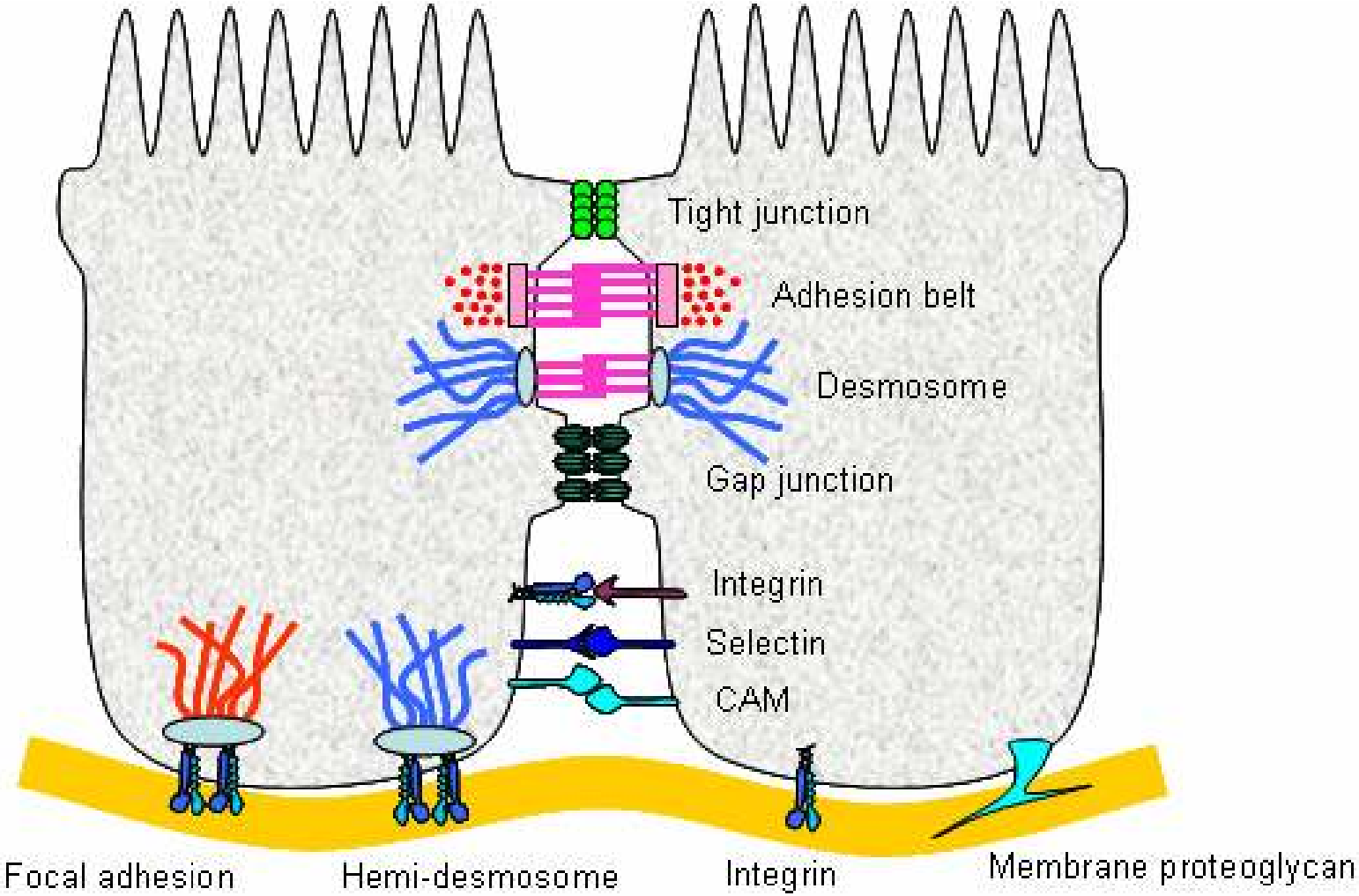
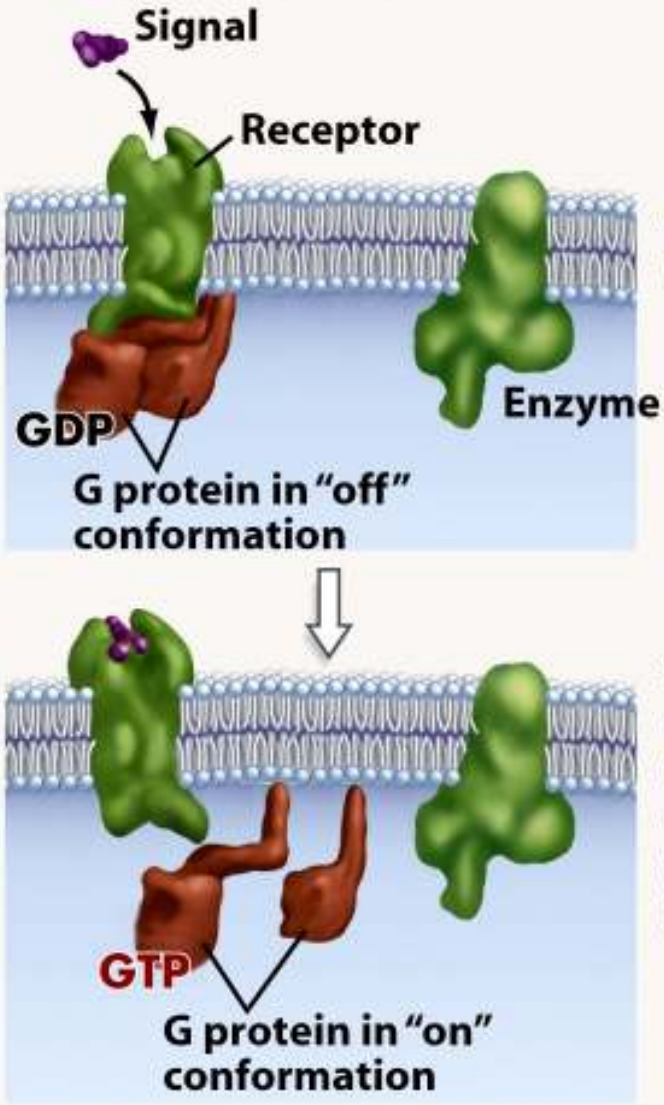
Cell-Cell Structures and Communications


Tight junction
Adhesion belt
Desmosome
Gap junction
Integrin
Selectin
CAM
Focal adhesion
Hemi-desmosome
Integrin
Membrane proteoglycan

G PROTEINS TRIGGER THE PRODUCTION OF SECOND MESSENGERS.



1. Signal arrives and binds to receptor.

2. Signal-receptor complex changes conformation. G protein binds GTP and splits into two parts.

Figure 8-16a part 1 Biological Science, 2/e

Gametogenesis, Fertilization, and Embryogenesis

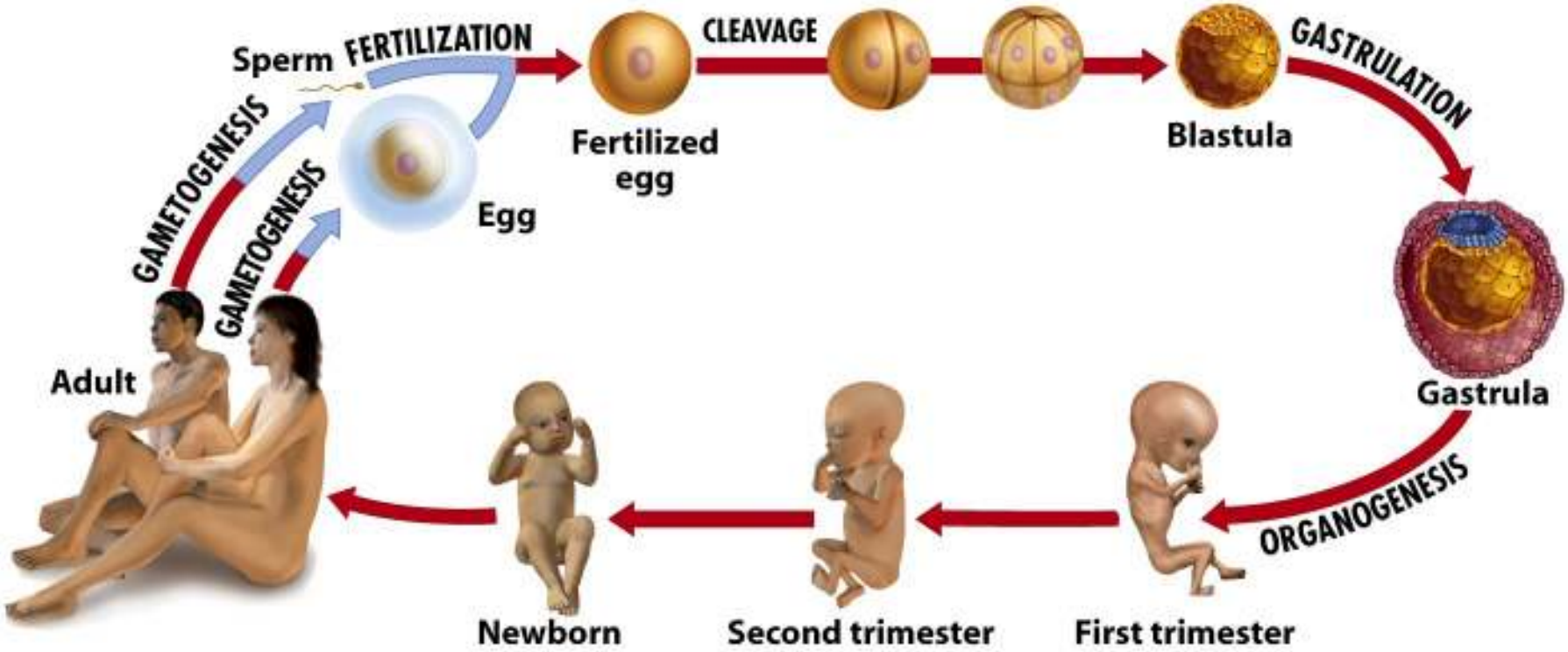


Figure 21-1 Biological Science, 2/e

Animal sperm swim to the egg.

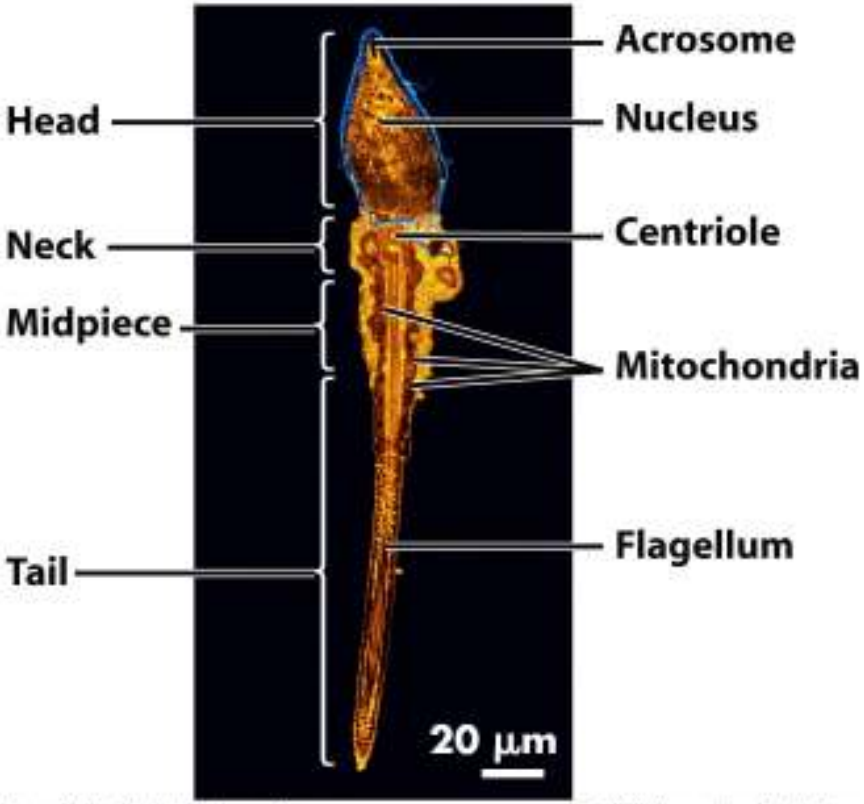


Figure 21-2a Biological Science, 2/e

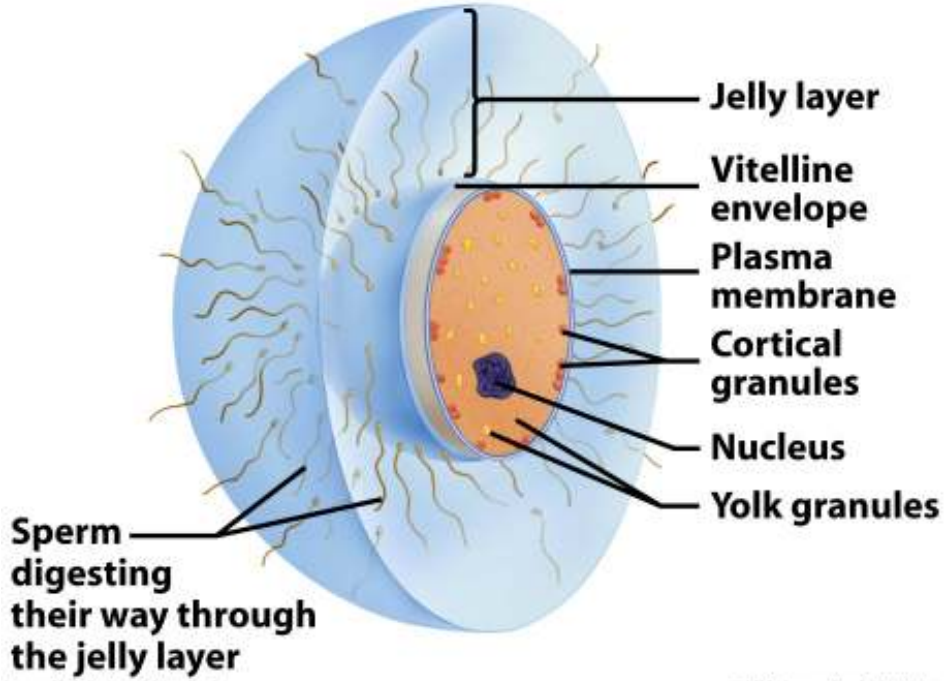


Figure 21-3 Biological Science, 2/e

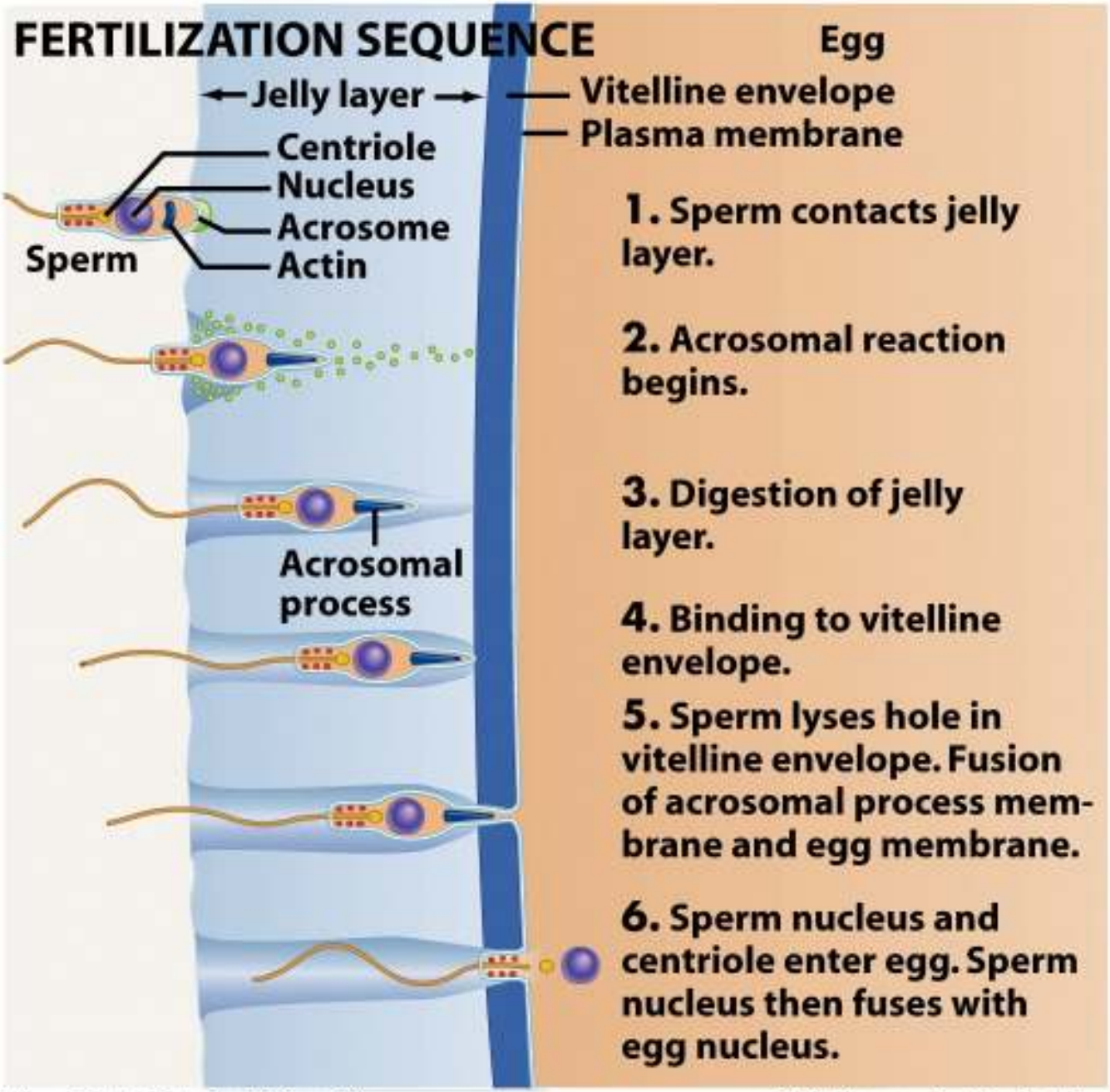


Figure 21-4b Biological Science, 2/e

Prevention of Polyspermy
(entry of more than one sperm)

Sea urchin releasing gametes

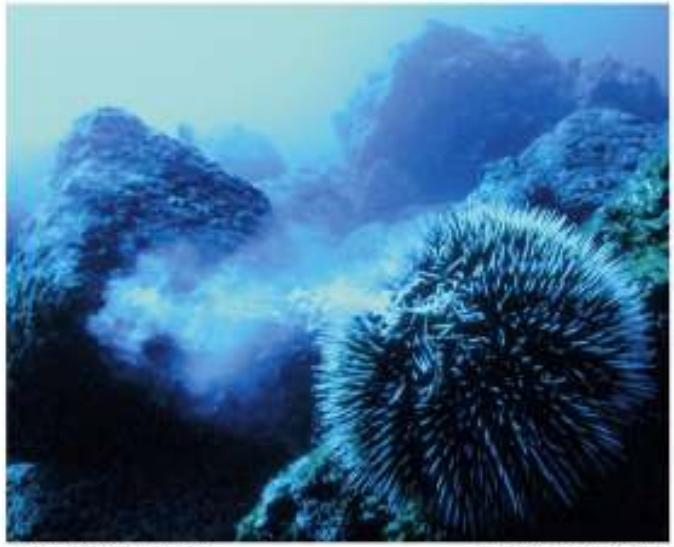


Figure 21-4a Biological Science, 2/e

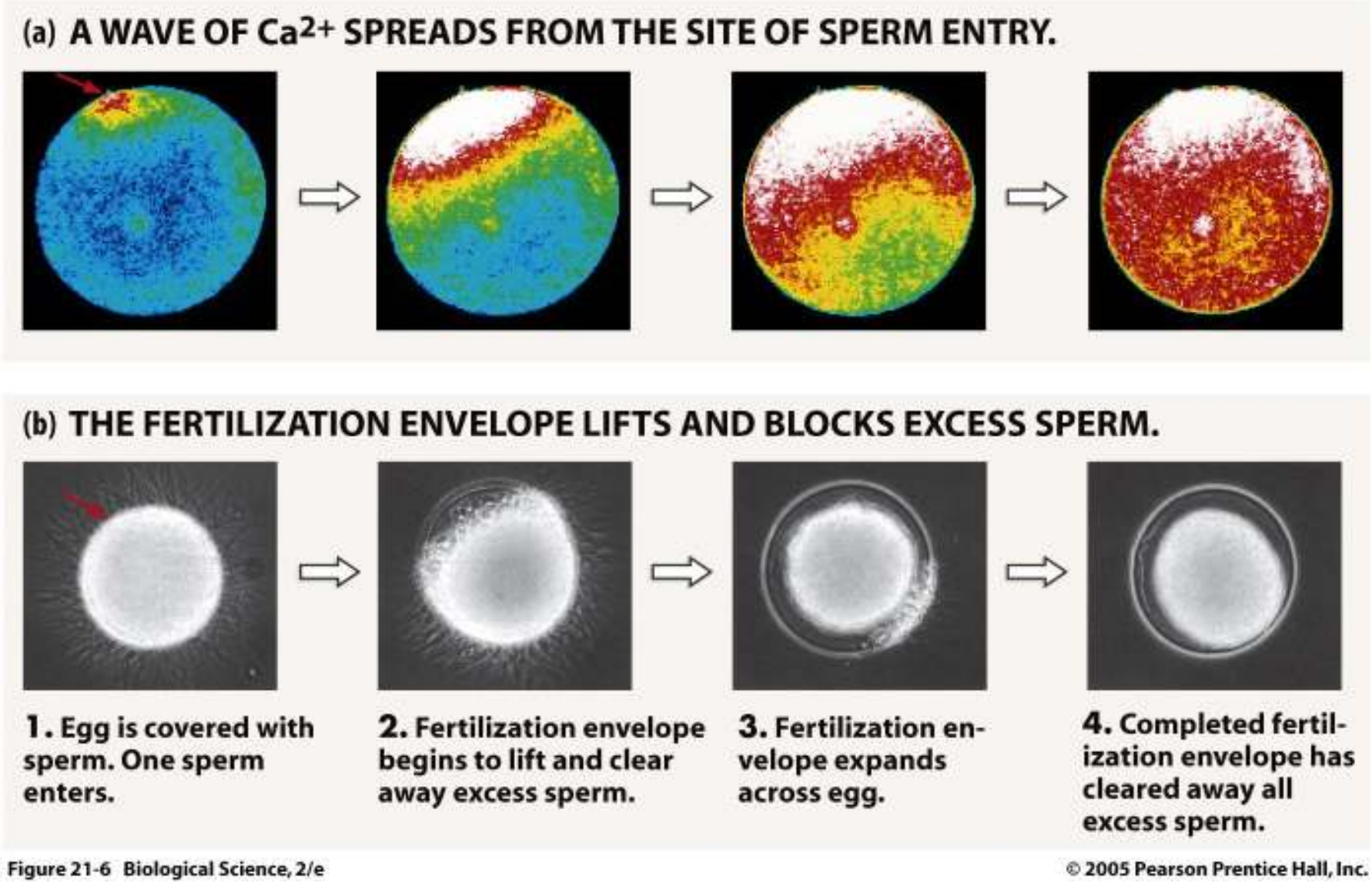


Figure 21-6 Biological Science, 2/e

The Ca wave is caused by a G Protein-mediated signal initiated by the binding of a sperm protein (<u>ligand</u>) to an egg plasma membrane sperm receptor.

Processes occurring during sea urchin fertilization are:

A. Cortical granule rupture.
B. G protein-mediated signals from egg's sperm receptors.
C. Fertilization envelope elevation.
D. Fusion of sperm & egg nuclei.
E. Calcium wave initiated at point of sperm entry.

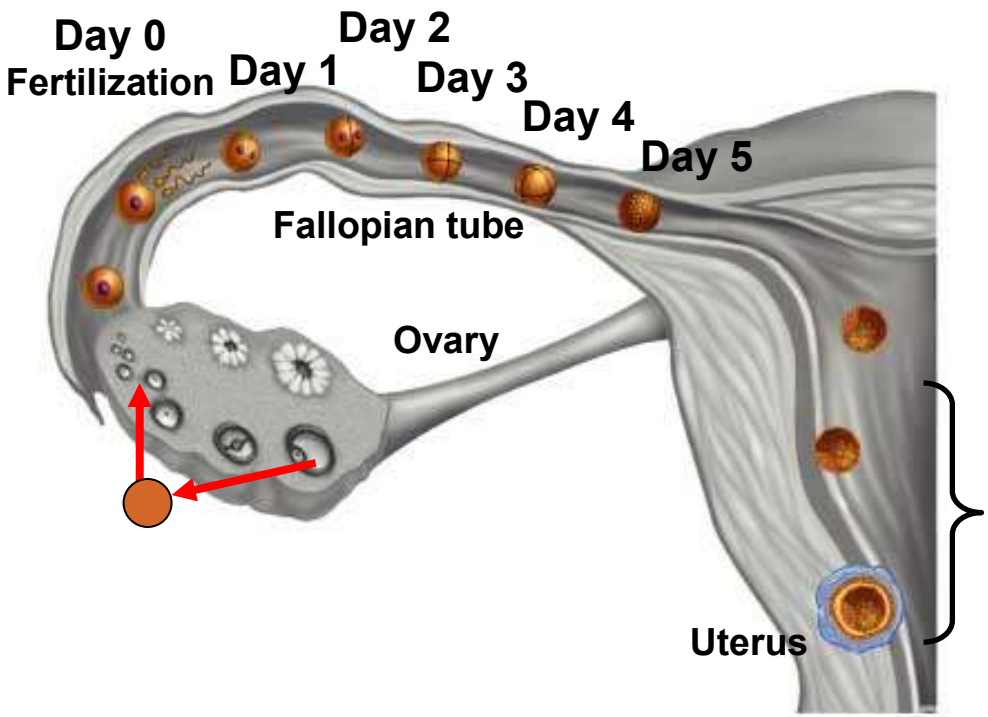
Which list contains the correct temporal order?

1. B --> A --> C --> E --> D
2. D --> B --> E --> A --> C
3. E --> B --> A --> D --> C
4. B --> E --> A --> C --> D

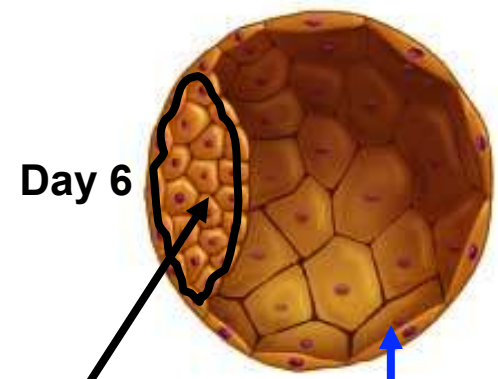
After Fertilization . . . cell cleavage, cell movement and cell fate determination

Early Human & Mammalian Cleavage Stages

Cleavage Stages



Blastocyst



Inner Cell Mass:
These cells form the embryo

outer "trophoblast" cells form the chorion, fetal part of placenta.

Cleavage divides up the egg cytoplasm.

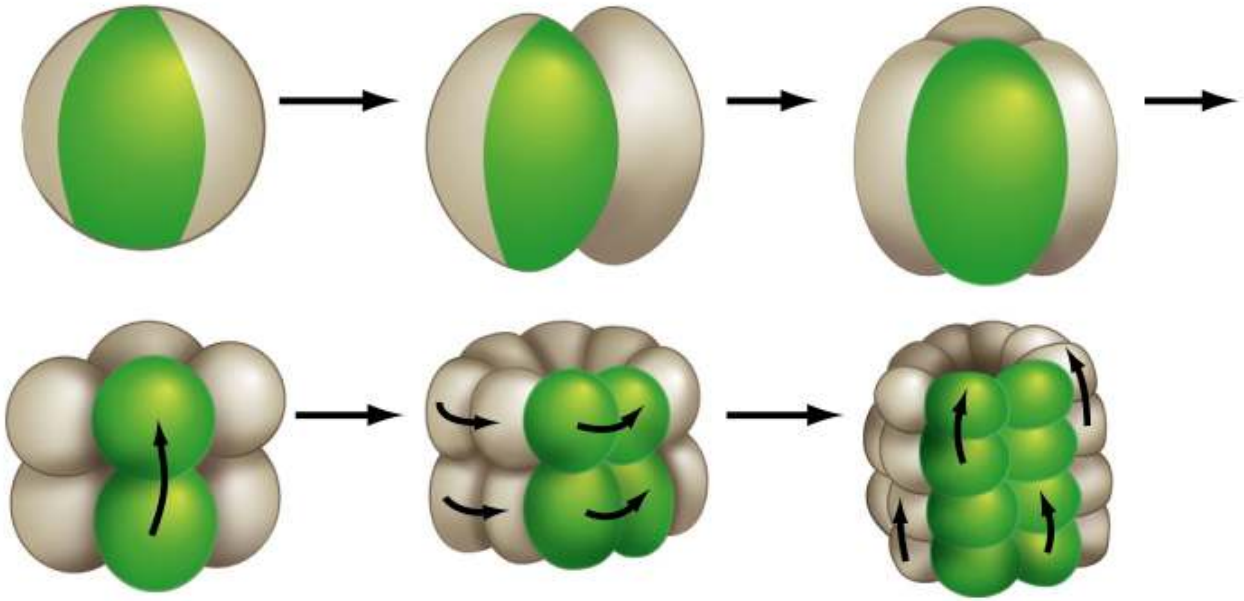


Figure 21-8a Biological Science, 2/e

Late Blastula Stage

Early & Later Gastrula Stages