

Thyroid Pathology

Kristine Krafts, M.D.

Introduction

Hyperthyroidism

Hypothyroidism

Non-neoplastic diseases

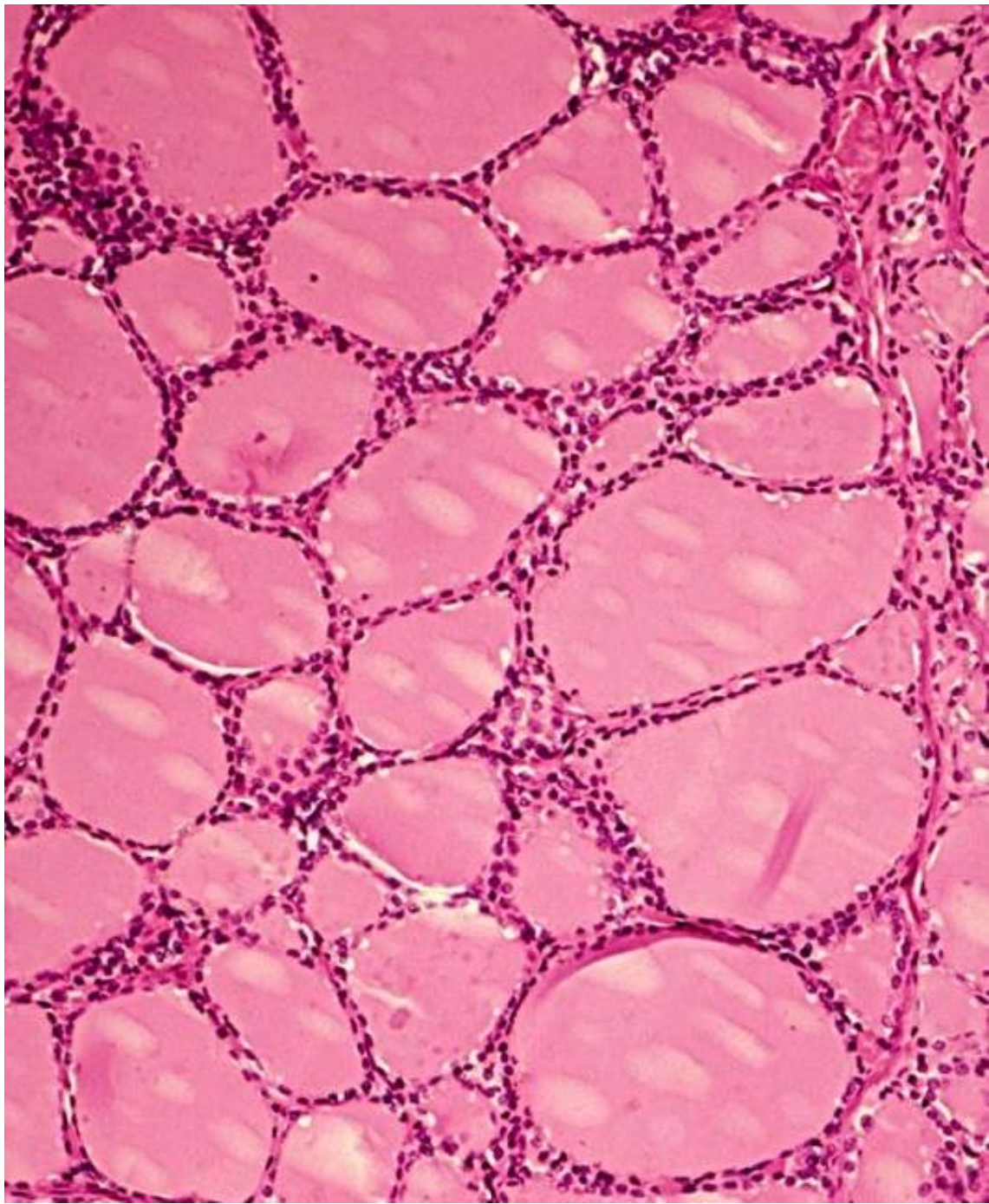
Neoplastic diseases



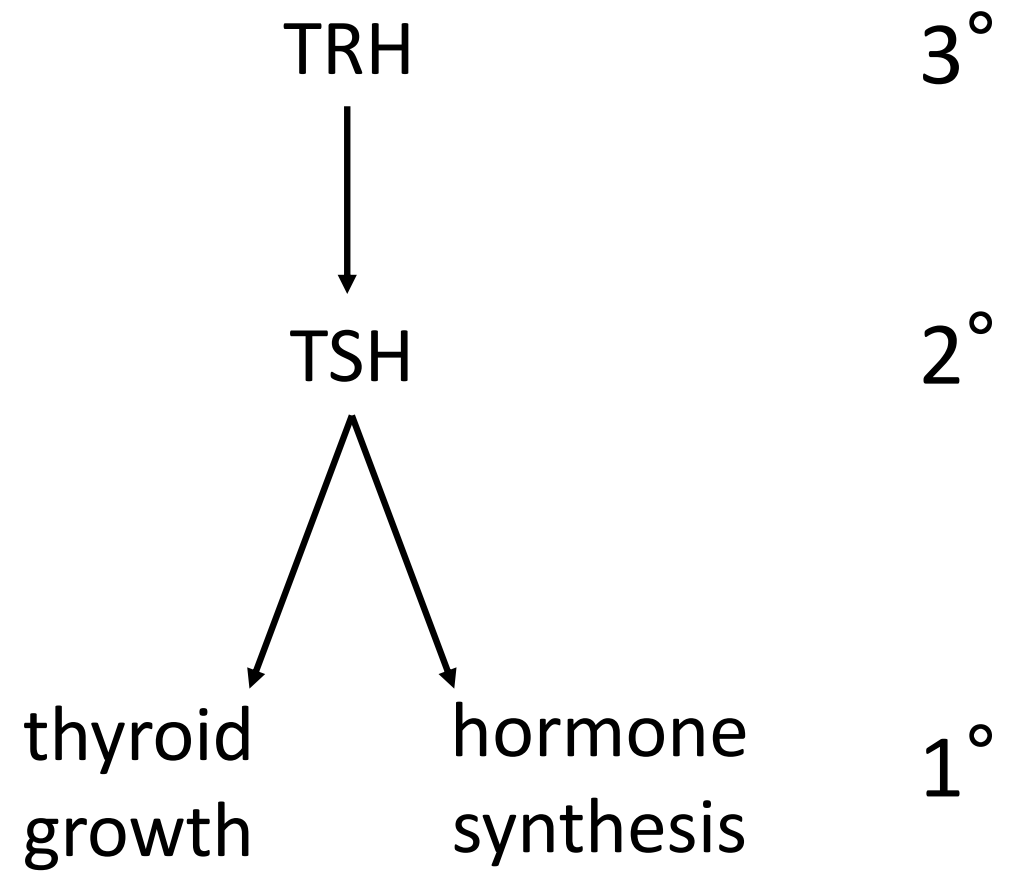
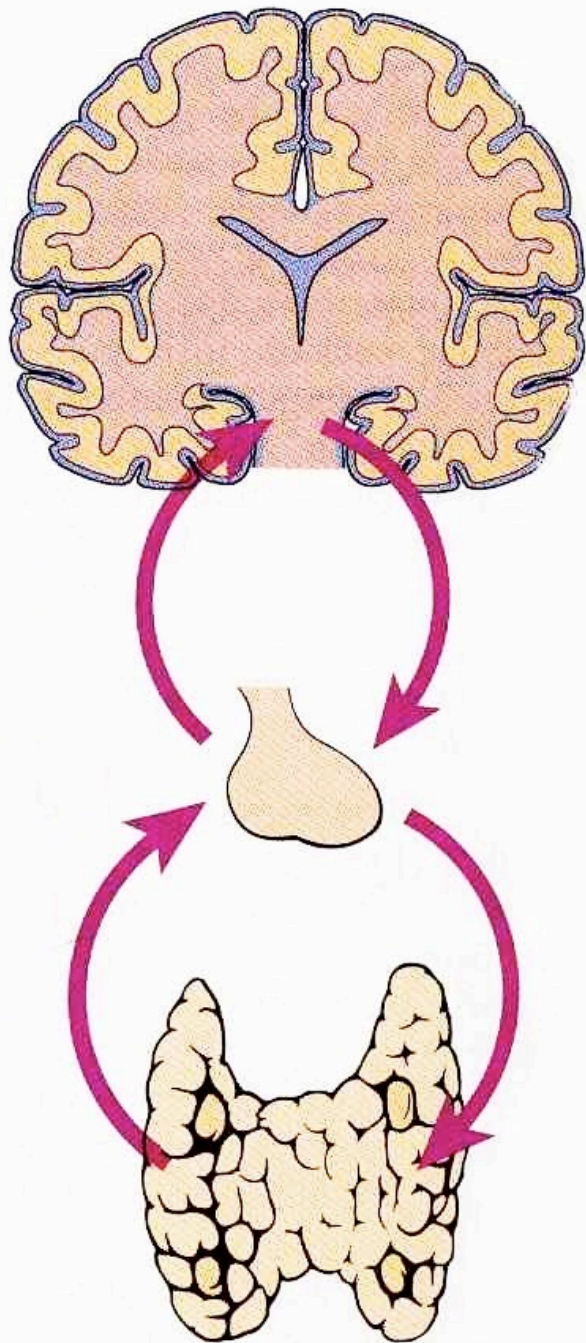




Introduction



Normal thyroid follicles

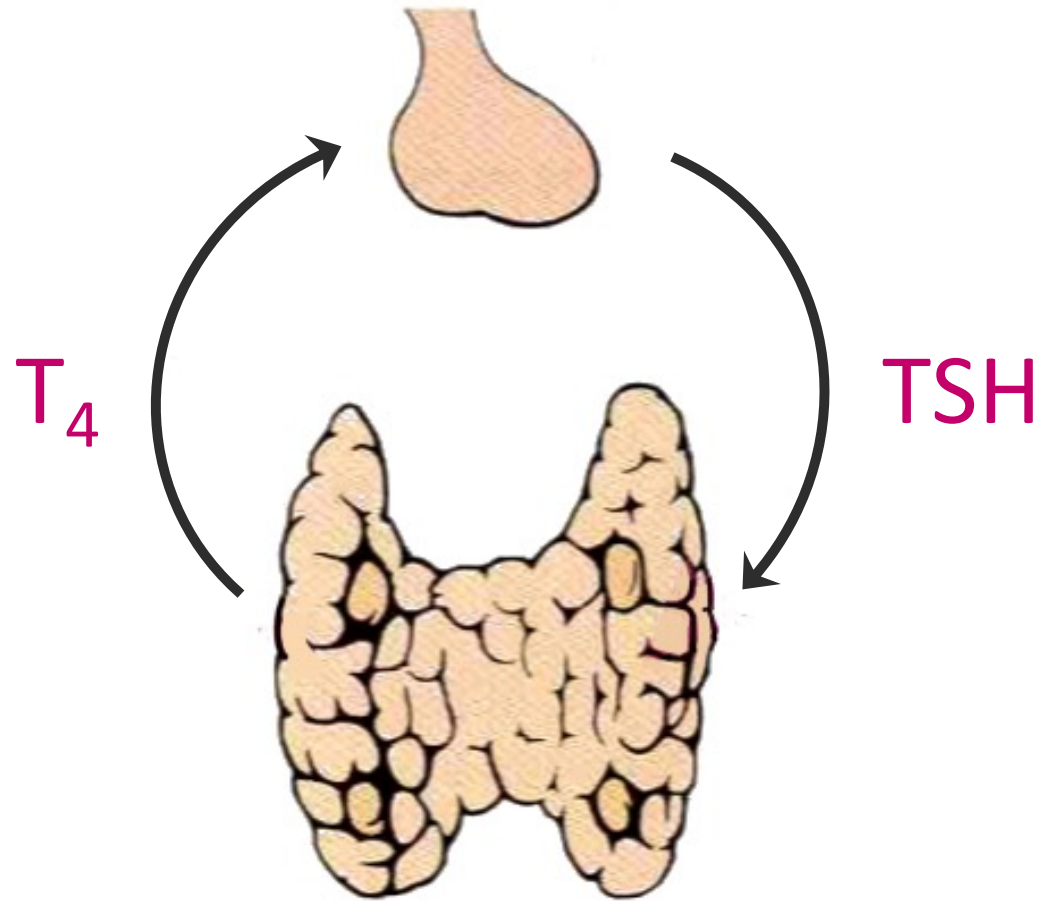


Lab Tests

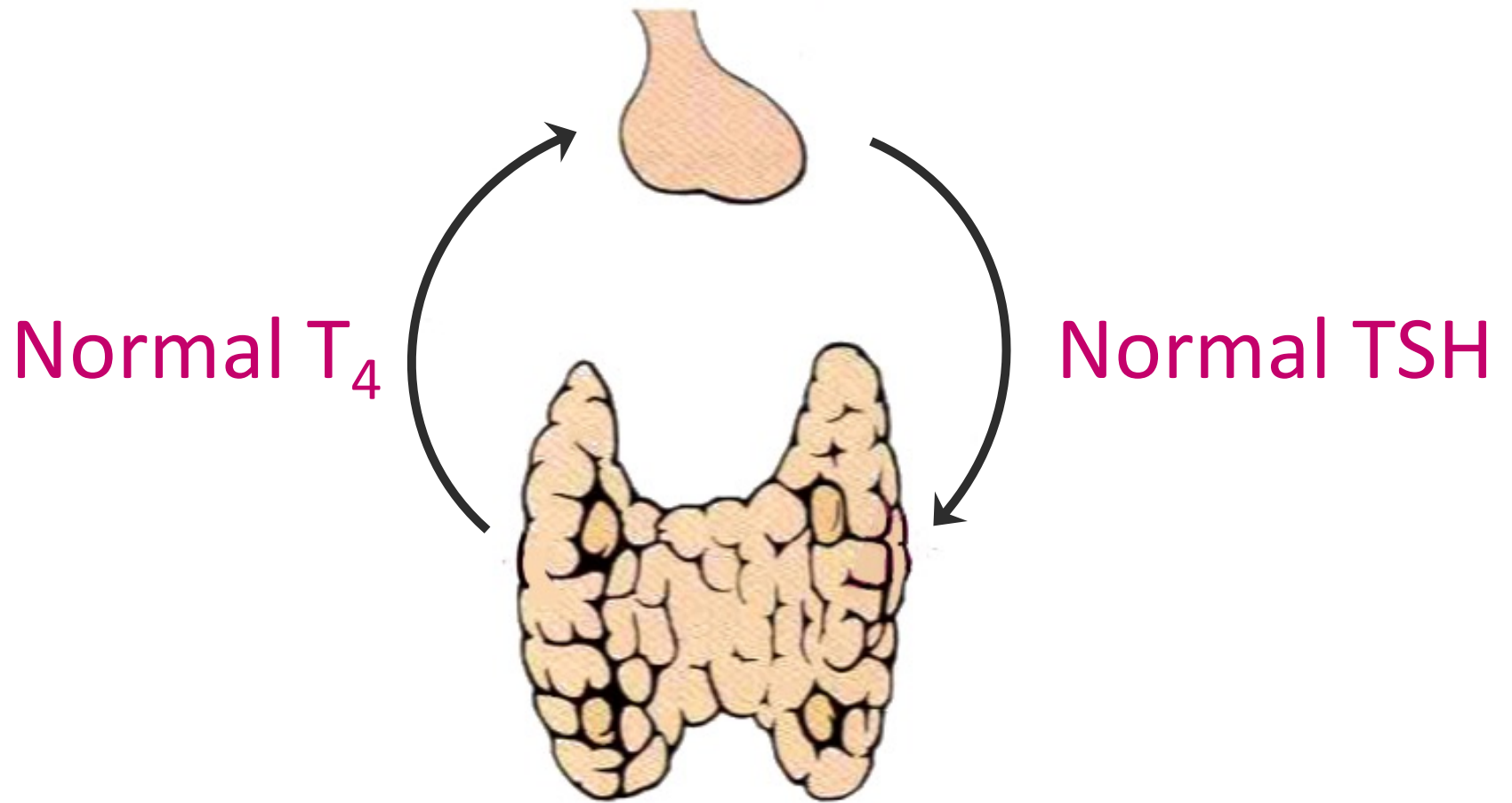




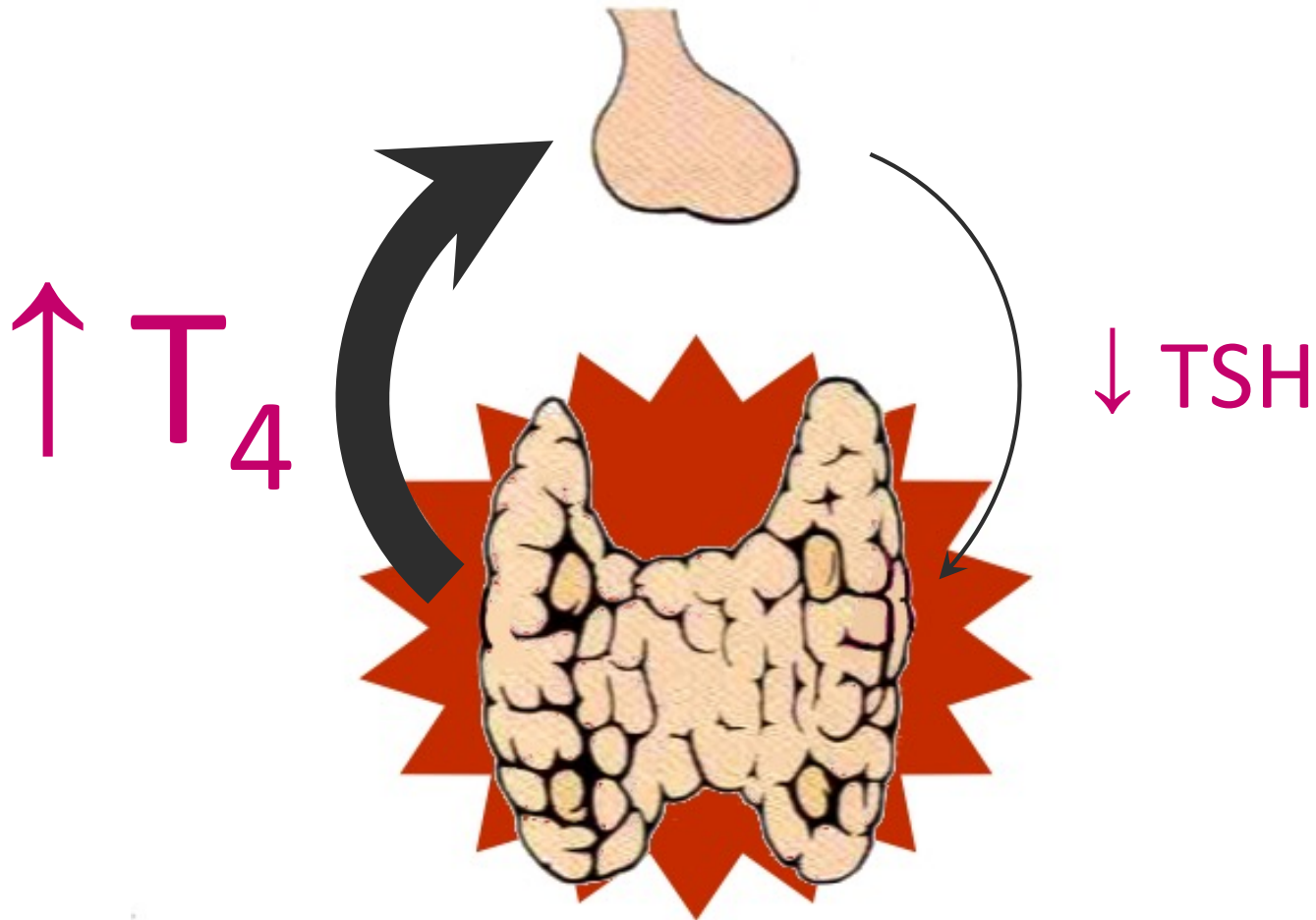
Thyroid Lab Tests



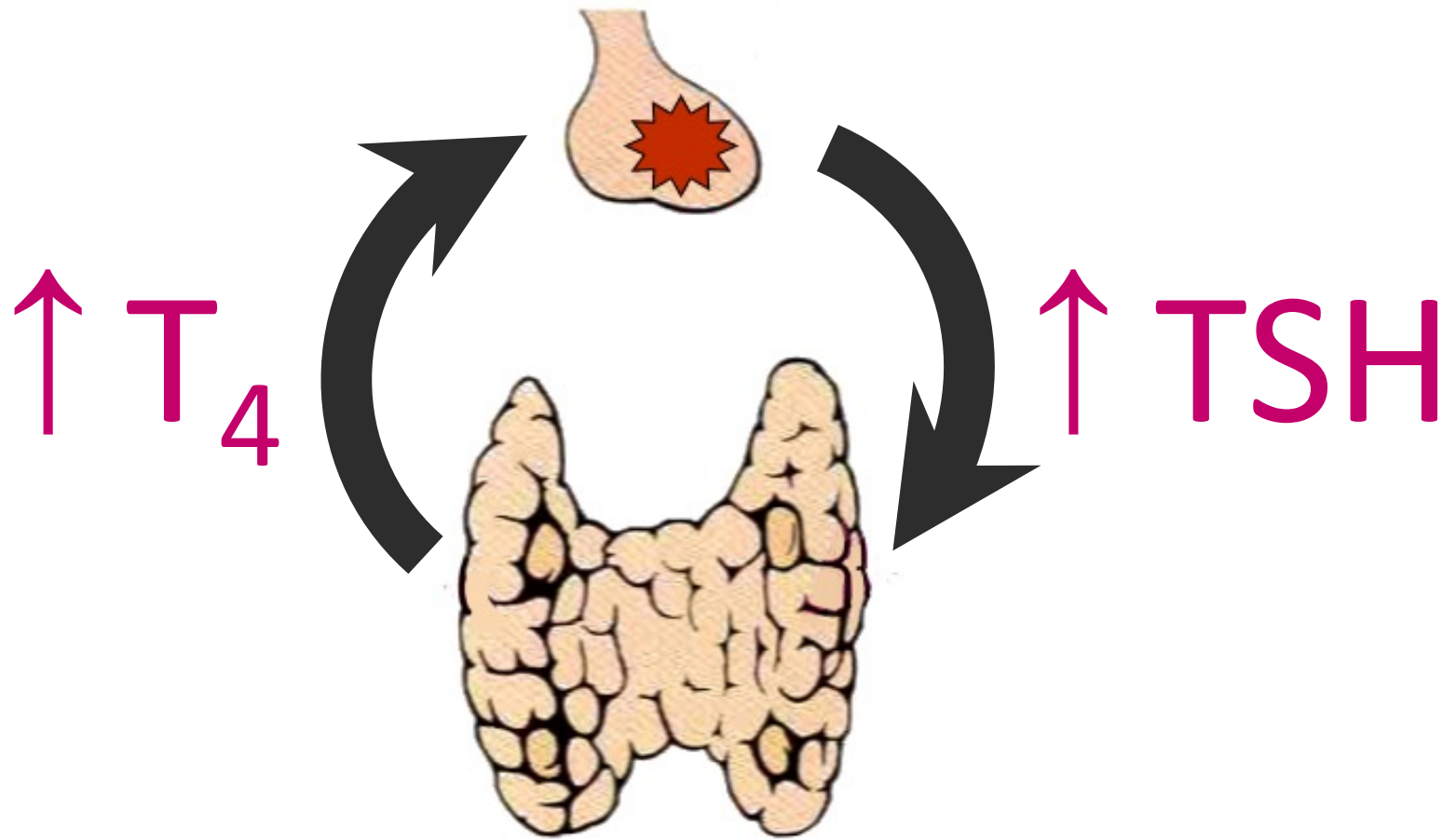
Euthyroidism (Normal)



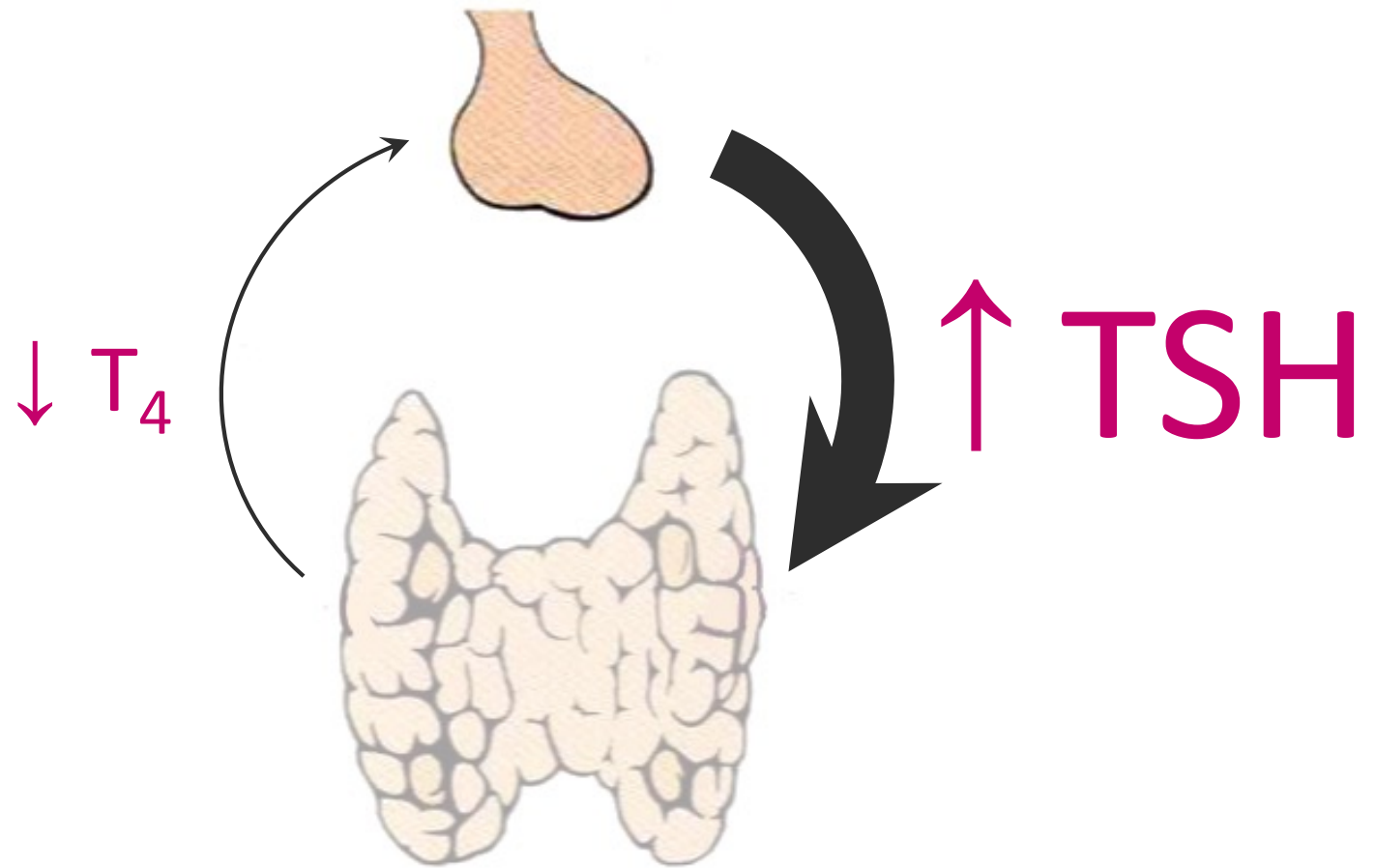
Primary Hyperthyroidism



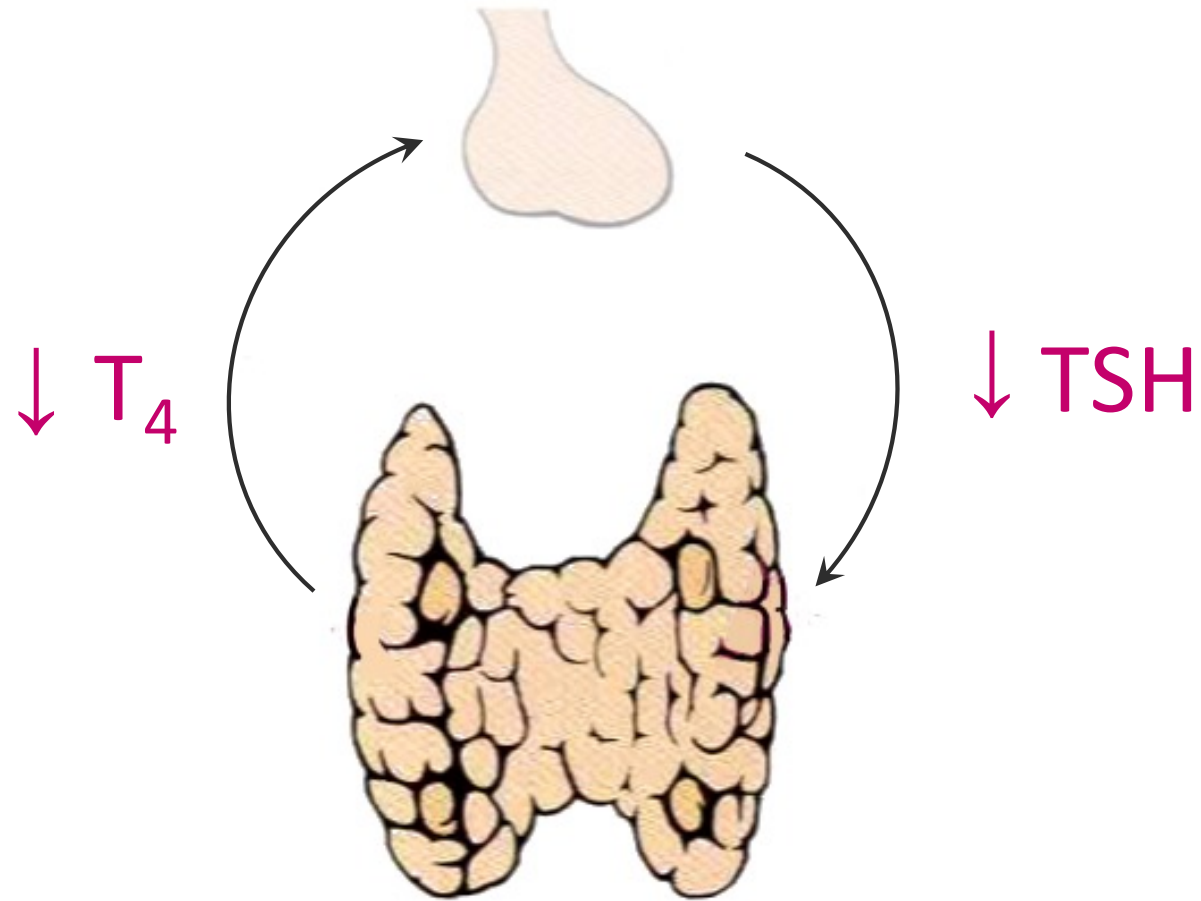
Secondary Hyperthyroidism



Primary Hypothyroidism



Secondary Hypothyroidism





Hyperthyroidism

A hypermetabolic state caused by increased thyroid hormone.

Hyperthyroidism Signs and Symptoms

General: weight loss, heat intolerance

Cardiac: rapid pulse, arrhythmias

Neuromuscular: tremor, emotional lability

Skin: warm, moist

Gastrointestinal: diarrhea

Eye: lid lag

Thyroid storm: extreme, dangerous symptoms

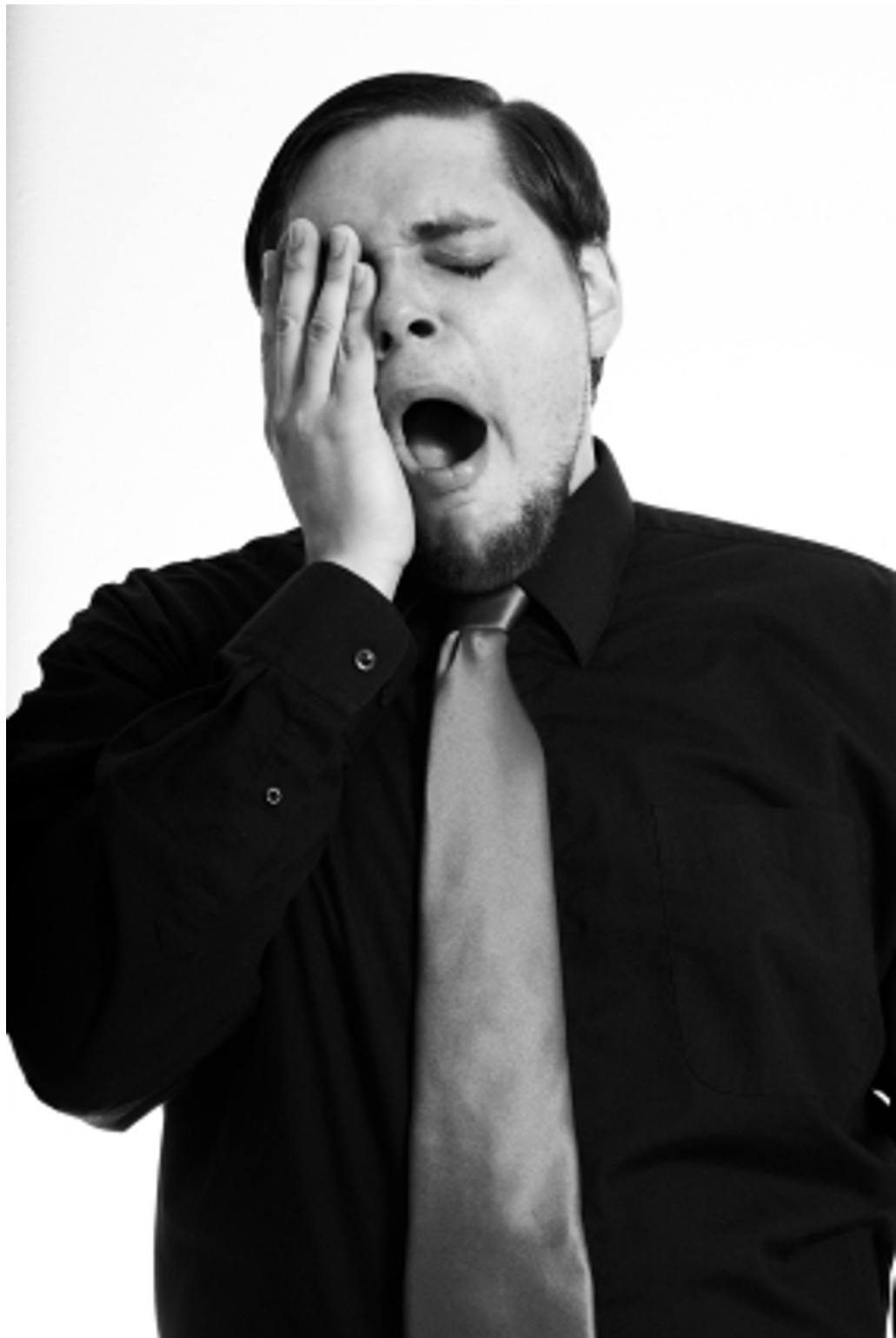


Lid lag

Introduction

Hyperthyroidism

Hypothyroidism



Hypothyroidism

A hypometabolic state caused by increased thyroid hormone.

Hypothyroidism Signs and Symptoms

General: fatigue, weight gain, cold intolerance

Cardiac: slow pulse, impaired contraction

Nervous: delayed reflexes, lethargy

Skin: rough, dry, cool

Gastrointestinal: reduced appetite, constipation

Myxedema: deepened voice, “edema”

Myxedema coma: deteriorating mental status



Myxedema

Introduction

Hyperthyroidism

Hypothyroidism

Non-neoplastic diseases

Introduction

Hyperthyroidism

Hypothyroidism

Non-neoplastic diseases

- Thyroiditis
- Graves disease
- Goiter

Introduction

Hyperthyroidism

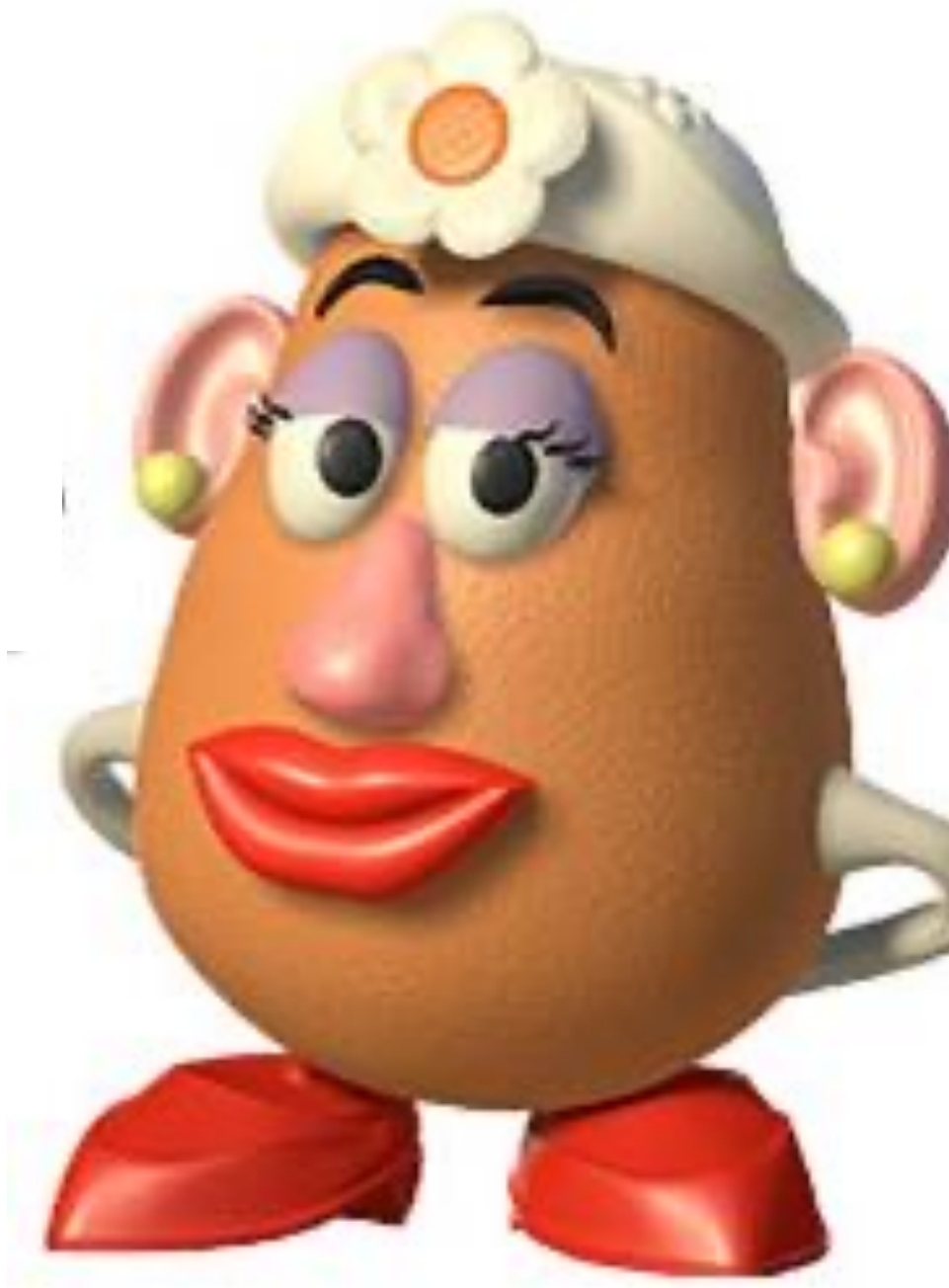
Hypothyroidism

Non-neoplastic diseases

- Thyroiditis

Hashimoto Thyroiditis

- Most common cause of hypothyroidism in the US!
- Autoimmune destruction of gland
- Diagnostic autoantibodies:
 - Anti-thyroglobulin antibody
 - Anti-thyroid peroxidase antibody



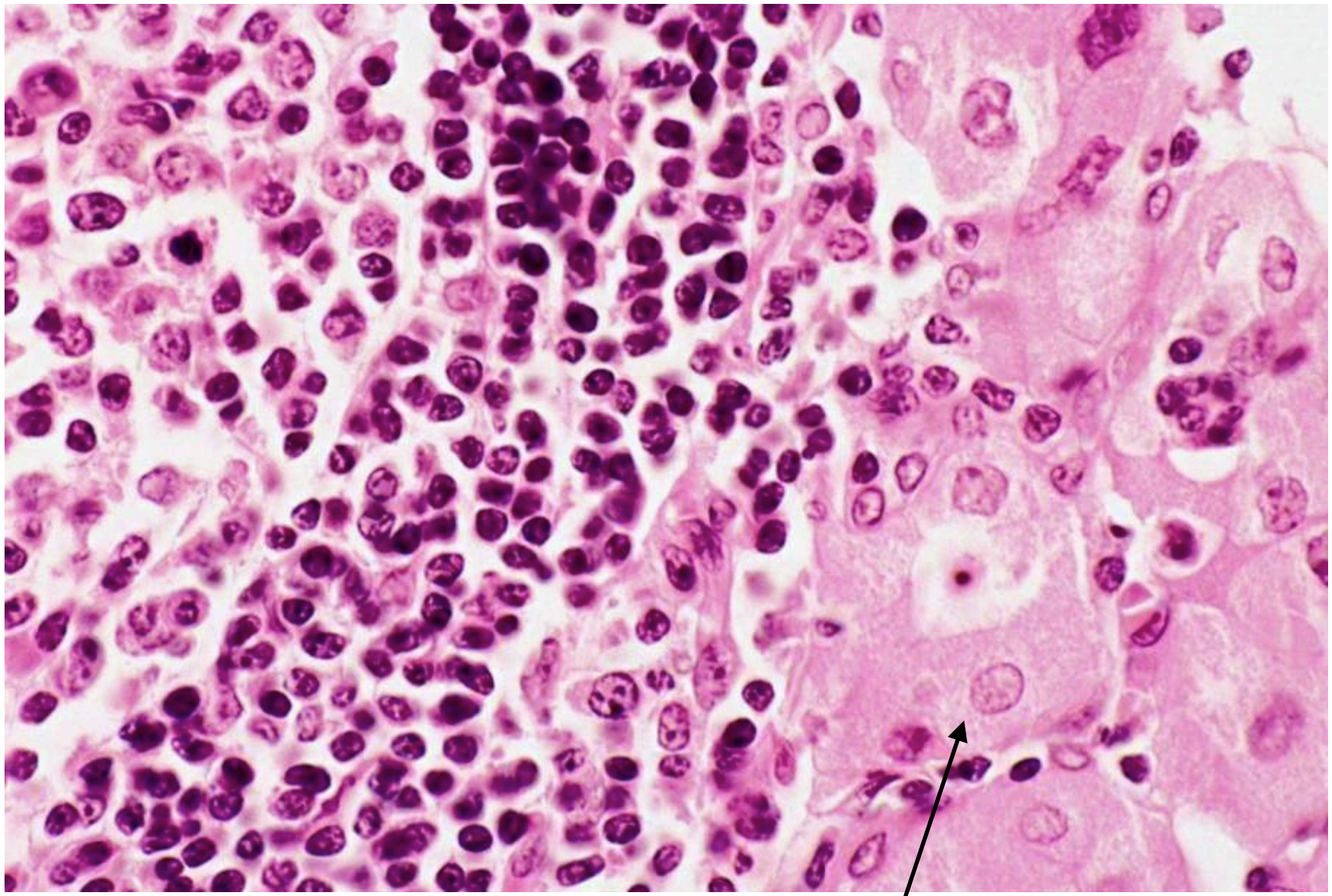
Mrs. Potatohead

Hashimoto Thyroiditis

Female

“Hash”

Myxedema



Hashimoto thyroiditis: Hürthle cells

DeQuervain Thyroiditis

- Big, sore thyroid
- Recent URI
- Immune cross-reaction with thyroid follicles
- Self-limiting



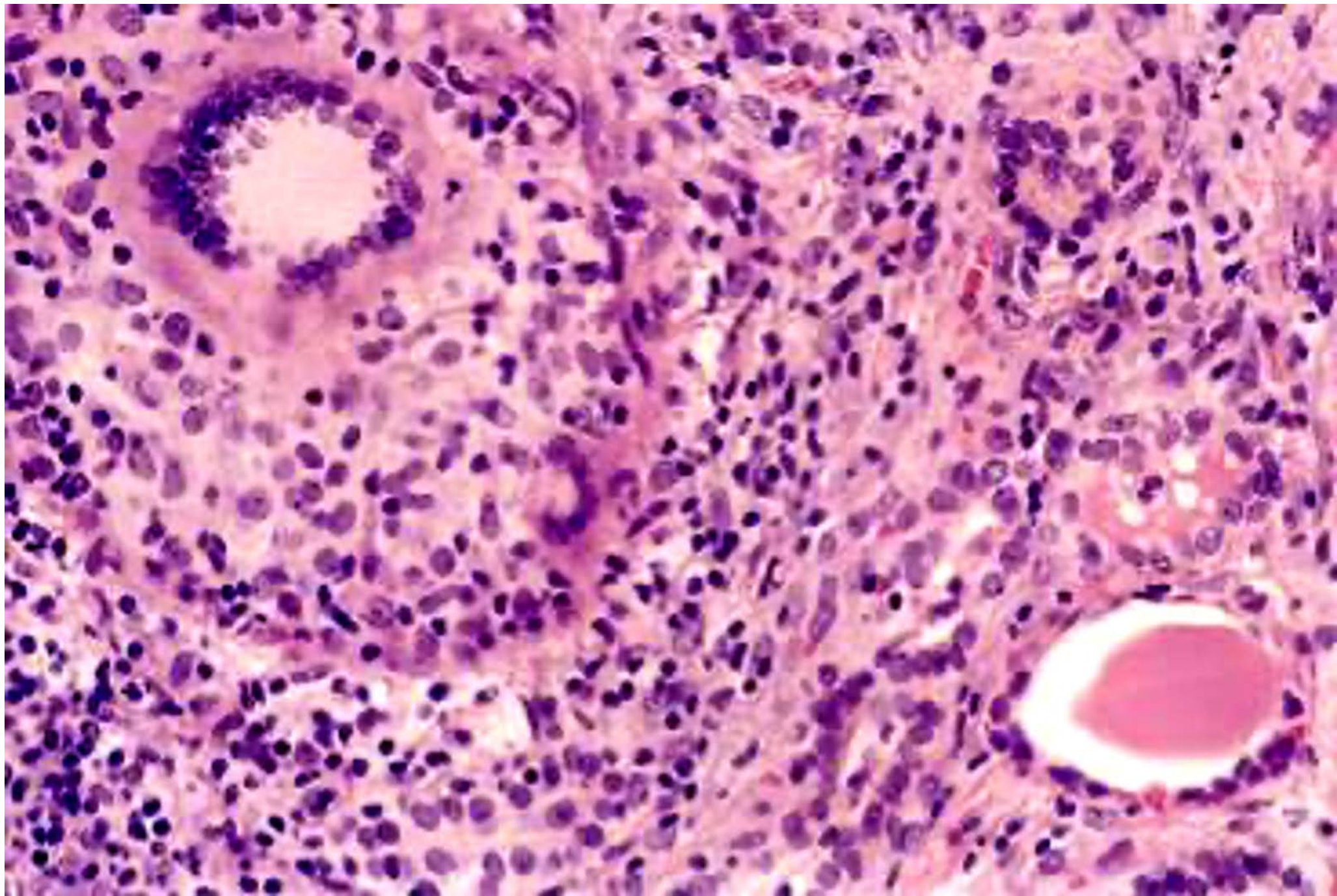
Rex

DeQuervain Thyroiditis

Looks scary

Really harmless

Goes away by itself



De Quervain thyroiditis: multinucleated giant cell

Silent Thyroiditis

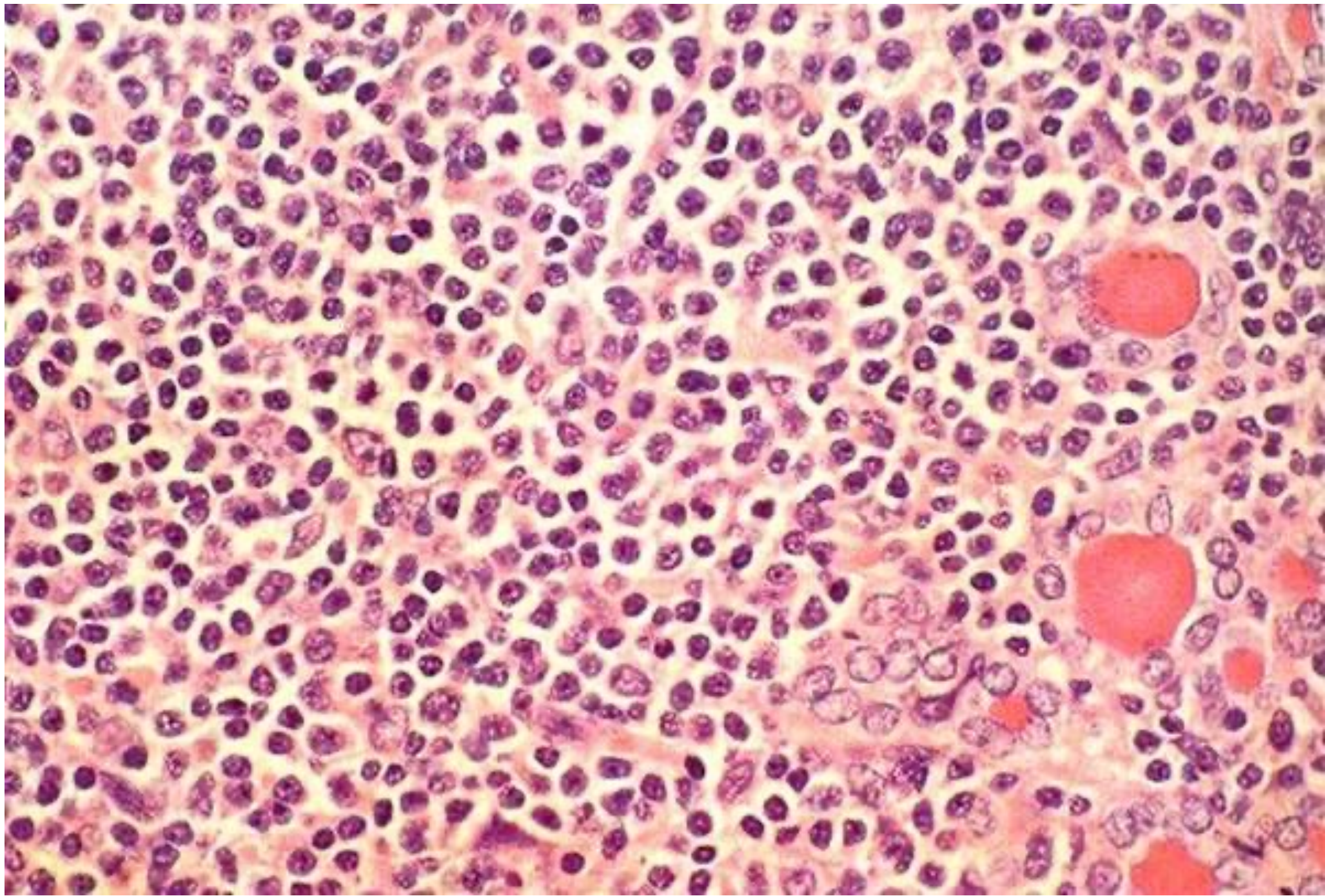
- Post-partum or middle age.
- Painless, slightly enlarged thyroid.



Silent Thyroiditis

Silent
Doesn't cause problems

Bullseye



Silent thyroiditis: lymphoid infiltrate

Reidel Thyroiditis

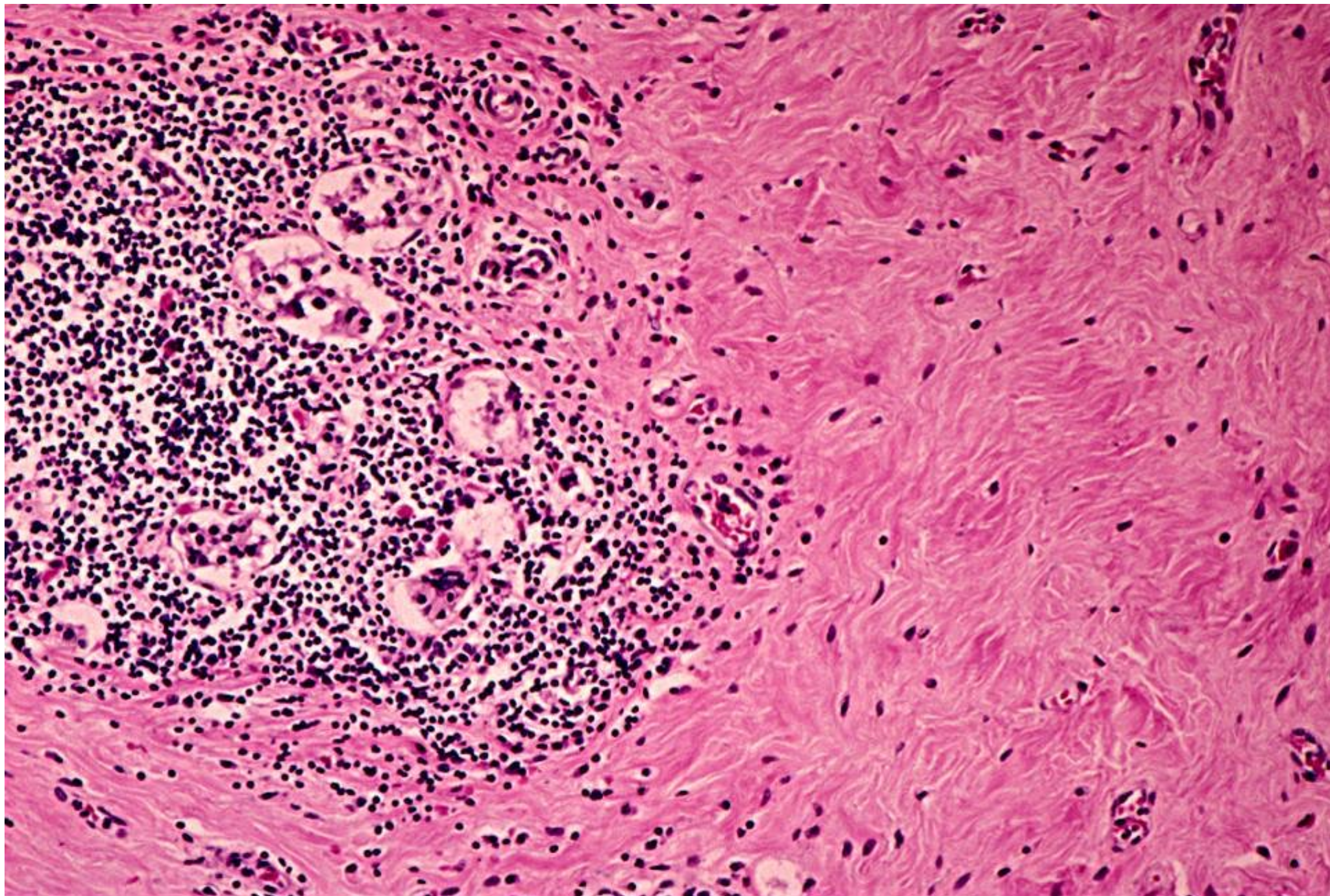
- Rare!
- Rock-hard neck mass
- Hypothyroidism
- Tracheal compression



Fibrosing Thyroiditis

Woody

Woody



Reidel thyroiditis

Introduction

Hyperthyroidism

Hypothyroidism

Non-neoplastic diseases

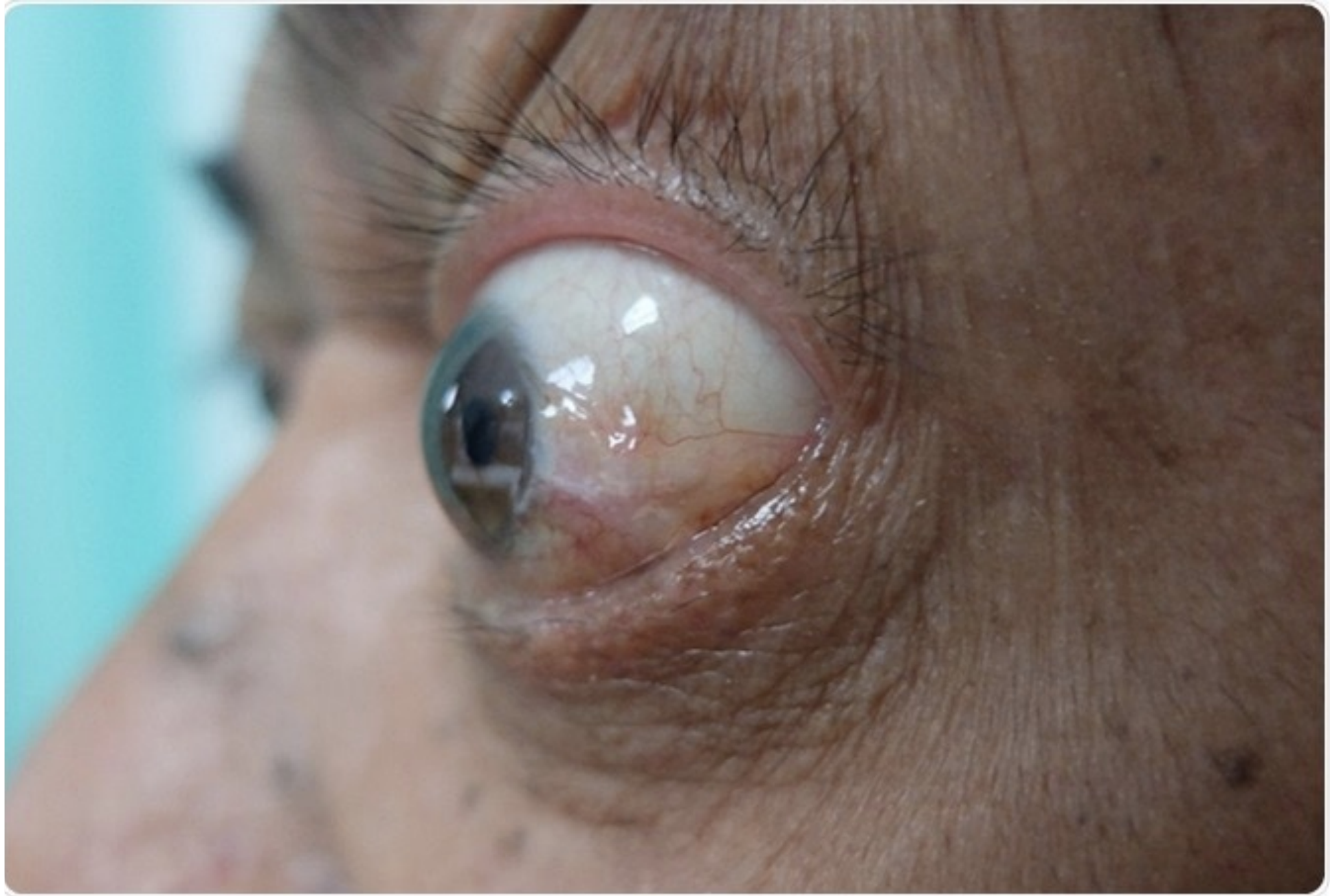
- Thyroiditis
- Graves disease

Graves Disease

- Most common cause of hyperthyroidism in the US!
- Classic triad: hyperthyroidism, ophthalmopathy, dermopathy
- Autoimmune stimulation of thyroid
- Diagnostic autoantibody: anti-TSH receptor antibody (stimulates growth)



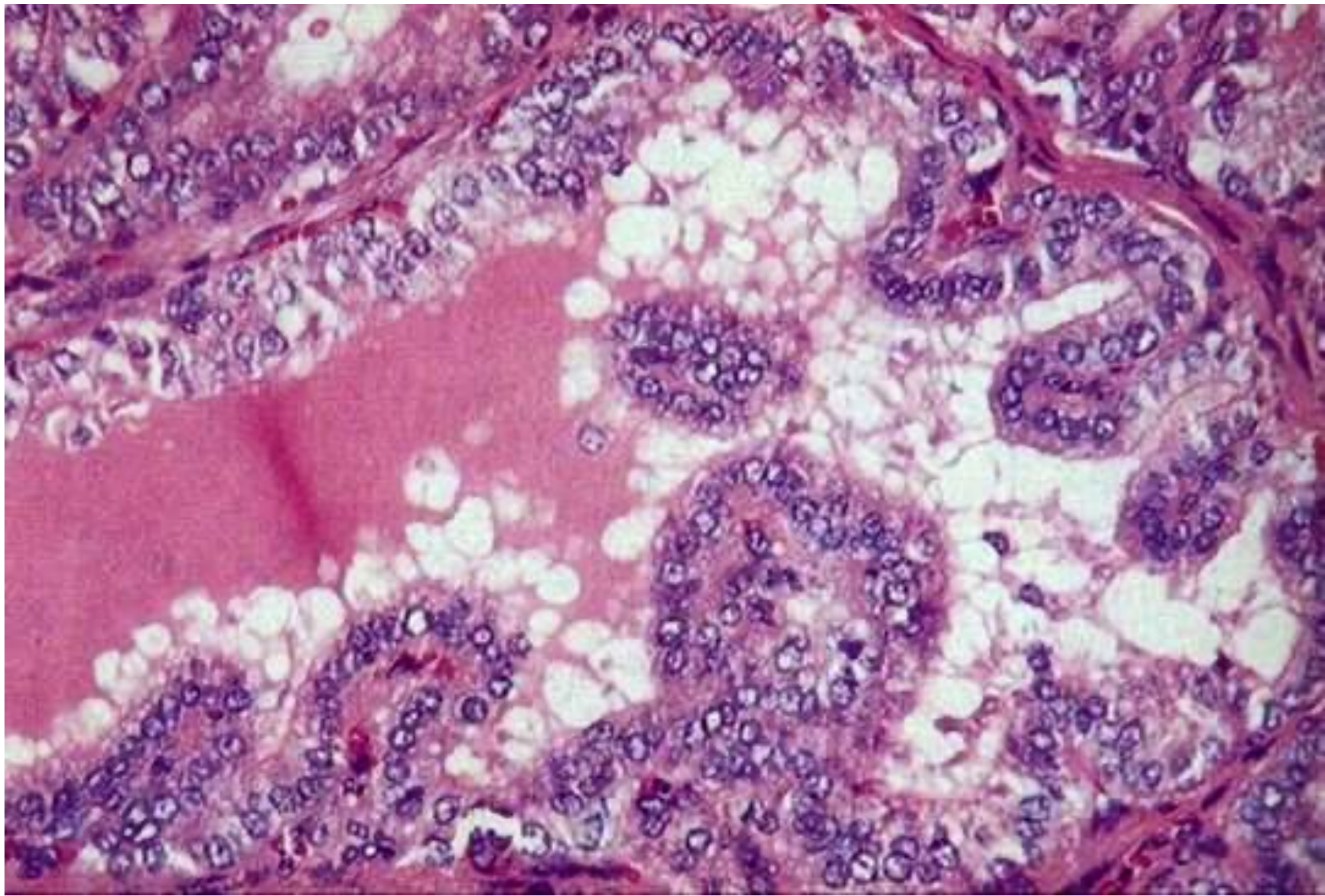
Marty Feldman



Exophthalmos



Graves disease dermopathy



Graves disease: papillae and scalloped colloid

Introduction

Hyperthyroidism

Hypothyroidism

Non-neoplastic diseases

- Thyroiditis
- Graves disease
- Goiter

Goiter

- “Goiter” = big thyroid gland
- You can see a goiter in Graves disease and in some cases of thyroiditis.
- You can also see a goiter in patients who aren’t making enough T_4 .

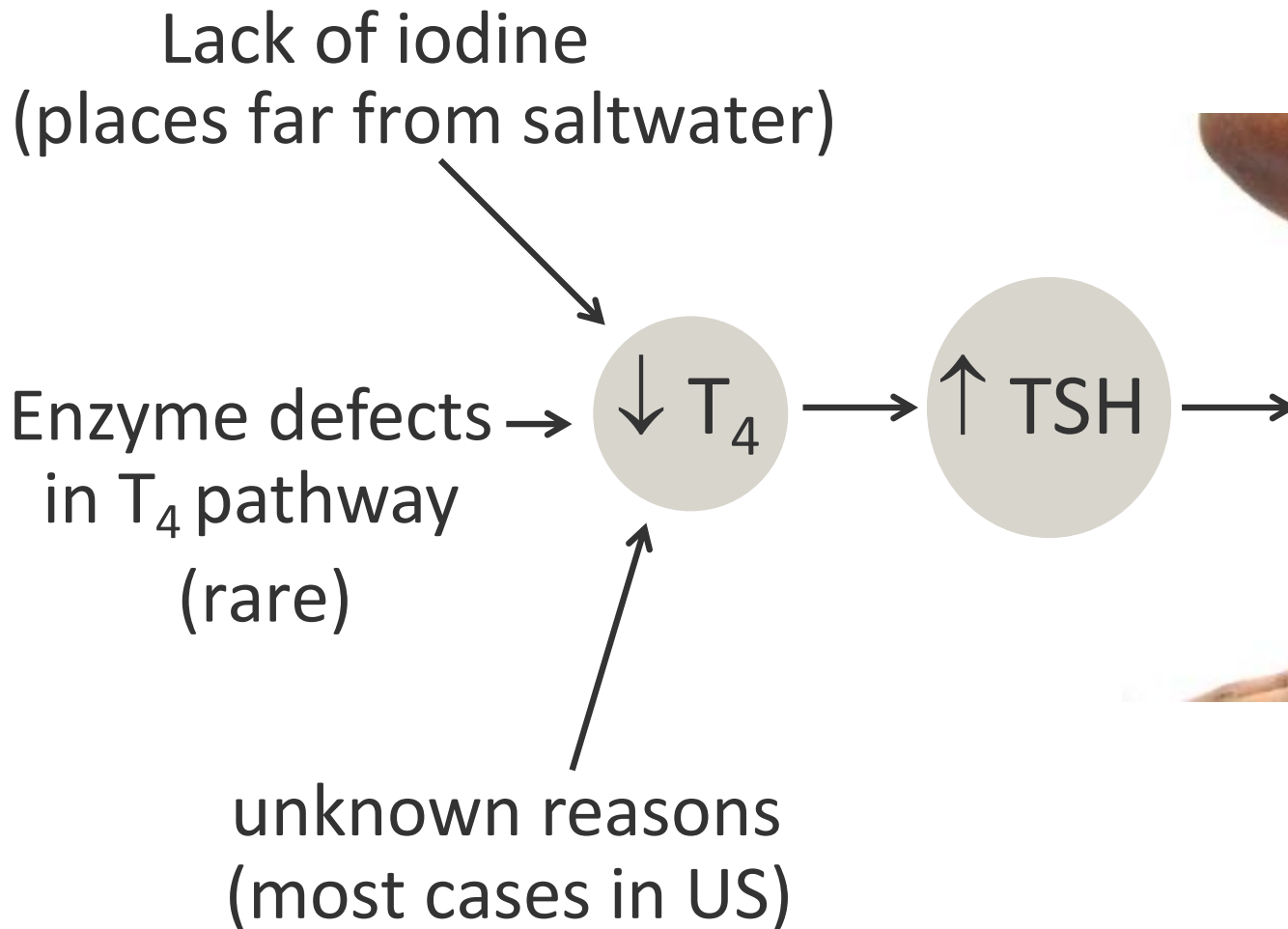


Goiter



Goiter

How you get a goiter from $\downarrow T_4$ synthesis



Introduction

Hyperthyroidism

Hypothyroidism

Non-neoplastic diseases

Neoplastic diseases

- Benign
- Malignant

Introduction

Hyperthyroidism

Hypothyroidism

Non-neoplastic diseases

Neoplastic diseases

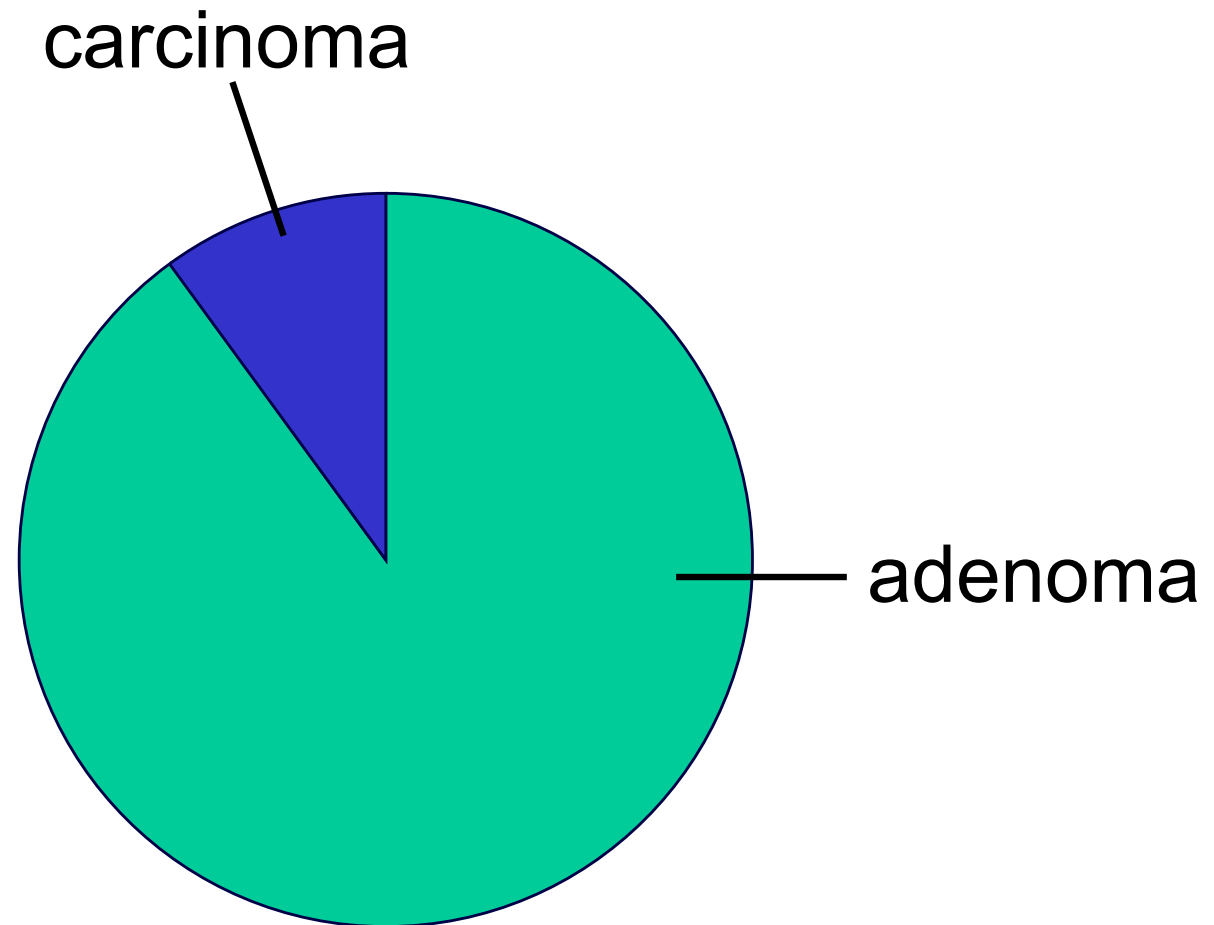
- Benign

Thyroid neoplasms

Most neoplasms present as nodules.

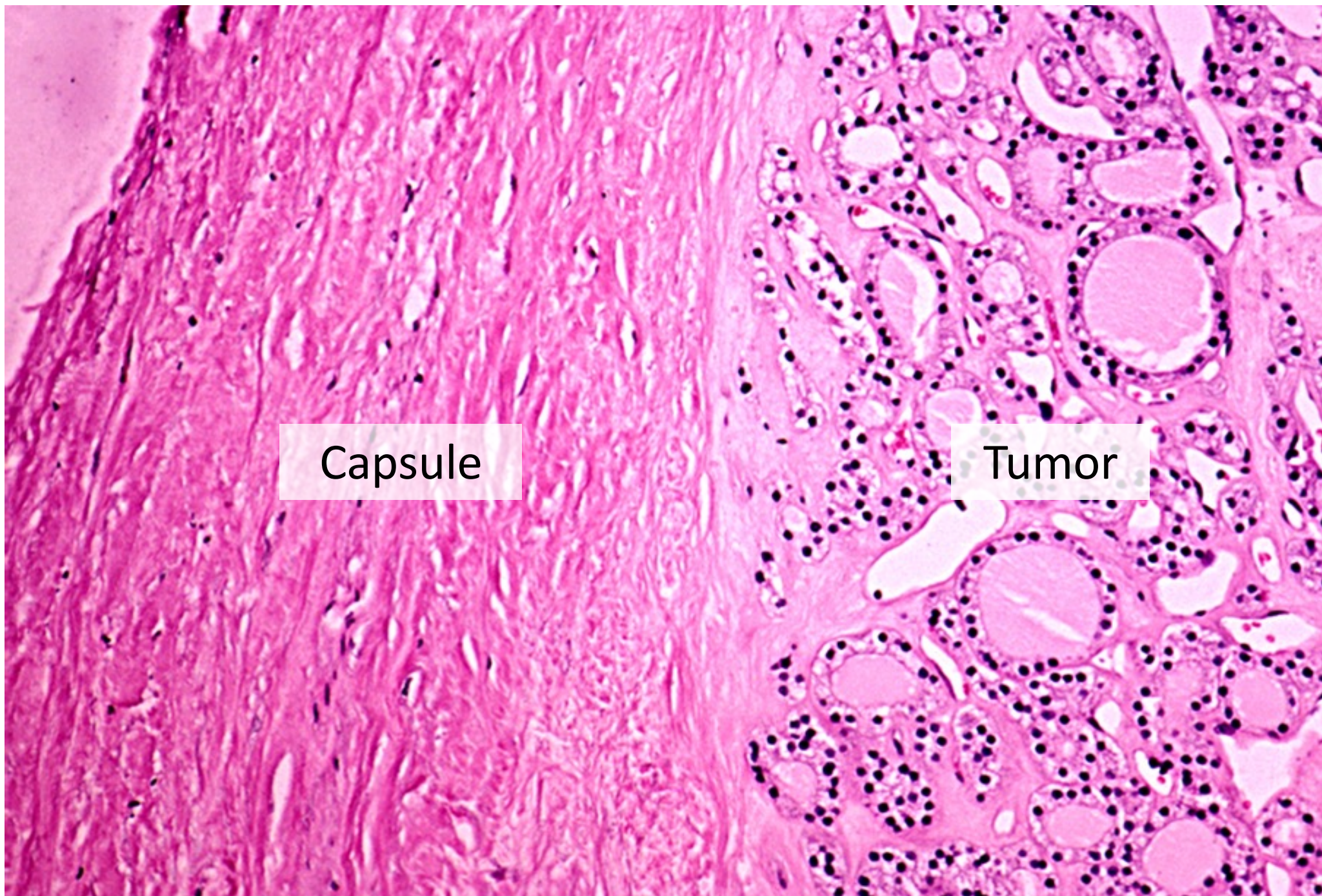
- Nodules are common!
- Most are benign.
- Thyroid carcinoma is uncommon.

Incidence of thyroid carcinoma vs. adenoma



Thyroid adenoma

- Common!
- Most patients are euthyroid
- Some are hyperthyroid



Capsule

Tumor

Adenoma

Thyroid adenoma

Treatment: take it out!

Q. Why, if it's benign?

A. Because thyroid adenomas can look exactly like follicular thyroid carcinoma!

Introduction

Hyperthyroidism

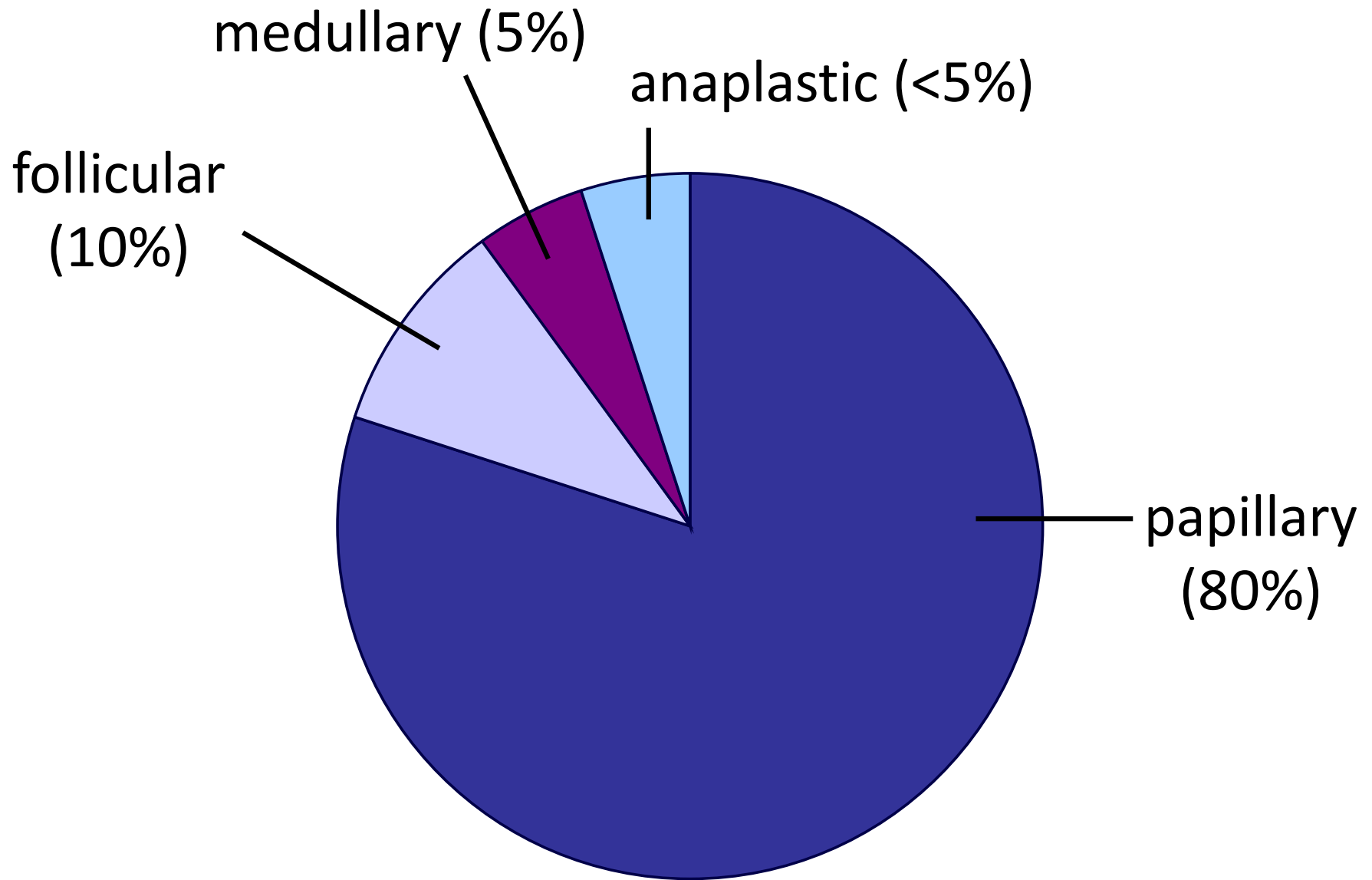
Hypothyroidism

Non-neoplastic diseases

Neoplastic diseases

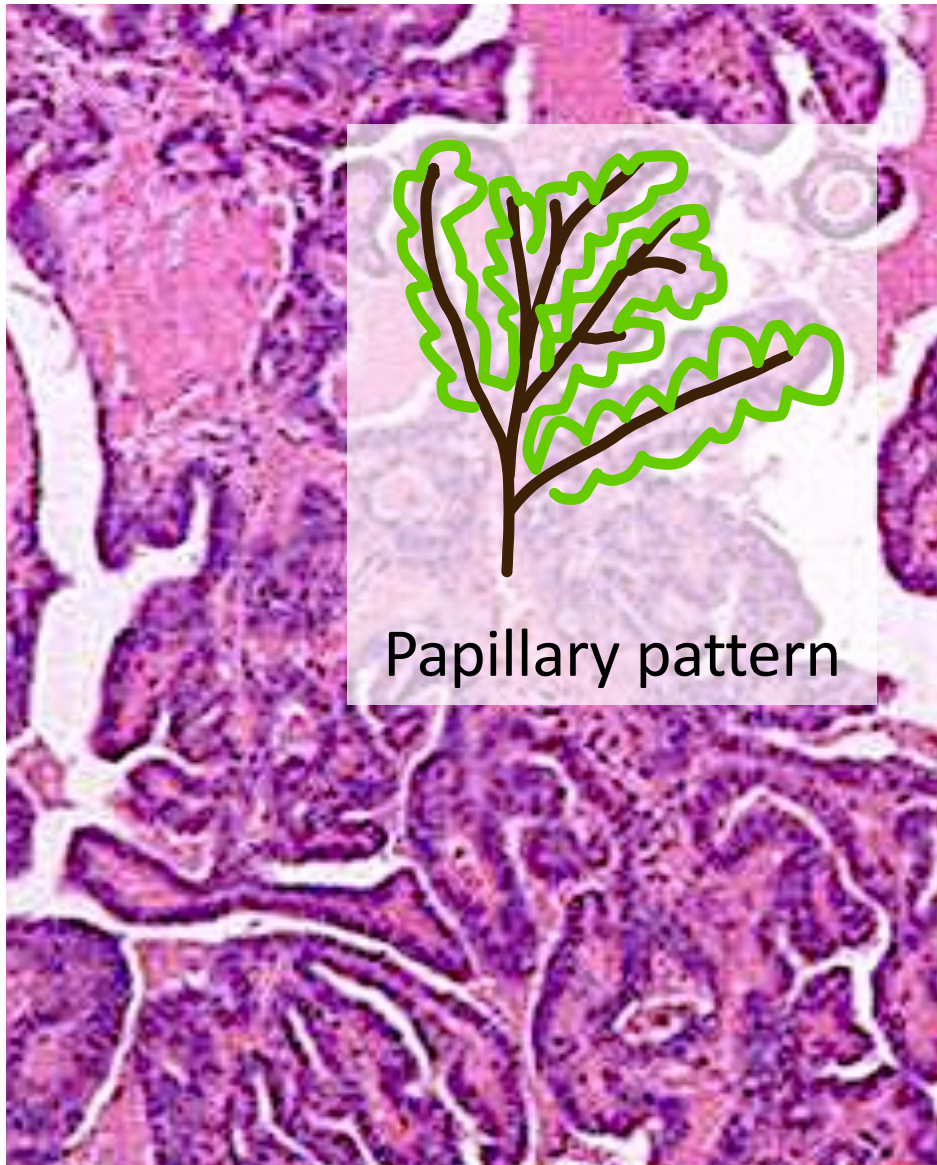
- Benign
- Malignant

Incidence of Different Types of Thyroid Carcinoma

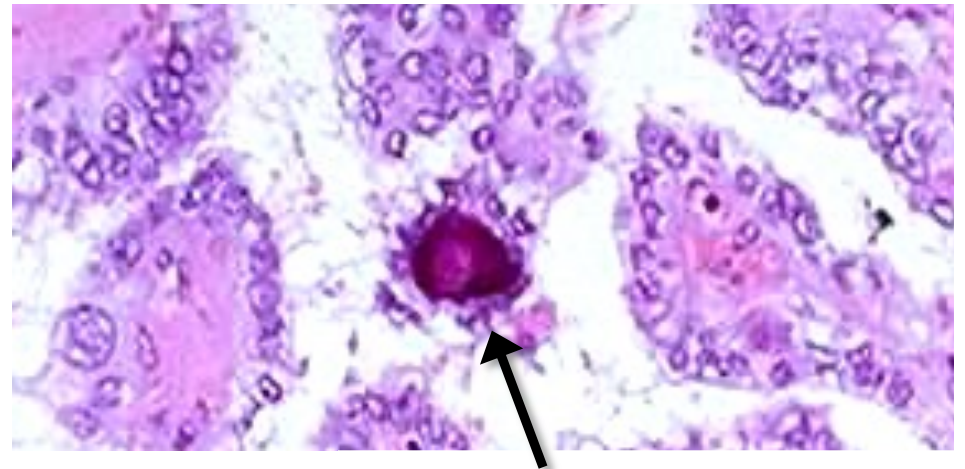
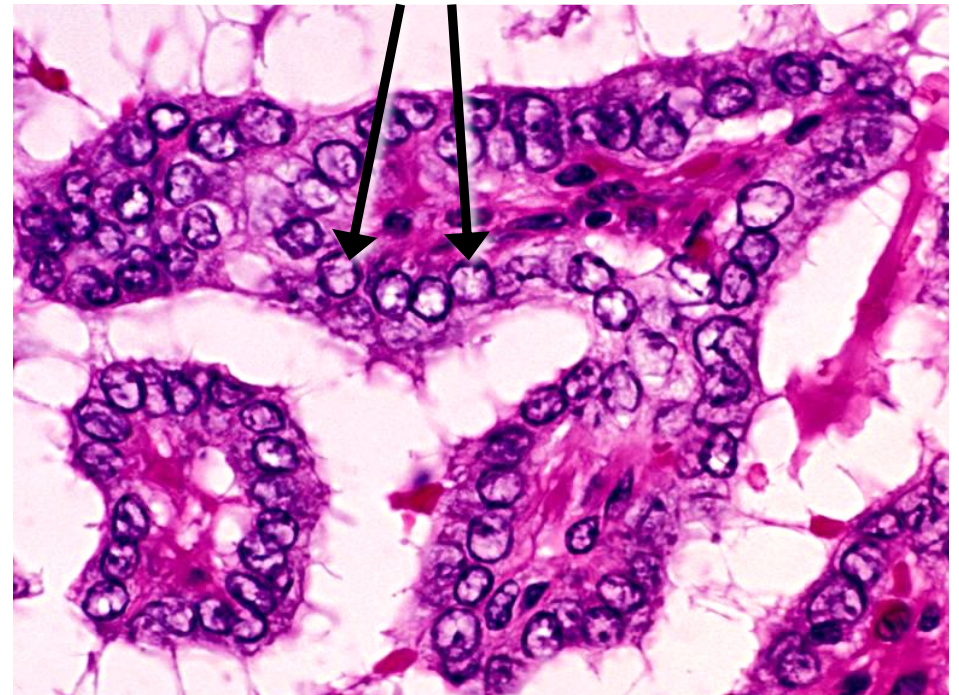


Papillary Thyroid Carcinoma

- Most common thyroid malignancy
- Excellent prognosis (>95% 10y survival)
- “Orphan Annie” tumor



Orphan Annie nuclei



Papillary thyroid carcinoma

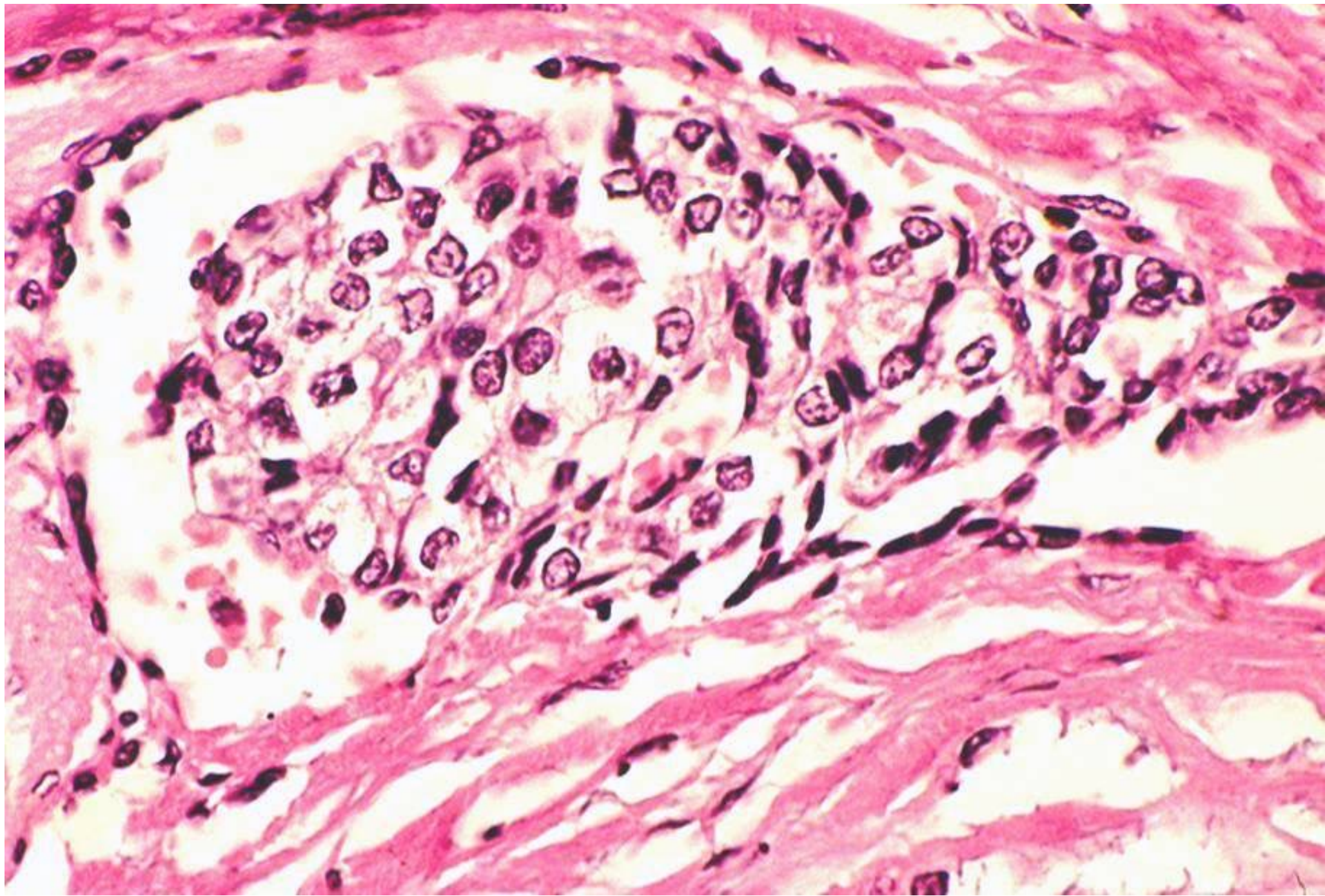
Papillary Carcinoma: The Little Orphan Annie Tumor



- Often affects younger women
- Tends to stay around for years without getting any bigger
- Is usually well-behaved; seldom kills people
- Has nuclei that resemble Orphan Annie's eyes
- Has psammoma bodies (from the greek *psammos*, or sand) - Annie's dog is named Sandy

Follicular Thyroid Carcinoma

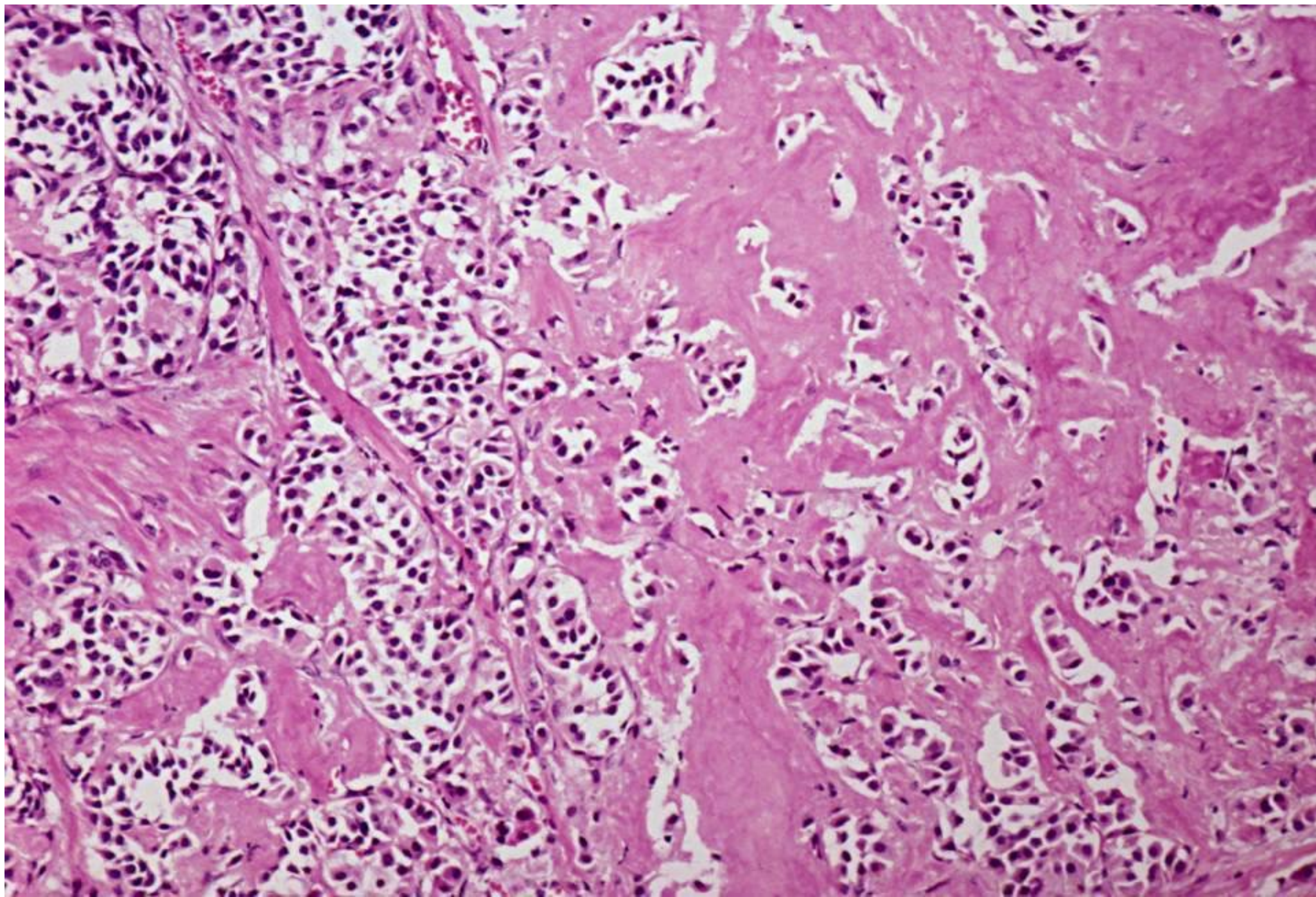
- Second most common type
- Young patient with small, minimally invasive tumor: 95% 10y survival
- Prognosis worsens with increasing age, tumor size, and invasiveness



Follicular thyroid carcinoma: vascular invasion

Medullary Thyroid Carcinoma

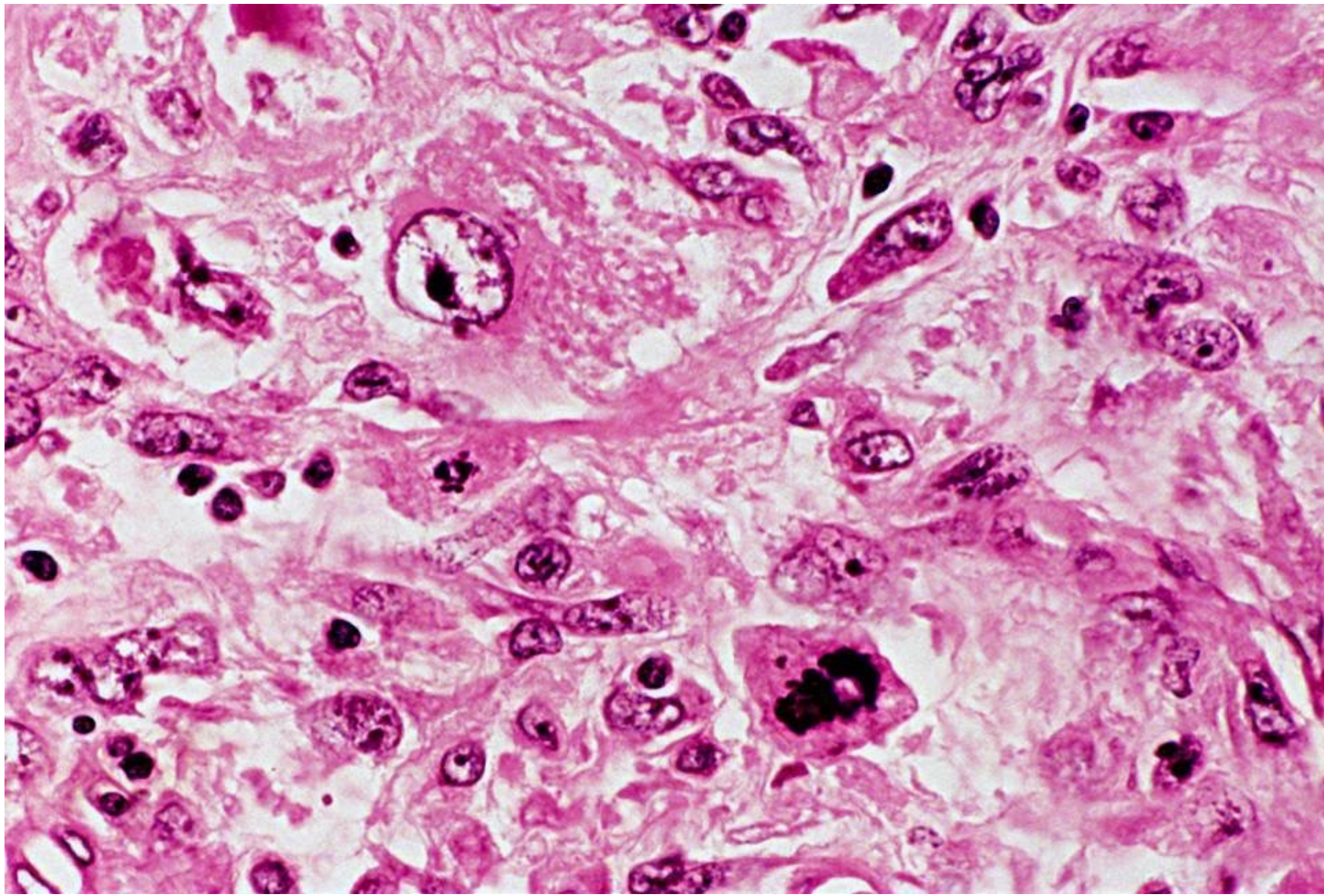
- Rare
- Endocrine tumor (of C cells)
- Confined to thyroid: 90% 10y survival
- Distant mets: 20% 10y survival



Medullary thyroid carcinoma

Anaplastic Thyroid Carcinoma

- Rarest type
- Bulky, fast-growing, invasive neck mass
- Usually metastatic at diagnosis
- Very bad prognosis (<10% 5y survival)



Anaplastic thyroid carcinoma