



BUILDING SCALABLE AI

**Collaboratively.
Globally.
For womankind.**

Dr Michelle Perugini

Michelle@Presagen.com



AI Summit



AI can improve global healthcare

A light gray world map is visible in the background of the slide, showing the outlines of continents and countries.

Developed countries

- Overloaded health services
- Information overload in a time constrained environment results in poor clinical decisions

Developing countries

- Poor quality health services
- Lack of specialist clinical expertise
- Poorer health and higher demand for health services

**Healthcare is a global problem.
We need AI that is Globally Equitable, Accessible and Affordable.**



In healthcare, the biggest challenge for AI is bias and lack of scalability needed to make AI accessible and affordable for all

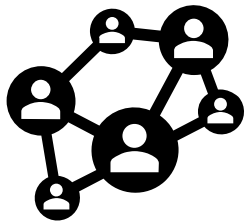
Scalable and unbiased AI requires a globally diverse dataset that represents different patient demographics and different clinical settings

What are the challenges in accessing diverse healthcare data?



Data Privacy Laws

Prevents global data being moved or centralized outside the country of origin for AI training



Collaboration

Data is locked up in **clinics** distributed globally that may not want to give it away for free, and **patients** want to control and ownership over their data



Data Quality

Clinical data is inherently poor quality, and only 1% poor quality data impacts AI scalability & accuracy

The Social Network for Healthcare

Presagen is changing the way clinics, patients, and medical data **globally** are **connected** through **AI**, with a focus on **Women's Health**



Collaboration enables equitable, affordable, and accessible healthcare for all

- Collaboration enables globally connected data and **scalable AI**, bringing global intelligence to individual clinics of any size.
- Collaboration democratizes AI for healthcare because any clinic of any size, anywhere in the world, can contribute to developing AI to benefit all
- Developing AI at a single institute level is not scalable, or commercially or technically viable - it is expensive and biased!

Solving Critical AI Healthcare Challenges

Data Diversity

GLOBAL CLOUD PLATFORM

Data and AI products on local cloud servers, complying with data laws

Data Protection

DECENTRALIZED FEDERATED AI

Train AI on data distributed globally without moving or seeing the data
**Patent (PCT)*

Data Quality

AUTOMATED DATA CLEANING

Detect poor quality medical data without manually seeing the data
Patent (PCT), Nature Scientific Reports



The Social Network for Healthcare Benefits All

A social network for data sharing and collaboration where users can collectively build and deliver affordable AI healthcare products *for all*

Presagen

ACCESS DATA

Decentralized access (not ownership) to globally diverse data to develop scalable AI

Clinics

LEVERAGE DATA

Share and monetize data via royalties, without commercial or technical cost and risk

Patients

CONTROL DATA

Retain data ownership, privacy, and security, and benefit from affordable and accessible healthcare

AI Enhanced Fertility

*Improving IVF outcomes
for patients globally*



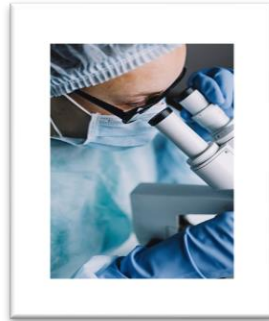
Life Whisperer

AI Enhanced Fertility

Selecting the best embryo in IVF is critical to a successful pregnancy outcome

Embryo Quality = Viability + Genetics

Morphological Grading
Implantation Potential



PGT-A
Genetic Integrity



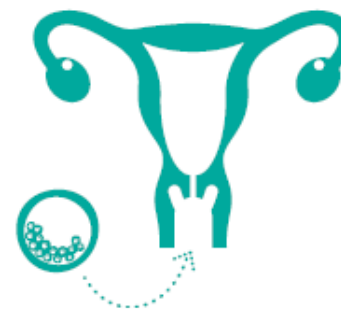
Fertilize eggs/oocytes
with sperm



Embryos form
after 5 days



Assess and select
embryos for implantation



Implant the Embryo
into the patient



Pregnancy after 6 weeks
(fetal heartbeat)

AI can more effectively select high quality embryos

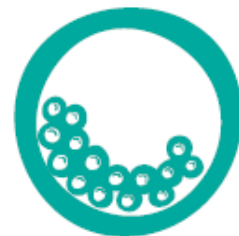
Embryo Quality = Viability + Genetics



 **Life Whisperer**
A.I. Enhanced Fertility



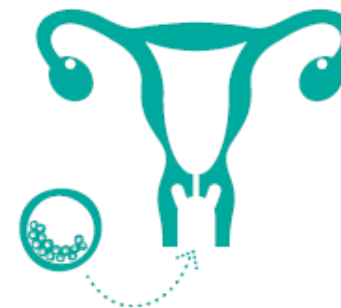
Fertilize eggs/oocytes
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Embryos form
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Implant the Embryo
into the patient



Pregnancy after 6 weeks
(fetal heartbeat)

A single platform for embryo evaluation

Drag-and-Drop Embryo Images

LifeWhisperer
A.I. Enhanced Fertility

Patients Users Invoices Usage Reports Help About

Dr John Smith

Patient Id: 546654 Last Name: Doe First Name: Jane Date of Birth: Jan 1, 1980 Clinic: Demo Clinic

Assessment

Patient: 546654 Cycle: 2

Search Search By Embryo Id Sort By Confidence Score

Embryo Day 5

Viability Assessment Genetic Assessment

Click to select images or drag them here



Single Image, Two Instant Assessments

Patient Id: 0001 Last Name: Patient First Name: Jane Date of Birth: Jun 5, 1988 Clinic: EB Demo

Assessment

Patient: 0001 Cycle: C1

Search Search By Embryo Id Sort By Confidence Score

Embryo Day 5

Viability Assessment Genetic Assessment

Click to select images or drag them here

Viability Genetic

	9.9 / 10 for Embryo Day 5 Genetic		
Embryo Id	Embryo Age	Cycle Id	C1
Embryo Grade	Collection Date	Transfer Date	
Fetal Heartbeats	Live Births	Sent for PGT-A	
PGT-A Results	Biopsy Date	PGT-A Provider	
Testing Platform	Clinical Notes	Patient Report Notes	

	9.5 / 10 for Embryo Day 5 Genetic		
Embryo Id	Embryo Age	Cycle Id	C1
Embryo Grade	Collection Date	Transfer Date	
Fetal Heartbeats	Live Births	Sent for PGT-A	
PGT-A Results	Biopsy Date	PGT-A Provider	
Testing Platform	Clinical Notes	Patient Report Notes	

Benefits of Life Whisperer

Objective

Increased consistency, accuracy, & confidence

Receive a score of 0-10 correlating with the likelihood of clinical pregnancy and improve selection of viable embryos up to 25% vs. manual assessment

Easy-to-Use

Drag-and-drop functionality helps you make key decisions almost instantly

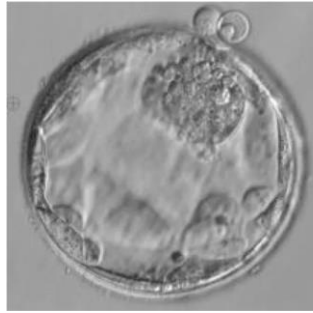
Integrate the AI-based assessment into your embryo selection workflow immediately

Cost Effective

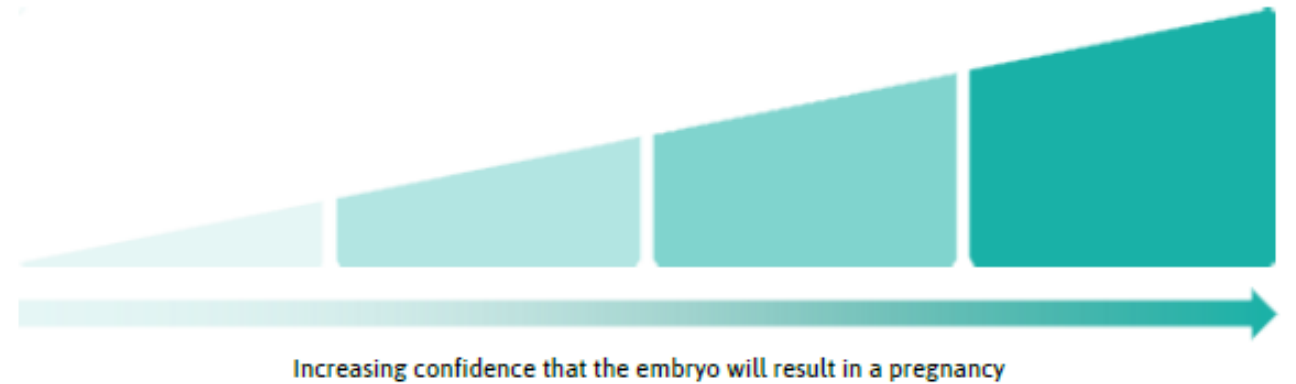
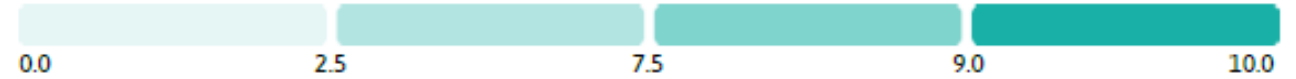
No expensive equipment, maintenance, or subscription fees

No capital outlay is required, so you can implement AI-based technology with minimum to no disruption to the IVF workflow

The Life Whisperer Score



Life Whisperer
Viability Score
7.5/10



Low	Medium	High	Very High
29%	55%	59%	65%
Of embryos resulted in pregnancy	Of embryos resulted in pregnancy	Of embryos resulted in pregnancy	Of embryos resulted in pregnancy

The confidence score reflects the confidence of the AI-based algorithm that the embryo may or may not result in clinical pregnancy. It does not provide any information on the probability of a live birth. The accuracy of the Life Whisperer prediction does not take into account any patient-specific factors that may influence pregnancy outcome.

Life Whisperer Viability - Visual Versus AI-based Assessment

Gardner score



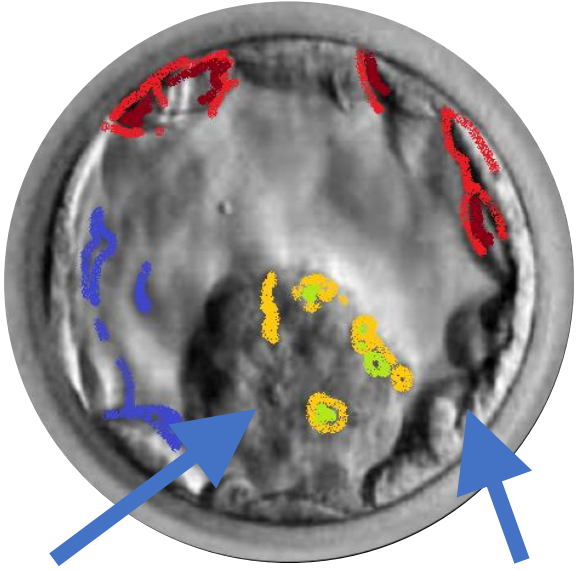
ICM (grade A)

TE (grade B)

*Expansion grade 4
(expanded
blastocyst)*

The AI-based analysis is identifying additional morphological features that are not captured using the Gardner scoring method, but which are directly associated with pregnancy outcome or ploidy

AI algorithm?



ICM (grade A)

TE (grade B)

*Expansion grade 4
(expanded
blastocyst)*

Life Whisperer Viability has been Clinically Tested Internationally

15%

Reduction in Time-to-Pregnancy¹

25%

Increased accuracy for pregnancy prediction

Human Reproduction, pp. 1–15, 2020
doi:10.1093/humrep/deaa013

human
reproduction

ORIGINAL ARTICLE Embryology

Development of an artificial intelligence-based assessment model for prediction of embryo viability using static images captured by optical light microscopy during IVF

M. VerMilyea^{1,2,†}, **J.M.M. Hall**^{3,4,†}, **S.M. Diakiw**³, **A. Johnston**^{3,5},
T. Nguyen³, **D. Perugini**³, **A. Miller**¹, **A. Picou**¹, **A.P. Murphy**³, and
M. Perugini^{3,6,*}

¹Ovation Fertility, Austin, TX 78731, USA ²Texas Fertility Center, Austin, TX 78731, USA ³Life Whisperer Diagnostics, Pty Ltd., Adelaide, SA 5000, Australia ⁴Australian Research Council Centre of Excellence for Nanoscale BioPhotonics, The University of Adelaide, Adelaide, SA 5000, Australia ⁵Australian Institute for Machine Learning, School of Computer Science, The University of Adelaide, Adelaide, SA 5000, Australia ⁶Adelaide Medical School, Faculty of Health Sciences, The University of Adelaide, Adelaide, SA 5000, Australia

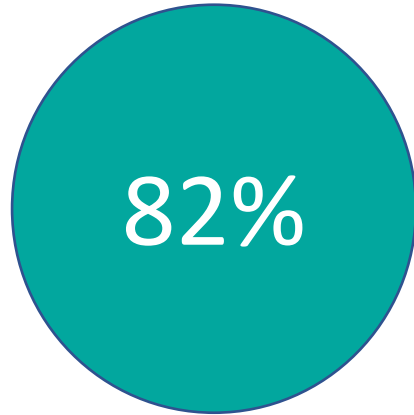
*Correspondence address: michelle@lifewhisperer.co

Submitted on October 13, 2019; resubmitted on December 23, 2019; editorial decision on January 16, 2020

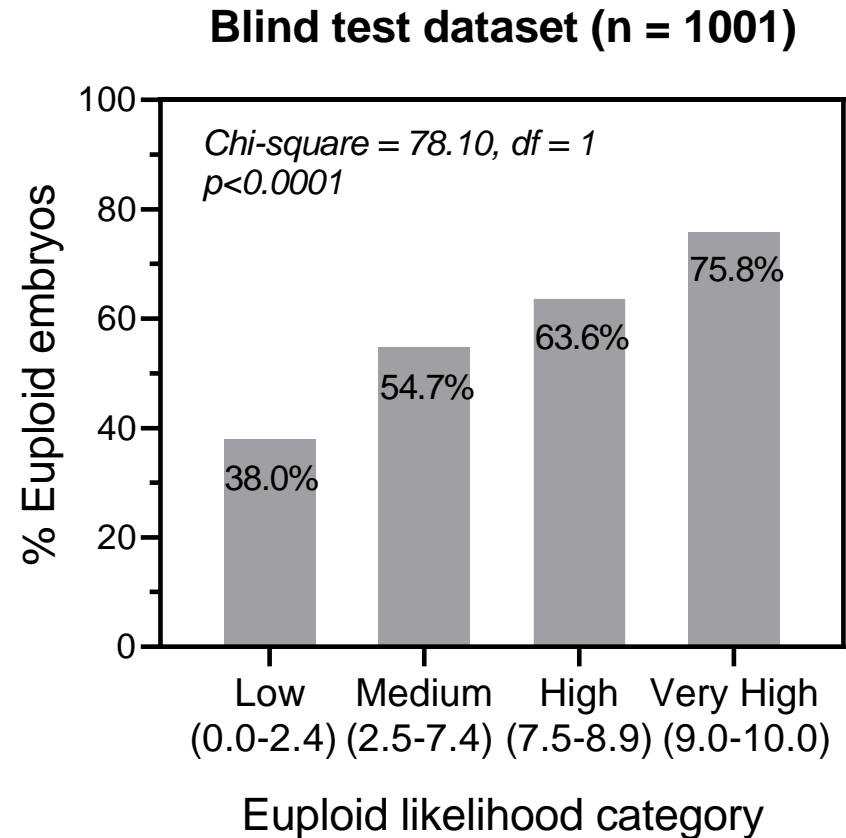
Other publications can be downloaded at www.lifewhisperer.com/ESHRE-2021 and ¹[here](#).

Approved for clinical use Australia, UK, Canada, Guyana, Hong Kong, India, New Zealand, Singapore, Thailand, Vietnam, Austria, Cyprus, Denmark, Finland, Germany, Hungary, Iceland, Ireland, Liechtenstein, Luxembourg, Malta, Netherlands, Norway, Slovenia, Sweden, Portugal, Spain, Slovakia, Estonia, Latvia, Lithuania, and Romania.

Clinical data for Life Whisperer Genetics



Probability of the Life Whisperer top-ranked embryo being euploid/genetically normal



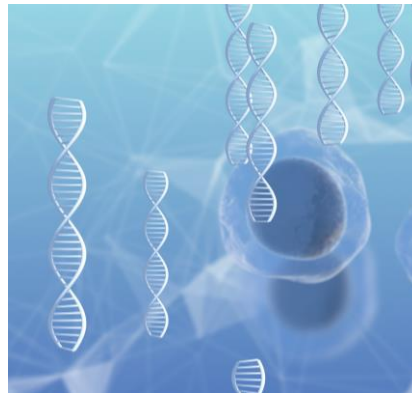
Life Whisperer demonstrates the power of scalable AI



Viability



Genetics



- Built collaboratively with and for clinics globally (incl. USA, Aust, NZ, Malaysia)
- Non-invasive, objective, easy to use
- 25% better than the visual assessment at predicting pregnancy outcomes
- 82% accurate at identifying genetically normal embryos
- Approved in >60% global IVF market*
- Being used in IVF clinics globally

Approved for clinical use Australia, UK, Canada, Guyana, Hong Kong, India, New Zealand, Singapore, Thailand, Vietnam, Austria, Cyprus, Denmark, Finland, Germany, Hungary, Iceland, Ireland, Liechtenstein, Luxembourg, Malta, Netherlands, Norway, Slovenia, Sweden, Portugal, Spain, Slovakia, Estonia, Latvia, Lithuania, and Romania.

Our Vision

Create the largest global network of clinics, patients, and medical data to make AI-Enhanced Healthcare affordable and accessible ***for all***

Democratizing
creation of AI
products

Sharing and
collaboration
through incentives

Decentralizing
protected access to
data, not ownership



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