

New insights gained through time-lapse imaging

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Halo characteristics during fertilization are predictive of human pre-implantation

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Halo char

Impact of reverse cleavage on *in vitro* development and reproductive potential of human embryos

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CREATING FAMILIES
AROUND THE WORLD

Impact of reverse cleavage on *in vitro* development and reproductive



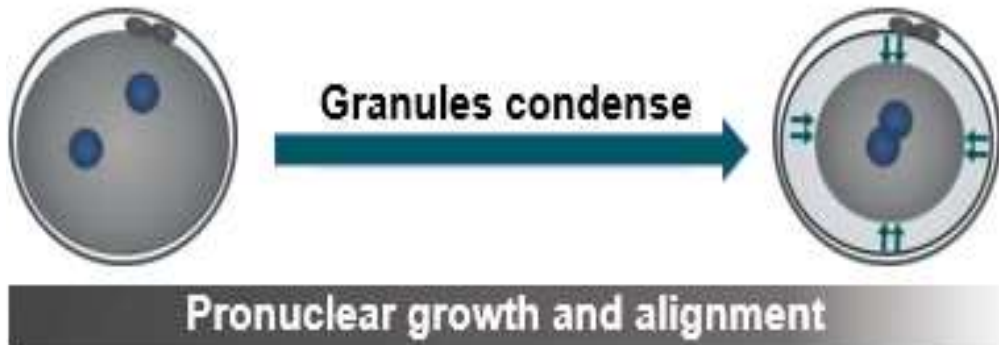
Sergi Novo



35th Annual Meeting
Vienna, Austria, 23-26 June 2019

Halo characteristics during fertilisation are predictive of human pre-implantation embryo development and pregnancy outcomes: *K. Ezoë*

Halo phenomenon

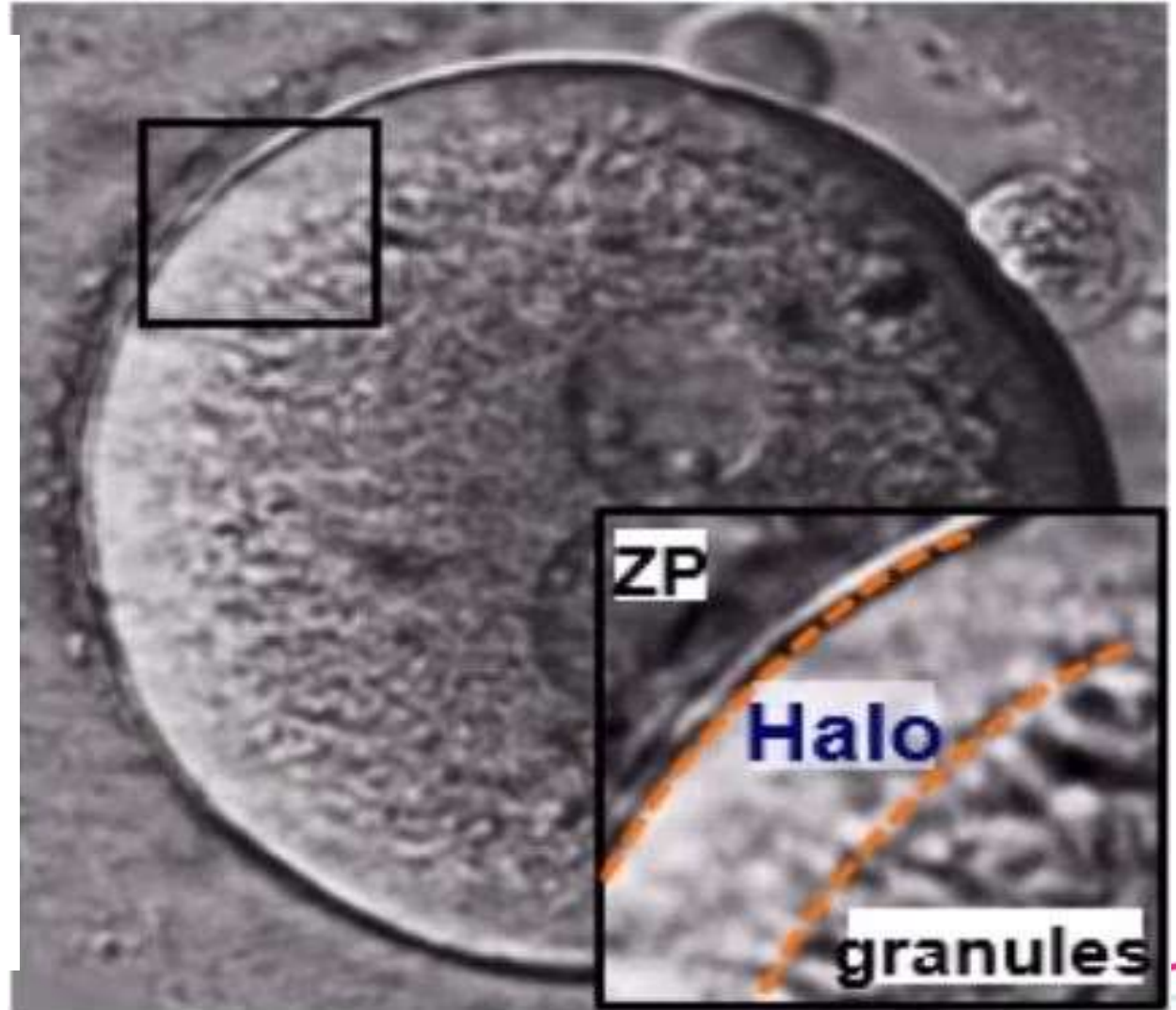


A clear cortical moon-shaped area that constitutes a subplasmalemmal zone of translucent cytoplasm
(Payne et al., 1997)

↓

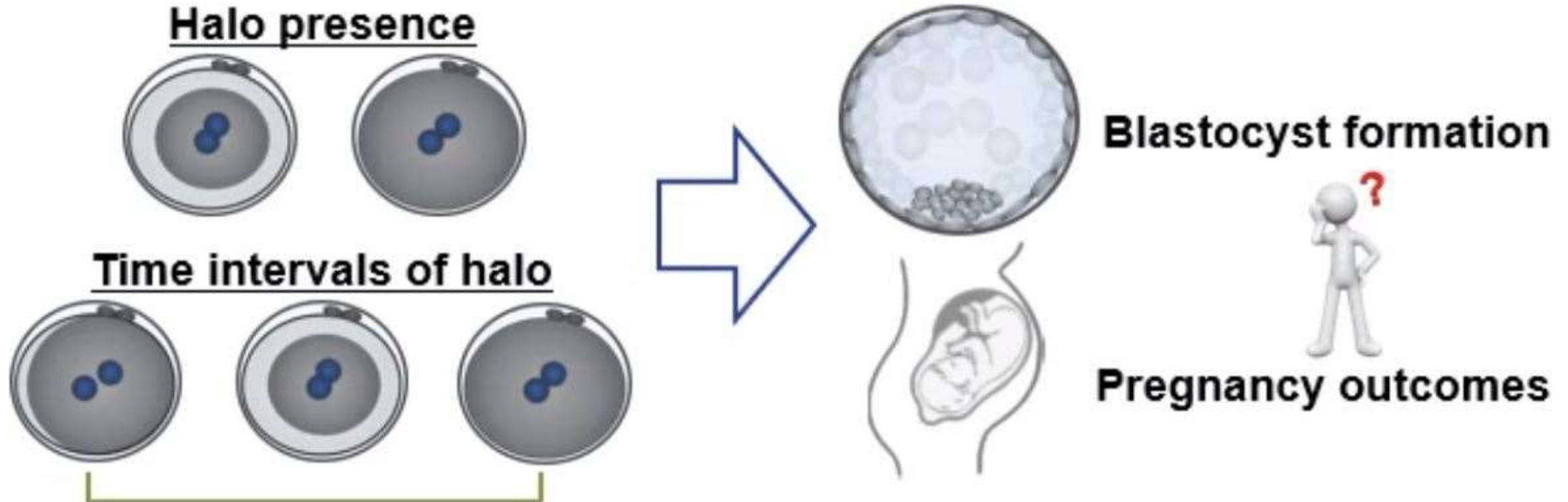
“Cytoplasmic halo”

(Scott and Smith, 1998)



Objective

To determine the correlation of the presence and time intervals of halo phenomenon with pre-implantation development and pregnancy outcome after embryo transfer



Study design

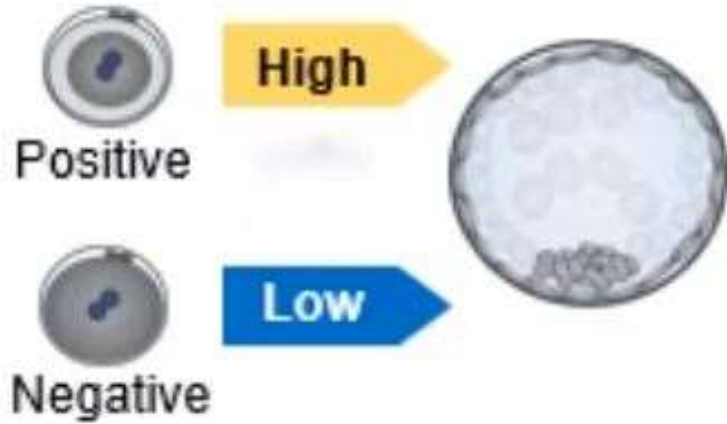
Embryos analyzed	1,009 embryos obtained from 560 patients
Study period	April 2017 – March 2018
Insemination method	ICSI
Embryo transfer method	Single vitrified-warmed blastocyst transfer (SVBT)
Observation of halo phenomenon	Halo presence (positive or negative) Halo distribution (symmetry, asymmetry or unstable) Timing of halo events (halo appearance, end of organelle centring, initiation of organelle redistribution, and halo disappearance)
IVF outcomes	Morphokinetic data Embryo stage of development reached Cleavage embryo quality Blastocyst quality Pregnancy outcome after SVBT



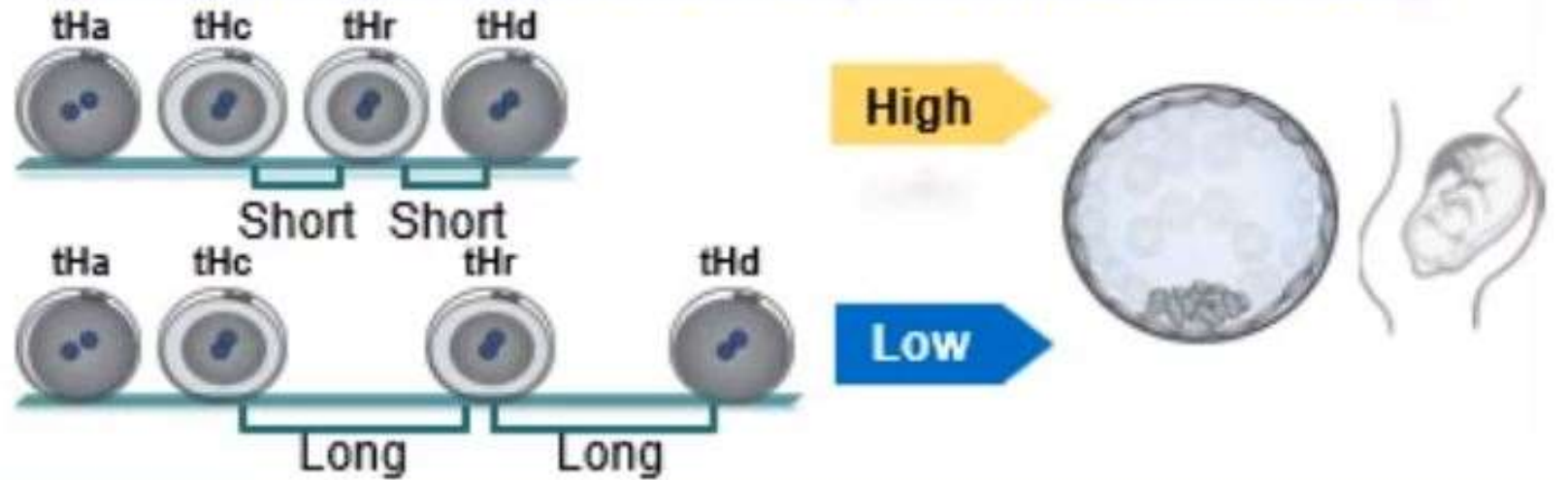
Halo observation

Conclusion

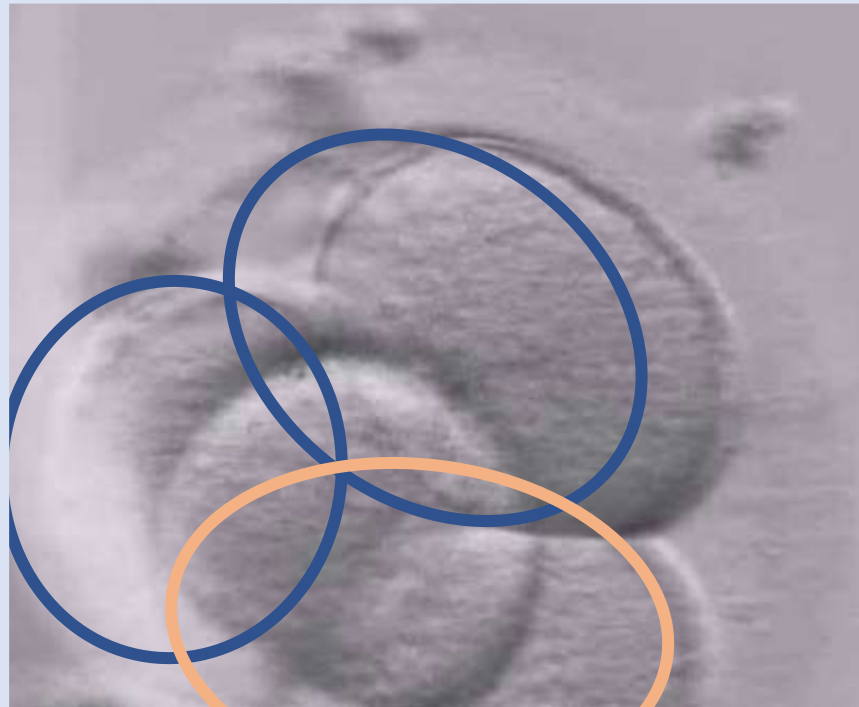
Halo presence



Time intervals of halo events (TI of tHc-r and tHr-d)



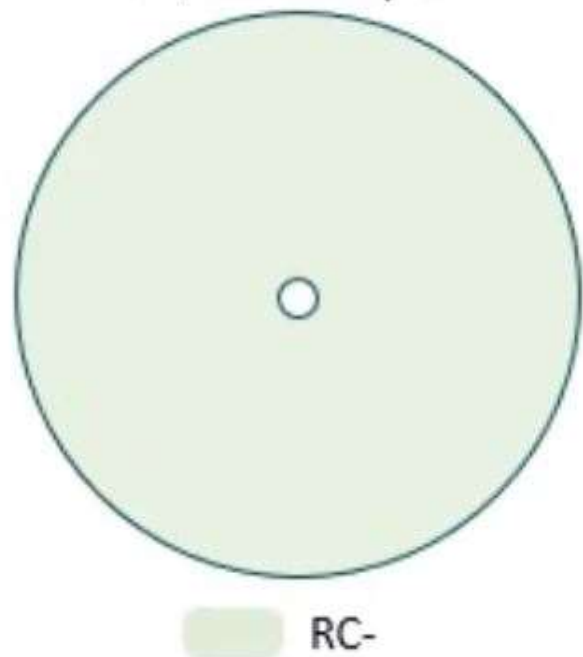
Impact of reverse cleavage on in vitro development and reproductive outcomes of human embryos: S Novo



Reverse cleavage of an embryo Stein, D (MIRI TL, ESCO)

REVERSE CLEAVAGE (RC)

23,007 embryos



303 embryos

1.3%



RC+

0.4% Barrie et al. 2017
6.8% Desai et al. 2014
7.0% Hickman et al. 2012

RESULTS

Blastocyst rate (transferable)

53.2%

19.1%

$p < 0.05$

Clinical pregnancy rate

54.2%

55.9%

NS

Live birth rate

37.5%

36.5%

NS

RC-

RC+



Reverse Cleavage could be a part of some cellular error-detection mechanism.

Embryos that are able to overcome this checkpoint, repairing or discarding the involved cells to reach a good quality blastocyst, would have the **same reproductive potential** as blastocysts without **Reverse Cleavage**.

Concluding Remarks

- The **halo phenomenon & timings** is important to consider when selecting the **best embryo for transfer**, especially during the **cleavage stage** of development.
- Embryos that undergo **reverse cleavage** should still be **considered to ET** due to the embryo's ability to undergo "self correction".

Thank you

