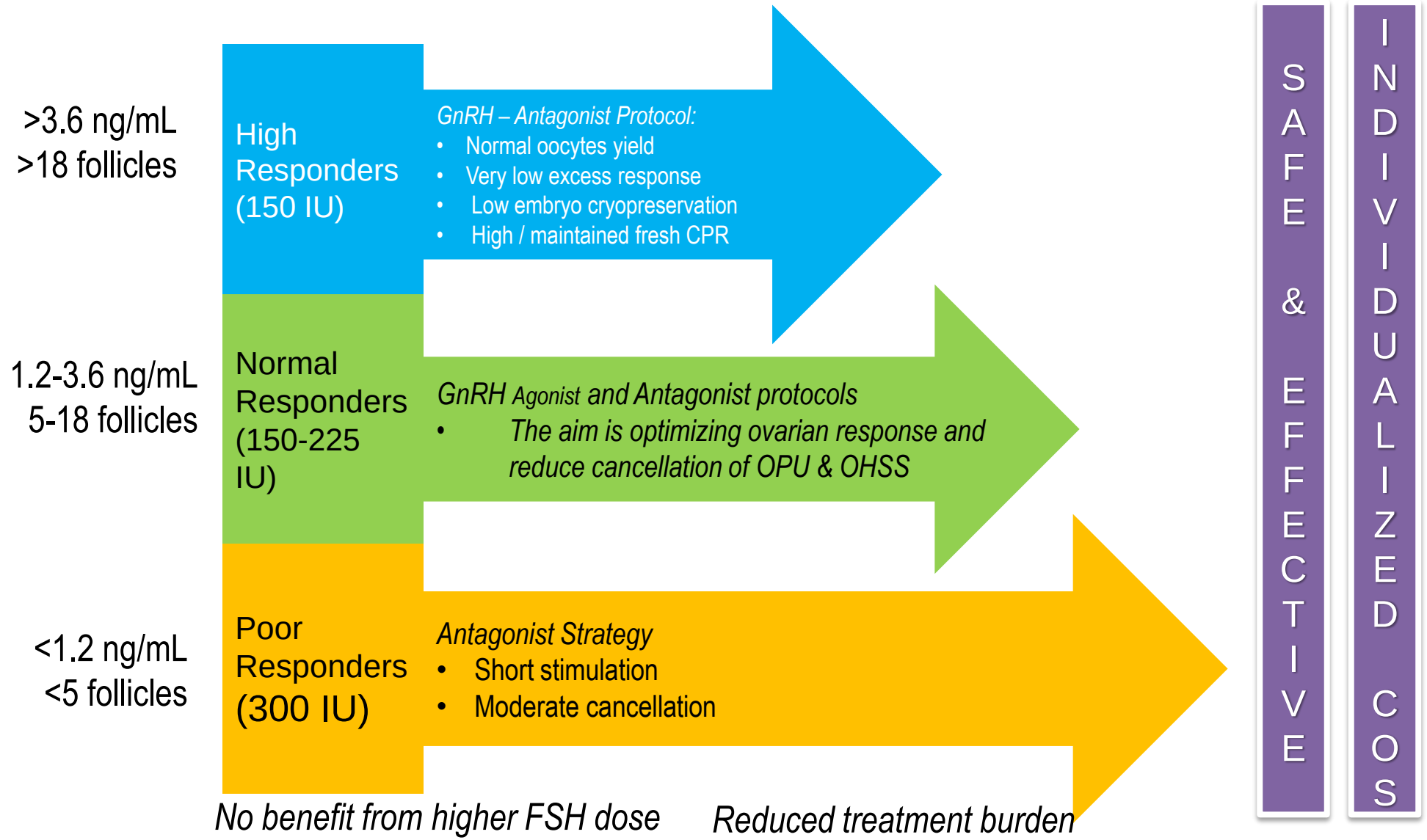


Inquadramento e gestione delle pazienti a bassa prognosi

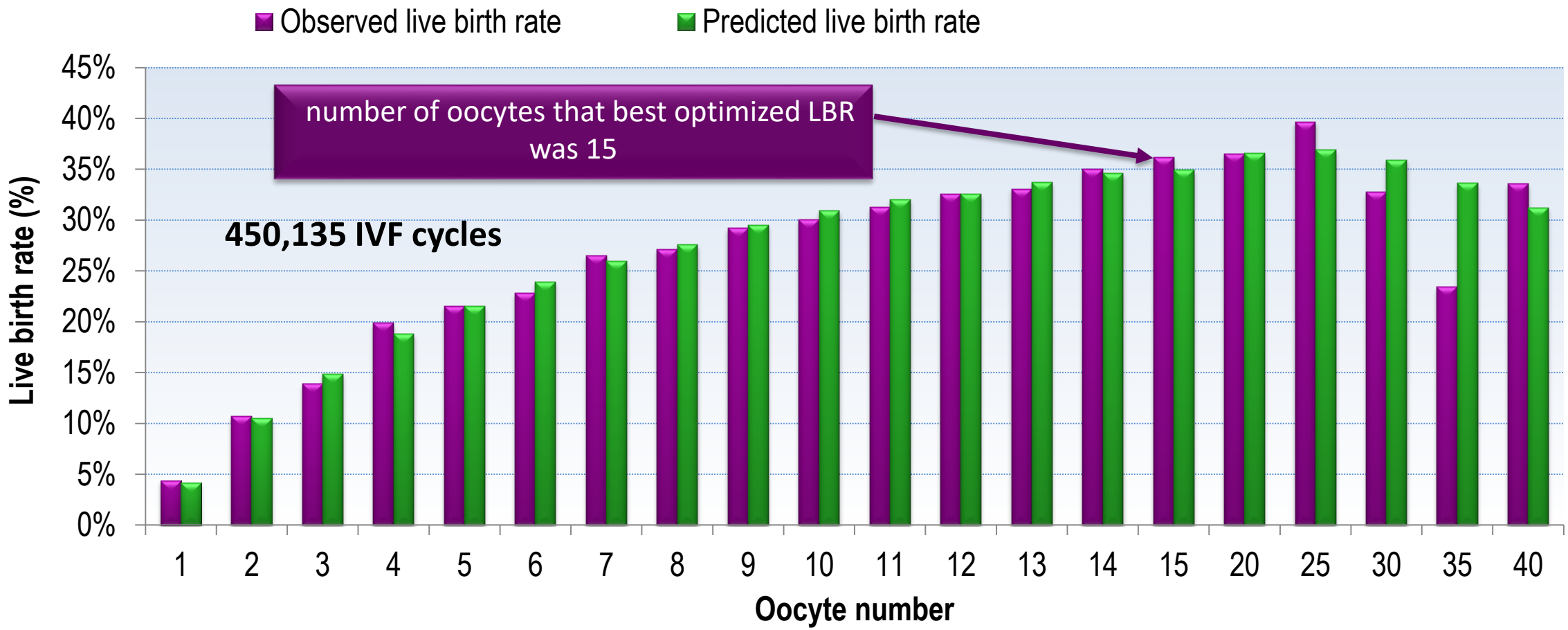
Carlo Alviggi

AMH/AFC in patient profiling



Alviggi, Humaidan and Ezcurra, Reproductive Biology and Endocrinology, 2012, Adapted from Nelson, *et al. Human Reproduction*, 2009.

Number of oocytes retrieved and live birth rates



Sunkara *et al*. Hum Reprod 2011

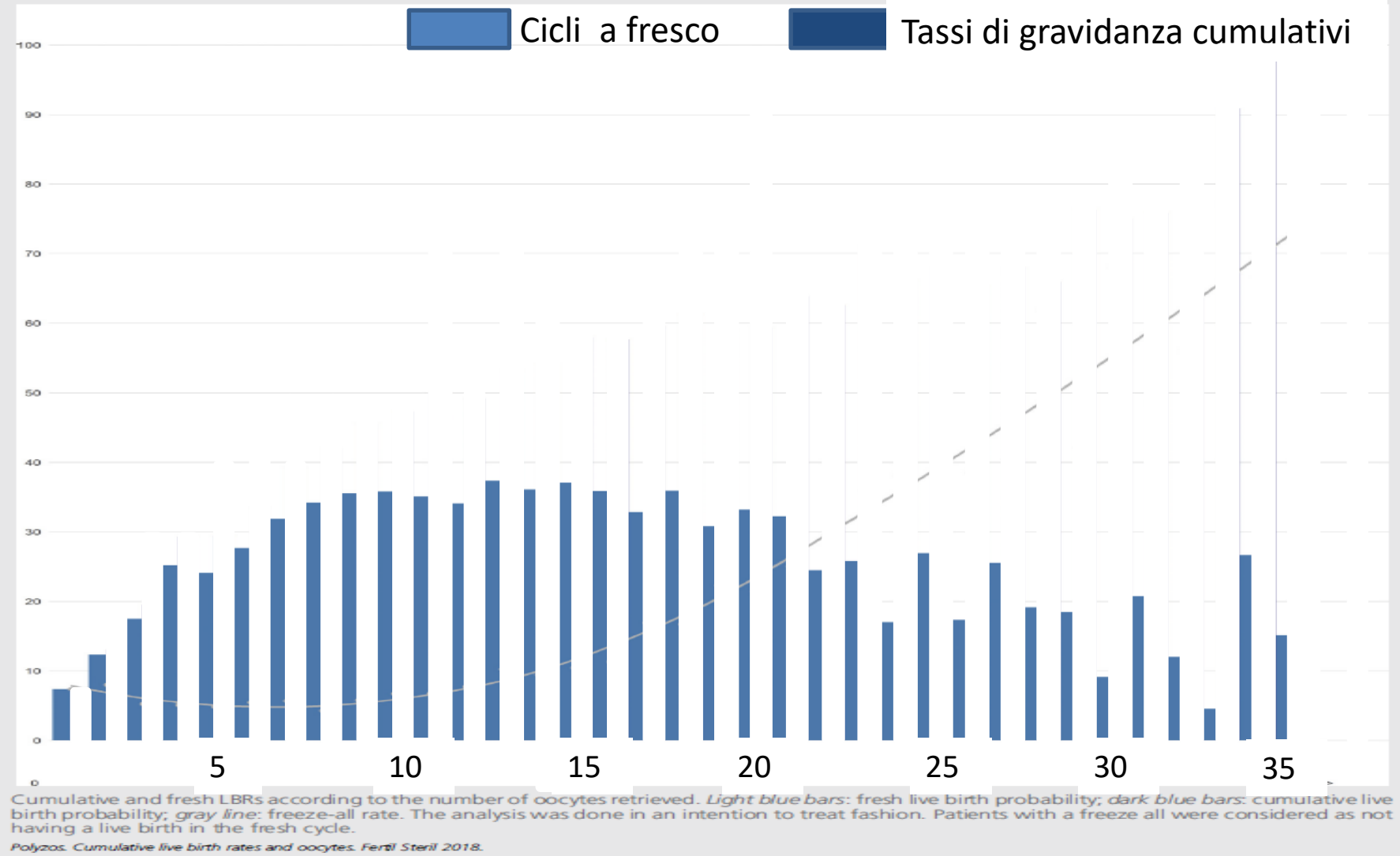
Different prognosis (LBR and CLBR) according the Number of oocytes retrieved

	Ovarian response groups				
	Group A 1–3 oocytes *n* = 83	**Group B** 4–9 oocytes *n* = 471	**Group C** 10–15 oocytes *n* = 327	**Group D** >15 oocytes *n* = 218	***P*-value**
Age (years)	32.8 (3.9)	31.6 (4.1)	30.5 (3.8)	30.3 (3.5)	<0.001[a]
Oocytes retrieved	2.3 (0.7)	6.6 (1.6)	12.1 (1.7)	22 (7.6)	<0.001[a]
Live birth in the fresh cycle*	14 (16.9%)	140 (29.7%)	111 (33.4%)	70 (32.1%)	0.02[b]

POOR SUBOPTIMAL OPTIMAL HYPER

Drakopoulos *et al.*, Hum reprod 2016

Cumulative LBRs progressively increase even above 25 oocytes

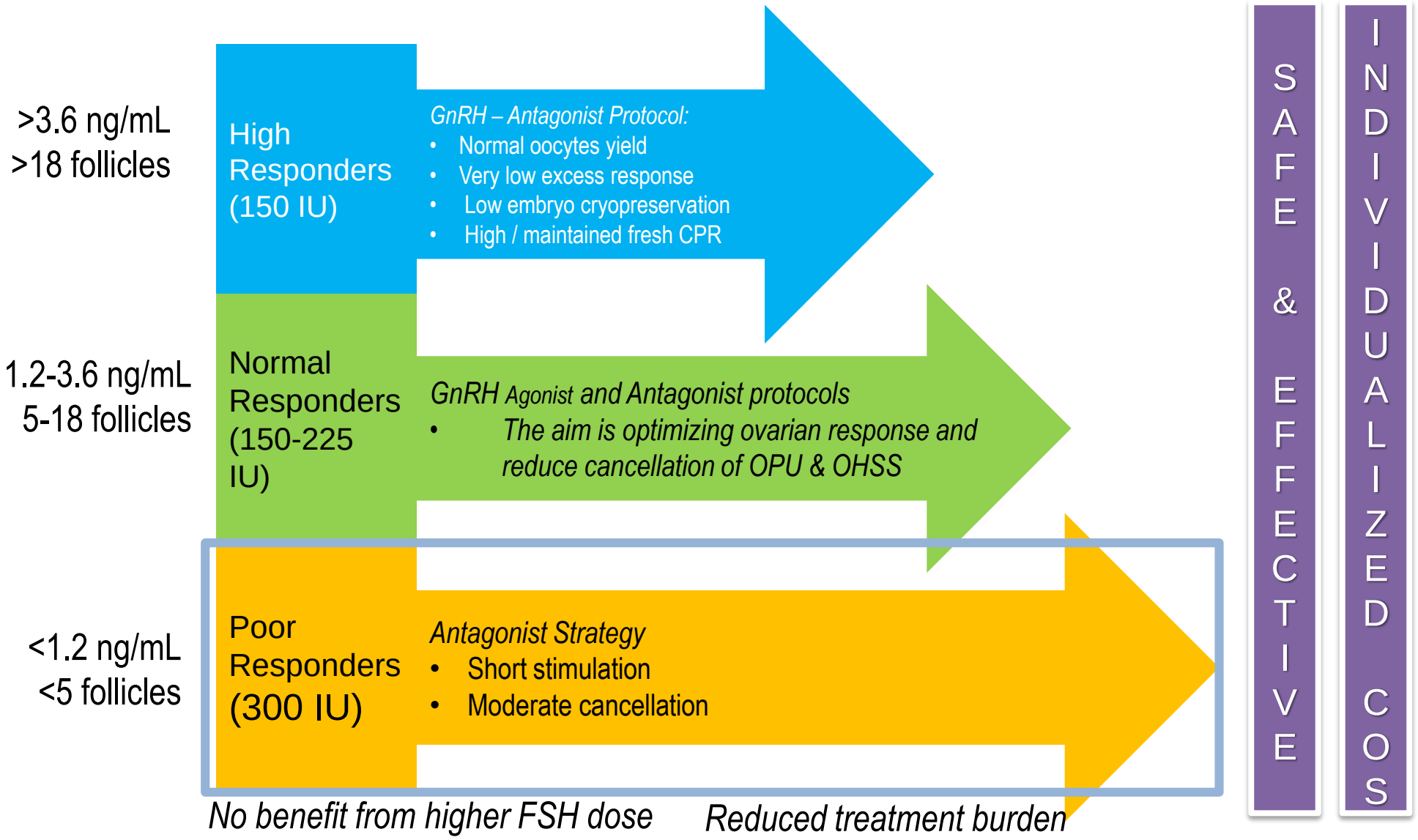


Cumulative and fresh LBRs according to the number of oocytes retrieved. *Light blue bars*: fresh live birth probability; *dark blue bars*: cumulative live birth probability; *gray line*: freeze-all rate. The analysis was done in an intention to treat fashion. Patients with a freeze all were considered as not having a live birth in the fresh cycle.

Polyzos. Cumulative live birth rates and oocytes. Fertil Steril 2018.

Polyzos *et al*. Fertil Steril 2018

AMH/AFC in patient profiling



Alviggi, Humaidan and Ezcurra, Reproductive Biology and Endocrinology, 2012, Adapted from Nelson, *et al. Human Reproduction*, 2009.

THE WHY

POOR OVARIAN RESPONDER: THE PROBLEM

Wide heterogeneity in POR definition.

More than 90% POR interventional trials show no statistical differences in the reported outcomes (eg. CPR, LBR) regarding the treatment options evaluated.

Heterogeneous definitions and study design make it difficult (if not impossible) to draw valid conclusions.



Papathanasiou et al. *Hum Reprod Update*. 2016

GROUP POSEIDON

THE WHY

POOR OVARIAN RESPONDER
The SOLUTION proposed: Bologna criteria

At least two of the following:

1. Advanced maternal age
≥40 years or risk factor for POR

2. Previous POR
≤3 oocytes with conventional stimulation

3. Abnormal ovarian reserve biomarker
AFC <5-7; AMH <0.5-1.1 ng/mL

1+3: expected POR

Two episodes of POR after maximal stimulation are sufficient to define a patient as poor responder in the absence of advanced maternal age or abnormal ORT

Designed to select **homogeneous** groups of **patients** based on '**oocyte quantity**' for testing in prospective randomized trials

Ferraretti et al. ESHRE Consensus, HR 2011

GROUP POSEIDON

THE WHY

Women with Low Oocyte Quantity can have different characteristics

Young women (<35 years) with normal ovarian reserve, with two episodes of POR

Young women (<35 years) with low ovarian reserve, with a previous episode of POR

Old women (≥40 years) with normal ovarian reserve and previous POR



THE WHY

Women with Low Oocyte Quantity can have different OOCYTE QUALITY (euploidy rate)

- **Euploidy rate is independent from the number of obtained blastocysts but not of age**

Number of blastocysts	% normal embryos				
	<35 years	35–37 years	38–40 years	41–42 years	>42 years
1–3	61%	51%	39%	22%	13%
4–6	60%	52%	38%	23%	17%
7–10	62%	51%	36%	21%	14%
>10	63%	55%	37%	25%	n/a

N. = 4,747 cycles and 29,803 embryos. (Modified from Munne)

Ata, Munne et al. (2012) Reprod Biomed Online and unpublished data

THE WHY

Women with Low Oocyte Quantity can have different SENSITIVITY to Gonadotropins

Ernestine



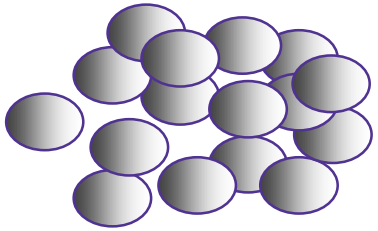
Age 32
FSH 8.7 IU/L
BMI 24.3 Kg/m^2

Gwen

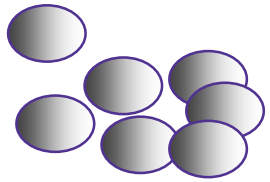


Age 31 years
FSH 8.7 IU/L
BMI 26.3 Kg/m^2

Follicle Output RaTe (FORT)

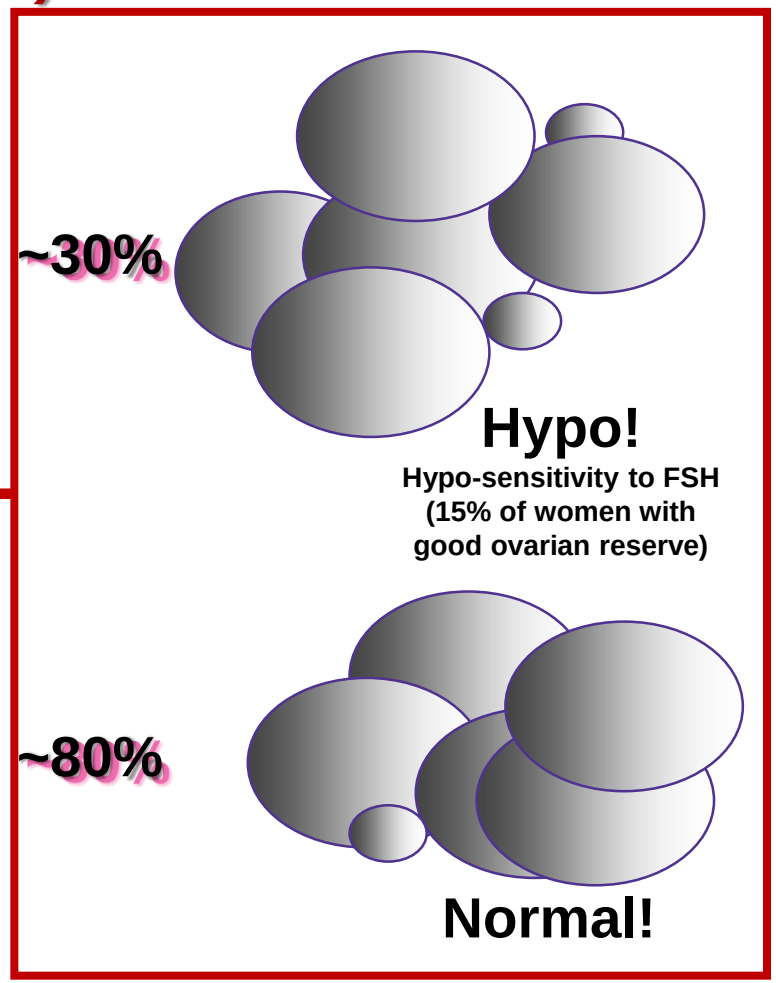


Suboptimal (4-9 oocytes)
Expected LBR: 29.7%
Drakopoulos *et al.*, 2016



Hyporesponse means:

Low FORT (i.e., <40%)



Unexpected poor (≤3 oocytes) or suboptimal (4-9 oocytes) response in a woman with normal ovarian reserve

Genro et al., 2011

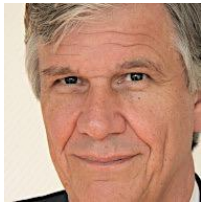
THE WHY

Patient-**O**riented **S**trategies **E**ncompassing **I**ndividualize**D** **O**ocyte **N**umber

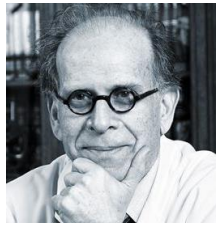
POSEIDON group

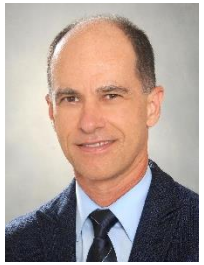

Alviggi C
(Italy)


Humaidan P
(Denmark)


Bühler K
(Germany)


Andersen C
(Denmark)


Fischer R
(Germany)

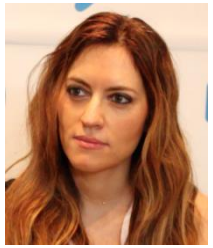

Esteves S
(Brazil)


Ubaldi F
(Italy)


Conforti A
(Italy)


Sunkara S
(United Kingdom)


Polyzos N
(Spain)


Galliano D
(Spain)

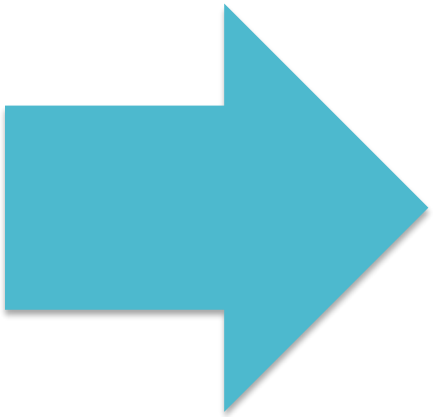

De Placido G
(Italy)

GROUP POSEIDON

THE WHAT

Aim 1: New system to **identify** and **stratify** IVF patients with **low prognosis**

Poor ovarian response



Low prognosis concept

Poseidon Group; Alviggi et al. *Fertil Steril.* 2016; Humaidan et al. *F1000Research* 2016

GROUP POSEIDON

THE WHAT

Fertility and Sterility

June 2016 Volume 105, Issue 6, Pages 1452–1453

Next Article >

A new more detailed stratification of low responders to ovarian stimulation: from a poor ovarian response to a low prognosis concept

Poseidon Group (Patient-Oriented Strategies Encompassing IndividualizeD Oocyte Number), Carlo Alviggi, M.D., Ph.D., Claus Y. Andersen, D.M.Sc., Klaus Buehler, M.D., Alessandro Conforti, M.D., Giuseppe De Placido, M.D., Sandro C. Esteves, M.D., Ph.D., Robert Fischer, M.D., Daniela Galliano, M.D., Ph.D., Nikolaos P. Polyzos, M.D., Ph.D., Sesh K. Sunkara, M.D., M.R.C.O.G., Filippo M. Ubaldi, M.D., Peter Humaidan, D.M.Sc.

GROUP POSEIDON

THE WHAT

Low Prognosis Groups

- **Ovarian Biomarkers (AMH and/or AFC)**
- **No. oocytes retrieved if previous OS cycle**
- **Age**

POSEIDON GROUP 1

Young patients <35 years with adequate ovarian reserve parameters (AFC≥5; AMH≥1.2 ng/ml) and with an unexpected poor or suboptimal ovarian response.

- Subgroup 1a: <4 oocytes*
- Subgroup 1b: 4-9 oocytes retrieved*

*after standard ovarian stimulation

POSEIDON GROUP 2

Older patients ≥35 years with adequate ovarian reserve parameters (AFC≥5; AMH≥1.2 ng/ml) and with an unexpected poor or suboptimal ovarian response.

- Subgroup 2a: <4 oocytes*
- Subgroup 2b: 4-9 oocytes retrieved*

*after standard ovarian stimulation

POSEIDON GROUP 3

Young patients (<35 years) with poor ovarian reserve pre-stimulation parameters (AFC<5; AMH<1.2 ng/ml)

POSEIDON GROUP 4

Older patients (≥35 years) with poor ovarian reserve pre-stimulation parameters (AFC<5; AMH<1.2 ng/ml)

Poseidon Group; Alviggi et al. *Fertil Steril.* 2016; Humaidan et al. *F1000Research* 2016

GROUP POSEIDON

THE WHAT

i. Ovarian Biomarkers

POSEIDON GROUP 1

Young patients <35 years with adequate ovarian reserve parameters (AFC≥5; AMH≥1.2 ng/ml) and with an unexpected poor or suboptimal ovarian response.

- Subgroup 1a: <4 oocytes*
- Subgroup 1b: 4-9 oocytes retrieved*

*after standard ovarian stimulation

POSEIDON GROUP 2

Older patients ≥35 years with adequate ovarian reserve parameters (AFC≥5; AMH≥1.2 ng/ml) and with an unexpected poor or suboptimal ovarian response.

- Subgroup 2a: <4 oocytes*
- Subgroup 2b: 4-9 oocytes retrieved*

*after standard ovarian stimulation

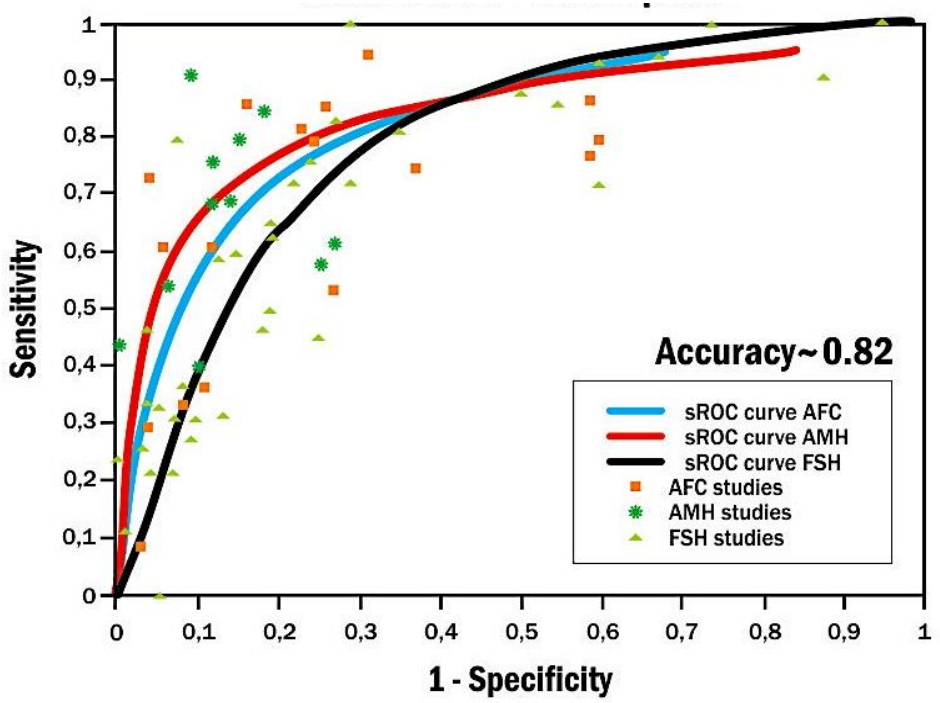
POSEIDON GROUP 3

Young patients (<35 years) with poor ovarian reserve pre-stimulation parameters (AFC<5; AMH<1.2 ng/ml)

POSEIDON GROUP 4

Older patients (≥35 years) with poor ovarian reserve pre-stimulation parameters (AFC<5; AMH<1.2 ng/ml)

AMH ~ AFC > FSH > Age



Broer et al. Fertil Steril 91:705; 2009

Good accuracy for prediction of low oocyte quantity

GROUP POSEIDON

THE WHAT

ii. Number of Oocytes

POSEIDON GROUP 1

Young patients <35 years with adequate ovarian reserve parameters (AFC≥5; AMH≥1.2 ng/ml) and with an unexpected poor or suboptimal ovarian response.

- **Subgroup 1a: <4 oocytes***
- **Subgroup 1b: 4-9 oocytes retrieved***

***after standard ovarian stimulation**

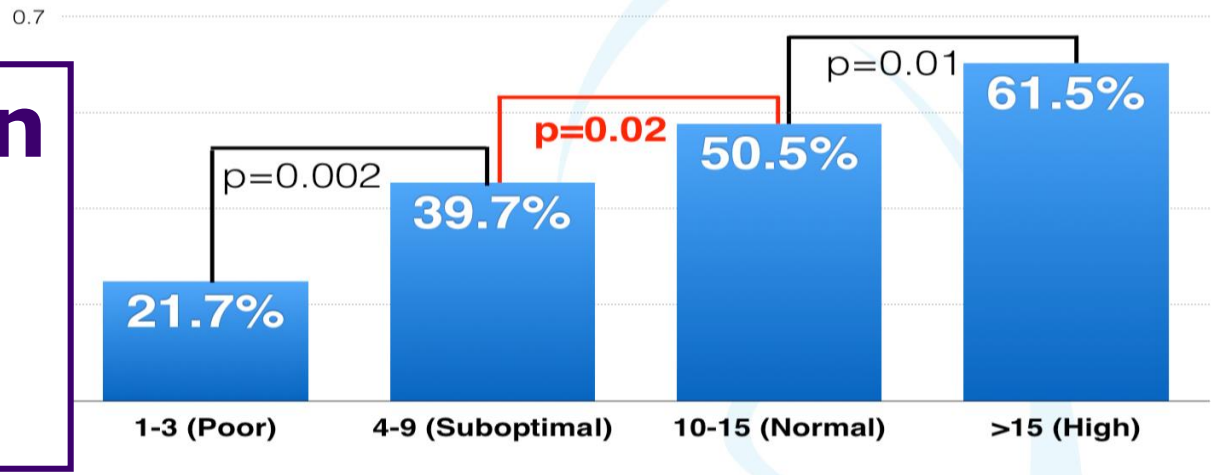
POSEIDON GROUP 2

Older patients ≥35 years with adequate ovarian reserve parameters (AFC≥5; AMH≥1.2 ng/ml) and with an unexpected poor or suboptimal ovarian response.

- **Subgroup 2a: <4 oocytes***
- **Subgroup 2b: 4-9 oocytes retrieved***

***after standard ovarian stimulation**

Strong association between oocyte quantity and cumulative LBR



***Age adjusted (OR: 0.9; 95% CI: 0.9-1.01); Drakopoulos et al HR 2016; Published**

GROUP POSEIDON

iii. Age

POSEIDON GROUP 1

Young patients <35 years with adequate ovarian reserve parameters (AFC≥5; AMH≥1.2 ng/ml) and with an unexpected poor or suboptimal ovarian response.

- **Subgroup 1a: <4 oocytes***
- **Subgroup 1b: 4-9 oocytes retrieved***

***after standard ovarian stimulation**

POSEIDON GROUP 2

Older patients ≥35 years with adequate ovarian reserve parameters (AFC≥5; AMH≥1.2 ng/ml) and with an unexpected poor or suboptimal ovarian response.

- **Subgroup 2a: <4 oocytes***
- **Subgroup 2b: 4-9 oocytes retrieved***

***after standard ovarian stimulation**

POSEIDON GROUP 3

Young patients (<35 years) with poor ovarian reserve pre-stimulation parameters (AFC<5; AMH<1.2 ng/ml)

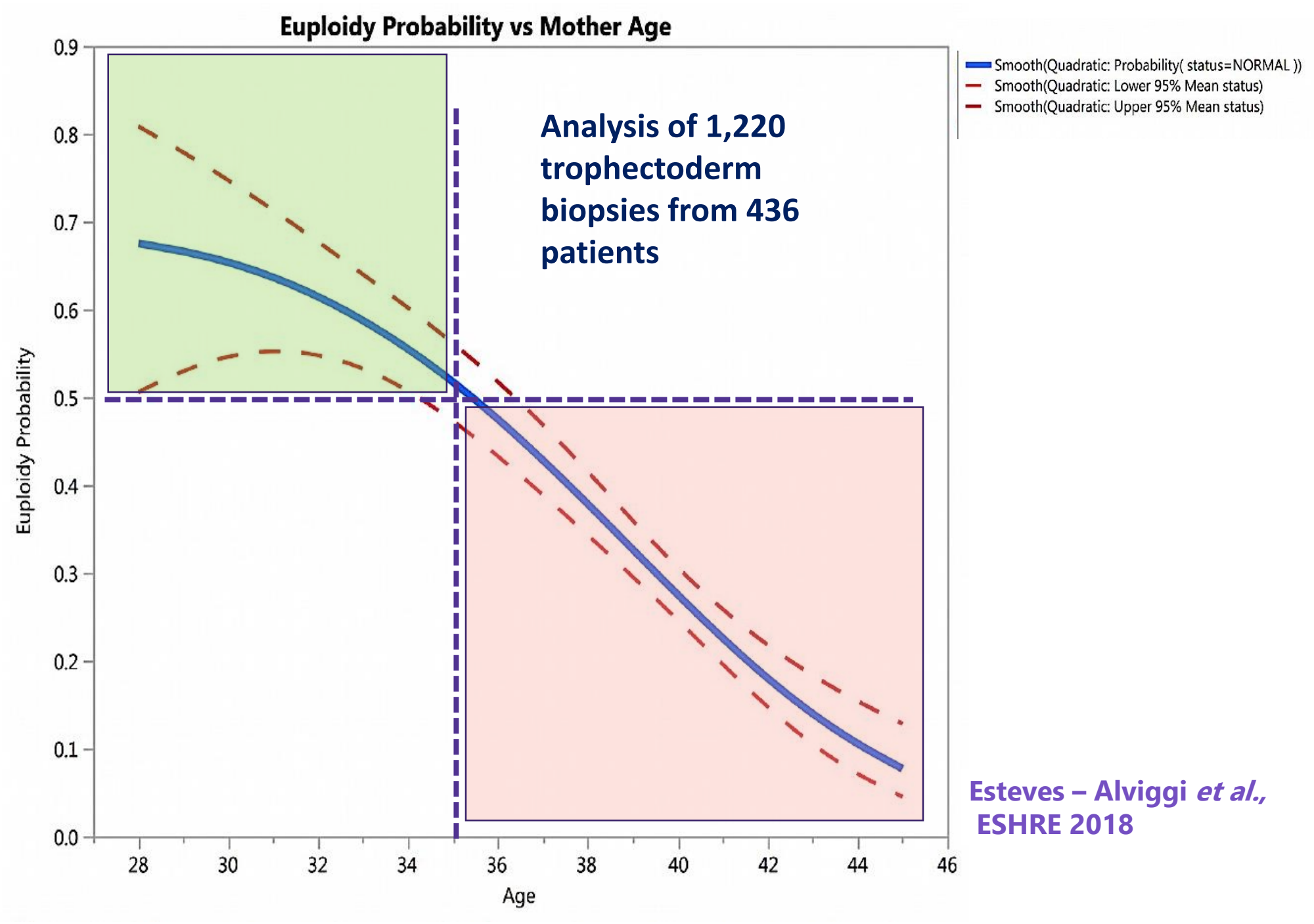
POSEIDON GROUP 4

Older patients (≥35 years) with poor ovarian reserve pre-stimulation parameters (AFC<5; AMH<1.2 ng/ml)

Poseidon Group; Alviggi et al. *Fertil Steril.* 2016; Humaidan et al. *F1000Research* 2016

GROUP POSEIDON

THE WHAT



Analysis of 1,220 trophectoderm biopsies from 436 patients

Esteves – Alviggi *et al.*, ESHRE 2018

Poseidon classification for low prognosis women

GROUP 1

Young patients <35 years with adequate ovarian reserve parameters (AFC ≥5; AMH ≥1.2 ng/ml) and with an unexpected poor or suboptimal ovarian response

Subgroup 1a: <4 oocytes*

Subgroup 1b: 4-9 oocytes retrieved*



GROUP 2

Older patients ≥35 years with adequate ovarian reserve parameters (AFC ≥5; AMH ≥1.2 ng/ml) and with an unexpected poor or suboptimal ovarian response

Subgroup 2a: <4 oocytes*

Subgroup 2b: 4–9 oocytes retrieved*



Unexpected impaired ovarian response (hypo-response)

Hypo-response to standard doses of FSH (Groups 1–2 Poseidon)

1. Does hypo-response reflect genetics of FSH receptor?
2. Can we overcome it by increasing FSH?
3. Is there a role for LH in these women?

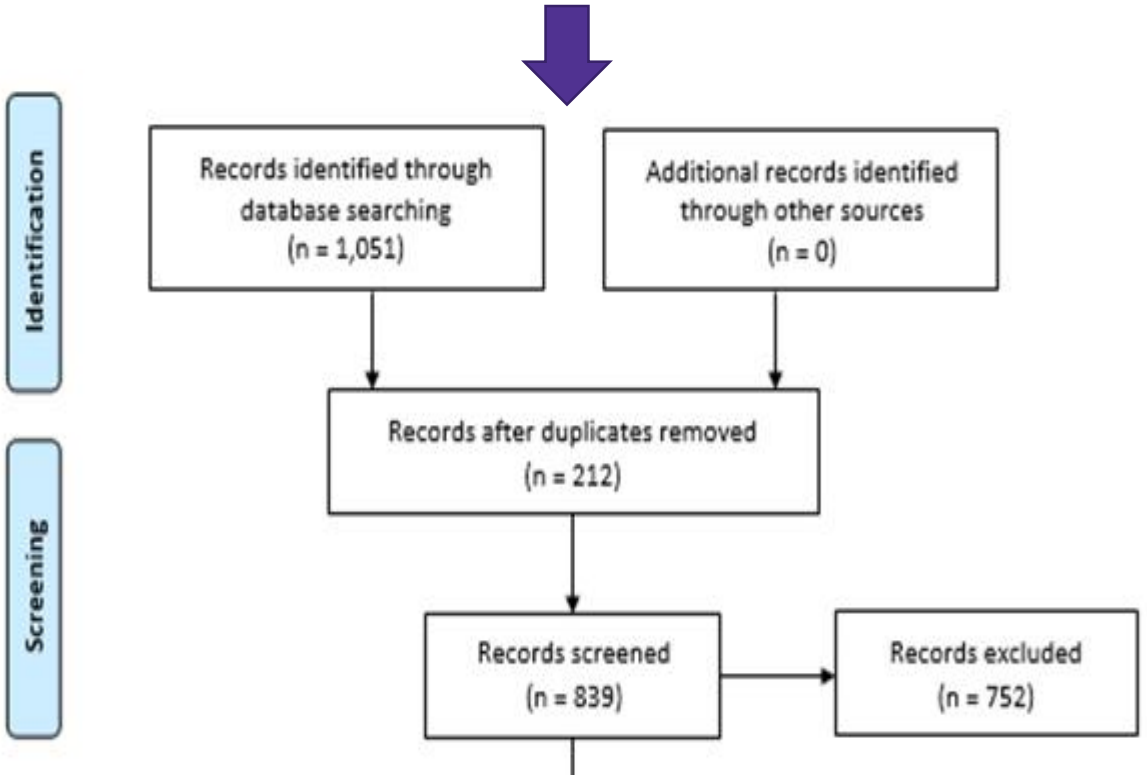
Systematic review and meta-analysis on the impact of polymorphisms of Gn and their receptors on IVF

PICO: Population, Intervention, Comparison, Outcome

Population	**i. Women who underwent controlled ovarian stimulation**
Intervention Comparison	Controlled ovarian stimulation response was evaluated comparing each haplotype (i.e AA vs BB; AA vs AB and BB vs AB)
Outcomes	i. Number of oocytes retrieved ii. FSH consumption iii. Stimulation duration v. Ratio between FSH consumption and the number of oocytes retrieved vi. Number of metaphase II oocytes vii. Ongoing pregnancy rate
Study type	Clinical trials without time or language restrictions

Our aim was to summarize the clinical evidence regarding the impact of gonadotropins and their receptor polymorphisms on the outcomes of COS.

MEDLINE (PubMed), EMBASE, SCOPUS, and Cochrane Library databases

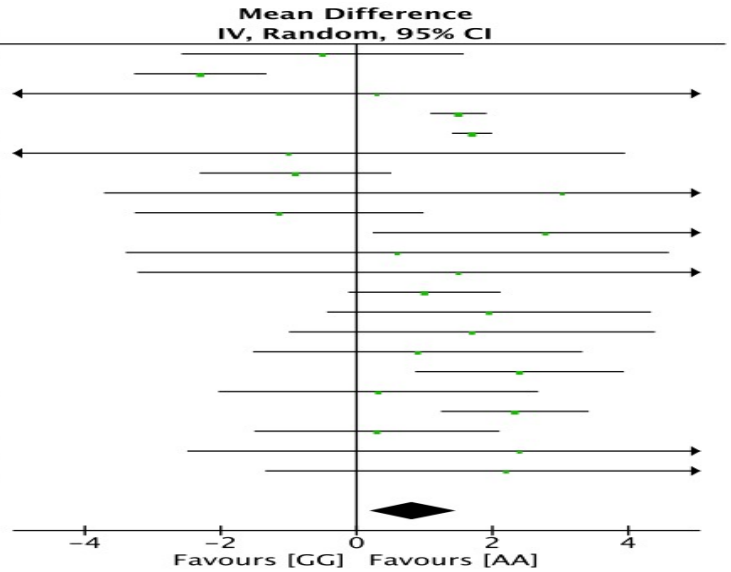


Alviggi *et al.*, Hum Reprod Update, 2018

FSHR (rs6166–680) Asn/Asn carriers showed higher number oocytes than Ser/Ser carriers

Study or Subgroup	AA Mean	AA SD	AA Total	GG Mean	GG SD	GG Total	Weight	Mean Difference IV, Random, 95% CI	Year
Perez Mayorga 2000	11.5	5	46	12	5	43	4.9%	−0.50 [−2.58, 1.58]	2000
Sudo 2002	7.5	0.9	19	9.8	1.5	11	7.9%	−2.30 [−3.27, −1.33]	2002
De Castro 2003	5.3	71.9	83	5	18.67	19	0.1%	0.30 [−17.30, 17.90]	2003
Behre 2005	10.2	0.7	44	8.7	0.9	24	9.3%	1.50 [1.08, 1.92]	2005
Jun 2006	9.6	0.6	110	7.9	0.8	33	9.5%	1.70 [1.40, 2.00]	2006
Klinkert 2006	7	11.68	40	8	7.32	18	1.5%	−1.00 [−5.95, 3.95]	2006
Loutradis 2006	5.2	3.6	34	6.1	2.4	42	6.6%	−0.90 [−2.31, 0.51]	2006
Achrekar 2009a	15.2	1.4	21	12.17	8.4	6	0.8%	3.03 [−3.72, 9.78]	2009
Huang 2010	7.33	3.91	38	8.47	5.13	34	4.8%	−1.14 [−3.27, 0.99]	2010
Sheikhha 2011	5.91	2.7	22	3.13	4.5	15	3.9%	2.78 [0.24, 5.32]	2011
Genro 2012	12.6	6.7	29	12	5.6	12	2.1%	0.60 [−3.40, 4.60]	2011
Nordhoff 2011	13.5	6.3	10	12	4.7	12	1.6%	1.50 [−3.22, 6.22]	2011
Mohiyiddeen 2013	9	4	128	8	4	79	7.5%	1.00 [−0.12, 2.12]	2013
Yan 2013	13.07	6.76	211	11.12	7.29	42	4.2%	1.95 [−0.44, 4.34]	2013
Lledo 2013	21.5	9.2	62	19.8	8.9	151	3.6%	1.70 [−0.99, 4.39]	2013
Zalewski 2013	8.2	2.72	10	7.3	1.78	4	4.1%	0.90 [−1.53, 3.33]	2013
Lazaros 2013	11	5.4	57	8.6	4.9	233	6.3%	2.40 [0.86, 3.94]	2013
Trevisan 2014	6.58	5.92	55	6.26	5	31	4.3%	0.32 [−2.03, 2.67]	2014
Huang 2015	12.65	6	506	10.32	6.38	172	7.6%	2.33 [1.24, 3.42]	2015
Alviggi 2016	9.2	1.7	8	8.9	2.7	15	5.5%	0.30 [−1.50, 2.10]	2016
Lledo 2016a	19.3	7	11	16.9	6.8	26	1.5%	2.40 [−2.49, 7.29]	2016
Lledo 2016b	20.1	5.3	17	17.9	8.9	49	2.5%	2.20 [−1.34, 5.74]	2016
Total (95% CI)			**1561**			**1071**	**100.0%**	**0.84 [0.19, 1.49]**	

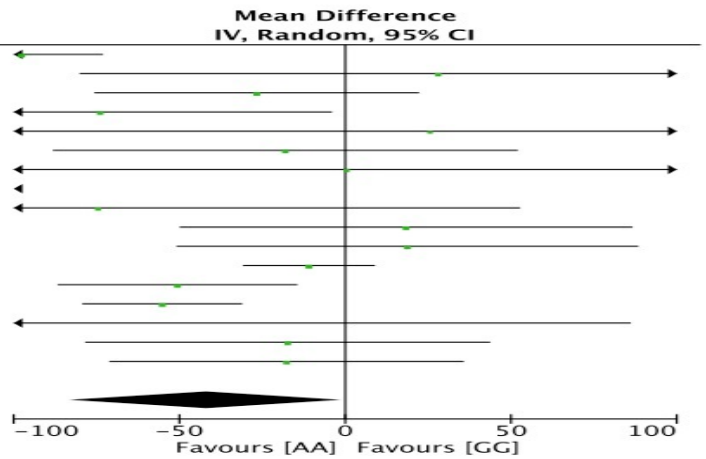
Heterogeneity: Tau² = 1.14; Chi² = 88.51, df = 21 (P < 0.00001); I² = 76%
Test for overall effect: Z = 2.53 (P = 0.01)



FSHR (rs6166–680) Asn/Asn carriers showed lower Gn/oocytes ratio than Ser/Ser carriers

Study or Subgroup	AA Mean	AA SD	AA Total	GG Mean	GG SD	GG Total	Weight	Mean Difference IV, Random, 95% CI	Year
Perez Mayorga 2000	207.39	24.07	22	305	75	43	7.3%	−97.61 [−122.18, −73.04]	2000
Sudo 2002	252	154.44	19	223.98	140.33	11	4.9%	28.02 [−80.14, 136.18]	2002
Behre 2005	160.78	81.43	44	187.47	106.67	24	6.8%	−26.69 [−75.68, 22.30]	2005
Jun 2006	238.23	108.33	110	312.15	196.25	33	6.2%	−73.92 [−143.87, −3.97]	2006
Loutradis 2006	602.31	272.5	34	576.72	629.17	42	2.5%	25.59 [−185.59, 236.77]	2006
Achrekar 2009a	188.87	146.14	21	206.93	39.74	6	6.2%	−18.06 [−88.19, 52.07]	2009
Huang 2010	302.15	323.02	38	301.77	251.02	34	4.2%	0.38 [−132.54, 133.30]	2010
Sheikhha 2011	282.06	24.07	22	479.23	33.33	15	7.4%	−197.17 [−216.81, −177.53]	2011
Nordhoff 2011	136.3	102.46	10	210.87	195.09	12	4.4%	−74.57 [−201.91, 52.77]	2011
Genro 2012	221.43	82.09	29	203.1	108.57	12	6.2%	18.33 [−49.98, 86.64]	2011
Mohiyiddeen 2013	300	250	128	281.25	247.5	79	6.2%	18.75 [−50.92, 88.42]	2013
Lledo 2013	97.6	69.5	62	108.54	62.06	151	7.4%	−10.94 [−30.87, 8.99]	2013
Yan 2013	161.23	105.28	211	211.81	110.02	42	7.1%	−50.58 [−86.76, −14.40]	2013
Huang 2015	165.06	108.5	506	220.25	148.75	172	7.3%	−55.19 [−79.35, −31.03]	2015
Alviggi 2016	218.75	247.76	8	330.06	192.67	15	2.7%	−111.31 [−308.75, 86.13]	2016
Lledo 2016a	105.18	90.43	11	122.54	77.06	26	6.4%	−17.36 [−78.46, 43.74]	2016
Lledo 2016b	100.75	105.47	17	118.44	66.52	49	6.7%	−17.69 [−71.17, 35.79]	2016
Total (95% CI)			**1292**			**766**	**100.0%**	**−41.96 [−82.90, −1.03]**	

Heterogeneity: Tau² = 5791.48; Chi² = 229.76, df = 16 (P < 0.00001); I² = 93%
Test for overall effect: Z = 2.01 (P = 0.04)



Alviggi *et al.*, Hum Reprod Update, 2018

Four Groups of Patient with Low Prognosis

Poseidon groups where oocyte/blastocyst accumulation is an option…

GROUP 3

Young patients (<35 years) with poor ovarian reserve pre-stimulation parameters
(AFC <5; AMH <1.2 ng/ml)

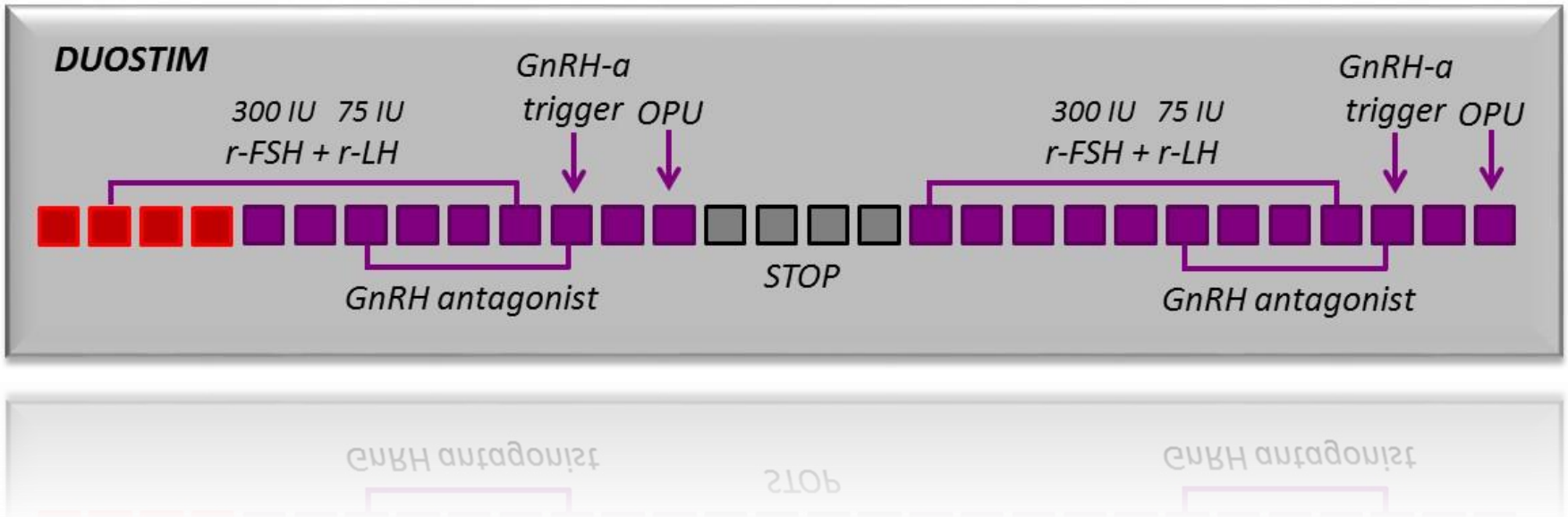


GROUP 4

Older patients (≥35 years) with poor ovarian reserve pre-stimulation parameters
(AFC <5; AMH <1.2 ng/ml)



DUOSTIM in low prognosis patients



Ubaldi, Vaiarelli, Alviggi, Trabucco, Zullo, Capalbo, Cimadomo, Rienzi
ASRM, 2015

DuoStim in POR/poor prognosis patients

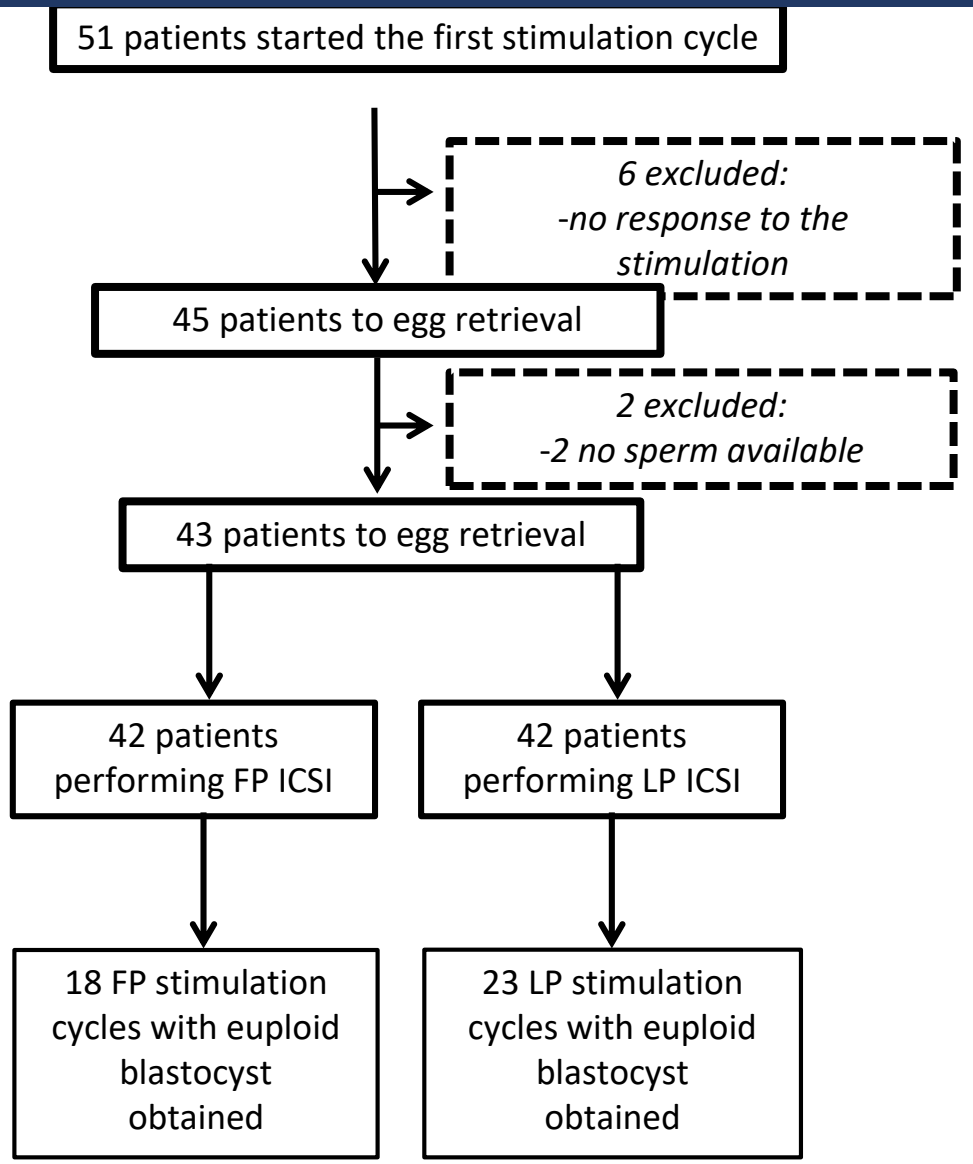
Follicular versus luteal phase ovarian stimulation during the same menstrual cycle (DuoStim) in a reduced ovarian reserve population results in a similar euploid blastocyst formation rate: new insight in ovarian reserve exploitation

Filippo Maria Ubaldi, M.D., M.Sc.,[a,b,c] Antonio Capalbo, Ph.D.,[a,b,c] Alberto Vaiarelli, M.D., Ph.D.,[a,b] Danilo Cimadomo, M.Sc.,[a,b,d] Silvia Colamaria, M.D.,[a,b] Carlo Alviggi, M.D., Ph.D.,[d,e] Elisabetta Trabucco, M.D.,[a,b] Roberta Venturella, M.D.,[a,b,f] Gábor Vajta, Ph.D.,[g,h] and Laura Rienzi, M.Sc.[a,b,c]

Ubaldi et al., Fertil Steril 2016

51 patients with poor ovarian reserve (AMH ≤1,5 ng/ml, AFC ≤ 6 follicles and/or ≤ 5 oocyte retrieved in previous COH) undergoing ICSI treatment and PGT-A

Primary outcome measure:
euploid blastocyst rate.
Secondary outcome measures:
#of retrieved COCS and MII oocytes



Huge intra & inter-cycle variability

SUPPLEMENTAL FIGURE 1

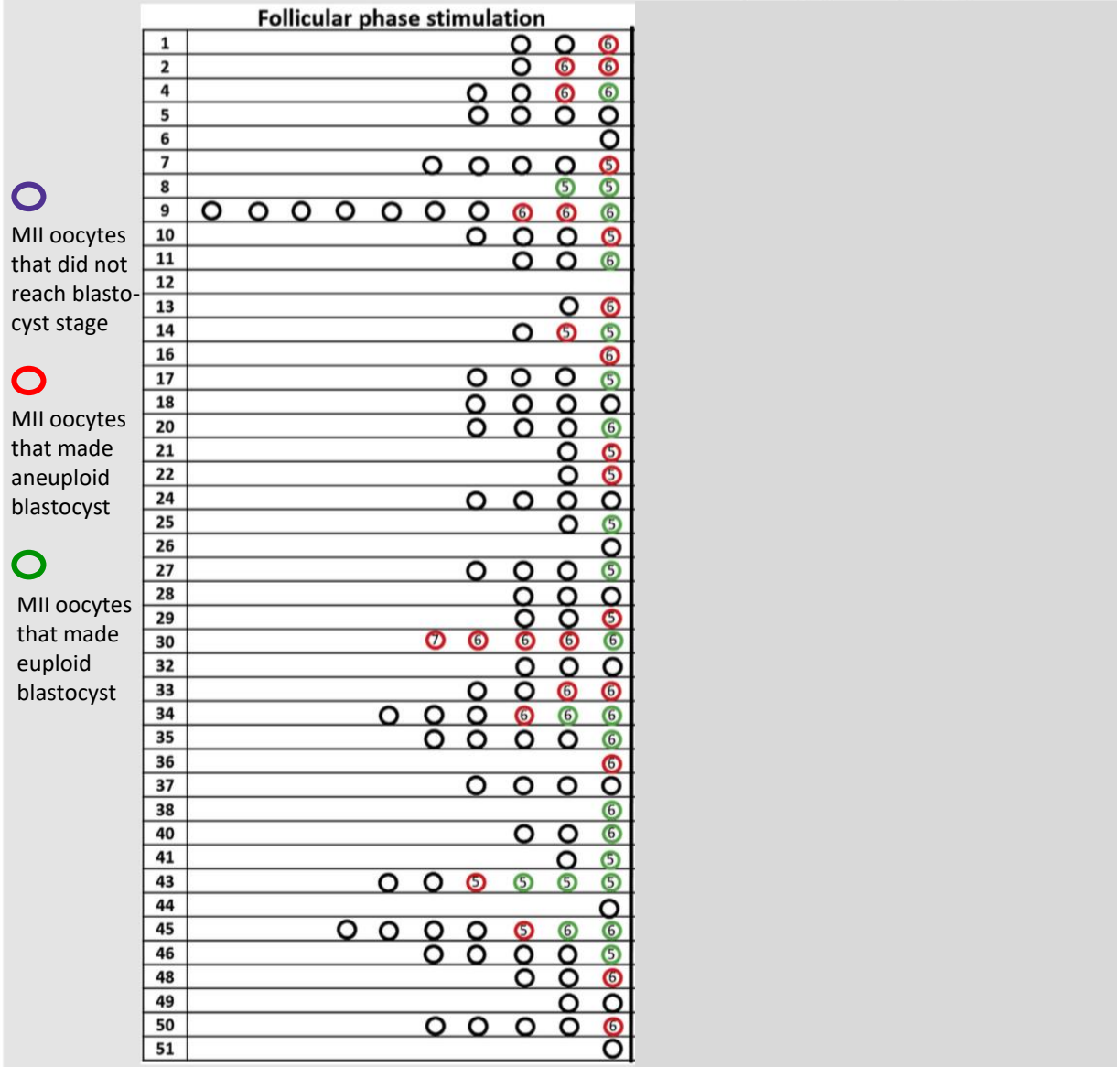


TABLE 1

Data according to follicular and luteal phase stimulation.

Data basis	Stimulation phase: Follicular	Luteal	*P* value
Per patient[a]			
Days of stimulation	9.6 ± 2.4 (6–14)	10.3 ± 2.5 (8–15)	NS
COCs	5.1 ± 3.4 (1–22)	5.7 ± 3.3 (1–17)	NS
MII oocytes	3.4 ± 1.9 (0–10)	4.1 ± 2.5 (0–11)	NS
Fertilized oocytes	2.3 ± 1.7 (0–6)	3.2 ± 2.3 (0–10)	NS
Biopsied blastocysts	1.2 ± 1.2 (0–5)	1.4 ± 1.7 (0–9)	NS
Euploid blastocysts	0.6 ± 0.8 (0–3)	0.7 ± 0.8 (0–4)	NS
Per injected MII oocyte			
MII oocytes	142	173	
Fertilized oocytes	99 (69.7)	136 (78.6)	NS
Biopsied blastocysts	49 (34.5)	58 (33.5)	NS
Euploid blastocysts	23 (16.2)	26 (15.0)	NS
Per biopsied blastocyst			
Biopsied blastocysts	49	58	NS
Day of blastulation			
5	19 (38.8)	22 (37.9)	NS
6	29 (59.2)	36 (62.0)	NS
7	1 (2.0)	0	NS
Blastocyst quality			
Excellent	21 (42.8)	26 (44.8)	NS
Good	9 (18.4)	10 (17.2)	NS
Average	12 (24.5)	12 (20.7)	NS
Poor	7 (14.3)	10 (17.2)	NS
Aneuploidy			
Euploid	23 (46.9)	26 (44.8)	NS
Single/double aneuploid	18 (37.1)	25 (43.2)	NS
Complex aneuploid	8 (16.0)	7 (12.0)	NS

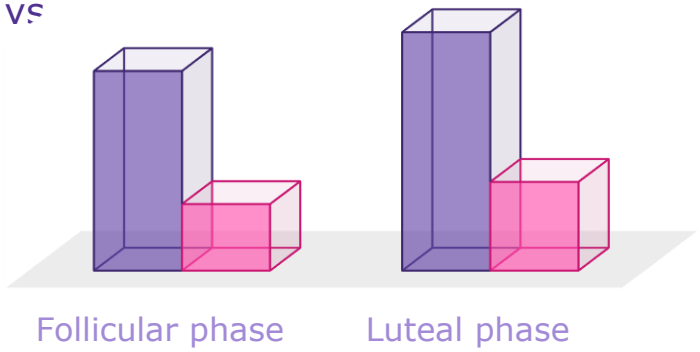
Ubaldi et al., Fertil Steril 2016

human reproduction ORIGINAL ARTICLE Embryology

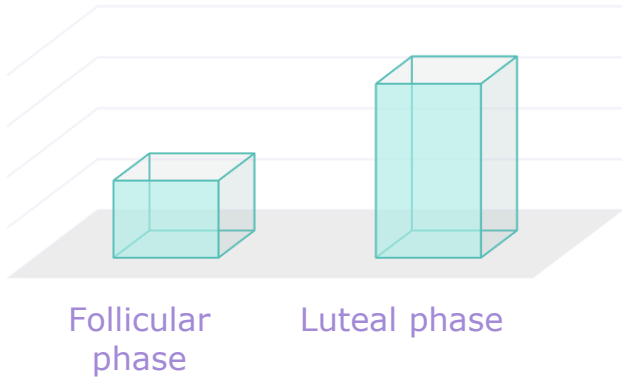
Luteal phase anovulatory follicles result in the production of competent oocytes: intra-patient paired case-

Danilo Cimadomo[1,*], Alberto Vaiarelli[1], Silvia Colamaria[1], Elisabetta Trabucco[2], Carlo Alviggi[3,4], Roberta Venturella[5], Erminia Alviggi[2], Ramona Carmelo[2], Laura Rienzi[1,2], and Filippo Maria Ubaldi[1,2]

- Significantly fewer blastocysts were obtained after FPS than LPS (1.2 ± 1.1 vs. 1.6 ± 1.6, *P* <0.05), due to fewer oocytes collected (3.6 ± 2.1 vs



Overall, a significantly lower chance of producing blastocysts was reported after FPS than LPS
67.6% vs. 77.1%



THE WHAT

Aim 2: A pragmatic endopoint in ART

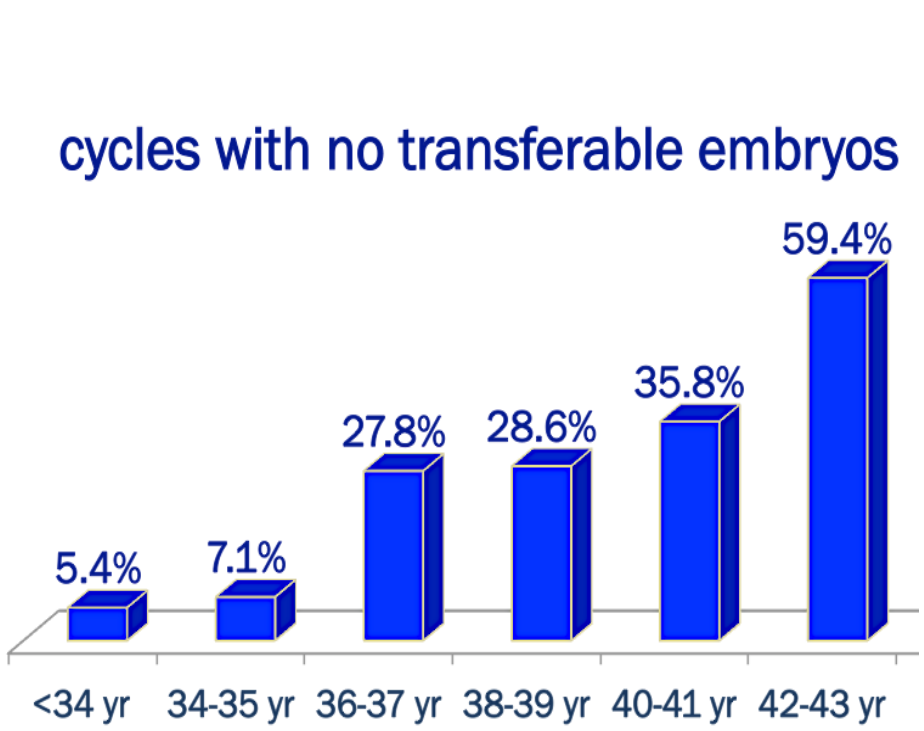
Ability to obtain No. oocytes required to achieve at least 1 euploid blastocyst for transfer in each patient

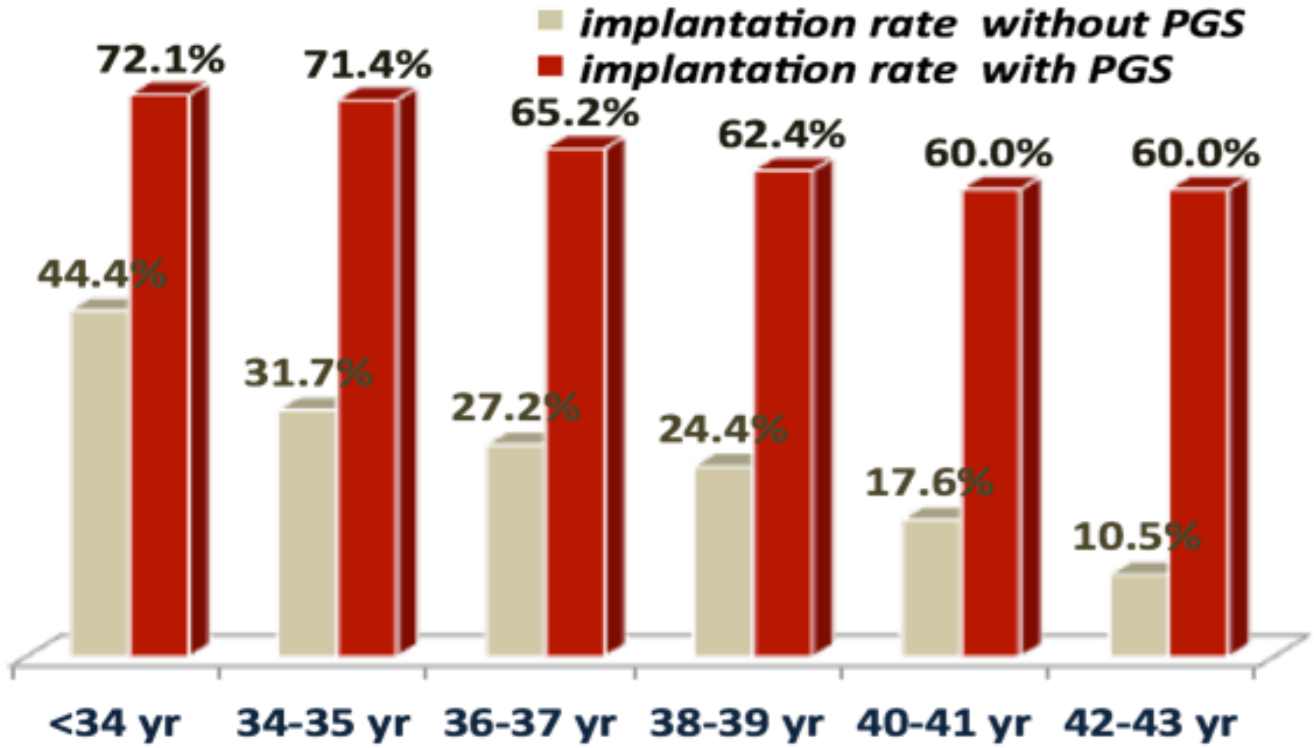
Poseidon Group; Alviggi et al. *Fertil Steril.* 2016; Humaidan et al. *F1000Research* 2016

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THE WHAT

Availability of euploid embryos for transfer maximize IVF efficiency by offsetting age-related effect on implantation





Courtesy of Ubaldi & Rienzi (GENERA; Jan 2012-Dez 2013)

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THE WHAT

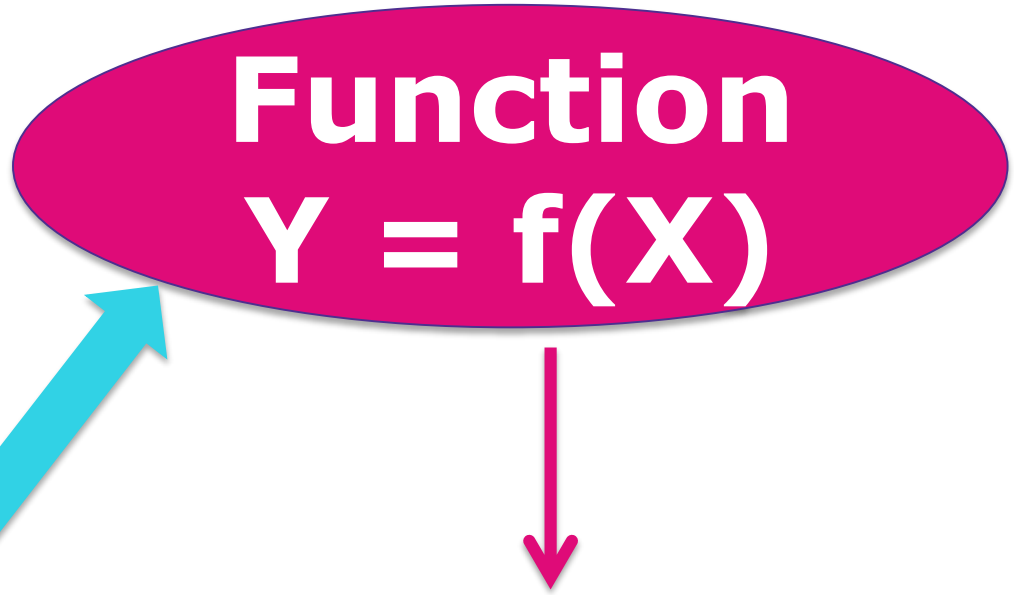
How many oocytes are needed for at least 1 euploid embryo?

Input variables

X

Maturation rate
2PN Fertilization rate
Cleavage or Blastulation rate
Euploidy rate per age group

Adjusted according to maternal and paternal age, sperm source, sperm and oocyte status, and type of embryo transfer (fresh; FET)



Output variable

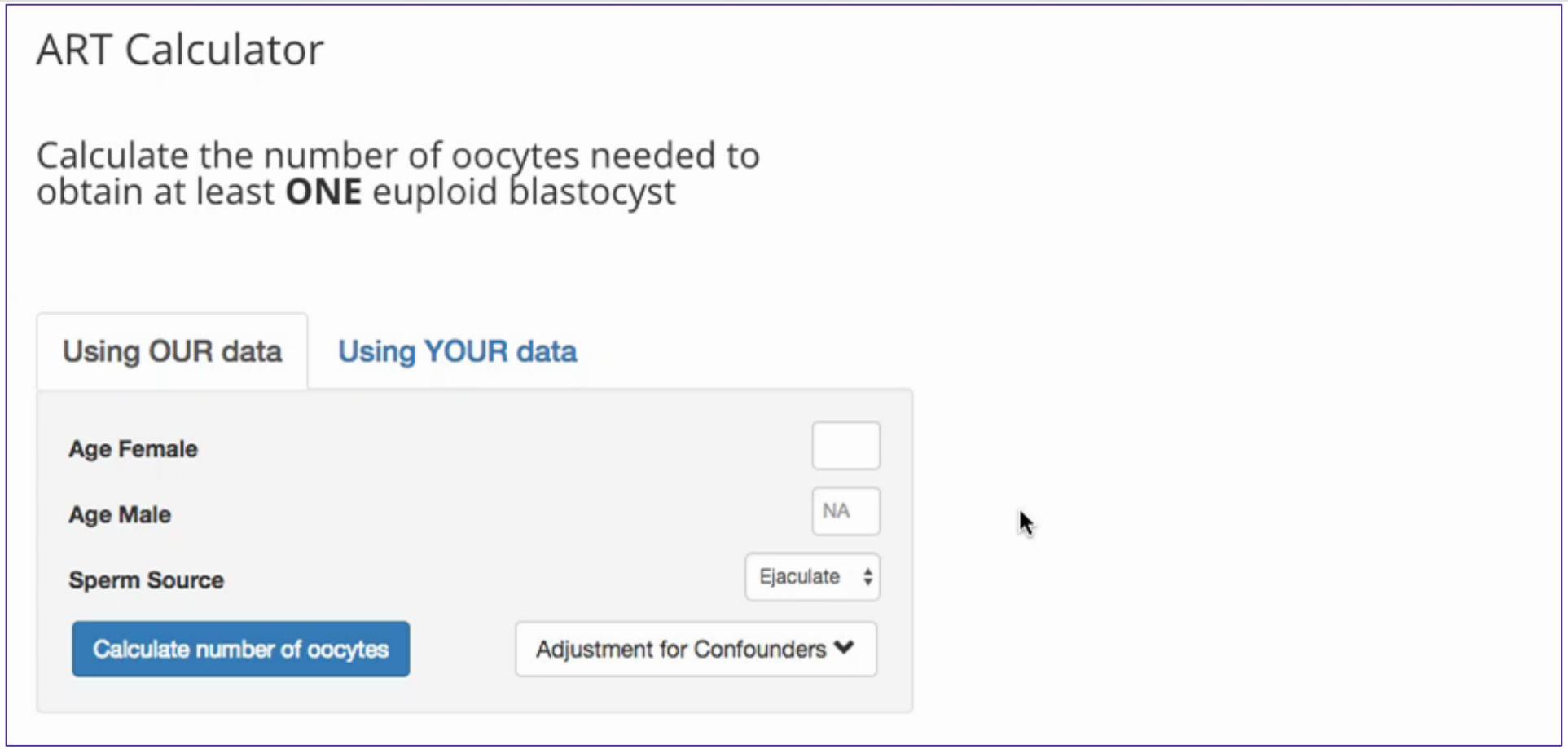
Y (N oocytes)

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THE WHAT

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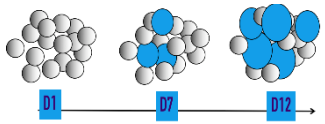
Available at: http://www.groupposeidon.com

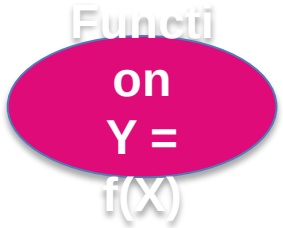
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WHAT'S NEW IN POSEIDON









Introduced the Concept of 'Low Prognosis' in ART

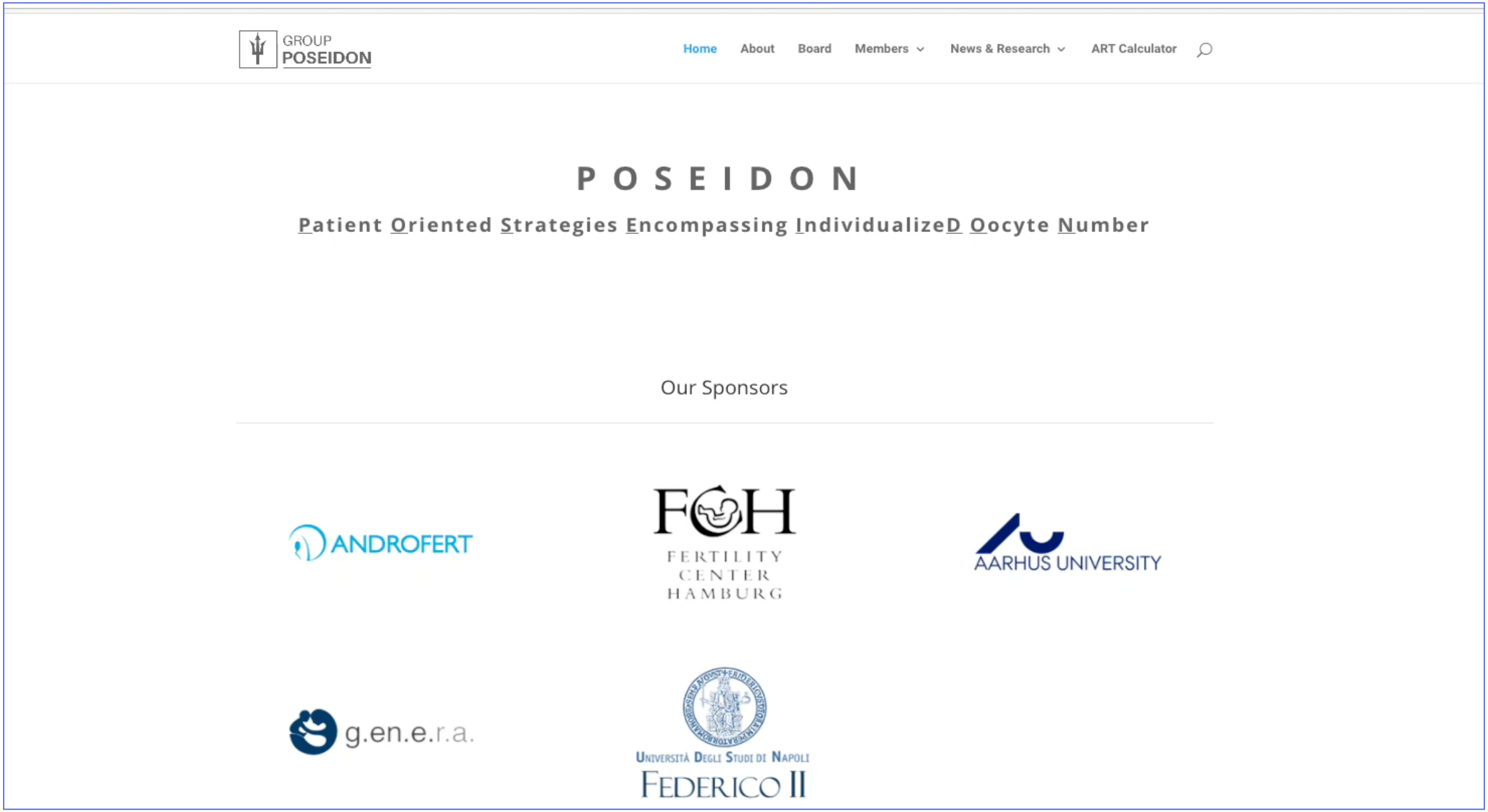
Combined Oocyte Quality and Quantity for Identification and Stratification of the 'Low Prognosis' Patient

Included 'Hypo-responders' as a Distinct Category of 'Low Prognosis' Patients

Introduced an Intermediate Marker of Success in ART: the Ability to Obtain the Number of Oocytes Needed to Achieve at Least One Euploid Blastocyst for

Poseidon Group; Alviggi et al. *Fertil Steril.* 2016; Humaidan et al. *F1000Research* 2016

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Poseidon guys



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