



ANATOMY II

SYSTEMA URINARIA

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SYSTEMA URINARIA (Urinary System)

- The urinary system is consists of some structures for excreating the wastes products from the body
- The main purpose of the system is to eliminate wastes from the body, regulate blood volume and blood pressure, control levels of electrolytes and metabolites, and regulate blood pH.

SYSTEMA URINARIA

- The system consists of two main parts. The organ that is filtrate the urine from the blood and the ducts those are excrate the urine from the body
- Ren - Kidney
- Ureters
- Vesica urinaria - Bladder
- Urethra

REN (Nephros; Kidney)

- The kidney is the central organ of the urinary system. The functions are;
 - Filtering the urine from the blood
 - Removing the waste products of body metabolism
 - Regulating the blood volume and pressure

Location of the Kidney

- The kidneys are the pair organs that are located in the dorsal part of the abdominal cavity. They are just behind the last ribs and under the transversal process of the lumbar vertebrates.

Position of the Kidneys

- They are not symmetrical. So, generally right kidney is positioned more cranially. In ruminants the left kidney are located in the right side of the body because of the rumen.

Shape of the Kidneys

- The kidneys are bean-shaped organs except the right kidney of the odd-toed mammals. They are also irregular ovalshaped in ox.
- The kidneys have two surface (facies dorsalis et ventralis), two points (extremitas cranialis et caudalis) and two sides (margo lateralis et medialis)

Outer Layer of the Kidneys

- **Capsula serosa**
- **Capsula adiposa**
- **Capsula fibrosa**

Outer Layer of the Kidneys

- **Capsula serosa - Peritoneum ; just cover the ventral surface of the organ**
- **Capsula adiposa**
- **Capsula fibrosa**

Outer Layer of the Kidneys

- **Capsula serosa**
- **Capsula adiposa - Fat tissue; Especially developed in ox**
- **Capsula fibrosa**

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- **Capsula serosa**
 - **Capsula adiposa**
 - **Capsula fibrosa - Fibrose tissue; It covers the whole organ surface area**

REN (Nephros; Kidney)

- The main smallest functional structures of the kidney is called as nephron

Inner Layer of The Kidney

- Cortex renis
- Medulla renis
- Sinus renalis
 - * Pelvis renalis

Inner Layer of The Kidney

- Cortex renis - filtration
 - * Corpusculum renis
 - glomerulus + capsula glomerularis
 - * Proximal tubul, loop of henle, distal tubul
 - * Columnae renales, Pars radiata



Nephron

Inner Layer of The Kidney

- Medulla renis - collecting tubuls

Lobi renales - A.interlobares

* Pyramides renales

Basis pyramidalis

Papillae renales

Ductus papillaris

Foramina papillaria

Inner Layer of The Kidney

□ Sinus renalis

* Pelvis renalis

Recessus pelvis (Car., ov., cap.)

Recessus terminalis (Eq.)

Gl.pelvis renalis (Eq.)

* Calix renalis (Ru., su)

* Adipoz tissue

* Hilus renalis

A.et v.renalis

Ureter

Types of the Kidneys

- Lobular kidneys = Whale and sea mammals

Types of the Kidneys

- Fake lobular kidneys = Ox

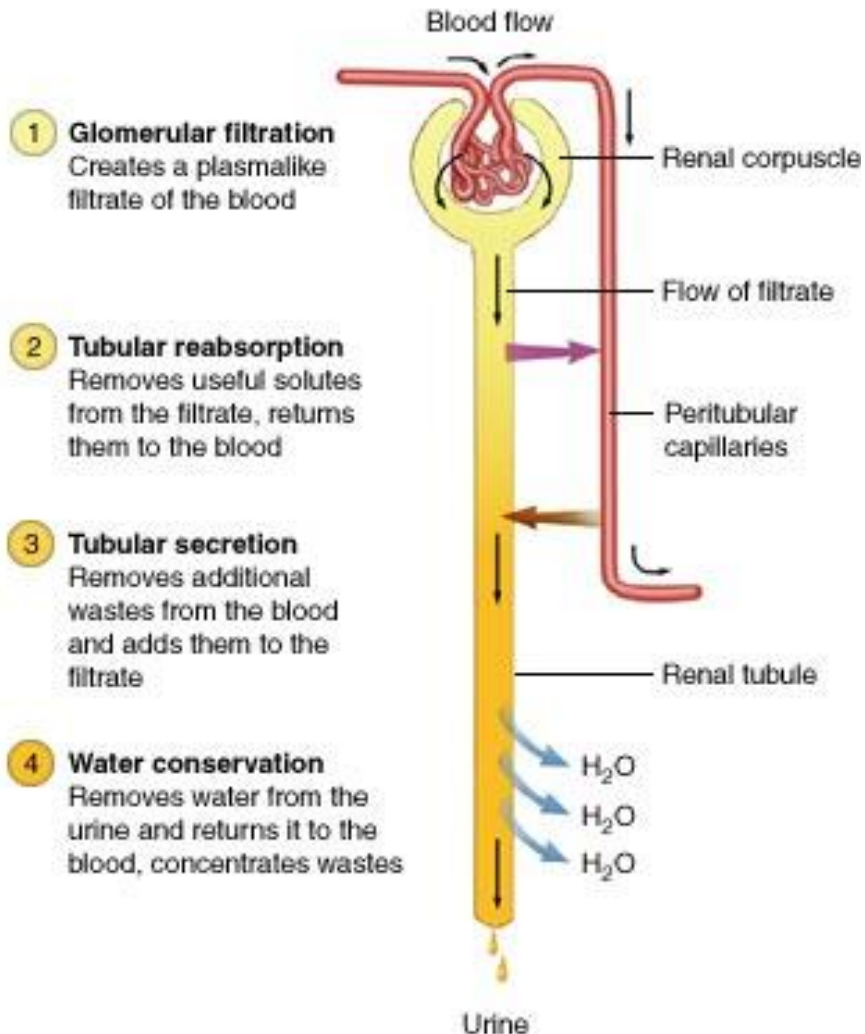
Types of the Kidneys

- Cortical merge = Human and pig

Types of the Kidneys

- Cortical and medullar merge = Eq, Car, ov, cap.

Urine



Urine

0.05% Ammonia
0.18% Sulphate
0.12% Phosphate
0.6% Chloride
0.01% Magnesium
0.015% Calcium
0.6% Potassium
0.1% Sodium
0.1% Creatinine
0.03% Uric acid
2% Urea

95% Water

URETERS

- A pair of ducts that move the urine from kidney to the bladder.
 - pars abdominalis
 - pars pelvina
- *ostium ureteris

VESICA URINARIA (Bladder)

- ❑ The storage organ of the urine excreted by kidneys.
- ❑ It is a bulb-shaped, hollow, muscular and distensible organ.
- ❑ It locates on the basement of the pelvic cavity. When it is filled, the organ move toward cranially.
- ❑ 3parts ; Apex vesicae, corpus vesicae, cervix vesicae

Structure of the Bladder

- **Tunica serosa** - peritoneum
- **Tunica muscularis** - m. detrusor vesicae :The detrusor muscle is a layer of the urinary bladder wall made of smooth muscle fibers arranged in spiral, longitudinal, and circular bundles.
- **Tunica mucosa** - mucosal layer

- **Columna ureterica**
- **Ostium ureteris**
- **Plica ureterica**
- **Ostium urethrae int.**

***Trigonum vesicae

Lig. vesica laterale

Lig. teres vesicae - a. umbilicalis

Lig. vesicae medianum

URETHRA

- Ostium urethrae internum
- Ostium urethrae externum
- Diverticulum suburethrale (female; su., ru.)