OOCYTE QUALITY IN POOR RESPONDERS

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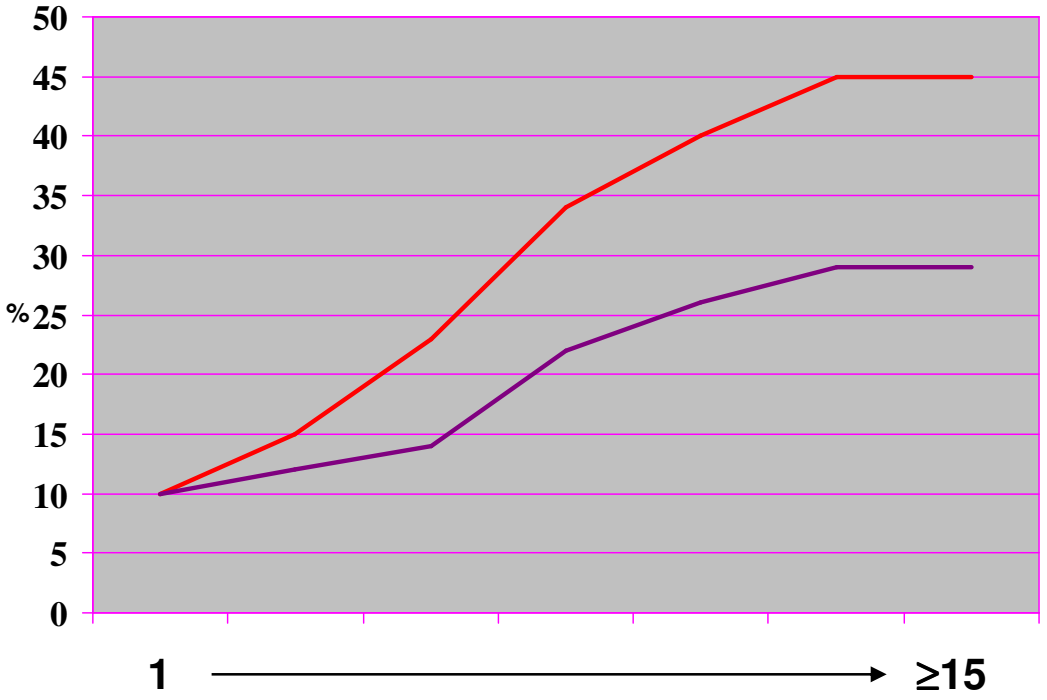

Pregnancy rate

Implantation rate

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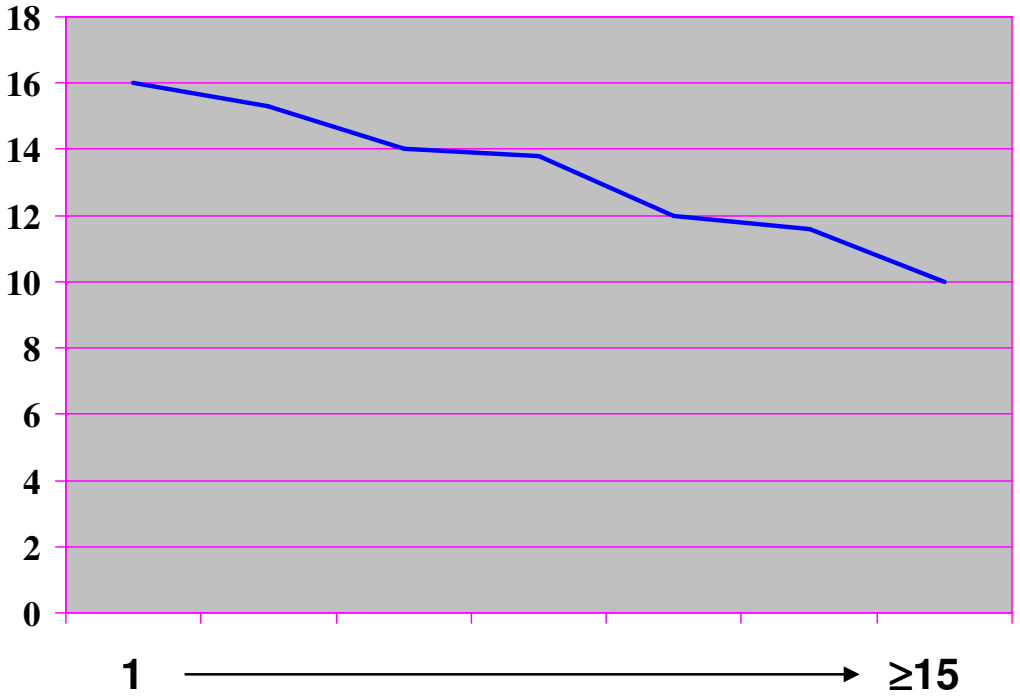
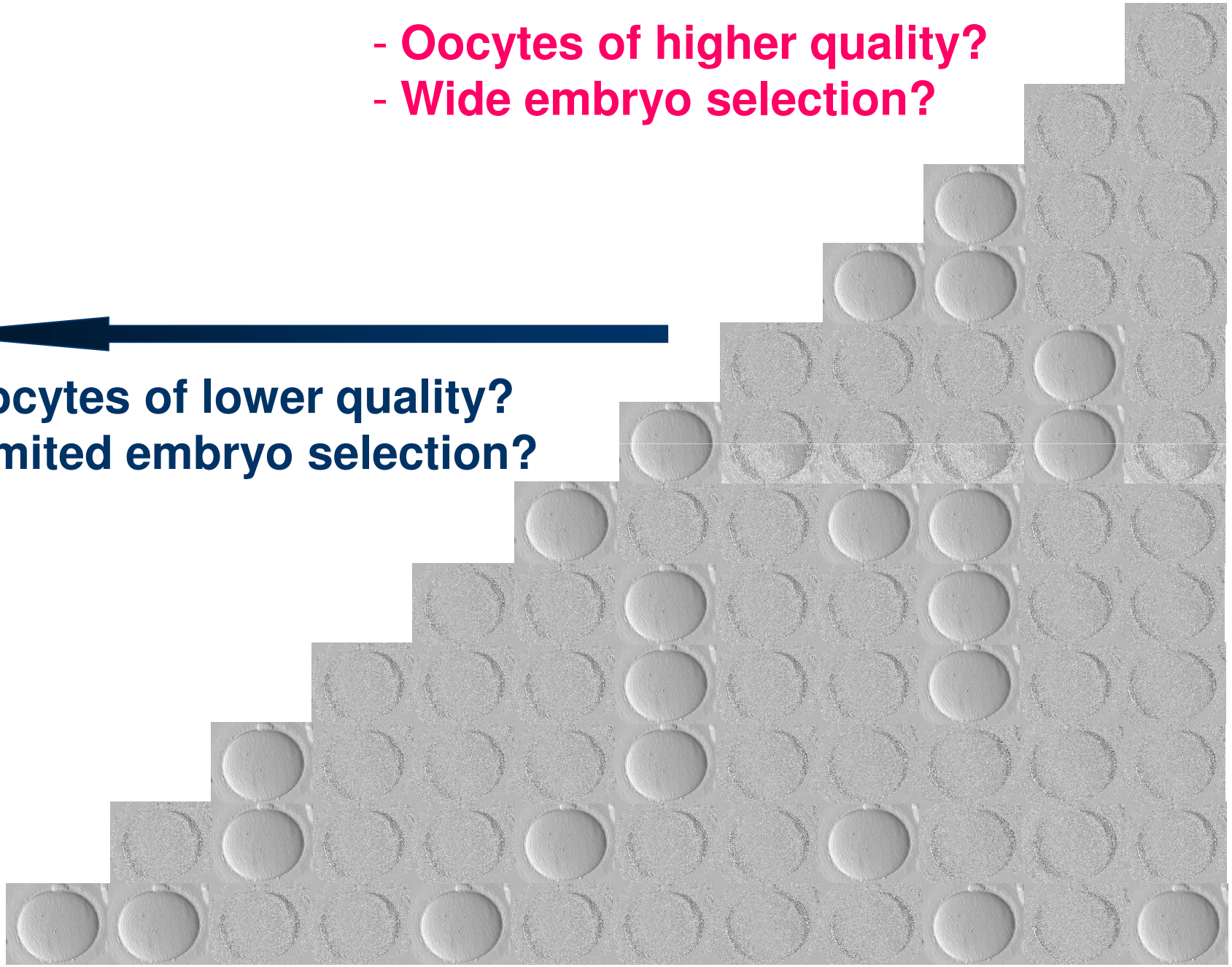


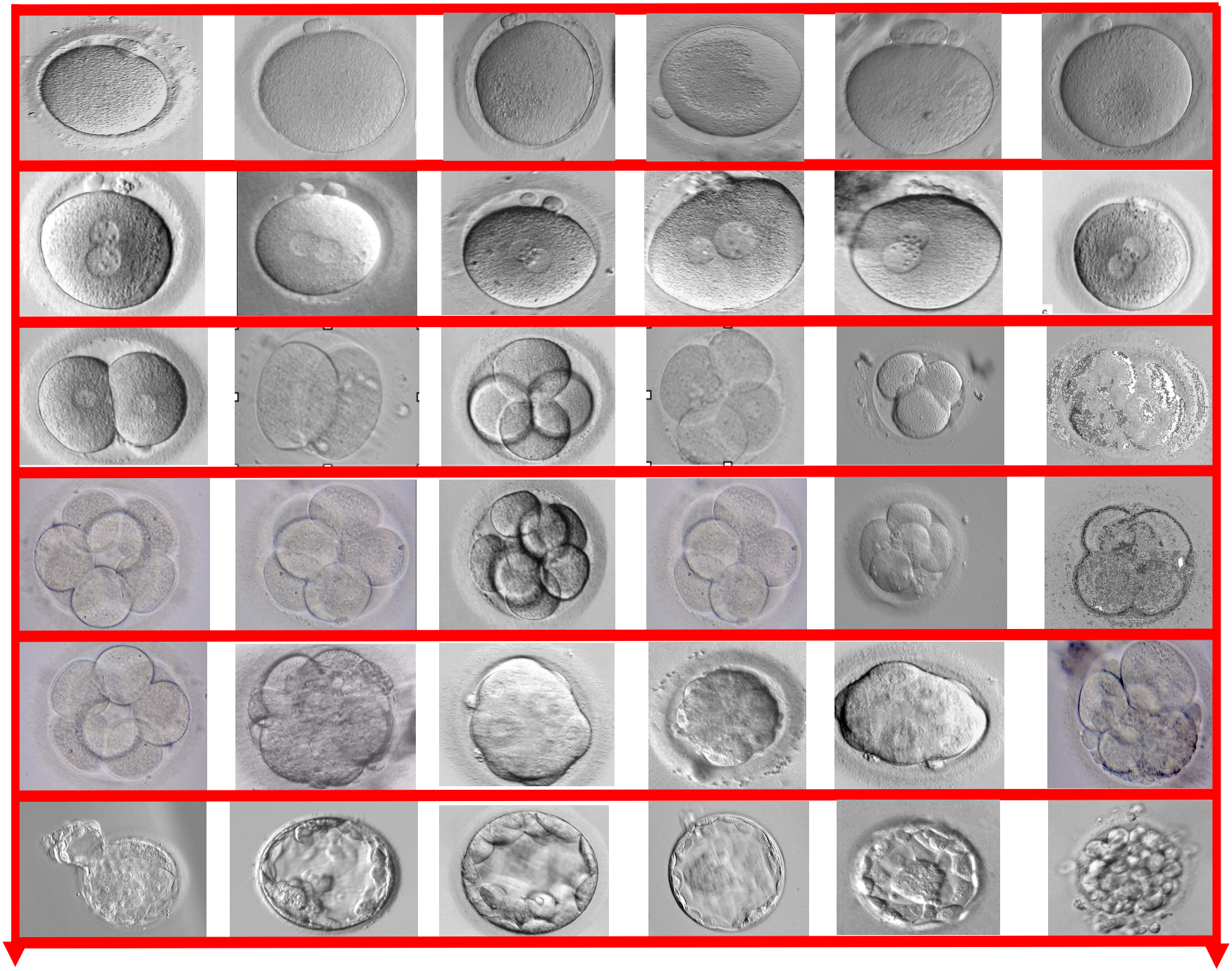
No. oocytes needed for a FHB

- Oocytes of higher quality?
- Wide embryo selection?

- Oocytes of lower quality?
- Limited embryo selection?



EMBRYO SELECTION



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- Oocytes of higher quality?
- Wide embryo selection?

In a selected patient population with allocation and randomization on Day 3 based on the number of good-quality embryos, embryo transfer on Day 5 has a higher chance of ongoing pregnancy and live birth than embryo transfer on Day 3.

Papanikolaou et al., 2005

- Oocytes of higher quality?
- Wide embryo selection?

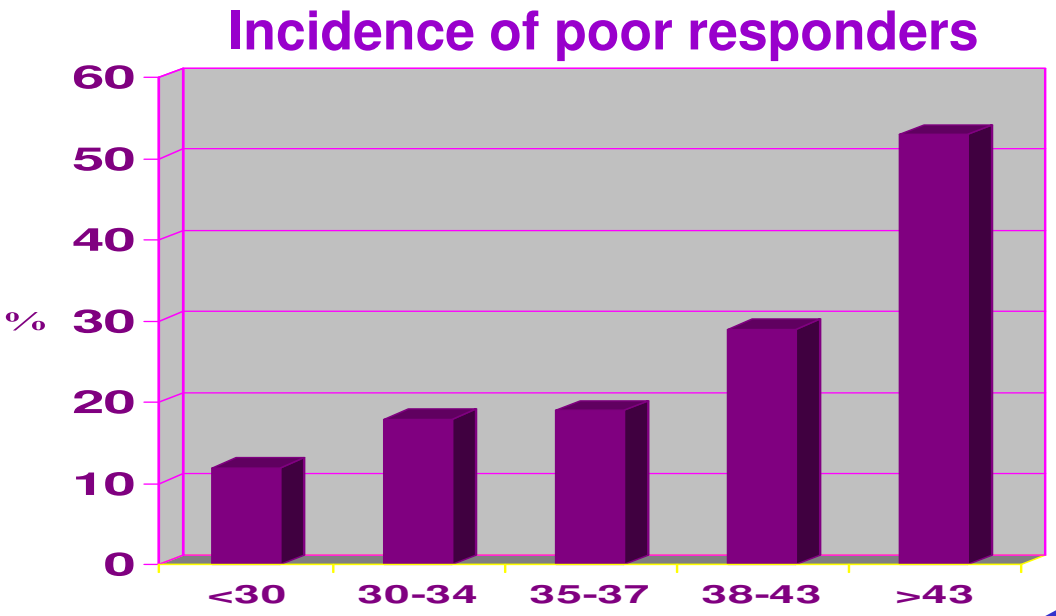
In a non-selected patient population with randomization at consultation, embryo transfer on Day 3 or on Day 5 has a similar chance of ongoing clinical pregnancy per started cycle.

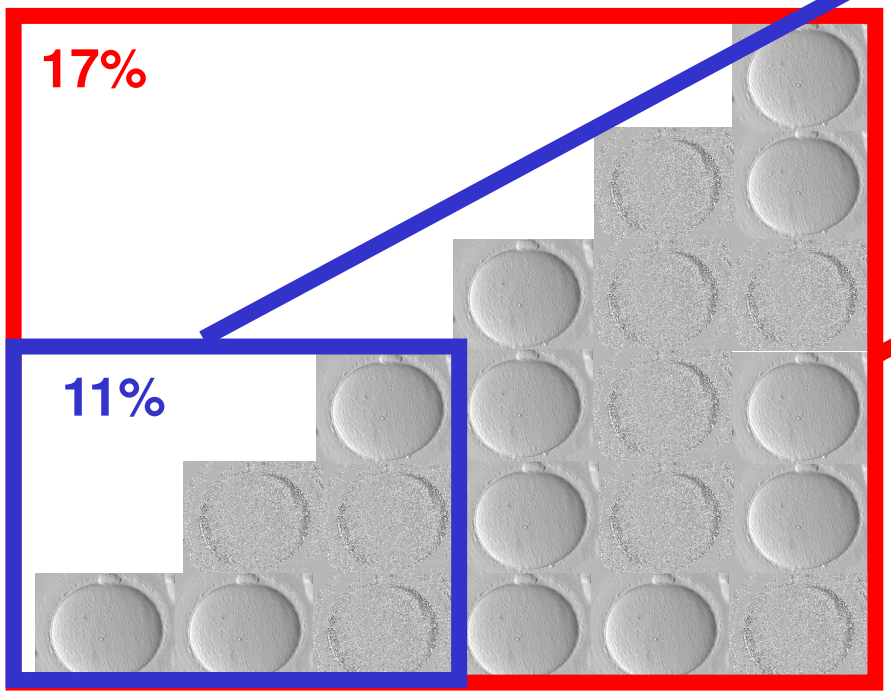
Kolibianakis et al., 2004

POOR RESPONDERS

Age

POOR RESPONDERS





≤37 yrs: 27%

≥38 yrs: 73%

≤37 yrs: 50.5%

≥38 yrs: 49.5%

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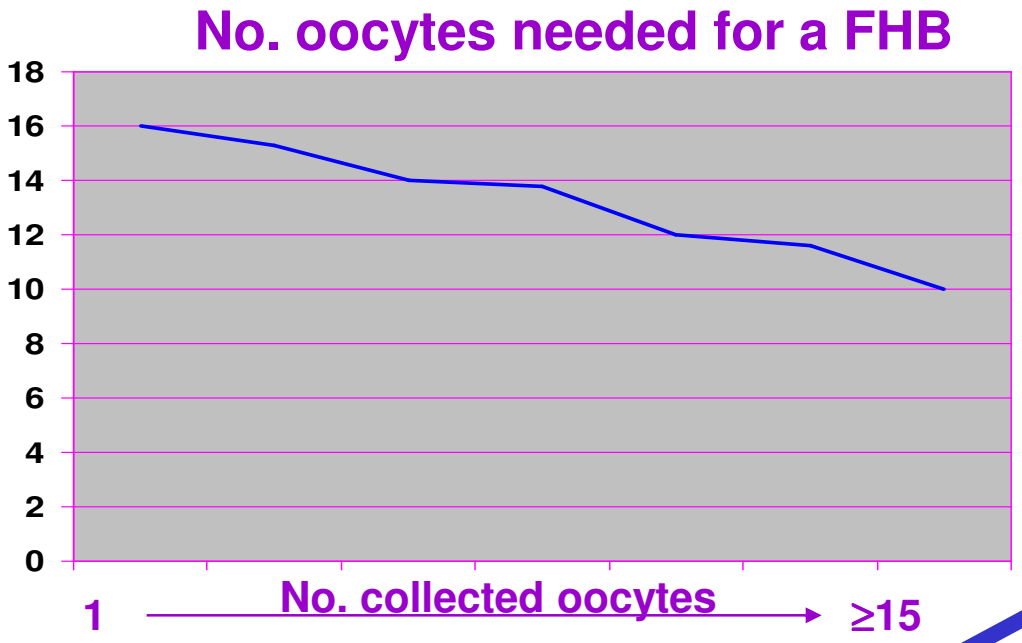
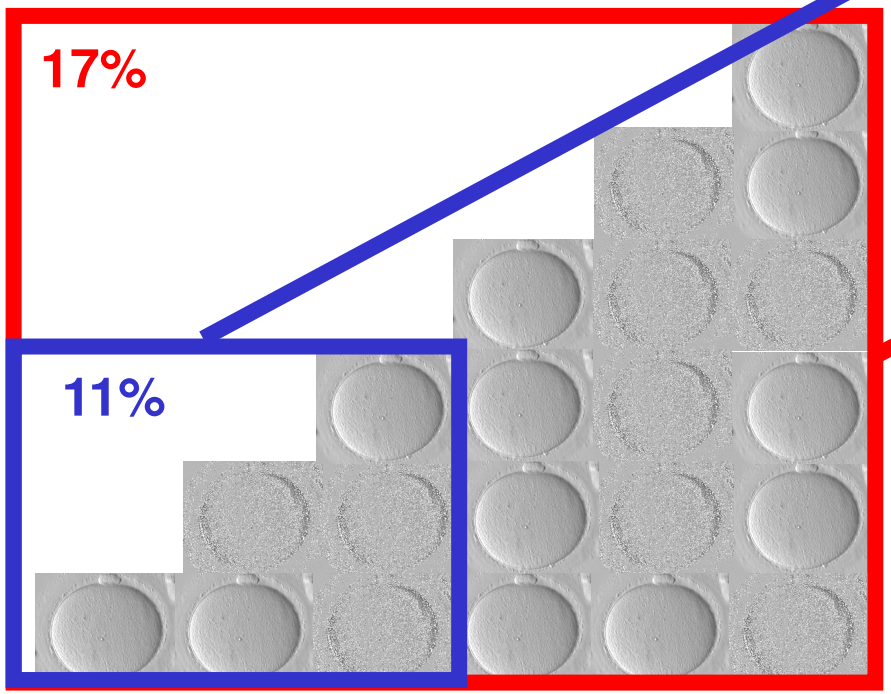
2000-2003

POOR RESPONDERS



No. oocytes needed for a FHB



≤37 yrs: 27%

≥38 yrs: 73%

12.5

17.1

15.3

≤37 yrs: 50.5%

≥38 yrs: 49.5%

12

16.2

13.8

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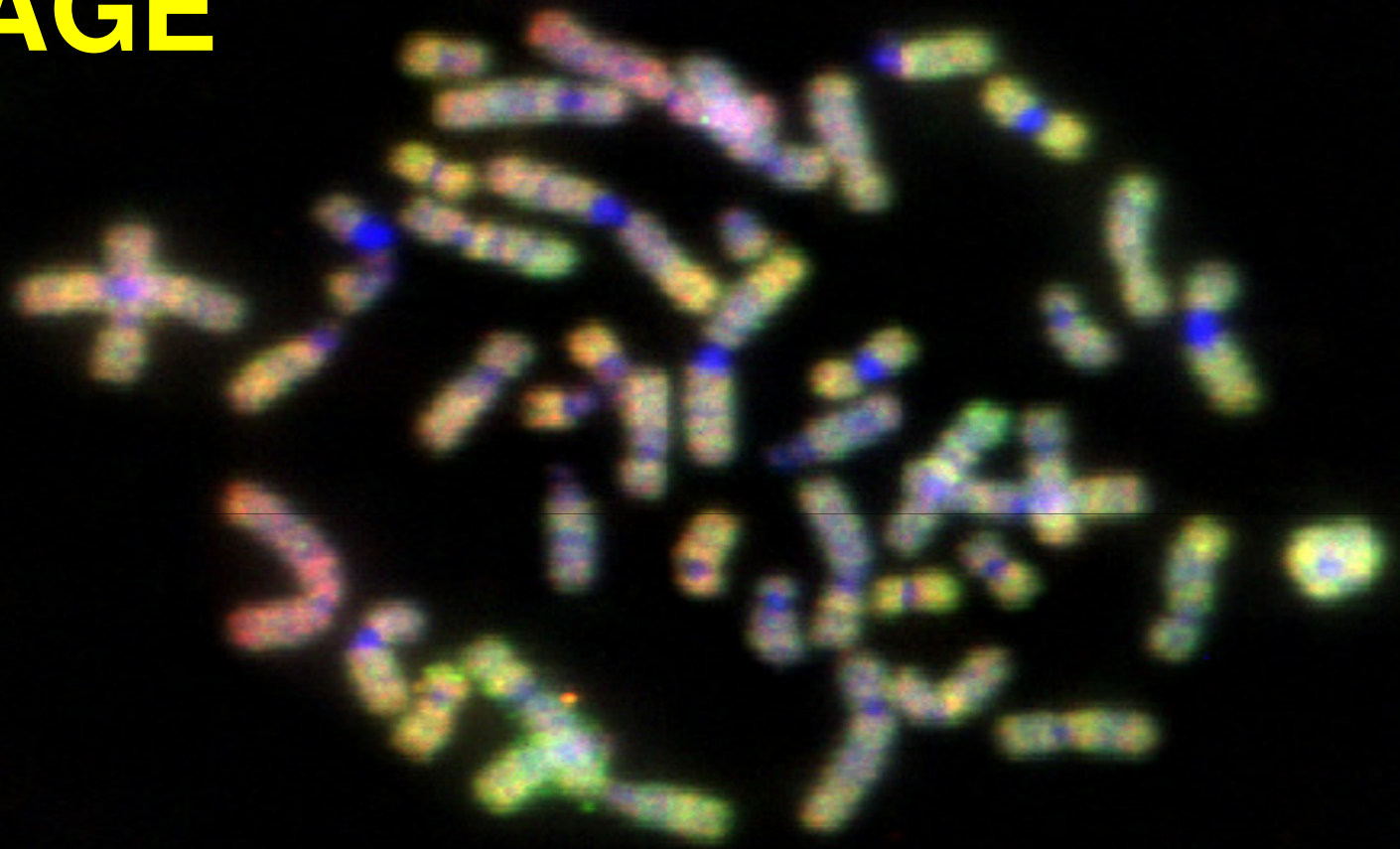
FEMALE AGE



Poor
implantation

ANEUPLOIDY

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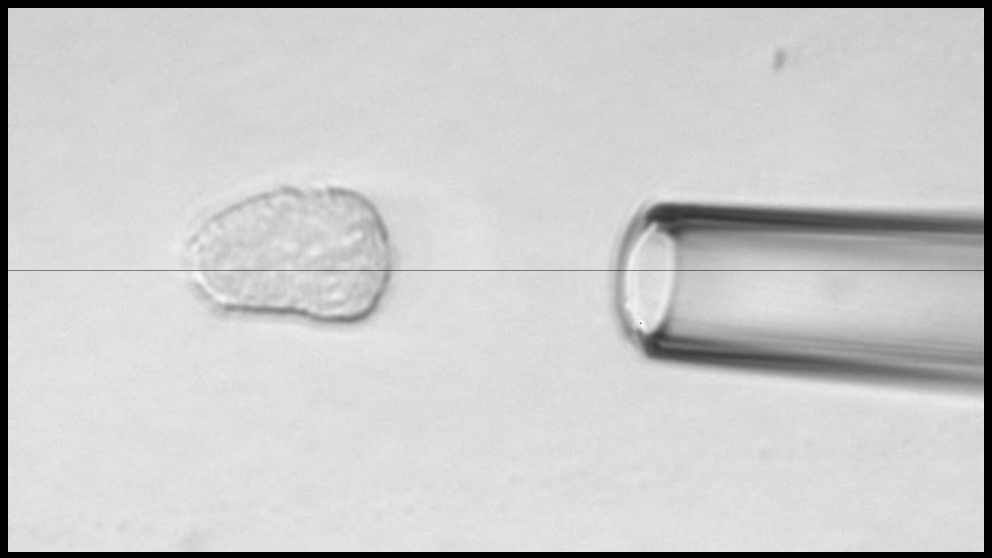
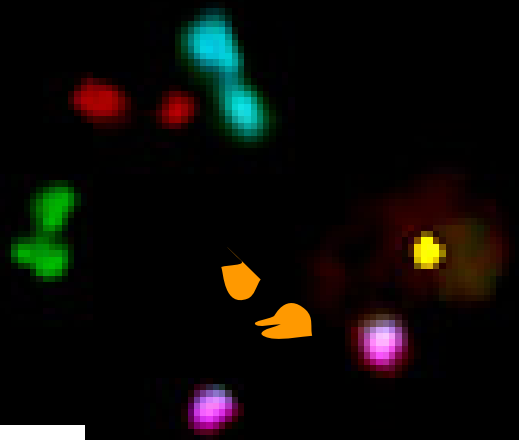
FIRST POLAR BODY ANALYSIS





13
15
16
18
21
22

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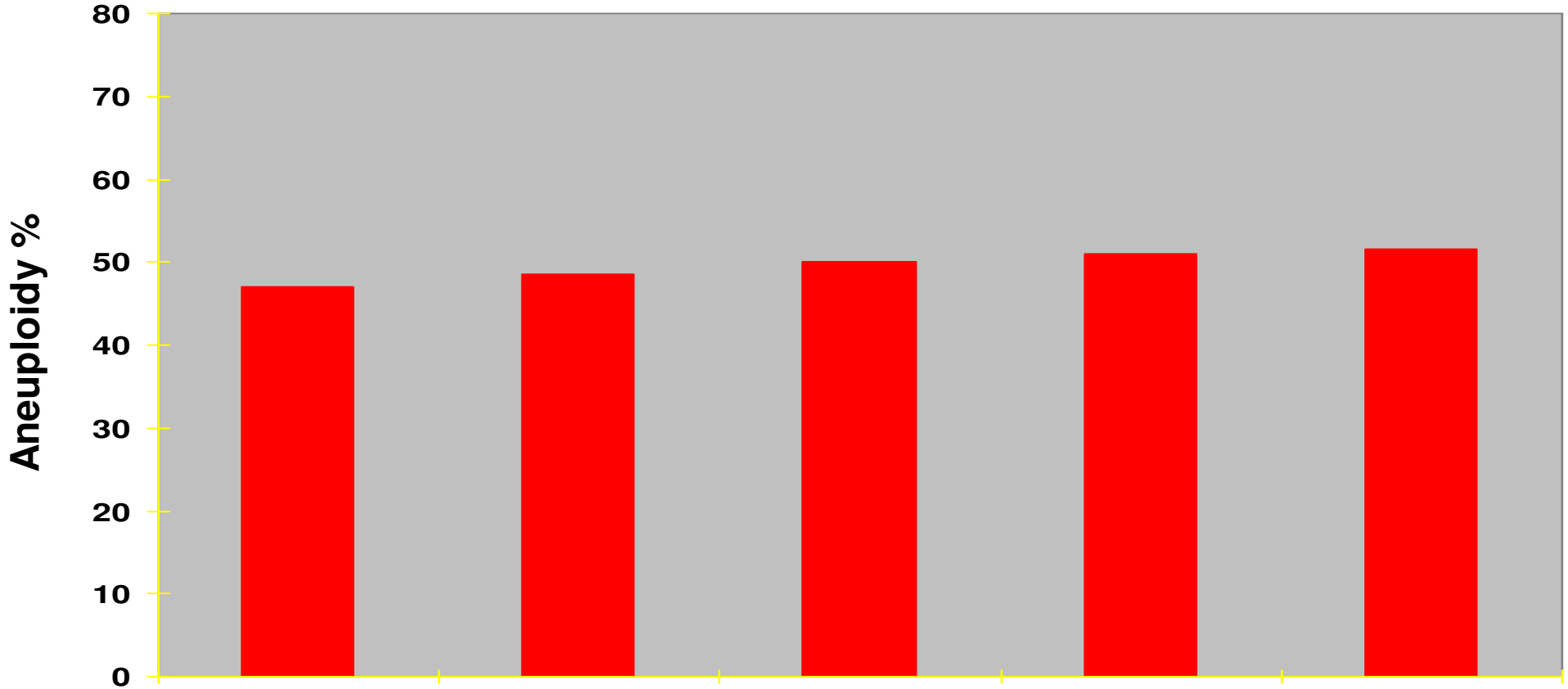
FIRST POLAR BODY ANALYSIS
INCIDENCE OF ANEUPLOIDY IN RELATION TO THE NUMBER OF RETRIEVED OOCYTES

n=5254



N. retrieved oocytes	1-3	4-6	7-10	11-14	≥15
Mean age	40.7±3.5	38.0±3.2	37.6±4.1	37.5±3.6	36.6±4.1

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3/04-12/09

FIRST POLAR BODY ANALYSIS
INCIDENCE OF ANEUPLOIDY IN RELATION TO THE NUMBER OF RETRIEVED OOCYTES

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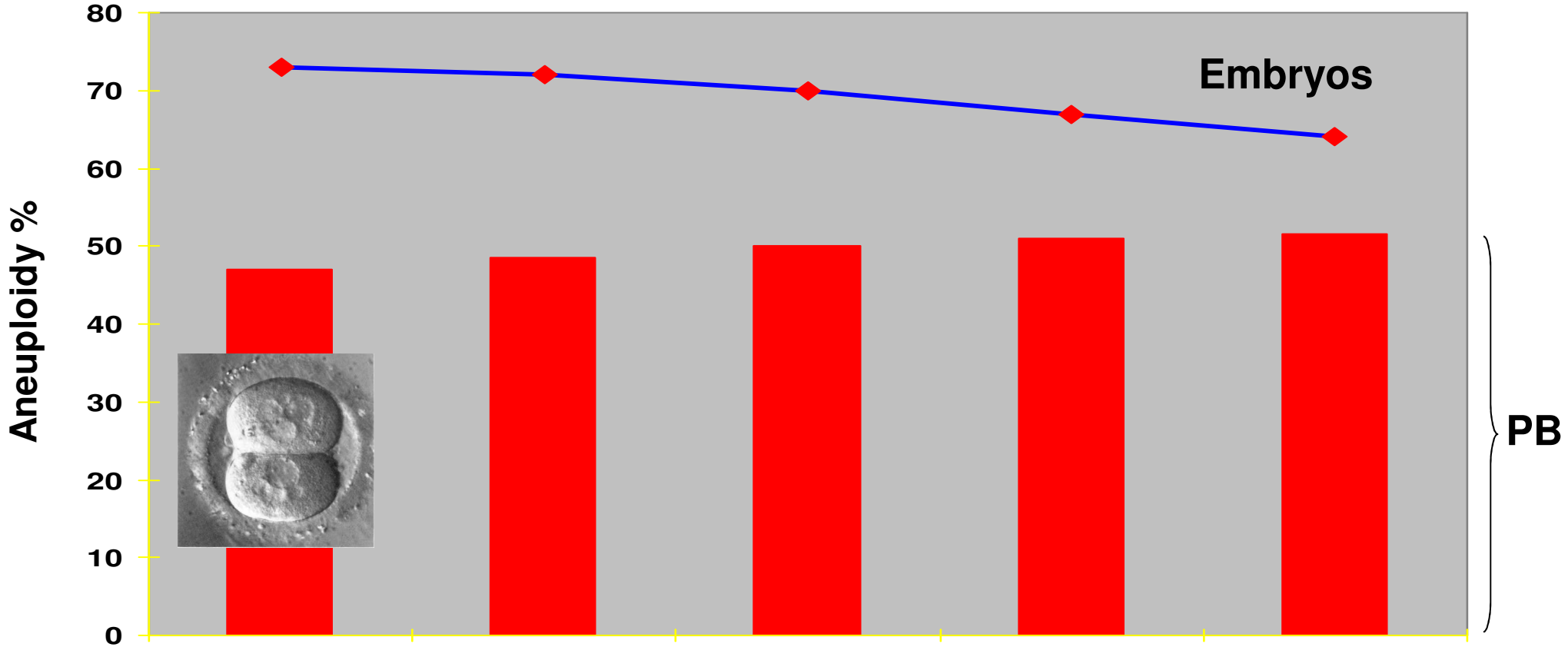

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FIRST POLAR BODY ANALYSIS

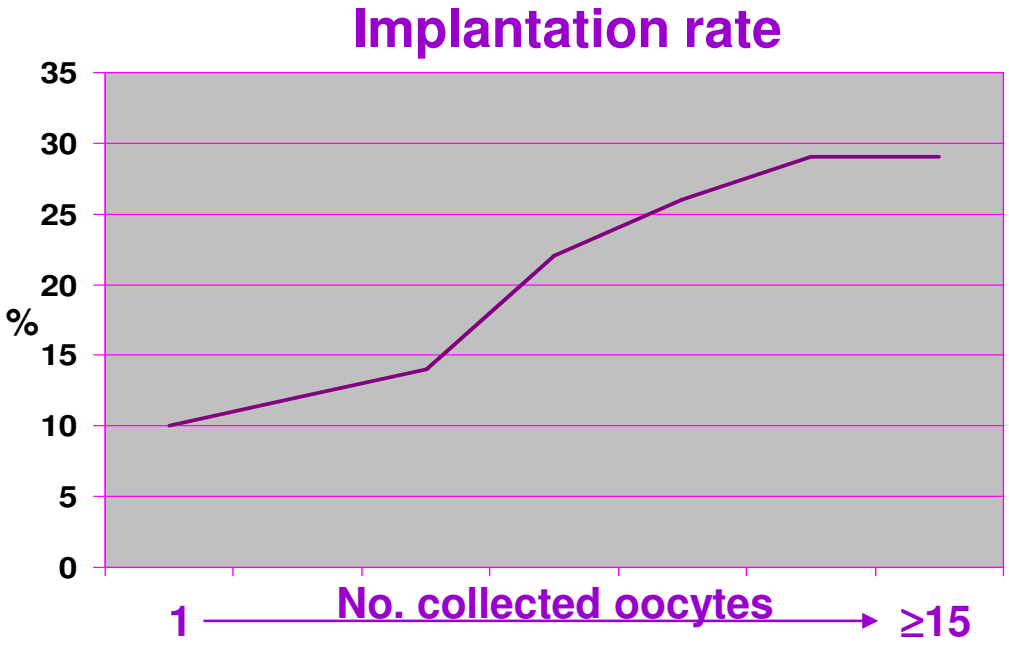
Multivariate regression analysis

An inverse and significant correlation was found between the proportion of normal oocytes and:

1) female age

2) an ovulatory factor

POOR RESPONDERS



Implantation rate / transferred embryo

≤37 yrs: 27%

≥38 yrs: 73%

20.0

7.8[b]

13.0[a]

17%

11%

≤37 yrs: 50.5%

≥38 yrs: 49.5%

25.6

19.0[b]

22.4[a]

[ab]P<0.001

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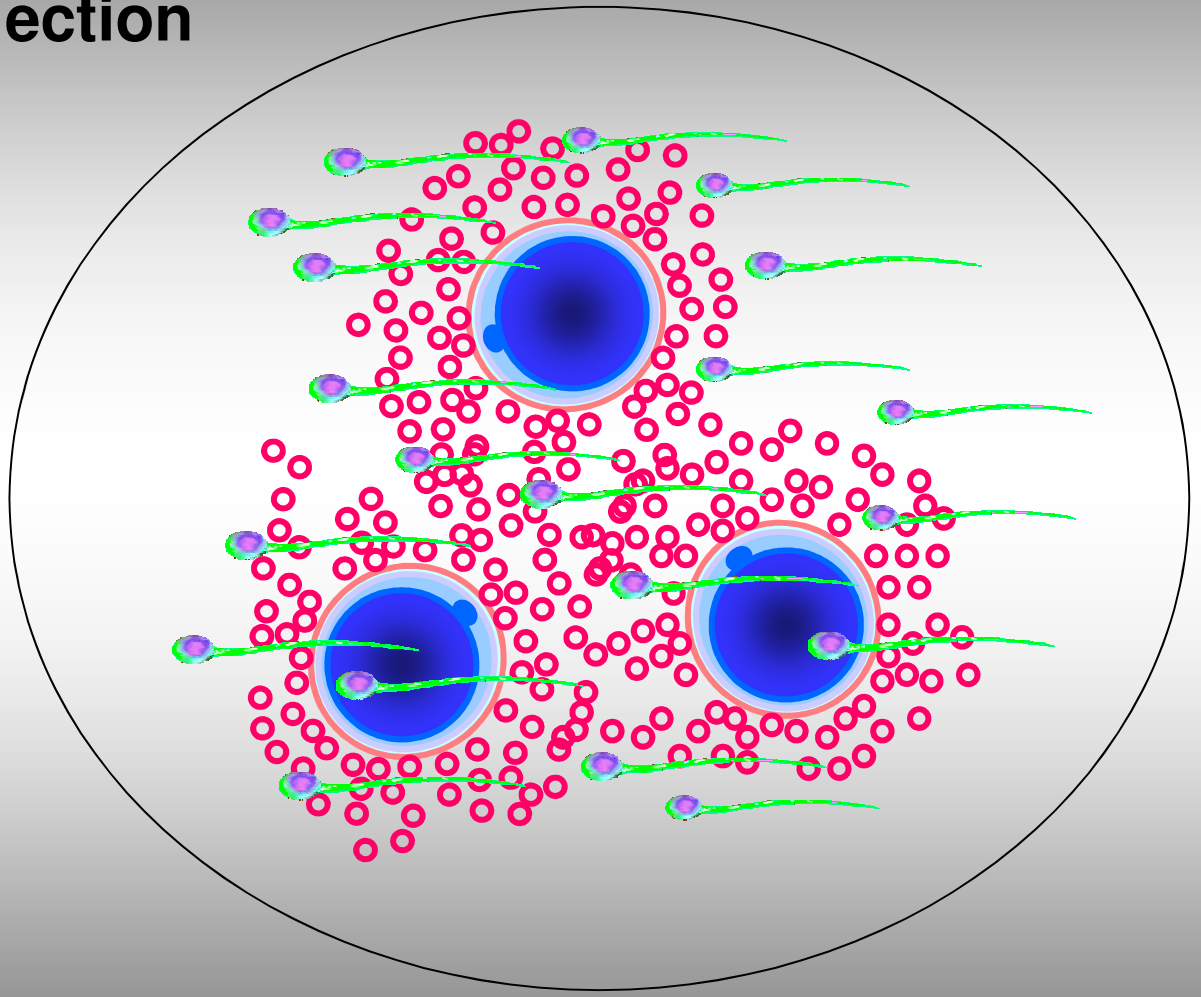
POOR RESPONDERS

Age
Oocyte number

- 1343 Cycles / March 2004 – April 2009
- Only 3 oocytes inseminated
- No embryo selection

All patients behaved as poor responders



Patients ≤ 40 yrs, in their first or second cycle.
COH protocol, FSH IU starting doses, egg retrieval procedure, transfer technique and luteal support were similar in all women.

NO EMBRYO SELECTION

	No. collected oocytes			
	≤3	4-6	7-9	≥10
No. cycles	214	433	351	345
Age	35.4±4.1	35±3.6	34.9±3.8	34.5±3.6
No. fertilized oocytes (%)	284/400 (71)[abc]	1012/1267 (80)[a]	887/1149 (77)[b]	785/966 (81)[c]
No. embryos (%)	233 (82)	815 (81)	711 (80)	568 (72)
No. top quality embryos Day 2 (%)	109 (38)	370 (37)	331 (37)	230 (29)

[acdefghi]P<0.001; [b]P<0.025

Ferraretti, unpublished

NO EMBRYO SELECTION

	No. collected oocytes			
	≤3	4-6	7-9	≥10
No. transferred cycles (%)	159 (74)[abc]	397 (92)[a]	331 (94)[b]	331 (96)[c]
No. clinical pregnancies (% per ET) (% per pick up)	37 (23) (17)[def]	112 (28) (26)[d]	109 (32) (31)[e]	101 (31) (29)[f]
No. abortions (%)	4 (11)	22 (20)	19 (17)	11 (11)
Implantation rate (%)	40/257 (15.6)	140/823 (17)	128/707 (18.1)	128/655 (19.5)
Take-home baby rate (% per ET) (% per pick up)	33 (20.7) (15.4)[gh]	90 (22.7) (20.8)	90 (27.2) (25.6)[g]	90 (27.2) (26.1)[h]

[abce]P<0.001; [d]P<0.025; [fh]P<0.005; [g]P<0.01

Ferraretti, unpublished

- Oocytes of lower quality?
- Limited embryo selection?

The possibility to select the best oocytes for insemination favours:

- higher fertilization rate
- higher proportion of transferred cycles
- higher number of embryos for transfer (≤3 oocytes: 1.6±0.6 vs. 2.2±.7 in the other groups; P<0.001)

- Oocytes of lower quality?
- Limited embryo selection?

in a normal context where all oocytes are inseminated

A lower probability of term pregnancy in poor responders compared to normal responders seems to be more related to the reduced number of oocytes than to their quality.

Oocyte selection before insemination affects fertilization, but the crucial point in ART is embryo selection before transfer.

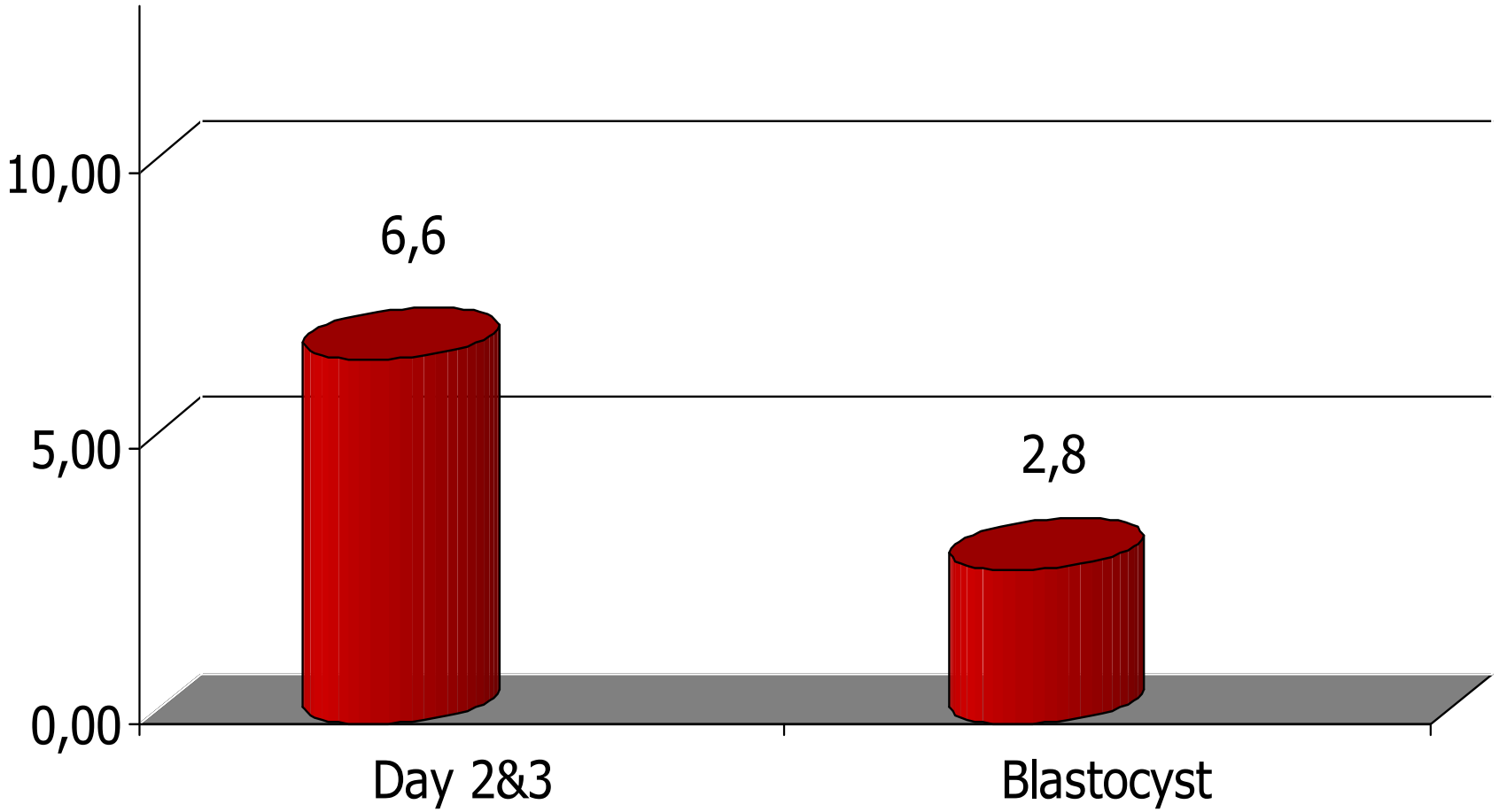
Low responders
(2-4 oocytes/OPU)
250

No BC for transfer	eSBT	SBT	eDBT	DBT	TBT
62 (19.9 %)	12	113	22	101	2
Delivery rate	**25.0**	**23.0**	**42.9**	**35.6**	0.0

Multiple pregnancy rate = 32.1%

Vlaisavljević, Maribor 2010, ESHRE course

Number of embryos required for transfer per baby born



Vlaisavljević, Maribor 2010, ESHRE course

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IN VITRO FERTILIZATION

Clinical outcome of day 2 versus day 5 transfer in cycles with one or two developed embryos

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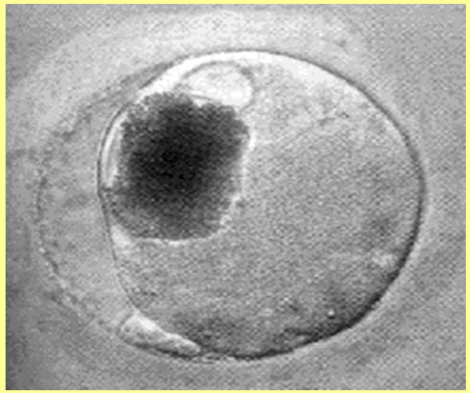
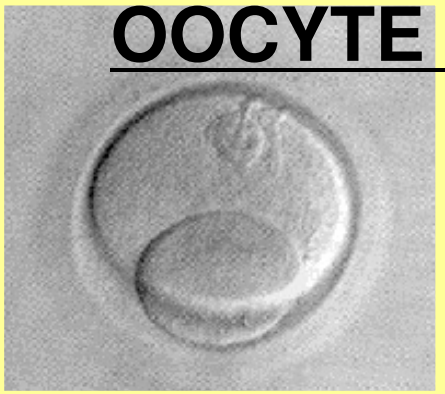
Department of Reproductive Medicine and Gynecologic Endocrinology, Maribor Teaching Hospital, Maribor, Slovenia

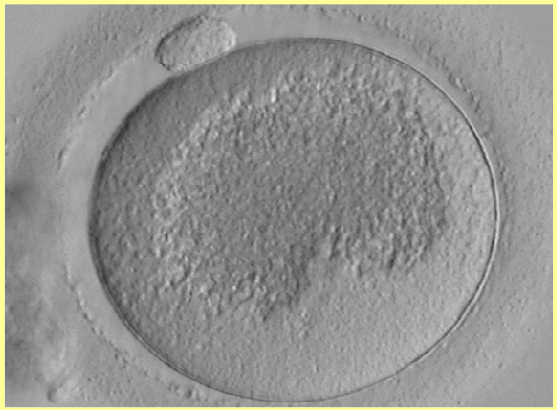
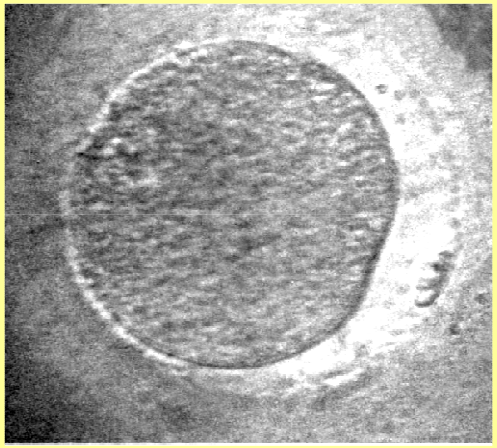
- Embryo transfer rate per cycle was higher when day 2 embryos were transferred
- Expected pregnancy rate in poor responders calculated per embryo(s) available on day 2 is not affected by oocyte culture to the blastocyst stage.

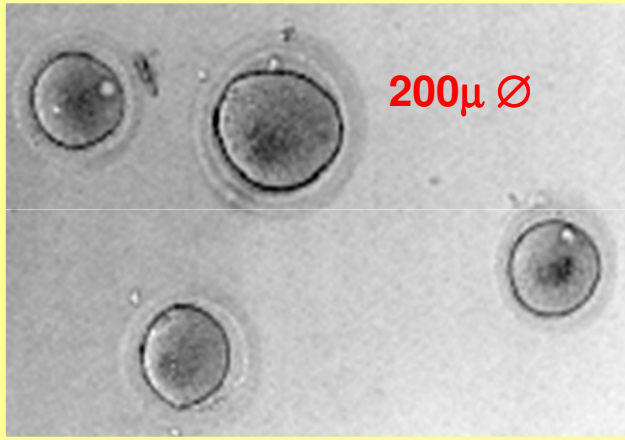
POOR RESPONDERS

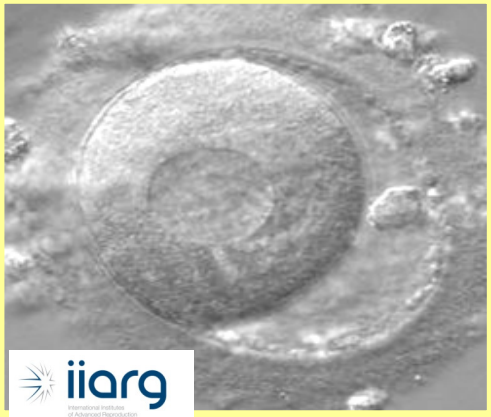
Age
Oocyte number
Oocyte morphology

OOCYTE MORPHOLOGY

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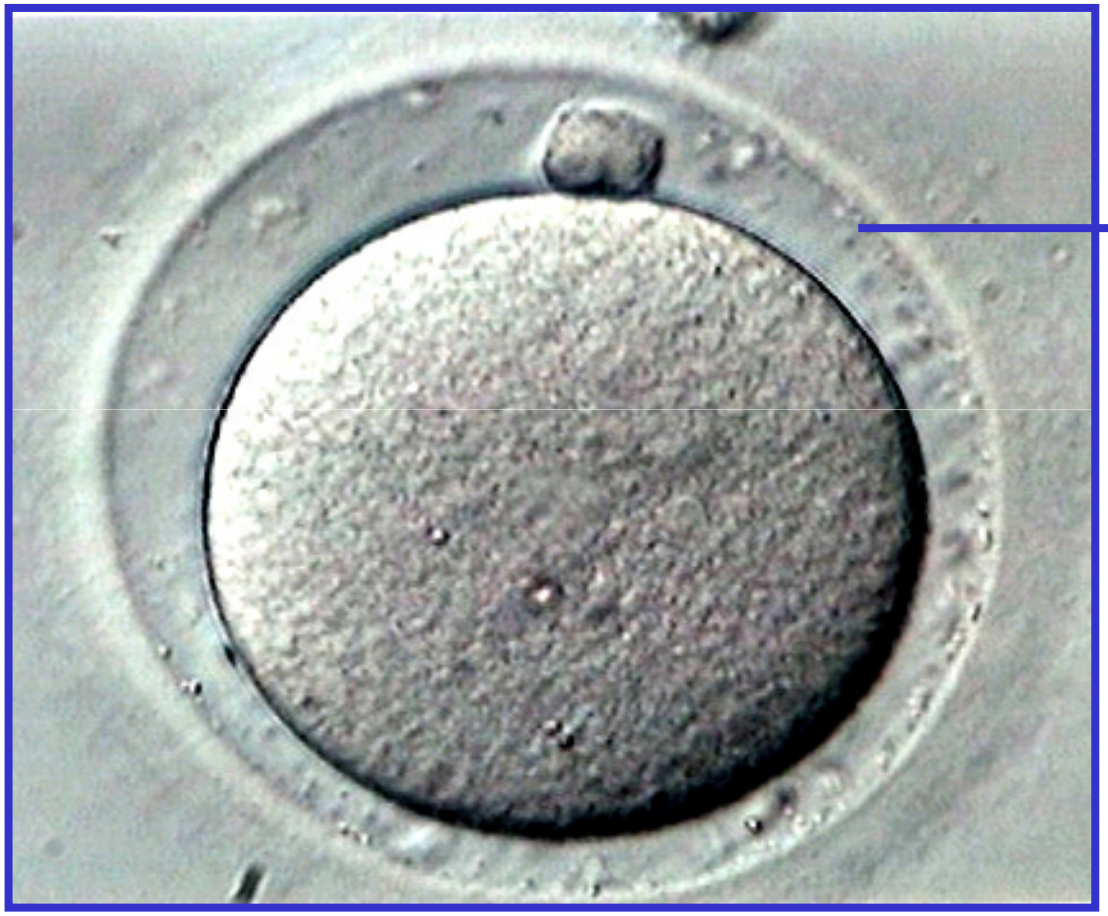
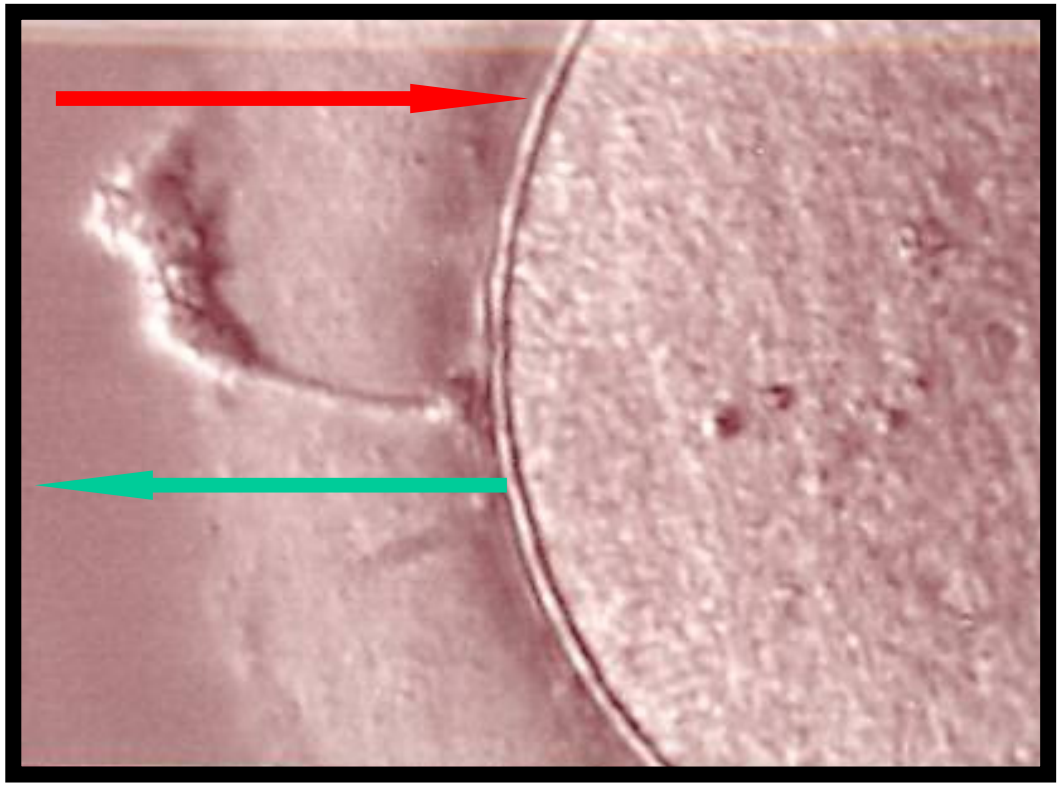
POOR RESPONDERS



Large PVS
(4% of the oocytes)

Aged oocyte

OOCYTE MORPHOLOGY
POOR RESPONDERS



Granula in PVS
(1.8% of the oocytes)

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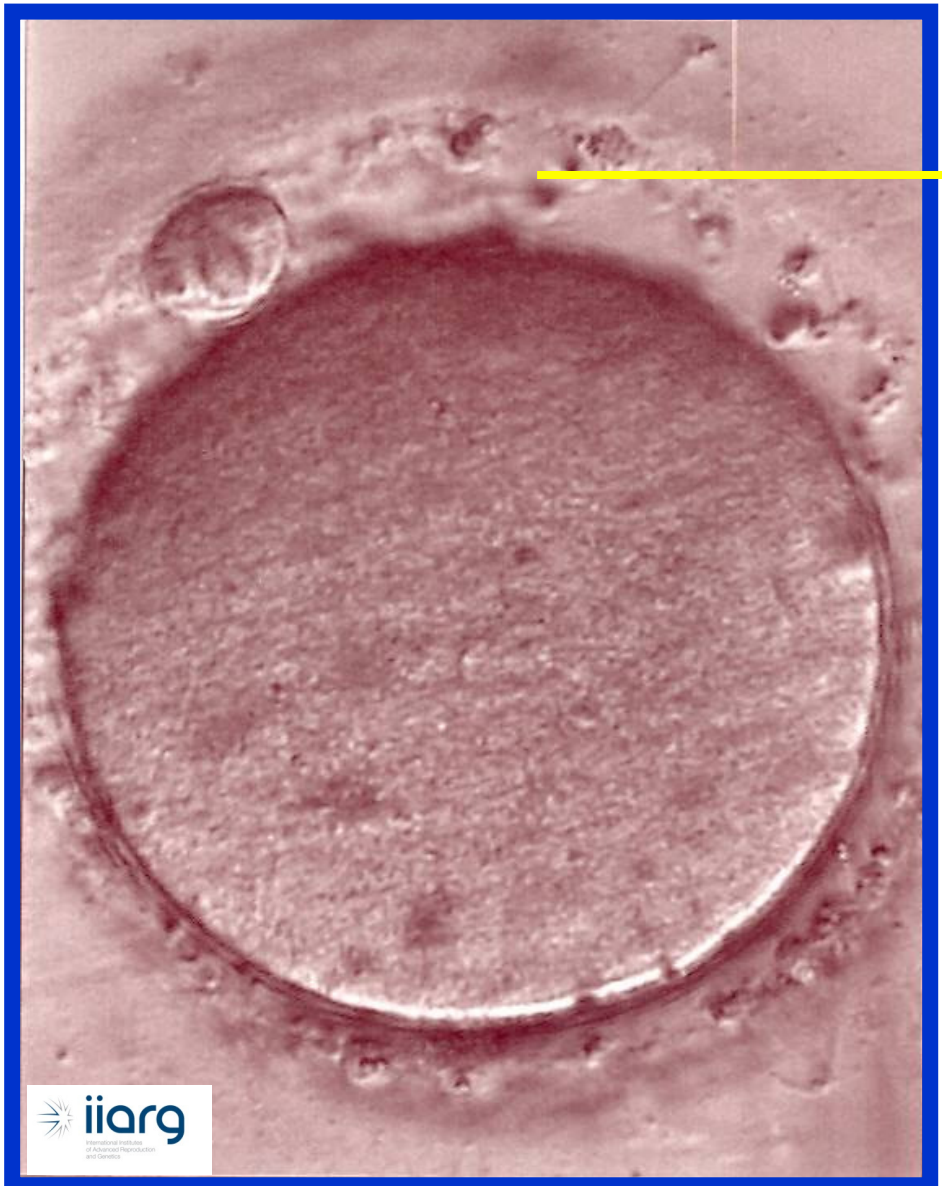
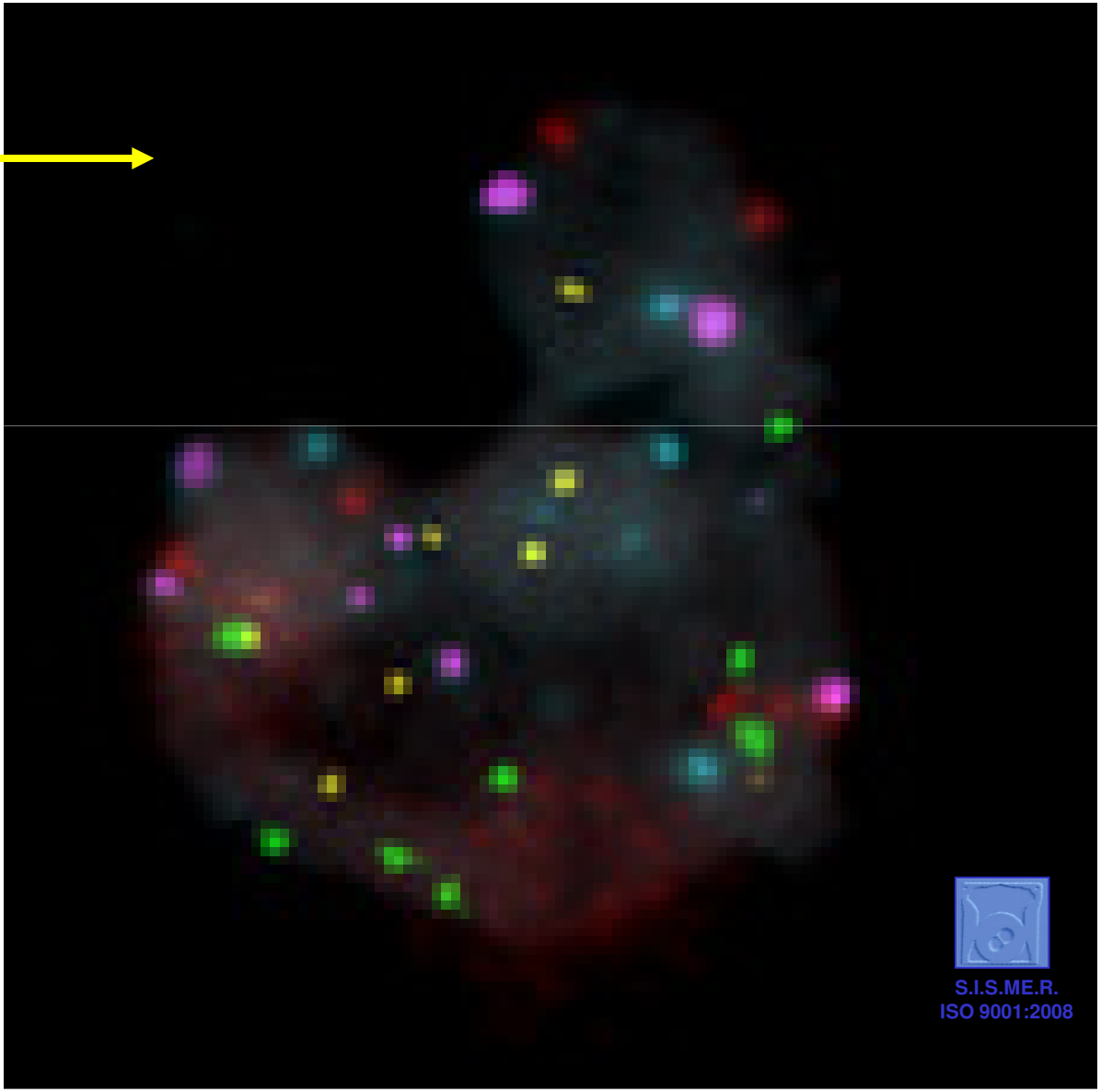
POOR RESPONDERS





POOR RESPONDERS

The viability of oocytes in poor responders is:

- Especially poor when associated with advanced maternal age.

- More related to the limited possibility of performing embryo (and oocyte) selection rather than to a compromised viability of the oocyte itself.

No morphological aspects are particularly relevant in oocytes generated from poor responder patients.