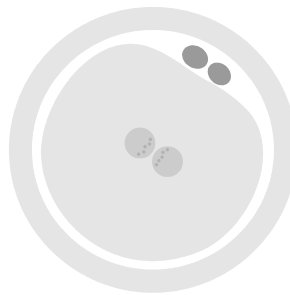


## InfoSheet : EMBRYO DEVELOPMENT

This InfoSheet describes the development of the early human embryo.

### In summary:

Day 0	This is the day of IVF or ICSI
Day 1	The day of "fertilization check"
Days 2–3	Cleavage stages
Day 4	The "morula" stage
Day 5	The "blastocyst" stage



### Day 1

The signs of fertilization (2 polar bodies and two pronuclei) are first visible about 18–21 hours after insemination. The pronuclei are in the centre of the egg. One contains the chromosomes from the egg and the other those from the

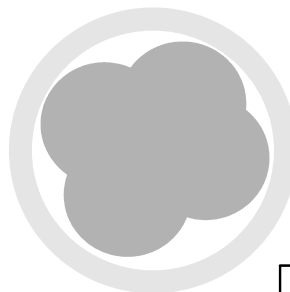
sperm. The alignment of the nucleoli within the pronuclei is thought to indicate the developmental competence. The membranes around the pronuclei break down around 21–23 hours after insemination, and the chromosomes mix for the first time. From a scientific viewpoint, this is the beginning of the potential new individual.



### Day 1–2

From around 26 hours after insemination, the fertilized egg starts to divide. It is thought that the more competent embryos divide earlier than less competent embryos. The same genetic information is in the nucleus of each cell.

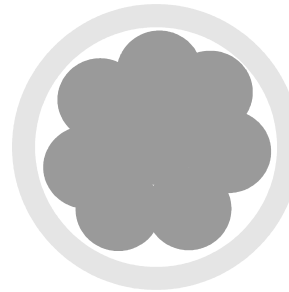
Note that the cells are smaller than the fertilized egg.



### Day 2

The two cells divide to give four cells within 48 hours of insemination. This is the beginning of the "rounding" of the embryo, with the cells forming a tetrahedral

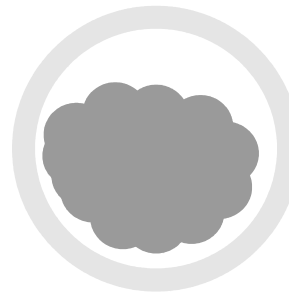
("pyramid") pattern.



### Day 3

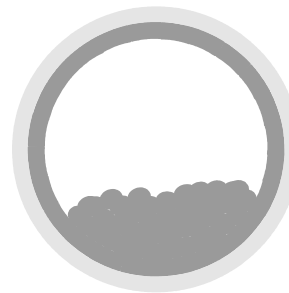
The four cells divide synchronously (all at about the same time) to give an 8-cell embryo by 66 hours after insemination. It is possible to see 5-, 6- or 7-cell embryos at this time, but the most competent embryos are

those which divide synchronously and do not have fragments. Often, embryos which have developed in vitro are transferred or frozen at this stage of development.



### Day 4

The cells have divided again, but now they are attached to each other for the first time. This is the beginning of the development of the "inside" and "outside" of the embryo. This stage is termed the *morula*.



### Day 5

The cells have divided again, but the cell division is no longer synchronous. The embryo is now a ball of cells, and is called a blastocyst. The cells around the outside of the blastocyst are those destined to make the

membranes and placenta, while those grouped together inside the blastocyst are destined to make the fetus. The blastocyst continues to grow, and eventually breaks open the zona pellucida, the shell in which the embryo has developed. The blastocyst can only implant in the uterus after it escapes from the zona.

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