

Innovations in Embryology: Advancing Reproductive Technologies for Improved Patient Care

Presented by Audrey Kit Mei Foong

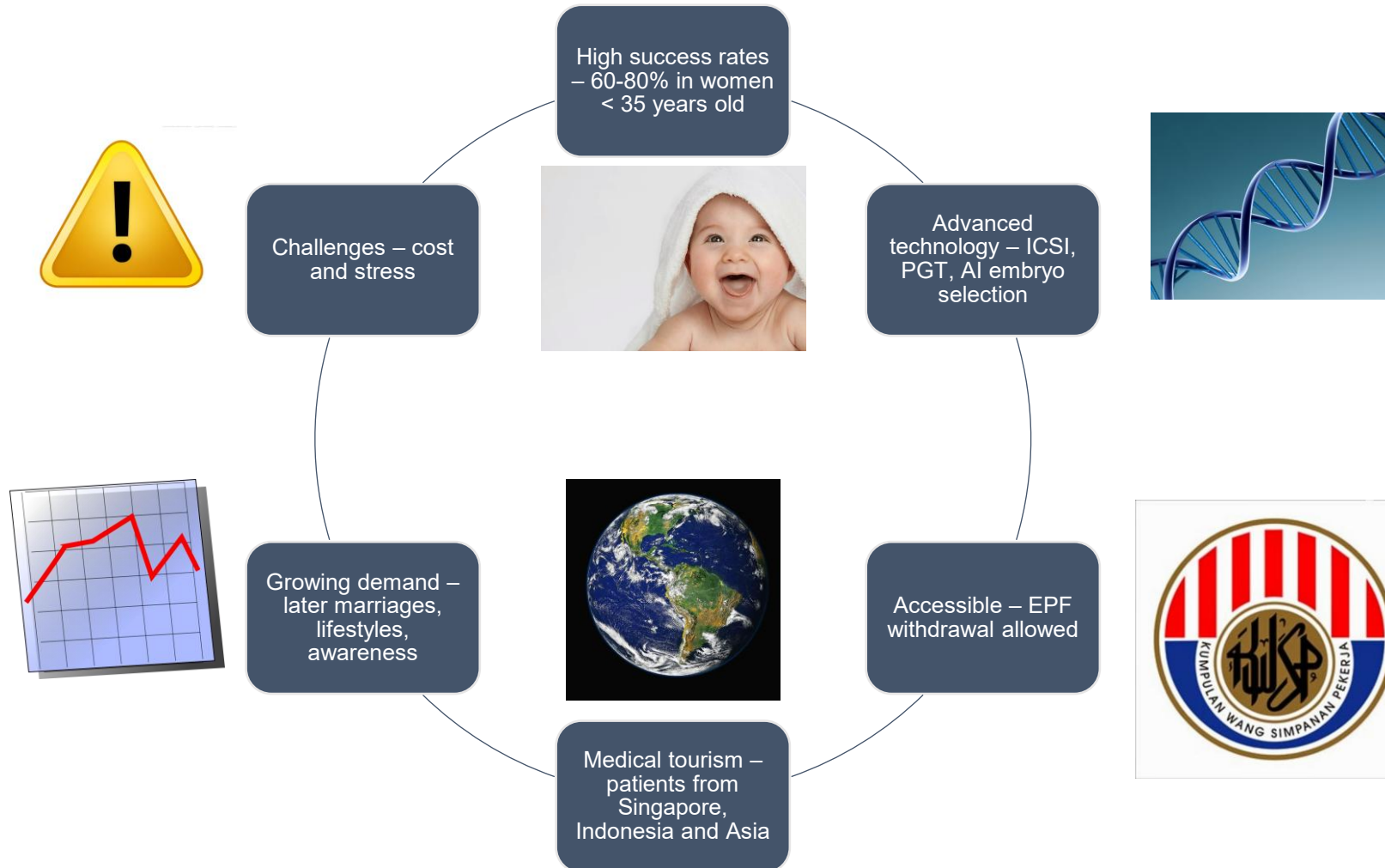
Sunfert International Fertility Centre



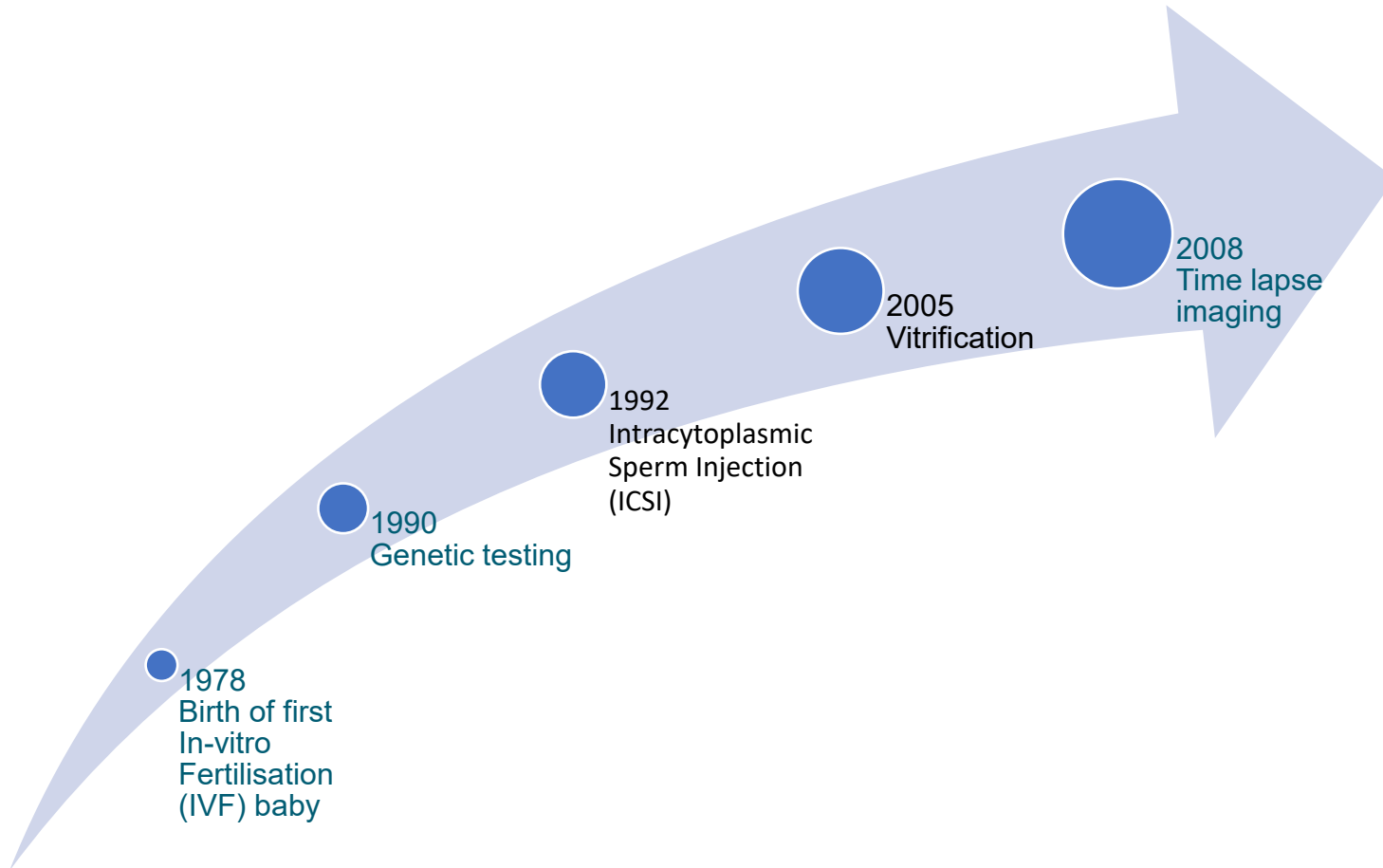
Overview

1. IVF in Malaysia
2. Evolution of Embryology
3. Key Innovations in Assisted Reproductive Technologies
4. Future Directions

IVF in Malaysia: Current Landscape



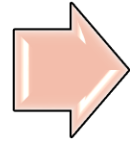
Evolutions of Embryology



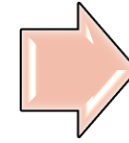
Key Innovations in Assisted Reproductive Technologies (ART)

- Incubators

Big box



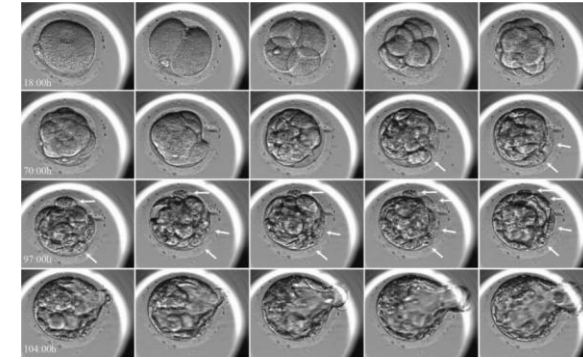
Benchtop



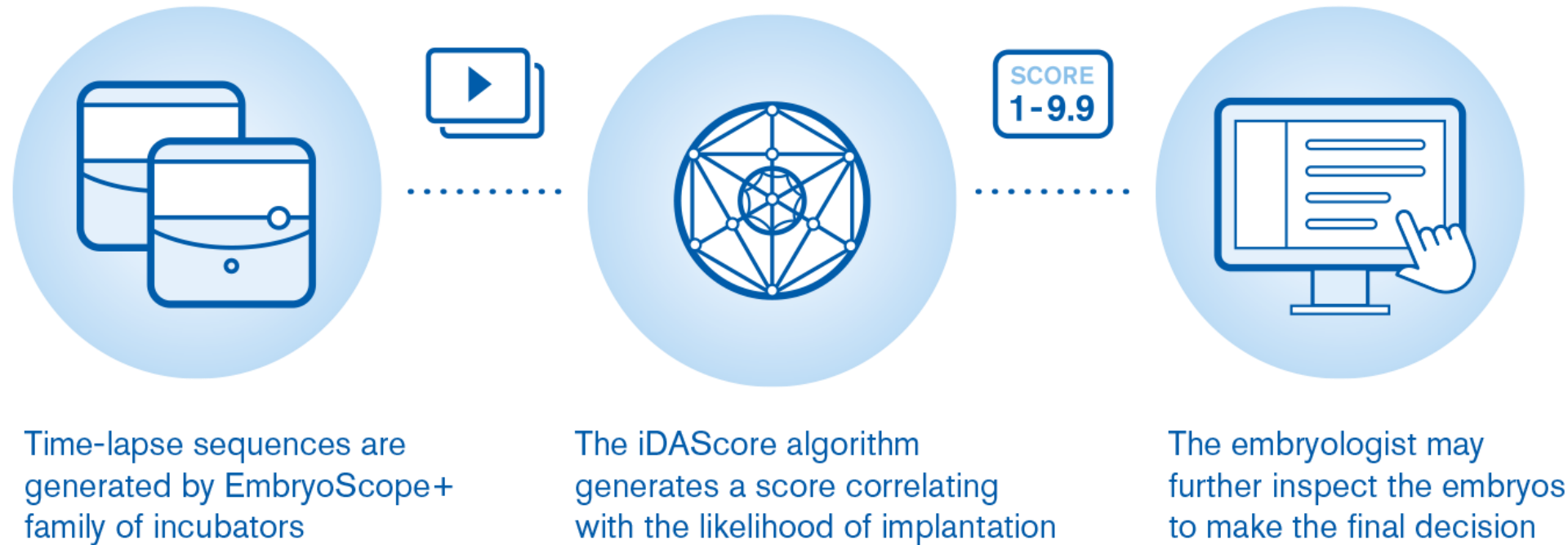
Timelapse



Key Innovations in Assisted Reproductive Technologies (ART)



- Embryo selection and Artificial Intelligence (AI)



Improving the evaluation process

- Consistent
- Objective
- Fully automated
- Reliable

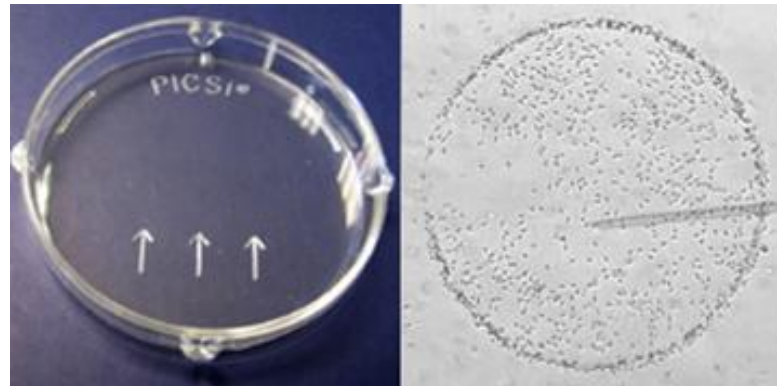
Key Innovations in Assisted Reproductive Technologies (ART)

- Advanced sperm selection

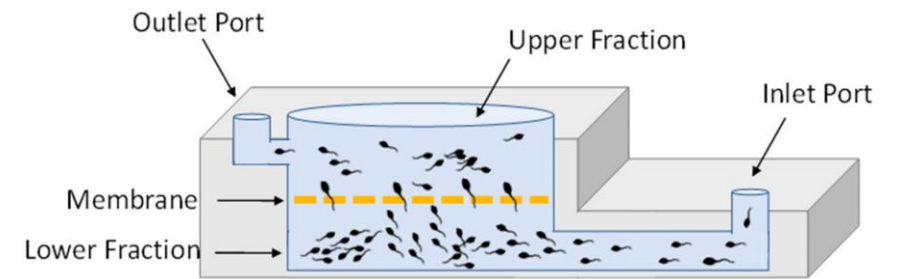
IMSI
(Intracytoplasmic Morphologically
Selected Sperm Injection)



PICSI
(Physiological Sperm Injection)



Microfluidic Sperm Sorting



Key Innovations in Assisted Reproductive Technologies (ART)

- PIEZO-ICSI

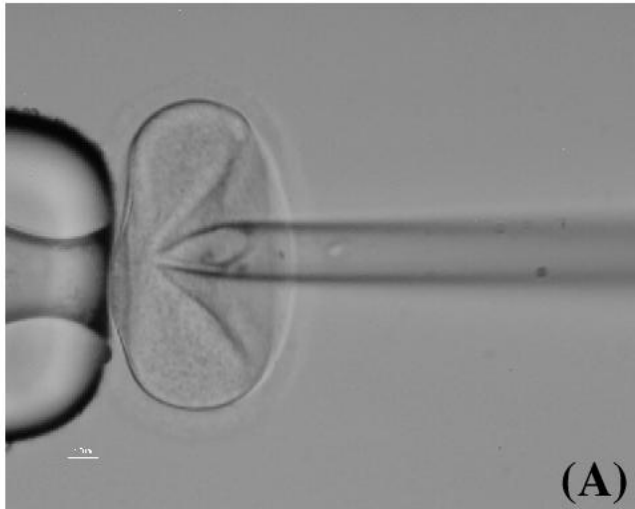


Image A: Conventional ICSI



Image B: PIEZO ICSI

FR: fertilisation rate
DR: degeneration rate

Cytoplasm not aspirated into micropipette

Less invasive

Usage of piezo pulse, ultrafast submicron forward momentum

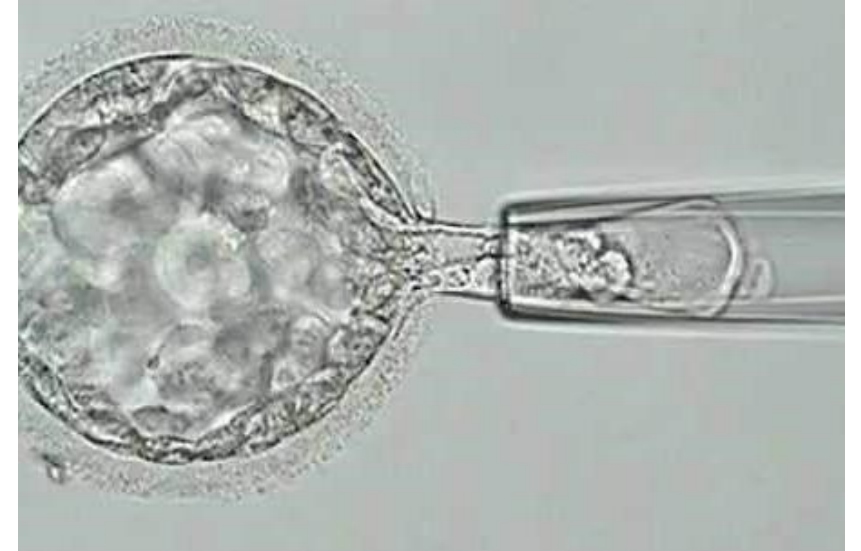
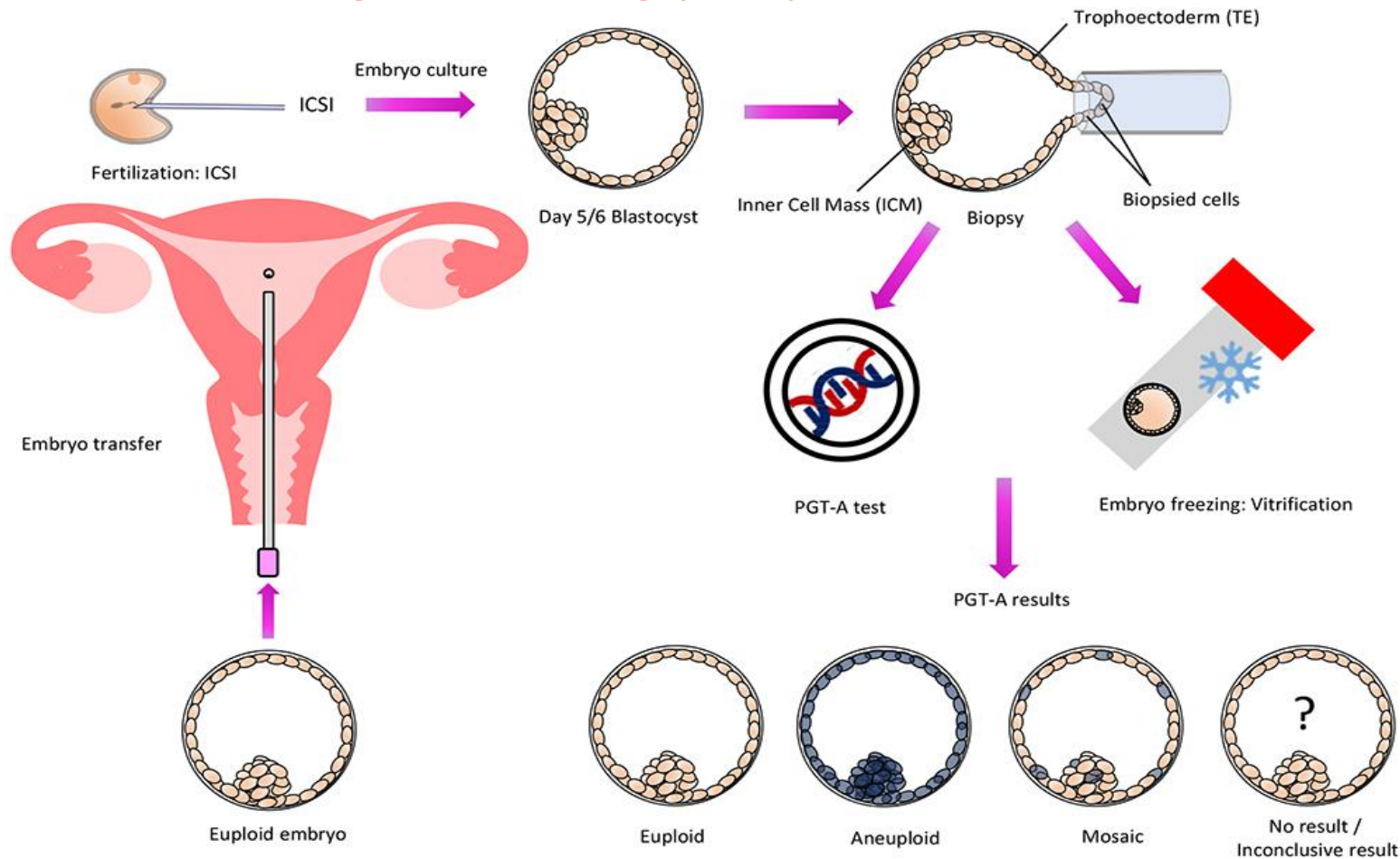
Micropipette are flat-tipped without spike or bevel

Higher FR and less DR

Emerging usage in Australia by Monash IVF and in New Zealand by FA group

Key Innovations in Assisted Reproductive Technologies (ART)

- Preimplantation genetic testing (PGT)



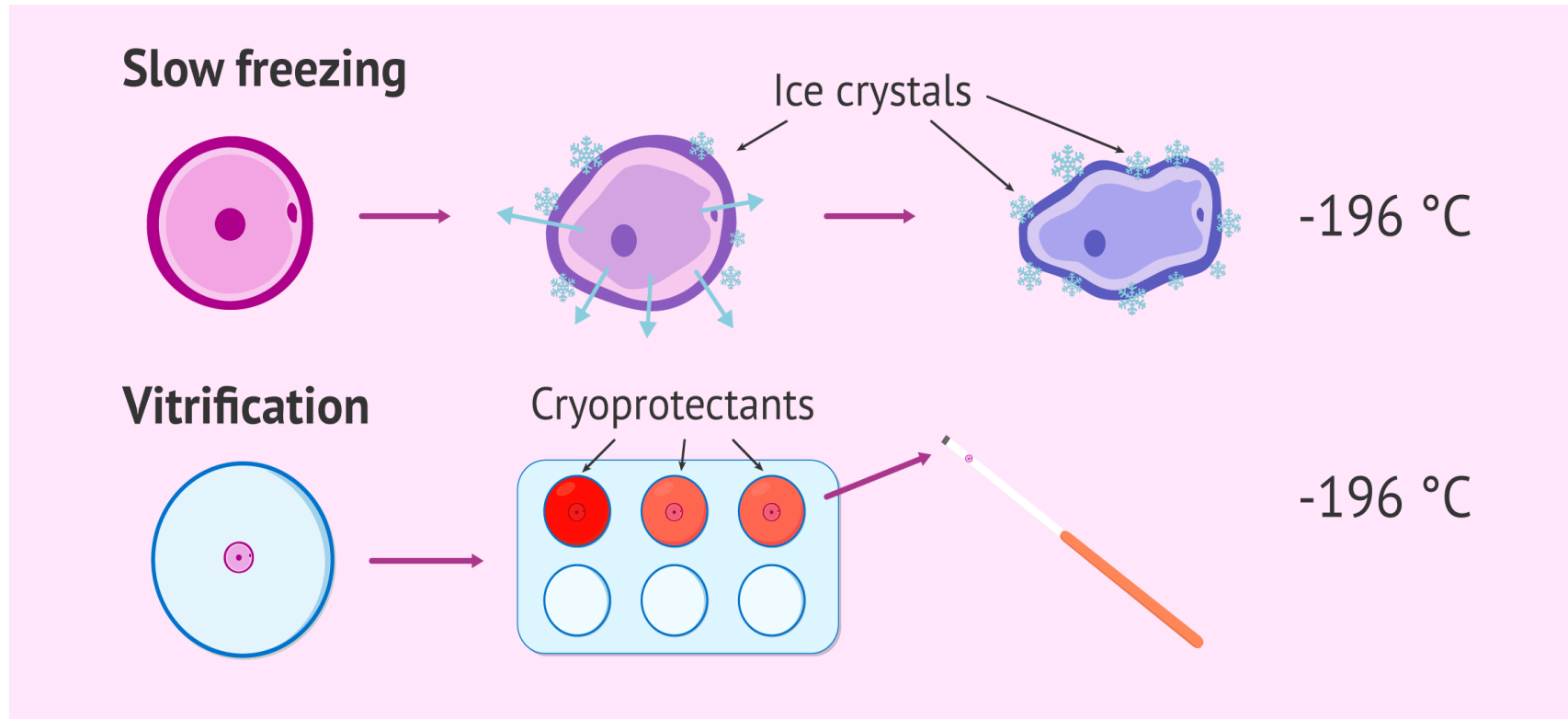
Key Innovations in Assisted Reproductive Technologies (ART)

- Electronic witnessing



Key Innovations in Assisted Reproductive Technologies (ART)

- Cryopreservation



Key Innovations in Assisted Reproductive Technologies (ART)

- Cryopreservation (Automated)



Future Directions Automated laboratory

AURA AUTOMATED IVF LAB



Summary

- Embryology has evolved rapidly – from IVF and ICSI to advanced embryo selection and AI tools
- Global breakthroughs – time lapse imaging and vitrification have transformed practice
- Malaysia's IVF labs steadily adapting innovations, balancing technology with cost and accessibility
- PGT, automation and AI are paving the way for more precise and patient centered care
- Future of embryology lies in integration of technology, ethics and personalized medicine

Our role as an embryologists is to bring science and compassion together for the next generation of patients.





Thank you.

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