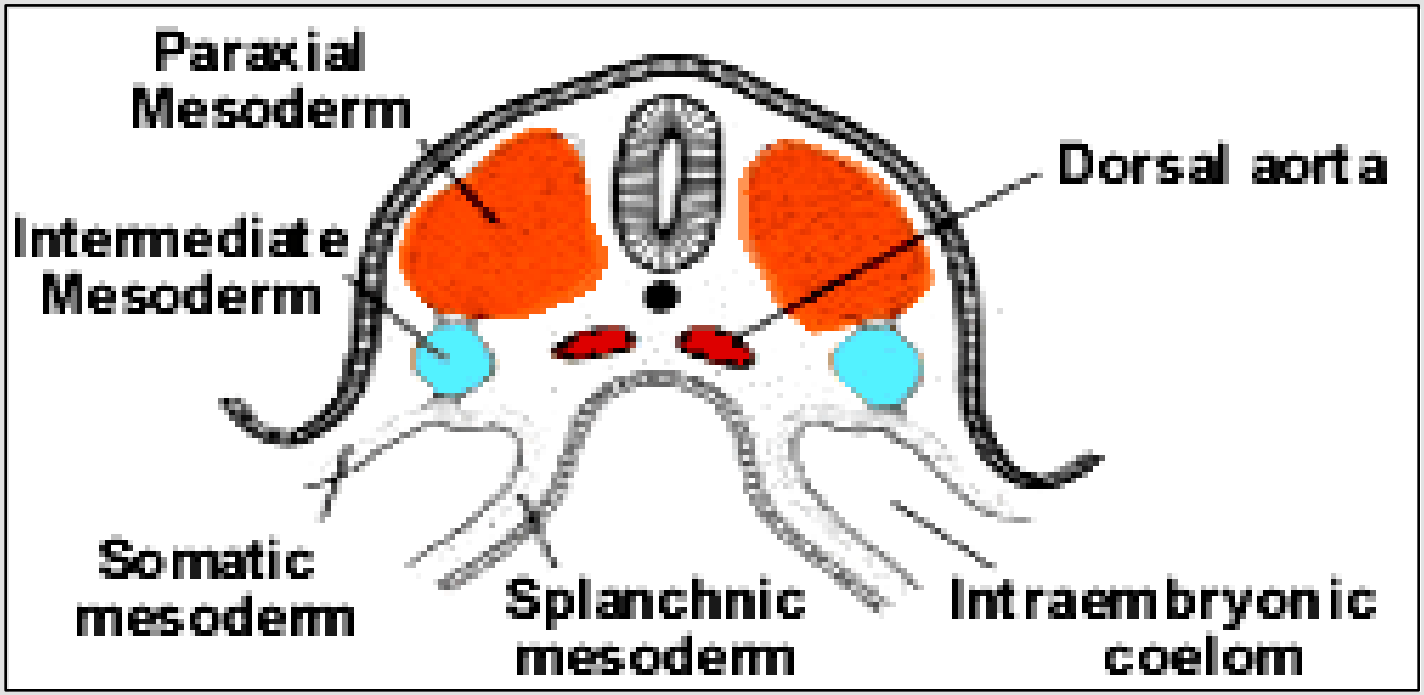
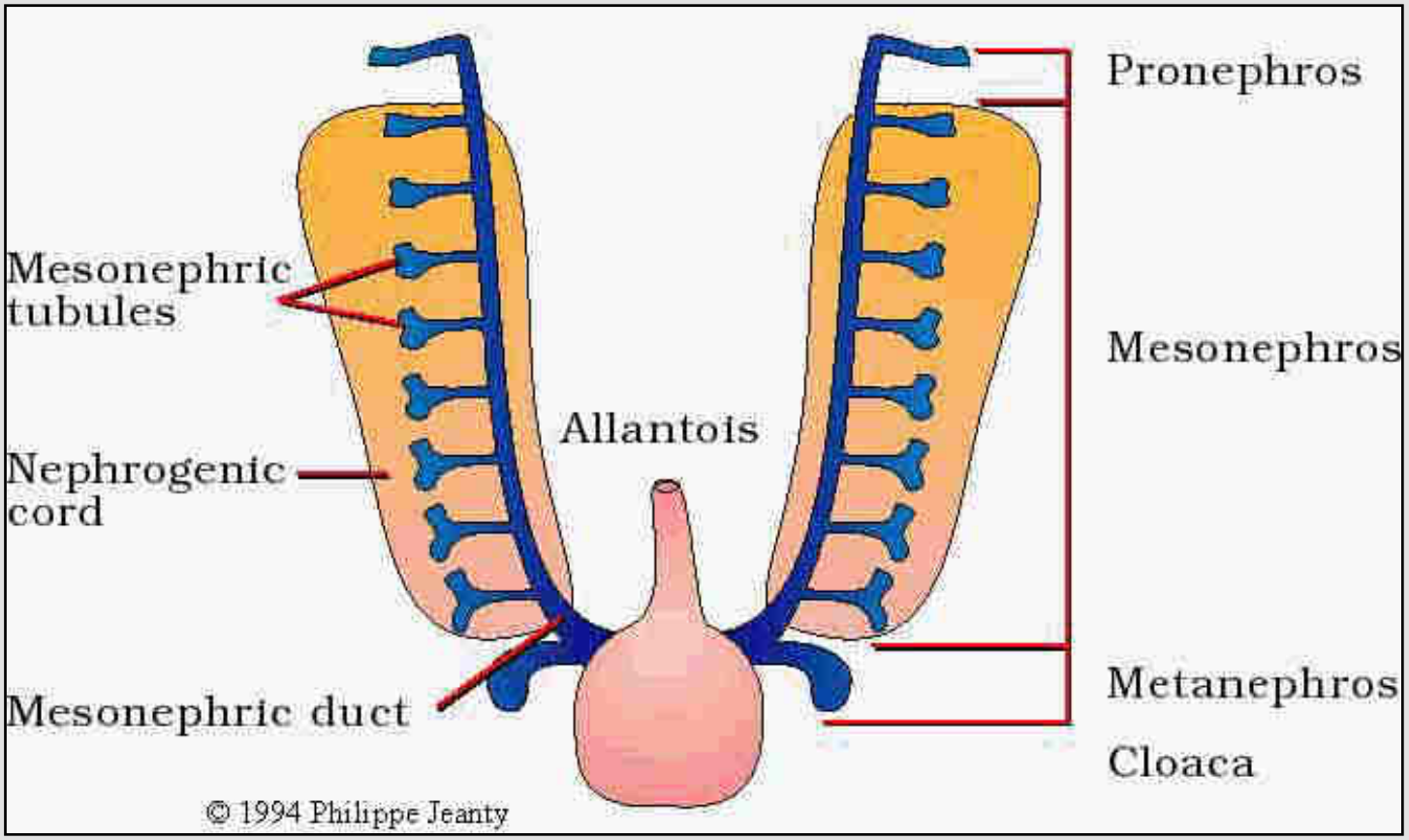
EMBRYOLOGY:

THE URINARY SYSTEM



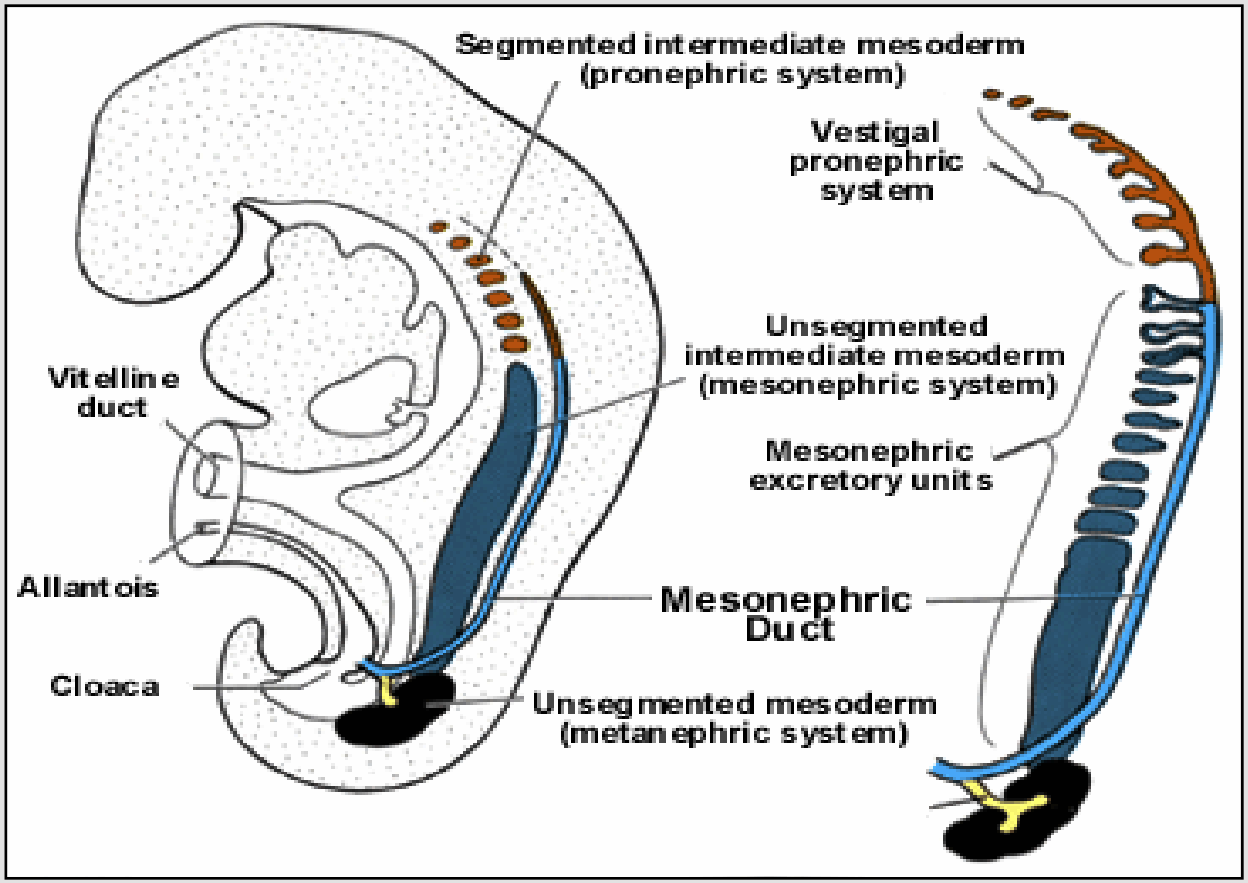
- Which type of mesoderm is known as the “kidney maker”

This diagram shows the development of the three kidney systems

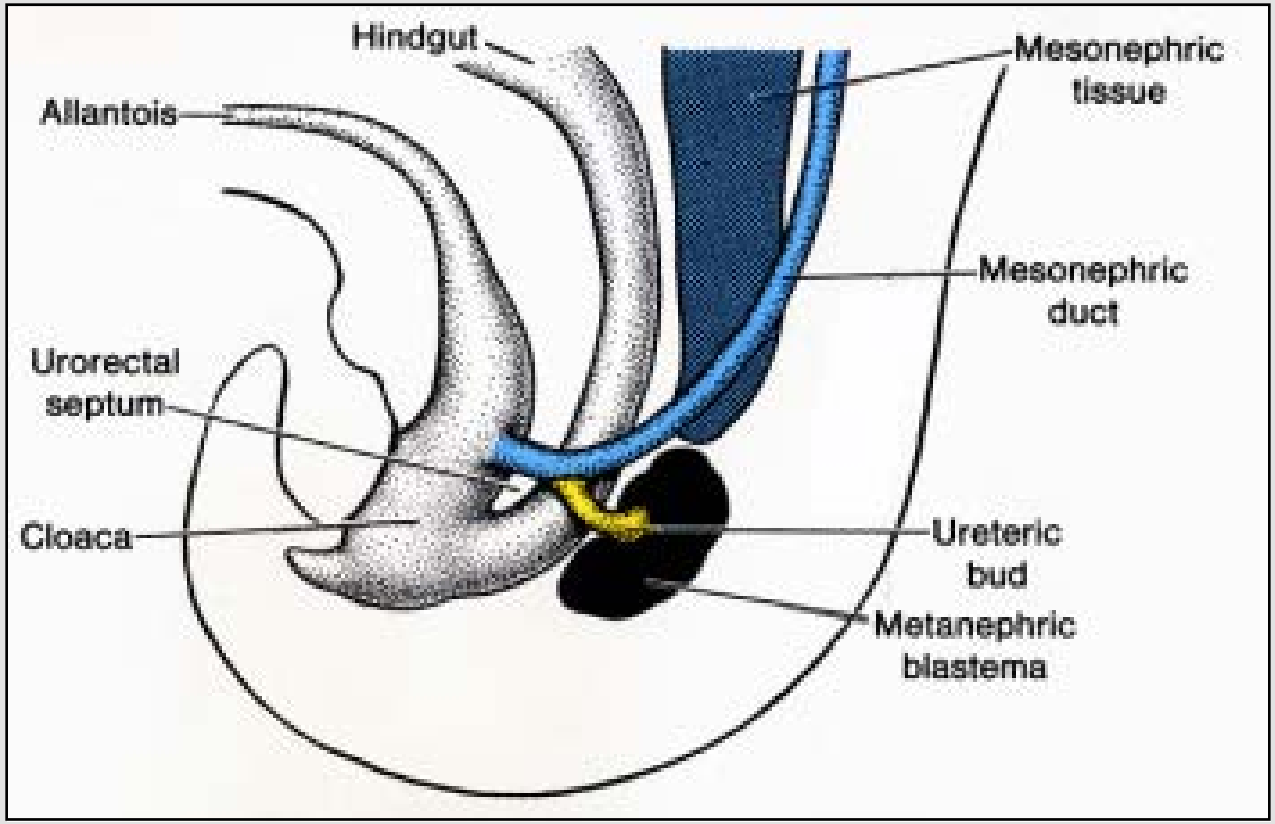


- List the three systems.
- At what stage of embryonic development do these systems appear?
- Do all these systems become functional?

This diagram shows the development of the three kidney systems

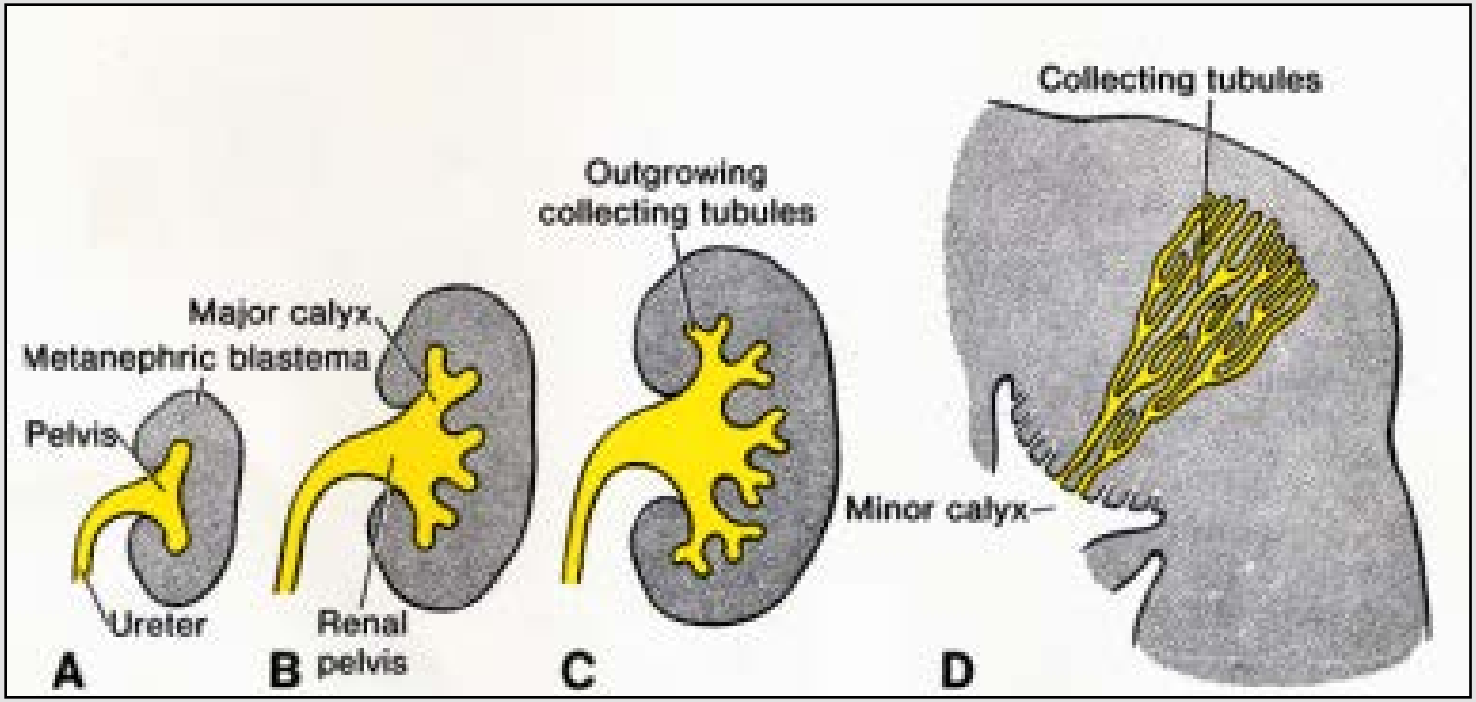


- Which part of the mesonephros persists?
- What does this part of the mesonephros give rise to?



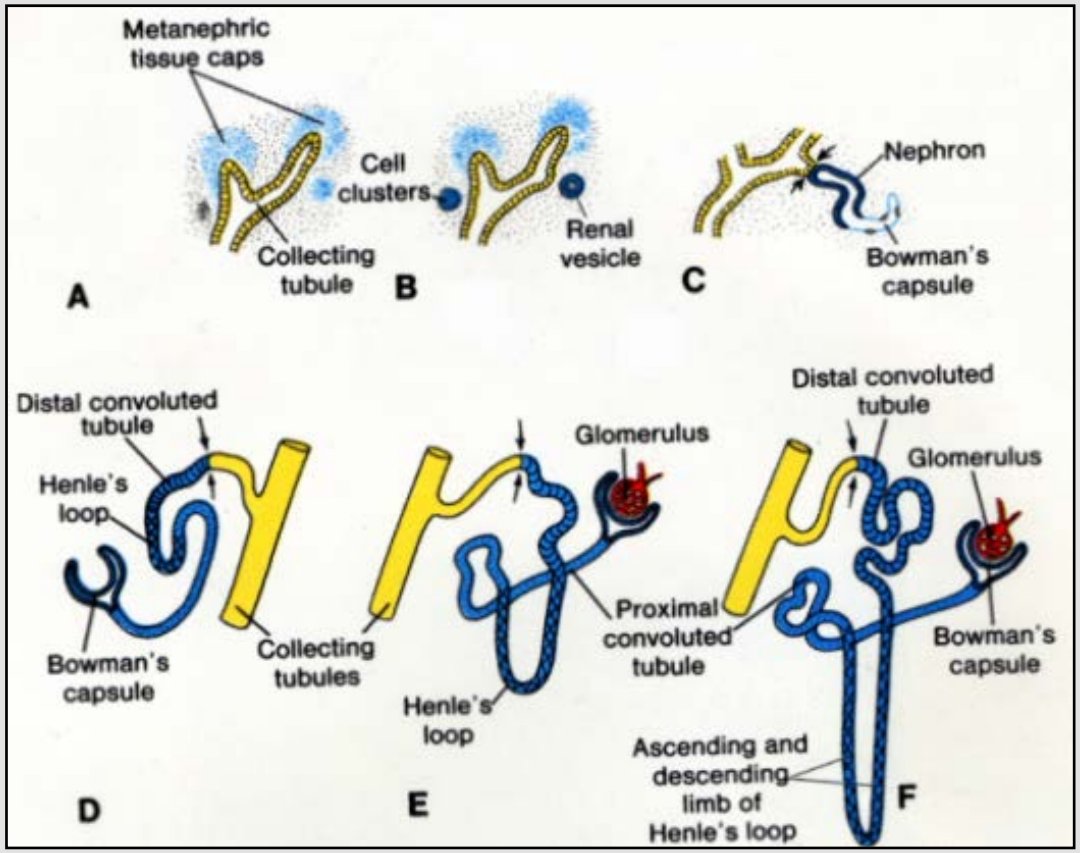
- Which two structures make up the metanephros (permanent kidney)?

The above diagram shows the development of the collecting system of the kidney



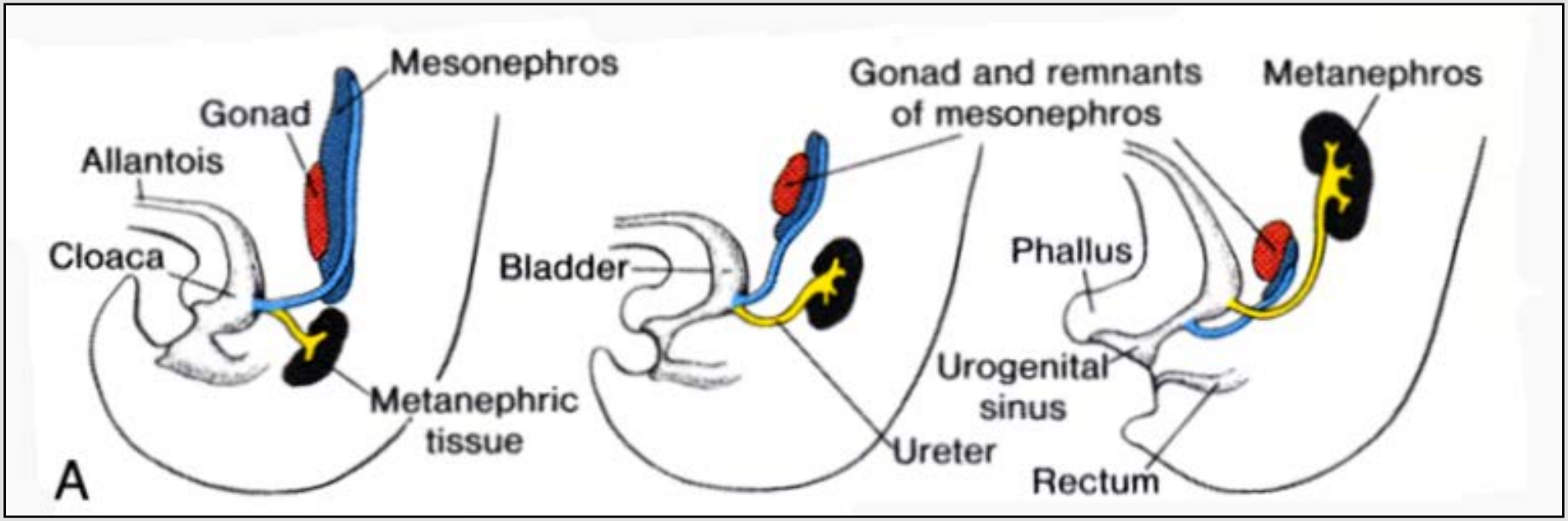
- Which structure is responsible for the formation of the collecting system?
- At what stage of development does the permanent kidney form?
- Which structure induces the formation of the collecting system?

The above diagram shows the development of the excretory system of the kidney

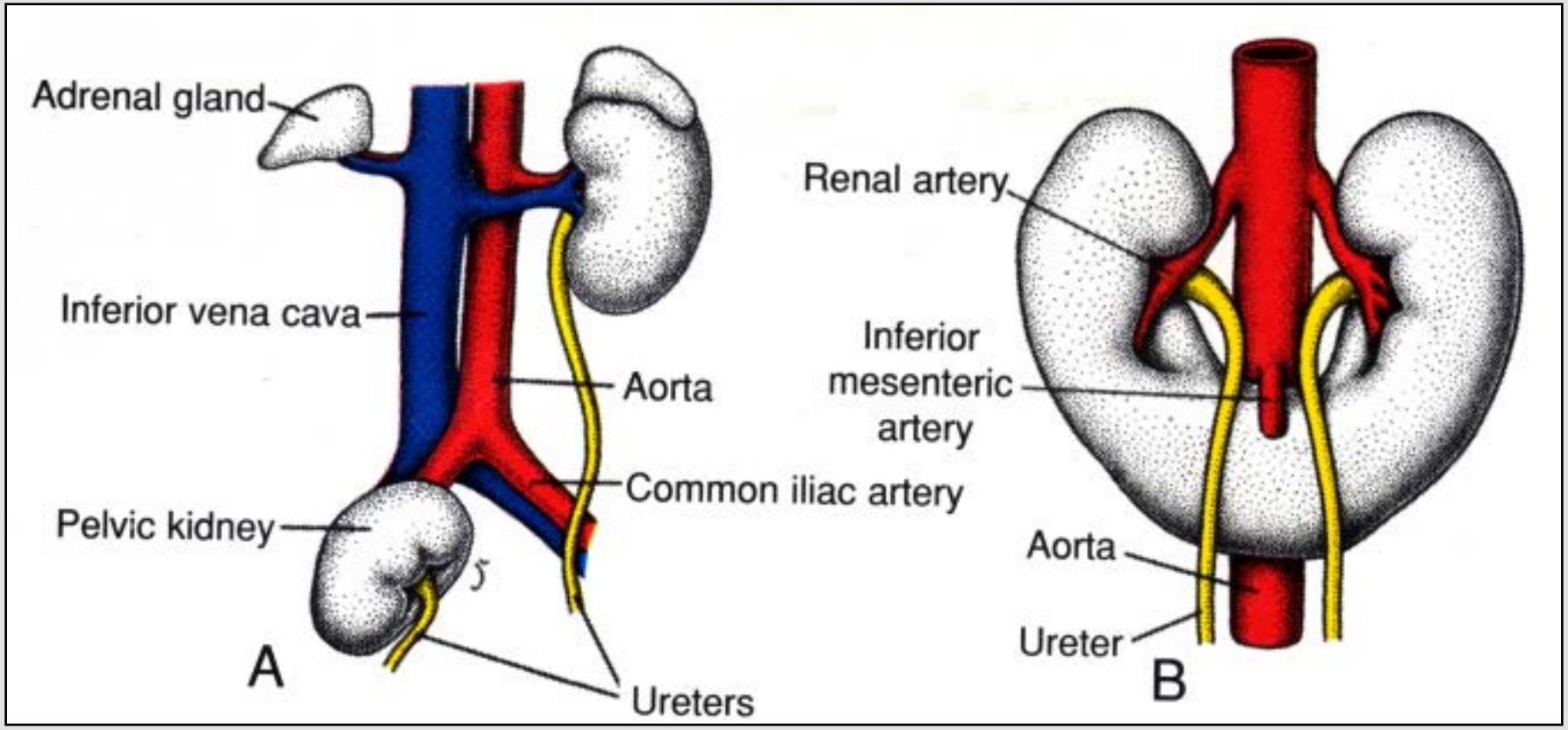


- Which structure is responsible for the formation of the excretory system?
- Which structure induces the formation of the excretory system?
- What are renal vesicles?

This picture shows the “ascent” of the kidney

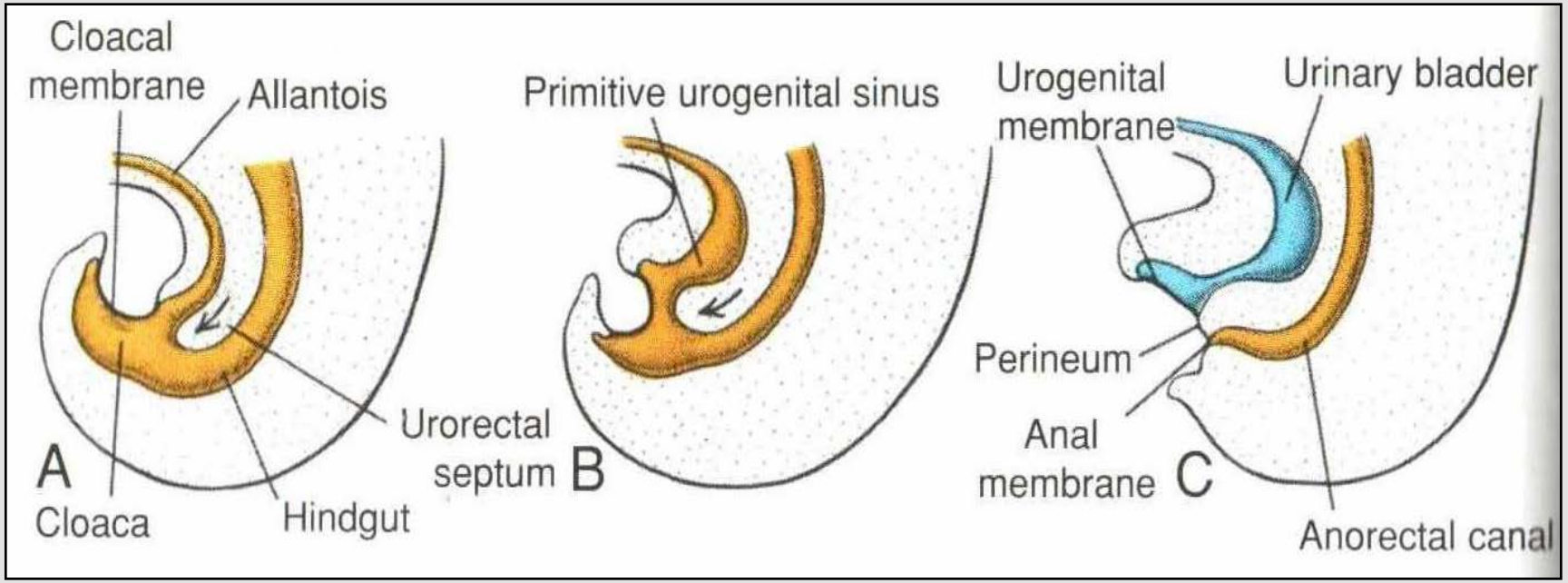


- Describe this migration of the kidney.
- What causes this “ascent” of the kidney?



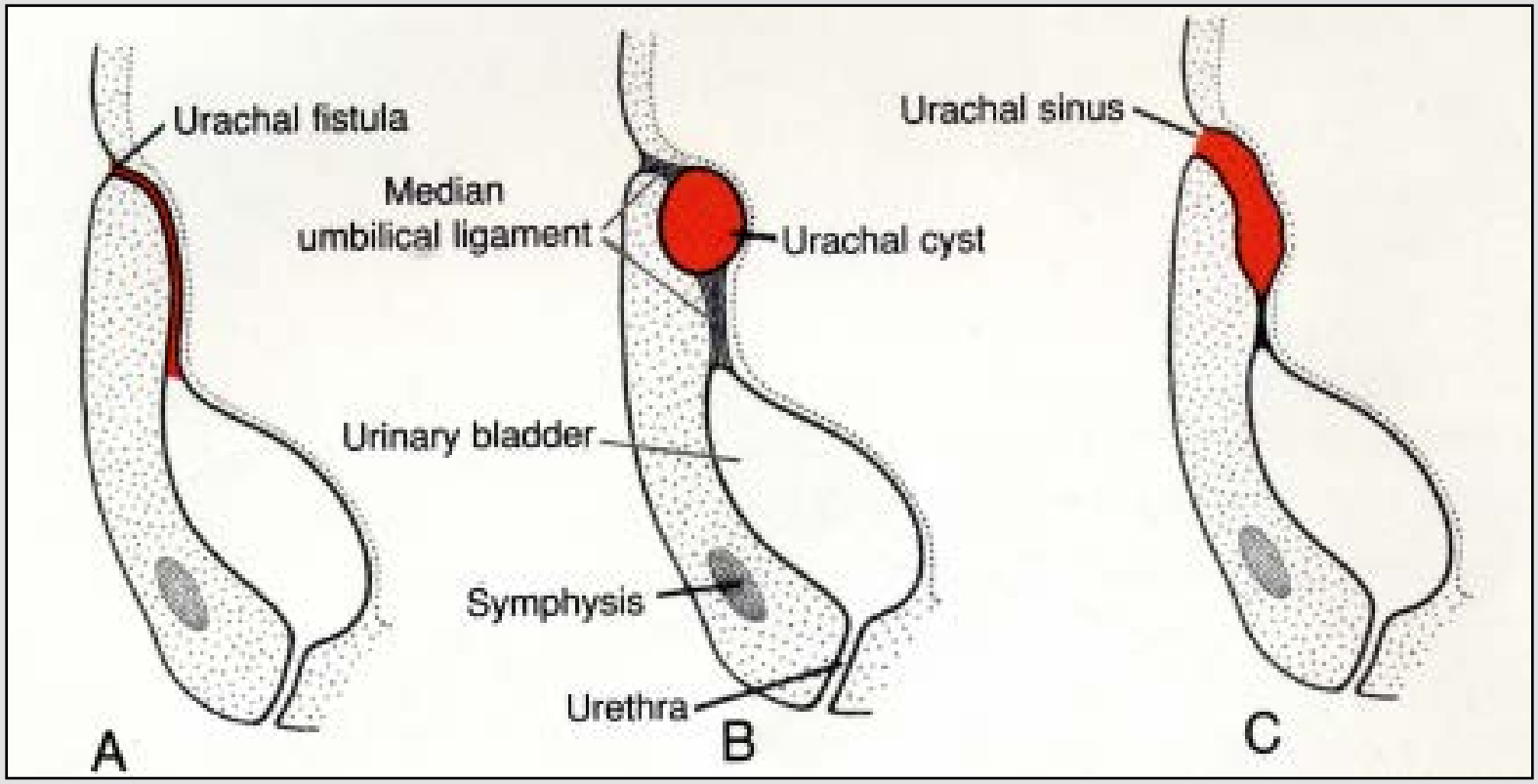
- Identify the abnormalities depicted at A and B.
- What are the causes of these abnormalities?

This picture shows the embryonic development of the cloaca and the urinary bladder



- What is the function of the urorectal septum?
- Which structure is responsible for the formation of the urinary bladder?
- What is the function of the urachus?

This picture shows the abnormalities associated with the development of the urinary bladder



- What are the causes of each of these abnormalities?

Short essay questions

- Describe IN DETAIL the embryonic development of the human metanephros (permanent kidney). Include in your answer, two abnormalities associated with this development. (12 marks)

- Describe the embryonic development of the urinary bladder. (8 marks)

Multiple choice questions

- **The mesonephros of the kidney**

  a) Appears late in the fourth week of intra-uterine life.
  b) Has a duct system which is used in the pronephric system.
  c) Consists of glomeruli and mesonephric tubules.
  d) Persists in the adult kidney.
  e) Appears caudal to the pronephros.

- **The ureteric bud**

  a) Is an outgrowth of the mesonephric duct.
  b) Gives rise to the collecting system of the kidney.
  c) Is derived from the paramesonephric duct.
  d) Forms the excretory system of the kidney.
  e) Induces the formation of nephrons.