FGAI4H-L-034-A01

E-meeting, 19-21 May 2021

Source:	Merck KGaA (Darmstadt, Germany)
Title:	Proposal for new topic group: AI for Human Reproduction and Fertility – Att.1: Presentation
Purpose:	Discussion

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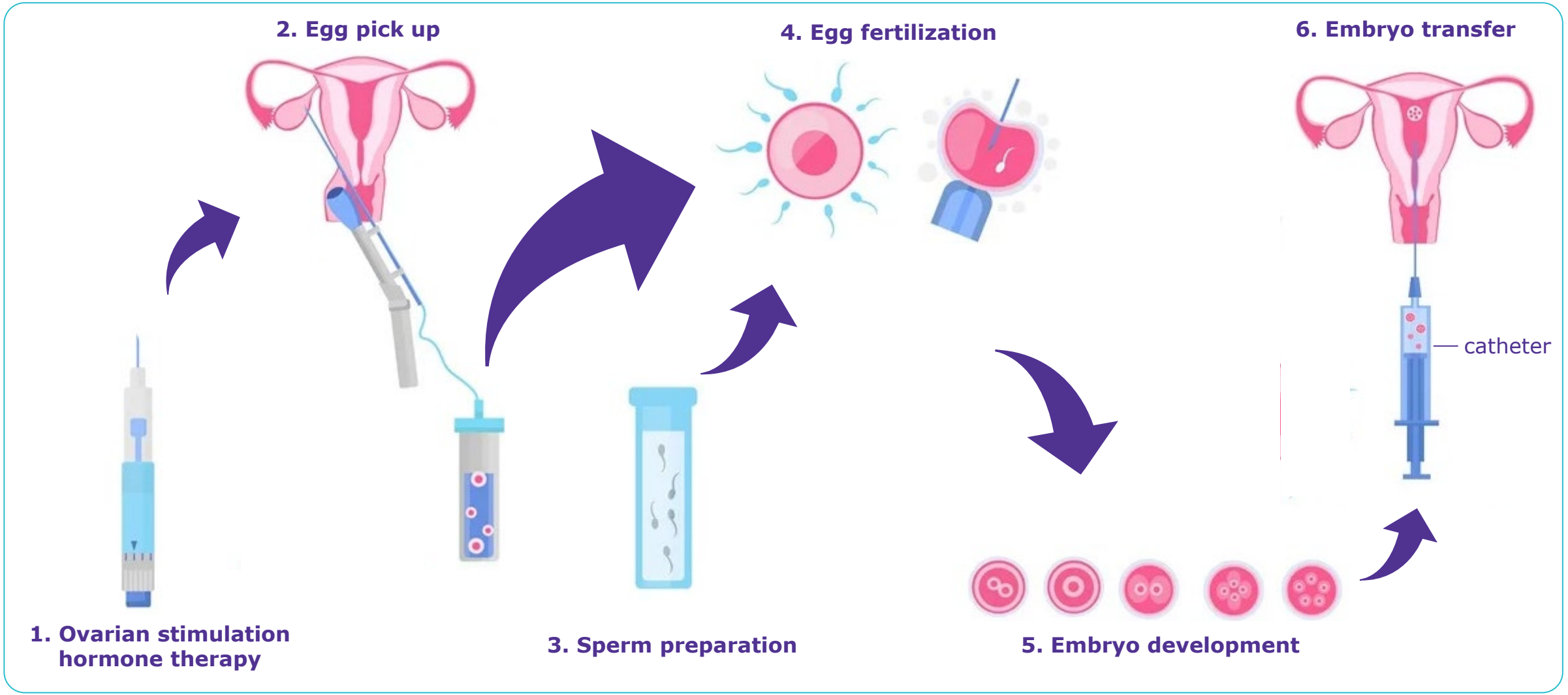
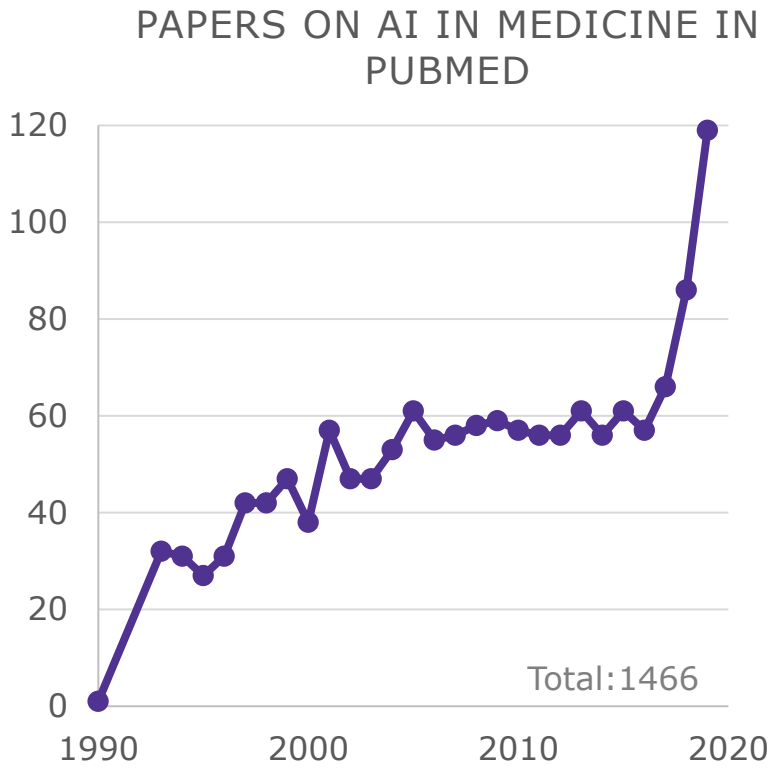
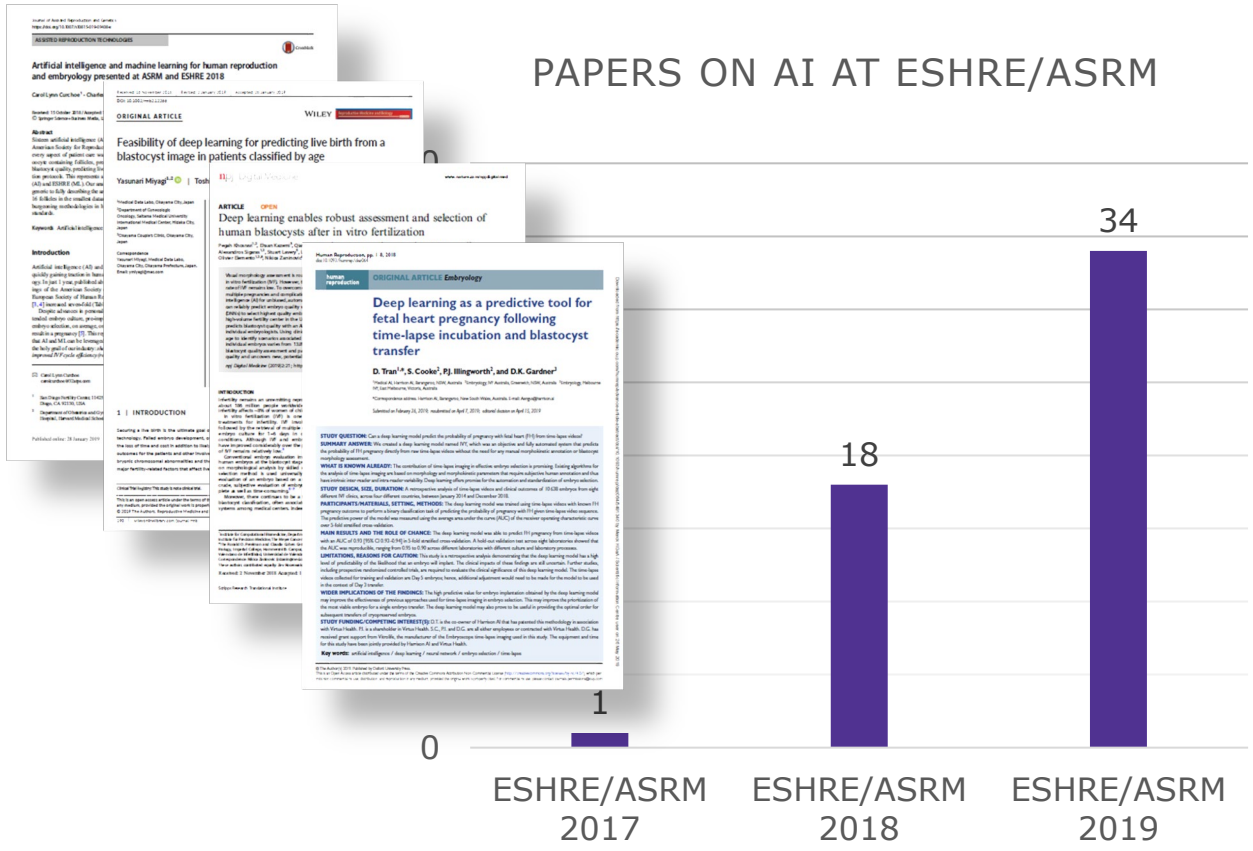
Abstract: This PPT summarizes the content of L-034 with a proposal for a new topic group on AI for fertility for presentation and discussion during the meeting. The topic group on AI for fertility will address challenges and considerations that should be assessed when developing AI solutions for clinical applications.

Infertility is a disease that impacts one in six couples and its treatment is unique, complex and divided in different phases



AI publications in medicine are growing very fast since a few years – Fertility is catching up as well





Advanced analytics and AI enables the creation of new products and services that improve treatment outcomes and efficiency

Patient Identification	Consultation	Stimulation & Triggering	ART Lab	Transfer & Pregnancy
Broader patient identification due to **identification of new infertility indicators** and correlations of **behavioral patterns** through big data analytics	Improved patient **expectations management** through **predictive analysis** and individual prediction of IVF success	Higher treatment success rates through **personalized treatment protocol** individualized interventions if necessary	**Support clinical decision making** throughout all lab process steps based on advanced AI algorithms and computer vision to identify most viable embryos	Increasing successful transfers and **improving receptivity** through intelligent algorithms and biomarkers that **help to determine the status of the endometrium**

Data-driven business opportunities delivered through AI, data analytics, and connectivity solutions add value throughout the entire IVF journey

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Patient Identification	Consultation	Stimulation & Triggering	ART Lab	Transfer & Pregnancy

univfy

Binflux

Vitrolife iDAScore®

FUTuRE FERTILITY
Fertility Understanding Through Registry and Evaluation

ERICA

IVF vision
Applied AI

Eva

AIVF

LifeWhisperer
AI Enhanced Fertility

EMBRYONICS
Bringing new life. Wisely.

fairtility

PGTai 2.0 Plus

Most AI solutions are currently performed without any standardized process, regulatory or harmonized quality standards

Given the maturity and the recent developments of AI in Fertility, there are several challenges that need to be addressed to ensure safety, reliability and transparency

Challenges

Data

- Heterogeneity of data sources
- Data quality and data size
- Bias in the data, noise or partial evidence

Validation

- Proper validation on hold-out data and lack of benchmark
- Lack of clinical prospective validation

Proposal

Data

- Definition of quality standard and guidelines to harmonize data
- Facilitate integration and collection of data from different sources

Validation

- Definition of guidelines for proper development and validation
- Creation of benchmarks

Timeline

questions?