradiol level on the hCG administration day and neonatal birthweight after IVF-ET among 3659 singleton live births', *Scientific Reports* 2021 11:1. Nature Publishing Group, 11(1), pp. 1–10. doi: 10.1038/s41598-021-85692-7.

Luke, B. et al. (2021) 'Risks of nonchromosomal birth defects, small-for-gestational age birthweight, and prematurity with in vitro fertilization: effect of number of embryos transferred and plurality at conception versus at birth', *Journal of Assisted Reproduction and Genetics* 2021 38:4. Springer, 38(4), pp. 835–846. doi: 10.1007/S10815-021-02095-3.

Luke, B. et al. (2021) 'The risk of birth defects with conception by ART', *Human Reproduction*. Oxford Academic, 36(1), pp. 116–129. doi: 10.1093/HUMREP/DEAA272.

Lv, H. et al. (2021) 'Assisted reproductive technology and birth defects in a Chinese birth cohort study', *The Lancet Regional Health - Western Pacific*. Elsevier Ltd, 7, p. 100090. doi: 10.1016/J.LANWPC.2020.100090/ATTACHMENT/05E3CE33-1E25-4BDA-B477-C977B2AF79C0/MMC2.DOCX.

Magnus, M. C. et al. (2021) 'Growth in children conceived by ART', *Human Reproduction*. Oxford Academic, 36(4), pp. 1074–1082. doi: 10.1093/HUMREP/DEAB007.

Menezo, Y. et al. (2021) 'Modulating oxidative stress and epigenetic homeostasis in preimplantation IVF embryos', *Zygote*. Cambridge University Press, pp. 1–10. doi: 10.1017/S0967199421000356.

Moreau, J. et al. (2021) 'Impact of the polycarbonate strippers used in assisted reproduction techniques on embryonic development', *Human Reproduction*. Oxford Academic, 36(2), pp. 331–339. doi: 10.1093/HUMREP/DEAA290.

Permadi, W. et al. (2021) 'Frozen vs. fresh cycles IVF outcomes: retrospective study from an Indonesian IVF centre', *BMC Research Notes*. BioMed Central Ltd, 14(1), pp. 1–5. doi: 10.1186/S13104-021-05585-W/TABLES/3.

Pontesilli, M. et al. (2021) 'Effect of parental and ART treatment characteristics on perinatal outcomes', *Human Reproduction*. Oxford Academic, 36(6), pp. 1640–1665. doi: 10.1093/HUMREP/DEAB008.

Ram, M. et al. (2021) 'Obstetrical outcomes of ART pregnancies in patients with male factor infertility', *Journal of Assisted Reproduction and Genetics* 2021 38:8. Springer, 38(8), pp. 2173–2182. doi: 10.1007/S10815-021-02259-1.

Roseboom, T. J. and Eriksson, J. G. (2021) 'Children conceived by ART grow differently in early life than naturally conceived children but reach the same height and weight by age 17. Reassuring? Not so sure', *Human Reproduction*. Oxford Academic, 36(4), pp. 847–849. doi: 10.1093/HUMREP/DEAB048.

Roychoudhury, S. et al. (2021) 'Neurodevelopmental outcomes of preterm infants conceived by assisted reproductive technology', *American Journal of Obstetrics & Gynecology*. Elsevier, 225(3), pp. 276.e1-276.e9. doi: 10.1016/J.AJOG.2021.03.027.

Sánchez Soler, M. J. et al. (2021) 'Riesgo de malformaciones mayores y menores en niños concebidos por técnicas de reproducción asistida (FIV/ICSI): estudio prospectivo de cohorte controlado', *Anales de Pediatría*. Elsevier Doyma, 95(6), pp. 448–458. doi: 10.1016/J.ANPEDI.2021.06.010.

- Shats, M. et al. (2020) 'Obstetric, neonatal and child development outcomes following assisted hatching treatment: a retrospective cohort study', <https://doi.org/10.1080/09513590.2020.1756248>. Taylor & Francis, 37(1), pp. 41–45. doi: 10.1080/09513590.2020.1756248.
- Sites, C. K. et al. (2021) 'Embryo biopsy and maternal and neonatal outcomes following cryopreserved-thawed single embryo transfer', *American Journal of Obstetrics & Gynecology*. Elsevier, 225(3), pp. 285.e1-285.e7. doi: 10.1016/J.AJOG.2021.04.235.
- Talebi, T. et al. (2021) 'The association between in vitro fertilization and intracytoplasmic sperm injection treatment and the risk of congenital heart defects', <https://doi.org/10.1080/14767058.2021.1949705>. Taylor & Francis. doi: 10.1080/14767058.2021.1949705.
- Terho, A. M. et al. (2021) 'High birth weight and large-for-gestational-age in singletons born after frozen compared to fresh embryo transfer, by gestational week: a Nordic register study from the CoNARTaS group', *Human Reproduction*. Oxford Academic, 36(4), pp. 1083–1092. doi: 10.1093/HUMREP/DEAA304.
- Terho, A. M. et al. (2021) 'Childhood growth of term singletons born after frozen compared with fresh embryo transfer', *Reproductive BioMedicine Online*. Elsevier, 43(4), pp. 719–726. doi: 10.1016/J.RBMO.2021.08.002.
- Togola, A. et al. (2021) 'Bisphenol S is present in culture media used for ART and cell culture', *Human Reproduction*. Oxford Academic, 36(4), pp. 1032–1042. doi: 10.1093/HUMREP/DEAA365.
- Tsakiridis, I. et al. (2021) 'Impact of Marginal and Velamentous Cord Insertion on Uterine Artery Doppler Indices, Fetal Growth, and Preeclampsia', *Journal of Ultrasound in Medicine*. John Wiley & Sons, Ltd. doi: 10.1002/JUM.15883.
- Vajta, G. et al. (2021) 'Back to the future: optimised microwell culture of individual human preimplantation stage embryos', *Journal of Assisted Reproduction and Genetics* 2021 38:10. Springer, 38(10), pp. 2563–2574. doi: 10.1007/S10815-021-02167-4.
- Vo, M. T. et al. (2021) 'Comparison of psychomotor development among children conceived through icSI in-vitro-fertilisation and naturally at 5 through 30 months of age, Vietnam', *European Journal of Obstetrics and Gynecology and Reproductive Biology*. Elsevier, 258, pp. 157–161. doi: 10.1016/J.EJOGRB.2020.12.027.
- Wang, C. W. et al. (2021) 'Association between intracytoplasmic sperm injection and neurodevelopmental outcomes among offspring', *PLOS ONE*. Public Library of Science, 16(9), p. e0257268. doi: 10.1371/JOURNAL.PONE.0257268.
- Wang, C. et al. (2021) 'Association of assisted reproductive technology, germline de novo mutations and congenital heart defects in a prospective birth cohort study', *Cell Research* 2021 31:8. Nature Publishing Group, 31(8), pp. 919–928. doi: 10.1038/s41422-021-00521-w.
- Wang, J. et al. (2021) 'Pregnancy outcomes of Chinese women undergoing IVF with embryonic cryopreservation as compared to natural conception', *BMC Pregnancy and Childbirth*. BioMed Central Ltd, 21(1), pp. 1–12. doi: 10.1186/S12884-020-03486-7/TABLES/5.
- Wessel, J. A. et al. (2021) 'Birthweight and other perinatal outcomes of singletons conceived after assisted reproduction compared to natural conceived singletons in couples with unexplained subfertility: follow-up of two randomized clinical trials', *Human Reproduction (Oxford, England)*. Oxford University Press, 36(3), p. 817. doi: 10.1093/HUMREP/DEAA298.
- Xu, J. J. et al. (2021) 'Effect of embryo cryopreservation duration on pregnancy-related complications and birthweight after frozen-thawed embryo transfer: a retrospective cohort study', *Journal of Developmental Origins of Health and Disease*. Cambridge University Press, pp. 1–10. doi: 10.1017/S2040174421000192.
- Zacchini, F. et al. (2021) 'Perturbations of the hepatic proteome behind the onset of metabolic disorders in mouse offspring developed following embryo manipulation', *Theriogenology*. Elsevier, 171, pp. 119–129. doi: 10.1016/J.THERIOGENOLOGY.2021.05.022.
- Zhang, J. et al. (2021) 'Comparison of Pregnancy and Neonatal Outcomes of Single Frozen Blastocyst Transfer Between Letrozole-Induction and HRT Cycles in Patients With Abnormal Ovulation', *Frontiers in Endocrinology*. Frontiers Media S.A., 12, p. 358. doi: 10.3389/FENDO.2021.664072/BIBTEX.
- Zhang, L. et al. (2021) 'Birth defects surveillance after assisted reproductive technology in Beijing: a whole of population-based cohort study', *BMJ Open*. British Medical Journal Publishing Group, 11(6), p. e044385. doi: 10.1136/BMJOOPEN-2020-044385.

Zhang, X. et al. (2021) 'Perinatal and maternal outcomes after frozen versus fresh embryo transfer cycles in women of advanced maternal age', *European Journal of Obstetrics and Gynecology and Reproductive Biology*. Elsevier, 257, pp. 133–137. doi: 10.1016/J.EJOGRB.2020.09.047.

### Impact of the microbiome on fertility and fertility treatment outcomes

Abbasi, A. et al. (2021) 'Probiotic intervention as a potential therapeutic for managing gestational disorders and improving pregnancy outcomes', *Journal of reproductive immunology*. J Reprod Immunol, 143. doi: 10.1016/J.JRI.2020.103244.

Alonso Martínez, M. C. et al. (2021) 'Study of the Vaginal Microbiota in Healthy Women of Reproductive Age', *Microorganisms*. Microorganisms, 9(5). doi: 10.3390/MICROORGANISMS9051069.

Corbett, G. A., Crosby, D. A. and McAuliffe, F. M. (2021) 'Probiotic therapy in couples with infertility: A systematic review', *European journal of obstetrics, gynecology, and reproductive biology*. Eur J Obstet Gynecol Reprod Biol, 256, pp. 95–100. doi: 10.1016/J.EJOGRB.2020.10.054.

Di Simone, N. et al. (2020) 'Recent Insights on the Maternal Microbiota: Impact on Pregnancy Outcomes', *Frontiers in Immunology*. Frontiers Media SA, 11, p. 528202. doi: 10.3389/FIMMU.2020.528202.

Diaz-martínez, M. D. C. et al. (2021) 'Impact of the vaginal and endometrial microbiome pattern on assisted reproduction outcomes', *Journal of Clinical Medicine*. MDPI, 10(18), p. 4063. doi: 10.3390/JCM10184063/S1.

Ding, C., Yu, Y. and Zhou, Q. (2021) 'Bacterial Vaginosis: Effects on reproduction and its therapeutics', *Journal of gynecology obstetrics and human reproduction*. J Gynecol Obstet Hum Reprod, 50(9). doi: 10.1016/J.JOGOH.2021.102174.

Farahani, L. et al. (2021) 'The semen microbiome and its impact on sperm function and male fertility: A systematic review and meta-analysis', *Andrology*. Andrology, 9(1), pp. 115–144. doi: 10.1111/ANDR.12886.

Kovács, Z. et al. (2021) 'Novel diagnostic options for endometriosis – Based on the glycome and microbiome', *Journal of Advanced Research*. Elsevier, 33, p. 167. doi: 10.1016/J.JARE.2021.01.015.

Lozano, F. M. et al. (2021) 'Characterization of the vaginal and endometrial microbiome in patients with chronic endometritis', *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 263, pp. 25–32. doi: 10.1016/j.ejogrb.2021.05.045.

Lüll, K. et al. (2021) 'The Gut Microbiome in Polycystic Ovary Syndrome and Its Association with Metabolic Traits', *The Journal of Clinical Endocrinology & Metabolism*. Oxford Academic, 106(3), pp. 858–871. doi: 10.1210/CLINEM/DGAA848.

Osadchiy, V. et al. (2020) 'The Seminal Microbiome and Male Factor Infertility', *Current sexual health reports*. Curr Sex Health Rep, 12(3), pp. 202–207. doi: 10.1007/S11930-020-00273-5.

Punzón-Jiménez, P. and Labarta, E. (2021) 'The impact of the female genital tract microbiome in women health and reproduction: a review', *Journal of Assisted Reproduction and Genetics* 2021 38:10. Springer, 38(10), pp. 2519–2541. doi: 10.1007/S10815-021-02247-5.

Skoracka, K. et al. (2021) 'Female Fertility and the Nutritional Approach: The Most Essential Aspects', *Advances in Nutrition*. Oxford Academic, 12(6), pp. 2372–2386. doi: 10.1093/ADVANCES/NMAB068.

Tsonis, O., Gkrozou, F. and Paschopoulos, M. (2021) 'Microbiome affecting reproductive outcome in ARTs', *Journal of gynecology obstetrics and human reproduction*. J Gynecol Obstet Hum Reprod, 50(3). doi: 10.1016/J.JOGOH.2020.102036.

### In vitro gametogenesis

Akatsuka, K. et al. (2021) 'Public attitudes in Japan toward the reproductive use of gametes derived from human-induced pluripotent stem cells.', *Future science OA*. Future Medicine Ltd., 7(10), p. FSO754. doi: 10.2144/fsoa-2021-0065.

Chang, Y. W. et al. (2021) 'Tissue of Origin, but Not XCI State, Influences Germ Cell Differentiation from Human Pluripotent Stem Cells', *Cells*. Cells, 10(9). doi: 10.3390/CELLS10092400.

Clark, A. T. et al. (2021) 'Human embryo research, stem cell-derived embryo models and in vitro gametogenesis: Considerations leading to the revised ISSCR guidelines', *Stem Cell Reports*. Cell Press, 16(6), pp. 1416–1424. doi: 10.1016/j.stemcr.2021.05.008.Gooßen, D. (2021) 'The use of human artificial gametes and the limits of reproductive freedom', *Bioethics*. Bioethics, 35(1), pp. 72–78. doi: 10.1111/BIOE.12787.

Hayashi, K. et al. (2021) 'Artificially produced gametes in mice, humans and other species', *Reproduction, Fertility and Development*. CSIRO, 33(2), pp. 91–101. doi: 10.1071/RD20265.

Hong, T. K. et al. (2021) 'Germ Cell Derivation from Pluripotent Stem Cells for Understanding In Vitro Gametogenesis', *Cells*. Cells, 10(8). doi: 10.3390/CELLS10081889.

Hong, T. K. et al. (2021) 'Germ cell derivation from pluripotent stem cells for understanding in vitro gametogenesis', *Cells*. MDPI, 10(8). doi: 10.3390/cells10081889.

Ishikura, Y. et al. (2021) 'In vitro reconstitution of the whole male germ-cell development from mouse pluripotent stem cells', *Cell Stem Cell*. Cell Press, 28(12), pp. 2167–2179.e9. doi: 10.1016/j.stem.2021.08.005.

Martin-Inaraja, M. et al. (2021) 'Improving In Vitro Culture of Human Male Fetal Germ Cells', *Cells*. Cells, 10(8). doi: 10.3390/CELLS10082033.Martin-Inaraja, M. et al. (2021) 'Improving in vitro culture of human male fetal germ cells', *Cells*. MDPI, 10(8). doi: 10.3390/cells10082033.

Mertes, H. et al. (2021) 'Enthusiasm, concern and ambivalence in the Belgian public's attitude towards in-vitro gametogenesis', *Reproductive biomedicine & society online*. Reprod Biomed Soc Online, 14, pp. 156–168. doi: 10.1016/J.RBMS.2021.10.005.

Mishra, S. et al. (2021) 'Sex-Specific Isolation and Propagation of Human Premeiotic Fetal Germ Cells and Germ Cell-Like Cells', *Cells*. Cells, 10(5). doi: 10.3390/CELLS10051214.

Mishra, S. et al. (2021) 'Activin A-derived human embryonic stem cells show increased competence to differentiate into primordial germ cell-like cells', *Stem cells (Dayton, Ohio)*. Stem Cells, 39(5), pp. 551–563. doi: 10.1002/STEM.3335.

Overeem, A. W. et al. (2021) 'Ligand-Receptor Interactions Elucidate Sex-Specific Pathways in the Trajectory From Primordial Germ Cells to Gonia During Human Development', *Frontiers in cell and developmental biology*. Front Cell Dev Biol, 9. doi: 10.3389/FCELL.2021.661243.

Saitou, M. and Hayashi, K. (2021) 'Mammalian in vitro gametogenesis', *Science*. American Association for the Advancement of Science, 374(6563). doi: 10.1126/SCIENCE.AAZ6830/ASSET/78E21DFD-D457-4229-95A3-63AD3E0F09D8/ASSETS/IMAGES/LARGE/SCIENCE.AAZ6830-FA.JPG.

Sawai, T. et al. (2021) 'Public attitudes in Japan toward the creation and use of gametes derived from human-induced pluripotent stem cells', *Future science OA*. Future Sci OA, 7(10). doi: 10.2144/FSOA-2021-0066.

Tahmasbpour Marzouni, E. et al. (2021) 'Stem cells and organs-on-chips: new promising technologies for human infertility treatment', *Endocrine reviews*. Endocr Rev. doi: 10.1210/ENDREV/BNAB047.

## Impact of stress on fertility treatment outcomes

Bapayeva, G. et al. (2021) 'The Effect of Stress, Anxiety and Depression on In Vitro Fertilization Outcome in Kazakhstani Public Clinical Setting: A Cross-Sectional Study', *Journal of Clinical Medicine*, 10(5), p. 937. doi: 10.3390/jcm10050937.

Darolia, S. and Ghosh, D. (2021) 'Importance of Personality Factors in Determining the Psychological Consequences of Infertility: A Systematic Review', *Health Education & Behavior*, p. 109019812110571. doi: 10.1177/10901981211057109.

Fernandes, J. et al. (2021) 'Effect of depression and anxiety on sexual functioning in couples trying to conceive with and without an infertility diagnosis', *Psychology & Health*, pp. 1–18. doi: 10.1080/08870446.2021.1955115.

Koumparou, M. et al. (2021) 'Stress management and In Vitro Fertilization (IVF): A pilot randomized controlled trial', *Psychiatriki*. doi: 10.22365/jpsych.2021.029.

Liu, Y.-F. et al. (2021) 'The Analysis of Anxiety and Depression in Different Stages of in vitro Fertilization-Embryo Transfer in Couples in China', *Neuropsychiatric Disease and Treatment*, Volume 17, pp. 649–657. doi: 10.2147/NDT.S287198.

Mahmoud, M. Y. et al. (2021) 'The impact of music therapy on anxiety and pregnancy rate among infertile women undergoing assisted reproductive technologies: a systematic review and meta-analysis', *Journal of Psychosomatic Obstetrics & Gynecology*, pp. 1–9. doi: 10.1080/0167482X.2021.1977277.

Maia Bezerra, N. K. et al. (2021) 'Success of in vitro fertilization and its association with the levels of psychophysiological stress before and during the treatment', *Health Care for Women International*, 42(4–6), pp. 420–445. doi: 10.1080/07399332.2020.1787415.

Miller, N. et al. (2021) 'Can Social Support on Facebook Influence Fertility Outcomes?', *Reproductive Sciences*. doi: 10.1007/s43032-021-00611-5.

Nikolaeva, M. et al. (2021) 'Immunoendocrine Markers of Stress in Seminal Plasma at IVF/ICSI Failure: a Preliminary Study', *Reproductive Sciences*, 28(1), pp. 144–158. doi: 10.1007/s43032-020-00253-z.

Nwogueze, B. C. et al. (2021) 'Down regulatory response of reproductive potentials in stress-induced rats supplemented with clomifene citrate: The fate of infertility', *Biomedicine & Pharmacotherapy*, 143, p. 112208. doi: 10.1016/j.biopha.2021.112208.

Paraskevi, L., Antigoni, S. and Kleanthi, G. (2021) 'Stress and Anxiety Levels in Couples who Undergo Fertility Treatment: a Review of Systematic Reviews', *Materia Socio Medica*, 33(1), p. 60. doi: 10.5455/msm.2021.33.60-64.

Peng, M. et al. (2021) 'Stress, anxiety, and depression in infertile couples are not associated with a first IVF or ICSI treatment outcome', *BMC Pregnancy and Childbirth*, 21(1), p. 725. doi: 10.1186/s12884-021-04202-9.

Raad, G. et al. (2020) 'Stress Management during the Intracytoplasmic Sperm Injection Cycle May Slow Down First Embryo Cleavage and Accelerate Embryo Compaction: A Pilot Randomized Controlled Trial', *Psychotherapy and Psychosomatics*, pp. 1–8. doi: 10.1159/000512530.

Simionescu, G. et al. (2021) 'The complex relationship between infertility and psychological distress (Review)', *Experimental and Therapeutic Medicine*, 21(4), p. 306. doi: 10.3892/etm.2021.9737.

Trikoilis, N. et al. (2022) 'The association of in vitro fertilization/intracytoplasmic sperm injection results with anxiety levels and stress biomarkers: An observational, case-control study', *Journal of Gynecology Obstetrics and Human Reproduction*, 51(1), p. 102254. doi: 10.1016/j.jogoh.2021.102254.

Zhou, R. et al. (2021) 'Pregnancy or Psychological Outcomes of Psychotherapy Interventions for Infertility: A Meta-Analysis', *Frontiers in Psychology*, 12. doi: 10.3389/fpsyg.2021.643395.

## Mitochondrial donation

Brenner, C. A. (2021) 'Genetic ethics and mtDNA replacement techniques', *New Bioethics*. Taylor and Francis Ltd., 27(1), pp. 3–18. doi: 10.1080/20502877.2021.1876204.

Christodoulaki, A. et al. (2021) 'Prospects of Germline Nuclear Transfer in Women With Diminished Ovarian Reserve', *Frontiers in endocrinology*. Front Endocrinol (Lausanne), 12. doi: 10.3389/FENDO.2021.635370.

Dziadek, M. A. and Sue, C. M. (2021) 'Mitochondrial donation: is Australia ready?', *The Medical journal of Australia*. Med J Aust. doi: 10.5694/MJA2.51309.

Ferreira, A. F. et al. (2021) 'Does supplementation with mitochondria improve oocyte competence? A systematic review', *Reproduction*. Bioscientifica Ltd, 161(3), pp. 269–287. doi: 10.1530/REP-20-0351.

Herbrand, C. (2021) 'Silences, omissions and oversimplification? The UK debate on mitochondrial donation', *Reproductive biomedicine & society online*. Reprod Biomed Soc Online, 14, pp. 53–62. doi: 10.1016/J.RBMS.2021.07.005.

Lewens, T. (2021) 'The fragility of origin essentialism: Where mitochondrial "replacement" meets the non-identity problem', *Bioethics*. Bioethics, 35(7), pp. 615–622. doi: 10.1111/BIOE.12910.

Sendra, L. et al. (2021) 'Mitochondrial DNA Replacement Techniques to Prevent Human Mitochondrial Diseases', *International journal of molecular sciences*. Int J Mol Sci, 22(2), pp. 1–23. doi: 10.3390/IJMS22020551.

Siristatidis, C., Mantzavinos, T. and Vlahos, N. (2021) 'Maternal spindle transfer for mitochondrial disease: lessons to be learnt before extending the method to other conditions?', <https://doi.org/10.1080/14647273.2021.1925168>. Taylor & Francis. doi: 10.1080/14647273.2021.1925168.

Sobek, A. et al. (2021) 'Cytoplasmic Transfer Improves Human Egg Fertilization and Embryo Quality: an Evaluation of Sibling Oocytes in Women with Low Oocyte Quality', *Reproductive sciences* (Thousand Oaks, Calif.). Reprod Sci, 28(5), pp. 1362–1369. doi: 10.1007/S43032-020-00371-8.

Tinker, R. J. et al. (2021) 'Current and Emerging Clinical Treatment in Mitochondrial Disease', *Molecular diagnosis & therapy*. Mol Diagn Ther, 25(2), pp. 181–206. doi: 10.1007/S40291-020-00510-6.

Tytgat, O. et al. (2021) 'Digital Polymerase Chain Reaction for Assessment of Mutant Mitochondrial Carry-over after Nuclear Transfer for In Vitro Fertilization', *Clinical chemistry. Clin Chem*, 67(7), pp. 968–976. doi: 10.1093/CLINCHEM/HVAB021.

### New technologies in gamete and embryo testing

Anbari, F. et al. (2021) 'Microfluidic sperm selection yields higher sperm quality compared to conventional method in ICSI program: A pilot study', *Systems biology in reproductive medicine*. Syst Biol Reprod Med, 67(2), pp. 137–143. doi: 10.1080/19396368.2020.1837994.

Aras-Tosun, D. et al. (2021) 'Phospholipase C-zeta levels are not correlated with fertilisation rates in infertile couples', *Andrologia*. Andrologia. doi: 10.1111/AND.14269.

Bahrami-Asl, Z. et al. (2021) 'Cytokines in embryonic secretome as potential markers for embryo selection', *American journal of reproductive immunology* (New York, N.Y.: 1989). Am J Reprod Immunol, 85(5). doi: 10.1111/AJI.13385.

Capalbo, A. et al. (2021) 'Clinical validity and utility of preconception expanded carrier screening for the management of reproductive genetic risk in IVF and general population', *Human Reproduction*. Oxford Academic, 36(7), pp. 2050–2061. doi: 10.1093/HUMREP/DEAB087.

Chen, H. et al. (2021) 'Laser-assisted selection of immotile spermatozoa has no effect on obstetric and neonatal outcomes of TESA-ICSI pregnancies', *Reproductive Biology and Endocrinology*. BioMed Central Ltd, 19(1), pp. 1–9. doi: 10.1186/S12958-021-00835-9/TABLES/5.

Chen, S. et al. (2021) 'Comprehensive preimplantation genetic testing by massively parallel sequencing', *Human Reproduction*. Oxford Academic, 36(1), pp. 236–247. doi: 10.1093/HUMREP/DEAA269.

Da Costa, R., Redmann, K. and Schlatt, S. (2021) 'Simultaneous detection of sperm membrane integrity and DNA fragmentation by flow cytometry: A novel and rapid tool for sperm analysis', *Andrology*. Andrology, 9(4), pp. 1254–1263. doi: 10.1111/ANDR.13017.

Daei-Farshbaf, N. et al. (2021) 'Identification of calcineurin as a predictor of oocyte quality and fertilization competence based on microarray data', *Computational biology and chemistry*. Comput Biol Chem, 94. doi: 10.1016/J.COMPBIOLCHEM.2021.107561.

Dearing, C., Jayasena, C. and Lindsay, K. (2021) 'Can the Sperm Class Analyser (SCA) CASA-Mot system for human sperm motility analysis reduce imprecision and operator subjectivity and improve semen analysis?', *Human fertility* (Cambridge, England). Hum Fertil (Camb), 24(3), pp. 208–218. doi: 10.1080/14647273.2019.1610581.

Dutta, S., Henkel, R. and Agarwal, A. (2021) 'Comparative analysis of tests used to assess sperm chromatin integrity and DNA fragmentation', *Andrologia*. John Wiley & Sons, Ltd, 53(2), p. e13718. doi: 10.1111/AND.13718.

Fuentes Ávila, A., Blasco Sanz, R. and Cortés Alaguero, C. (2021) 'Effect of Sperm Morphology in Intrauterine Insemination: Analysis of 115 Cycles and Literature Review', *Obstetrical & gynecological survey*. Obstet Gynecol Surv, 76(3), pp. 170–174. doi: 10.1097/OGX.0000000000000871.

Gao, F. F. et al. (2021) 'ChromInst: A single cell sequencing technique to accomplish pre-implantation comprehensive chromosomal screening overnight', *PLOS ONE*. Public Library of Science, 16(5), p. e0251971. doi: 10.1371/JOURNAL.PONE.0251971.

Gombos, K. et al. (2021) 'NGS-Based Application for Routine Non-Invasive Pre-Implantation Genetic Assessment in IVF', *International Journal of Molecular Sciences* 2021, Vol. 22, Page 2443. Multidisciplinary Digital Publishing Institute, 22(5), p. 2443. doi: 10.3390/IJMS22052443.

Hawke, D. C., Watson, A. J. and Betts, D. H. (2021) 'Extracellular vesicles, microRNA and the preimplantation embryo: non-invasive clues of embryo well-being', *Reproductive BioMedicine Online*. Elsevier, 42(1), pp. 39–54. doi: 10.1016/J.RBMO.2020.11.011.

Huang, J. et al. (2021) 'Chromosome Screening of Human Preimplantation Embryos by Using Spent Culture Medium: Sample Collection and Chromosomal Ploidy Analysis', *JoVE (Journal of Visualized Experiments)*. Journal of Visualized Experiments, 2021(175), p. e62619. doi: 10.3791/62619.

Inagaki, Y. et al. (2021) 'The expression of human testis-specific actin capping protein predicts in vitro fertilization outcomes: A novel biomarker of sperm function for assisted reproductive technology', *Reproductive Medicine and Biology*. Wiley-Blackwell, 20(4), p. 537. doi: 10.1002/RMB2.12407.

Ito, Y. et al. (2021) 'A method for utilizing automated machine learning for histopathological classification of testis based on Johnsen scores', *Scientific reports*. Sci Rep, 11(1). doi: 10.1038/S41598-021-89369-Z.

Jeong, M. et al. (2021) 'Predictive value of sperm motility before and after preparation for the pregnancy outcomes of intrauterine insemination', *Clinical and experimental reproductive medicine. Clin Exp Reprod Med*, 48(3), pp. 255–261. doi: 10.5653/CERM.2021.04469.

Karabulut, S. et al. (2021) 'Seminal oxidation-reduction potential as a possible indicator of impaired sperm parameters in Turkish population', *Andrologia*. Andrologia, 53(2). doi: 10.1111/AND.13956.

Kragh, M. F. and Karstoft, H. (2021) 'Embryo selection with artificial intelligence: how to evaluate and compare methods?', *Journal of assisted reproduction and genetics. J Assist Reprod Genet*, 38(7), pp. 1675–1689. doi: 10.1007/S10815-021-02254-6.

Lal, A. et al. (2021) 'Fluorescent-dependent comparative Ct method for qPCR gene expression analysis in IVF clinical pre-implantation embryonic testing', *Biology Methods & Protocols*. Oxford University Press, 6(1). doi: 10.1093/BIOMETHODS/BPAB001.

Le, M. T. et al. (2021) 'Predictive Significance of Sperm DNA Fragmentation Testing in Early Pregnancy Loss in Infertile Couples Undergoing Intracytoplasmic Sperm Injection', *Research and Reports in Urology*. Dove Press, 13, p. 313. doi: 10.2147/RRU.S315300.

Li, J. et al. (2021) 'Development a nomogram to predict fertilisation rate of infertile males with borderline semen by using semen parameters combined with AMH and INHB', *Andrologia*. Andrologia, 53(9). doi: 10.1111/AND.14182.

Liu, C. et al. (2021) 'Prediction of oocyte quality using mRNA transcripts screened by RNA sequencing of human granulosa cells', *Reproductive BioMedicine Online*. Elsevier, 43(3), pp. 413–420. doi: 10.1016/J.RBMO.2021.05.018.

Liu, L. et al. (2021) 'Progress of miRNA in male infertility: how close are we to noninvasive and accurate diagnostic markers? Systematic review and meta-analysis', *Biomarkers in medicine. Biomark Med*, 15(17), pp. 1681–1692. doi: 10.2217/BMM-2020-0434.

Masuda, Y. et al. (2021) 'Three-Dimensional Live Imaging of Bovine Preimplantation Embryos: A New Method for IVF Embryo Evaluation', *Frontiers in Veterinary Science*. Frontiers Media S.A., 8, p. 315. doi: 10.3389/FVETS.2021.639249/BIBTEX.

Munné, S. et al. (2021) 'Corrigendum. First PGT-A using human in vivo blastocysts recovered by uterine lavage: comparison with matched IVF embryo controls', *Human Reproduction*. Oxford Academic, 36(7), pp. 2069–2070. doi: 10.1093/HUMREP/DEAB097.

Neumann, A. et al. (2021) 'Whole-genome amplification/preimplantation genetic testing for propionic acidemia of successful pregnancy in an obligate carrier Mexican couple: A case report', *World Journal of Clinical Cases*. Baishideng Publishing Group Inc, 9(29), p. 8797. doi: 10.12998/WJCC.V9.I29.8797.

Novoselsky Persky, M. et al. (2021) 'Conventional ICSI vs. physiological selection of spermatozoa for ICSI (picsi) in sibling oocytes', *Andrology*. Andrology, 9(3), pp. 873–877. doi: 10.1111/ANDR.12982.

Orvieto, R., Aizer, A. and Gleicher, N. (2021) 'Is there still a rationale for non-invasive PGT-A by analysis of cell-free DNA released by human embryos into culture medium?', *Human reproduction (Oxford, England)*. Hum Reprod, 36(5), pp. 1186–1190. doi: 10.1093/HUMREP/DEAB042.

Pan, M. et al. (2021) 'The integrity of cfDNA in follicular fluid and spent medium from embryo culture is associated with embryo grade in patients undergoing in vitro fertilization', *Journal of Assisted Reproduction and Genetics* 2021. Springer, pp. 1–12. doi: 10.1007/S10815-021-02357-0.

Panner Selvam, M. K. et al. (2021) 'Evaluation of seminal oxidation-reduction potential in male infertility', *Andrologia*. Andrologia, 53(2). doi: 10.1111/AND.13610.

Rogers, A. et al. (2021) 'Preimplantation Genetic Testing for Monogenic Conditions: Is Cell-Free DNA Testing the Next Step?', *Molecular Diagnosis & Therapy* 2021 25:6. Springer, 25(6), pp. 683–690. doi: 10.1007/S40291-021-00556-0.

Shi, W. H. et al. (2021) 'Different strategies of preimplantation genetic testing for aneuploidies in women of advanced maternal age: A systematic review and meta-analysis', *Journal of Clinical Medicine*. MDPI, 10(17). doi: 10.3390/JCM10173895/S1.

Shitara, A. et al. (2021) 'Cell-free DNA in spent culture medium effectively reflects the chromosomal status of embryos following culturing beyond implantation compared to trophectoderm biopsy', *PLoS ONE*. Public Library of Science, 16(2). doi: 10.1371/JOURNAL.PONE.0246438.

Simchi, M. et al. (2021) 'Selection of high-quality sperm with thousands of parallel channels', *Lab on a chip*. Lab Chip, 21(12), pp. 2464–2475. doi: 10.1039/D0LC01182G.

Sindiani, A. M. et al. (2021) 'Pre-Implantation Gender Selection: Family Balancing in Jordan', *Risk Management and Healthcare Policy*. Dove Press, 14, p. 2797. doi: 10.2147/RMHP.S306124.

Smith, G. D., Cantatore, C. and Ohl, D. A. (2021) 'Microfluidic Systems for Isolation of Spermatozoa from Testicular Specimens of Non-Obstructive Azoospermic Men: Does/Can It Improve Sperm Yield?', *Journal of Clinical Medicine* 2021, Vol. 10, Page 3667. Multidisciplinary Digital Publishing Institute, 10(16), p. 3667. doi: 10.3390/JCM10163667.

Stanhiser, J. et al. (2020) 'Sperm morphology from the actual inseminated sample does not predict clinical pregnancy following intrauterine insemination', *F&S reports*. F S Rep, 2(1), pp. 16–21. doi: 10.1016/J.XFRE.2020.11.007.

Tan, T. C. Y. et al. (2021) 'Non-invasive, label-free optical analysis to detect aneuploidy within the inner cell mass of the preimplantation embryo', *Human Reproduction*. Oxford University Press (OUP). doi: 10.1093/HUMREP/DEAB233.

Tanga, B. M. et al. (2021) 'Semen evaluation: methodological advancements in sperm quality-specific fertility assessment - A review', *Animal bioscience*. Anim Biosci, 34(8), pp. 1253–1270. doi: 10.5713/AB.21.0072.

Tavares, R. S. et al. (2021) 'Mitochondrial Functional Assessment in Mammalian Gametes Using Fluorescent Probes', *Methods in molecular biology* (Clifton, N.J.). Methods Mol Biol, 2310, pp. 57–68. doi: 10.1007/978-1-0716-1433-4\_5.

Tong, J. et al. (2021) 'Next-Generation Sequencing (NGS)-Based Preimplantation Genetic Testing for Aneuploidy (PGT-A) of Trophectoderm Biopsy for Recurrent Implantation Failure (RIF) Patients: a Retrospective Study', *Reproductive Sciences*. Springer Science and Business Media Deutschland GmbH, 28(7), pp. 1923–1929. doi: 10.1007/S43032-021-00519-0/TABLES/3.

Tšuiko, O. et al. (2021) 'Haplotyping-based preimplantation genetic testing reveals parent-of-origin specific mechanisms of aneuploidy formation', *npj Genomic Medicine* 2021 6:1. Nature Publishing Group, 6(1), pp. 1–10. doi: 10.1038/s41525-021-00246-0.

Zhang, S. et al. (2021) 'A comprehensive and universal approach for embryo testing in patients with different genetic disorders', *Clinical and Translational Medicine*. Wiley-Blackwell, 11(7), p. 11. doi: 10.1002/CTM2.490.

## Round spermatid injection

Barda, S. et al. (2021) 'Questioning the utility of round spermatid injections in men with non-obstructive azoospermia', *Andrology*, 9(4), pp. 1145–1150. doi: 10.1111/andr.13008.

Hanson, B. et al. (2021) 'Round spermatid injection into human oocytes: a systematic review and meta-analysis', *Asian Journal of Andrology*, 23(4), p. 363. doi: 10.4103/aja.aja\_85\_20.

- Kurotaki, Y. K. et al. (2015) 'Impaired active DNA demethylation in zygotes generated by round spermatid injection', *Human Reproduction*, 30(5), pp. 1178–1187. doi: 10.1093/humrep/dev039.
- Tanaka, A. et al. (2015) 'Fourteen babies born after round spermatid injection into human oocytes', *Proceedings of the National Academy of Sciences*, 112(47), pp. 14629–14634. doi: 10.1073/pnas.1517466112.
- Tanaka, Atsushi et al. (2018) 'Ninety babies born after round spermatid injection into oocytes: survey of their development from fertilization to 2 years of age', *Fertility and Sterility*. Elsevier Inc., 110(3), pp. 443–451. doi: 10.1016/J.FERTNSTERT.2018.04.033/ATTACHMENT/C940F25F-C08F-4C25-9E6F-A228A74CD46D/MMC4.DOCX.
- Tekayev, M. and Vuruskan, A. K. (2021) 'Clinical values and advances in round spermatid injection (ROSI)', *Reproductive Biology*, 21(3), p. 100530. doi: 10.1016/j.repbio.2021.100530.
- Vloeberghs, V., Verheyen, G. and Tournaye, H. (2013) 'Intracytoplasmic spermatid injection and in vitro maturation: fact or fiction?', *Clinics*, 68(S1), pp. 151–156. doi: 10.6061/clinics/2013(Sup01)17.
- Zhu, H. et al. (2021) 'Transcriptome and DNA Methylation Profiles of Mouse Fetus and Placenta Generated by Round Spermatid Injection', *Frontiers in Cell and Developmental Biology*, 9. doi: 10.3389/fcell.2021.632183.

### Synthetic embryo like entities

- Garcia-Alegria, E. et al. (2021) 'In vitro differentiation of human embryonic stem cells to hemogenic endothelium and blood progenitors via embryoid body formation', *STAR protocols*. STAR Protoc, 2(1). doi: 10.1016/J.XPRO.2021.100367.
- Girgin, M. U. et al. (2021) 'Bioengineered embryoids mimic post-implantation development in vitro', *Nature Communications*, 12(1), p. 5140. doi: 10.1038/s41467-021-25237-8.
- Glykofrydis, F. et al. (2021) 'Bioengineering Self-Organizing Signaling Centers to Control Embryoid Body Pattern Elaboration', *ACS Synthetic Biology*, 10(6), pp. 1465–1480. doi: 10.1021/acssynbio.1c00060.
- Guerra-Crespo, M. et al. (2021) 'Embryoid Body Formation from Mouse and Human Pluripotent Stem Cells for Transplantation to Study Brain Microenvironment and Cellular Differentiation', *Methods in molecular biology (Clifton, N.J.)*. Methods Mol Biol. doi: 10.1007/7651\_2021\_433.
- Han, U. et al. (2021) 'Nano-structure of vitronectin/heparin on cell membrane for stimulating single cell in iPSC-derived embryoid body', *iScience*, 24(4), p. 102297. doi: 10.1016/j.isci.2021.102297.
- Liu, X. et al. (2021) 'Modelling human blastocysts by reprogramming fibroblasts into iBlastoids', *Nature*. Nature, 591(7851), pp. 627–632. doi: 10.1038/S41586-021-03372-Y.
- Mantziou, V. et al. (2021) 'In vitro teratogenicity testing using a 3D, embryo-like gastruloid system', *Reproductive Toxicology*, 105, pp. 72–90. doi: 10.1016/j.reprotox.2021.08.003.
- Naticchia, M. R. et al. (2021) 'Spatially controlled glycocalyx engineering for growth factor patterning in embryoid bodies', *Biomaterials Science*, 9(5), pp. 1652–1659. doi: 10.1039/D0BM01434F.
- Radojevic, B., Conley, S. M. and Bennett, L. D. (2021) 'Adherent but Not Suspension-Cultured Embryoid Bodies Develop into Laminated Retinal Organoids', *Journal of developmental biology. J Dev Biol*, 9(3). doi: 10.3390/JDB9030038.
- Rebuzzini, P. et al. (2021) 'Functional and structural phenotyping of cardiomyocytes in the 3D organization of embryoid bodies exposed to arsenic trioxide', *Scientific reports. Sci Rep*, 11(1). doi: 10.1038/S41598-021-02590-8.
- Tomoda, K. et al. (2021) 'Reprogramming epiblast stem cells into pre-implantation blastocyst cell-like cells', *Stem cell reports. Stem Cell Reports*, 16(5), pp. 1197–1209. doi: 10.1016/J.STEMCR.2021.03.016.

### Treatment add-ons

*Melatonin could improve women's IVF success - BioNews* (no date). Available at: [https://www.bionews.org.uk/page\\_92573](https://www.bionews.org.uk/page_92573) (Accessed: 13 December 2021).

*Micro-video: An Update on Randomized Control Trials Using PGT-A / ASRM* (no date). Available at: <https://www.asrm.org/resources/videos/learn-on-the-go---short-videos/micro-videos/2019-micro-videos/Update-on-randomized-control-trials-using-pgt-a/> (Accessed: 3 December 2021).

Adeniyi, T. et al. (2021) 'Clinical efficacy of hyaluronate-containing embryo transfer medium in IVF/ICSI treatment cycles: a cohort study', *Human reproduction open*. Hum Reprod Open, 2021(1). doi: 10.1093/HROOPEN/HOAB004.

Adhikari, D. (2013) 'In vitro activation of dormant follicles for fertility preservation', *Advances in experimental medicine and biology*. Adv Exp Med Biol, 761, pp. 29–42. doi: 10.1007/978-1-4614-8214-7\_4.

Agarwal, A. et al. (2019) 'Male oxidative stress infertility (MOSI): Proposed terminology and clinical practice guidelines for management of idiopathic male infertility', *World Journal of Men's Health*. Korean Society for Sexual Medicine and Andrology, 37(3), pp. 296–312. doi: 10.5534/wjmh.190055.

Alahmar, A. T. et al. (2021) 'Coenzyme Q10 Improves Sperm Parameters, Oxidative Stress Markers and Sperm DNA Fragmentation in Infertile Patients with Idiopathic Oligoasthenozoospermia', *The world journal of men's health*. World J Mens Health, 39(2). doi: 10.5534/WJMH.190145.

Anderson, R. A., Davies, M. C. and Lavery, S. A. (2020) 'Elective Egg Freezing for Non-Medical Reasons: Scientific Impact Paper No. 63', *BJOG : an international journal of obstetrics and gynaecology*. BJOG, 127(9), pp. e113–e121. doi: 10.1111/1471-0528.16025.

Atkinson, B. and Woodland, E. (2021) 'Embryo Glue: The Use of Hyaluronan in Embryo Transfer Media', *Seminars in reproductive medicine*. Semin Reprod Med, 39(1–02), pp. 24–26. doi: 10.1055/S-0041-1730415.

Balakier, H., Kuznyetsova, I. and Librach, C. L. (2020) 'The impact of hyaluronan-enriched culture medium and intrauterine infusion of human chorionic gonadotropin on clinical outcomes in blastocyst transfer cycles', *Systems biology in reproductive medicine*. Syst Biol Reprod Med, 66(2), pp. 79–88. doi: 10.1080/19396368.2020.1727995.

Bell, J. L. et al. (2020) 'E-Freeze - a randomised controlled trial evaluating the clinical and cost effectiveness of a policy of freezing embryos followed by thawed frozen embryo transfer compared with a policy of fresh embryo transfer, in women undergoing in vitro fertilisation: a statistical analysis plan', *Trials*. Trials, 21(1). doi: 10.1186/S13063-020-04441-9.

Ben Rafael, Z. (2021) 'Endometrial Receptivity Analysis (ERA) test: an unproven technology', *Human reproduction open*. Hum Reprod Open, 2021(2). doi: 10.1093/HROOPEN/HOAB010.

Bhatt, S. J. et al. (2021) 'Pregnancy outcomes following in vitro fertilization frozen embryo transfer (IVF-FET) with or without preimplantation genetic testing for aneuploidy (PGT-A) in women with recurrent pregnancy loss (RPL): a SART-CORS study', *Human Reproduction*. Oxford Academic, 36(8), pp. 2339–2344. doi: 10.1093/HUMREP/DEAB117.

Boediono, A. et al. (2021) 'Morphokinetics of embryos after IMSI versus ICSI in couples with sub-optimal sperm quality: A time-lapse study', *Andrologia*. Andrologia, 53(4). doi: 10.1111/AND.14002.

Capalbo, A. et al. (2021) 'Mosaic human preimplantation embryos and their developmental potential in a prospective, non-selection clinical trial', *The American Journal of Human Genetics*. Elsevier, 108(12), pp. 2238–2247. doi: 10.1016/J.AJHG.2021.11.002.

Chera-aree, P. et al. (2021) 'Comparison of pregnancy outcomes using a time-lapse monitoring system for embryo incubation versus a conventional incubator in in vitro fertilization: An age-stratification analysis', *Clinical and experimental reproductive medicine*. Clin Exp Reprod Med, 48(2), pp. 174–183. doi: 10.5653/CERM.2020.04091.

Cozzolino, M. et al. (2020) 'Evaluation of the endometrial receptivity assay and the preimplantation genetic test for aneuploidy in overcoming recurrent implantation failure', *Journal of assisted reproduction and genetics*. J Assist Reprod Genet, 37(12), pp. 2989–2997. doi: 10.1007/S10815-020-01948-7.

Dahdouh, E. M. (2021) 'Preimplantation Genetic Testing for Aneuploidy: A Review of the Evidence', *Obstetrics and gynecology*. NLM (Medline), 137(3), pp. 528–534. doi: 10.1097/AOG.0000000000004295.

Eravuchira, P. J. et al. (2018) 'Individual sperm selection by microfluidics integrated with interferometric phase microscopy', *Methods (San Diego, Calif.)*. Methods, 136, pp. 152–159. doi: 10.1016/J.YMETH.2017.09.009.

Espino, J. et al. (2019) 'Impact of Melatonin Supplementation in Women with Unexplained Infertility Undergoing Fertility Treatment', *Antioxidants*. Multidisciplinary Digital Publishing Institute (MDPI), 8(9). doi: 10.3390/ANTIOX8090338.

Farimani, M. et al. (2019) 'A report on three live births in women with poor ovarian response following intra-ovarian injection of platelet-rich plasma (PRP)', *Molecular biology reports. Mol Biol Rep*, 46(2), pp. 1611–1616. doi: 10.1007/S11033-019-04609-W.

Farzaneh, F. and Khastehfekr, F. (2021) 'The effect of topical endometrial scratching on pregnancy outcome in women with previous failure of intrauterine insemination: A non-randomized clinical trial', *International journal of reproductive biomedicine. Int J Reprod Biomed*, 19(5), pp. 465–470. doi: 10.18502/IJRM.V19I5.9256.

Fernando, S. and Rombauts, L. (2014) 'Melatonin: shedding light on infertility?--A review of the recent literature', *Journal of ovarian research. J Ovarian Res*, 7(1). doi: 10.1186/S13048-014-0098-Y.

Foyle, K. L. et al. (2021) 'Effect of Intralipid infusion on peripheral blood T cells and plasma cytokines in women undergoing assisted reproduction treatment', *Clinical & translational immunology. Clin Transl Immunology*, 10(8). doi: 10.1002/CTI2.1328.

Galiano, V. et al. (2021) "Add-Ons" for Assisted Reproductive Technology: Do Patients Get Honest Information from Fertility Clinics' Websites?', *Reproductive sciences (Thousand Oaks, Calif.). Reprod Sci*, 28(12), pp. 3466–3472. doi: 10.1007/S43032-021-00601-7.

Geng, L. et al. (2021) 'Laser-assisted hatching zona thinning does not improve the pregnancy outcomes of poor-quality blastocysts in frozen-thawed embryo transfer cycle: a retrospective cohort study', *Lasers in medical science. Lasers Med Sci*. doi: 10.1007/S10103-021-03409-8.

Hao, X. et al. (2021) 'Assisted Hatching Treatment of Piezo-Mediated Small Hole on Zona Pellucida in Morula Stage Embryos Improves Embryo Implantation and Litter Size in Mice', *Frontiers in cell and developmental biology. Front Cell Dev Biol*, 9. doi: 10.3389/FCELL.2021.746104.

Heymann, D. et al. (2020) 'Hyaluronic acid in embryo transfer media for assisted reproductive technologies', *The Cochrane database of systematic reviews. Cochrane Database Syst Rev*, 9(9). doi: 10.1002/14651858.CD007421.PUB4.

Hu, K. L. et al. (2020) 'Melatonin Application in Assisted Reproductive Technology: A Systematic Review and Meta-Analysis of Randomized Trials', *Frontiers in endocrinology. Front Endocrinol (Lausanne)*, 11, pp. 1–11. doi: 10.3389/FENDO.2020.00160.

Huo, P. et al. (2020) 'The effect of laser-assisted hatching on the methylation and expression pattern of imprinted gene IGF2/H19 in mouse blastocysts and offspring', *Journal of assisted reproduction and genetics. J Assist Reprod Genet*, 37(12), pp. 3057–3067. doi: 10.1007/S10815-020-01975-4.

Hwang, S. Y. et al. (2020) 'Clinical factors that affect the pregnancy rate in frozen-thawed embryo transfer in the freeze-all policy', *Yeungnam University journal of medicine. Yeungnam Univ J Med*, 37(1), pp. 47–53. doi: 10.12701/YUJM.2019.00346.

Jia, Y. et al. (2021) 'Effectiveness comparison between Endometrial Receptivity Array, Immune Profiling and the combination in treating patients with multiple implantation failure', *American Journal of Reproductive Immunology. John Wiley & Sons, Ltd*. doi: 10.1111/AJI.13513.

Jing, T. et al. (2017) 'Melatonin levels in follicular fluid as markers for IVF outcomes and predicting ovarian reserve', *Reproduction (Cambridge, England). Reproduction*, 153(4), pp. 443–451. doi: 10.1530/REP-16-0641.

Kalyoncu, Ş., Yazıcıoğlu, A. and Demir, M. (2021) 'Endometrial scratching for poor responders based on the Bologna criteria in ICSI fresh embryo transfer cycles: a preliminary retrospective cohort study', *Journal of the Turkish German Gynecological Association. J Turk Ger Gynecol Assoc*, 22(1), pp. 47–52. doi: 10.4274/JTGGA.GALENOS.2021.2020.0127.

Kawamura, K., Kawamura, N. and Hsueh, A. J. W. (2016) 'Activation of dormant follicles: a new treatment for premature ovarian failure?', *Current opinion in obstetrics & gynecology. NIH Public Access*, 28(3), p. 217. doi: 10.1097/GCO.0000000000000268.

Lacey, L. et al. (2021) 'Assisted hatching on assisted conception (in vitro fertilisation (IVF) and intracytoplasmic sperm injection (ICSI))', *The Cochrane database of systematic reviews. Cochrane Database Syst Rev*, 3(3). doi: 10.1002/14651858.CD001894.PUB6.

Lammers, J. et al. (2021) 'Modification of late human embryo development after blastomere removal on day 3 for preimplantation genetic testing', *Systems biology in reproductive medicine*. Syst Biol Reprod Med, 67(2), pp. 121–126. doi: 10.1080/19396368.2020.1834008.

Lan, K. C. et al. (2020) 'Evaluation of the effect of the elective blastocyst-stage embryo transfer and freezing strategy on the abandonment of frozen embryos under the Taiwan National Assisted Reproduction Act', *Journal of assisted reproduction and genetics*. J Assist Reprod Genet, 37(4), pp. 973–982. doi: 10.1007/S10815-020-01699-5.

Lensen, S. F. et al. (2021) 'Endometrial injury in women undergoing in vitro fertilisation (IVF)', *The Cochrane database of systematic reviews*. Cochrane Database Syst Rev, 6(6). doi: 10.1002/14651858.CD009517.PUB4.

Lensen, S. et al. (2021) 'IVF add-ons in Australia and New Zealand: A systematic assessment of IVF clinic websites', *Australian and New Zealand Journal of Obstetrics and Gynaecology*. John Wiley and Sons Inc, 61(3), pp. 430–438. doi: 10.1111/ajo.13321.

Li, M. et al. (2021) 'Day 3 time lapse selection is beneficial for the patients with no good-quality embryos', *Gynecological endocrinology : the official journal of the International Society of Gynecological Endocrinology*. Gynecol Endocrinol, 37(1), pp. 31–34. doi: 10.1080/09513590.2020.1750002.

Li, X. et al. (2021) 'Comparison of IVF and IVM outcomes in the same patient treated with a modified IVM protocol along with an oocytes-maturing system containing melatonin: A pilot study', *Life sciences*. Life Sci, 264. doi: 10.1016/J.LFS.2020.118706.

Liu, C. et al. (2020) 'Higher implantation and live birth rates with laser zona pellucida breaching than thinning in single frozen-thawed blastocyst transfer', *Lasers in medical science*. Lasers Med Sci, 35(6), pp. 1349–1355. doi: 10.1007/S10103-019-02946-7.

Liu, X. et al. (2020) 'Characterization of seminal plasma proteomic alterations associated with the IVF and rescue-ICSI pregnancy in assisted reproduction', *Andrology*. Andrology, 8(2), pp. 407–420. doi: 10.1111/ANDR.12687.

Luño, V. et al. (2020) 'Specific phosphodiesterase type-10 inhibitor, papaverine, added after the cooling period improves canine sperm quality', *Animal biotechnology*. Anim Biotechnol. doi: 10.1080/10495398.2020.1811714.

Madhuri, M. . et al. (2021) 'The effect of endometrial scratching on pregnancy rate after failed intrauterine insemination: A Randomised Controlled Trail', *European journal of obstetrics, gynecology, and reproductive biology*. Eur J Obstet Gynecol Reprod Biol, 268, pp. 37–42. doi: 10.1016/J.EJOGRB.2021.10.028.

Maged, A. M. et al. (2021) 'Endometrial scratch injury in infertile women seeking conception through natural or intrauterine insemination cycles: A systematic review and meta-analysis', *International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics*. Int J Gynaecol Obstet. doi: 10.1002/IJGO.14030.

Mangoli, E. et al. (2020) 'Association between early embryo morphokinetics plus transcript levels of sperm apoptotic genes and clinical outcomes in IMSI and ICSI cycles of male factor patients', *Journal of assisted reproduction and genetics*. J Assist Reprod Genet, 37(10), pp. 2555–2567. doi: 10.1007/S10815-020-01910-7.

Marin, L. et al. (2021) 'Sildenafil Supplementation for Women Undergoing Infertility Treatments: A Systematic Review and Meta-Analysis of Randomized Controlled Trials', *Journal of clinical medicine*. J Clin Med, 10(19). doi: 10.3390/JCM10194346.

McQueen, D. B. et al. (2021) 'Can embryo morphokinetic parameters predict euploid pregnancy loss?', *Fertility and sterility*. Fertil Steril, 115(2), pp. 382–388. doi: 10.1016/J.FERTNSTERT.2020.08.021.

Moini, A. et al. (2020) 'The Effect of Vaginal Sildenafil on The Outcome of Assisted Reproductive Technology Cycles in Patients with Repeated Implantation Failures: A Randomized Placebo-Controlled Trial', *International journal of fertility & sterility*. Int J Fertil Steril, 13(4), pp. 289–295. doi: 10.22074/IJFS.2020.5681.

Moubasher, A. et al. (2021) 'An Open Prospective Study on Whether Intracytoplasmic Morphologically Selected Sperm Injection (IMSI) Offers a Better Outcome Than Conventional Intracytoplasmic Sperm Injection (ICSI)', *Cureus*. Cureus, 13(11). doi: 10.7759/CUREUS.19181.

Nikshad, A. et al. (2021) 'Advances of microfluidic technology in reproductive biology', *Life sciences*. Life Sci, 265. doi: 10.1016/J.LFS.2020.118767.

Nosrati, R. et al. (2017) 'Microfluidics for sperm analysis and selection', *Nature reviews. Urology*. Nat Rev Urol, 14(12), pp. 707–730. doi: 10.1038/NRUROL.2017.175.

Oxman, A. D. et al. (2020) 'Development of a checklist for people communicating evidence-based information about the effects of healthcare interventions: a mixed methods study', *BMJ open*. BMJ Open, 10(7). doi: 10.1136/BMJOPEN-2019-036348.

Oxman, A. D. and Paulsen, E. J. (2019) 'Who can you trust? A review of free online sources of "trustworthy" information about treatment effects for patients and the public', *BMC Medical Informatics and Decision Making*. BioMed Central Ltd, 19(1), pp. 1–17. doi: 10.1186/S12911-019-0772-5/TABLES/5.

Ozcan, P. et al. (2021) 'Does the use of microfluidic sperm sorting for the sperm selection improve in vitro fertilization success rates in male factor infertility?', *The journal of obstetrics and gynaecology research. J Obstet Gynaecol Res*, 47(1), pp. 382–388. doi: 10.1111/JOG.14539.

Paffoni, A. et al. (2021) 'Should rescue ICSI be re-evaluated considering the deferred transfer of cryopreserved embryos in in-vitro fertilization cycles? A systematic review and meta-analysis', *Reproductive biology and endocrinology : RB&E*. Reprod Biol Endocrinol, 19(1). doi: 10.1186/S12958-021-00784-3.

Pan, J. P. et al. (2021) 'Obstetric and neonatal outcomes after frozen-thawed embryos transfer with laser-assisted hatching: a retrospective cohort study', *Archives of gynecology and obstetrics*. Arch Gynecol Obstet. doi: 10.1007/S00404-021-06153-0.

Pini, T. et al. (2020) 'Mitigating the Effects of Oxidative Sperm DNA Damage', *Antioxidants (Basel, Switzerland)*. Antioxidants (Basel), 9(7), pp. 1–13. doi: 10.3390/ANTIOX9070589.

Quinn, M. M. et al. (2018) 'Microfluidic sorting selects sperm for clinical use with reduced DNA damage compared to density gradient centrifugation with swim-up in split semen samples', *Human reproduction (Oxford, England)*. Hum Reprod, 33(8), pp. 1388–1393. doi: 10.1093/HUMREP/DEY239.

Racca, A. et al. (2021) 'Is a freeze-all policy the optimal solution to circumvent the effect of late follicular elevated progesterone? A multicentric matched-control retrospective study analysing cumulative live birth rate in 942 non-elective freeze-all cycles', *Human reproduction (Oxford, England)*. Hum Reprod, 36(9), pp. 2463–2472. doi: 10.1093/HUMREP/DEAB160.

Reignier, A. et al. (2021) 'Time-lapse technology improves total cumulative live birth rate and shortens time to live birth as compared to conventional incubation system in couples undergoing ICSI', *Journal of assisted reproduction and genetics*. J Assist Reprod Genet, 38(4), pp. 917–923. doi: 10.1007/S10815-021-02099-Z.

Rimmer, M. P. et al. (2021) 'Intralipid infusion at time of embryo transfer in women with history of recurrent implantation failure: A systematic review and meta-analysis', *The journal of obstetrics and gynaecology research. J Obstet Gynaecol Res*, 47(6), pp. 2149–2156. doi: 10.1111/JOG.14763.

Saab, W. et al. (2021) 'A systemic review of intravenous immunoglobulin G treatment in women with recurrent implantation failures and recurrent pregnancy losses', *American journal of reproductive immunology (New York, N.Y. : 1989)*. Am J Reprod Immunol, 85(4). doi: 10.1111/AJI.13395.

Sanders, K. D. et al. (2021) 'Analysis of IVF live birth outcomes with and without preimplantation genetic testing for aneuploidy (PGT-A): UK Human Fertilisation and Embryology Authority data collection 2016–2018', *Journal of Assisted Reproduction and Genetics* 2021. Springer, pp. 1–9. doi: 10.1007/S10815-021-02349-0.

Sarkar, P. et al. (2021) 'The role of preimplantation genetic testing for aneuploidy in a good prognosis IVF population across different age groups', <https://doi.org/10.1080/19396368.2021.1954725>. Taylor & Francis, 67(5), pp. 366–373. doi: 10.1080/19396368.2021.1954725.

Saxtorph, M. H. et al. (2020) 'Assessing endometrial receptivity after recurrent implantation failure: a prospective controlled cohort study', *Reproductive biomedicine online*. Reprod Biomed Online, 41(6), pp. 998–1006. doi: 10.1016/J.RBMO.2020.08.015.

Scarfia, C. et al. (2021) 'Does Ovarian Endometriosis Increase Oocyte Sensitivity to ICSI-Induced Mechanical Damage?', *Journal of Clinical Medicine* 2021, Vol. 10, Page 1757. Multidisciplinary Digital Publishing Institute, 10(8), p. 1757. doi: 10.3390/JCM10081757.

Sciorio, R. et al. (2020) 'Blastocyst collapse as an embryo marker of low implantation potential: a time-lapse multicentre study', *Zygote*. Cambridge University Press, 13(2), pp. 1–9. doi: 10.1017/s0967199420000623.

Sciorio, R. and Meseguer, M. (2021) 'Focus on time-lapse analysis: blastocyst collapse and morphometric assessment as new features of embryo viability', *Reproductive BioMedicine Online*. Elsevier, 43(5), pp. 821–832. doi: 10.1016/J.RBMO.2021.08.008.

Sfakianoudis, K. et al. (2021) 'The Role of Uterine Natural Killer Cells on Recurrent Miscarriage and Recurrent Implantation Failure: From Pathophysiology to Treatment', *Biomedicines. Biomedicines*, 9(10). doi: 10.3390/BIOMEDICINES9101425.

Sfakianoudis, K. et al. (2020) 'Reactivating Ovarian Function through Autologous Platelet-Rich Plasma Intraovarian Infusion: Pilot Data on Premature Ovarian Insufficiency, Perimenopausal, Menopausal, and Poor Responder Women', *Journal of clinical medicine. J Clin Med*, 9(6), pp. 1–25. doi: 10.3390/JCM9061809.

Sharpe, A., Bhandari, H. and Miller, D. (2020) 'Is there a role for phosphodiesterase inhibitors in the treatment of male subfertility?', *Human fertility (Cambridge, England)*. Hum Fertil (Camb), pp. 1–11. doi: 10.1080/14647273.2020.1793420.

Sheikhansari, G. et al. (2020) 'Etiology and management of recurrent implantation failure: A focus on intra-uterine PBMC-therapy for RIF', *Journal of reproductive immunology. J Reprod Immunol*, 139. doi: 10.1016/J.JRI.2020.103121.

Shibahara, T. et al. (2021) 'Early rescue oocyte activation for activation-impaired oocytes with no second polar body extrusion after intracytoplasmic sperm injection', *Journal of Assisted Reproduction and Genetics 2021* 38:5. Springer, 38(5), pp. 1061–1068. doi: 10.1007/S10815-021-02089-1.

Silla, A. J., Keogh, L. M. and Byrne, P. G. (2017) 'Sperm motility activation in the critically endangered booroolong frog: the effect of medium osmolality and phosphodiesterase inhibitors', *Reproduction, fertility, and development. Reprod Fertil Dev*, 29(11), pp. 2277–2283. doi: 10.1071/RD17012.

Silvestri, G. et al. (2021) 'Preimplantation genetic testing for aneuploidy improves live birth rates with in vitro produced bovine embryos: A blind retrospective study', *Cells. MDPI*, 10(9). doi: 10.3390/CELLS10092284/S1.

Simón, C. et al. (2020) 'A 5-year multicentre randomized controlled trial comparing personalized, frozen and fresh blastocyst transfer in IVF', *Reproductive BioMedicine Online*. Elsevier Ltd. doi: 10.1016/j.rbmo.2020.06.002.

Sun, B. and Yeh, J. (2020) 'Calcium Oscillatory Patterns and Oocyte Activation During Fertilization: a Possible Mechanism for Total Fertilization Failure (TFF) in Human In Vitro Fertilization?', *Reproductive Sciences 2020* 28:3. Springer, 28(3), pp. 639–648. doi: 10.1007/S43032-020-00293-5.

Tamura, H. et al. (2020) 'Importance of Melatonin in Assisted Reproductive Technology and Ovarian Aging', *International journal of molecular sciences. Int J Mol Sci*, 21(3). doi: 10.3390/IJMS21031135.

Tamura, H. et al. (2012) 'The role of melatonin as an antioxidant in the follicle', *Journal of Ovarian Research. Springer Nature*, 5(1), p. 5. doi: 10.1186/1757-2215-5-5.

Tao, Y. and Wang, N. (2020) 'Adjuvant Vaginal Use of Sildenafil Citrate in a Hormone Replacement Cycle Improved Live Birth Rates Among 10,069 Women During First Frozen Embryo Transfers', *Drug design, development and therapy. Drug Des Devel Ther*, 14, pp. 5289–5297. doi: 10.2147/DDDT.S281451.

Tiegs, A. W. et al. (2021) 'A multicenter, prospective, blinded, nonselection study evaluating the predictive value of an aneuploid diagnosis using a targeted next-generation sequencing-based preimplantation genetic testing for aneuploidy assay and impact of biopsy', *Fertility and Sterility. Elsevier*, 115(3), pp. 627–637. doi: 10.1016/J.FERTNSTERT.2020.07.052.

Tilia, L. et al. (2020) 'Oocyte meiotic spindle morphology is a predictive marker of blastocyst ploidy-a prospective cohort study', *Fertility and sterility. Fertil Steril*, 113(1), pp. 105-113.e1. doi: 10.1016/J.FERTNSTERT.2019.08.070.

Uzun, K. N. et al. (2021) 'Comparison of the rates for reaching the blastocyst stage between normal and abnormal pronucleus embryos monitored by a time-lapse system in IVF patients', *Journal of the Turkish German Gynecological Association. J Turk Ger Gynecol Assoc*, 22(2), pp. 120–126. doi: 10.4274/JTGGA.GALENOS.2020.2020.0033.

Xu, W. et al. (2021) 'Laser-assisted hatching in lower grade cleavage stage embryos improves blastocyst formation: results from a retrospective study', *Journal of ovarian research. J Ovarian Res*, 14(1). doi: 10.1186/S13048-021-00844-7.

Xu, Z. et al. (2021) 'Calcium Ionophore (A23187) Rescues the Activation of Unfertilized Oocytes After Intracytoplasmic Sperm Injection and Chromosome Analysis of Blastocyst After Activation', *Frontiers in Endocrinology*. Frontiers Media S.A., 12, p. 692082. doi: 10.3389/FENDO.2021.692082/FULL.

Yan, J. et al. (2021) 'Live Birth with or without Preimplantation Genetic Testing for Aneuploidy', *New England Journal of Medicine*, 385(22), pp. 2047–2058. doi: 10.1056/NEJMoa2103613.

Yin, C. et al. (2021) 'Efficiency and safety of laser-assisted hatching on vitrified-warmed blastocyst transfer cycles: a prospective control trial', *Lasers in medical science*. Lasers Med Sci. doi: 10.1007/S10103-021-03453-4.

Yin, M. et al. (2021) 'Efficacy of artificial oocyte activation in patients with embryo developmental problems: a sibling oocyte control study', *Archives of gynecology and obstetrics*. Arch Gynecol Obstet. doi: 10.1007/S00404-021-06329-8.

Yung, S. S. F. et al. (2021) 'Hyaluronic acid-enriched transfer medium for frozen embryo transfer: a randomized, double-blind, controlled trial', *Fertility and sterility*. Fertil Steril, 116(4), pp. 1001–1009. doi: 10.1016/J.FERTNSTERT.2021.02.015.

Zhang, J. et al. (2020) 'In vivo and in vitro activation of dormant primordial follicles by EGF treatment in mouse and human', *Clinical and Translational Medicine*. Wiley-Blackwell, 10(5). doi: 10.1002/CTM2.182.

Zhou, P. et al. (2020) 'The effect of intralipid on pregnancy outcomes in women with previous implantation failure in in vitro fertilization/intracytoplasmic sperm injection cycles: A systematic review and meta-analysis', *European journal of obstetrics, gynecology, and reproductive biology*. Eur J Obstet Gynecol Reprod Biol, 252, pp. 187–192. doi: 10.1016/J.EJOGRB.2020.06.057.