Thyroid tumors & nodules info	
Epidem	-Rare -females -if present, is benign (e.g.: follicular adenoma)
Gross	-If found, solitary small nodule -if a nodule is found, its highly Likely to be a tumor
Diagnosis Method	using Radioactive Uptake Study RUS great uptake = active nodule (graves) minor uptake = inhibited nodule (tumors - require fine needle aspiration for diagnosis of which type of tumors)
Diagnoses (clues)	**Tumors** -if a nodule found in a young male -if it was solitary **Benign tumor** Hot tumor (using RUS - high uptake) **Malignant tumor** Patient had a history of head and/or neck radiation
Toxic tumors	-A tumor so active that it causes local toxicity -high RUS uptake (shows very dark) -almost all thyroid tumors are NOT toxic (non-fun, & cold)

/thyroid tumors (lymphoma + adenomas + carcinomas)

Thyroid Lymphoma	
Types	Primary “within the thyroid” Secondary “metastes”
Risk	Hashimoto

Adenoma	
Is	A benign thyroid tumor
Gross	One mass
Origin	Follicular cells
Hallmark	Presence the fibrous capsule around the tumor
Symptoms	Nill - painless
Diagnosis	Biopsy & L/M
types	**Macro** -simple colloid tumor **Micro** -aka: fetal -seen in emryo thyroid **Hurthle** -large eosinophilic -very rich in mitochondria
Invasion & metastesis	Nill
Treatment	Excision
Prognosis	Excellent

Carcinoma	
Is	Thyroid malignant tumor
Epidem	Very, very rare
Etiology	Radiation
Types	**(From most common to rarest)** 1-Papillary 2-follicular 3-medullary 4-anaplastic “undifferentiated”
(1) Papillary	
Gene	RET, KTRK, BRAF
Epedim	Markedly inc in the past 30 years
RUS	Cold
Risk	Hashimoto & radiation
Hallmark	N features
Gross	Papillaries (finger-like projections)
L/M **BOSS**	-grooved N “coffee Bean-like” -Orphan annie N “very clear” -Psammoma bodies “calcification” -Pseudo-inuclusions “cytoplasm invasion mimic IC inclusions”
Symptoms	**-mostly asymptomatic thyroid nodule** -may spread to cervical lymphs -doesn’t cause death “no mortality”
Prognosis depends on	-presence of extrathyroidal extensions -metastases -age
Prognosis in general	Excellent
(2) follicular	
Gene	RAS, PAX, PPAR-gamma
Hallmark	Capsule & vascular invasion (Can metastase hematogenously)
Risk	Iodine def.
Invasion	**Minute** -only invade the capsule and/or one vessel, but still remains encapsulated **Wide** -systemic invasion

(3) medullary	
Gene	RET, MEN2(multiple endocrine neoplasms)
Hallmark	Neuroendocrine - calcitonin
Origin	Parafollicular cells
Hormones	-Significant inc in calcitonin secretion, causing hypocalcemia -calcitonin deposit within the tumor causing local amyloidosis
Epedim	-mostly sporadic -only familial are ass with the genes above -if familial and ass with MEN, then its called FMTC (familial medullary thyroid carcinoma) -if present, it affects all paraT glands
L/M	-neurogranular cytoplasm -multicentricity (having multiple centers) -amyloidosis -necrosis & hemorrhage
Stains	-ImmunoHistoChemistry IHC (for calcitonin) -congo red (for amyloid)
(4) anaplastic	
Gene	P53 (tumor suppressor gene)
Epedim	commonest of all anaplastic tumors, but rarest of thyroid
Origin	-Follicular cells -can arise from another tumorous cells (papillary)
L/M types	-giant pleomorphic cells (osteoclast-like multiN giant cells) -spindle cells -giant & spindle cells -small cells
Prognosis	Worst! -highly malignant, rapidly growing, local&systemic metastesis (usually to trachea & eso “dysphagia”)