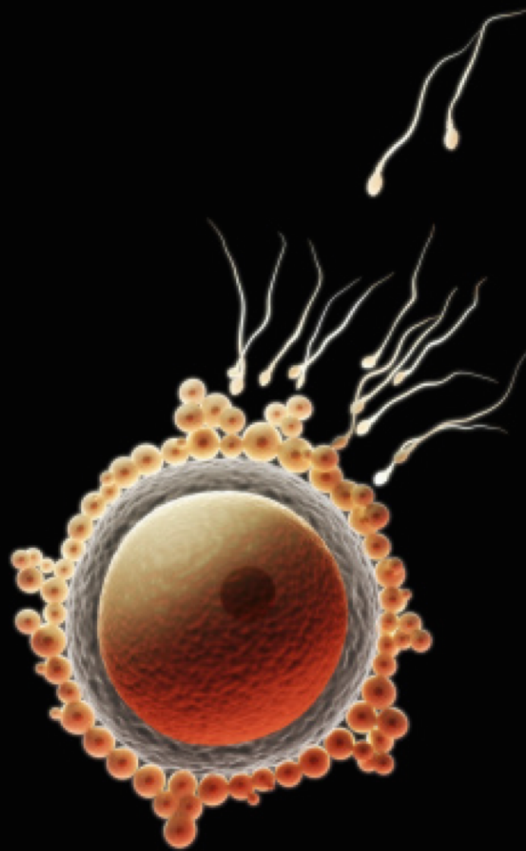


Fécondation

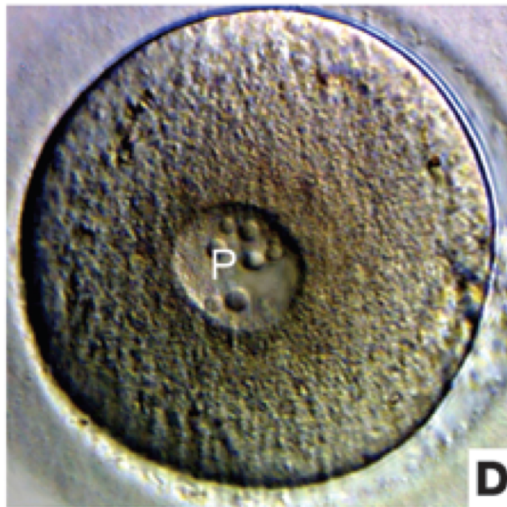


environ 200 spermatozoïdes

La polyspermie



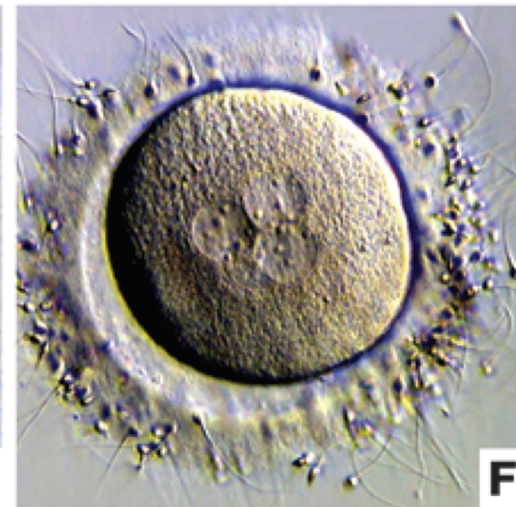
Ovocytes humains fécondés in vitro



1 seul
pronoyau



3 pronoyaux



4 pronoyaux

Triploïdie humaine



2 pronoyaux

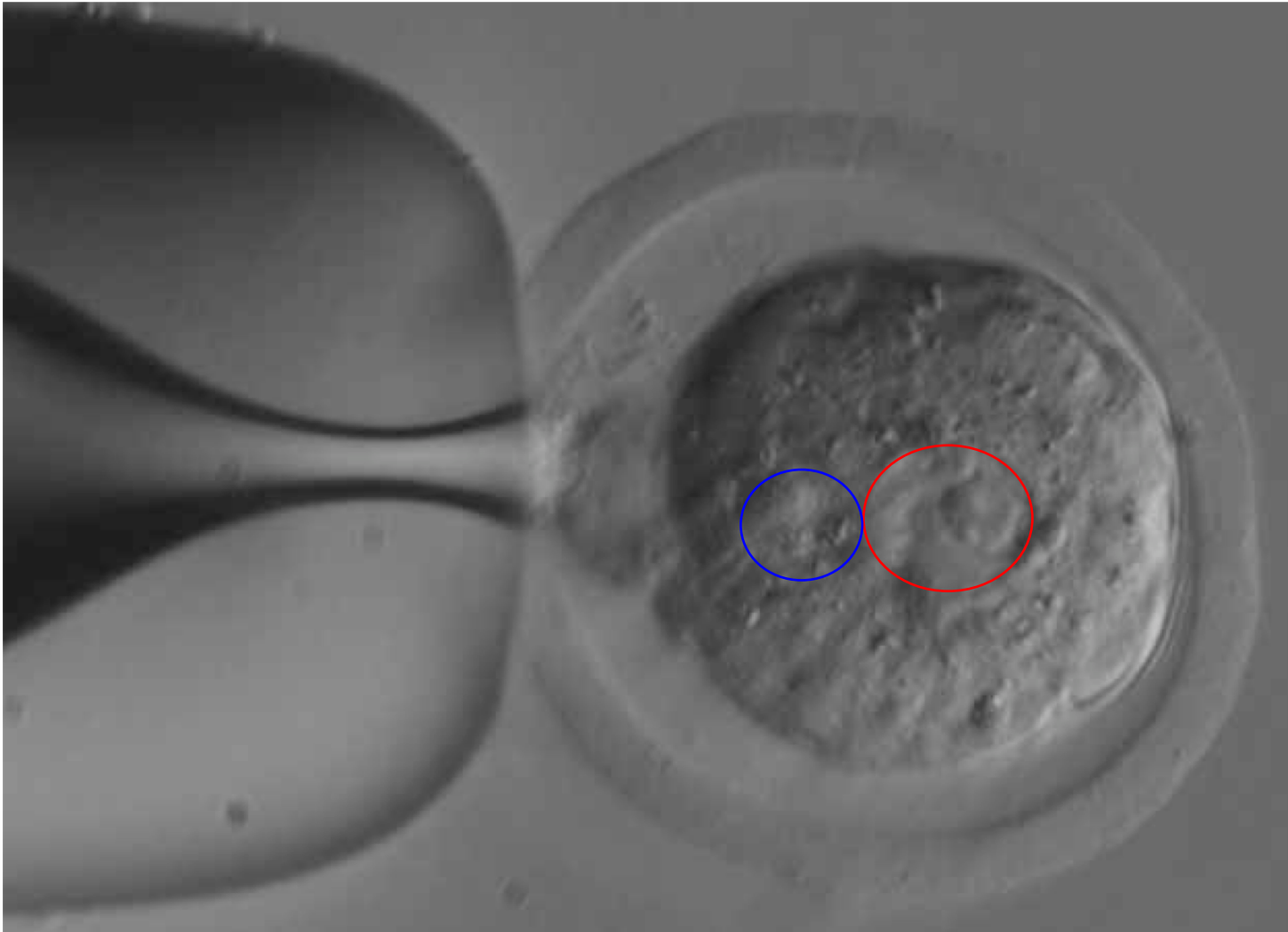
dispermie

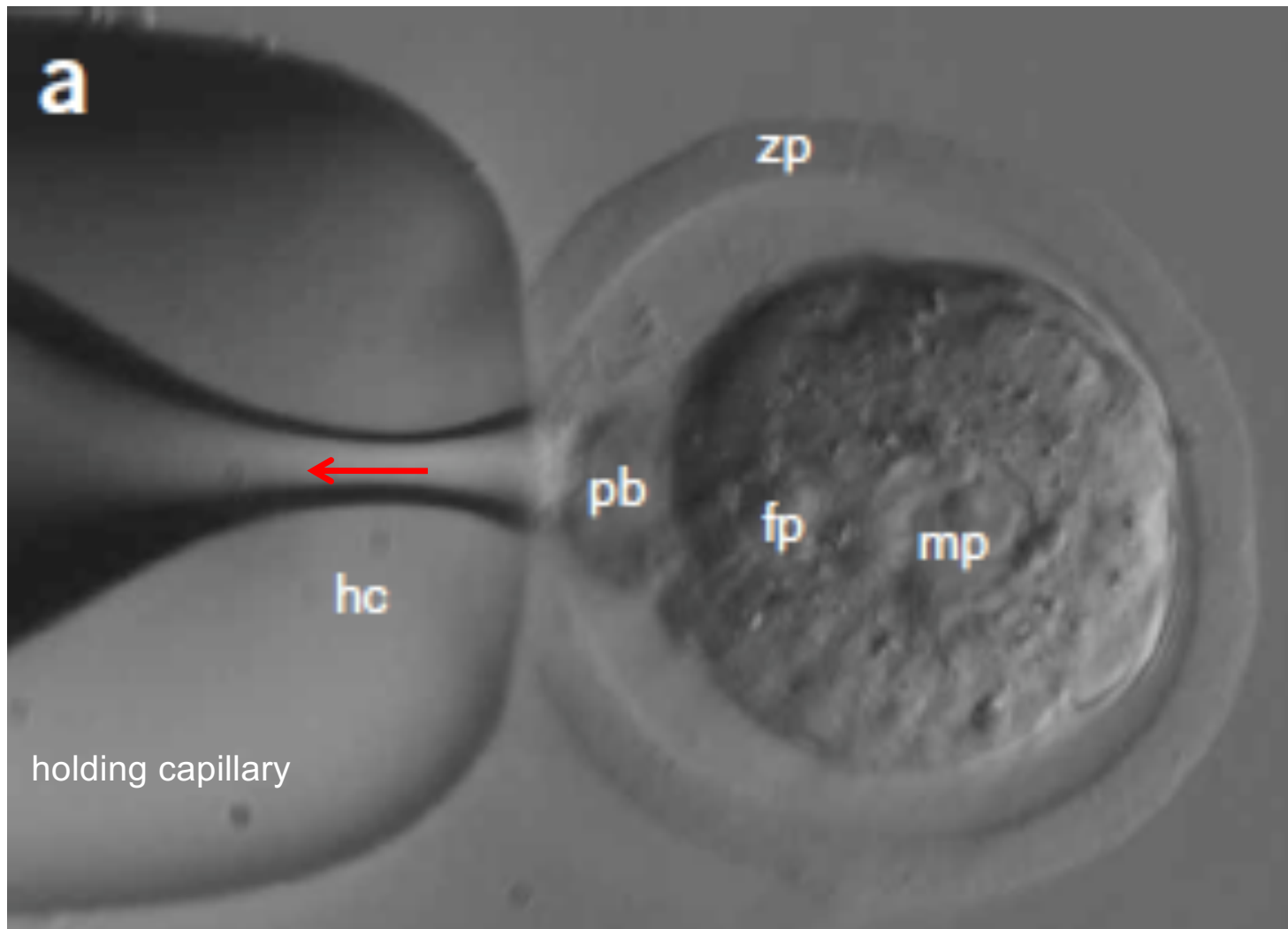
The incidence of triploidy in conventional IVF averages 4% per cycle and at least one triploid prezygote is found in 60% of all IVF cycles (Escriba *et al.*, 2006).

H.-J. Kang and Z. Rosenwaks Int. J. Dev. Biol. 52: 449-454 (2008)

Ovocyte fécondé de souris









1 Formation de la cellule œuf*

Juste après la fécondation, le noyau de l'ovule et celui du spermatozoïde fusionnent pour former la cellule œuf.

↑
pas de fusion



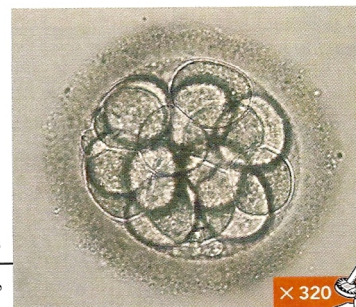
2 Embryon* au stade 2 cellules

La *division** commence : trente heures après la fécondation, la cellule œuf s'est divisée en deux et devient l'embryon. Poussé par le mouvement des cils de la trompe, l'embryon se dirige vers l'utérus.



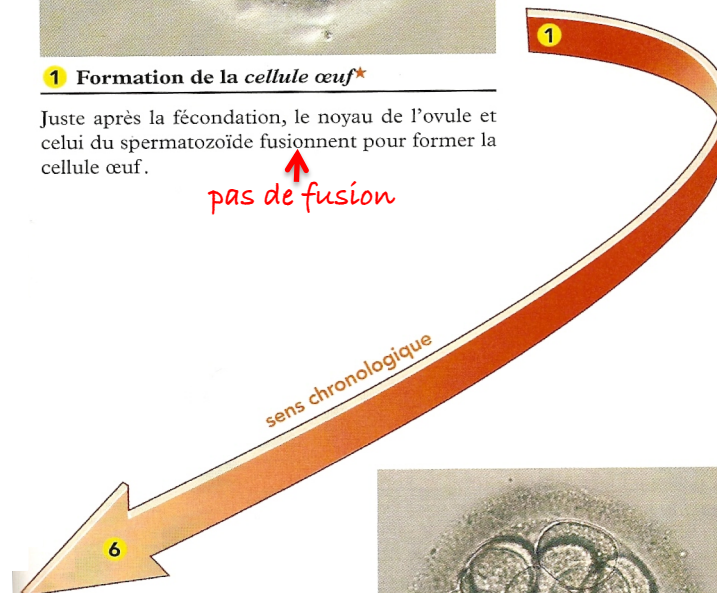
3 Embryon au stade 4 cellules

Quarante heures après la fécondation, l'embryon s'est divisé deux fois.



5 Embryon au stade 16 cellules

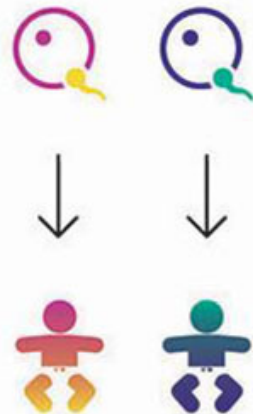
Soixante heures après la fécondation, l'embryon s'est divisé quatre fois.



Normal Fertilisation

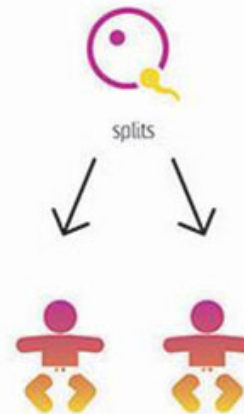


Fraternal twins Dizygotic



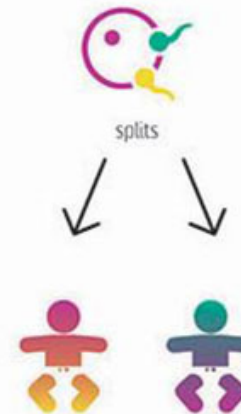
Share 1/2 DNA
50% maternal
50% paternal

Identical twins Monozygotic

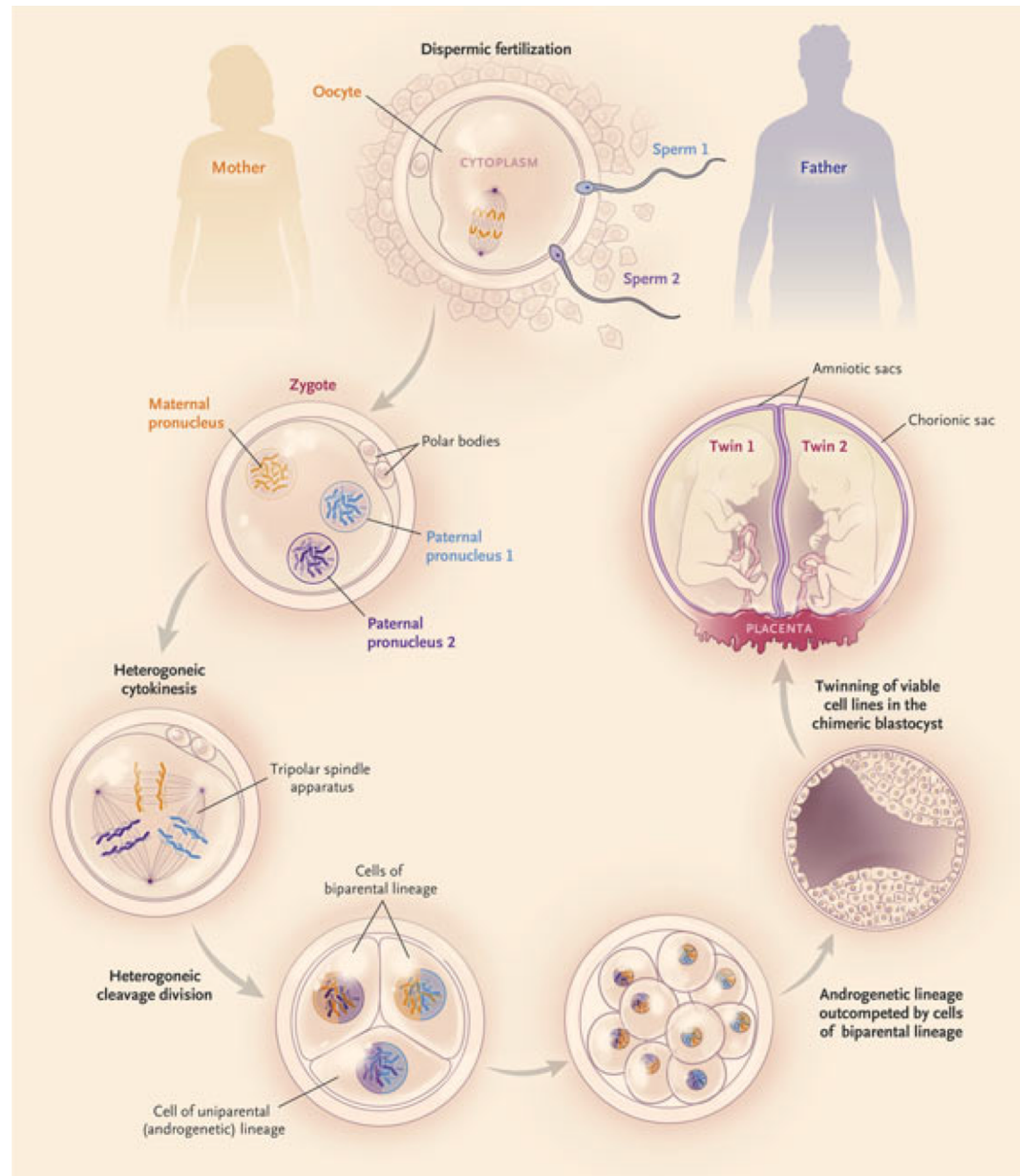


Share all DNA
100% maternal
100% paternal

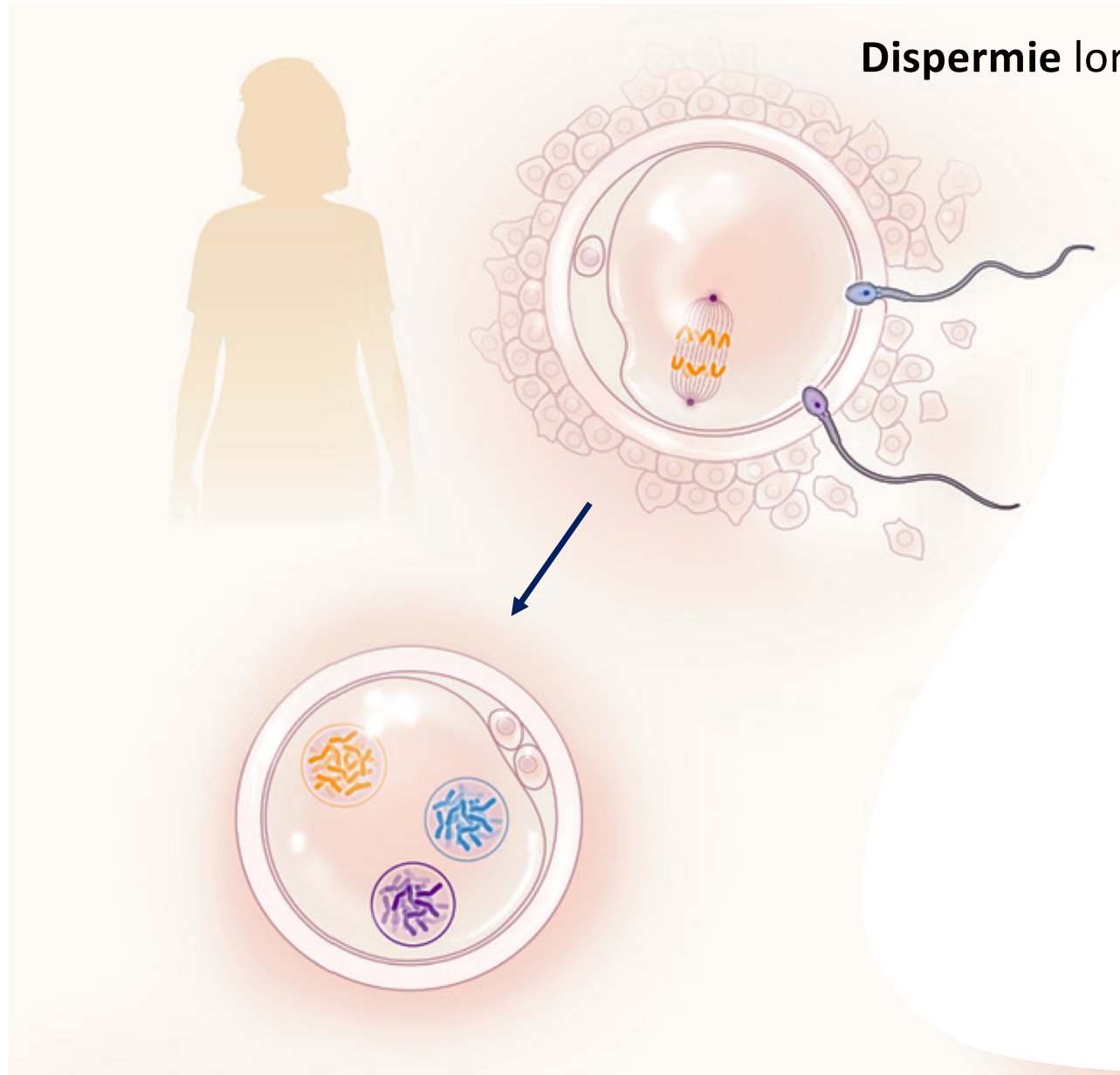
Semi-identical twins Sesquizygotic

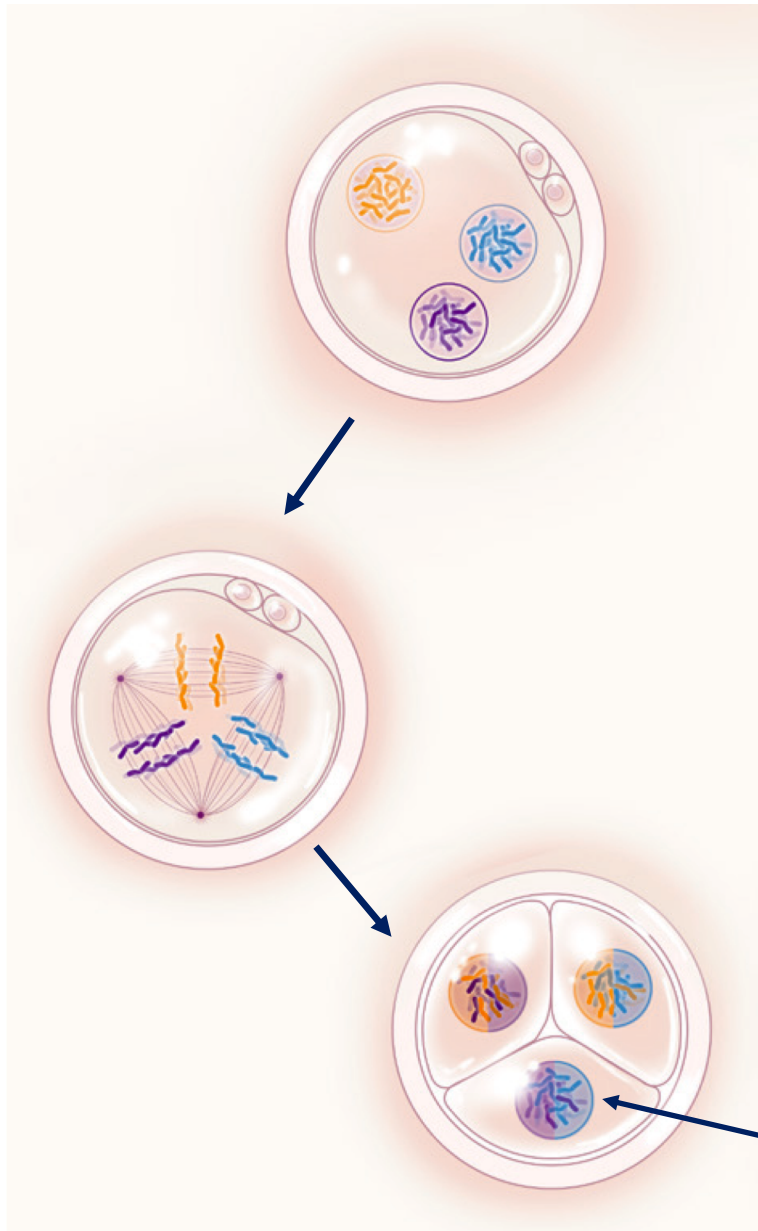


Share 3/4 DNA
100% maternal
50% paternal



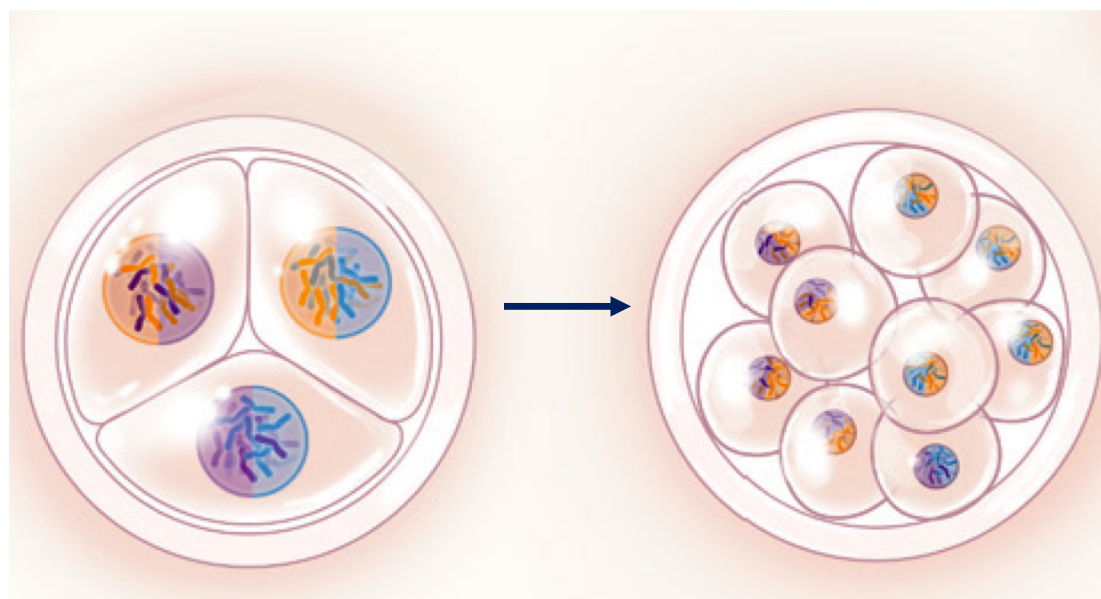
Dispermie lors de la fécondation



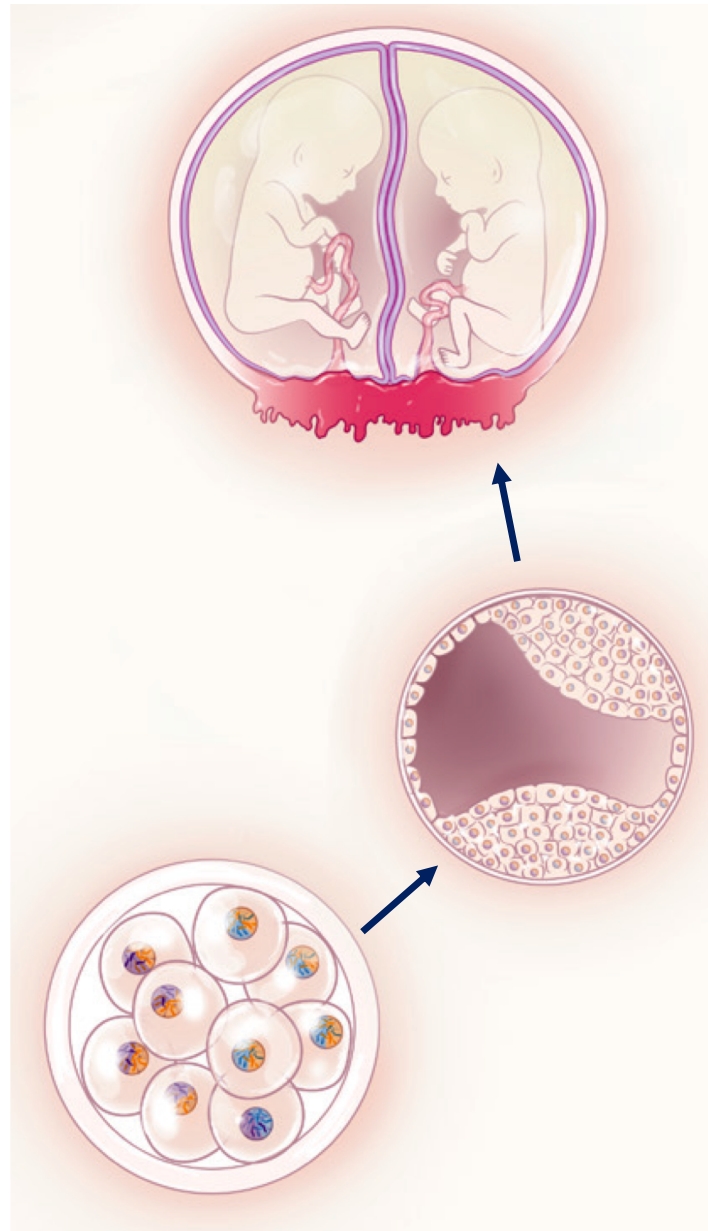


génomme paternel + génomme paternel
(pas de contribution maternelle!)

→ éliminé



Jumeaux sesquizygotiques



ChatGPT does not get it !



Semi-identical twins, also known as sesquizygotic twins, occur when a single fertilized egg splits in two and forms two embryos. These embryos develop into twins who share the same genetic material, but not necessarily the same chromosomes. Normally, when a fertilized egg splits, it forms identical twins, who share the same chromosomes. But in the case of semi-identical twins, the egg splits later than usual and some of the chromosomes are already separated. This means that the twins will have different sets of chromosomes, making them not identical. Semi-identical twins are a rare occurrence, and it's estimated that they happen in 1 out of every 100 million births. They are usually diagnosed at a later stage, as they may not present any obvious physical differences. It's important to note that the term "semi-identical" is not an official medical term, and it's still under debate among scientists. Some researchers prefer to use the term "biparental" twins, as they have genetic material from both parents.

Prévention de la dispermie

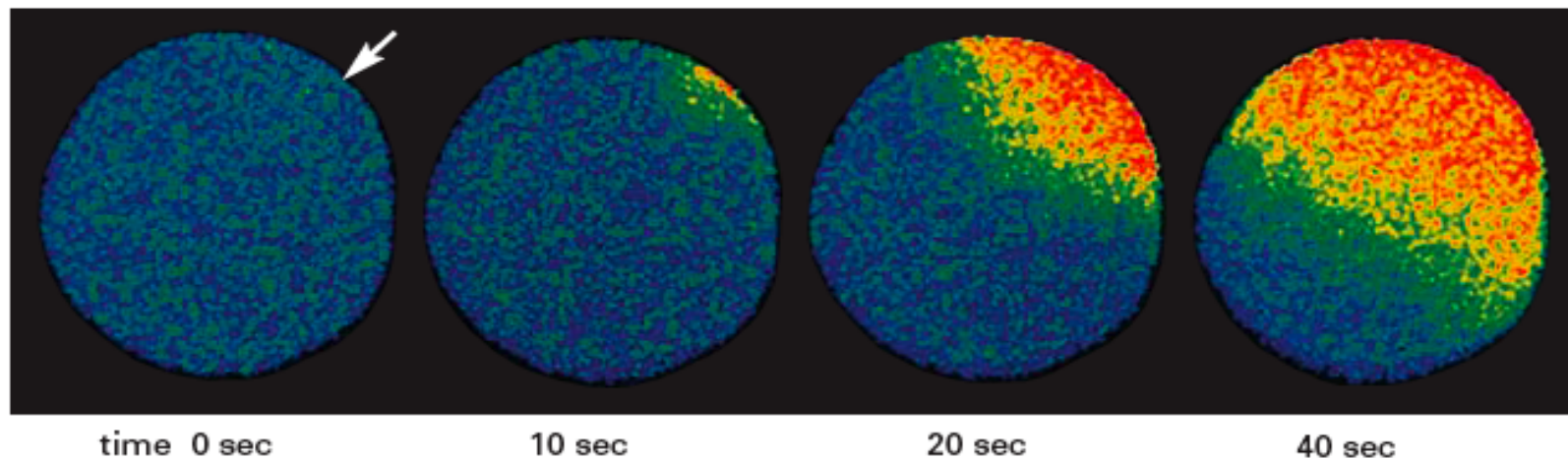
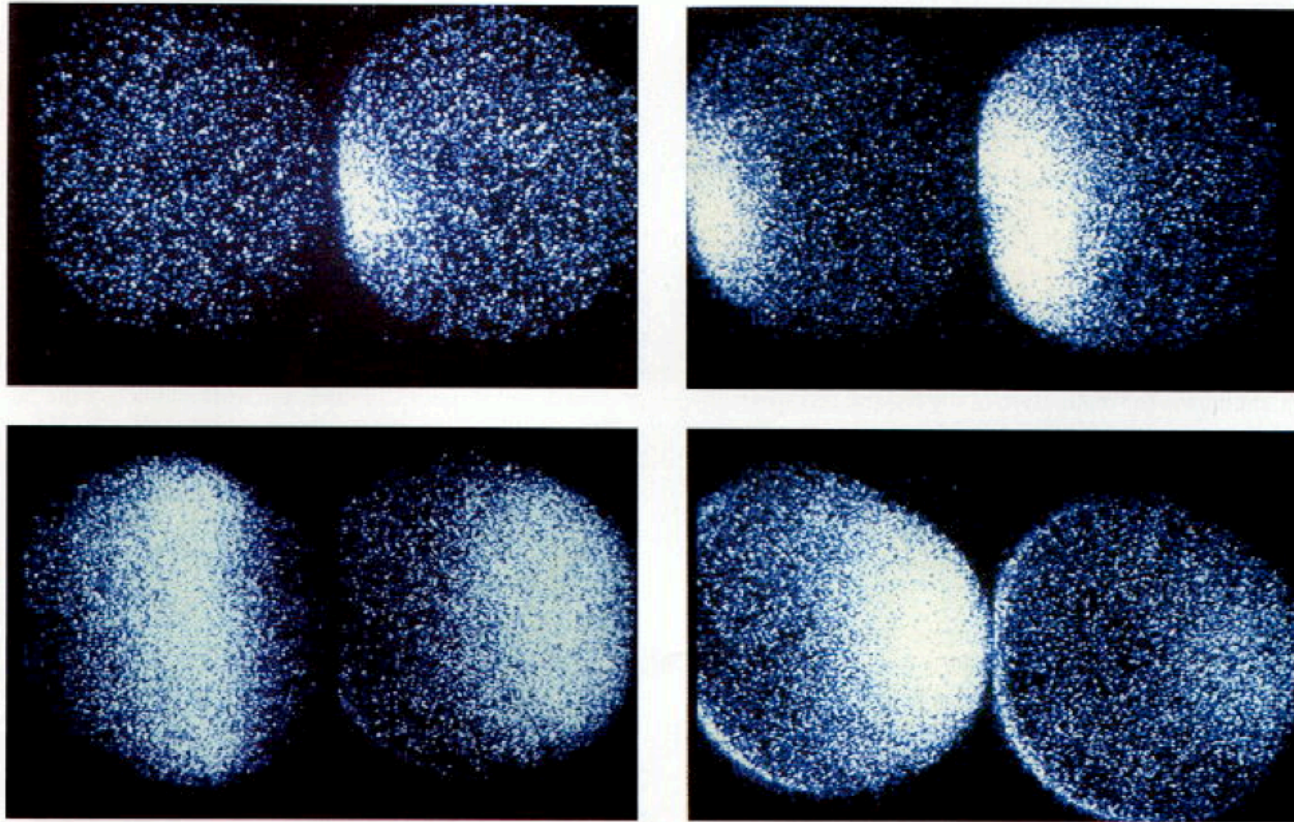


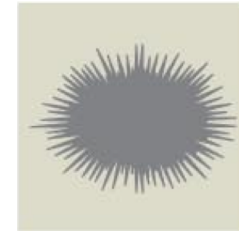
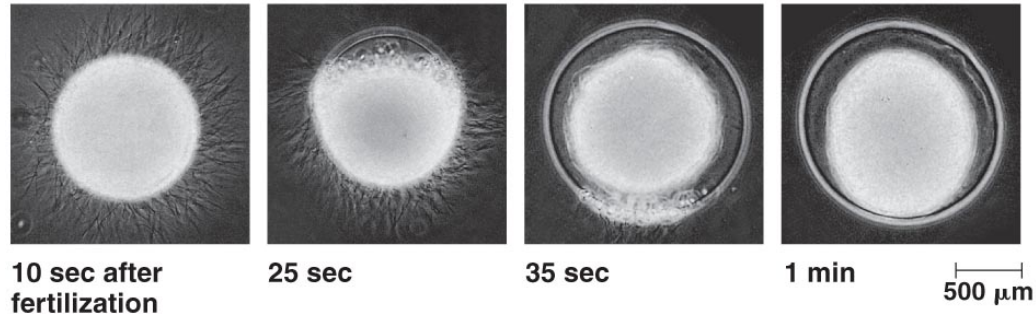
Figure 16–26 Fertilization of an egg by a sperm triggers an increase in cytosolic Ca^{2+} in the egg. This starfish egg was injected with a Ca^{2+} -sensitive fluorescent dye before it was fertilized.

Vague de calcium traversant l'ovocyte de l'oursin durant la fertilisation

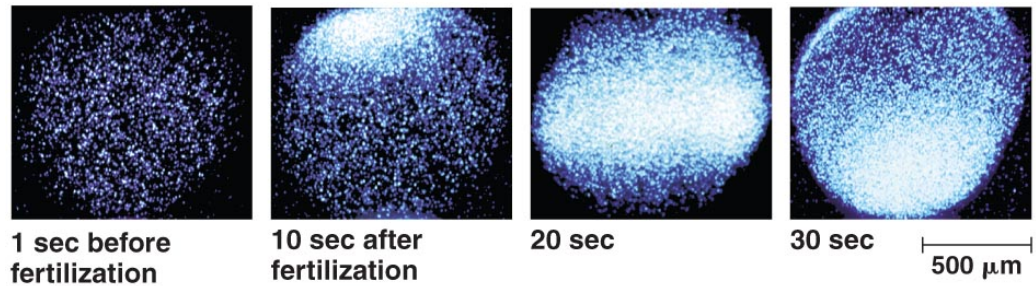


La vague prend environ **30 secondes** pour traverser l'ovocyte.

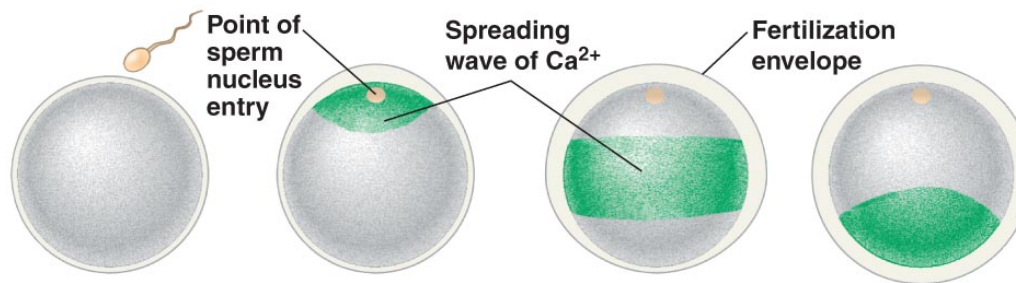
EXPERIMENT



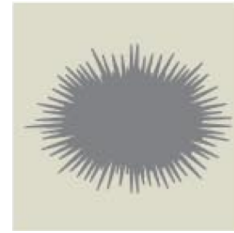
RESULTS



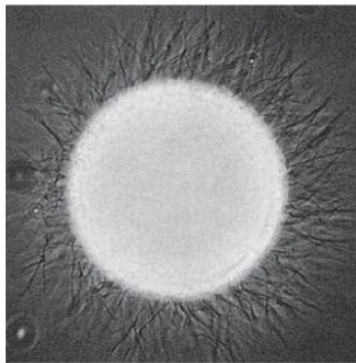
CONCLUSION



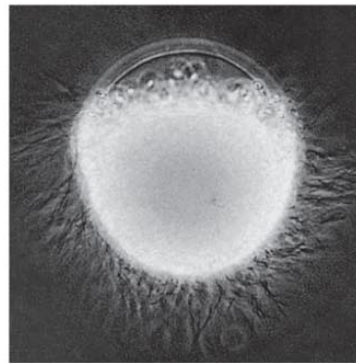
Fécondation chez l'oursin :



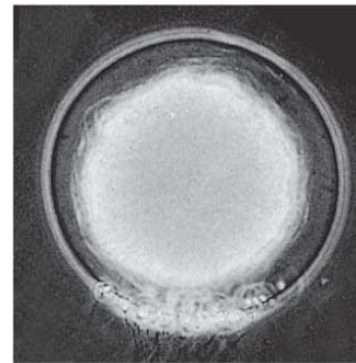
EXPERIMENT



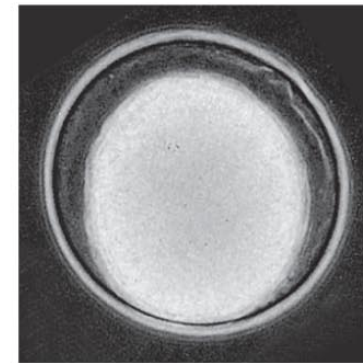
**10 sec after
fertilization**



25 sec



35 sec

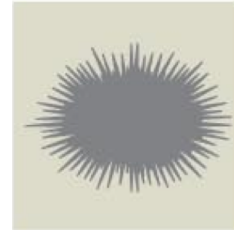


1 min

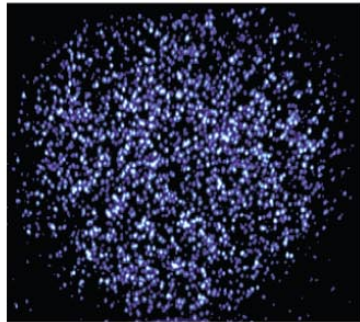
500 μm

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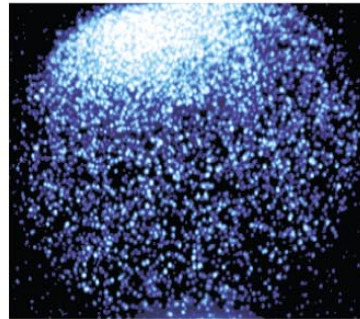
Fécondation chez l'oursin :



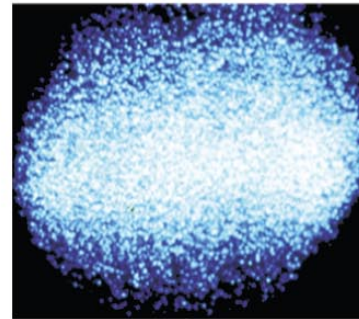
RESULTS



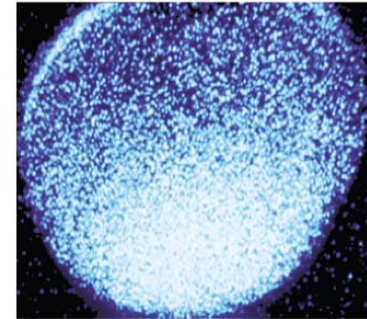
**1 sec before
fertilization**



**10 sec after
fertilization**



20 sec

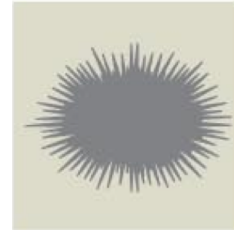


30 sec

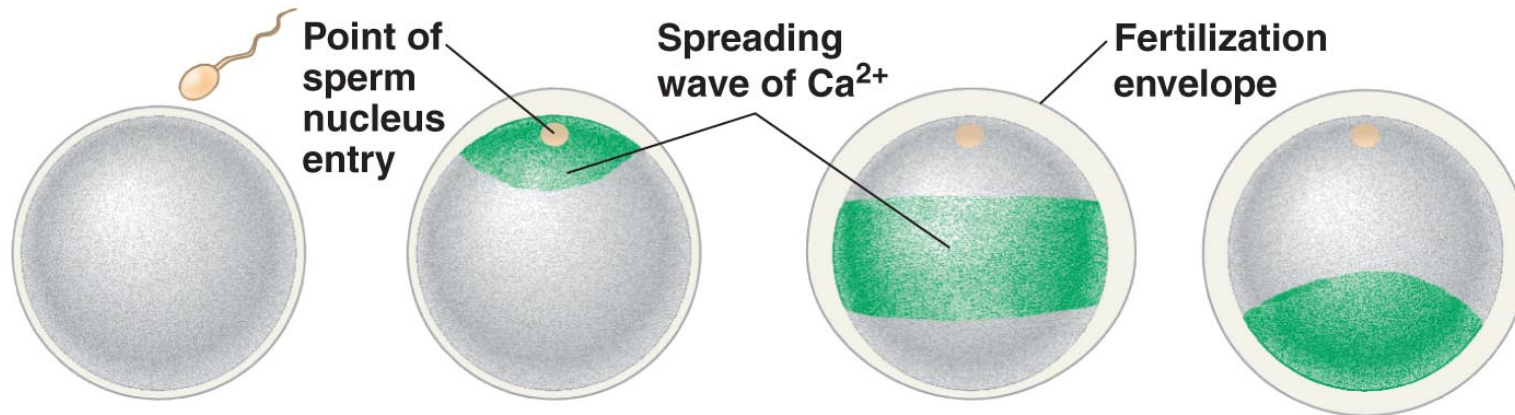
500 μm

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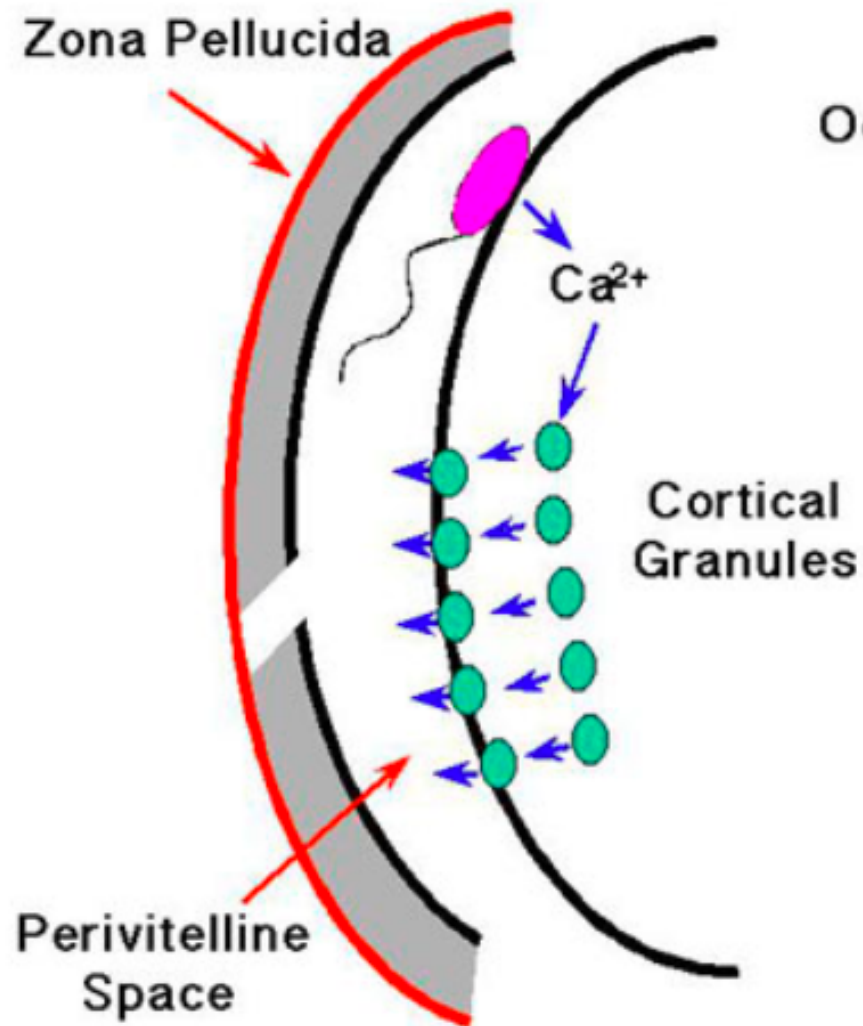
Fécondation chez l'oursin :



CONCLUSION



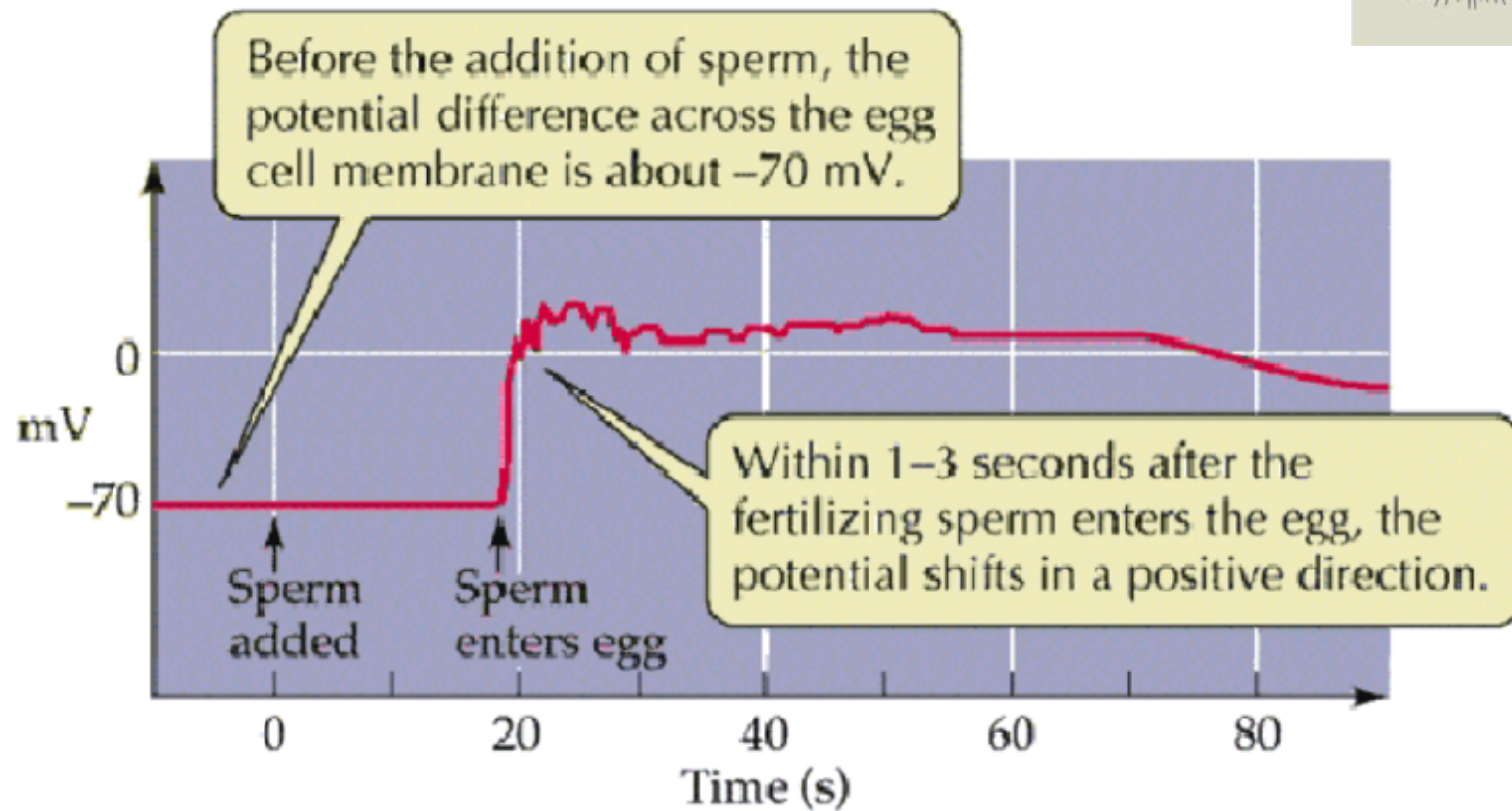
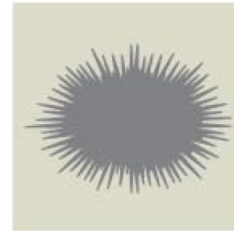
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Mécanismes pour éviter la polyspermie.

Block to Polyspermy

Fast block to polyspermy



from LIFE: The Science of Biology, Purves et al, 1998

Prévention rapide de la polyspermie

