Histology of Skin and Endocrine glands
Skin and Endocrine glands

- Skin
- Thyroid
- Parathyroid gland
- Adrenal gland
- Pituitary gland
- Pineal gland
Skin

- **Layers of skin**
  - **Epidermis**
  - *Five layers*
  - **Dermis**
  - *Two layers*

**Junction**

- Dermal papilla
- Epidermal peg (*rete pegs*)
Skin...

- **Epidermis** -
  1. **Stratum basale**
     - Single layer of columnar cells
  2. **Stratum spinosum**
     - Several layers of polyhedral cells, spine like process, tonofilament
  3. **Stratum granulosum**
     - Keratohyline granules
  4. **Stratum lucidum**
     - Homogeneous keratin, fusiform cells
  5. **Stratum corneum** - non nucleated keratinized dead cells
Skin……

• Cells of epidermis

-Keratinocytes-
90%, able to keratinization

-Cells of Langherhans-
present in st. spinosum, clear cytoplasmic process, antigen producing cell

-Melanocytes-pigmented cell in basal layer, many cytoplasmic process. Produce Melanin

-Merkel cells- sensory cell
Skin…..

**Dermis**
- **Papillary layer**
- **Tactile papilla**
- **Vascular papilla**
- **Collagen fibre**
- **Reticular layer**
  - Collagen fibre
- **Sweat glands**
- **Sebaceous glands**
- **Hairs**
Skin

- Thick skin
- Thin skin
FIGURE 10.3  Hairy thin skin of the scalp: hair follicles and surrounding structures. Stain: hematoxylin and eosin. ×40.
Slide 44 Scalp

- Stratum corneum
- Stratum granulosum
- Stratum spinosum
- Stratum basale
Thyroid gland

1. Capsule
2. Parenchyma
   - thyroid follicle
     - Structural & functional unite
     - Epithelium - simple cuboidal cells (follicular cells), synthesis thyroxin hormone
     - cell size varies with activeness
     - Lumen of thyroid follicle filled with colloid
   - Parafollicular cells (“C” Cells)
     Present at margin or inter follicular space, Calcitonin
3. Stroma - connective tissue, septa, blood vessels
FIGURE 17.6  Thyroid gland: canine (general view). Stain: hematoxylin and eosin. Low magnification.
FIGURE 17.7  Thyroid gland follicles, follicular cells, and parafollicular cells (sectional view). Stain: hematoxylin and eosin. High magnification.
Slide 42 Thyroid gland

Thyroid follicles
Parathyroid gland

- **Chief cells**
  - Polygonal shape, round nucleus, synthesis **Parathormone**
- **Oxyphill cells** - larger cells, less in number, polygonal, dark
- **Sinusoidal capillaries**
- **Connective tissue, fat cells**
Slide 40 Parathyroid gland

Oxyphil cells
Parathyroid gland
FIGURE 17.8  Thyroid and parathyroid glands: canine (sectional view). Stain: hematoxylin and eosin. Low magnification.
Adrenal gland

- Adrenal cortex
- Adrenal medulla
Adrenal gland

- **Adrenal cortex**
- **Zona glomerulosa** - near capsule. Arched cluster of polygonal cells, secret mineralocorticoids
- **Zona fasciculata** - intermediate zone 65%, straight, parallel cords of polyhedral cells with pale cytoplasm lipid granules (spongiocytes) sinusoidal capillaries. Secret glucocorticoids
- **Zona reticularis** - Inner most layer. Small irregular branching cords of cells. Secret androgen
Adrenal gland

Adrenal medulla
Chromaffin cells
polyhedral cells
(pheochromocyets),
reticular fiber
Ganglion cells
Secret-adrenaline
,noradrenaline
Adrenal Gland H&E

capsule

cortex

cortex

medulla
capsule

zona glomerulosa
[makes mineralcorticooids]
(supercicial ovoid groups)

sinusoidal capillaries

zona fasciculata
[makes glucocorticoids]
(columns of cells)

adrenal medulla
(if present)

zona reticularis
[makes androgens]
(deep anastomosing cords of darker cells)
Pituitary and Pineal Glands

- Pituitary gland
- Pineal gland
- Cerebellum
- Pons
- Medulla oblongata
- Spinal cord
Pituitary gland……

- Parts of pituitary gland
  - Pars anterior
    - (Adenohypophysis)
    - pars distalis
    - pars tuberalis
    - pars intermedia
  - Pars posterior
    - (Neurohypophysis)
FIGURE 17.1  Hypophysis: adenohypophysis and neurohypophysis (panoramic view, sagittal section).
Stain: hematoxylin and eosin. Low magnification.
Pituitary gland……

- Pars distalis
- Chromophils
- **Acidophils**- pink cytoplasm
- Somatotrophs- growth hormone
- Lactotrophs- prolatin
- **Basophils**- blue cytoplasm
- Gonadotrophs- FSH, LH
- Thyrotrophs- TSH
- Corticotrophs –ACTH
- **Chromophobes**- inactive phase of Chromophilis
- **Pars tuberalis**- same as Pars distalis
Pituitary gland…..

- **Pars intermedia**-
  - colloid filled cyst and follicle
  - MSH& Endorphins
- **Pars posterior** *(Neurohypophysis)*
  - Unmyelinated nerve fibres
  - Pituicytes- glial cells
  - Herring bodies
FIGURE 17.2  Hypophysis: sections of pars distalis, pars intermedia, and pars nervosa. Stain: hematoxylin and eosin. Medium magnification.
FIGURE 17.3  ■ Pars distalis of adenohypophysis: acidophils, basophils, and chromophobes. Stain: azan. High magnification.
FIGURE 17.4  ■  Cell types in the hypophysis. Stain: modified azan. Oil immersion.
Slide 38 Pituitary gland

Pars Intermedia

Pars Nervosa

Pars Distalis
Pineal gland

- **Pinealocytes (95%)**
  - modified, neurons, large cytoplasmic process

- **Astroglial cells**
  - Dark nuclei, supportive cells

- **Brain sand** (corpora arenacea) extra cellular bodies contains calcium and magnesium phosphate
Pineal Gland

- astrocyte
- pinealocytes