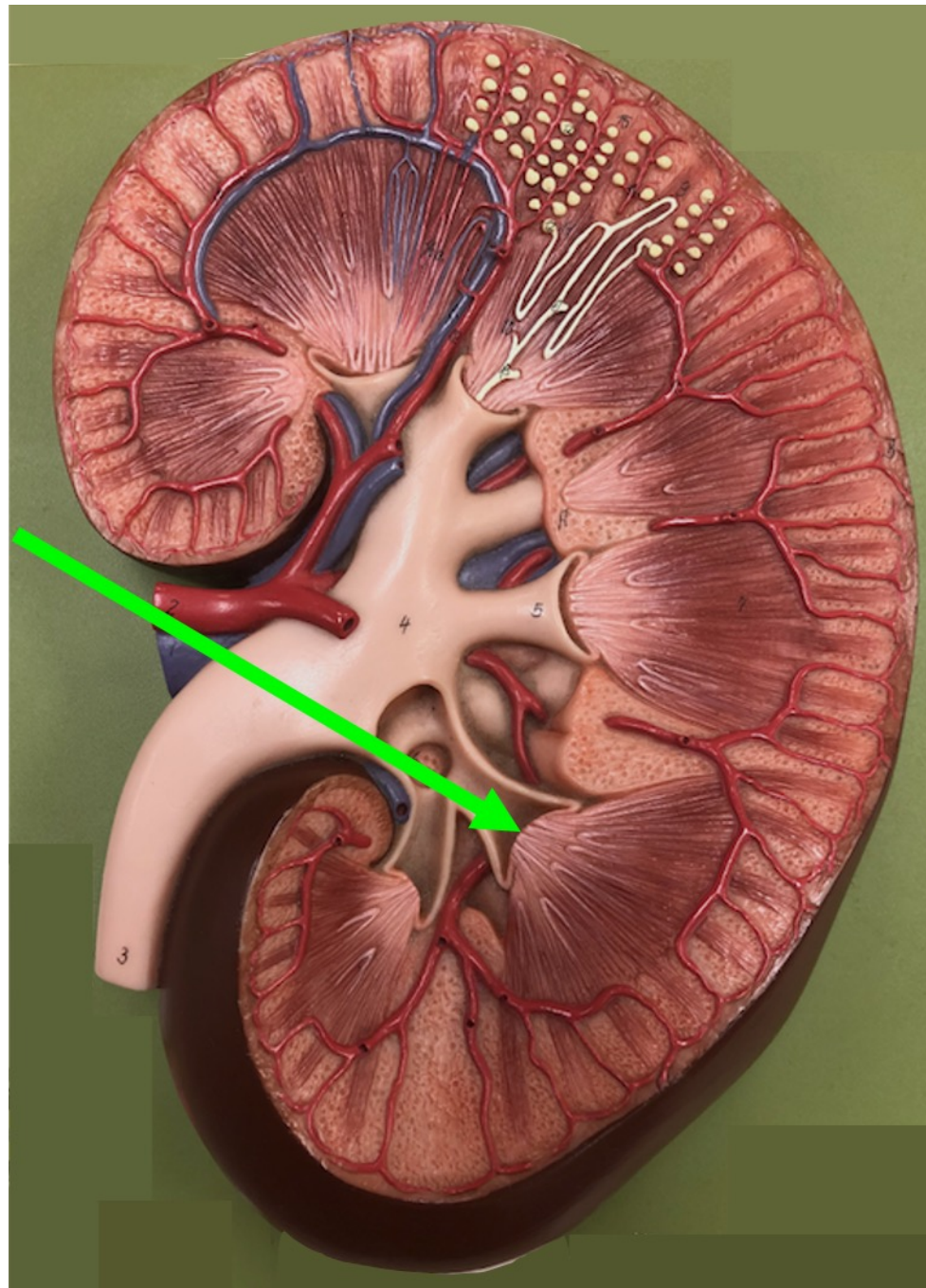**Quiz Section Test 5-AB**
Answers are given in red.
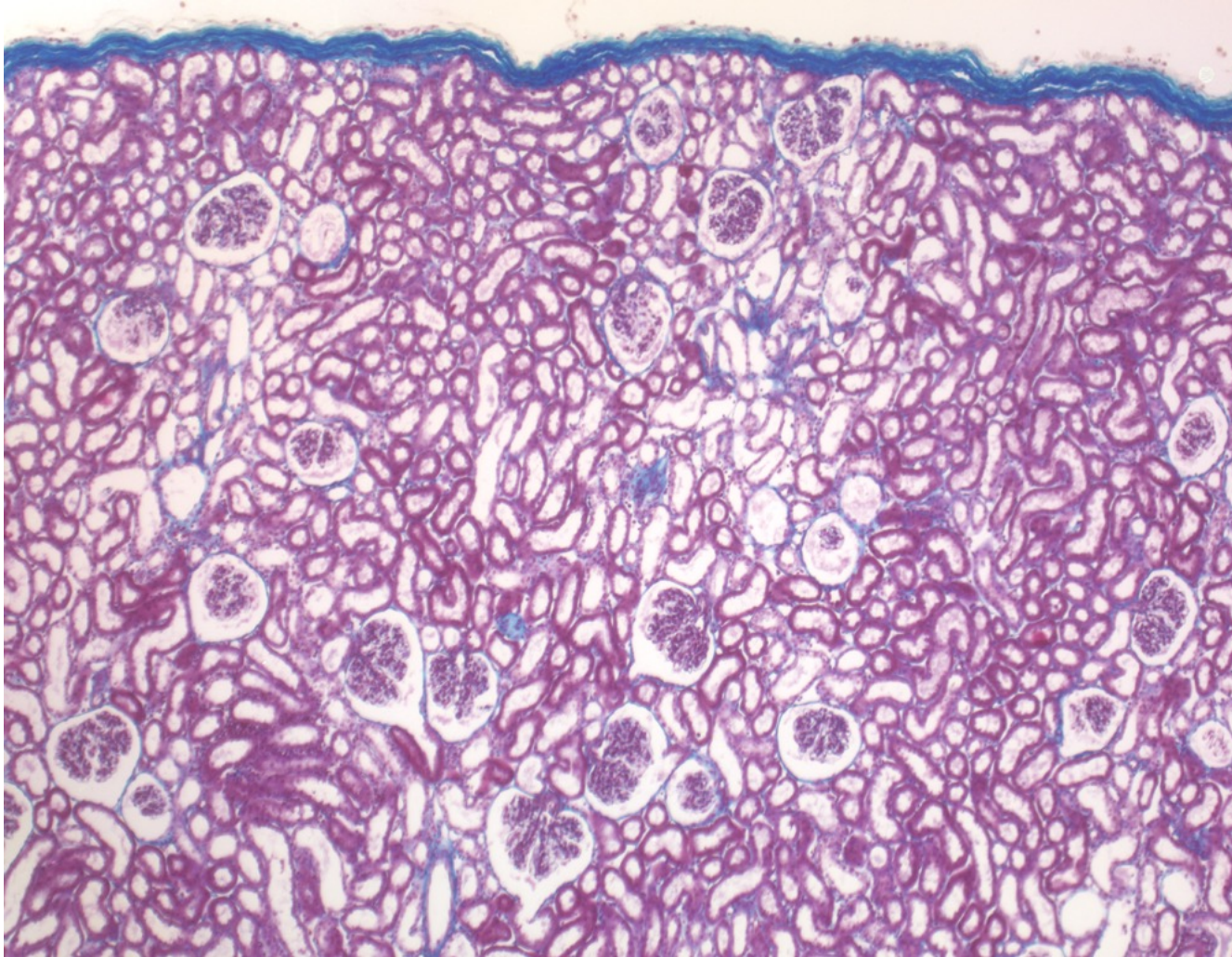
1. Name the structure shown by the arrow.

papilla

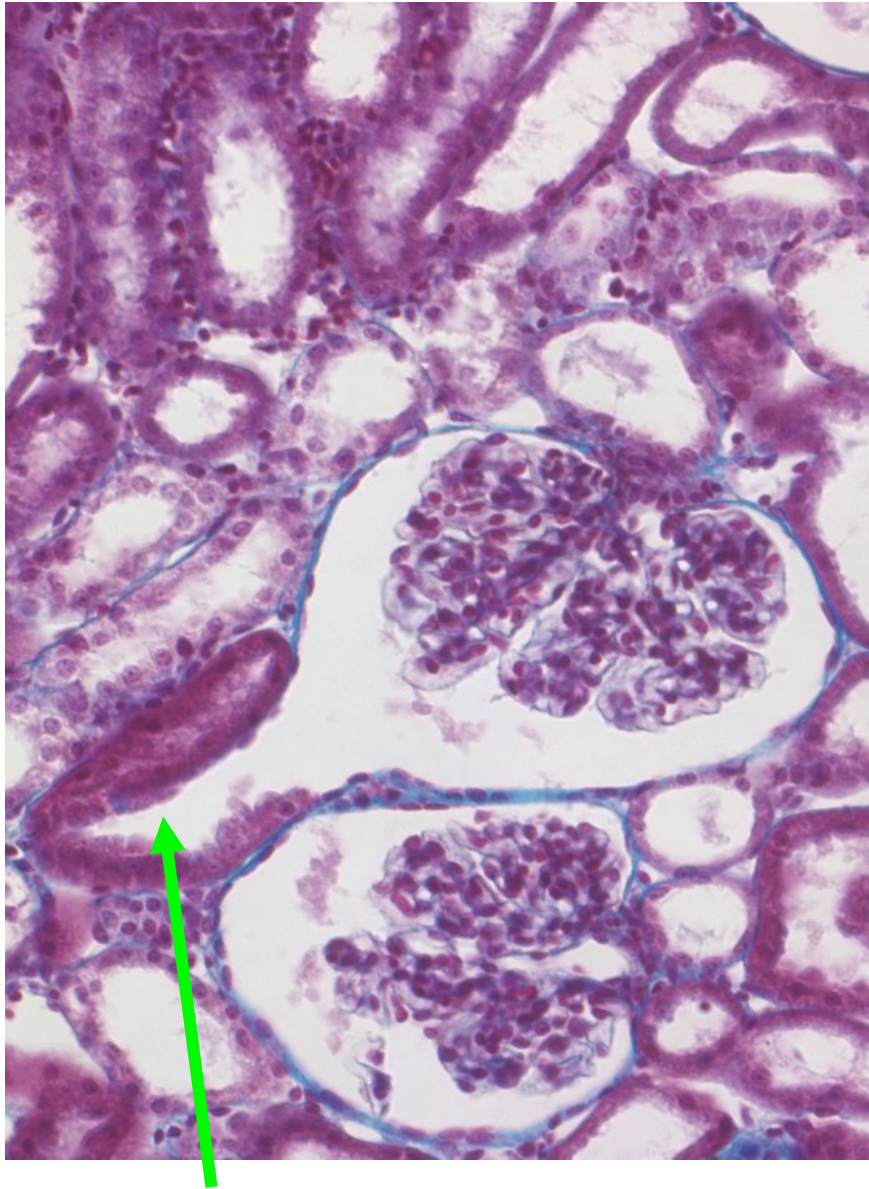**2. What type of neuron innervates smooth muscle in the urethra?**
a.   sympathetic preganglionic neuron
b.   parasympathetic postganglionic neuron
c.   somatic motor neuron
d.   sympathetic postganglionic neuron

3. Name the <u>region</u> of the kidney shown in the picture above.
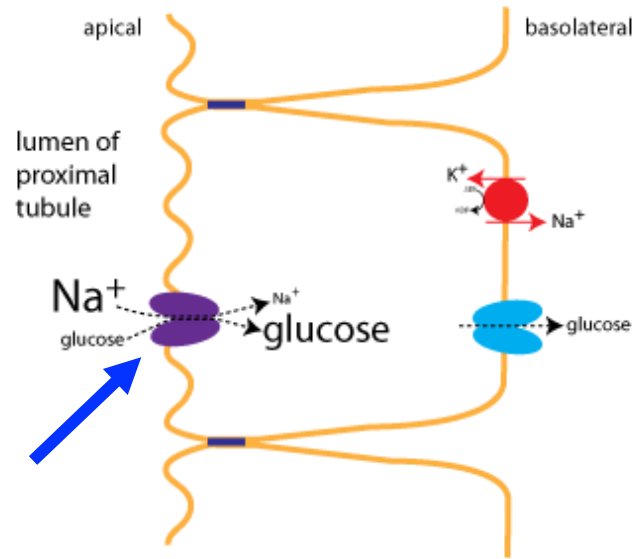
cortex

4. What part of the nephron is indicated by the arrow?
a. collecting duct
b. distal tubule
c. Bowman's capsule
d. proximal tubule
e. glomerulus

5. Name the protein indicated by the blue arrow, This protein is a target of drugs used to treat type 2 diabetes mellitus. (abbreviation okay)

SGLT2

6. Vasopressin is a hormone that is secreted by neurosecretory cells at the posterior pituitary. In what part of the brain are the cell bodies of vasopressin-secreting cells located?

hypothalamus

7. In a patient with chronic kidney disease, which of the following increases?
a. plasma inulin concentration
b. glomerular filtration rate
c. creatinine clearance
d. inulin clearance
e. **plasma creatinine concentration**

Calculations

Be sure to show your work. Full credit will be given for answers that are set up correctly.

DATA for questions #8-10

inulin clearance:	90 ml/min
creatinine clearance:	105 ml/min
amount of urea excreted in urine:	9.6 mg/min
urine flow rate:	1.2 ml/min
plasma urea concentration:	0.15 mg/ml
urine urea concentration:	8 mg/ml

8. Using the above data, calculate the **urea clearance**. (2 points)

$$CL_{urea} = \frac{U_{urea} \cdot \dot{V} \;(amount\ excreted)}{P_{urea}}$$

$$= \frac{9.6\ mg/min}{0.15\ mg/ml} = \boxed{64\ ml/min}$$

9. Using the above data, calculate the **filtered load of urea**. (2 points)

$$FL_{urea} = GFR \cdot P_{urea} \qquad\qquad GFR = inulin\ clearance$$

$$= 90\ ml/min \cdot 0.15\ mg/ml = \boxed{13.5\ mg/min}$$

10. Using the above data, calculate the **amount of urea** that was **reabsorbed or secreted**. (2 points)

$$13.5\ mg/min > 9.6\ mg/min \qquad \therefore urea\ is$$
$$(FL) \qquad\qquad (amt.\ urea\ excreted) \qquad reabsorbed$$

$$amount\ reabsorbed = FL - amount\ excreted$$

$$= 13.5\ mg/min - 9.6\ mg/min = \boxed{3.9\ mg/min}$$