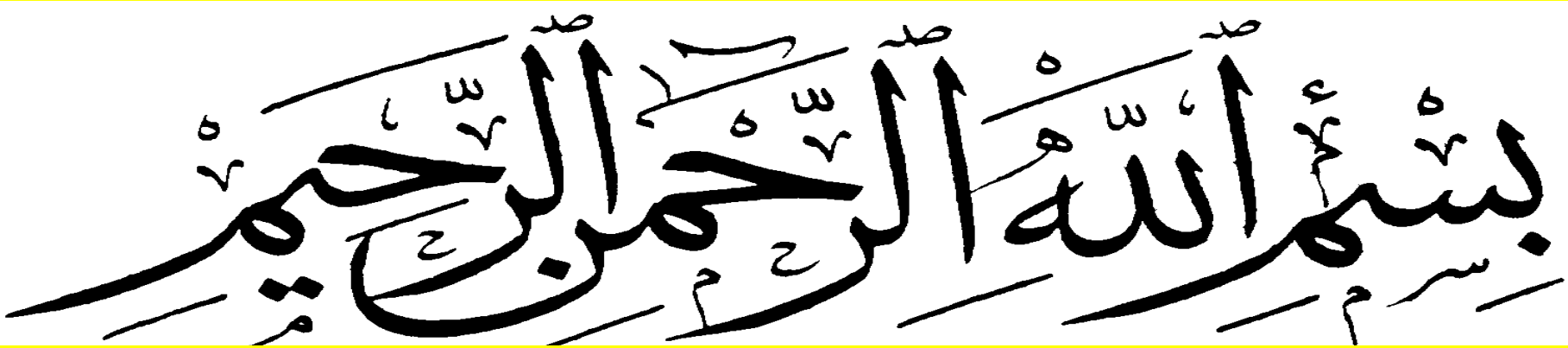

بسم الله الرحمن الرحيم

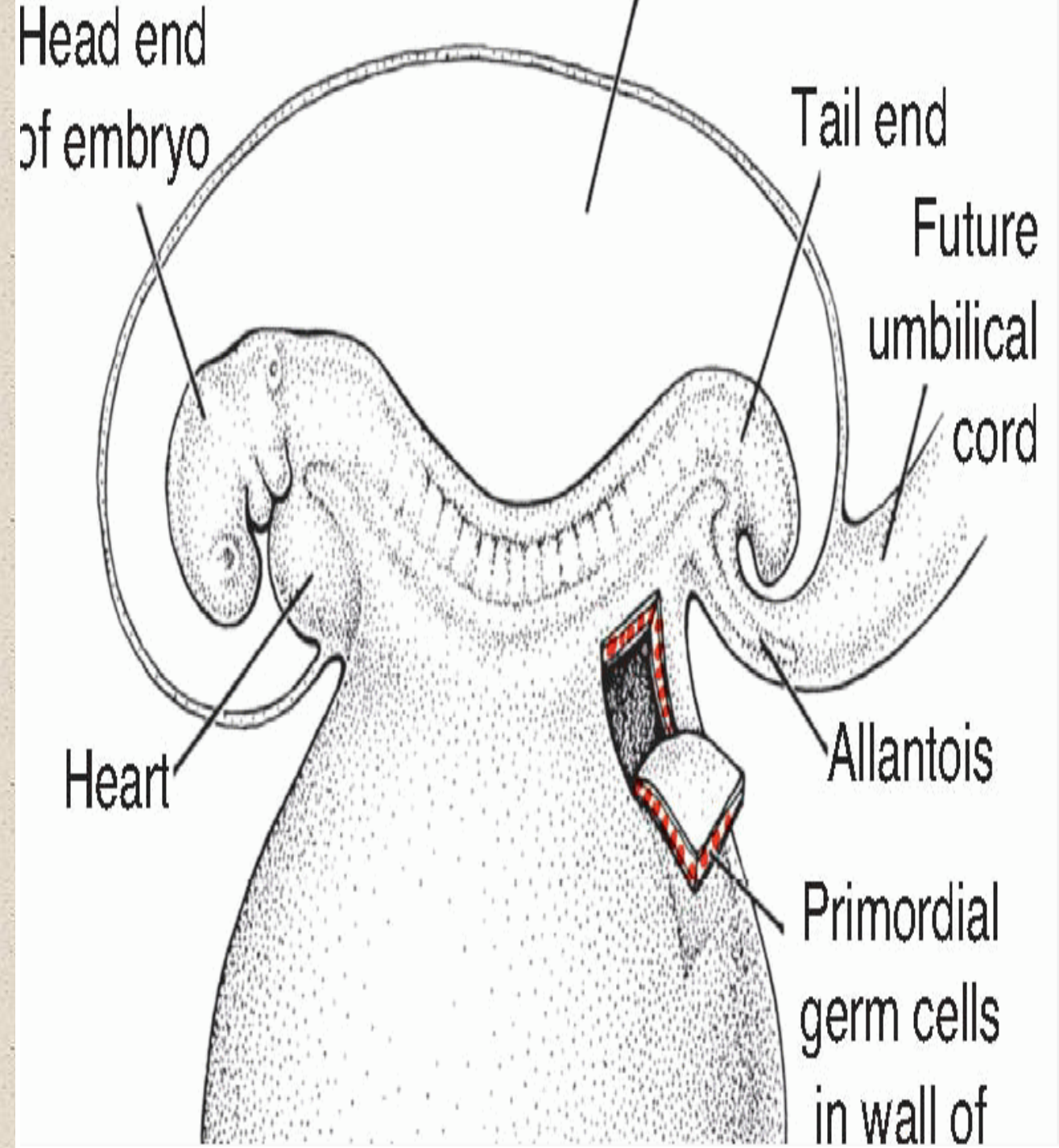
Gametogenesis

Primordial germ cells

Epiblast

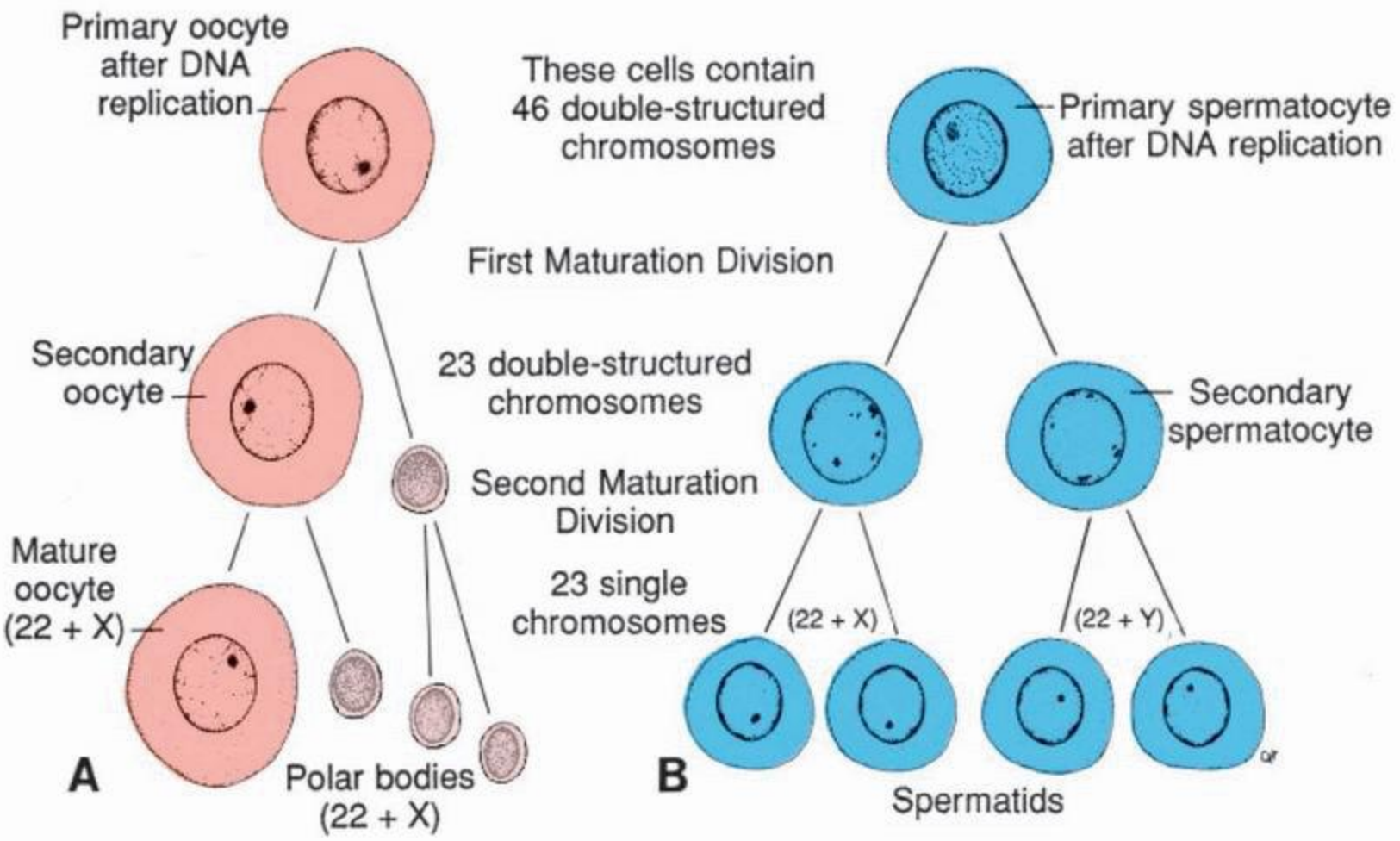
Second week

Yolk sac



1. During meiosis I, homologous chromosomes pair and exchange genetic material;
2. during meiosis II, cells fail to replicate DNA, and each cell is thus provided with a haploid number of chromosomes and half the amount of DNA of a normal somatic cell.
3. Hence, mature male and female gametes have 22 plus X or 22 plus Y chromosomes, respectively.

- Female: 22X &
- Male: 22X or 22Y


Primary oocyte after DNA replication
These cells contain 46 double-structured chromosomes
Primary spermatocyte after DNA replication
First Maturation Division
Secondary oocyte
23 double-structured chromosomes
Secondary spermatocyte
Second Maturation Division
Mature oocyte (22 + X)
23 single chromosomes
(22 + X)
(22 + Y)
A
Polar bodies (22 + X)
B
Spermatids

- **Birth Defects and Spontaneous Abortions:**

  Chromosomal and Genetic Factors

- **Meiosis provide genetic variability**

  – crossover, which redistributes genetic material
  – random distribution of homologous chromosomes to the daughter cells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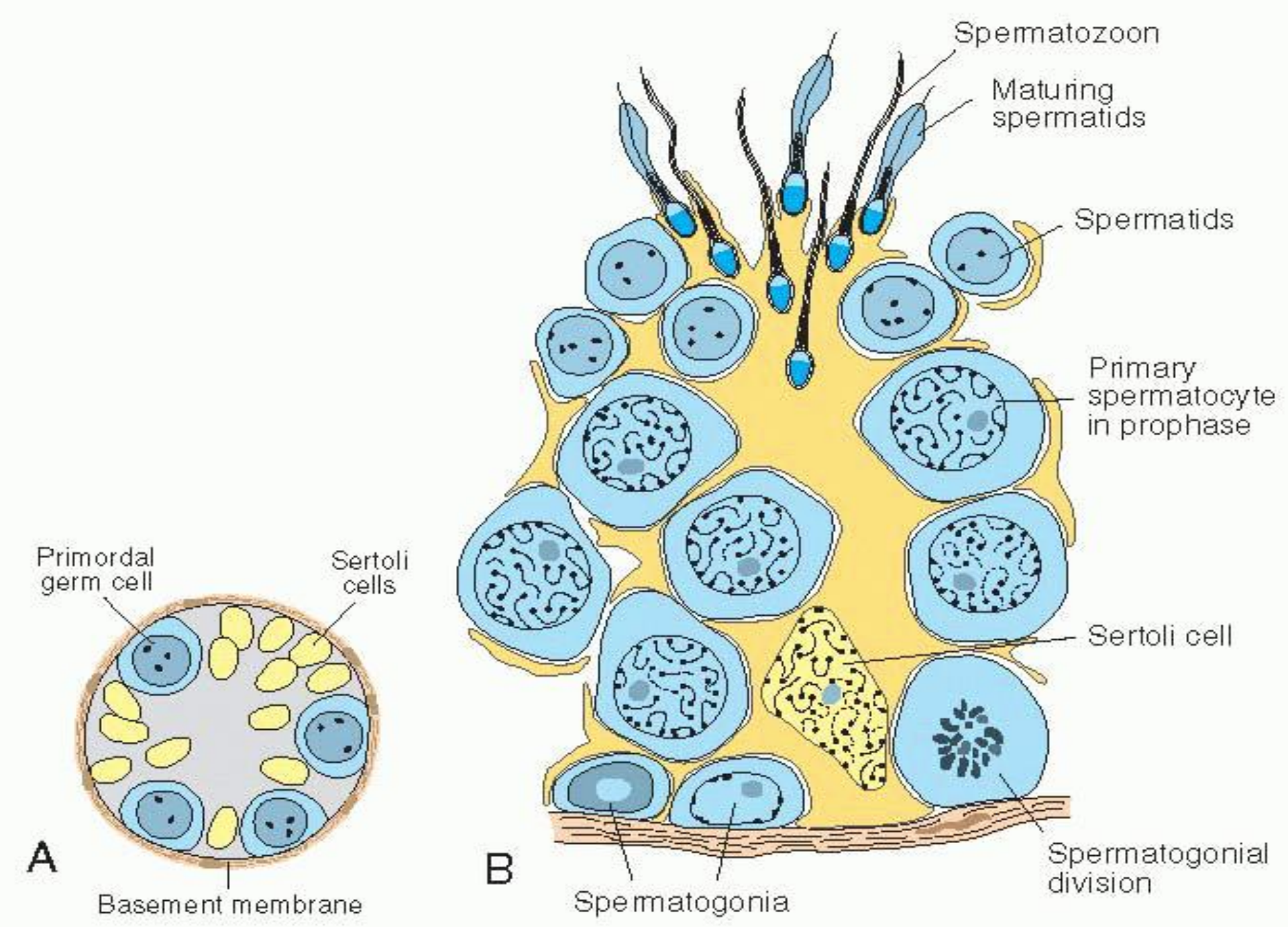
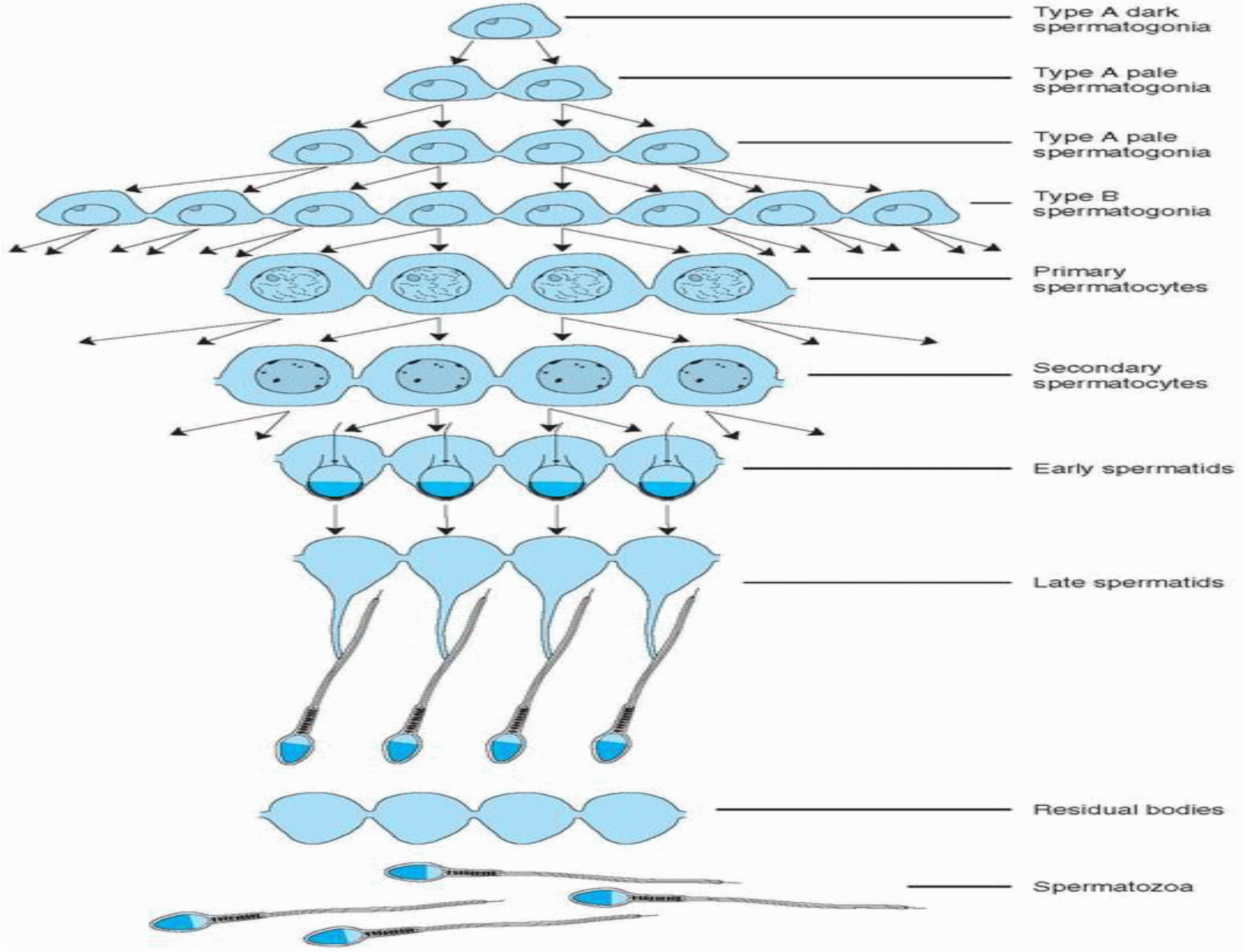
Spermatogenesis

Spermatogonia are transformed into spermatozoa.

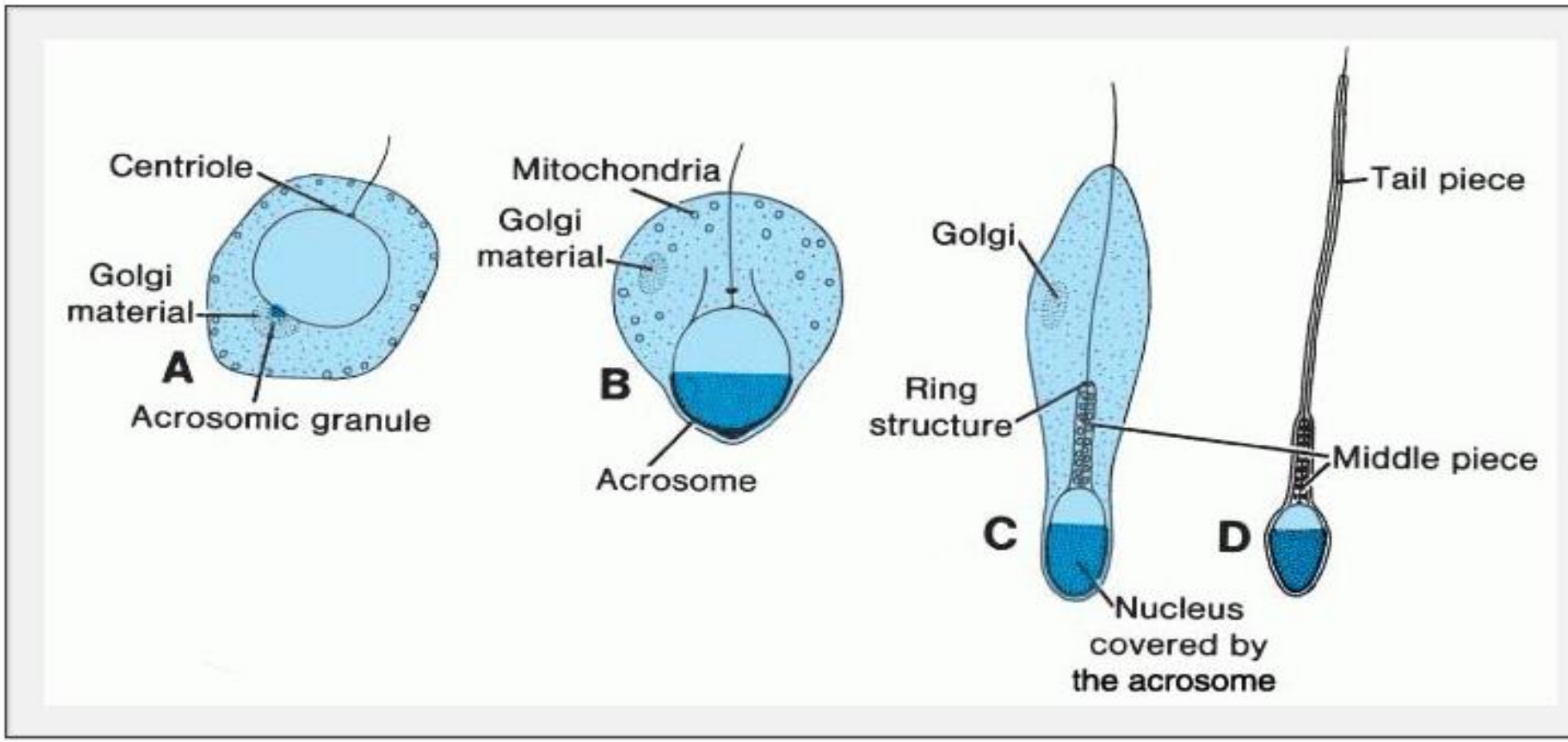

Spermatozoon
Maturing spermatids
Spermatids
Primary spermatocyte in prophase
Sertoli cell
Spermatogonial division
Spermatogonia
B
Primordal germ cell
Sertoli cells
Basement membrane
A


Type A dark spermatogonia
Type A pale spermatogonia
Type A pale spermatogonia
Type B spermatogonia
Primary spermatocytes
Secondary spermatocytes
Early spermatids
Late spermatids
Residual bodies
Spermatozoa

- **Spermiogenesis**

- The series of changes resulting in the transformation of spermatids into spermatozoa.

- Acrosome
- Condensation of the nucleus
- Formation of neck, middle piece, and tail
- Shedding of most of the cytoplasm

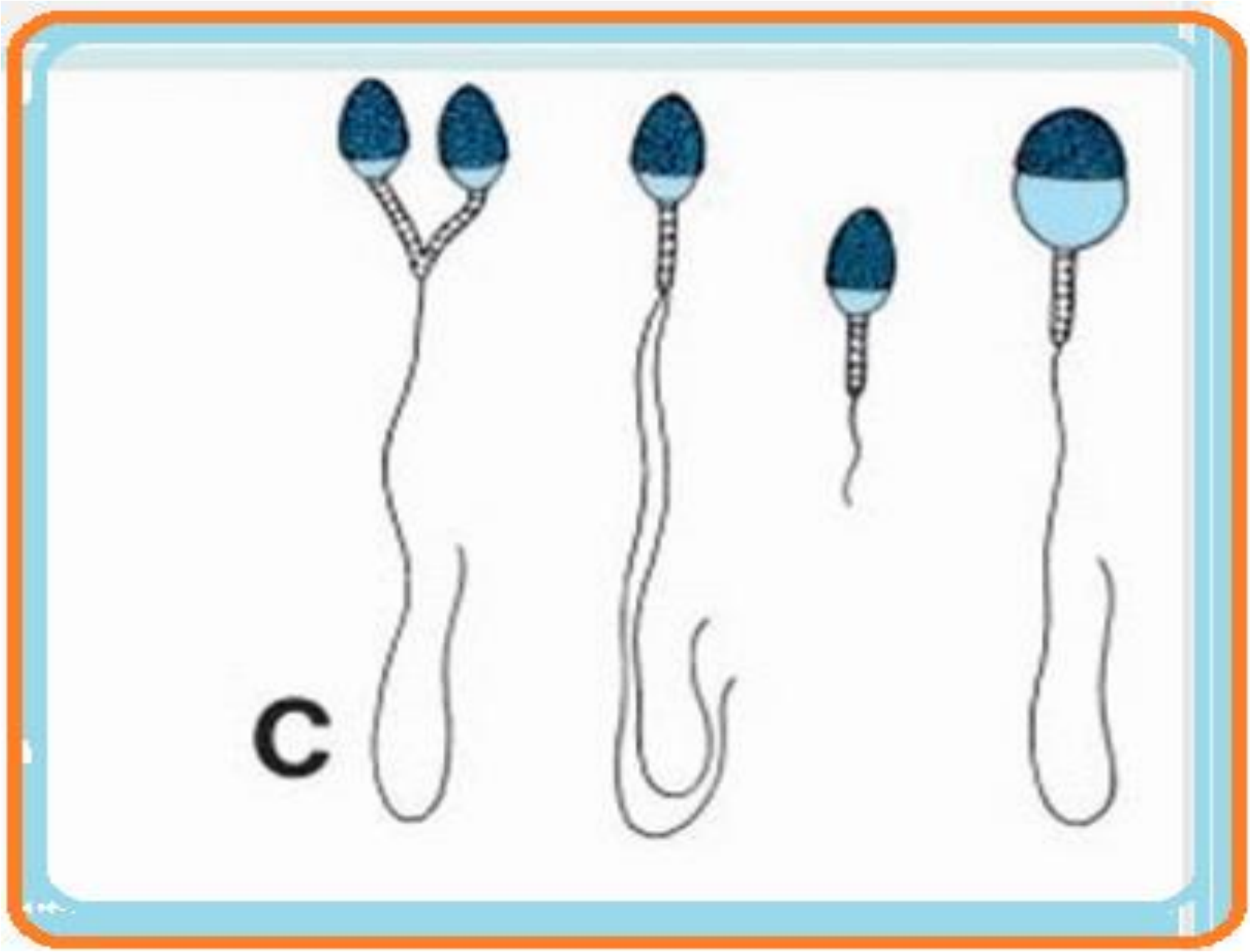


- **74 days**
- **300 million sperm cells are produced daily.**

- **Birth Defects and Spontaneous Abortions:**
  Chromosomal and Genetic Factors

- **Meiosis provide genetic variability**

  – crossover, which redistributes genetic material
  – random distribution of homologous chromosomes to the daughter cells


C

Teratoma

Primordial germ cells

or

Epiblast cells

SACROCOCCYGEAL TERATOMA

THANKS