



Leaders in research and innovation

# Biennial Research Report July 2021 to June 2023

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# Monash IVF Group



**Mr Michael Knaap**  
**Managing Director &**  
**Chief Executive Officer**

The Monash IVF Group has a longstanding commitment to the pursuit of excellence in assisted reproductive science and the advancement of new technologies and diagnostic tools to improve the outcomes of hopeful parents. A new research governance framework was implemented in 2022 to focus the attention on the company's growing research capabilities across all sites and departments, and to provide a unique platform for the nurturing of projects from inception to translation. Heading the new research governance framework is the Research and Translation Executive Committee (RTEC) independently chaired by distinguished scientist Professor Jock Findlay AO of the Hudson Institute of Medical Research. It reports to the Board via the CEO and a Board Liaison, whilst three subcommittees provide clinical and academic expertise, and report to the Monash Research and Education Foundation (MREF), chaired by Australia's leading clinical andrologist Professor Robert McLachlan AM.

The Monash IVF Group has awarded substantial funding for the financial years 2022 and 2023, and will continue as the forerunner of research innovation, investing in sustainable research partnerships, and rewarding commercial opportunities.

# Research governance framework

**Consolidating and expanding research opportunities within the Monash IVF Group, the strategic research governance framework aims to:**

- improve the coordination and oversight of research activities and medical innovations,
- capitalise on the growing diversity of expertise across our departments,
- encourage staff participation in research and foster external collaborations, and
- streamline our research to improve our patients' experience and their clinical outcomes.

## **Research and Translation Executive Committee (RTEC)**

### **Chair, Professor Jock Findlay AO**

RTEC provides high-level leadership and counsel on research activities, funding policies, new technologies and best clinical practice, and has oversight of translational research, commercial ventures, IP agreements, and project compliance. The Monash Education and Research Foundation (MREF) and its three subcommittees report to RTEC.

Since its establishment in March 2022, RTEC has evaluated the PIEZO ICSI injection of sperm for use in clinical practice, new funding initiatives for research projects, research and compliance guidelines, and pathways to support novel technology or treatments.

## **Monash Research and Education Foundation (MREF)**

### **Chair, Professor Robert McLachlan AM**

MREF facilitates, coordinates, and implements all research activities, policies, and funding opportunities within the Monash IVF Group. Chaired by our nationally recognised clinical andrologist, Professor Rob McLachlan AM, and is the first point of call for all research related communications and supports three research subcommittees.

### **Subcommittee 1**

#### **Research, New Technologies & Science Communications**

Chair, Professor Kelton Tremellen

### **Subcommittee 2**

#### **Science & Psychosocial Research**

Chair, Professor Deirdre Zander-Fox

### **Subcommittee 3**

#### **Education & Training**

Chair, Dr Michael Costello

# Research highlights

## Implementation of new technology: PIEZO ICSI

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The PIEZO ICSI technology has been used by several IVF clinics in Japan for many years with excellent results, but very few IVF companies have adopted the technology outside of Japan. In 2019, the Monash IVF Group recognised that there may be advantages in the use of this technique for our patients. A series of studies were conducted to evaluate its efficacy and the findings have verified that rates of fertilisation are superior to traditional ICSI, with fewer eggs being damaged during the process. Embryo quality and pregnancy rates were comparable in both ICSI techniques. The Monash IVF Group has now instituted the clinical use of PIEZO ICSI across all Company sites for eligible patients.

## Monash IVF Group Biennial Clinical Meeting 2023

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The Monash IVF Group Biennial Clinical Meeting held in Sydney this year was an overwhelming success, with engaging and informative presentations by distinguished international and local speakers. Topics included – ‘New Directions in ART and Imaging’, ‘Future of Embryo Selection’ and ‘Male Infertility: From Biology to Baby’. Important case studies, emerging treatments and improvements to patient care were discussed, with the attendees having numerous valuable networking opportunities throughout the three-day event. We are grateful to our sponsors for their generous contributions which enabled the assembly of experts in the field and the valuable interchange of ideas. The 2025 meeting is scheduled to be held in Adelaide, South Australia.

## Major commercial partnerships

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### Symex Labs – Innovative biosensor

The Monash IVF Group has partnered with Symex Labs to introduce an innovative, wearable hormone biosensor which will allow IVF clinics to receive hormone tracking data from their patients remotely and accurately. The device is similar to the continuous glucose monitors currently used in type 1 diabetes management. Initial prototype studies are currently underway, with the plan for pre-clinical trials to be conducted in the near future.

### Memphasys Ltd - FELIX™ sperm separation device

For several years the Monash IVF Group has partnered with Memphasys to assist in the development and testing of their novel sperm separation device: FELIX™. This device uses electrophoresis to separate sperm in a rapid fashion (<5 minutes) with the aim to reduce the time it takes to prepare sperm in the laboratory for treatment cycles and to provide a prepared sperm sample with lower levels of DNA fragmentation compared to traditional methods of sperm preparation. Monash IVF Group commenced a multi-centre sibling oocyte clinical trial to assess the efficacy of the FELIX™ device in mid-2022 and continue to work closely with Memphasys to further develop their device as key opinion leaders.

## Staff educational events

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Our highly popular Scientists' Days, held annually in Victoria, Queensland, and South Australia, are convivial forums for presentations by staff and external collaborators from universities and research institutions. Open discussions on current research projects and emerging technologies in reproductive medicine provide valuable learning experiences and foster positive collegial interactions. The first Nurses' Day was held in May 2023.

# Grants, awards, prizes

## Medical Research Future Fund (MRFF) Grant for Mitochondrial Donation Research

The Monash IVF Group is proud to be a co-recipient of a \$15 million federal government Medical Research Future Fund (MRFF) with Monash University and the Murdoch Children's Research Institute. The mitoHOPE (*Healthy Outcomes Pilot and Evaluation*) Project brings together a group of experts in fertility, embryology, genetics, social science, and clinical trials. The project is led by Professor John Carroll, Director of the Monash Biomedicine Discovery Institute (BDI), an expert in mitochondrial activity in egg and embryo development. The awarding of the MRFF grant to the Melbourne researchers comes almost a year after the Mitochondrial Donation Law Reform Bill (Maeve's Law) passed Federal Parliament.

Chief investigators on this five-year project include Monash IVF Group Medical Director, **Professor Luk Rombauts**; Monash IVF Group Chief Scientific Officer, **Professor Deirdre Zander-Fox**; and Monash IVF Group Medical Director of Genetics, **Dr Tristan Hardy**. The grant will fund a pilot program, including a clinical trial to help determine whether mitochondrial donation will be introduced into formal clinical practice in Australia in the future.

## Fertility Society of Australia and New Zealand (FSANZ) Grants

Two FSANZ Grants were awarded to the Monash IVF Group in 2023:

Ferring Grant for \$25,000 was awarded to Allison Henwood for the project - Concordance of segmental duplications and deletions in subsequent trophectoderm biopsies and ICM of preimplantation human embryos and its implication for suitability for transfer.

Grant Supervisors: **Professor Deirdre Zander-Fox** and **Associate Professor Mark Green**

Merck Grant for \$20,000 was awarded to Carolina Lliberos/**Carla Pietrucci** for the project - Use of follicular fluid biomarkers to determine oocyte quality and in vitro interventions to counter the effects of maternal age on oocyte quality.

Grant Supervisors: **Professor Deirdre Zander-Fox** and **Associate Professor Mark Green**

# Research presentations

The Monash IVF Group continues to have a strong presence on the national and international stage in reproductive science as invited speakers and conference presenters.

Collectively, Monash IVF Group presented 13 oral or poster presentations in 2022 and 15 oral or poster presentations in 2023 at international and national scientific conferences. Notably, a broad range of research was presented from clinical, embryological, genetic, pathological, nursing, and psychosocial projects. **Lee-Sarose Orevich**, from Monash IVF Queensland, won best oral presentation at the 2022 Scientists in Reproductive Technologies (SIRT) meeting, subsequently being presented at the 39th European Society for Human Reproductive and Embryology Conference in Denmark.





# Key current projects

Our fertility clinicians, researchers and professional staff dedicate themselves to improving the patient experience and providing successful pregnancy outcomes.

The Monash IVF Group strongly supports important interventional and observational projects to continually advance our understanding of reproductive science and refine our methodologies and treatments with 52 projects on our research register for FY22-23.

## **A non-inferiority study to assess the safety and performance of the Felix™ System vs Swim-Up and Discontinuous Gradient Centrifugation to isolate spermatozoa prior to its use in human intracytoplasmic spermatozoa injection (ICSI) assisted reproductive technology (ART)**

**Prof Rob McLachlan, A/Prof Hassan Bakos, Prof Deidre Zander-Fox, Dr Leanne-Pacella-Ince**

*Monash IVF Group, University of Newcastle and Memphasys Ltd*

Current semen preparation methods in Assisted Reproductive Technology (ART) do not assess the molecular integrity of sperm. The selection of sperm for ICSI is usually based on morphological suitability which is determined by low magnification screening. Sperm with high levels of DNA damage are known to result in reduced fertilisation rates, poorer embryo development, reduced pregnancy rates and increased levels of miscarriage. The Felix™ System, manufactured by Memphasys Ltd, uses electrophoresis and size-exclusion membranes to separate DNA intact sperm. The Monash IVF Group has partnered with Memphasys to undertake a clinical study to evaluate this new technology. Density Gradient Centrifugation (DGC) and Swim-up (SU) are two globally established methods for the preparation of sperm for assisted reproductive technologies. This project was designed to assess the safety and performance of the Felix™ System in comparison to the DGC and SU method.

ANZCTR Trial ID: ACTRN12622000439741

## **NuLIFE: A prospective placebo-controlled trial investigating the ability of uterine application of a copper chloride containing gel to modulate endometrial cytokine production in healthy women.**

**Prof Kelton Tremellen, Dr Erin Morton**

*Monash IVF Group, Flinders University and NuLIFE B.V., Netherlands*

Implantation failure is an important cause of unexplained infertility and a common reason for failure of IVF treatment. Even when a high quality genetically normal embryo is transferred to the uterus, only 50% of these embryos successfully implant. As such, inefficient implantation rates are the “Achilles’ heel” of IVF treatment, resulting in significant psychological distress to patients and costs. Therefore, new therapies that augment successful implantation are urgently required. Successful implantation of the embryo requires appropriate development of the adjacent endometrium to assist embryo cell division, attachment and invasion. Several cytokines and growth factors have been identified whose expression in the endometrium occurs at the time of implantation and have been suggested as biomarkers for uterine receptivity. Two of these growth factors, Leukaemia Inhibitory Factor (LIF) and Vascular Endothelial Growth Factor (VEGF) have been consistently reported to be essential to implantation, with endometrial and uterine fluid levels of LIF and VEGF being significantly higher in fertile woman compared to those experiencing recurrent IVF implantation failure. We propose a proof-of-concept study in which we will investigate the possibility that application of an investigational gel to the endometrium will also up-regulate endometrial LIF and VEGF production *in vivo*, similar to our *in vitro* results.

ANZCTR Trial ID: ACTRN12621001666819p

### **Australian Male Infertility Exposure study (AMIE)**

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Prof Jane Halliday, Dr Sarah Biggs,  
**Prof Robert McLachlan,**  
**Prof Luk Rombauts**

*Monash IVF Group and Murdoch Children's Research Institute*

The aim of the AMIE study is to develop a better understanding of the impact of lifestyle and environmental factors on male infertility. Male reproductive health issues contribute to infertility in about half of all couples seeking help to have a baby. Unfortunately, not much is known about the causes of male infertility which is why we are supporting this important study. We know that smoking, diet or environmental pollutants can lead to diseases like diabetes or cancer, but we do not know whether they can also impact fertility. This study is being conducted by an expert team of scientists and clinicians, led by the Reproductive Epidemiology group at the Murdoch Children's Research Institute. The Monash IVF Group is participating with several other fertility organisations across Australia to help find ways of improving reproductive health in men.

### **Oocyte disposition preferences and actual practices following oocyte cryopreservation**

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Dr Molly Johnston, Dr Liz Sutton,  
Prof Catherine Mills, **Dr Sarah Hunt,**  
**Prof Luk Rombauts, Prof Deirdre Zander-Fox**

*Monash IVF Group and Monash University*

The number of egg-freezing cycles undertaken in Australia outpaces the number of people who return to use their eggs in assisted reproduction. Consequently, the number of eggs in storage is rapidly increasing, creating growing pressure on cryostorage facilities. At the same time, demand for donor eggs is increasing but current supplies are insufficient to meet current, let alone future demands. This study will be the first to examine decision-making at the end of the egg freezing period to track what women do with surplus eggs, their views towards egg donation and how decision-making at this point may be best supported. Outcomes of this project include data that could inform practice and policy to better support patients making decisions regarding surplus eggs, as well as ethical guidance on how best to facilitate egg donation following egg freezing.

### **Podocalyxin identified as a key negative regulator of human endometrial epithelial receptivity**

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Prof Guiying Nie, **Prof Luk Rombauts**  
*Monash IVF Group and RMIT University*

Assisted Reproductive Technologies have become important medical interventions to help overcome infertility. However, despite significant advancements in embryo culture, selection and transfer techniques, implantation failure still poses a crucial limiting factor; it is believed that a contributing factor lies in the 'soil for the seeds', the endometrium. For implantation to occur, the endometrium must transform into a receptive state. As the embryo first contacts the surface of the endometrial epithelium, this surface must become adhesive for embryo attachment. Although it is known that the endometrial epithelium remodels structurally and functionally to gain receptivity, the exact molecular changes are not well understood. Our studies have discovered a membrane protein called podocalyxin, which is expressed in all endometrial epithelial cells and inhibits embryo implantation. During the establishment of receptivity, podocalyxin is down-regulated in the luminal epithelial cells, selectively converting the endometrial surface from a non-receptive to an implantation-permitting state. Further studies will evaluate the important role of podocalyxin in optimising endometrial receptivity, so that in future this may be used as a potential diagnostic tool to help determine the optimal time for embryo transfer and thus improve pregnancy success rates.

### **Development of a non-invasive test to screen IVF endometrial receptivity - iREST (IVF Receptivity Endometrium Screening Test)**

**Prof Kelton Tremellen, Dr Tristan Hardy, Dr Tod Fullston,**  
Dr Joachim Alfer

*Monash IVF Group, Institute of Pathology, Ravensburg, Germany and Pronacera, Seville, Spain*

The process of implantation of an embryo is a complex cascade of events. Following ovulation there is a rise in reproductive hormones and epithelial cells transform into highly active secretory cells that synthesise various substances (nutrients, growth factors, cytokines) known to enhance embryo development and alter endometrial function to facilitate implantation - opening of the "window of implantation" (WOI). This study proposes that a non-invasive, inexpensive test, independent of menstrual cycle stage, the iREST assay (Receptivity Endometrium Screening Test), can be performed on a peripheral blood sample to predict whether the endometrium is receptive and adequately mature for successful implantation.

### **Whole Genome Sequencing of embryos for Preimplantation Genetic Testing**

**Dr Tristan Hardy, Dr Jan Liebelt, Dr. Tod Fullston, Prof Deirdre Zander-Fox, Dr. Leanne Pacella-Ince, Prof Kelton Tremellen, Dr Emily Button**

*Monash IVF Group*

The purpose of this study is to improve the current form of embryo genetic testing by using sequencing technology. Our group is exploring novel ways to use sequencing data to analyse the DNA fingerprint of embryos and provide an assessment of the likelihood of aneuploidy (PGT-A), structural rearrangements (PGT-SR) and single gene conditions (PGT-M). The workflow is designed to improve the patient experience and reduce the need for additional samples from family members prior to having PGT, easing the transition from test design to embryo testing.

### **Mackenzie's Mission: The Australian Reproductive Carrier Screening Project – multi site national study**

**Dr Tristan Hardy, Dr Jan Liebelt,**  
Prof Martin Delatycki, Prof Edwin Kirk,  
Prof Nigel Laing

*Monash IVF Group, Murdoch Children's Research Institute, University of New South Wales, and The University of Western Australia*

Mackenzie's Mission, the Australian Reproductive Carrier Screening Project, is a multicentre, \$20 million federal government funded initiative which aims to evaluate the feasibility and sustainability of a national genetic carrier screening program. Currently, Reproductive Genetic Carrier Screening (RGCS) is a fee-for-service test available in Australia with variable access for couples. The project aims to identify the possible barriers and facilitators in a couples' decision-making process to undertake reproductive carrier screening which may reveal the chance of having a child with a serious genetic condition. Psychosocial impacts, ethical issues, and health economic implications will be measured to inform future service delivery by health providers. The Monash IVF Group is participating in the recruitment and treatment of couples in the program with our clinicians contributing to the development of the gene list and clinical pathways (Dr. Tristan Hardy and Dr. Jan Liebelt).



### Defining the male contribution to pregnancy immune tolerance deficit in women.

Dr David Sharkey, Prof Sarah Robertson,  
Prof Kelton Tremellen

*Monash IVF Group and Robinson Research Institute, University of Adelaide*

This project will generate new knowledge and understanding of factors in male partner seminal fluid that influence a couple's fertility and reproductive success by identifying novel agents in human seminal plasma and sperm that are associated with promoting immune adaptation in women and determining links in couples between composition of seminal fluid, immune tolerance, and fertility. Advancing knowledge on this novel paternal contribution to reproductive success will enable the identification of pivotal bioactive compounds in seminal fluid that promote immune tolerance in women. The outcomes have the potential to change practise in pre-conception planning, provide new diagnostic tests for unexplained male subfertility, and inform the development of new immune therapies for infertility. There is an urgent demand for improved tests for male factor infertility and this research is well positioned to deliver a simple, microbead-based test that is expected to have widespread utility and uptake. The intellectual property to be generated from this work has potential for commercialisation and clinical translation.

### Incubating sperm in a new sperm washing media 'SpermFAST' to induce post ejaculation maturation prior to IVF result in fertilization.

Dr Nicole McPherson, Dr Hamish Hamilton, Kevin Lam, Marg Szemis, A/Prof Hassan Bakos, Prof Deirdre Zander-Fox, Dr Leanne Pacella-Ince

*Monash IVF Group and University of Adelaide*

In the past 5-10 years fertilisation rates after IVF have stayed the same (~65%), with 10% chance of cycle cancellation due to failed fertilization after standard IVF insemination. This is higher than that of intracytoplasmic sperm injection (ICSI), which is usually ~1%. As our understanding of sperm biology has advanced, we know that the female reproductive tract activates the sperm to improve the ability of the sperm to bind and fertilize an egg. Currently, the media that are used for IVF only result in less than 20% of sperm to undergo this activation process. We have developed a new sperm media (SpermFAST) which induces these naturally occurring changes in sperm at a much higher rate (approximately 60%). Based on our understanding of sperm biology these changes should make it easier for the sperm to bind to and fertilise an egg during IVF. This pilot study will determine if sperm incubated in our new sperm media (SpermFAST) will promote activation of sperm thereby improving their ability to bind and fertilise the egg.

ANZCTR Trial ID: ACTRN12619000370101

### Piezo ICSI: Can an alternative type of intracytoplasmic sperm injection (ICSI) for eggs improve fertilisation.

Prof Deirdre Zander-Fox, Kate Watson, A/Prof Hassan Bakos, Dr Leanne Pacella-Ince, Dr Ross Turner, Dr Jinny Foo, Prof Luk Rombauts

*Monash IVF Group*

PIEZO-ICSI is a gentler form of microinjection that uses a blunt ended pipette and microdrilling technology compared to the spiked bevelled pipette and conventional pressure/suction methods of breaking through the zona and cytoplasmic membrane that is used in conventional ICSI. PIEZO-ICSI has been used for approximately 30 years in animal models and for 20 years in some assisted reproductive clinics in Japan, although for technical reasons has not been widely embraced by human Assisted Reproductive Technology (ART) centres across the world. Despite this being a gentler technique, it was not utilised by mainstream ART centres because historically this technology required non-biocompatible mercury or fluorinert, as an operating liquid to give the micropipette inertial mass. To address this, in 2021 we were one of the first groups to publish on the use of an alternative biocompatible operation fluid (per-fluro-n-octane). This current study was designed to build on this study that demonstrated that PIEZO-ICSI results in increased fertilisation rates, decreased degeneration rates and increased embryo utilisation compared to conventional ICSI (Zander-Fox *et al* 2021 RBMO). This current clinical trial builds on our previous work, using a more robust trial design (multi-center sibling split trial). The primary objective of this project is to investigate the efficacy of Piezo intracytoplasmic sperm injection (ICSI) in improving fertilisation rates, decreasing oocyte degeneration rates, improving embryo quality, and increasing pregnancy rates by comparing it to conventional ICSI in patients undergoing ICSI treatment at five Monash IVF Group sites where 50% of a patient's oocytes are injected using conventional ICSI and 50% are injected using PIEZO-ICSI.

ANZCTR Trial ID: ACTRN12620000407998

### **Establishment and validation of the 'exposome' as a prognostic predictor of female fertility**

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**A/Prof Mark Green**, Dr Bradley Clarke,  
**Prof Deidre Zander-Fox**,  
**Prof Luk Rombauts**

*Monash IVF Group and University of Melbourne*

There is now an increasing reliance on Assisted Reproductive Technology (ART) in order to conceive. It is postulated that the rising trend in infertility can be partially attributed to exposure to man-made environmental toxicants, such as endocrine disrupting chemicals (EDCs), found in many everyday household items and personal care products. The aims of this project are to firstly, establish and validate methodologies to quantify the 'exposome', and secondly, the accurate quantification of EDCs in the blood, urine and follicular fluid of patients. EDC concentrations will then be analysed with respect to clinical measurements of fertility to determine whether a negative correlation exists between EDCs and patient outcomes measures (i.e. number of eggs, as well as fertilisation, blastocyst and utilisation rates). The findings of this study will provide preliminary data to determine whether the exposome can be used as a reliable prognostic marker for egg quality and thus fertility. The project outcomes have substantial scope for understanding how exposure to chemicals can influence clinical success rates.

### **Oocyte DNA repair capacity as a novel marker for female ageing in IVF/ICSI cycles**

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**Prof Beverley Vollenhoven**, Dr Fabrizio Horta, A/Prof Peter Temple-Smith, Dr Sally Catt, **A/Prof Mark Green**, **Prof Deirdre Zander-Fox**

*Monash IVF Group and Monash University*

Female ageing and egg quality have been associated with genetic abnormalities, however, the factors determining egg quality remain unclear. Damage to sperm DNA has been considered a negative predictive factor for the clinical outcomes of patients undergoing Assisted Reproductive Technologies (ART) such as *in vitro* fertilisation and intra-cytoplasmic sperm injection. Studies have shown that eggs fertilised by sperm with DNA damage may still have developmental potential due to the egg's ability to repair DNA, but little is known about this mechanism and how ageing may affect this DNA damage response. This study will assess the capacity of the ageing female egg to repair DNA, and investigate the consequences of sperm DNA damage in the presence of decreased egg DNA repair capacity.

# Key research publications

Continuing our pursuit in research excellence, the Monash IVF Group published 70 peer-reviewed publications between FY22 to FY23, with some of the most significant publications listed below. **(Monash IVF Group staff and clinicians in bold)**

## 2023

Henshaw J, **Tremellen K**. Intralipid infusion therapy as an adjunct treatment in women experiencing adenomyosis-related infertility. *Ther Adv Reprod Health*. 2023 Jun 21;17:26334941231181258. doi: 10.1177/26334941231181258. PMID:37362235; PMCID: PMC10288412.

Kristensen SE, Kvist Ekelund C, Sandager P, Stener Jørgensen F, Hoseth E, Sperling L, Zingenberg HJ, Duelund Hjortshøj T, Gadsbøll K, Wright A, Wright D, **McLennan A**, Sundberg K, Petersen OB. Triple trouble: uncovering the risks and benefits of early fetal reduction in trichorionic triplets in a large national Danish cohort study. *Am J Obstet Gynecol*. 2023 May 30;S0002-9378(23)00367-8. doi: 10.1016/j.ajog.2023.05.029. Epub ahead of print. PMID: 37263399.

**Scott F, Smet M-E**, Elhindi J, **Mogra R**, Sunderland L, **Ferreira A, Menezes M, Meagher S, McLennan A**. Late first-trimester ultrasound findings can alter management after high-risk NIPT result. *Ultrasound Obstet Gynecol*. 2023 May 29. doi: 10.1002/uog.26272. Epub ahead of print. PMID: 37247395.

Herbert M, Choudhary M, **Zander-Fox D**. Assisted reproductive technologies at the nexus of fertility treatment and disease prevention. *Science*. 2023 Apr 14;380(6641):164-167. doi: 10.1126/science.adh0073. Epub 2023 Apr 13. PMID: 37053308.

Kristensen SE, Ekelund CK, Sandager P, Jørgensen FS, Hoseth E, Sperling L, Balaganeshan SB, Hjortshøj TD, Gadsbøll K, Wright A, Wright D, **McLennan A**, Sundberg K, Petersen OB. Risks and pregnancy outcome after fetal reduction in dichorionic twin pregnancies: a Danish national retrospective cohort study. *Am J Obstet Gynecol*. 2023 May;228(5):590.e1-590.e12. doi: 10.1016/j.ajog.2022.10.028. Epub 2022 Oct 29. PMID: 36441092.

Rode L, Wulff OB, Ekelund CK, Hoseth E, Petersen OB, Tabor A, El-Achi V, Hyett JA, **McLennan AC**. First-trimester prediction of preterm prelabour rupture of membranes incorporating cervical length measurement. *Eur J Obstet Gynecol Reprod Biol*. 2023 Mar 10;284:76-81. doi: 10.1016/j.ejogrb.2023.03.003. Epub ahead of print. PMID: 36940605.

Peel A, Saini A, Deluao JC, **McPherson NO**. Sperm DNA damage: The possible link between obesity and male infertility, an update of the current literature. *Andrology*. 2023 Feb 15. doi: 10.1111/andr.13409. Epub ahead of print. PMID: 36789664.

Sepulveda W, Garcia-Rodriguez R, Martinez-Ten P, Tonni G, Grisolia G, **Meagher S**. Basic sonographic examination of the fetal brain at 11-13 weeks' gestation: Rationale for a simple and reliable four-step technique. *J Clin Ultrasound*. 2023 Feb;51(2):300-

310. doi: 10.1002/jcu.23337. PMID: 36785499.

Kennedy AL, **Vollenhoven BJ**, Hiscock RJ, Stern CJ, Walker SP, Cheong JLY, Quach JL, Hastie R, Wilkinson D, McBain J, Gurrin LC, **MacLachlan V**, Agresta F, Baohm SP, Tong S, Lindquist AC. School-age outcomes among IVF-conceived children: A population-wide cohort study. *PLoS Med*. 2023 Jan 24;20(1):e1004148. doi: 10.1371/journal.pmed.1004148. PMID: 36693021; PMCID: PMC9873192.

Byrne AB, Alicia B Byrne, Peer Arts, Thuong T Ha, Karin S Kassahn, Lynn S Pais, Anne O'Donnell-Luria; Broad Institute Center for Mendelian Genomics; Milena Babic, Mahalia S B Frank, Jinghua Feng, Paul Wang, David M Lawrence, Leila Eshraghi, Luis Arriola, John Toubia, Hung Nguyen; Genomic Autopsy Study Research Network; George McGillivray, Jason Pinner, Fiona McKenzie, Rebecca Morrow, Jill Lipsett, Nick Manton, T Yee Khong, Lynette Moore, **Jan E Liebelt**, Andreas W Schreiber, Sarah L King-Smith, **Tristan S E Hardy**, Matilda R Jackson, Christopher P Barnett, Hamish S Scott. Genomic autopsy to identify underlying causes of pregnancy loss and perinatal death. *Nat Med*. 2023 Jan;29(1):180-189. doi: 10.1038/s41591-022-02142-1. Epub 2023 Jan 19. PMID: 36658419.

## 2022

Drakopoulos P, Khalaf Y, Esteves SC, Polyzos NP, Sunkara SK, Shapiro D, Rizk B, Ye H, **Costello M**, Koloda Y, Salle B, Lispi M, D'Hooghe T, La Marca A. Treatment algorithms for high responders: What we can learn from randomized controlled trials, real-world data and models. *Best Pract Res Clin Obstet Gynaecol*. 2023 Feb;86:102301. doi: 10.1016/j.bpobgyn.2022.102301. Epub 2022 Dec 27. PMID: 36646567.

**Caddy M, Popkiss S, Weston G, Vollenhoven B, Rombauts L, Green M, Zander-Fox D**. PIEZO-ICSI increases fertilization rates compared with conventional ICSI in patients with poor prognosis. *J Assist Reprod Genet*. 2023 Feb;40(2):389-398. doi: 10.1007/s10815-022-02701-y. Epub 2022 Dec 31. PMID: 36586007; PMCID: PMC9935778.

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