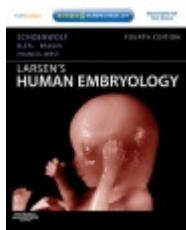
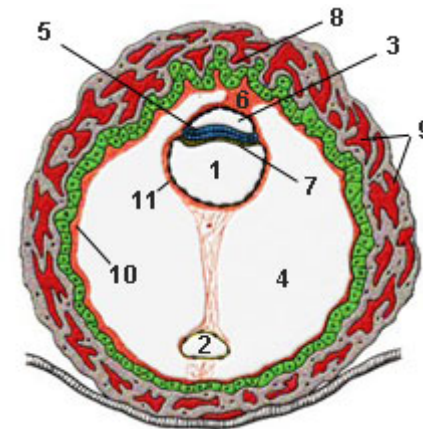
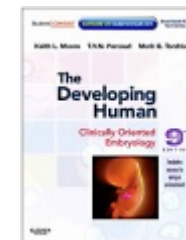


# ANAT2341: Week 1 and 2



Resources ANAT2341:  
<http://php.med.unsw.edu.au/embryology/>  
Larsen's Human Embryology  
The Developing Human: Clinically Oriented Embryology



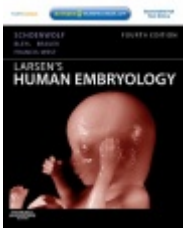
Dr Annemiek Beverdam – School of Medical Sciences, UNSW  
Wallace Wurth Building Room 234 – A.Beverdam@unsw.edu.au

# Fertilization Lecture

Cell division, mitosis and meiosis

Gametogenesis: oogenesis and spermatogenesis

Fertilization

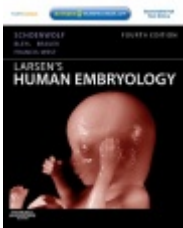
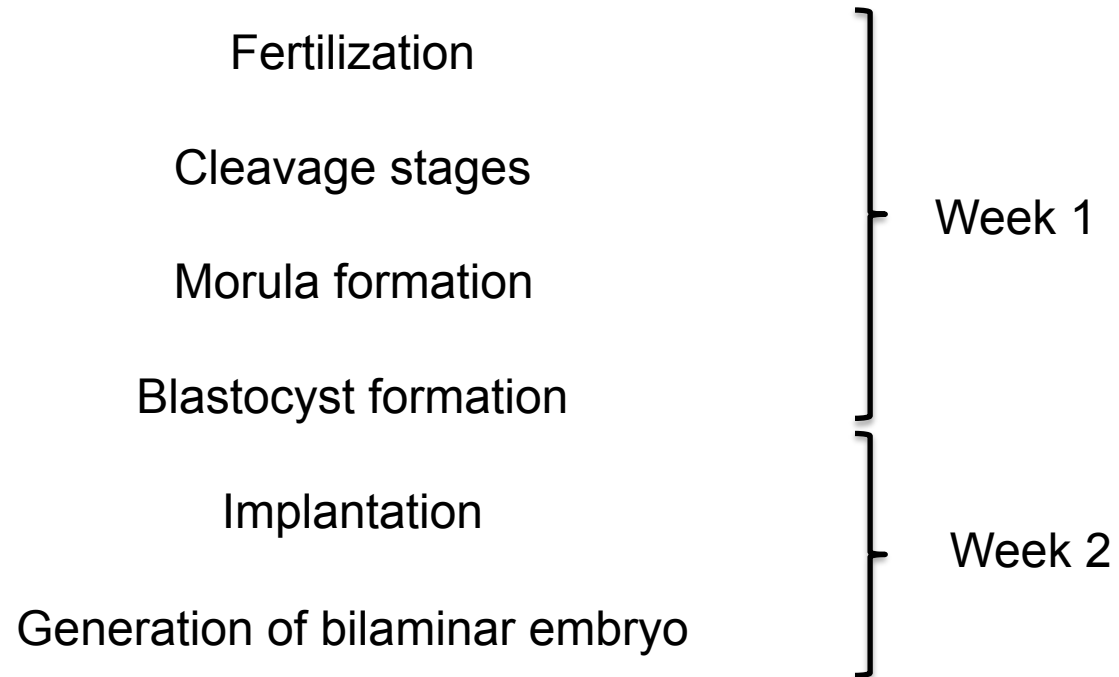


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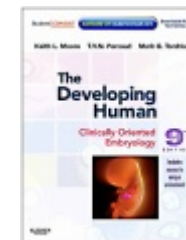


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# Week 1/2 Lecture overview

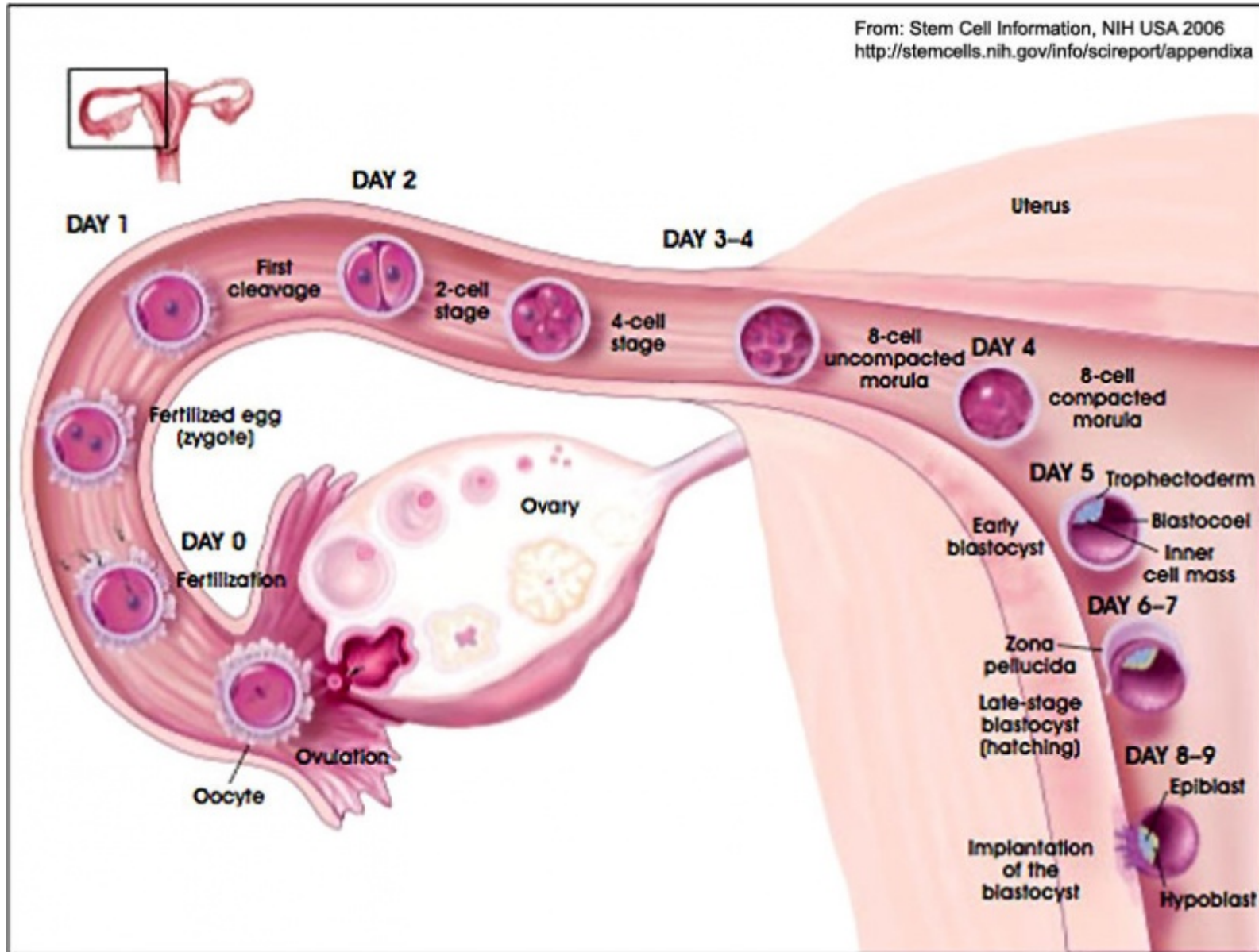


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# Week 1/2



# Fertilization

## Spermatozoa

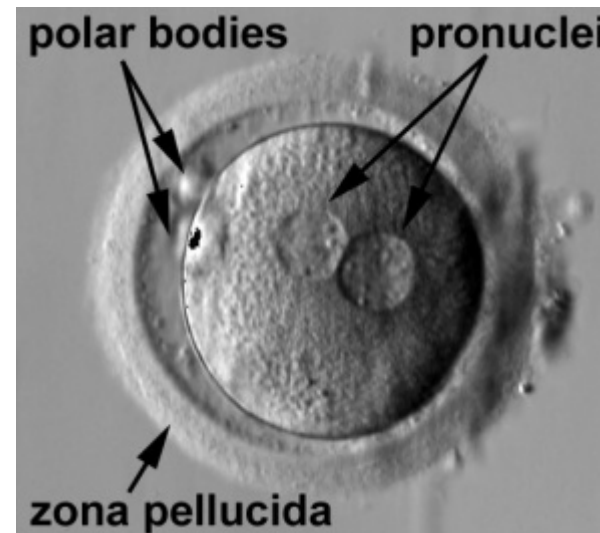
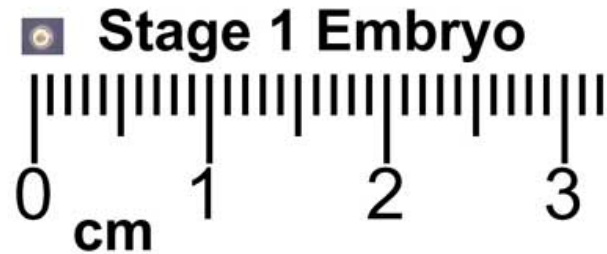
Sperm Binding  
Acrosome Reaction  
Membrane Fusion

## Oocyte

Membrane Depolarization  
Cortical Reaction  
Meiosis II

## Zygote Formation

Diploid cell  
Male and Female pronuclei  
First mitotic division within 24h



# Cleavage stages

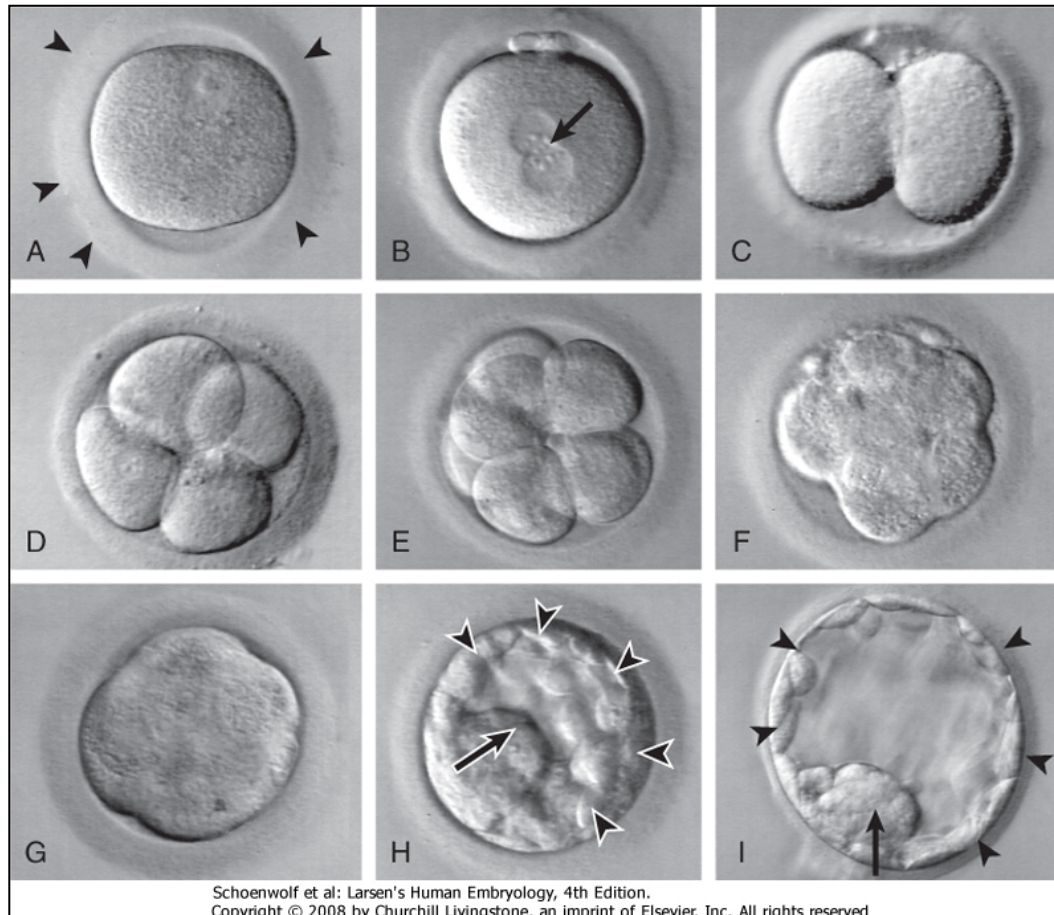
Day 1-3

Blastomeres

No growth (G1/G2) stages

Synchronous/asynchronous cell division

Zona Pellucida



# Cleavage stages

Day 1-3

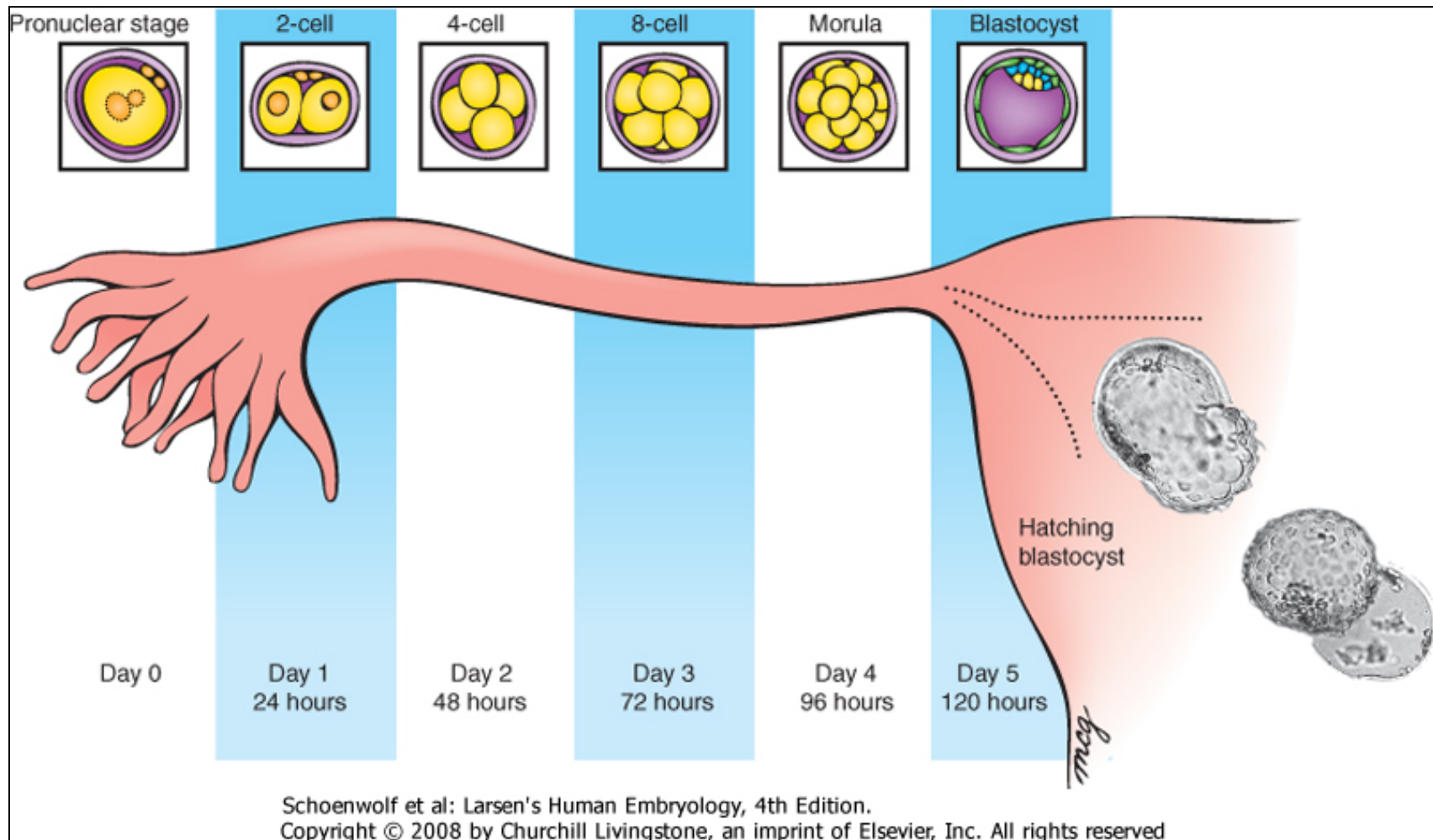
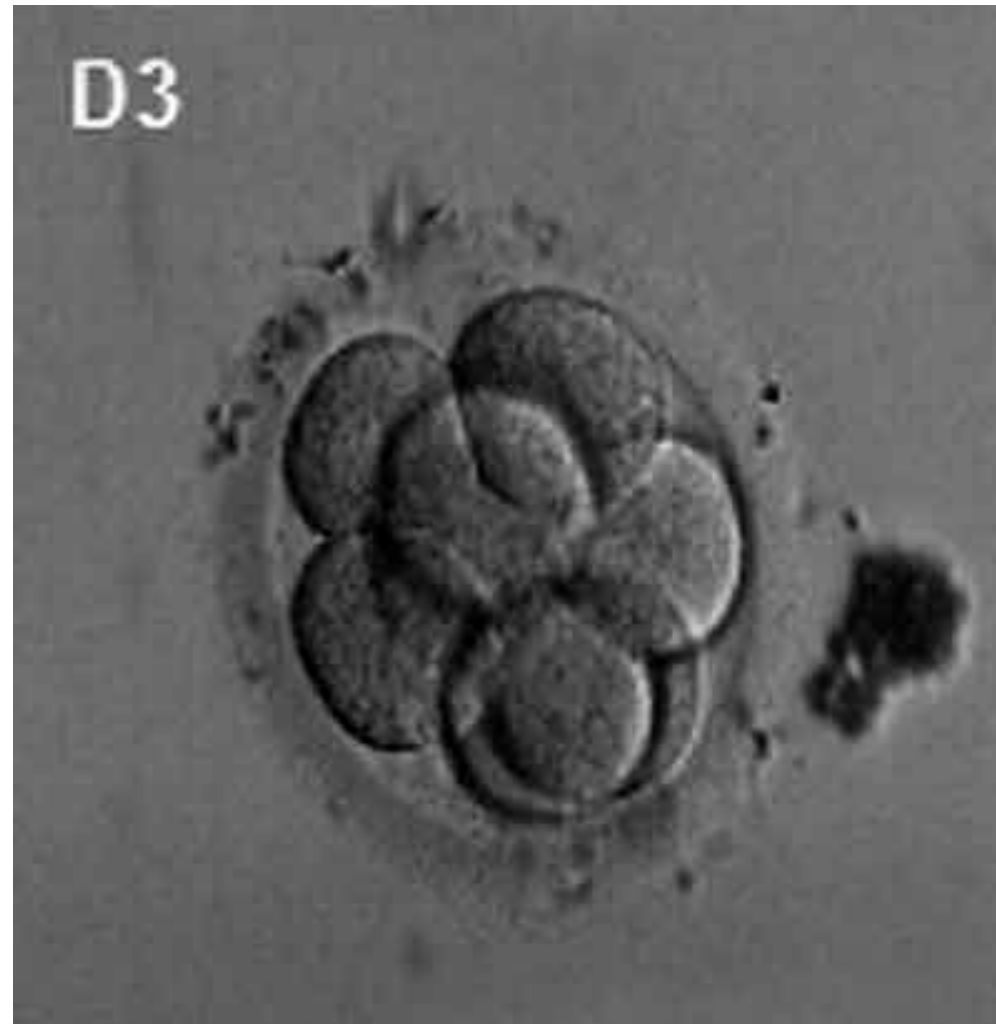


Fig 1-16 Larsen's

# Morula

Day 3

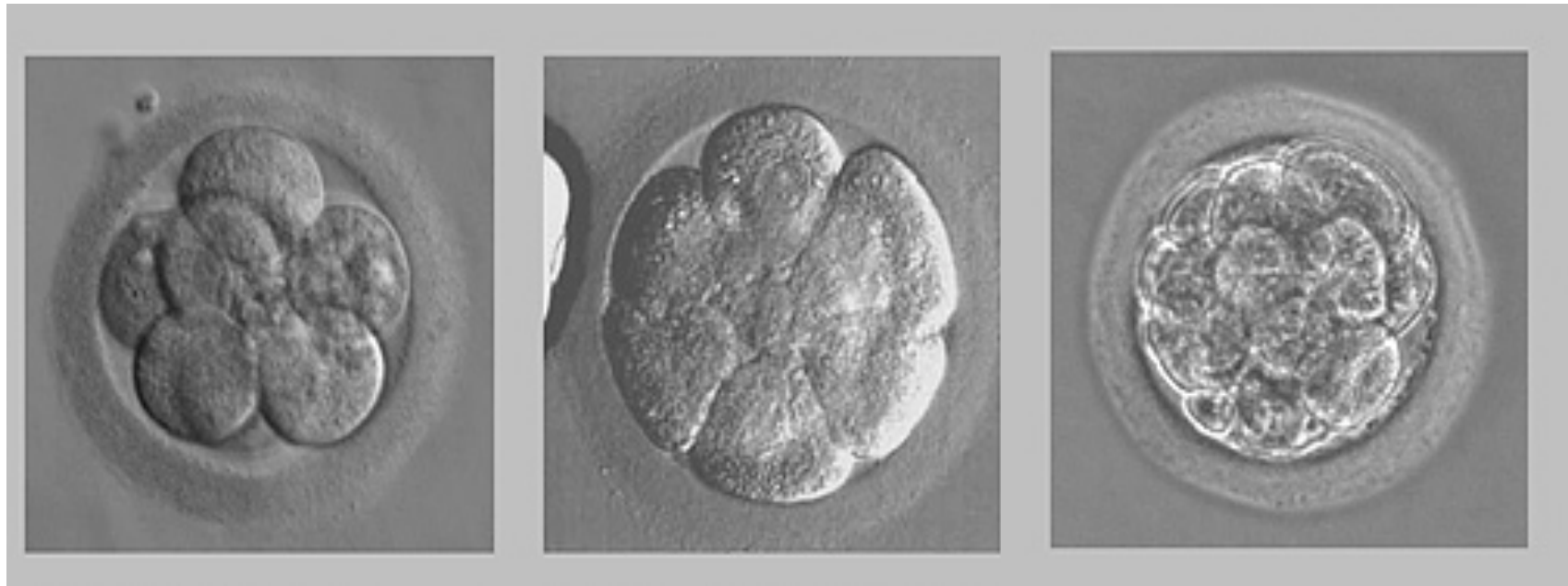




# Compaction

Day 3-4

Maximization of cell-cell contacts  
Generation of inside-outside polarity  
Fluid absorption



# Blastocyst formation and hatching

Blastocoel formation (day 4-5)  
Trophoblast and Inner Cell Mass  
Hatching (day 5-6)  
Ectopic pregnancies  
Multiple roles for zona pellucida



[http://php.med.unsw.edu.au/embryology/images/b/b4/Week1\\_001.mp4](http://php.med.unsw.edu.au/embryology/images/b/b4/Week1_001.mp4)

[http://php.med.unsw.edu.au/embryology/images/a/ae/Human\\_blastocyst\\_day\\_3-6.mp4](http://php.med.unsw.edu.au/embryology/images/a/ae/Human_blastocyst_day_3-6.mp4)

# Week 1 of development

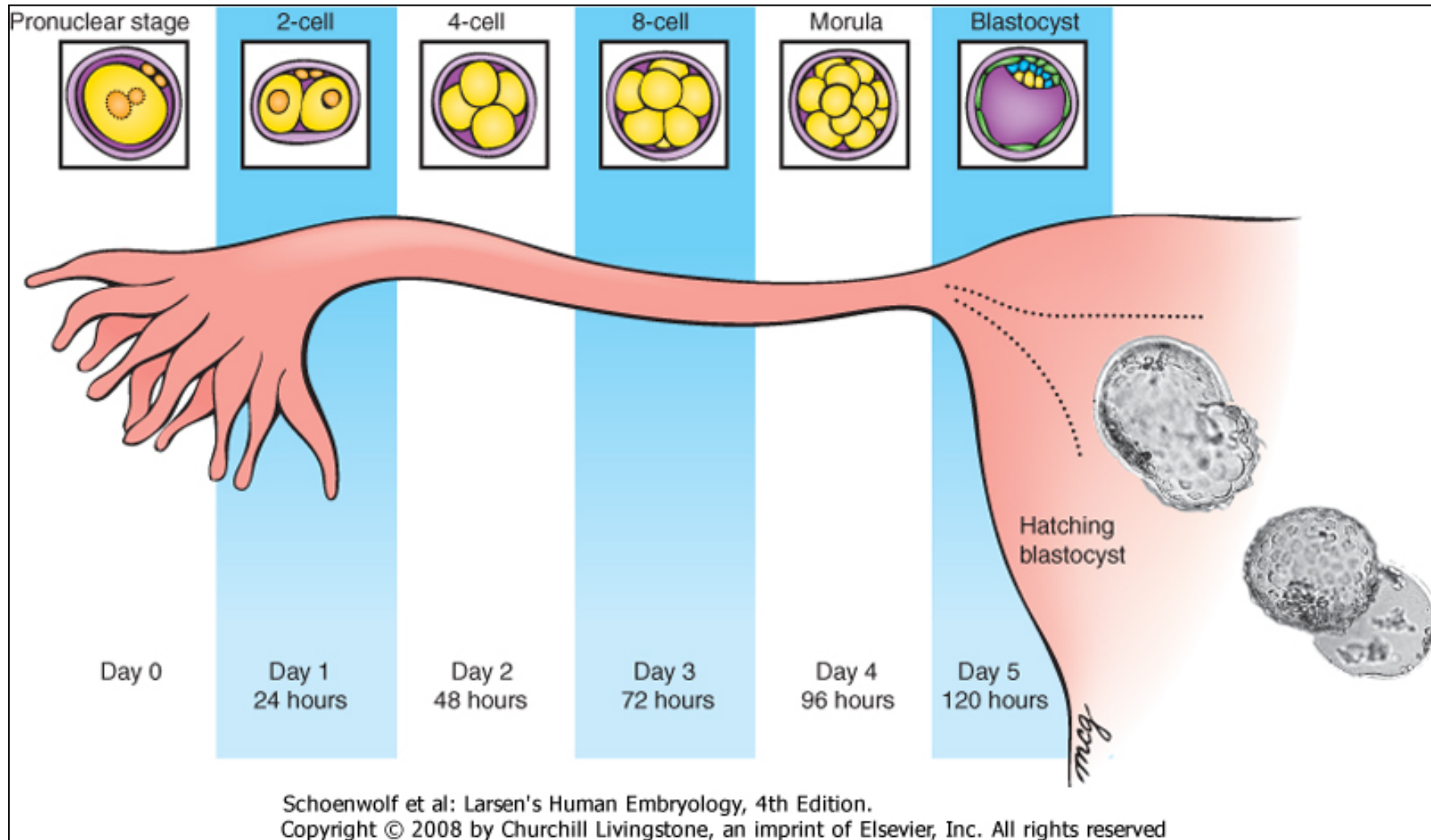


Fig 1-16 Larsen's

# Week 2: Implantation

Trophoblast: syncytiotrophoblast and cytotrophoblast

Inner cell mass: epiblast and hypoblast

Generation of bilaminar embryo

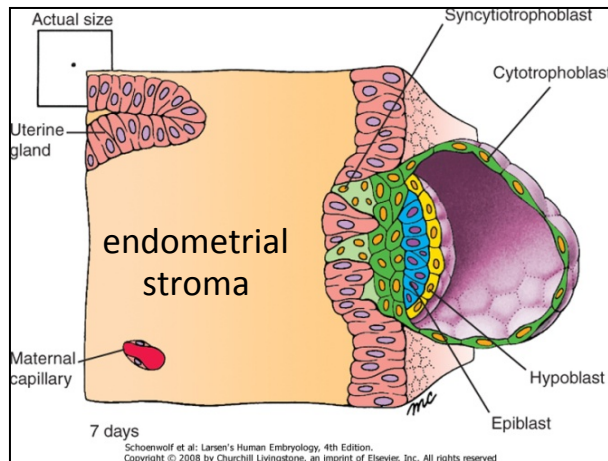
Amniotic cavity

Syncytiotrophoblast produces:

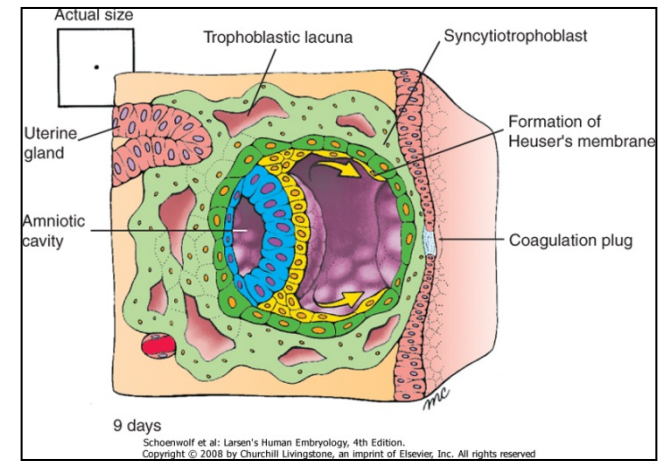
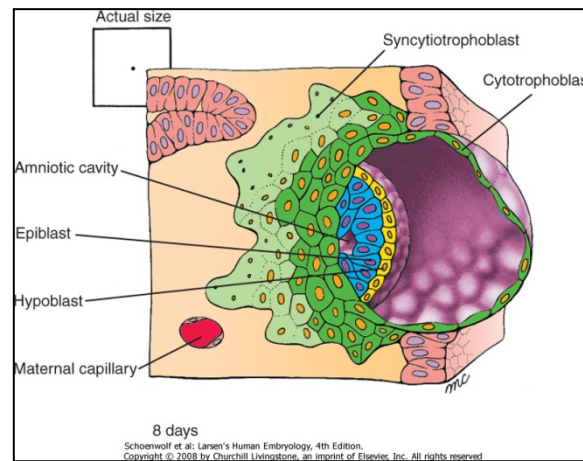
Proteolytic enzymes

Human chorionic gonadotropin hormone

Adplantation



Implantation



# Ovarian Cycle

Human chorionic gonadotropin  
(syncytiotrophoblast)



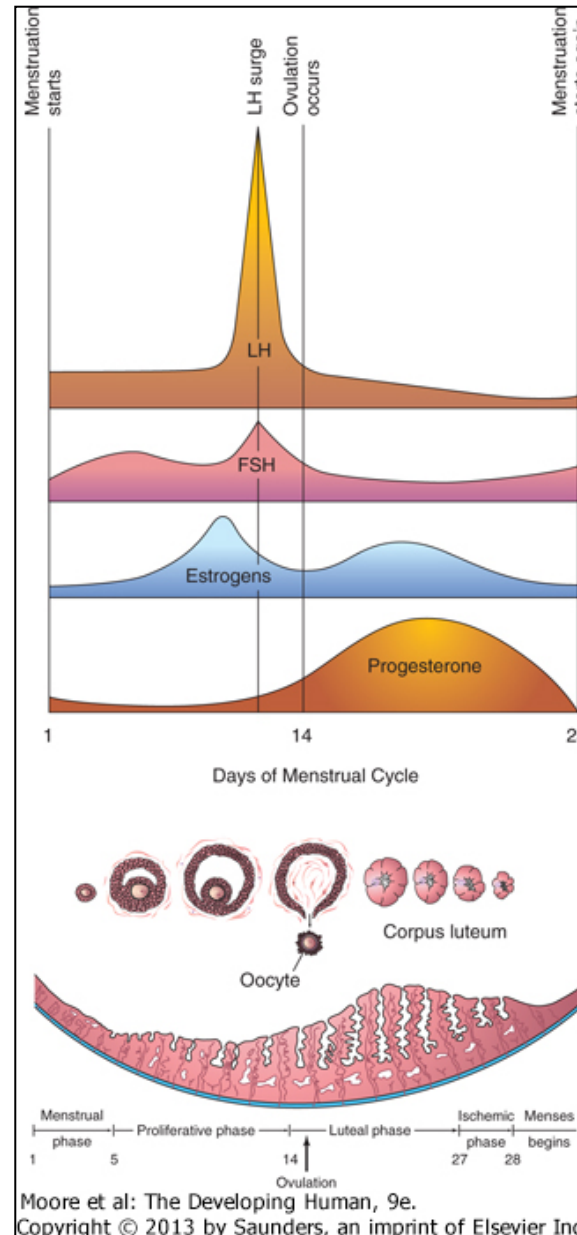
Corpus luteum  
(vs Corpus albicans)



Progesterone



Endometrial growth

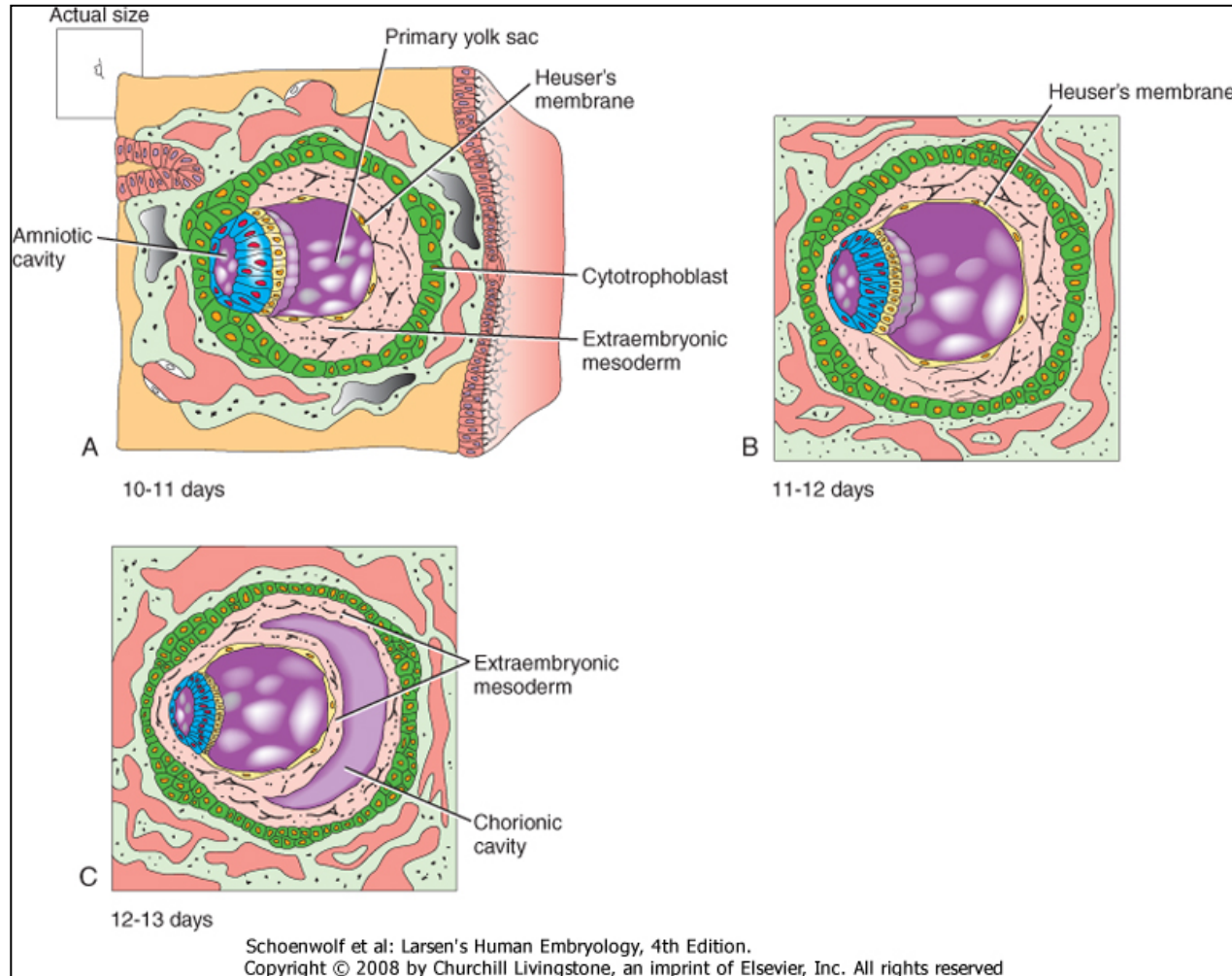


Pituitary hormones

Ovarian hormones

# Bilaminar Embryo

Day 10-13



# Bilaminar Embryo

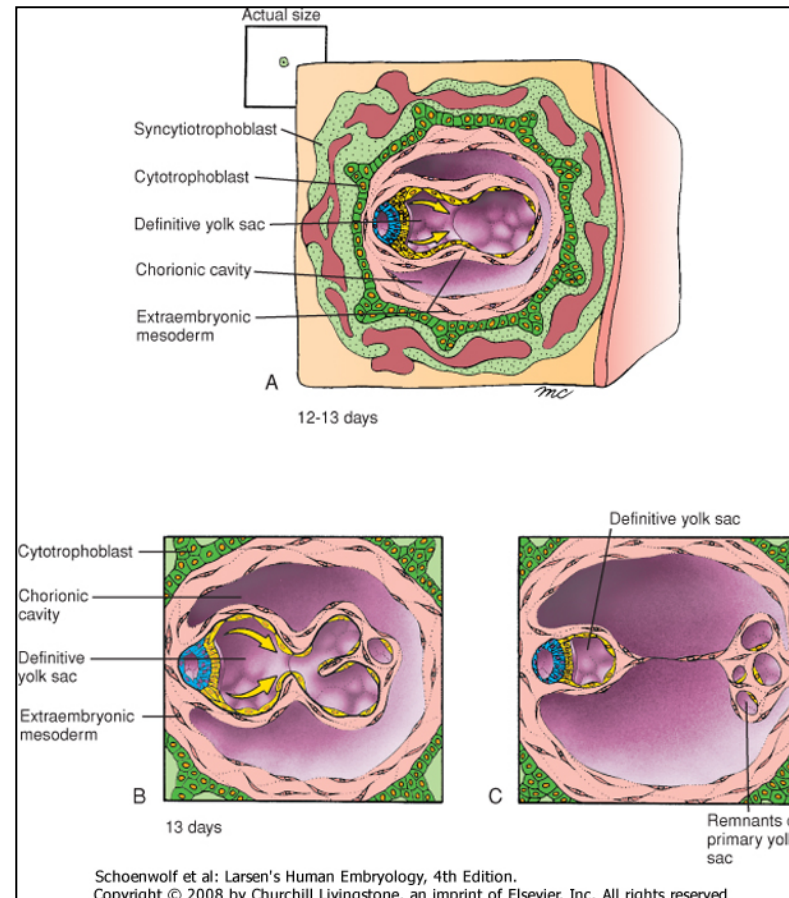
Day 12-13

Extraembryonic mesoderm forms chorionic cavity (embryonic)

Epiblast forms amniotic cavity (embryonic)

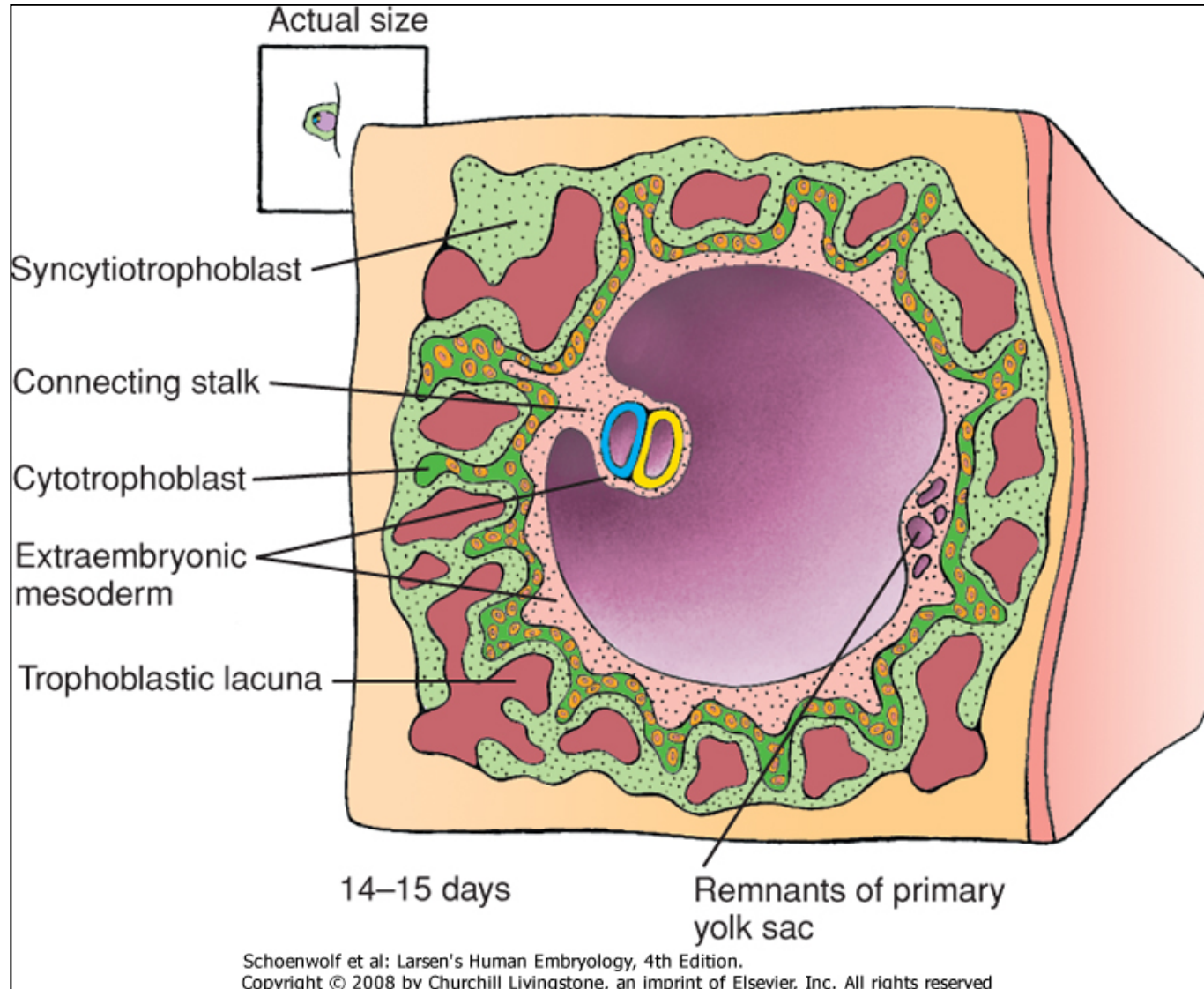
Blastocoel cavity becomes definitive yolk sac (embryonic)

Endometrium forms the decidua (Maternal)



# Bilaminar Embryo

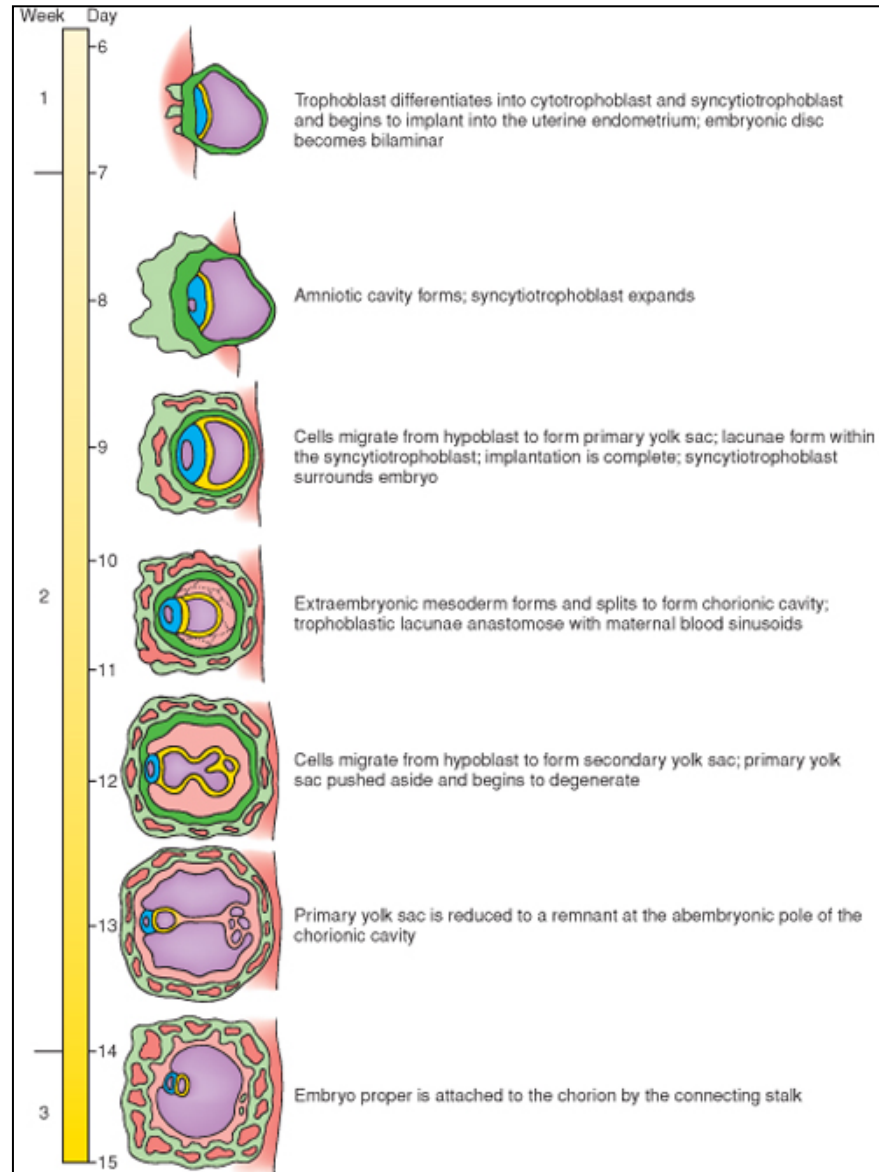
Day 13-14



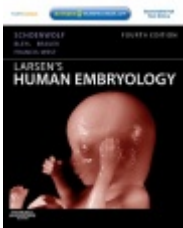
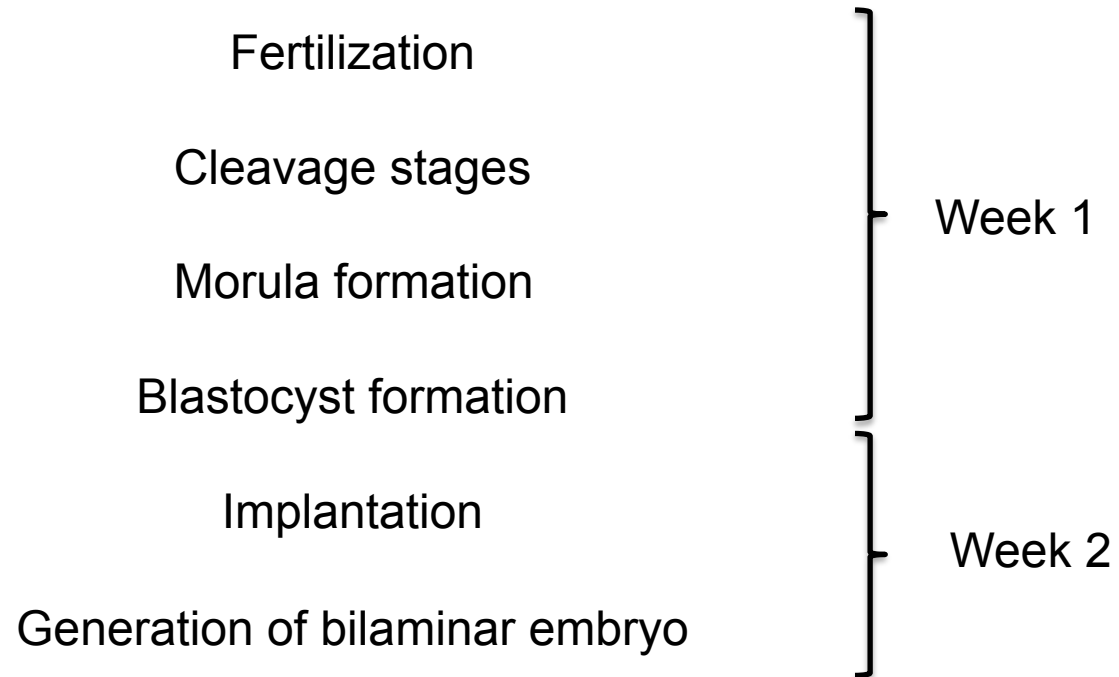


# Implantation

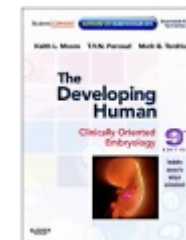
## Week 2



# Week 1/2 Lecture overview



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