

by an international publication grant: International Research Collaboration Grant (NKB-1944/UN2.R3.1/HKP.05.00/2019) of the year 2019.

REFERENCES

- [1] M. R. Sadeghi, "The 40th anniversary of IVF: Has ART's success reached its peak?," *J. Reprod. Fertil.*, vol. 19, no. 2. Avicenna Research Institute, pp. 67–68, Apr. 01, 2018, Accessed: Feb. 17, 2021. [Online]. Available: <http://www.abc.net.au/radionational/>.
- [2] B. Wiweko *et al.*, "Correlation between luteinizing hormone receptor gene expression in human granulosa cells with oocyte quality in poor responder patients undergoing in vitro fertilization: A cross-sectional study [version 1; peer review: 2 approved, 1 approved with reserv.," *F1000Res*, vol. 8, no. 16, pp. 1–13, 2019, doi: 10.12688/f1000research.17036.1.
- [3] S. Moustafa and S. Young, "Diagnostic and therapeutic options in recurrent implantation failure," *F1000Res*, vol. 9, no. 1, pp. 1–9, 2020, doi: 10.12688/f1000research.22403.1.
- [4] J. Patel, A. Patel, J. Banker, S. Shah, and M. Banker, "Personalized embryo transfer helps in improving In vitro fertilization/ICSI outcomes in patients with recurrent implantation failure," *J. Hum. Reprod. Sci.*, vol. 12, no. 1, pp. 59–66, Jan. 2019, doi: 10.4103/jhrs.JHRS_74_18.
- [5] M. Reljić, J. Knez, V. Kovač, and B. Kovačić, "Endometrial injury, the quality of embryos, and blastocyst transfer are the most important prognostic factors for in vitro fertilization success after previous repeated unsuccessful attempts," *J. Assist. Reprod. Genet.*, vol. 34, no. 6, pp. 775–779, Jun. 2017, doi: 10.1007/s10815-017-0916-4.
- [6] F. Fesahat, F. Montazeri, M. H. Sheikha, H. Saeedi, R. D. Firouzabadi, and S. M. Kalantar, "Frequency of chromosomal aneuploidy in high quality embryos from young couples using preimplantation genetic screening," *Int J Reprod Biomed*, vol. 15, no. 5, pp. 297–304, May 2017, doi: 10.29252/ijrm.15.5.297.
- [7] R. Sciorio and M. Dattilo, "PGT-A preimplantation genetic testing for aneuploidies and embryo selection in routine ART cycles: Time to step back?," *Clin. Genet*, vol. 98, no. 2, pp. 107–115, Aug. 2020, doi: 10.1111/cge.13732.
- [8] X. W. Gu *et al.*, "ATP mediates the interaction between human blastocyst and endometrium," *Cell Prolif.*, vol. 53, no. 2, p. e12737, Feb. 2020, doi: 10.1111/cpr.12737.
- [9] L. Guzman *et al.*, "The number of biopsied trophectoderm cells may affect pregnancy outcomes," *J. Assist. Reprod. Genet.*, vol. 36, no. 1, pp. 145–151, Jan. 2019, doi: 10.1007/s10815-018-1331-1.
- [10] L. Huang, B. Bogale, Y. Tang, S. Lu, X. S. Xie, and C. Racowsky, "Noninvasive preimplantation genetic testing for aneuploidy in spent medium may be more reliable than trophectoderm biopsy," in *Proc. Natl. Acad. Sci. U. S. A.*, 2019, vol. 116, no. 28, pp. 14105–14112, doi: 10.1073/pnas.1907472116.
- [11] V. Kuznyetsov *et al.*, "Minimally Invasive Cell-Free Human Embryo Aneuploidy Testing (miPGT-A) Utilizing Combined Spent Embryo Culture Medium and Blastocoel Fluid –Towards Development of a Clinical Assay," *Sci. Rep.*, vol. 10, no. 1, p. 7244, Dec. 2020, doi: 10.1038/s41598-020-64335-3.
- [12] A. V. Timofeeva, V. V. Chagovets, Y. S. Drapkina, N. P. Makarova, E. A. Kalinina, and G. T. Sukhikh, "Cell-free, embryo-specific snRNA as a molecular biological bridge between patient fertility and IVF efficiency," *Int. J. Mol. Sci.*, vol. 20, no. 12, p. 2912, Jun. 2019, doi: 10.3390/ijms20122912.
- [13] L. Yang *et al.*, "Presence of embryonic DNA in culture medium," *Oncotarget*, vol. 8, no. 40, pp. 67805–67809, Sep. 2017, doi: 10.18632/oncotarget.18852.
- [14] S. Stigliani *et al.*, "Non-invasive mitochondrial DNA quantification on Day 3 predicts blastocyst development: A prospective, blinded, multi-centric study," *Mol. Hum. Reprod.*, vol. 25, no. 9, pp. 527–537, Aug. 2019, doi: 10.1093/molehr/gaz032.
- [15] D. Cimadomo *et al.*, "Definition and validation of a custom protocol to detect miRNAs in the spent media after blastocyst culture: Searching for biomarkers of implantation," *Hum. Reprod.*, vol. 34, no. 9, pp. 1746–1761, Sep. 2019, doi: 10.1093/humrep/dez119.
- [16] F. Carvalho *et al.*, "ESHRE PGT Consortium good practice recommendations for the detection of monogenic disorders†," *Hum. Reprod. Open*, vol. 2020, no. 3, pp. 1–18, Mar. 2020, doi: 10.1093/hropen/hoaa018.
- [17] C. Katevatis, A. Fan, and C. M. Klapperich, "Low concentration DNA extraction and recovery using a silica solid phase," *PLoS One*, vol. 12, no. 5, p. e0176848, May 2017, doi: 10.1371/journal.pone.0176848.
- [18] D. Higgins, J. Kaidonis, G. Townsend, and J. J. Austin, "Evaluation of carrier RNA and low volume demineralization for recovery of nuclear DNA from human teeth," *Forensic Sci Med Pathol*, vol. 10, no. 1, pp. 56–61, Mar. 2014, doi: 10.1007/s12024-013-9519-2.
- [19] K. J. Shaw *et al.*, "The use of carrier RNA to enhance DNA extraction from microfluidic-based silica monoliths," *Anal. Chim. Acta*, vol. 652, no. 1–2, pp. 231–233, 2009, doi: 10.1016/j.aca.2009.03.038.
- [20] S. I. Pearlman *et al.*, "Low-Resource Nucleic Acid Extraction Method Enabled by High-Gradient Magnetic Separation," *ACS Appl. Mater. Interfaces*, vol. 12, no. 11, pp. 12457–12467, Mar. 2020, doi: 10.1021/acsami.9b21564.
- [21] R. Kishore, W. Reef Hardy, V. J. Anderson, N. A. Sanchez, and M. R. Buoncristiani, "Optimization of DNA extraction from low-yield and degraded samples using the BioRobot® EZ1 and BioRobot® M48," *J. Forensic Sci.*, vol. 51, no. 5, pp. 1055–1061, Sep. 2006, doi: 10.1111/j.1556-4029.2006.00204.x.
- [22] L. Galluzzi *et al.*, "Extracellular embryo genomic DNA and its potential for genotyping applications," *Futur. Sci. OA*, vol. 1, no. 4, p. FSO62, Nov. 2015, doi: 10.4155/fso.15.62.
- [23] P. A. Reddy, M. Bhavanishankar, J. Bhagavatula, K. Harika, R. S. Mahla, and S. Shivaji, "Improved methods of carnivore faecal sample preservation, DNA extraction and quantification for accurate genotyping of wild tigers," *PLoS One*, vol. 7, no. 10, p. e46732, Oct. 2012, doi: 10.1371/journal.pone.0046732.
- [24] M. Vera-Rodriguez *et al.*, "Origin and composition of cell-free DNA in spent medium from human embryo culture during preimplantation development," *Hum. Reprod.*, vol. 33, no. 4, pp. 745–756, Apr. 2018, doi: 10.1093/humrep/dey028.
- [25] S. Hughes, N. Arneson, S. Done, and J. Squire, "The use of whole genome amplification in the study of human disease," *Prog. Biophys. Mol.*, vol. 88, no. 1. Prog Biophys Mol Biol, pp. 173–189, May 2005, doi: 10.1016/j.pbiomolbio.2004.01.007.
- [26] H. Wahyuningsih *et al.*, "Optimization of PCR condition: The first study of high-resolution melting technique for screening of APOA1 variance," *Yonago acta med*, vol. 60, no. 1, pp. 24–30, Mar. 2017, Accessed: Feb. 17, 2021. [Online]. Available: <https://pubmed.ncbi.nlm.nih.gov/28331418/>.