

Endocrinology of Fish

MS I (Semester-II)

Maj/Zoo-S-406

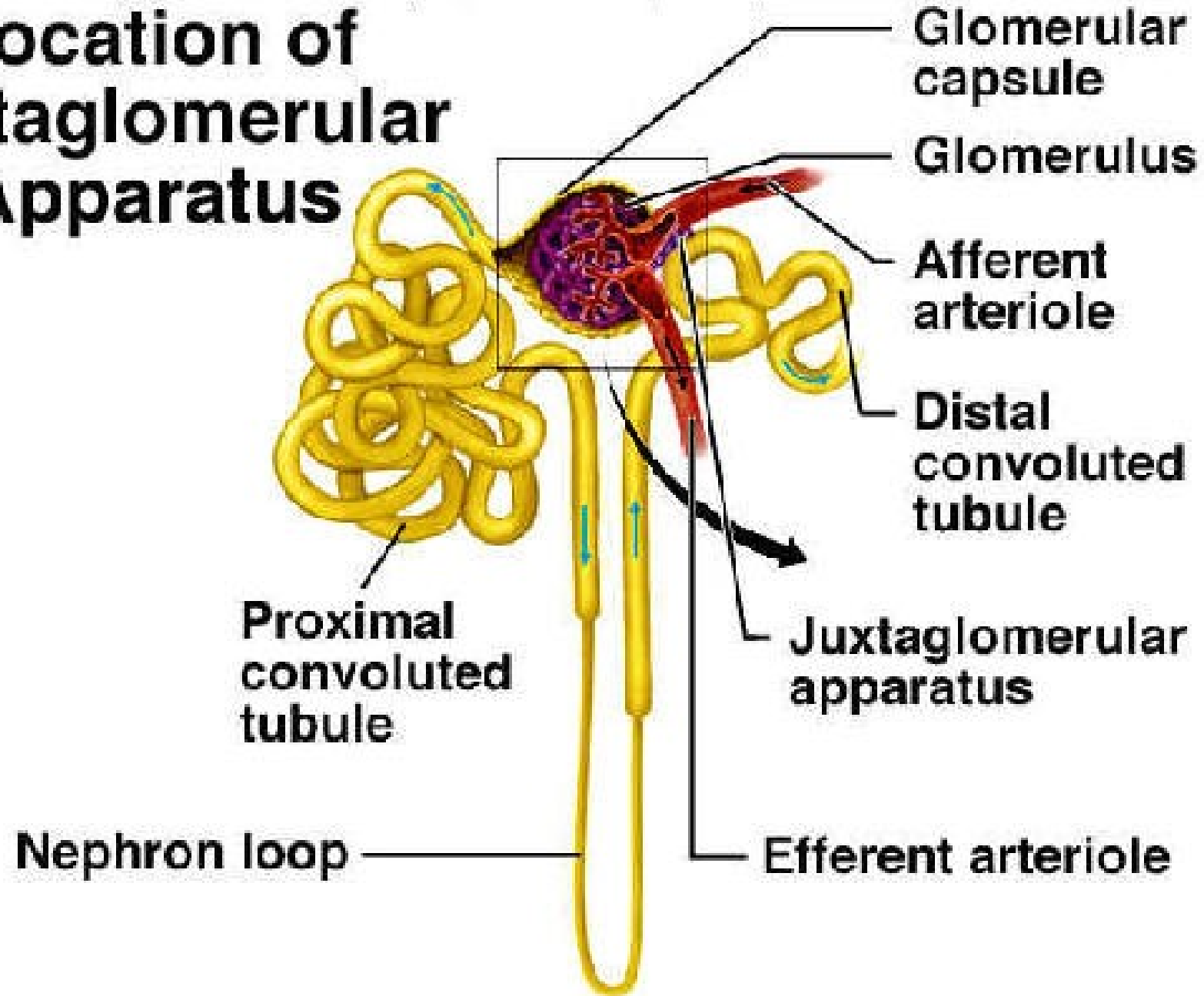
Lecture – 13

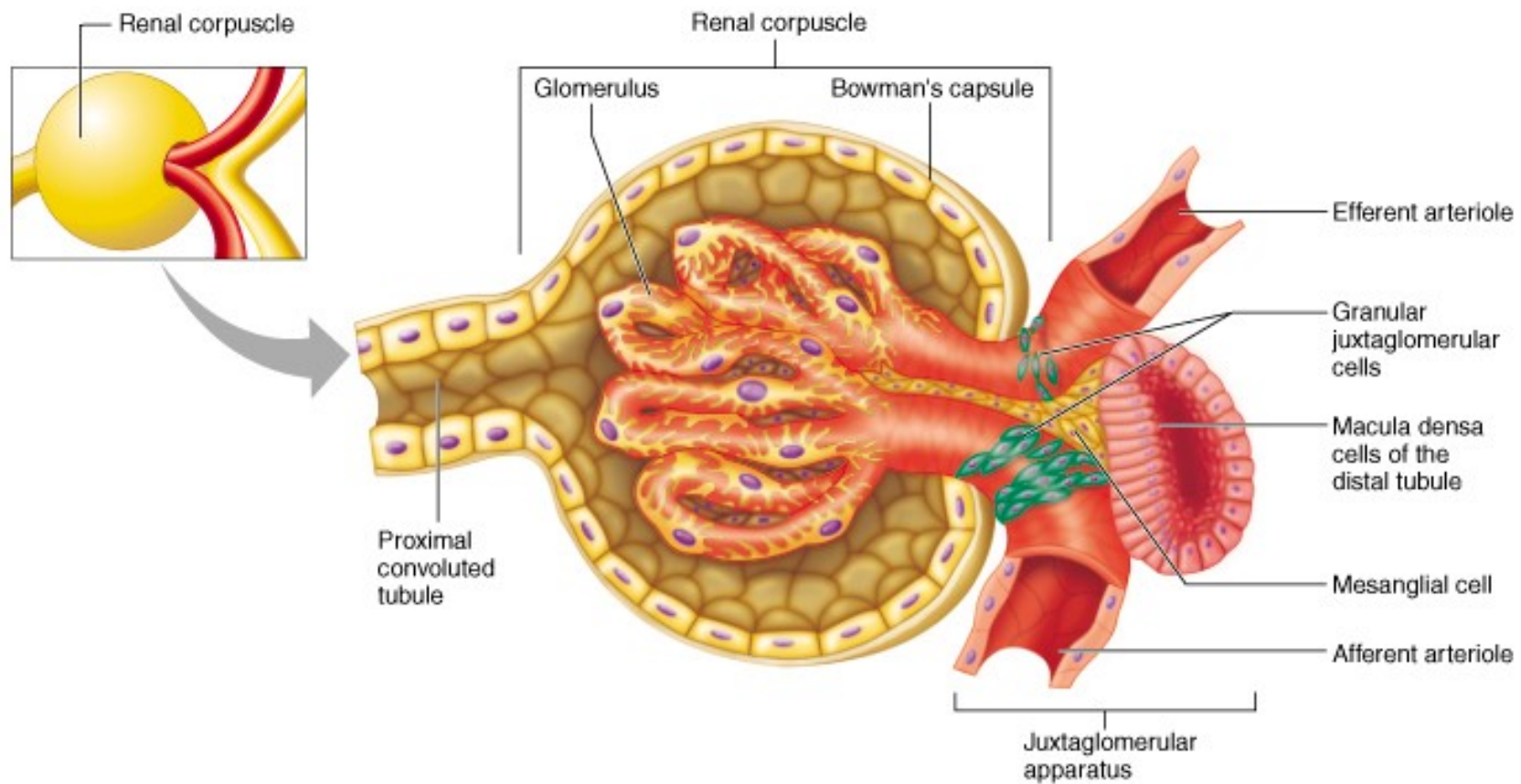
Juxtaglomerular Apparatus

Location

- A collection of cells located beside each renal glomerulus
- Consisting of a portion of the distal convoluted tubule arising from that glomerular capsule, segments of the afferent and efferent arterioles closest to the glomerulus, and cells lying between these structures.

Location of Juxtaglomerular Apparatus





The Renin-Angiotensin-Aldosterone System

- The **renin-angiotensin-aldosterone system (RAAS)** is part of a complex feedback circuit that functions in homeostasis
- A drop in blood pressure near the glomerulus causes the **juxtaglomerular apparatus (JGA)** to release the enzyme renin
- Renin triggers the formation of the peptide **angiotensin II**

- Angiotensin II
 - Raises blood pressure and decreases blood flow to the kidneys
 - Stimulates the release of the hormone **Cortisol**, which increases blood volume and pressure

Homeostatic Regulation of the Kidney

- ADH and RAAS both increase water reabsorption, but only RAAS will respond to a decrease in blood volume
- Another hormone, **atrial natriuretic peptide (ANP)**, opposes the RAAS
- ANP is released in response to an increase in blood volume and pressure and inhibits the release of renin