

DONOR EGG BANKING – FROM THE INSIDE

*Kimball O. Pomeroy, PhD, HCLD
Science Director - The World Egg Bank*



Types of Egg Banks

- Internal
- External
Outsourced
- External No
Outsourcing



THE WORLD
EGG BANK®

Expectation

1.44!

$$6 \times 0.8 = 4.8$$

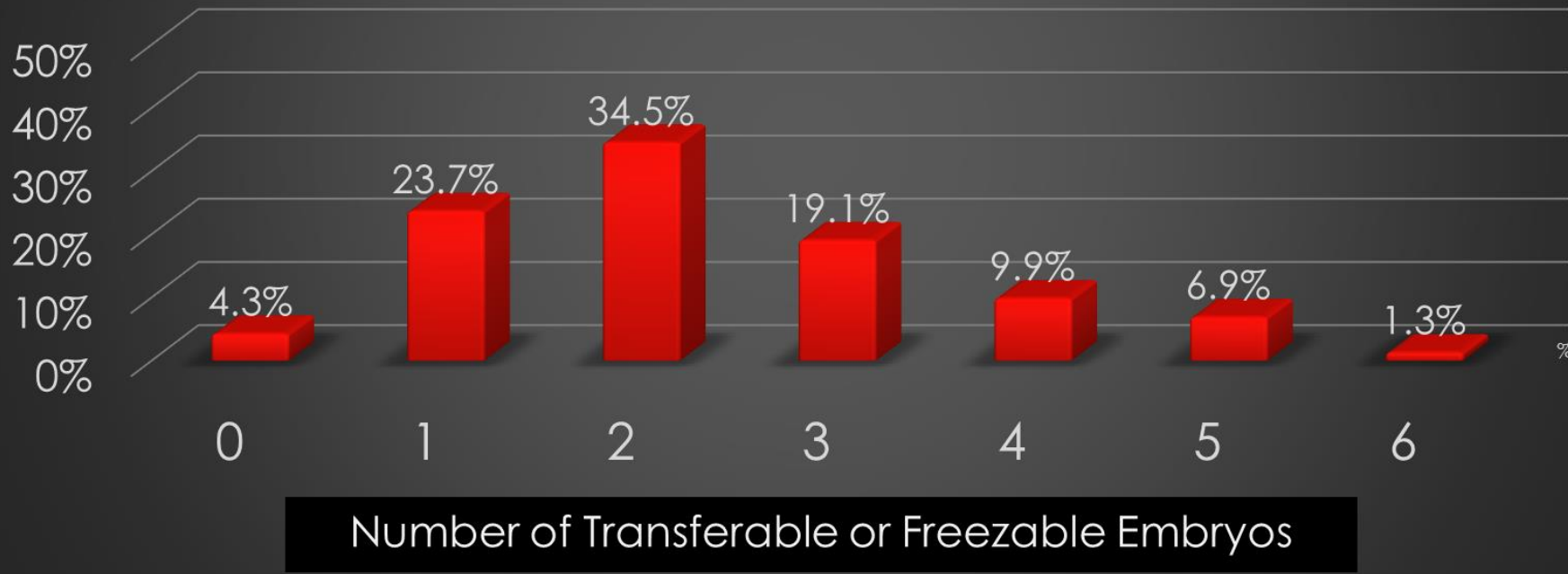
$$4.8 \times 0.75 =$$

$$3.6 \times 0.4 = 1.44$$

- Frozen Donor Ova
 - 5 to 8 ova
 - 80% maturity
 - 75% fertilization
 - 40% blastulation rate
 - 50% CPG

Reality

% Cases - Number of Transferable or Freezable Embryos per Warming



What Can Go Wrong?

- Donor
- Stimulation
- Retrieval
- Ova Prep
- Vitrification
- Warming
- ICSI
- Culture
- Transfer
- Luteal Phase Preparation

Stimulation

Can Stimulation Affect Oocyte Quality?

No
Conclusive
Data



Retrieval

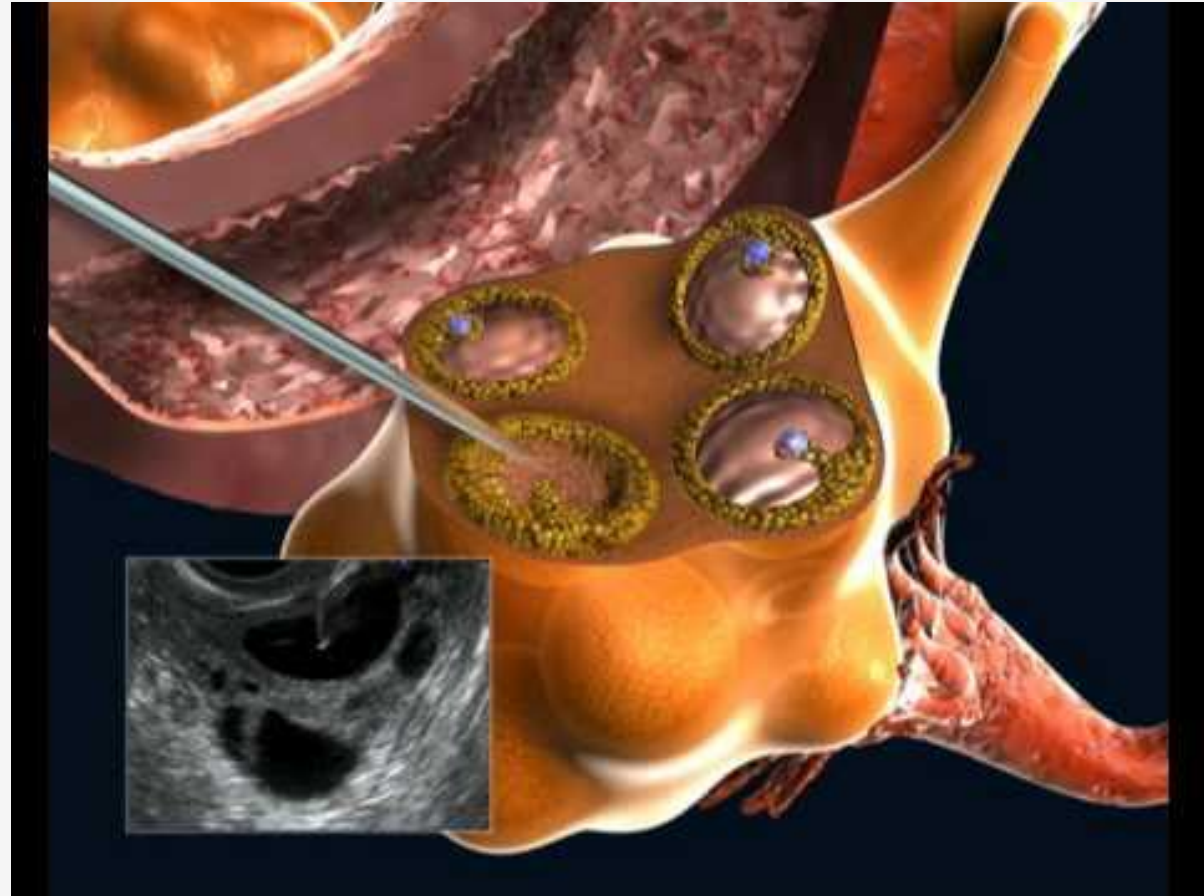
Can Retrieval Affect Oocyte Quality?

Too much suction
pressure

High temperatures

Poor Flush Media

Poor Aseptic
Technique



Retrieval

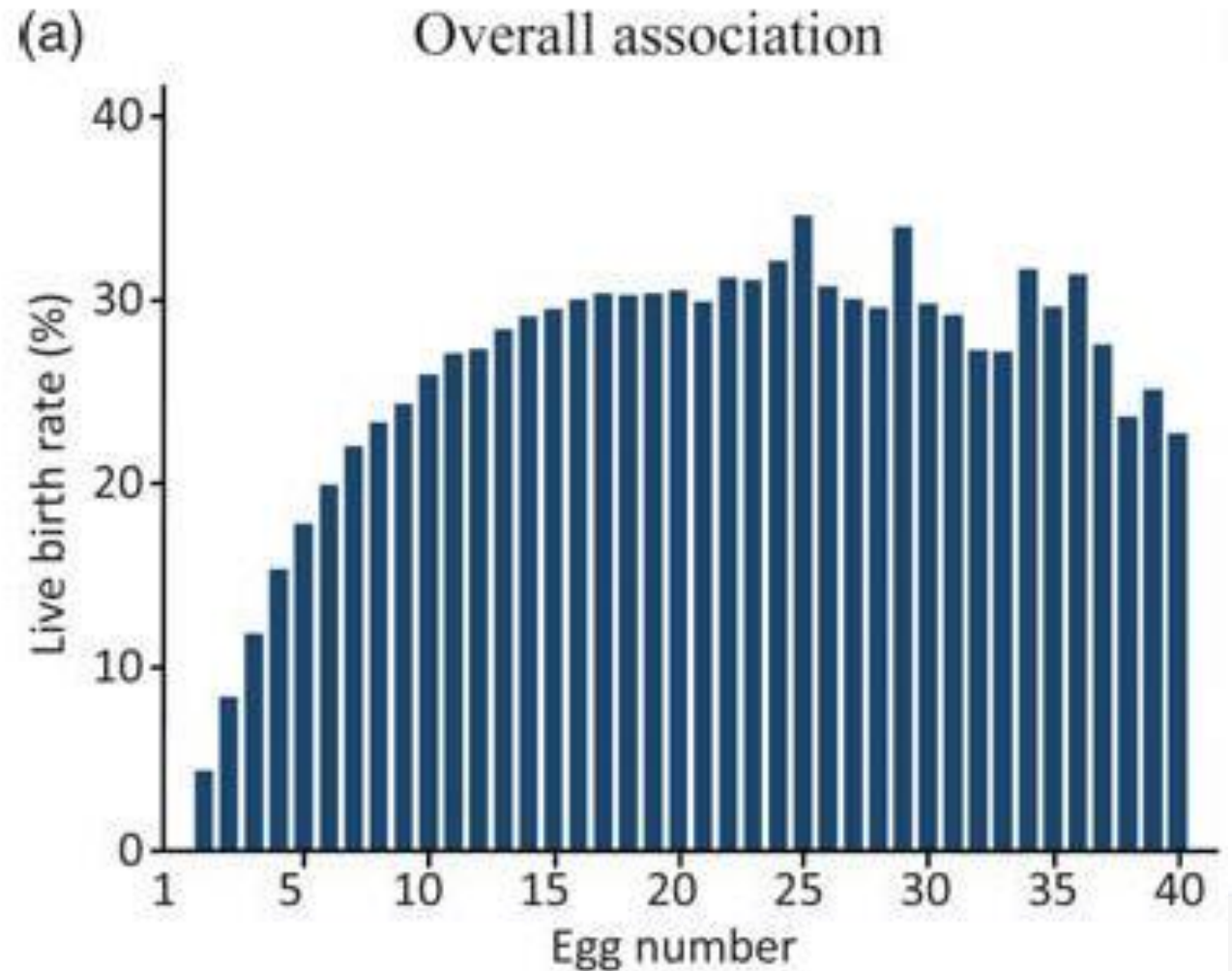
Sunkara et al 2007

Over 400,000 Cycles

No Decrease on a
Batch Basis

Egg Basis?

Can Donors Be Stimulated too Much?



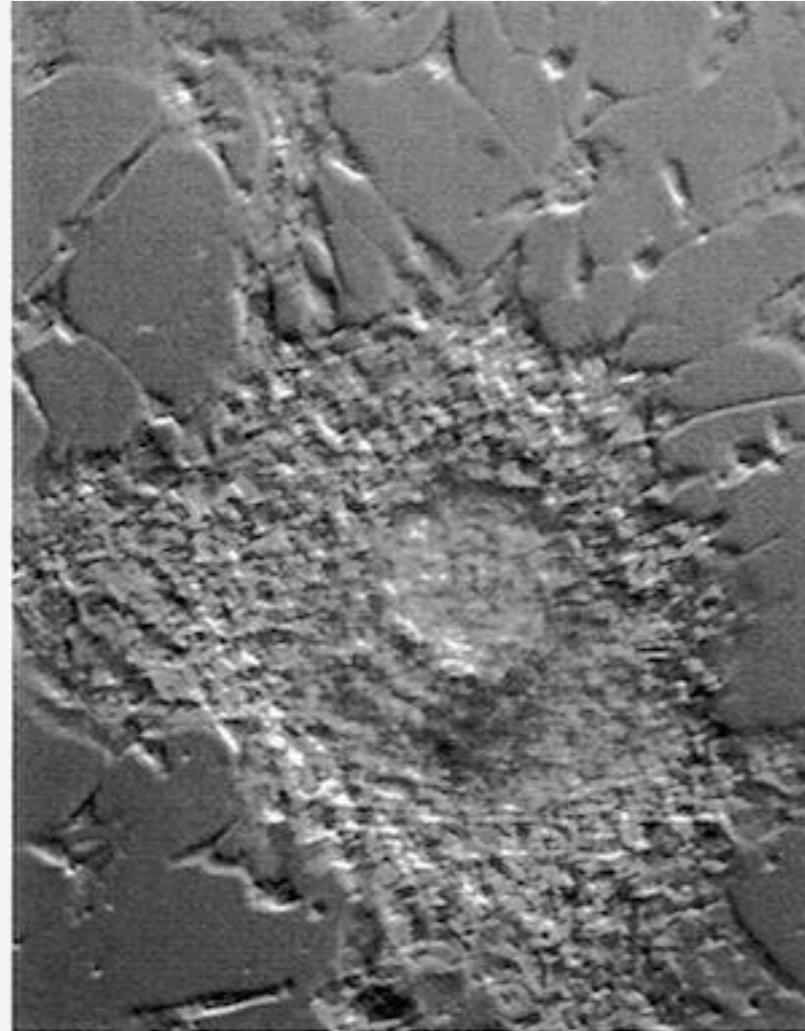
Cumulus Cell Removal

Too Harsh

Hyaluronidase
Exposure

Temperature, pH,
Osmolality

Can Cumulus Cell Removal Affect Oocyte Quality?



Ova Quality

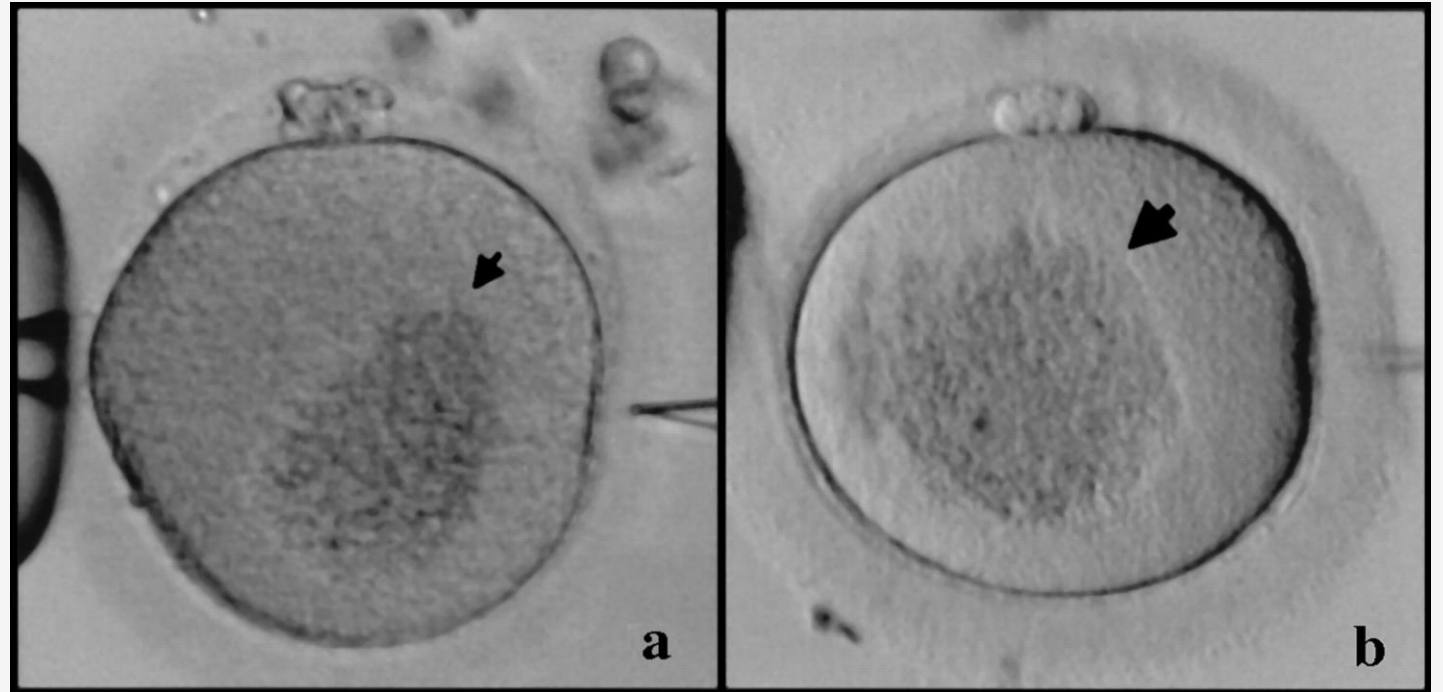
Centrally Located Granular Cytoplasm (CLCG)
“Bull’s Eye”

Normal Fertilization

Normal Embryo
Morphology

Low PG Rate

Half Miscarry



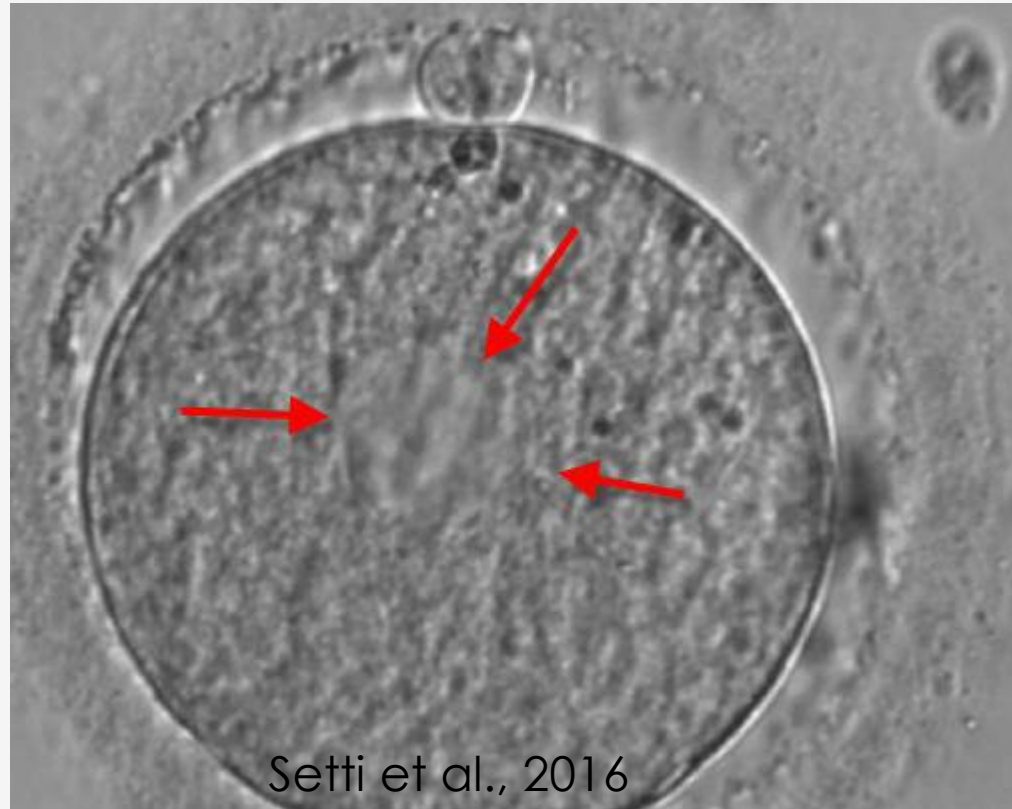
Ova Quality

Aggregates of Smooth Endoplasmic Reticulum

Normal Fertilization

Normal Embryo
Morphology

Lower IR Rate

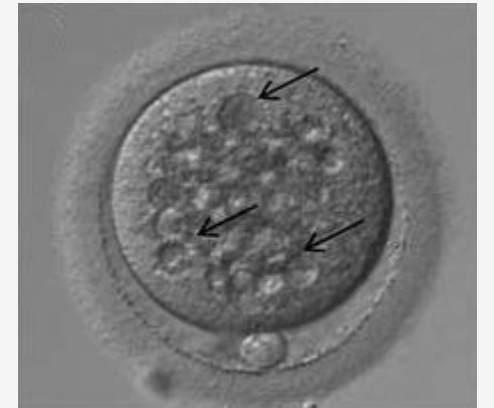
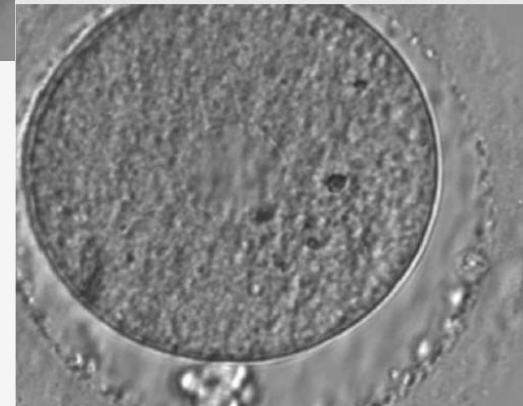
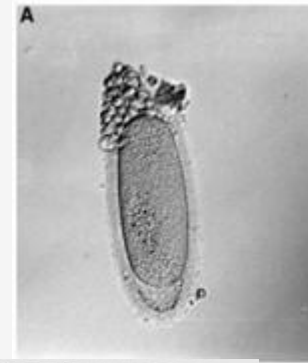
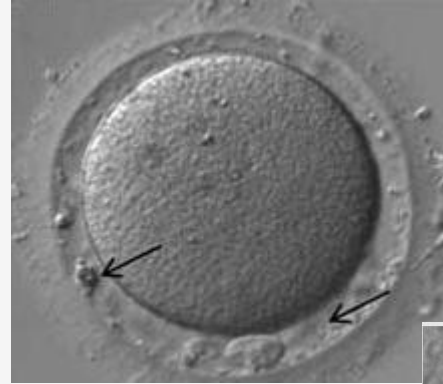


Setti et al., 2016

Ova Quality

50 Relevant Papers in Last 15 Years
Investigated 9 features.


“No clear tendency
in recent
publications to a
general increase in
predictive value of
morphological
features was found.”



Rienzi et al., 2011

Poor Case

“We received six eggs from the bank and none survived/fertilized!”

- Donor Related
 - Egg Bank
 - Shipping
 - Removal/Storage
 - Warming
 - ICSI
 - Other
- 

| | Clinic A | Clinic B |
|----------|----------|----------|
| Survival | 0 | 66.7 |
| PG | N | Y |

| | Clinic C | Clinic D |
|----------|----------|----------|
| Survival | 14.3 | 71.4 |
| PG | N | Y |

SURVIVAL

| | Clinic E | Clinic F | Clinic G |
|----------------------|----------|----------|----------|
| Fertilization | 0 | 83.3 | 50 |
| PG | N | Y | N |

| | Clinic H | Clinic I |
|----------------------|----------|----------|
| Fertilization | 25 | 100 |
| PG | N | N |

Fertilization

| | Clinic H | Clinic I |
|----------------------|----------|----------|
| Fertilization | 0 | 100 |
| PG | N | Y |



- What is the Ongoing PG Rate for Frozen ETs?
- Day of Endometrium
- Type of Progesterone

*Luteal Phase
Preparation*



"There is a paucity of high-quality literature on luteal support in frozen embryo transfer cycles, and there is no consensus regarding the optimal formulation, route, dosage, or duration of progesterone." - Toth and Vaughan, 2018

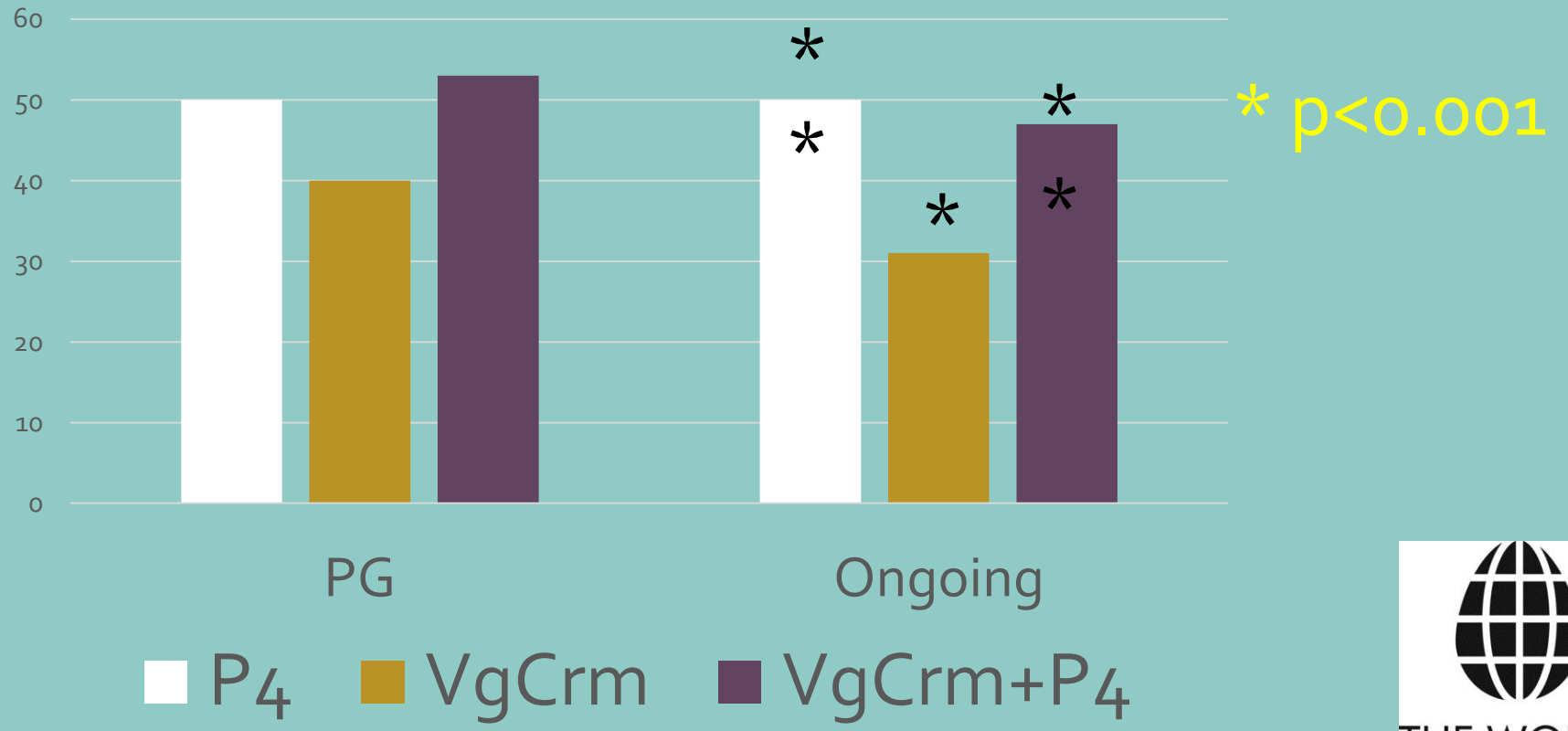
LUTEAL PHASE SUPPLEMENTATION

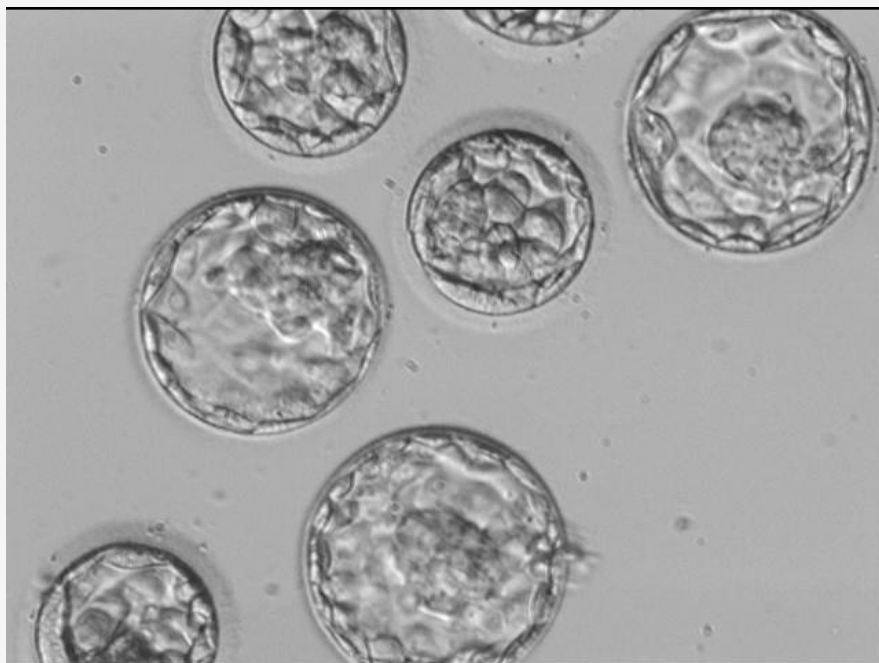


*Three Types
of Luteal
Phase
Preparations
for FETs*

- A. 50 mg daily P₄ injection
- B. 200 mg Twice Daily Vaginal Endometrim
- C. 200 mg Twice Daily Endometrim + 50 mg P₄ Injection Every Third Day

Outcomes in FETs Three Prep Methods





*Delayed
Development*





Biopsy on trophoblasts

PGS and Donor Ova



*The Use of
Preimplantation
Genetic Testing
for Aneuploidy
(PGT-A): A
Committee
Opinion – F&S
2018, 109, pp
429 – 436.*

- “The value of PGT-A as a universal screening test for all IVF patients has yet to be determined.”
- “The extremely challenging questions of false-positive testing, embryonic damage and loss of euploid embryos between day 3 and blastulation remains unanswered.”
- “The role of PGT-A for donor-oocyte cycles is unknown.”



The End

