2026 PCRS ANNUAL MEETING

REPRODUCTIVE FRONTIERS: BRIDGING BIOLOGY, PRACTICE, AND POSSIBILITY

MARCH 18-22 | RANCHO MIRAGE, CA

PACIFIC COAST REPRODUCTIVE SOCIETY

Opportunities to Increase Usable Embryo Yield in the Lab

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REPRODUCTIVE FRONTIERS:
BRIDGING BIOLOGY, PRACTICE, AND POSSIBILITY
MARCH 18-22 | RANCHO MIRAGE, CA

Bec Holmes, PhD, HCLD

CCRM Network

Disclosure Slide

- Neither I nor members of my immediate family have any actual or potential financial interests to disclose relating to the content of this presentation.

Needs Assessment Statement and Expected Learning Outcomes

- Increasing embryo yield is critical for patients
- We will discuss the role the IVF lab plays in this

Clinical End Points of IVF

- Pregnancy
- Preservation of Fertility
- **Usable embryo yield**

We all have common goals….

Get patients pregnant

Maximize Lab KPIs

Safety First without Compromising Quality

Satisfied patient

What Can the Lab Do?

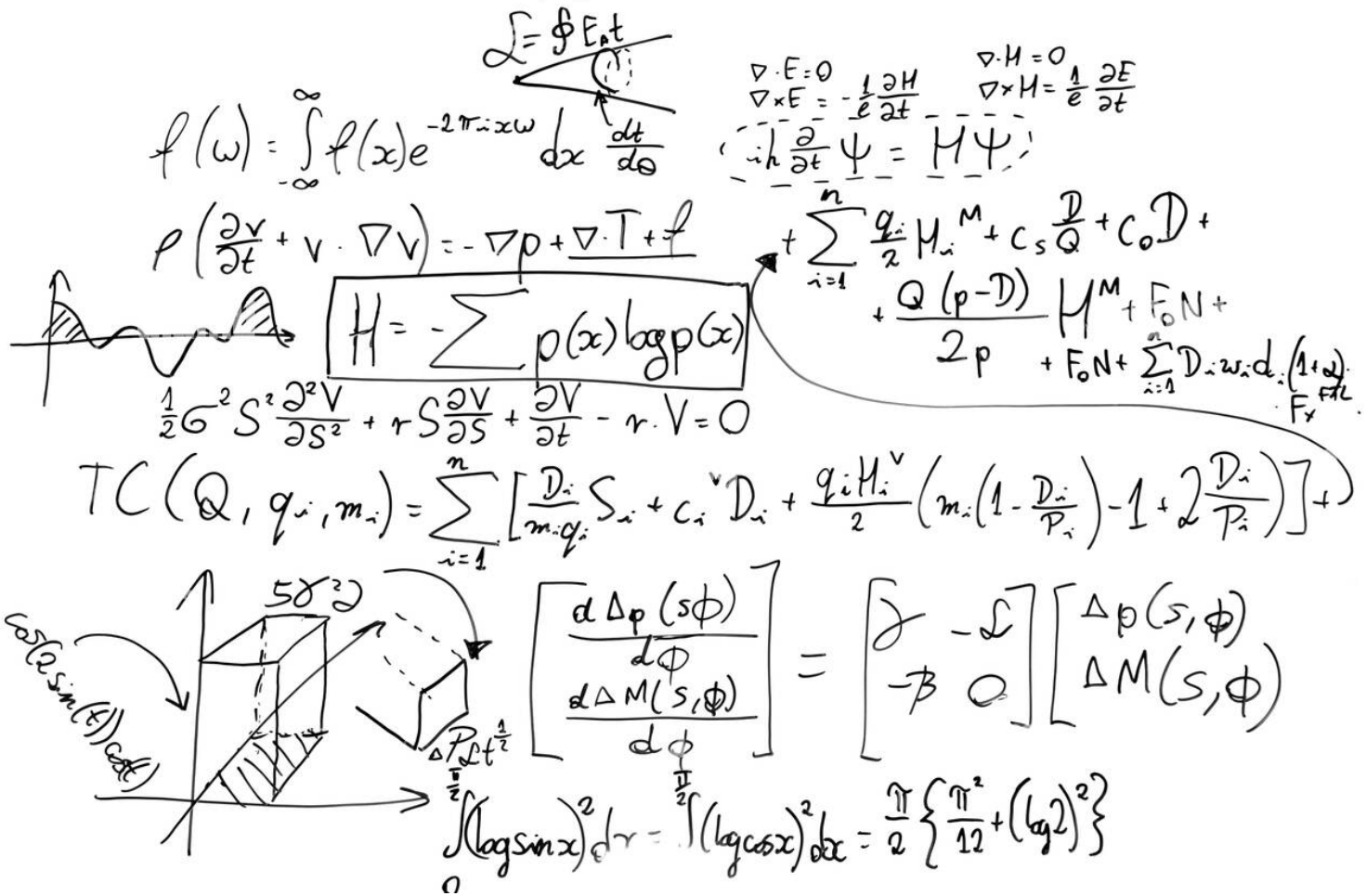
More oocytes

Better fertilization

More zygotes cultured

Better culture conditions

Better/broader selection



Maintain Quality…

Increasing Egg Yield

Improved Recovery

nature medicine

Article

https://doi.org/10.1038/s41591-026-04207-x

Microfluidic automation improves oocyte recovery from follicular fluid of patients undergoing in vitro fertilization

Received: 27 May 2025

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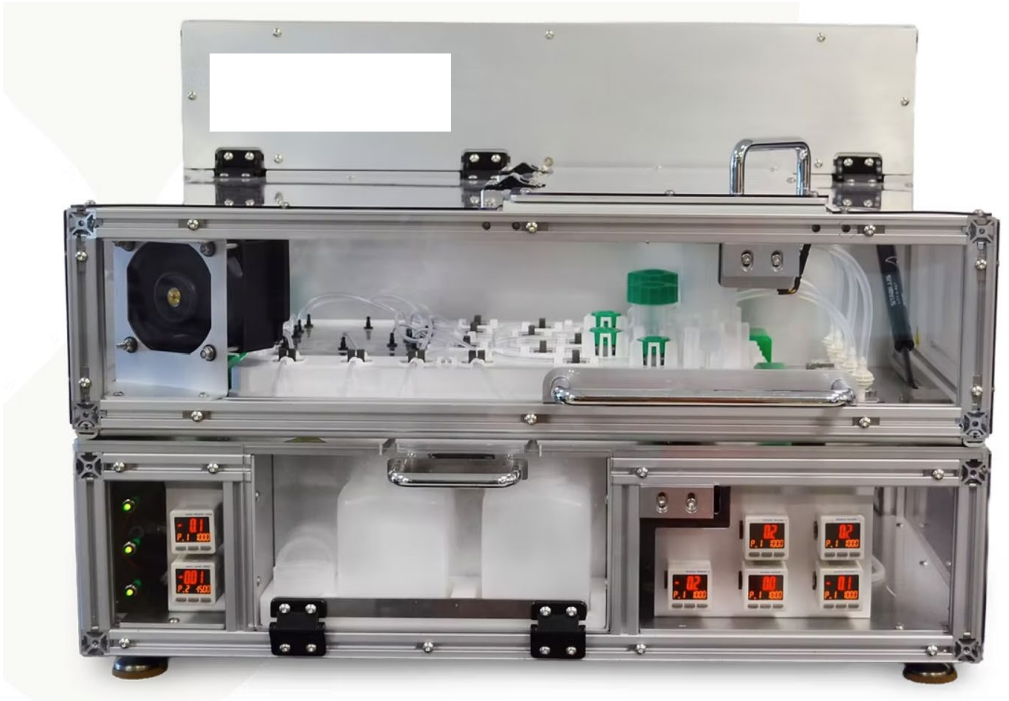
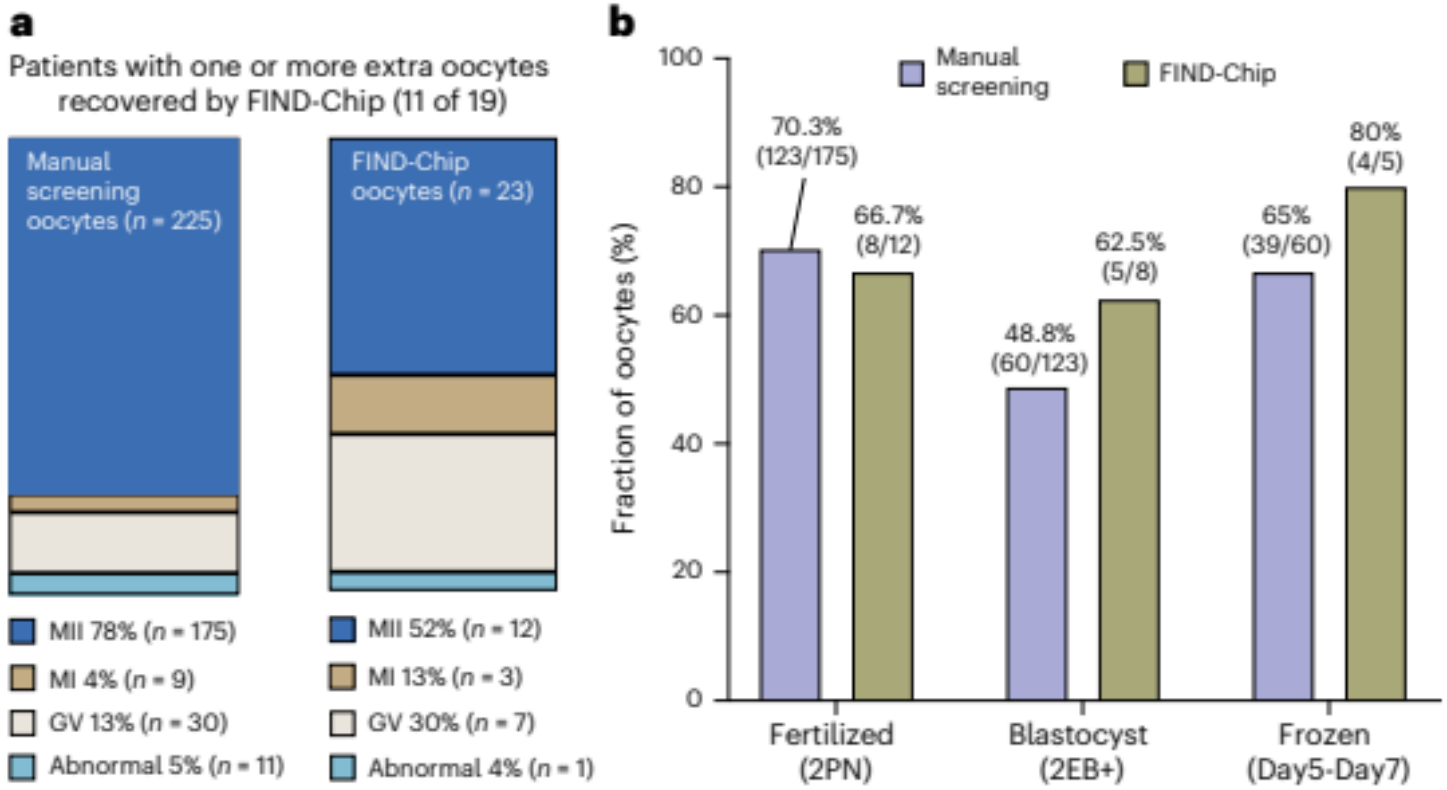
Published online: 12 February 2026

Baris R. Mutlu[1], Sabrina C. Civale[1], Joshua Diettrich[1], Neha Gupta[1], Thomas Barber[1], Mitchel Sayare[1], Alan S. Penzias[1,2], Michael M. Alper[1,2], Thomas L. Toth[1,2], Ravi Kapur[1], Mehmet Toner[1,3], Denny Sakkas[1,4] & Emre Ozkumur[1,4]



Improved Oocyte Recovery



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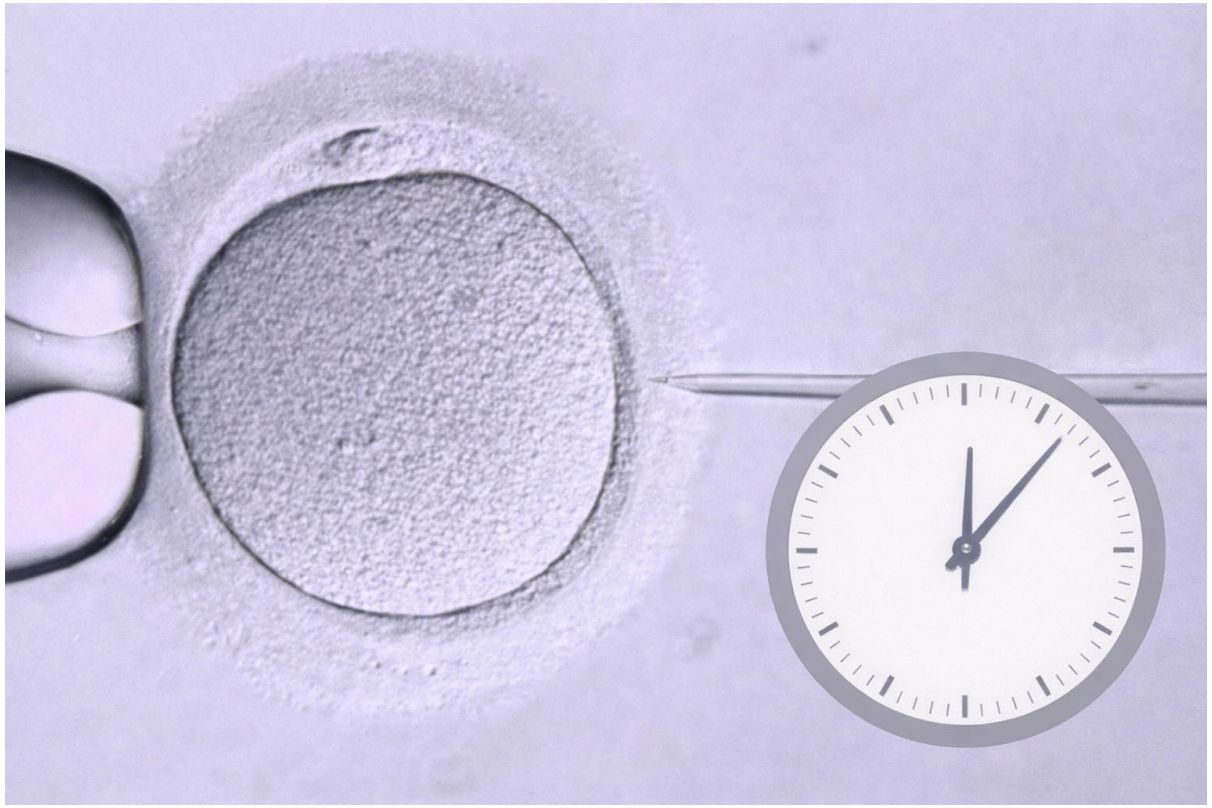
	Manual screening (SOC) blastocysts			FIND-Chip blastocysts		
	Day 5	Day 6	Day 7	Day 5	Day 6	Day 7
Patient 1	4AB, 4BB, 4BA	6BB (failed transfer), 5BB, 4BB			4BB, 5BB, 5BA[a] (live birth)	
Patient 2[b]	3BB (Abn), 4BB (Eup)	4BB (Eup), 4BB (Eup)	6BA (Eup), 5BA (Eup)	4BB (Eup)		

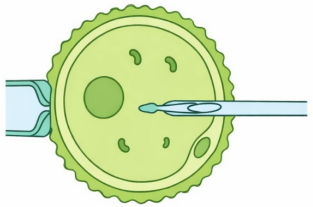
Better Fertilization

Extra ICSI's
- timing matters



Day 2 ICSI does result in good quality blastocyst development and pregnancy
Kile, Rebecca et al.
Fertility and Sterility, Volume 112, Issue 3, e278

Day 0 Day 1 Day 2



ICSI

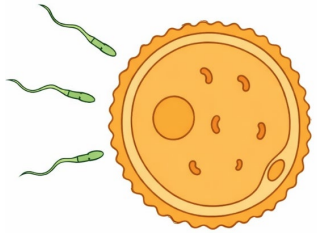
ICSI

Late Maturing ICSI

Fert Check and Maturity check

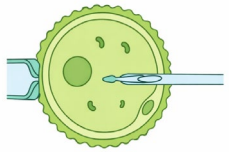
2nd Day ICSI of overnight matured

2nd Day Fert Check



Conventional IVF

Insemination



ICSI

ICSI of no ferts

2nd Day Fert Check

2nd Day ICSI

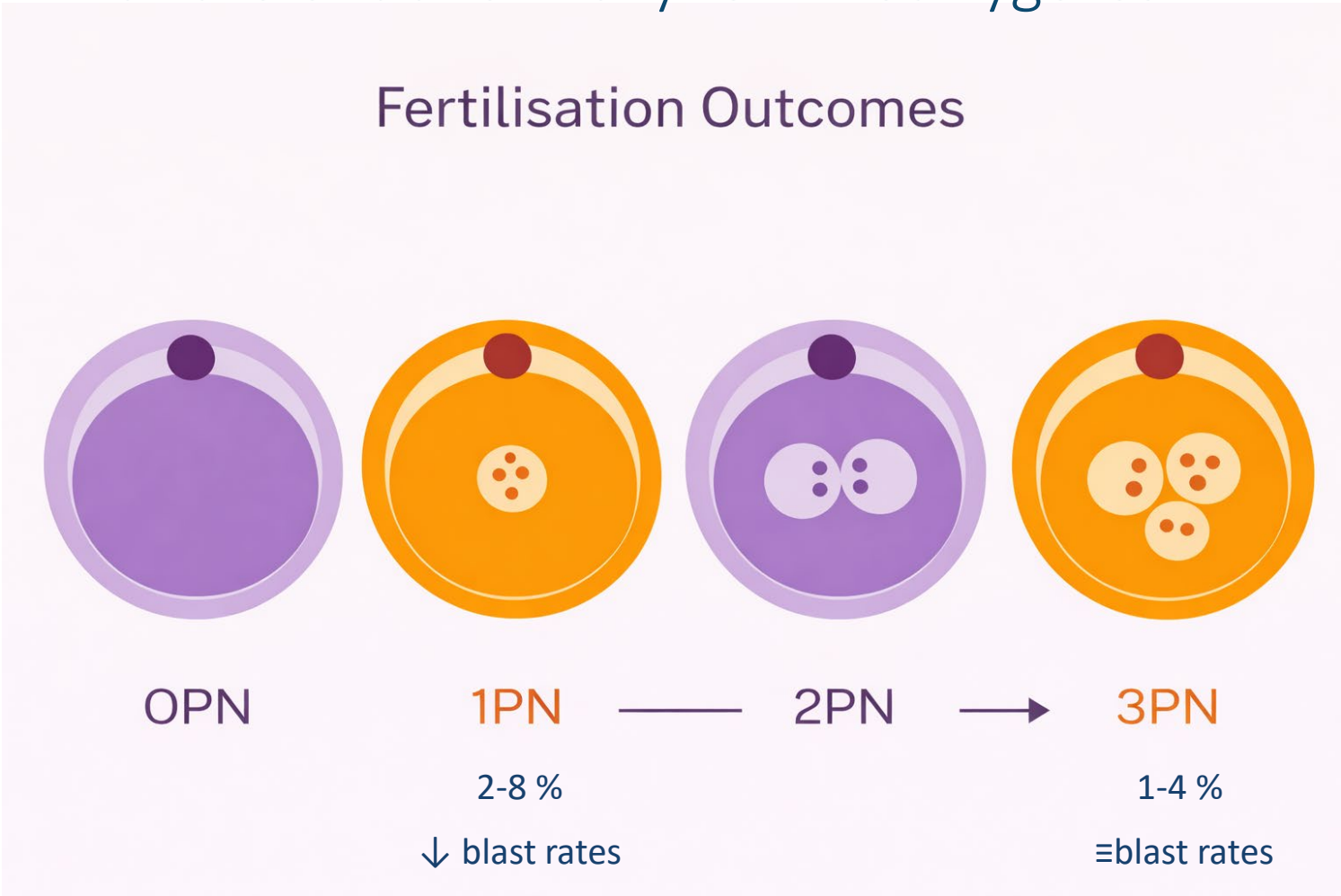
Approach	Outcomes
Original cohort	Best fert rates and blast dev
2nd Day ICSI	Ok Fert rates & Good blast dev
Late Maturing ICSI	Lower fert rates and blast dev
Rescue ICSI	Poor fert rates and increased chr abnormalities

SUCCESS RATES OF RESCUE ICSI THE DAY AFTER FAILED FERTILIZATION IN CONVENTIONAL INSEMINATION: FRESH VERSUS FROZEN EMBRYO TRANSFERS
Batha, Sara Nasser et al.
Fertility and Sterility,

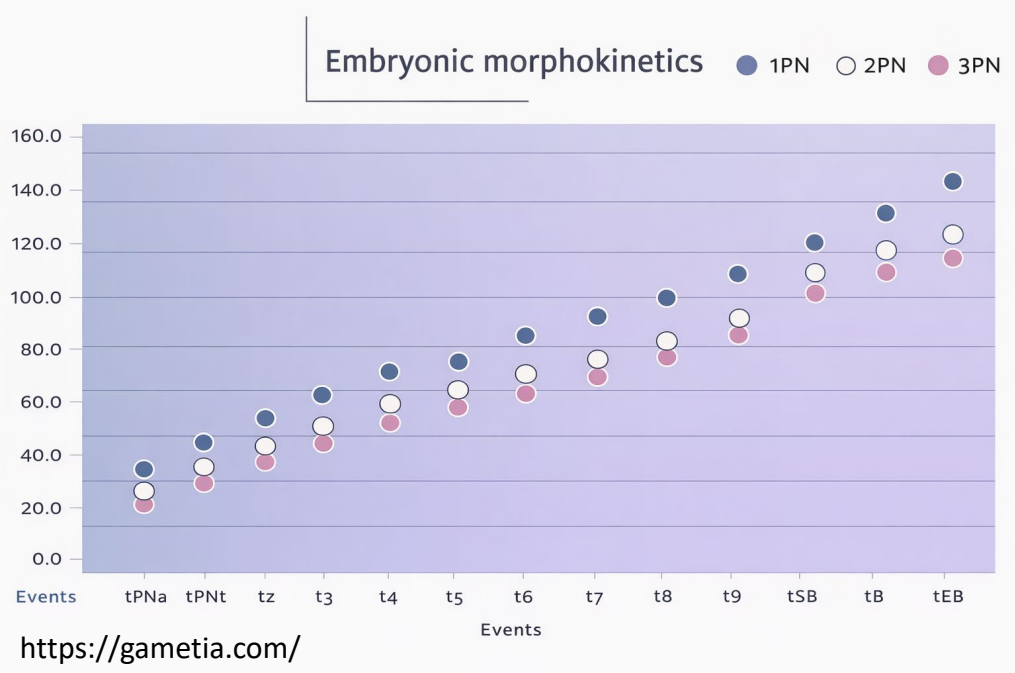
REPRODUCTIVE POTENTIAL OF LATE MATURING OOCYTES WITH SAME DAY AND NEXT DAY ICSI
Ortega, Egle A. et al.
Fertility and Sterility, Volume 122, Issue 4, e293 2024

Day 2 ICSI does result in good quality blastocyst development and pregnancy
Kile, Rebecca et al.
Fertility and Sterility, Volume 112, Issue 3, e278

Culture of abnormally fertilized zygotes



Morphokinetics of Abnormally 0, 1, 3 PN embryos



https://gametia.com/

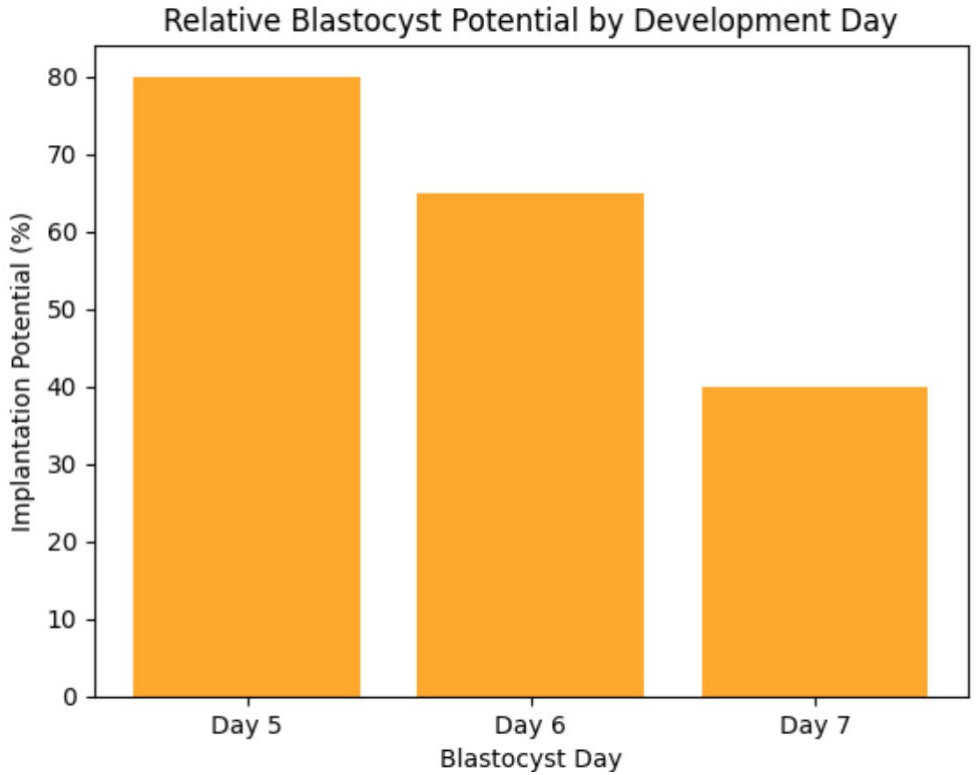
SNP analysis

Increases number of embryos in the pool

- 1pn: **59.4% diploid (203)**, 40.6% haploid (139)
- 3pn: **13.9% diploid (63)**, 86.1% triploid (389)
- 0Pns: 98% diploid

Day 7 Culture

"trophectoderm biopsy of D7 blastocysts is a clinical option for poor prognosis infertility patients since viable euploid blastocysts may result."



MORPHOKINETICS AND REPRODUCTIVE POTENTIAL OF DAY 7 EMBRYOS Reckhow, Jensen et al.Fertility and Sterility, Volume 124, Issue 6, e23 - e24

BENEFITS OF DAY 7 BLASTOCYST CULTURE?: A COMPARISON OF CONVERSION AND EUPLOIDY RATES BETWEEN RELATED IVF LABORATORIES WITH DIFFERENT VOLUMES Swain, Jason E. et al. Fertility and Sterility, Volume 114, Issue 3, e120

Day 7 culture

BENEFITS OF DAY 7 BLASTOCYST CULTURE?: A COMPARISON OF CONVERSION AND EUPLOIDY RATES BETWEEN RELATED IVF LABORATORIES WITH DIFFERENT VOLUMES.

Jason E. Swain, PhD, HCLD,[1] William B. Schoolcraft, MD,[2] Rebecca L. Krisher, PhD[2]
[1]CCRM IVF Network, Lone Tree, CO; [2]CCRM Colorado, Lone Tree, CO.

Lab #	1	2	3	4	5	6	7	8	9	10	11
# of Retrievals	3197	1831	1359	1089	1075	732	680	623	588	353	131
Avg. female Age	37.5	36.4	36.5	36.7	36.8	36.5	36.9	37.5	36.7	36.1	37.0
% Day 7 Blastocyst Rate	4.7^{a}	5.0^{ac}	2.9^{b}	4.0^{d}	3.5^{d}	2.5^{b}	5.9^{e}	5.6^{ce}	5.0^{ac}	5.5^{c}	2.8^{b}
% D7 Euploid Rate	37.2^{ad}	44.5^{ab}	56.2^{c}	46.9^{ab}	44.1^{ab}	51.7^{bc}	41.0^{a}	36.3^{ad}	59.6^{b}	30.1^{d}	20.1^{e}

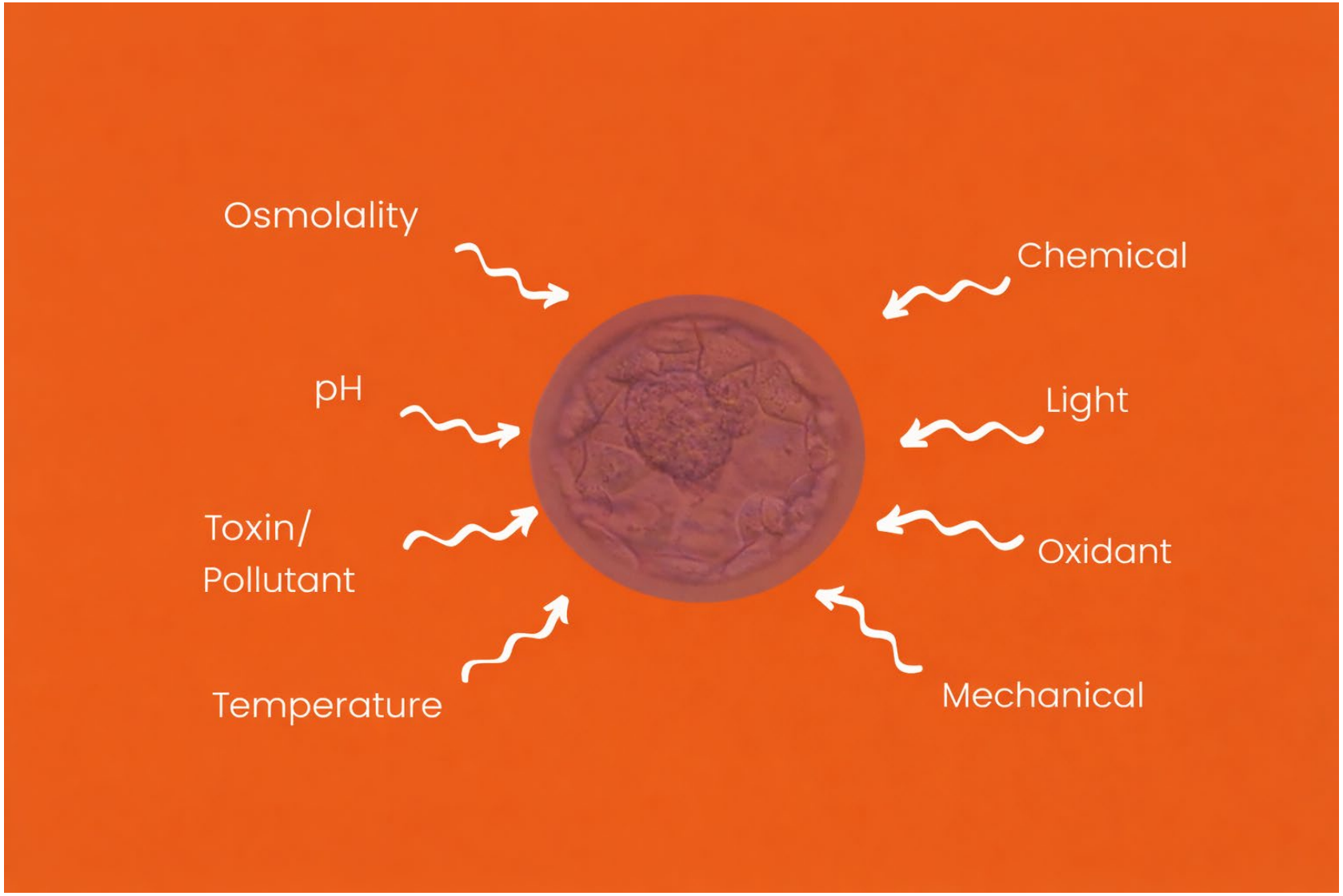
Day 7 culture

DAY 7 EMBRYO CULTURE INCREASES BLASTOCYST YIELD FOR DIFFERENT AGED FEMALE PATIENTS.

Nancy L. Bossert, PhD,[1] Rebecca L. Krisher, PhD,[2] William B. Schoolcraft, MD,[2] Hannah Van Der Geest, BS,[1] Jason E. Swain, PhD, HCLD.[3] [1]CCRM Minneapolis, Edina, MN; [2]CCRM Colorado, Lone Tree, CO; [3]CCRM IVF Network, Lone Tree, CO.

Female Age	# Patients	Day 5 Total Bast Rate	Day 5 GQB	Day 5/6 Total Blast Rate	Day 5/6 GQB	Day 5/6/7 Total Blast rate	Day 5/6/7 GQB	% Increase in GQB from D7
<30 yrs	22	63.7%^{a}	29.5%^{ac}	72.2%^{ab}	51.6%^{ab}	76.2%^{a}	52.7%^{ab}	1.1%^{ab}
30-34	166	61.1%^{a}	28.5%^{a}	69.7%^{a}	50.4%^{a}	74.5%^{a}	51.1%^{a}	0.7%^{a}
35-37	152	51.0%^{b}	23.5%^{bc}	63.4%^{bc}	42.7%^{bc}	73.0%^{ab}	45.2%^{bc}	2.5%^{b}
38-40	149	47.8%^{bd}	19.4%^{be}	59.8%^{cd}	39.6%^{cd}	71.9%^{ab}	41.1%^{cd}	1.5%^{ab}
41-42	61	42.8%^{bd}	11.6%^{d}	54.4%^{df}	31.1%^{df}	68.9%^{ab}	32.9%^{df}	1.8%^{ab}
>42	40	36.9%^{cd}	12.3%^{de}	45.0%^{ef}	22.7%^{ef}	63.9%^{b}	25.6%^{ef}	2.88%^{ab}

Culture Conditions



Improved Culture Conditions

- Maintain strict control of temperature, gas composition, and pH
- Minimize environmental fluctuations during oocyte, sperm and embryo handling
- Designing laboratory workflows that prioritize efficiency
- Choose the best media for your lab

Culture Conditions

599 RBMO VOLUME 39 ISSUE 4 2019

RBMO

ELSEVIER

REVIEW

Controversies in ART: can the IVF laboratory influence preimplantation embryo aneuploidy?

Jason E. Swain* PhD, HCLD

REVIEW

FERTILITY & REPRODUCTION

OPEN ACCESS

FandR 2021.03:120-124. Downloaded from www.worldscientific.com

Can Culture Media Impact Preimplantation Embryo Aneuploidy?

Jason E. Swain*

CCRM Fertility Network, Lone Tree, CO, USA

CellPress

Developmental Cell

Review

Cellular Stress Associated with Aneuploidy

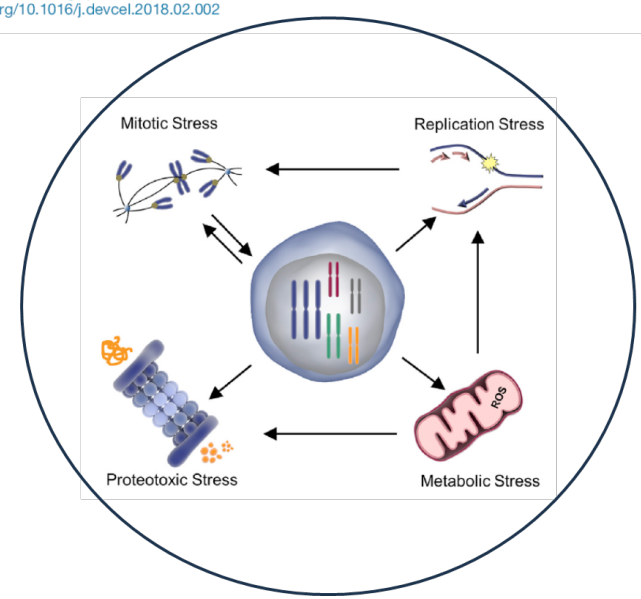
Jin Zhu,[1] Hung-Ji Tsai,[1] Molly R. Gordon,[1] and Rong Li[1,2,*]

[1]Department of Cell Biology, Center for Cell Dynamics, Johns Hopkins University School of Medicine, Baltimore, MD 21205, USA

[2]Department of Chemical and Biomolecular Engineering, Whiting School of Engineering, Johns Hopkins University, Baltimore, MD 21218, USA

*Correspondence: rong@jhu.edu

https://doi.org/10.1016/j.devcel.2018.02.002



O-058

Evidence that differences between embryology laboratories can influence the rate of mitotic errors, leading to increased chromosomal mosaicism, with significant implications for IVF success rates

Wells D., Alfarawati S., Taylor S., Kubikova N., Spath K., Turner K., Hickman C., Fragouli E.

P-136 Tuesday, October 18, 2016

THE RATE OF MOSAIC EMBRYOS FROM DONOR EGG AS DETECTED BY NEXT GENERATION SEQUENCING (NGS) VARIES BY IVF LABORATORY. N. M. Sachdev,[a] L. Ribustello,[b] E. Liu,[b] D. H. McCulloh,[a] J. Grifo,[c] S. Munne.[b] [a]Obstetrics and Gynecology, New York University Fertility Center, New York, NY; [b]Reprogenetics, Livingston, NJ; [c]NYU Fertility Center, New York, NY.

166 Laboratory culture environment affects mitotic aneuploidy, not meiotic aneuploidy

Hickman Cristina[1]; Wells Dagan[2]; Lavery Stuart[3]

Rates of embryo ***mitotic*** *errors can vary as much as* ***>30%*** *between IVF facilities*

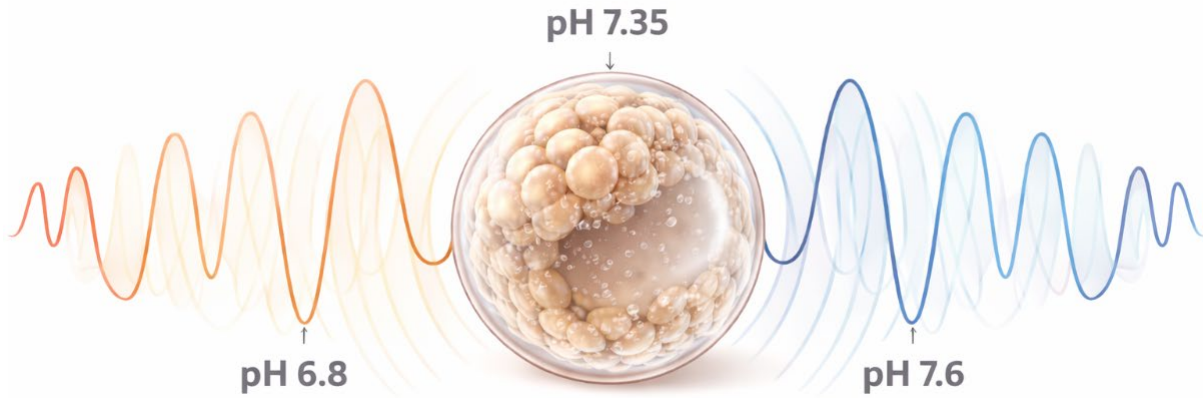
IMPACT OF pH on Cellular Aneuploidy

BIOLOGY OF REPRODUCTION **64,** 1845–1854 (2001)

Altering Intracellular pH Disrupts Development and Cellular Organization in Preimplantation Hamster Embryos[1]

Jayne M. Squirrell,[2] Michelle Lane,[3] and Barry D. Bavister[4]

Department of Animal Health and Biomedical Sciences, University of Wisconsin, Madison, Wisconsin 53706



CELL CYCLE
2016, VOL. 15, NO. 18, 2454–2463
http://dx.doi.org/10.1080/15384101.2016.1201255

Taylor & Francis
Taylor & Francis Group

REPORT

Elevated intracellular pH appears in aged oocytes and causes oocyte aneuploidy associated with the loss of cohesion in mice

Jin-Mei Cheng[a,b], Jian Li[a,b], Ji-Xin Tang[a,b], Su-Ren Chen[a], Shou-Long Deng[a], Cheng Jin[a,b], Yan Zhang[a], Xiu-Xia Wang[a], Chen-Xi Zhou[a], and Yi-Xun Liu[a]

[a]State Key Laboratory of Stem Cell and Reproductive Biology, Institute of Zoology, Chinese Academy of Sciences, Beijing, China; [b]University of Chinese Academy of Sciences, Beijing, China

Culture Conditions
-the lab *can* affect aneuploidy which in turn affects the total number of usable embryos

O-058

Evidence that differences between embryology laboratories can influence the rate of mitotic errors, leading to increased chromosomal mosaicism, with significant implications for IVF success rates

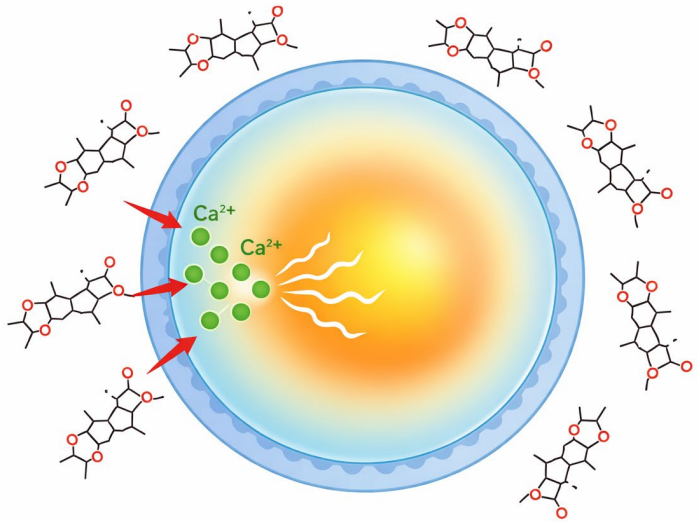
Wells D., Alfarawati S., Taylor S., Kubikova N., Spath K., Turner K., Hickman C., Fragouli E.

P-203 2016 Hum Reprod

Euploid rate sensitivity to laboratory culture environment: a blind, prospective, randomised, sibling study

Hickman C., Wells D., Gwinnett D., Wilkinson T., Christiansen S., Oliana O., Abramov B., Carby A., Lavery S.

Calcium Ionophore



A23187 (Calcimycin) induces Ca^{2+} influx, triggering oocyte activation.

Meta-Analysis > J Assist Reprod Genet. 2025 Jan;42(1):165-183.
doi: 10.1007/s10815-024-03319-y. Epub 2024 Nov 19.

Assessing the impact of calcium ionophore on pregnancy outcomes in artificial oocyte activation cycles: a 10-year update of systematic review and meta-analysis

Jingqi Zhang [1], Yilun Sui [1], Min Xiao [1], Xiaoxi Sun [1], Jing Fu [2]

Future -

DOI: 10.64898/2026.01.08.698387 • Corpus ID: 284597735

Restoring Shugoshin 1 reduces chromosome errors in human eggs

Debojit Saha, Saba Manshaei, +7 authors Melina Schuh • Published in bioRxiv 9 January 2026 • Biology, Medicine

P-200 2:00 PM Monday, October 27, 2025

PRECLINICAL TESTING OF A NOVEL THERAPEUTIC FOR REDUCTION OF ANEUPLOIDY IN OOCYTES.

Alexandre Webster, PhD,[1] Eirini Bellou, PhD,[2] Alison J. Campbell, B.SC., PH.D.,[3] Chloe Charalambous, PhD,[1] Jordan Abdi, MD[1] [1]U-Ploid Biotechnologies ltd., Oxford, United Kingdom; [2]U-Ploid Biotechnologies, Oxford, Oxfordshire, United Kingdom; [3]CARE Fertility, Nottingham, United Kingdom.

From aged mice, oocytes treated with UP-036 showed a statistically significant reduction in PSSC frequency compared to untreated oocytes. Oocytes from aged mice that underwent treatment were statistically significantly less likely to exhibit chromosome errors compared to untreated counterparts; with PSSC rates approaching those of young mice controls..

Summary

Balance quantity and quality	• extra work, resources
Personalized medicine vs. Standardized	• specific patients?

Incremental additions to a patients cohort of eggs can have profound affects on a cycle

1 + 1 + 1 + 1

↓

Q&A