



3RD AI FERTILITY WORLD CONFERENCE

HOTEL MIRAGEM, CASCAIS
LISBON, PORTUGAL

September 25 - 27, 2026

<https://aifertility.org/>





Welcome from the Founders

Dear Colleagues,

Welcome to the **3rd World AI Fertility Conference**.

Artificial intelligence is transforming fertility care, but its success depends on more than technology. It depends on collaboration.

This conference is unique because it brings together everyone needed to shape the future of AI in reproductive medicine. Embryologists, clinicians, nurses, regulators, patient advocates, robotic engineers, data scientists, inventors, investors and industry leaders are all in one room, united by a common goal: to bring the benefits of AI to healthcare responsibly, so patients truly benefit.

Our previous two conferences brought together invited global thought leaders and became catalysts for many of the conversations and collaborations driving AI in fertility today. This year, we are expanding that conversation.

Expect inspiring TED-style talks, insightful and honest panel discussions, practical solutions and opportunities to tackle the real barriers to AI implementation. Whether you are developing AI, evaluating it, regulating it or using it in clinical practice, your voice matters.

Thank you for joining us. Together, we can prepare for the future and shape it. Imagine what is possible. Challenge what exists. Build what comes next.

Shape the future of AI in fertility...

Nikica Zaninovic & Cristina Hickman
Co-Founders World AI Fertility Society



MEET THE FOUNDERS

Dr Nikica Zaninovic

is an internationally recognised embryologist, scientist and innovator who has spent more than three decades advancing reproductive medicine. A pioneer in IVF laboratory practice and emerging technologies, he has helped shape many of the scientific advances that define modern fertility care. As Co-Founder of the World AI Fertility Society, he is passionate about bringing together the world's leading experts to accelerate the responsible adoption of artificial intelligence and improve outcomes for patients everywhere.



Dr Cristina Hickman

is a Clinical embryologist, entrepreneur and internationally recognised leader in artificial intelligence for reproductive medicine. With more than 26 years of experience, she is the Founder and CEO of Avenues, the world's first fertility clinic to integrate AI technologies throughout the entire patient journey. Cristina has also been the Founder, Executive Director, Chief Clinical Officer or Chief Scientific Officer behind several of the pioneering AI technologies now transforming fertility care. As Co-Founder of the World AI Fertility Society, her mission is to unite clinicians, scientists, engineers and innovators to responsibly harness AI, improving patient outcomes while shaping the future of reproductive healthcare.





SPEAKERS FROM 17 COUNTRIES • **Hyejun Lee**, South Korea, Doctor

- **Aleksandra Goch**, UK, Tech
- **Alejandro Chavez Badiola**, Mexico, Doctor
- **Andreia Trigo**, Portugal, Nurse
- **Andrew Khair**, US, Business
- **Betty Meiri**, Israel, Tech
- **Carole Gilling-Smith**, UK, Doctor
- **Cecilie Jakobsen**, Norway, Tech
- **Chloe He**, UK, Tech
- **Chris Rego**, Brazil, Business
- **Chris Helriger**, USA
- **Cristina Hickman**, UK, Embryologist
- **Christine Allen**, US, Embryologist
- **Cynthia Hudson**, US, Embryologist
- **Dan Nayot**, Canada, Doctor
- **Daniela Braga**, Brasil, Embryologist
- **Daria Iliev**, UK, Tech
- **David Chrimes**, UK, Business
- **David Sable**, US, Doctor
- **Eduardo Gonzalez**, UAE, Business
- **Eduardo Hariton**, US, Doctor
- **Elizabeth Grill**, US, Psychologist
- **Fernando Prado**, Brazil, Doctor
- **Florian Kromp**, Austria, Tech
- **Frida Polli**, UK, Tech
- **Gaurav Singhal**, UK, Tech
- **Halil Ruso**, UK, Embryologist
- **Helen O'Neill**, UK, Biologist
- **Iman Hajirasouliha**, US, Tech
- **Imran Akram**, UK, Tech
- **Ihor Pachkiv**, Ukraine / Germany, Tech
- **Jonas Malmsten**, US, Tech
- **Jørgen Berntsen**, Denmark, Tech
- **Karina Malhotra**, UK, Business
- **Kazem Nouri**, Austria, Doctor
- **Kshitiz Murdia**, India, Business
- **Meena Mahil**, Canada, Business
- **Morten Raaschou-Jensen**, Denmark, Tech
- **Nikica Zaninovic**, US, Embryologist
- **Paul Balondrade**, France, Tech
- **Paulina Valpas**, France, Tech
- **Rabi Odia**, UK, Embryologist
- **Saeed Fathi**, UK, Tech
- **Samuel Ojos Negros**, Spain, Tech
- **Sarthak Sawarkar**, USA, Tech
- **Sasha Sadowy**, USA, Embryologist
- **Semra Kahraman**, Türkiye, Doctor
- **Serdar Coskun**, Saudi Arabia, Embryologist
- **Sergei Gorlovetsky**, Canada, Tech
- **Simon Lumsdon**, UK, Tech
- **Stepahnne Kuku**, UK, Doctor
- **Sydni Meyrowitz**, US, Business
- **Tobias Wolfram**, US, Genetics
- **Toni Di Berardino**, Canada, Embryologist
- **Vinesh Gadhia**, India, Business
- **Ying Cheong**, UK, Doctor
- **Zev Rosenwaks**, US, Doctor



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25–27 SEPTEMBER 2026



HOTEL CASCAIS MIRAGEM
CASCAIS, LISBON, PORTUGAL

MEET THE GLOBAL LEADERS SHAPING THE FUTURE OF FERTILITY

The AI Inflection Point in Fertility

Chaired by Cristina Hickman



Halil Ruso —

Laboratory Director of Innovation at Avenues and Vice-President of the Turkish Society of Clinical Embryology, bringing the **embryologist's perspective** on how AI and emerging technologies are transforming the IVF laboratory.

Cecilie Jakobsen —

Founder & CEO of wawa fertility, bringing the **digital and data specialist perspective** on turning fragmented fertility information into intelligence that can transform how care is delivered.



Carole Gilling-Smith —

Founder, CEO & Medical Director of Agora, bringing the **doctor's perspective** to the future of fertility care, with a career defined by clinical innovation and patient-centred medicine.

Sydni Meyrowitz —

COO and founding team member at Pendant Health, bringing the **employment benefits perspective** and exploring how technology can make fertility care more accessible, measurable and meaningful for employees.



Andreia Trigo —

Founder and CEO of Enhanced Fertility, bringing the **perspective of a fertility nurse and as a patient** with her personal experience of infertility, Andreia founded Enhanced Fertility to make fertility diagnosis and treatment more accessible through technology, data and AI.

David Sable —

Physician, entrepreneur and healthcare investor at AWM Investment Company, bringing the **entrepreneur and investor perspective** on how technology, capital and innovation can reshape reproductive healthcare.

six
perspectives
one
problem



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MEET THE GLOBAL LEADERS SHAPING THE FUTURE OF FERTILITY

AI: From Buzzword to Business Strategy



Chaired by
Vinesh Gadhia

Eduardo Gonzalez —

Group CEO of Blue Ocean Health Group,
the largest middle eastern fertility group, bringing
the **Middle Eastern perspective** on building and scaling
reproductive healthcare across the GCC,
with extensive experience in international fertility networks,
transformation and strategic growth.



Chris Rego —

CEO of FertGroup,
Brazil's largest
assisted reproduction
group, bringing the
**Latin American
perspective** on
building, scaling and
innovating fertility
businesses in a
rapidly evolving
healthcare
landscape.



FERTGROUP
REPRODUCTIVE HEALTHCARE

a
global
perspective



INDIRA IVF

Dr Kshitiz Murdia —

Whole-Time Director &
CEO of Indira IVF, the
largest Indian group of
clinics, bringing the
Indian perspective on
scaling fertility care,
standardising clinical
quality and using
technology to expand
access across one of
the world's largest
fertility markets.



KAIHEALTH

Hyejun Lee —

Founder & CEO of Kai Health, bringing the **Asian-
Pacific perspective** on AI and fertility, combining her
experience as a fertility physician with a vision for
using data and AI to make reproductive medicine
more personalised and consistent.



MEET THE GLOBAL LEADERS SHAPING THE FUTURE OF FERTILITY

Ferring Symposia: The AI Roadmap for Fertility Clinics

From Hype, to Value



**Chaired by
Andrew Khair**



Eduardo Hariton —

SVP, Clinical Growth & Innovation and Managing Director of the US Fertility Innovation Fund, bringing the perspective of a reproductive endocrinologist, healthcare innovator and investor on moving AI from promising technology into meaningful clinical and business value. He also serves as Vice Chair of the ASRM Artificial Intelligence Special Interest Group.



Imran Akram —

Founder & Managing Partner of Akadra, bringing the perspective of a technology investor and AI expert with 20 years of experience investing in and advising high-growth technology companies across Europe and the US, helping distinguish genuine AI transformation from hype and identify where technology can create lasting value.

FERRING



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Debate: RCT is the best way to evaluate AI



Chaired by
Eduardo Hariton



FOR

Ying Cheong —

Professor of Reproductive Medicine at the University of Southampton, with leadership roles across the HFEA, ESHRE and British Fertility Society. A leading clinical trialist and strong advocate for rigorous evidence in reproductive medicine, she champions the power of randomised controlled trials (RCTs) and the need for more high-quality RCTs to evaluate technologies in fertility.



AGAINST

Rabi Ahmed-Odia —

Director of Laboratory Operations & Scientific Research at Avenues, with over 18 years' experience as a clinical embryologist. An early adopter of AI in embryology, she brings extensive practical experience in introducing, testing and responsibly validating emerging technologies in real-world IVF laboratories — demonstrating how meaningful evidence can be generated without relying exclusively on RCTs..



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Chaired by Cristina Hickman

Karina Malhotra—

Lessons from Implementing AI across the UK National Health Service (NHS)

Former NHS operational director and Founder & Managing Director of Acumentice who has personally led the real-world deployment of data and AI solutions inside multiple major NHS Trusts — uniquely equipped to share the hard-won lessons of what succeeds, what fails, and why scale remains so difficult in the UK's largest healthcare system.



Acumentice



Jonas Malmsten—

Integration challenges in the real world IVF clinic

Assistant Professor at Weill Cornell's Center for Reproductive Medicine who works daily at the interface of cutting-edge AI models and live clinical embryology — uniquely positioned to expose the practical, technical and workflow barriers that determine whether an AI tool can truly function inside a high-pressure, real-world IVF laboratory.



Weill Cornell
Medicine



AI Healthcare IMPLEMENTATION challenges

Iman Hajirasouliha— From Idea to Impact: Designing Research That Survives Peer Review – The Academic Challenges

Associate Professor at
Weill Cornell Medicine



Weill Cornell
Medicine



avenues



Chloe He— Cybersecurity in Fertility Clinics: Protecting the Most Sensitive Data in Healthcare

CTO at Avenues and
Honorary Senior

Research Fellow at UCL specialising in AI for reproductive medicine and data integrity, whose work on embryo selection algorithms, genetic testing accuracy and equitable fertility care gives her deep insight into the uniquely sensitive nature of fertility data — making her the ideal voice on the cybersecurity and privacy safeguards clinics must prioritise.

whose lab has repeatedly taken ambitious AI concepts for IVF through the most demanding peer-review processes into landmark publications — the ideal specialist to reveal the precise design, validation and storytelling choices that turn promising research into work that survives rigorous academic scrutiny and reaches the clinic



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MEET THE GLOBAL LEADERS SHAPING THE FUTURE OF FERTILITY

Chaired by Halil Ruso



Turning Oocyte Data into actionable decisions



FERTGROUP
RESEARCH REPRODUCTIVA

Daniela Braga—

Head of Scientific Research at Fertility Medical Group, DVM and PhD in Medical Sciences, and co-founder of Equinvitro and Science for EveryMind. A leading reproductive scientist with extensive research experience in oocytes, embryos and IVF, she brings the scientific and data perspective on how AI can turn oocyte characteristics into objective insights that inform treatment and clinical decision-making.

ACCEPTED
ABSTRACT



AVENUES

Fernando Prado—

CEO of Avenues Brasil and Embriológica, reproductive medicine specialist and Brazilian representative for CHLOE by Fairtivity. As both a clinician treating IVF patients and a real-world user of AI technology, he brings the clinical and implementation perspective on translating oocyte data into meaningful decisions for patients and fertility clinics.



Dan Nayot—

Reproductive Endocrinologist, academic and Chief Medical Officer at Future Fertility, bringing the AI and clinical innovation perspective on transforming oocyte images into objective measures of egg quality and, ultimately, actionable information for clinicians and patients. Through Future Fertility, he has helped pioneer the use of AI-powered oocyte assessment at scale, connecting data, research and real-world fertility care.



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Chaired by Halil Ruso



Turning Sperm Data into actionable decisions



Halil Ruso —

Sperm Intelligence: Turning Sperm Data into Actionable Decisions

Director of Lab Innovation at Avenues, bringing the embryologist and clinical implementation perspective on turning sperm data into actionable intelligence. With extensive experience in laboratory innovation and AI-driven sperm selection, he focuses on translating new technologies into responsible, real-world IVF practice.



Saeed Fathi —

Sperm identified and selected using AI assistance resulted in improved outcome

Chief Technology Officer and investor at NeoGenix Fertility, bringing the AI, engineering and technology perspective to sperm identification and selection. With expertise spanning AI, machine learning and advanced fertility technologies, he is developing tools such as SpermSearch.AI to identify rare sperm more efficiently and support challenging male-factor IVF cases.

ACCEPTED
ABSTRACT



Betty Meiri Ferber —

Sperm Selection using AI & Robotic Technologies

Senior Embryologist and Head of the Andrology Department at Assuta Medical Center, and Medical Director of BAIBYS™ Fertility, bringing more than 25 years of experience in embryology and assisted reproductive technologies. She brings the embryologist and robotics perspective on how AI can make sperm selection more objective, reproducible and precise, while reducing operator-dependent variability in the IVF laboratory.

ACCEPTED
ABSTRACT



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Advanced Imaging and Bioengineering

Chaired by Frida Polli



Daria Iliev —

Seeing the Unseen: Holotomography and the Future of Cell Imaging

Researcher and Innovation Lead at Avenues, and a UCL PhD researcher working on organelle-resolved assessment of human oocytes using label-free 3D holotomography. Her work combines advanced imaging and reproductive biology to reveal cellular structures that conventional microscopy cannot see, with the potential to transform how oocyte quality and viability are understood.

Florian Kromp —

AI Use of Natural Language to Describe Embryo Morphology

Senior Researcher in Data Science and Research Team Lead for Computer Vision and Representation Learning at the Software Competence Center Hagenberg (SCCH). His work combines computer vision, machine learning and multimodal AI, including InVitroVision, a model designed to automatically describe embryo development using natural language — moving AI embryo assessment beyond scores towards interpretable descriptions.

ACCEPTED
ABSTRACT

Chris Hellinger —

FLIM-Based Metabolic Imaging of Blastocysts to Predict Ploidy

Chris Hellinger is part of the team at Noor Sciences, working at the intersection of advanced optical imaging and reproductive science. His work focuses on FLIM-based metabolic imaging of blastocysts, exploring whether metabolic signatures can provide a non-invasive way to assess embryo biology and predict ploidy. His presentation, will examine the potential of fluorescence lifetime imaging microscopy to reveal biochemical information from embryos without requiring biopsy.

ACCEPTED
ABSTRACT

Samuel Ojos Negros —

Hyperspectral Imaging: Unlocking Biochemical Signals Without Touching the Embryo

Samuel a bioengineer and co-founder of Lumiris, combining expertise in biology, photonics and AI to develop new approaches to embryo assessment. His work with hyperspectral imaging explores how subtle spectral signatures can reveal biochemical and metabolic information from embryos non-invasively, without touching or labelling them. In this session, he examines how hyperspectral imaging could add a new layer of biological insight to embryo selection, beyond what conventional imaging can see.

Paul Balondrade —
3D Microscopy Combined with AI

Co-founder and CEO of OWLO, a deep-tech company developing non-invasive, label-free 3D microscopy for healthcare and assisted reproduction. With a background spanning technology, entrepreneurship and advanced imaging, he is pioneering the combination of real-time 3D imaging and AI to reveal previously inaccessible features of living oocytes and embryos.

Frida Polli —

Bioengineering: Female and Male Embryos Diverging Response to AMH

AI and women's health researcher at MIT, former Founder & CEO of pymetrics, and a scientist and entrepreneur with 25 years of experience in machine learning. She brings the AI and bioengineering perspective on using advanced computational approaches to uncover sex-specific biology and new insights into early human development.



AVENUES



OWLO



NOOR



MIT

Massachusetts
Institute of
Technology



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ABSTRACT



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Chaired by Semra Kahraman



Semra Kahraman— **Reducing Cost to Baby with AI Embryo** **Assessment**

Professor and Director of the ART & Reproductive Genetics Unit at Istanbul Memorial Hospital, with more than 35 years of experience in reproductive medicine and an extensive research portfolio spanning IVF, genetics and n embryo selectio. She brings the clinical and patient-outcome perspective on how AI embryo assessment can improve decision-making and ultimately reduce the cost, time and burden of achieving a healthy baby.



Toni Di Berardino— **Time-lapse: Evaluating efficacy, safety and** **outcomes in human IVF**

Scientific Director at ASTEC, with nearly 30 years of IVF laboratory experience spanning clinical embryology, laboratory leadership, technical support and medical science. Having held senior roles at LifeGlobal and CooperSurgical

she brings the laboratory, technology and data perspective on protecting increasingly connected fertility laboratories and the highly sensitive patient, embryo and genetic information they hold.



AI Embryo assessment

Jørgen Berntsen — **Consistency in Embryo** **Ranking**

Senior Product Specialist at Vitrolife, with a background in data science and extensive work on iDAScore, bringing the AI and embryo assessment perspective on making embryo ranking more consistent, objective and reproducible. His recent research examines how AI assistance can improve concordance between embryologists of different experience levels and reduce subjectivity in embryo selection.



Serdar Coskun—
The Global Adoption
Gap in Time-Lapse IVF:
What Is Really Limiting
Uptake? What Can AI
Implementation Learn
From This? Head and Senior Clinical Scientist of the Section of Assisted Reproductive Technology at King



Faisal Specialist Hospital and Research Centre, Riyadh, bringing the laboratory, research and implementation perspective on the adoption of time-lapse technology. His current research includes embryo morphokinetics and the use of AI models to understand embryo development and treatment outcomes, providing a valuable perspective on what enables — and limits — adoption of new technology in IVF.



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AI for Doctors

Chaired by Dan Nayot



Tobias Wolfram —
Digital Genetics with PGT-P:
Enhancing Genetic Assessment
beyond PGT-A and PGT-M

Research Scientist at Herasight, bringing the genomics and computational genetics perspective reproductive medicine. His work combines statistical genetics, embryo genotyping and polygenic prediction to explore how genetic information could extend embryo assessment beyond conventional PGT-A and PGT-M.



Herasight

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ABSTRACT



FertilAI

Simon Lumsdon —
Smarter Clinics, Better
Outcomes: Using AI to
Optimise IVF Operations

VP of Sales at FertilAI, with 16 years' experience helping fertility technology companies bring innovation into IVF and scale internationally. He now focuses on translating FertilAI's AI into practical tools that improve clinical decision-making and IVF operations.

Aleksandra Goch —
Making Reproductive
Surgery Smart

A medical trainee who chose to specialise in healthcare technology, Aleksandra is Technology and Innovation Lead at Avenues, building integrations that enable medical devices and clinical systems to communicate seamlessly. She brings a unique clinician-to-tech perspective on connecting devices, data and AI to create smarter clinical workflows.



Avenues



training with AI innovation. Amplinome develops AI-powered patient communication tools for medical practices, and Ihor has applied this technology in reproductive medicine, including an AI assistant for patients at Medical Center Reprolife.

Ihor Pachkiv —
AI Assisted Identification of
Poor Responders Who
Would Benefit from Dual
Stimulation

Founder of Amplinome and a medical student at Heidelberg University, Ihor combines clinical

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ABSTRACT

Paulina Valpas —
Measuring the Invisible: Data-
Driven Monitoring of Stress and
Emotional Load in Fertility Care

Part of the team at OTO Fertility, a precision fertility platform using wearable biosensing and AI to measure physiological signals such as stress and recovery and translate them into personalised fertility insights. Paulina brings the patient physiology and data perspective, exploring how we can make the invisible biological and emotional burden of fertility care measurable and actionable.



OTO



hertility

Helen O'Neill —
Advancing Gynaecological
Ultrasound Through
Automation and AI-
Assisted Prediction of
Reproductive Pathologies

Founder & CEO of Hertility and molecular geneticist at UCL, Helen combines reproductive science with AI and large-scale health data. Hertility uses data, diagnostics and AI to identify reproductive health conditions earlier and personalise care, with its GYN-AI trained on more than one million health assessments and extensive blood-result data.

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ABSTRACT



MEET THE GLOBAL LEADERS SHAPING THE FUTURE OF FERTILITY

Chaired by Danielo Gilboa



Machine Data Capture, Human Verification



Sarthak Sawarkar —
SAMA: automating the front office

Sarthak Sawarkar is CEO and co-founder of Sama Fertility, a technology-enabled fertility company focused on making IVF more accessible, affordable and patient-centred. With a background in reproductive genetics and fertility technology, he is now focused on using automation and distributed care to simplify the patient journey. His presentation, "SAMA: Automating the Front Office," explores how intelligent workflows can reduce administrative burden while keeping clinical judgement and patient safety at the centre.



Sergei Gorlovetsky —
Implementing an AI Copilot with Patient-Facing Avatar

Co-Founder of Fertiligent AI, bringing two decades of software architecture and delivery experience to fertility care. Fertiligent builds AI agents that automate patient communication, intake, triage and clinic workflows, with clinicians remaining in control of decisions and verification.



David Chrimes —
Automating KPIs in the Lab: Using RFID to Turn Workflow into Intelligence

Director of Global Genomics Business Development at CooperSurgical, David is a molecular geneticist with extensive experience in diagnostics and embryo genomics, including roles at BlueGnome, Illumina and Genesis Genetics. He now focuses on using automation and data capture to turn IVF laboratory workflows into actionable intelligence.



Morten Raaschou-Jensen —
Traceability, Time-Lapse and AI

Digital Solution Manager at Esco Medical, bringing an engineering and digital-technology perspective to IVF. Working across Esco's connected ecosystem of IVF equipment, software and data, he explores how traceability and time-lapse technologies can create the data infrastructure needed for smarter, more intelligent laboratories.



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Chaired by Gaurav Singhal



Robotics and Automation



Alejandro Chavez-Badiola —
**Conceivables: Validating
Automation with Live Births**

Founder & Chief Medical Officer of Conceivable Life Sciences, Alejandro is a fertility physician who has spent more than 20 years in reproductive medicine and has led the development of AURA, an AI-powered robotic IVF laboratory designed to standardise hundreds of manual laboratory steps while keeping embryologists in control. His recent work moves the conversation from whether IVF can be automated to what happens when automation is tested in real clinical practice — including the first reported live births following automated oocyte retrieval, sperm preparation and ICSI.



Cynthia Hudson —
**Cryostorage in the Age of
Robotics: Automation,
Traceability, and Risk
Reduction**

VP of Clinical Strategy at Reprotech, Cynthia is an embryologist with 20+ years' experience in reproductive technology and IVF laboratory operations. Following Reprotech's 2026 combination with TMRW Life Sciences, she is helping shape the next generation of robotic cryostorage, digital traceability and automated specimen management.



Sasha Sadowy —
**Enabling Modular
Automation in the
Lab**

Clinical Product Specialist at Overture Life, a company developing modular robotic systems to automate key procedures in the IVF laboratory, Sasha brings 30 years of experience as a clinical embryologist, leader and educator. She works with embryologists and laboratory directors to integrate automation into real-world IVF workflows, helping laboratories adopt robotics while retaining the expertise and judgement of the embryologist.



Gaurav Singhal —
**Structured Data
and Agentic AI**

Co-Founder of Avenues Digital Intelligence, Gaurav works at the intersection of structured data, AI and healthcare, building the digital intelligence infrastructure behind Avenues' technology ecosystem. His work explores how structured clinical data can power agentic AI that moves beyond analysing information to intelligently supporting and automating clinical workflows.



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Chaired by Cristina Hickman



Closing Session



Elizabeth Grill —

**From resistance
to readiness:**

**Helping Healthcare teams
and patients
embrace AI for better care**

Director of Psychological Services at the Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine and Professor of Clinical Psychology at Weill Cornell Medicine, Elizabeth is an internationally recognised expert in the psychological and emotional dimensions of fertility care. As a psychologist, researcher and patient advocate, she brings the human perspective to AI — exploring what it will take for healthcare teams and patients to trust, understand and embrace new technology.



Christine F. Allen —

**AI in IVF: The missing piece
of the regulatory puzzle**

A globally recognised expert in embryology and IVF laboratory operations, Christine brings decades of experience at the intersection of reproductive science, clinical practice and emerging technology. Her work focuses on responsible innovation in IVF — asking how we can protect patients and maintain scientific and ethical standards as technologies such as AI move rapidly into clinical practice.



Kazem Nouri —

**AI, Fertility, and Society: AI as
a sustainable tool for
humanitarian healthcare**

Professor of Reproductive Medicine and Co-Director of Kinderwunsch Burgenland, Kazem is a reproductive medicine specialist whose work spans IVF, fertility preservation, medical education and transcultural healthcare. His work with diverse patient populations has given him a broad perspective on how reproductive care can become more inclusive and accessible — and how AI could help extend high-quality fertility care beyond traditional healthcare systems.



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FutureFertility



SUPPORTERS



25th September 2026

WELCOME SESSION chaired by Cristina Hickman

Inside the IVF Clinic Bottleneck:

Structural Barriers to Better Outcomes

The AI Inflection Point in Fertility:**What Works, What Does Not, and What Is Missing**

- 8:00-8:10 ● Chair Welcome / **Nikica Zaninovic**
- 8:10-8:30 ● Clinical View / **Carole Gilling-Smith**
- 8:30-8:40 ● Embryology View / **Halil Ruso**
- 8:40-8:50 ● Entrepreneurial View / **David Sable**
- 8:50-9:00 ● Data Specialist View / **Cecilie Jakobsen**
- 9:00-9:10 ● Employer's View / **Sydni Meyrowitz**
- 9:10-9:20 ● Patient's View / **Andreia Trigo**
- 9:20-10:00 ● **PANEL LED DISCUSSION**

10:00-10:30 ● Coffee break

SESSION 2: chaired by Vinesh Gadhia

AI: from Buzzword to Business Strategy

- 10:30-10:40 ● Asian Perspective / **Hyejun Lee**
- 10:40-10:50 ● Latin American Perspective / **Chris Rego**
- 10:50-11:00 ● Indian Perspective / **Kshitiz Murdia**
- 11:00-11:10 ● Middle Eastern Perspective / **Eduardo Gonzalez**
- 11:10-11:40 ● **PANEL LED DISCUSSION**

SESSION 3: chaired by Andrew Khair

Ferring Symposia: The AI roadmap for Fertility Clinics

11:40-12:10 ● From Hype to Value

/ **Eduardo Hariton**/ **Imran Akram**



SESSION 4: chaired by Eduardo Hariton

Debate: RCT is the best way to evaluate AI

- 12:10-12:15 ● AUDIENCE VOTE
- 12:15-12:25 ● **FOR** / Ying Cheong
- 12:25-12:35 ● **AGAINST** / Rabi Odia
- 12:35-12:45 ● AUDIENCE QUESTIONS
- 12:45-12:50 ● **FOR Rebuttal** / Ying Cheong
- 12:50-12:55 ● **AGAINST Rebuttal** / Rabi Odia
- 12:55-13:00 ● AUDIENCE VOTE
- 13:00-14:00 ● Lunch

SESSION 5: chaired by Cristina Hickman

AI: Healthcare implementation challenges

- 14:00-14:10 ● Lessons from Implementing AI across the UK National Health Service (NHS) / Karina Malhotra
- 14:10-14:20 ● From Idea to Impact: Designing Research That Survives Peer Review- The Academic challenges / Iman Hajirasouliha
- 14:20-14:30 ● Integration challenges in the real world IVF clinic / Jonas Malmsten
- 14:30-14:40 ● Cybersecurity in Fertility Clinics: Protecting the Most Sensitive Data in Healthcare / Chloe He
- 14:40-15:10 ● PANEL LED DISCUSSION
- 15:10-15:40 ● Coffee break

SESSION 6: chaired by Halil Ruso

AI: Gamete Assessment

- 15:40-15:50 ● Egg Intelligence: Turning Oocyte Data into Actionable Decisions / Fernando Prado
- 15:50-16:00 ● / Daniela Braga
- 16:00-16:10 ● / Dan Nayot

- 16:10-16:20 ● Sperm Selection using AI and Robotic Technologies
/ **Betty Meiri**
- 16:20-16:30 ● Sperm Intelligence: Turning Sperm Data into Actionable
Decisions / **Halil Ruso**
- 16:30-16:40 ● Sperm identified and selected using AI assistance resulted in
improved outcome / **Saeed Fathi**
- 16:40-17:10 ● **PANEL LED DISCUSSION**

17:45 ● Sunset welcome drinks - meet outside in front of hotel

26th September 2026

SESSION 7: chaired by Frida Polli
Advanced Imaging and Bio-engineering

- 08:00-08:10 ● Seeing the Unseen: Holotomography and the Future of
Cell Imaging / **Daria Iliev**
- 08:10-08:20 ● Bioengineering: Female and Male embryos diverging response to
AMH / **Frida Polli**
- 08:20-08:30 ● Hyperspectral Imaging: Unlocking Biochemical Signals
Without Touching the Embryo / **Samuel Ojos Negros**
- 08:30-08:40 ● FLIM based metabolic imaging of blastocysts to predict polidy
/ **Chris Helrigger**
- 08:40-08:50 ● 3D microscopy combined with AI / **Paul Balondrade**
- 08:50-09:00 ● AI use of natural language to describe embryo morphology /
Florian Kromp
- 09:00-09:30 ● **PANEL LED DISCUSSION**
- 09:30-10:00 ● Coffee break

SESSION 8: chaired by Semra Kahraman
AI: Embryo Assessment

- 10:00-10:2 ● Consistency in Embryo Ranking / **Jorgen Berntsen**
- 10:20-10:35 ● Reducing cost to baby with AI embryo assessment
/ **Semra Kahraman**



- 10:35-10:45 ● The Global Adoption Gap in Time- Lapse IVF: What Is Really Limiting Uptake? What can AI implementation learn from this / **Serdar Coskun**
- 10:45-11:00 ● Cybersecurity in Fertility Clinics: Protecting the Most Sensitive Data in Healthcare / **Toni di Berardino**
- 11:00-11:30 ● **PANEL LED DISCUSSION**

SESSION 9: chaired by Dan Nayot **AI for clinicians**

- 11:30-11:40 ● Digital Genetics with PGT-P: Enhancing Genetic Assessment beyond PGT-A and PGT-M / **Tobias Wolfram**
- 11:40-11:50 ● AI assisted identification of poor responders who would benefit from dual stimulation / **Ihor Pachiv**
- 11:50-12:00 ● Smarter Clinics, Better Outcomes: Using AI to Optimise IVF Operations / **Simon Lumsdon**
- 12:00-12:10 ● Making Reproductive Surgery Smart / **Aleksandra Goch**
- 12:10-12:20 ● Measuring the Invisible: Data-Driven Monitoring of Stress in Fertility Care / **Paulina Valpas**
- 12:20-12:30 ● Advancing Gynaecological ultrasound through automation and AI assisted prediction system to predict reproductive pathologies / **Helen O'Neill**
- 12:30-13:00 ● **PANEL LED DISCUSSION**

13:00-13:50 ● **Lunch**

SESSION 10: chaired by Santiago Munne **Machine Data Capture, Human Verification**

- 13:50-14:00 ● SAMA: automating the front office / **Sarthak Sawarkar**
- 14:00-14:10 ● Implementing an AI copilot with patient facing avatar / **Sergei Gorlovetsky**
- 14:10-14:30 ● Automating KPIs in the Lab: Using RFID to Turn Workflow into Intelligence / **David Chrimes**
- 14:30-14:40 ● Traceability, Time-lapse and AI / **Morten Raaschou-Jensen**
- 14:40-15:10 ● **PANEL LED DISCUSSION**

SESSION 11: chaired by Gaurav Singhal

Robotics & Automation

- 15:10-15:20 ● Conceivables: Validating automation with live births / **Stephanie Kuku**
- 15:20-15:30 ● Enabling modular automation in the lab / **Sasha Sadowy**
- 15:30-15:40 ● Cryostorage in the Age of Robotics: Automation, Traceability, and Risk Reduction / **Cynthia Hudson**
- 15:40-15:50 ● Structured Data and Agentic AI / **Gaurav Singhal**
- 15:50-16:00 ● AI-Driven Communication Agents to Improve Patient Engagement and Operational Efficiency / **Meena Mahil**
- 16:00-16:10 PANEL LED DISCUSSION

16:00-16:25 ● Coffee break

SESSION 12: chaired by Cristina Hickman

Closing Session

- 16:25-16:35 ● From resistance to readiness: Helping Healthcare teams and patients embrace AI for better care / **Elizabeth Grill**
- 16:35-16:45 ● AI in IVF: the missing piece of the regulatory puzzle / **Christine Allen**
- 16:45-16:55 ● AI, Fertility, and Society: AI as a sustainable tool to humanitarian healthcare / **Kazem Nouri**
- 16:55-17:00 Conference summary and close
Cristina Hickman, Nikica Zaninovic, Zev Rosenwaks

17:15 Beach Activities - Meet outside in front on Hotel

27th September 2026

- 08:00-12:00 ● Consensus statement on the responsible integration of AI in fertility clinical practice



3rd AI FERTILITY WORLD CONFERENCE

HOTEL MIRAGEM, CASCAIS
LISBON, PORTUGAL

SOCIAL EVENTS

FRIDAY, SEPTEMBER 25

SUNSET CRUISE

Traditional Portuguese Vessel EVORA

18:30-20:30

MEETING POINT - 17:45 In front of Hotel Cascais Miragem

SATURDAY, SEPTEMBER 26

BEACH & WATER ACTIVITIES

17:30-19:00

PORTUGUESE WINE & SNACKS

From 19:00

MEETING POINT - 17:15 In front of Hotel Cascais Miragem



3RD AI FERTILITY WORLD CONFERENCE

HOTEL CASCAIS MIRAGEM
CASCAIS, LISBON, PORTUGAL

25-27 September 2026





Imagine what is possible.
Challenge what exists.
Build what comes next.
Shape the future of AI in fertility...





3RD AI FERTILITY WORLD CONFERENCE

INNOVATE. COLLABORATE. TRANSFORM.

THE GLOBAL
GATHERING
SHAPING THE
FUTURE OF
FERTILITY

YOUR NEXT MOVE IN AI IS TO LEAD IT

Join the world's leading minds in AI, reproductive medicine and innovation for 3 days that will **inspire, challenge and accelerate** what's next.



25-27 SEPTEMBER 2026



HOTEL CASCAIS MIRAGEM
CASCAIS, LISBON, PORTUGAL



GLOBAL
EXPERTS



BREAKTHROUGH
IDEAS



CUTTING-EDGE
AI SOLUTIONS



MEANINGFUL
CONNECTIONS



REAL-WORLD
IMPACT



SHAPING
TOMORROW

Clinicians • Embryologists • AI Experts • Innovators • CEOs
Investors • Researchers • Regulators • Entrepreneurs
Data Scientists • Robotics Engineers • Patient advocates



AI Fertility.org



17

COUNTRIES



52

WORLD-CLASS
SPEAKERS



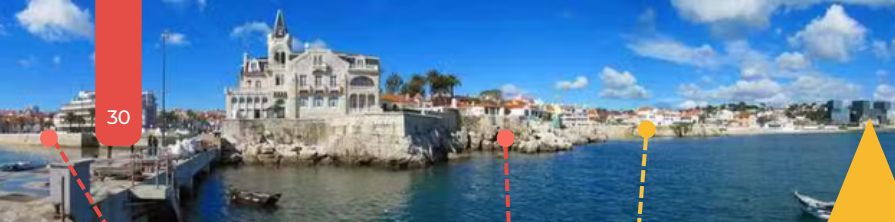
1 MISSION

TO TRANSFORM
FERTILITY CARE

INNOVATION TODAY. BETTER OUTCOMES TOMORROW.

-
- Cascais Municipality Points of Interest:**
1. Seafont pedestrian promenade
 2. Santa Maria House Museum
 3. Santa Maria Lighthouse Museum
 4. Museu Condes de Castro Guimarães
 5. Parc Marechal Carmona
 6. Citadel of Cascais
 7. Cascais Marina
 8. Clube Naval de Cascais
 9. Fortress Nossa Senhora da Luz de Cascais
 10. Cascais Tide Gauge
 11. Dom Luis I Foundation
 12. Casa Sommer
 13. Aos Descobrimentos Portugueses
 14. Cascais Bay
 15. Historic Center street shopping
 16. Museu da Vila
 17. Museu do Mar Rei Dom Carlos I
 18. Mercado da Vila
 19. Grutas do Poço Velho
 20. Palacete Seixas
 21. Palácio dos Duques de Palmela
 22. Parque Palmela
 23. Pisina Ocedínica Alberto Romano
 24. Jardim dos Passaninhos
 25. Paredão de Cascais
 26. Boca do Inferno
 27. Casa da Guia
 28. Guia Lighthouse
 29. Forte de São Jorge de Oitavos
 30. Farol do Cabo Raso
 31. Forte de Cresmina
 32. Praia do Guincho
 33. Dunas da Cresmina
 34. Sintra-Cascais Natural Park
 35. Museu da Música Portuguesa / Casa Verdades de Faria
- Other locations shown on the map:** Alcabideche, Amoreira, Monte Estoril, Santo António do Estoril, Cascais Bay, Cascais Marina, Cascais Tide Gauge, Cascais Lighthouse, Cascais Citadel, Cascais Fortress, Cascais Church, Cascais Castle, Cascais Museum, Cascais Park, Cascais Beach, Cascais Golf Course, Cascais Train Station, Cascais Bus Station, Cascais Airport, Cascais Port, Cascais Harbor, Cascais Marina, Cascais Tide Gauge, Cascais Lighthouse, Cascais Citadel, Cascais Fortress, Cascais Church, Cascais Castle, Cascais Museum, Cascais Park, Cascais Beach, Cascais Golf Course, Cascais Train Station, Cascais Bus Station, Cascais Airport, Cascais Port, Cascais Harbor.

30



Underpass to reach the beach promenade



Fogo de Chao, all you can eat Brazilian steakhouse

Hotel Cascais Miragem



Sintra, Palacio da Pena 16km

Praia do Guincho 8 km

Lisbon 27km



CASCAIS HIGHLIGHTS INCLUDE:

Coastal walk + Marina + Fort:

From the hotel, turn right, walk 200m and cross the underpass towards the beach promenade. Once you reach the beach promenade, turn right and walk along the beachfront. Follow the promenade into town, continue through/around Cascais Marina (restaurants, boats, atmosphere), and visit the fort/Citadel area (Forte da Cidadela / Cascais Citadel) for views and history. Excellent easy scenic route.

Boca do Inferno:

Dramatic cliffs and sea caves (“Mouth of Hell”) just west of the marina/Citadel. Easy ~20-minute coastal walk from the center along the dedicated path—highly recommended for the views and wave action.

DAY TRIPS WITH A CAR:

Praia do Guincho:

Beautiful wilder beach further west, but it requires a car or uber.

Palacio da Pena, Sintra:

is one of Portugal’s most iconic landmarks — a colorful 19th-century Romanticist palace perched high on a hill in the Serra de Sintra, about 20–30 minutes by car from Cascais.

Lisbon (≈30 minutes) and to the Palácio de Sintra / Sintra area (≈20–30 minutes) for the famous palaces, parks, and historic center.



RECOMMENDED RESTAURANTS

SEAFOOD

Marisco na Praça – Marina de Cascais (Marina, 1st floor):

Excellent choice for fresh seafood. Pick fish/seafood by the kilo or unit from their stall; cooked to order (Portuguese classics + some Peruvian fusion touches like ceviche/tataki). Great marina views.

Baía do Peixe (Avenida Dom Carlos I, 6, by the bay):

Another strong seafood option with sea views. Known for fish/seafood rodízio (all-you-can-eat style platters), cataplana, and fresh grilled fish.

STEAK

Fogo de Chao, Cascais.

All you can eat Brazilian steakhouse. (Galeria Comercial Auchan Cascais / Estrada Nacional 6 area): Traditional Brazilian rodízio with table-side carved meats + extensive buffet. Hearty and popular.

K Bueno SteakHouse (Marina de Cascais, loja 20 / upper floor):

High-quality steaks (aged cuts including picanha, entrecôte, T-bone, etc.), good sides, and a terrace with marina/sea views. Miami-inspired vibe.



3rd AI FERTILITY WORLD CONFERENCE



ICE CREAM

Santini:

The classic Cascais (and Portuguese) institution for artisanal gelato since 1949. Locations include the main one on Alameda Combatentes da Grande Guerra / Av. Valbom area in the center, plus a newer corner/kiosk at the Citadel with sea views and cocktails. Outstanding natural fruit flavors and creamy classics.

TRADITIONAL PORTUGUESE SWEETS

Sacolinha :

(main Cascais branch on Alameda Combatentes da Grande Guerra / near Largo Camões area, plus others): Excellent local pastelaria for pastéis de nata, bolos, and classic Portuguese pastries/sweets.

Enjoy Cascais!



GENERAL INFORMATION

OFFICIAL LANGUAGE

Official language of the Conference is English.

REGISTRATION FEE

- **Early bird** (before 16 April, 2026): **350 €** (VAT included)
- **Regular** (from 16 April, 2026): **550 €** (VAT included)
- **Students 225 €** (VAT included)

Participants who attended the ESHRE 42nd Annual Meeting may enter the Promo code during registration to receive a discount.

Students are required to provide an official proof of status (e.g. enrolment certificate or valid institutional ID). Please submit this documentation before registration to iva.simunic@vivid-original.com.

Fee includes

- Access to all scientific conference events
- Access to the exhibition area
- Conference materials
- Lunches and Coffee breaks

ACCOMODATION

As the technical organizer, we offer a limited number of rooms at the conference hotel at special rates for participants. We encourage you to book early to secure your accommodation. Please contact iva.simunic@vivid-original.com

CANCELLATION OF REGISTRATION

Participants who cancel their participation in writing to the technical organizer, Vivid Original, by August 7, 2026, are eligible for a refund of the paid registration fee after the Conference, less VAT and a 10% administrative fee. Cancellations made after August 7, 2026, are non-refundable; however, participant name substitutions are allowed.

CANCELLATION OF ACCOMMODATION

Free cancellation: 91 days before the arrival.

- 90-71 days prior to departure: Cancellation fee - 25% of the total price
- 71-40 days prior to departure: Cancellation fee - 50% of the total price
- 40-0 days prior to departure: Cancellation fee - 100% of the total price
- After the departure date or in case of a “no-show”:
Cancellation fee - 100% of the total price

ADDITIONAL NOTES

Any refunds, if applicable, will be processed according to the above schedule. Changes that are considered cancellations (e.g., name changes not permitted by the supplier) will be charged according to the same scale.

ARRIVING

Please contact iva.simunic@vivid-original.com to request airport pick-up, which is available for all speakers and sponsors.

Lisbon airport is only about 20 minutes from the hotel by car (up to 1 hour during peak traffic), and uber transport costs are around 20-40 Euros.

WHAT TO WEAR

Relaxed & Beach Chic

Think effortless, comfortable and ready for the coast.





ABSTRACTS

INNOVATION IN SPERM SELECTION USING AI AND ROBOTIC TECHNOLOGIES

Betty Meiri et al.

Can an AI-integrated microrobotic system improve the accuracy and consistency of ideal sperm selection while reducing operator-dependent variability in ICSI?

The BAIBYS[®], Φ System represents a novel automated approach to sperm selection, integrating AI and robotics to enhance accuracy, consistency, and efficiency in ART laboratories

Sperm selection is a pivotal step in ICSI and requires substantial training for embryologists. Because the process depends on subjective visual assessment, outcomes can vary between practitioners and even fluctuate for the same individual over time. This variability, combined with time pressure and limited inter-observer agreement, may negatively affect clinical results. Selecting a suboptimal spermatozoon can impair early embryonic development, reduce high-quality blastocyst formation, or lead to failed pregnancies and, in rare cases, congenital anomalies. An automated, embryologist-inspired workflow could reduce operator-dependent risks and improve selection reliability.

Dataset: Tens of thousands of high magnification sperm images annotated by expert embryologists following WHO 6th edition criteria. **Evaluation:** 21 semen samples processed to extract up to 20 sperm per sample. **Analysis:** 515 sperm videos (286 normal, 229 abnormal) were independently evaluated by three blinded senior embryologists. Consensus cases (n=160) were used to assess algorithm performance using discrete statistics and the Kappa inter rater reliability model. The BAIBYS[®], Φ System integrates high magnification imaging ($\times 10$ and $\times 60$), computer vision, deep neural networks, and robotic micromanipulation to autonomously detect, classify, and extract spermatozoa with normal morphology and progressive motility.

The BAIBYS[®], Φ AI algorithm demonstrated substantial agreement with embryologist consensus in classifying sperm as normal or abnormal (Kappa = 0.71). Agreement was even higher for normal spermatozoa (PPA = 0.951). These findings indicate strong alignment between expert human assessment and automated AI based classification, supporting the system's potential for reliable sperm selection in ICSI.

This report presents a clinical application of the device and documents the clinical potential achieved by AI-assisted sperm selection. A multinational randomized controlled trial is now underway to statistically evaluate its impact on fertilization, blastocyst development, and pregnancy rate outcomes.

The BAIBYS[®], Φ System introduces a standardized, automated method for sperm selection, using AI and robotics to improve accuracy and consistency in ART laboratories. Early concordance with expert evaluation is promising, suggesting potential for enhanced ICSI outcomes and reduced embryologist workload as validation expands.



ABSTRACTS

ISPERM IDENTIFIED AND SELECTED USING AI-ASSISTANCE RESULTED IN IMPROVED FERTILIZATION AND EMBRYO YIELD IN EXTENDED SPERM SEARCHES.

Dale M Goss et al.

In extended sperm searches of testicular tissue and semen, does AI-assisted sperm identification improve fertilization and embryo yield versus manual identification?

AI-assisted identification achieved higher fertilization rates and more embryos than manual identification within the same paired cycles.

Severe male factor infertility, including non-obstructive azoospermia, cryptozoospermia, and extremely low-count ejaculates, is associated with poor and highly variable fertilization and embryo development after ICSI. Outcomes in these cases are frequently limited by sperm scarcity and heterogeneity rather than oocyte factors. Within-cycle comparison of AI-assisted sperm searching allows controlled assessment of sperm identification approaches while minimising female and laboratory confounders. AI-based sperm identification tools may improve efficiency of locating usable sperm, but evidence linking AI-assisted identification to downstream embryology outcomes remains limited.

This was a side-by-side comparison of sperm searching with and without the assistance of an AI tool for rare sperm detection from a live-camera feed beside an inverted ICSI microscope over 12 months. Seventeen cycles were included where both manual and AI-assisted workflows recovered sperm suitable for injection within the same cycle. Oocytes were injected according to sperm availability rather than evenly split between identification approaches.

Poor-prognosis severe-male-factor cases undergoing ICSI using surgically retrieved (n=14) or cryptozoospermic semen (n=3) across three Australian IVF clinics. Dish setup and laboratory protocols were controlled within each cycle to ensure methods were identical apart from the search process itself. Embryologists selected the best available sperm for injection based on motility and morphology, blinded to identification method. Outcomes were fertilization rate and utilizable embryos. Paired comparisons used exact Wilcoxon matched-pairs tests.

Sperm from AI-assisted identification produced higher fertilization rates than sperm from manual identification. Median fertilization rate was 50.0% with AI-assisted versus 20.0% with manually identified sperm (n=17 pairs), with mean rates of 47.87% and 24.76%, respectively. The median paired difference (AI-assisted minus manual) was +27.0 percentage points. This difference was supported by an exact Wilcoxon matched-pairs signed-rank test (p=0.0010, two-tailed).

Embryo yield was also higher following AI-assisted sperm identification. Median embryos generated were 1.0 with AI-assisted versus 0.0 with manual, with mean values of 1.41 and 0.35 embryos per method, respectively. The median paired difference was +1.0 embryo. This difference was supported by exact Wilcoxon testing (p=0.0012, two-tailed).

Pregnancy outcomes were recorded descriptively only and included pregnancies arising from AI-derived embryos, including at least one live birth in January 2025 and one second-trimester miscarriage. These outcomes were not analysed statistically.

Retrospective design, small-sample-size, and diagnostic heterogeneity limit generalisability. Individual sperm time from identification to injection was not recorded, limiting assessment of prolonged exposure effects during handling. Comparison was non-randomised and restricted to cycles with sperm recovered by both approaches only.

In severe male factor cycles where sperm can be recovered by both approaches, AI-assisted sperm identification may improve fertilization and embryo yield. Prospective multicentre studies with protocolised allocation and powered clinical outcomes are warranted.



ABSTRACTS

ARE WOMEN CRYOPRESERVING ENOUGH OOCYTES FOR FERTILITY-PRESERVATION? A PROBABILISTIC MODEL INTEGRATING AI-BASED OOCYTE MORPHOLOGY AND AGE-DEPENDENT EUPLOIDY

Daniela Braga et al.

Are women undergoing elective fertility-preservation cryopreserving enough mature oocytes when maternal age and AI-derived oocyte quality are jointly considered?

Most women cryopreserve insufficient oocytes, reflecting age-related declines in both blastulation and euploidy, more pronounced with low AI-derived oocyte quality.

Elective oocyte cryopreservation is increasingly used to mitigate age-related fertility decline. Although vitrification is highly efficient, reproductive success depends on maternal age and the number of oocytes. Euploidy rates decline steeply with age, substantially increasing the number of oocytes required to achieve pregnancy. AI-based tools can assess oocyte quality and predict developmental competence, revealing inter-individual variability beyond chronological age. However, it remains unclear whether current fertility-preservation practices adequately reflect these biological constraints during patient counselling.

In this retrospective cohort study integrating probabilistic modelling, three datasets collected between January 2012–December 2024 were analyzed: 1) 14,404 mature oocytes from 1,647 elective fertility preservation cycles in 1,100 women (real-world oocyte yield); 2) 1,948 mature donor oocytes from 410 donation cycles (blastulation model), and 3) 3,594 mature oocytes from 711 autologous PGT-A cycles (euploidy model). The model estimated the number of mature oocytes required to obtain three euploid blastocysts.

Donor oocytes were used to build a model estimating blastulation according to oocyte age and AI-derived quality, classified into (T1=1–3.7), intermediate (T2=3.8–8.4) and high AI Score tertiles (T3=8.5–9.9). Autologous PGT-A cycles were analyzed to model age-specific euploidy probabilities. These components were integrated to estimate the likelihood of obtaining three euploid blastocysts for each age and AI-quality stratum, which was then compared with the number of oocytes cryopreserved in real-world fertility preservation cycles.

Blastocyst formation probability increased with higher AI Score (OR = 1.11, 95% CI: 1.08–1.14; $p < 0.001$), whereas euploidy probability declined steeply with advancing maternal age (OR = 0.85 per year; 95%CI: 0.84–0.87; $p < 0.001$). When combined, the number of mature oocytes required to obtain three euploid blastocysts increased sharply with age and was modulated by AI-derived quality. Women <30 years required 14.7, 9.2 and 8.9 oocytes; women 30–33 years required 18.8, 11.7 and 11.3 oocytes; women 34–36 years required 24.1, 14.9 and 14.4 oocytes; women 37–40 years required 32.6, 20.0 and 19.4 oocytes; and women >40 years required 52.9, 32.2 and 31.1 oocytes, for low, intermediate and high AI-derived oocyte quality, respectively. In the fertility preservation cohort, the median number of mature oocytes cryopreserved per cycle declined progressively with age (8.3, 8.1, 7.3, 6.1 and 4.0 oocytes for <30, 30–33, 34–36, 37–40 and >40 years, respectively). Among 132 women who returned to use their cryopreserved oocytes, both oocyte survival and pregnancy rates declined with age, with significantly lower survival and pregnancy rates observed in women aged >40 years ($p < 0.001$).

Blastocyst formation and euploidy were modelled using separate datasets, assuming independence between processes. AI-derived quality percentiles may not carry identical biological meaning across age groups, and cumulative multi-cycle oocyte banking was not explicitly modelled.

Integrating AI-derived oocyte quality with age-specific euploidy probability enables individualized fertility-preservation counselling, informs realistic expectations regarding cumulative success, highlights that oocyte numbers currently cryopreserved are often below biological requirements, and may prevent overly optimistic assumptions.



ABSTRACTS

CAN AN AI-MODEL USING NATURAL LANGUAGE TO DESCRIBE EMBRYO MORPHOLOGY ACHIEVE HIGH PERFORMANCE ON A DOWNSTREAM TASK LIKE EMBRYO SCORING WITH ONLY LIMITED TRAINING DATA? **Florian Kromp et al.**

For the first time it was shown that an AI-model describing embryo images using natural language excellently predicts Gardner scores even on limited training data.

Reproductive medicine is increasingly influenced by AI technology. The first clinical trial on embryo scoring comparing AI- to expert decisions concluded no significant disadvantage using AI, while demonstrating a 10-fold reduction in evaluation time. Key challenge to personalize AI-models for specific clinical data is the need for high-quality, curated datasets. Although efforts have been made to develop generalizable embryo assessment, downstream tasks still require thousands of annotated images. As an alternative strategy, developing language-grounded vision models have demonstrated strong performance on downstream tasks when trained on only limited data across various domains.

A community-centered project advancing AI foundation models to describe embryo morphology/developmental stage of public available TL images using standardised natural language (image captioning) was created. Two datasets (759 additional TL images, 532 static morphology images) were annotated with Gardner grades by clinical embryologists, and split into training- (TL: 625, static morphology: 434 images) and testsets (TL: 134, static morphology: 98 images) to finetune the AI foundation model for Gardner scoring.

A vision-language model was developed to predict the morphology and developmental stage of embryos using natural language descriptions (image captioning). The captioning model was then fine-tuned on Gardner-grade annotated images from two diverse datasets (public TL dataset and static morphology image dataset) to enable accurate Gardner scoring. Finally, the two resulting models were evaluated on held-out test sets to assess the impact of image captioning on downstream Gardner scoring performance.

The models' prediction accuracy was evaluated on the held-out test sets, for each of the Gardner grades expansion (EXP), quality of inner cell mass (ICM), and trophectoderm (TE), for each of the pre-trained models (non-captioning (NC), 700 image captioning (700C), 1000 image captioning (1000C)). For the TL dataset, all models showed substantially improved accuracy with increasing captioning: EXP (NC: 0.512, 700C: 0.848, 1000C: 0.909), ICM (NC: 0.756, 700C: 0.818, 1000C: 0.833), and TE (NC: 0.864, 700C: 0.954, 1000C: 0.969). For the static morphology dataset, the accuracy of EXP increased substantially (NC: 0.388, 700C: 0.663, 1000C: 0.755). In contrast, ICM's accuracy did not improve (NC: 0.666, 700C: 0.555, 1000C: 0.612). Meanwhile, TE showed a slight increase in accuracy (NC: 0.63, 700C: 0.632, 1000C: 0.642). Notably, the model achieved consistent, high performance on all three Gardner grades for the TL dataset, despite being trained on only 759 annotated images. In contrast, the performance on static morphology images was diverse: while EXP showed promising results, ICM and TE performance remained relatively constant or exhibited only marginal improvement. This discrepancy likely reflects domain shift, as image captioning training was performed exclusively on unprocessed TL data. Our findings suggest that relating embryo images to natural language description leads to an increased models' ability to extract semantically enriched image features. Nevertheless, to assess the generalizability of the AI-model for arbitrary embryo imaging data, datasets of more clinics should be included into captioning training in the next step.

These findings suggest that our model capable of describing embryo morphology using natural language can be successfully adapted to other tasks such as embryo ranking, or prediction of blastocyst formation and implantation while trained on limited data only.



ABSTRACTS

CLINICAL BLUEPRINT TO FOUNDATIONAL AI: REAL-WORLD VALIDATION OF A MULTIMODAL REPRODUCTIVE HEALTH PREDICTION SYSTEM ACROSS 680,000+ PATIENT JOURNEYS

Helen o'Neill et al.

Can clinically designed digital care pathways be translated into scalable AI systems capable of accurately identifying reproductive pathologies using multimodal patient data?

An AI-assisted prediction system, developed using clinically engineered frameworks, achieved 98-99% precision for 18 reproductive conditions, demonstrating scalable medical AI

Diagnosis of common reproductive conditions is frequently delayed due to fragmented care pathways, heterogeneous symptom presentation, and limited access to specialist evaluation. Existing AI approaches in reproductive medicine largely rely on isolated datasets and rarely integrate longitudinal outcomes with biochemical testing within clinical workflows.

A major barrier to effective medical AI is not algorithm development but the absence of structured, standardised clinical data environments capable of capturing biologically meaningful signals. A need remains for frameworks that translate physician reasoning into machine-interpretable datasets suitable for deployment in routine care.

We conducted a large-scale retrospective validation study using a longitudinal women's health dataset comprising over 680,000 health assessments, 80,000 hormone panels, and associated clinical outcomes collected through a digital reproductive healthcare pathway.

We first designed a standardised clinical intake and diagnostic blueprint enabling consistent multimodal data capture. ML models were subsequently trained within this predefined framework using gradient-boosted classification approaches and structured data extraction pipelines.

Participants entered a unified digital pathway incorporating structured reproductive assessments, symptom phenotyping, and biochemical hormone testing. Developed with specialists, the health assessments encoded diagnostic reasoning into structured variables. Twenty-five classification models were trained to generate probabilistic risk predictions across 18 reproductive conditions. Natural language processing standardised clinical inputs, while model outputs supported a clinician-facing decision-support system for real-time triage and reporting.

Across validation cohorts, the system demonstrated 98-99% precision and recall in identifying reproductive pathologies when benchmarked against clinician-confirmed diagnoses. Key findings include high concordance between AI predictions and specialist clinical assessment, alongside improved classification of complex endocrine phenotypes through combined symptom-biochemistry modelling. The models showed robust performance across heterogeneous demographic groups, supported by the significant scale and diversity of the dataset.

Diagnostic latency was reduced by enabling probabilistic risk stratification prior to specialist consultation. Performance gains were primarily attributable to structured clinical data design, with cross-validation confirming stability across independent subsets, suggesting minimal influence of random variation. Probability scoring enabled nuanced clinical triage rather than binary diagnosis, aligning model outputs with real-world clinical decision-making. These results demonstrate that embedding AI within a purpose-built clinical data ecosystem rather than using isolated datasets materially improves predictive reliability and provides a scalable framework for high-accuracy reproductive healthcare.

Predictions remain probabilistic and are intended to support clinical decision-making rather than replace definitive diagnosis. Certain conditions, particularly endometriosis, may still require imaging or surgical confirmation. Model performance depends on accurate patient-reported inputs and standardised laboratory testing.

This work demonstrates that scalable medical AI emerges most effectively from clinically engineered data infrastructures rather than algorithm-first approaches. By transforming routine patient journeys into structured, multimodal datasets, healthcare systems can generate continuously learning diagnostic tools deployable at population scale.



ABSTRACTS

ADVANCING GYNAECOLOGICAL ULTRASOUND THROUGH AUTOMATION: A MULTI-MODAL AI PIPELINE FOR SCALABLE IMAGE CLASSIFICATION, FEATURE DETECTION, AND CLINICAL REPORTING

Helen o'Neill et al.

Can integrated computer visions and LLM pipelines automate ultrasound image classification, anatomical feature detection, and clinical reporting with high diagnostic precision

Our automated pipeline achieved >96% classification accuracy and >97% follicle detection, reducing clinical reporting time from 30 minutes to under 3 minutes.

Manual ultrasound monitoring and reporting is a primary administrative bottleneck in women's health. Clinicians currently spend significant time manually downloading screenshots, unzipping files, and transcribing measurements into reports. This unstructured workflow takes approximately 10-30 minutes per scan and is prone to data security risks and information loss. While individual AI tools exist for imaging, an end-to-end pipeline that integrates DICOM metadata with automated reporting is missing, limiting the capacity for high-volume gynaecological screening and consistent patient follow-up.

This was a retrospective validation study. For classification, almost 7,000 images were used for training and 1,000 for validation. For object detection, the model was trained on >3,000 images containing >14,000 follicle instances. The multi-stage pipeline employed ResNet backbones for organ identification and U-NET models for high-resolution segmentation. Performance was measured over 30-100 training epochs to ensure validation loss stability.

The model processed ultrasound data through a secure portal, leveraging DICOM metadata for magnification and spatial orientation. We utilised a five-class classification system: Ovary, Uterus-Sagittal, Uterus-Transverse, Uterus-Transabdominal, and Text. Object detection identified follicles, ovaries, and the endometrium. Finally, a Large Language Model synthesised these structured outputs with biochemical data to generate comprehensive clinical letters for clinical review.

The classification model achieved >96% accuracy in identifying reproductive organs, with an AUC of 0.98 for ovaries and 0.97 for the sagittal uterus. Object detection identified 14,262 follicles with >97% accuracy in preliminary trials. Advanced 2025 results showed a mean Average Precision (mAP) of 0.749 across all classes. Clinical implementation successfully eliminated manual tasks such as unzipping and organising images.

The integration of DICOM metadata allowed for precise volume calculations, with the U-NET segmentation model reaching good alignment on DICE similarity coefficients. Clinician-in-the-loop time for interpretation was reduced to 30-60 seconds, and total report generation was accomplished in under 3 minutes. Saliency mapping confirmed the model learns from anatomical features rather than overlying text, reducing the role of chance in misidentification. While uterine orientation labelling remains a minor challenge, the system ensures 95% specificity in excluding non-organ features.

Uterine orientation (transverse vs. sagittal) requires more stringent labelling to improve detection precision. Furthermore, class imbalance exists as follicles dominate the training data. Future iterations will utilise focal loss functions and larger image sizes (250x250) to further refine model resolution for complex pathologies.

This pipeline resolves the reporting bottleneck in gynaecological ultrasound. By automating the workflow, clinics can increase patient capacity while maintaining superior data security and diagnostic consistency. This ensures faster, data-driven feedback, improving the efficiency of reproductive health monitoring and the patient experience.



ABSTRACTS

ADTOWARDS PERSONALISED FROZEN EMBRYO TRANSFER: MACHINE LEARNING PREDICTS IMPLANTATION FROM PRE-TRANSFER PROGESTERONE AND ESTRADIOL PROFILES

Ihor Pachkiv et al.

Can pre-transfer serum progesterone and estradiol levels be used to predict implantation after frozen embryo transfer using machine learning models?

Progesterone and estradiol levels before transfer contributed to implantation prediction, supporting endocrine-based ML approaches for personalized embryo transfer.

Many frozen embryo transfer cycles are managed without routine peri-transfer progesterone and estradiol monitoring, and in centers that do measure progesterone, decision-making typically relies on fixed cut-offs rather than personalised endocrine windows. Although evidence suggests progesterone levels influence outcomes, the independent role of estradiol and the optimal timing remain uncertain. No tools currently estimate implantation from peri-transfer hormonal profiles. ML could enable personalised embryo transfer by modelling implantation probability from continuous progesterone and estradiol values, moving beyond protocol-driven timing towards endocrine-guided decision-making.

This retrospective single-centre pilot study analysed 300 frozen embryo transfer (FET) cycles performed between 2024 and 2026. Peri-transfer serum progesterone and estradiol levels measured one day prior to the embryo transfer were evaluated in relation to implantation outcomes. Supervised and unsupervised machine learning models were developed to explore whether continuous endocrine profiles could predict implantation and support personalised embryo transfer strategies.

Patients undergoing FET at a private ART centre were eligible if peri-transfer progesterone and estradiol measurements and pregnancy outcomes were available. Implantation was assessed by biochemical and clinical pregnancy, and live birth was recorded as a secondary endpoint. Logistic regression and gradient boosting models were trained to estimate implantation probability. Model performance was assessed with cross-validation, and feature contributions were evaluated using SHAP values.

Traditional univariate analyses showed no global statistical association between individual pre-transfer progesterone (P) or estradiol (E2) levels and biochemical or foetal heartbeat pregnancy. In contrast, unsupervised clustering of P and E2 identified four endocrine phenotypes with divergent implantation rates; notably, a subgroup with markedly elevated P exhibited reduced implantation, whereas patients with moderate P/E2 profiles achieved higher success. Supervised models based on P, E2 and age demonstrated modest discriminatory performance with clear endocrine signal structure for biochemical and foetal heartbeat outcomes, whereas live birth prediction showed the highest apparent discrimination (AUC 0.70), although this should be interpreted cautiously due to class imbalance and small positive sample size. Across models, progesterone contributed most to prediction (~0.4), with estradiol contributing less. Accuracy overestimated model performance due to class imbalance. These findings suggest that pre-transfer endocrine profiles contain predictive information when modeled jointly and may define clinically relevant endocrine phenotypes. However, observed patterns may reflect chance clustering and require confirmation in larger cohorts with expanded embryo and clinical features as well as external validation.

This retrospective, single-centre analysis lacked external validation and was limited by sample size and heterogeneous supplementation protocols and heterogeneous luteal support regimens. Measurement timing may not generalise to other FET settings, and prospective studies are needed to confirm predictive performance.

Peri-transfer endocrine profiling combined with machine learning could support personalised embryo transfer timing rather than reliance on fixed progesterone cut-offs. Such tools may contribute to more tailored luteal support strategies and improved FET decision-making pending prospective validation.



ABSTRACTS

TOWARDS PRECISION STIMULATION FOR POOR RESPONDERS: DATA-DRIVEN STRATIFICATION OF DUAL OVARIAN STIMULATION CANDIDATES

Ihor Pachkiv et al.

Can AI-derived phenotypes identify which poor responder patients benefit the most from dual ovarian stimulation?

ML using baseline characteristics identified poor responders likely to benefit from dual stimulation enabling efficient and individualized stimulation planning.

Poor ovarian responders constitute a heterogeneous group with limited oocyte yield and suboptimal outcomes despite advances in stimulation protocols. Dual ovarian stimulation (DuoStim) may increase cumulative oocyte and blastocyst numbers within a single menstrual cycle, but responses vary widely and no criteria reliably identify which patients benefit. Existing classification systems (e.g., POSEIDON) recognize variability in ovarian reserve and age, yet do not guide DuoStim selection. Consequently, clinical decision-making remains inefficient, particularly in patients with diminished ovarian reserve or early ovarian aging.

This retrospective single-center exploratory study analyzed POSEIDON-defined poor responders undergoing dual stimulation between 2024–2026 to identify determinants of second-stimulation benefit. Exploratory data analysis, unsupervised clustering and supervised machine learning were applied to baseline characteristics to predict DuoStim benefit. Model performance was evaluated using 5-fold cross-validation. Seventy patients have been analyzed to date, with continued recruitment to increase statistical power.

Seventy POSEIDON poor responder patients were included. Baseline variables comprised demographics (age, BMI), hormonal profiles (FSH, LH, AMH), ovarian reserve and reproductive history (AFC, prior IVF attempts, endometrial thickness). Continuous variables were scaled and categorical variables one-hot encoded. K-means clustering identified candidate phenotypes, while Random Forest classifiers predicted dual stimulation benefit. Performance was assessed using MAE, R^2 and standard classification metrics under 5-fold cross-validation. This study developed a data-driven stratification framework for poor responders undergoing dual stimulation. Initial K-means clustering suggested four distinct patient phenotypes with markedly different second-stimulation mature oocyte yields. One phenotype represented favorable candidates with high benefit, whereas another showed consistently limited response, indicating that poor responders are not a uniform group and that pre-treatment stratification may be feasible.

Supervised machine-learning models trained on demographic, hormonal and reproductive history variables predicted whether the second stimulation would yield a clinically meaningful number of mature oocytes. Classification models achieved F1-scores of 0.92 and AUC of 0.88, indicating a strong predictive signal despite the modest sample size. Feature importance ranked IVF attempts, AMH and BMI as the strongest predictors of dual stimulation benefit. Regression models predicting exact oocyte counts showed weaker performance, suggesting that binary decision-support may be the more practical initial application. The observed performance metrics and cluster separation argue against pure chance, although external validation is needed.

Recruitment is ongoing, with additional endpoints including embryo development, pregnancy and live birth being collected.

The study is retrospective and single-center, and external validation is limited. Machine-learning models may overfit despite cross-validation, and phenotype definitions require reproducibility across protocols. Clinical utility remains hypothetical until prospective trials confirm phenotype-based selection improves efficiency in poor responders.

Data-driven stratification may enable a precision stimulation paradigm in poor responders by identifying patients most likely to benefit from dual stimulation and avoiding ineffective cycles in others. Such approaches could enhance cumulative embryo yield, potentially paving the way for individualized DuoStim decision-making.



ABSTRACTS

SAFETY AND EFFICACY OF AN AI-INTEGRATED EMBRYO MORPHO-METABOLIC INDEX (EMMI) ALGORITHM FOR NON-INVASIVE BLASTOCYST VIABILITY ASSESSMENT USING FLIM-BASED METABOLIC IMAGING

Kaveh Azartash et al.

Can an AI-driven EMMI algorithm combining FLIM-based metabolic imaging, morphology, and patient demographics safely and accurately predict embryo ploidy non-invasively?

The EMMI algorithm achieved an AUC of 0.91 for ploidy prediction while Em-Lux imaging preserved blastocyst viability across all exposure levels.

Embryo selection in IVF relies on subjective morphological grading and invasive preimplantation genetic testing (PGT-A), both limited by subjectivity, cost, and procedural risk. Evidence indicates a measurable relationship between chromosomal ploidy and cellular metabolic activity, particularly NADH levels, quantifiable through Fluorescence Lifetime Imaging Microscopy (FLIM), with aneuploid and euploid embryos exhibiting distinct metabolic signatures. However, no validated platform has yet unified metabolic imaging, morphology, patient demographics, and artificial intelligence into a single non-invasive embryo selection framework.

This is a prospective analytical study using human blastocysts (n=88, 57 aneuploid and 31 euploid) donated to the Stanford RENEW Biobank. Embryos underwent FLIM imaging with the Em-Lux platform and were assessed for EMMI score correlation with PGT-A ploidy results. Safety was evaluated by exposing embryos to low, medium, and high light doses, followed by overnight culture and re-grading. This represents interim findings of an ongoing large-cohort study.

Donated human blastocysts were imaged using the Em-Lux platform at an academic research biobank. NADH fluorescence lifetime signals were processed via a Gaussian Mixture Model algorithm to segment ICM and trophectoderm regions. An AI classification framework integrated metabolic, morphological, and demographic variables to generate EMMI scores. Classifier performance was evaluated by AUC. Safety was assessed by re-grading embryos after overnight culture across three exposure dosage groups.

The AI-driven EMMI algorithm achieved an AUC of 0.91, demonstrating strong sensitivity and specificity for non-invasive ploidy prediction. Mean EMMI scores differed between groups, with aneuploid embryos scoring 0.392 ± 0.018 versus 0.321 ± 0.017 for euploid embryos, supporting a biologically meaningful rather than chance-driven separation. The integration of FLIM-derived NADH signals, morphological parameters, and patient demographics produced a reproducible composite viability index. Safety assessment showed preserved embryo viability across all exposure levels, with survival rates of 100%, 80%, and 80% for low, medium, and high dosage groups respectively, even at 10X standard exposure. These findings represent interim analysis of an ongoing study, and cautious interpretation is warranted until larger cohort data confirm classifier performance across diverse populations.

This study represents interim findings from an ongoing large-cohort trial. The current sample size limits definitive statistical conclusions. Results are derived from donated, non-transferred embryos, which may not fully reflect clinical IVF populations. Independent external validation is needed before clinical implementation can be recommended.

When validated, EMMI algorithm could offer a non-invasive, cost-effective alternative to PGT-A, broadening access to reliable embryo selection globally. Integration of AI with metabolic and morphological data represents a paradigm shift toward objective, standardized assessment that could meaningfully improve IVF success rates and patient outcomes.



ABSTRACTS

ARTIFICIAL INTELLIGENCE AS A SUSTAINABLE TOOL FOR HUMANITARIAN HEALTHCARE: THE VIRTUE FOUNDATION EXPERIENCE

Kazem Nouri

How can artificial intelligence improve identification of unmet needs, optimize resource allocation, and enhance the sustainability and impact of global health interventions?

AI accelerates needs assessment, strengthens data integration, and enables evidence-informed humanitarian healthcare planning in low-resource environments.

Humanitarian health work often depends on limited data, episodic missions, and fragmented coordination among stakeholders. While artificial intelligence has improved diagnostics and workflow efficiency in high-income settings, its structured application to global health systems remains sparse. The Virtue Foundation has adopted AI-driven analytics to systematically map health needs, inform strategic planning, and coordinate resources across low- and middle-income regions. This integration enhances visibility into underserved areas and aligns interventions with demonstrable demand.

This is a descriptive, implementation-focused analysis of AI-enabled global health initiatives led by the Virtue Foundation over multiple years. Drawing on program reports, operational experience, and data platform outcomes across diverse regions, this work synthesizes insights on AI's role in humanitarian healthcare planning and coordination. It does not follow a randomized clinical design, but instead reflects real-world application, strategic evaluation, and evolving practice across multinational health programs and partnerships.

Participants include clinicians, global health practitioners, data scientists, and local healthcare partners across multiple low- and middle-income countries supported by the Virtue Foundation. Materials consist of aggregated public health, demographic, and infrastructure datasets. Methods integrate machine learning-enabled analytics platforms to identify priority needs, match resources to demand, and monitor operational outcomes.

AI-supported data integration provided enhanced clarity on global healthcare deficits, enabling more precise alignment of humanitarian services with actual population needs. Predictive modeling and real-time analytics improved prioritization of interventions, optimized logistical planning, and reduced resource waste. Operational transparency increased coordination across partners, improving continuity and scalability of care delivery.

Outcomes in this context are operational rather than clinical, reflecting improvements in planning, efficiency, and equity rather than statistically powered comparative measures. Because this work is descriptive rather than randomized, chance cannot be measured as in controlled trials. However, systematic improvements in targeting, resource alignment, and stakeholder engagement observed across multiple settings suggest that effects are consistent with structured AI-enabled decision support rather than random variation.

AI functioned as an enabling infrastructure tool augmenting human leadership and ethical governance rather than replacing them. Critical oversight ensured contextual relevance, human judgment, and alignment with humanitarian values throughout implementation.

This analysis does not include controlled comparative data or statistical causal inference.

AI has potential to transition humanitarian healthcare from episodic response to data-informed, strategic systems design. Scalable analytics can enhance equity, sustainability, and global collaboration, enabling better prioritization of care in underserved populations and strengthening resilience in international health systems.



3rd AI FERTILITY WORLD CONFERENCE

ABSTRACTS

AI-DRIVEN COMMUNICATION AGENTS TO IMPROVE PATIENT ENGAGEMENT AND OPERATIONAL EFFICIENCY IN A TORONTO FERTILITY CLINIC

Meena Mahil et al.

Can AI communication agents improve patient responsiveness, reduce administrative workload, and enhance operational efficiency in a high-volume urban fertility clinic?

Implementation of AI agents improved response times, reduced staff message burden, and enhanced patient engagement without compromising safety or clinical oversight.

Fertility treatment involves complex, time-sensitive communication between patients and clinical teams. High message volumes, medication clarification requests, and cycle coordination demands contribute to staff workload and burnout. Delayed or unclear communication can increase patient anxiety and risk missed appointments or medication errors. While AI chatbots are increasingly used in healthcare, most are generic and not integrated into cycle-specific reproductive workflows. Limited evidence exists on the real-world impact of fertility-specific AI agents embedded within clinic operations to support both patients and staff while maintaining clinical oversight.

Prospective quality improvement study conducted at a Toronto fertility clinic. Outcomes were measured before and after implementation of AI communication agents over a six-month period. Metrics included response time, message volume per staff member, appointment adherence, and patient satisfaction scores. Comparative pre- and post-implementation data were analyzed to assess operational and patient-level impact.

Participants included all patients undergoing IVF or egg freezing cycles during the study period. The intervention involved deployment of AI communication agents integrated within the clinic's patient app and EMR. Agents triaged messages, answered cycle-specific queries, sent reminders, and escalated complex concerns to nursing staff. Staff workload metrics and patient engagement indicators were collected and analyzed using descriptive and comparative statistical methods.

Following implementation, median response time to patient inquiries decreased by 58%. Administrative message volume handled directly by nursing staff declined by 32%, allowing reallocation of time to clinical care activities. Appointment adherence improved by 12%, and medication clarification requests decreased. Patient satisfaction scores increased, particularly in domains related to communication clarity and timeliness.

No adverse clinical events were attributed to AI-supported communication. All complex or high-risk queries were escalated to clinical staff according to predefined protocols. Statistical comparison of pre- and post-implementation periods demonstrated significant improvements in response time and staff workload measures. Improvements in appointment adherence and satisfaction showed positive trends consistent with operational enhancement.

These findings suggest that fertility-specific AI agents can safely augment communication workflows and improve efficiency in high-volume reproductive medicine settings. Single-center study in a digitally integrated clinic may limit generalizability. Observational design introduces potential confounding factors. Longer-term outcomes and multi-site validation are required to confirm scalability and reproducibility.

AI communication agents may enable fertility clinics to expand capacity without increasing staffing, reduce burnout, and improve patient experience. Scalable, workflow-integrated AI could support broader access to reproductive care across resource-constrained healthcare systems.



ABSTRACTS

NEW PERSPECTIVES FROM AI AND 3D IMAGING FOR QUANTITATIVE MICROSCOPY IN IVF. HOW CAN 3D MICROSCOPY COMBINED WITH AI ADD VALUE TO IVF?

Paul Balondrade et al.

The integration of 3D microscopy and AI holds potential to standardize oocyte and embryo quality assessment, introducing objective, reproducible metrics into clinical workflow

At the preclinical level (animal models), fluorescence microscopy “epifluorescence or confocal” enables extraction of subcellular information (cell count, DNA integrity, membrane structure, lipid composition) allowing to study oocyte & embryo viability. However, a substantial translational gap persists, as clinical embryologists currently rely exclusively on phase-contrast or brightfield imaging which yield only low-resolution, morphology-level detail.

We applied OWLO's platform “integrating 3D microscopy with AI” to bovine oocytes, denuded or through cumulus cells (25+ samples), murine embryos (50+ samples), and human oocytes/embryos donated for research (100+ samples), to automatically extract subcellular features such as nuclei or fragmentation established in preclinical models as viability indicators, as an initial step toward clinical standardization.

The study was conducted in collaboration with Fundaç n Carlos Sim n, INRAE, H pital Foch, and IMM. OWLO's proprietary imaging modality and confocal microscopy were used to generate training datasets for supervised AI algorithms enabling automated feature extraction.#

Subcellular-resolution imaging of embryos and oocytes was successfully achieved, enabling automated quantification of viability markers, nuclear morphology, and cell-stage classification across multiple developmental time points.

Safety validation studies are ongoing in collaboration with Embryotools. The primary challenge resides in the volume of annotated data required to train and validate a clinically robust AI-based grading score.

The integration of 3D microscopy and AI represents a promising paradigm shift in IVF practice, with the potential to enhance standardization, reduce inter-operator variability, and ultimately shorten time-to-pregnancy.



ABSTRACTS

IMPLEMENTING AN AI COPILOT WITH PATIENT-FACING AVATAR TO STREAMLINE FERTILITY CLINIC WORKFLOW AND SUPPORT

Sergei Gorlovetsky et al.

Can an AI copilot with a patient-facing avatar reduce administrative workload and improve patient communication and adherence in fertility clinics?

We anticipate the Fertiligent AI copilot with avatar will reduce documentation time, standardize communication, and enhance patient engagement; data collection is underway.x

Fertility clinics must deliver personalized care with limited resources. Staff spend much time drafting notes and fielding routine questions, and inconsistent messaging can confuse patients. AI assistants in other healthcare settings have reduced administrative burdens, improved communication clarity, and cut missed appointments. For example, automated messaging systems have improved follow-up adherence by reducing no-shows. However, evidence specific to fertility clinics is scarce. The impact of a combined AI documentation tool and patient avatar in reproductive medicine remains untested, highlighting the need for rigorous evaluation under ethical guidelines.

Prospective pilot across three fertility clinics. After a 1-month baseline period measuring documentation time, no-show rates, and communication volume, the Fertiligent AI copilot with patient avatar will be deployed. Post-implementation data will be collected for 3 months. Outcomes include changes in administrative workload, appointment adherence, and messaging metrics. Paired analyses will compare pre- and post-intervention. Institutional review board approval and ethical oversight will be obtained.

Clinicians (physicians, nurses, administrators) and adult patients at participating fertility clinics. The Fertiligent AI copilot integrates with each clinic's electronic medical record (EMR) to auto-draft notes and standardize responses. It includes a patient-facing avatar in the clinic portal, providing conversational, evidence-based guidance and answering FAQs. Engagement metrics (avatar queries, response quality, usage time) will be logged. Time-motion studies and surveys will capture clinician and patient feedback on trust and usability. Although data collection is ongoing, we anticipate outcomes similar to prior reports. Automated reminders have cut no-shows by ~20%, and AI assistants have reduced documentation time by ~30% in other settings. We expect the Fertiligent AI copilot to reduce administrative workload and missed visits, while the avatar improves communication consistency and patient satisfaction. Patient interactions will be scored for usability and trust based on validated scales. Statistical analyses will use paired tests (pre vs post, $\alpha=0.05$) with confidence intervals. Results will be adjusted for clinic and patient factors. Data collection completes by August 2026, allowing time for analysis before the conference. The final presentation will include updated quantitative results (e.g., changes in note-writing time, no-show rate, engagement metrics) and qualitative feedback. If changes are not statistically significant, we will interpret them cautiously, exploring learning effects and confounders. Sensitivity analyses and regression will account for chance and covariates.

This small, uncontrolled pilot is subject to confounding (clinic-specific factors, novelty effects). The short duration and few sites limit generalizability. Patients self-selecting into avatar use, and privacy/consent procedures, may influence engagement. Findings are preliminary and require validation in larger studies.

Demonstrating that a fertility AI copilot with patient avatar can responsibly enhance efficiency and patient support could model a new paradigm in reproductive care. Insights will guide ethical AI integration and best practices for clinician-patient collaboration in clinics, ultimately aiming to improve access and quality of fertility treatment.



ABSTRACTS

POLYGENIC RISK IN PREIMPLANTATION GENETIC TESTING: EVIDENCE, CLINICAL INTEGRATION, AND ADDRESSING COMMON CRITICISMS

Tobias Wolfram et al.

What is the current evidence base for polygenic risk score-based preimplantation genetic testing, and how should IVF clinicians evaluate its clinical utility?

Polygenic scores provide meaningful disease risk stratification between embryos, complementing PGT workflows with quantifiable risk reductions for common diseases.

PGT-A and PGT-M are established components of IVF care. Polygenic risk scores, which aggregate the effects of thousands of genetic variants, now enable risk estimation for common diseases. However, clinical adoption of PGT-P remains limited. Critics have raised concerns about small effect sizes in embryo cohorts, poor cross-ancestry performance, potential pleiotropy, and the gap between population-level prediction and individual clinical utility. IVF clinicians increasingly encounter patient questions about PGT-P but lack a practical framework for evaluating the underlying evidence and integrating it into counseling.

We present a clinical evidence review drawing on our validation work across multiple biobanks. Within-family analyses used sibling pairs to test whether polygenic scores retain predictive accuracy after controlling for shared family environment. We synthesize these results into a practical evaluation framework addressing the key questions IVF professionals face when considering PGT-P adoption.

Polygenic risk scores were constructed using advanced machine learning methods for more than 20 common diseases. Validation compared between-family and within-family prediction using sibling pairs, the most rigorous test of direct genetic effects. Ancestry portability was assessed using multi-ancestry training sets spanning European, East Asian, and African populations. Clinical utility was evaluated using expected gain calculations applied to realistic embryo cohort sizes typical of IVF cycles.

Within-family validation confirmed minimal prediction attenuation for diseases tested, demonstrating that polygenic scores primarily capture direct genetic effects rather than environmental confounding. This addresses the most substantive scientific criticism of PGT-P: that population-level PRS accuracy is inflated by stratification and indirect effects.

For clinical utility, expected gain analyses show quantifiable absolute risk reductions achievable across realistic embryo cohort sizes. For high-burden diseases or in the presence of family history, selection among even modest cohorts produces meaningful shifts in lifetime risk. The framing of clinical utility should center on absolute risk reduction rather than variance explained or AUC, which are population-level metric poorly suited to individual patient counseling.

Cross-ancestry optimised PRS substantially improved prediction in non-European populations, though performance gaps remain for underrepresented ancestries. Pleiotropy analyses showed that multi-trait optimization produces net positive health tradeoffs, addressing concerns that reducing risk for one condition inadvertently increases risk for another.

PGT-P is probabilistic, not deterministic, and counseling must reflect this. Ancestry portability, while improving, does not yet achieve parity across all populations. Embryo cohort sizes limit achievable gains. Current validation uses postnatal data. Ongoing regulation varies by jurisdiction, and clinicians should follow local guidelines.

As patient demand for polygenic information grows, IVF clinicians need evidence-based frameworks to evaluate PGT-P offerings. Rigorous within-family validation, transparent reporting of ancestry limitations, and absolute risk communication provide the foundation for responsible clinical integration alongside established PGT-A and PGT-M services.

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