PRO,MESO AND METANEPHRIC KIDNEYS..

FIGURES

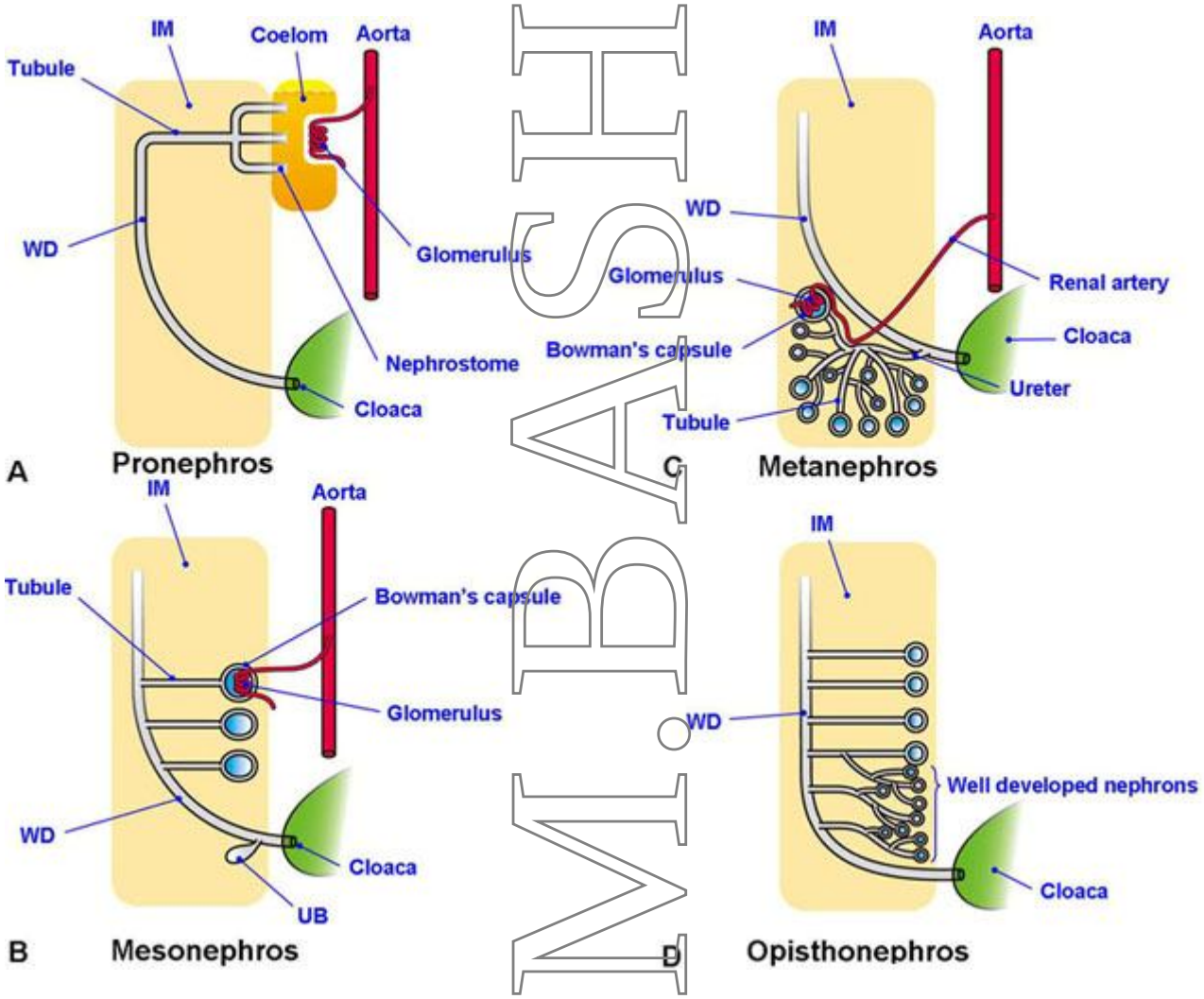

Figure 1. Development of the vertebrate kidney. A. Pronephros: The pronephros arises from the anterior section of the IM. The glomeruli are referred to as external glomeruli and are not located within the Bowman's capsule. Waste is deposited into the coelom then excreted outside the body. B. Mesonephros: The mesonephros arises from the middle section of the IM. The ducts are referred to as WDs and the glomeruli, referred to as internal glomeruli, are located within the Bowman's capsule. Waste is drained directly into the ducts. C. Metanephros: The metanephros is the permanent kidney of amniotes and arises from posterior section of the IM. A new duct, the ureter, has arisen and the collecting duct system has developed an extra order of complexity by branching and allowing many nephrons to form in a compact space. The internal glomeruli are supplied by a renal artery extending from the aorta. D. Opisthonephros: The opisthonephros is the adult kidney of fish and amphibians. It arises from the middle and

posterior section of the IM. Although the main duct is a WD, the tubules of the posterior region of the opisthonephros are well developed resembling those of the metanephros.

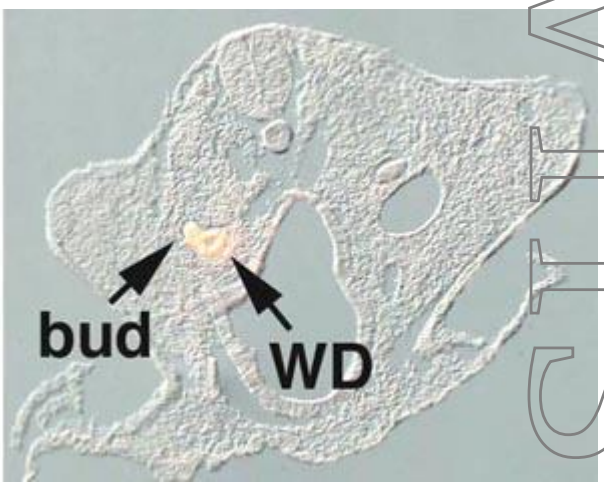

Figure 2. The bud of the mesonephros (confocal and DIC image of a frozen section, X100). DiI-labeled cells are located in the WD and in the bud of the mesonephros approximately 36 hours after labeling WD progenitor cells (E3.0).

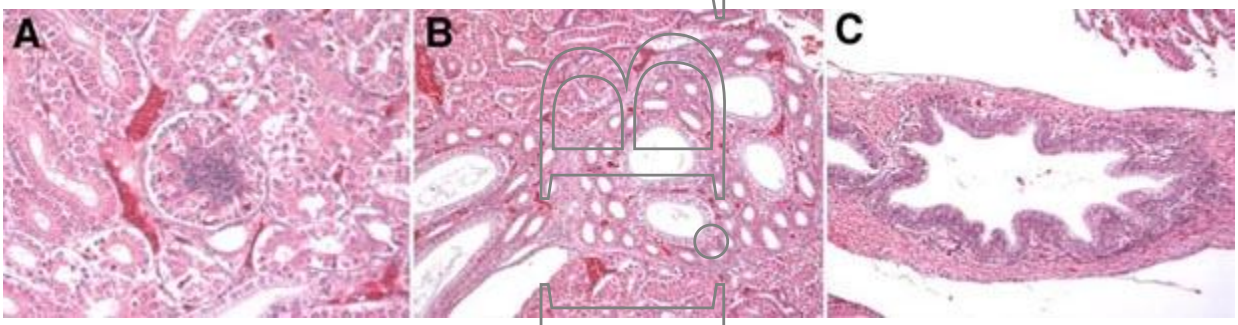

Figure 3. Histological examination of the adult chicken kidney (HE stain). A Glomerulus and tubules (X400) B Collecting ducts (X200) C Ureters (X200).

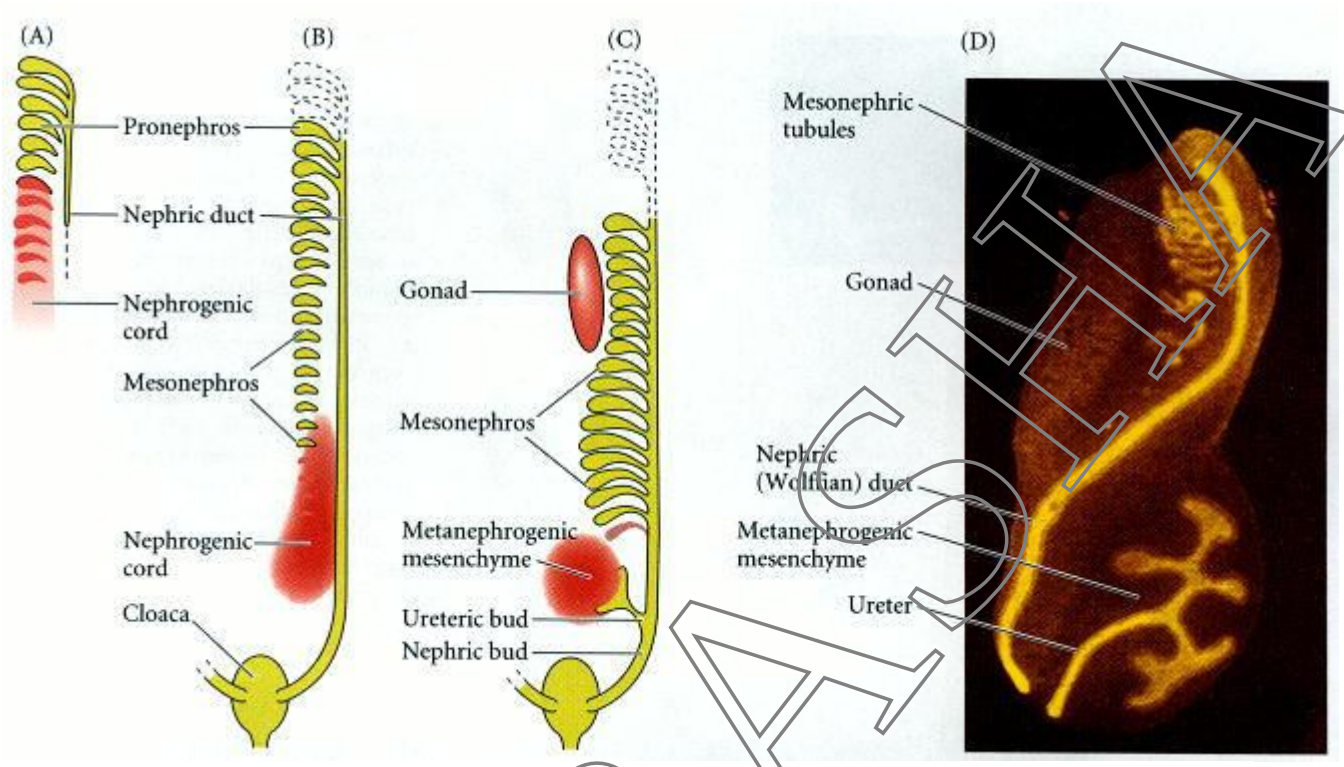

Figure 14.18

General scheme of development in the vertebrate kidney. (A) The original tubules, constituting the pronephros, are induced from the nephrogenic mesenchyme by the pronephric duct as it migrates caudally. (B) As the pronephros degenerates, the mesonephric tubules form. (C) The final mammalian kidney, the metanephros, is induced by the ureteric bud, which branches from the nephric duct. (D) The intermediate mesoderm of a 13-day mouse embryo showing the initiation of the metanephric kidney (bottom) while the mesonephros is still apparent. The duct tissue is stained with a fluorescent antibody to a cytokeratin found in the pronephric duct and its derivatives. (A-C after Saxén 1987; D courtesy of S. Vainio.)