GOALS

- RELATE IMAGING TO GROSS ANATOMY
- CLINICAL CASES TO BASIC SCIENCE
- RADIOLOGY EXAMS - IDENTIFY STRUCTURE AT ARROW.

- LABELED IMAGES FROM LAB FILM SETS AND DIGITAL FILM SETS

- LECTURE POWERPOINT
WHAT IS RADIOLOGY?

- medical specialty that supervises and interprets imaging studies
- reports findings to referring physicians
- anatomy vs pathology
X-RAY

- DISCOVERED AND NAMED BY DR. W. C. RÖNTGEN AT UNIVERSITY OF WÜRZBURG, 1895

- AWARDED FIRST NOBEL PRIZE FOR PHYSICS, 1901
HOW IS IMAGING DONE?

- X-RAYS: IONIZING RADIATION
- GAMMA RAYS: IONIZING RADIATION
- SOUND WAVES
- MAGNETIC FIELDS / RADIO FREQUENCY WAVES
RADIOLOGY TOOLS

- X-RAY
- ULTRASOUND
- NUCLEAR MEDICINE
- MAGNETIC RESONANCE
- COMPUTED TOMOGRAPHY
X- RAY

- HIGH ENERGY PHOTON
- IONIZING RADIATION
- EXPOSES FILM / DETECTOR
- PROJECTION DATA
XRAYS

PLAIN FILM RADIOGRAPHY

- CXR
- MAMMOGRAPHY
- ABDOMEN
- SPINE
- EXTREMITIES, BONES & JOINTS
- SKULL
X - RAY -- FOUR BASIC DENSITIES

- BONE
- SOFT TISSUE
- FAT
- AIR
CONTRAST RADIOGRAPHY

- INJECTION, INGESTION, OR OTHER PLACEMENT OF OPAQUE MATERIAL WITHIN THE BODY
- INCREASES INHERENT CONTRAST
- CAN DEMONSTRATE FUNCTIONAL ANATOMY AND PATHOLOGY
UPPER GI – ORAL BARIUM CONTRAST

STOMACH

BARIUM ENEMA - RECTAL BARIUM CONTRAST

WITHOUT CONTRAST

COLON

SUPINE
INTRAVENOUS PYELOGRAM – IVP
INTRAVENOUS IODINE CONTRAST

ARTERIOGRAM
INTRAARTERIAL IODINE CONTRAST
COMPUTED TOMOGRAPHY

- HIGH ENERGY PHOTON
- IONIZING RADIATION
- EXPOSES DETECTOR
- TOMOGRAPHIC DATA
CT- EXAMPLE

CT REFERENCE FILM
NUCLEAR MEDICINE

- INJECTION OF RADIOPHARMACEUTICAL
- HIGH ENERGY PHOTON
- IONIZING RADIATION
- EXPOSES DETECTOR
- PROJECTION DATA
NM - EXAMPLES

- HEPATOBILIARY
- BONE
- RENAL
ULTRASOUND

- SOUND WAVE
- NO IONIZING RADIATION
- REFLECTED TO DETECTOR
- TOMOGRAPHIC DATA
US - EXAMPLES

- Gallbladder
- Kidney
- OB
MAGNETIC RESONANCE

- HYDROGEN PROTONS IN A MAGNETIC FIELD
- RADIO WAVE SIGNAL TRANSMISSION
- NO IONIZING RADIATION
- TOMOGRAPHIC DATA
MAGNETIC RESONANCE EXAMPLES

- BRAIN
- SPINE
- JOINT
MR has advantage of multi planar imaging
HOSPITAL LINGO

You will hear and see these abbreviations used frequently in the medical community.

- X-ray → Plain Film
- Computed Tomography → CAT Scan → CT → Scan
- Nuclear Medicine → Nuc Med
- Ultrasound → Ultrasound
- Magnetic Resonance → MR → MRI → MRA
VERTEBRA

BODY
SPINOUS PROCESS
SPINAL CANAL
PEDICLE (ROOT)
LAMINA
PARTS OF THE ARCH
SUPERIOR ARTICULAR PROCESS
TRANSVERSE PROCESS
INFERIOR ARTICULAR PROCESS
SPINOUS PROCESS
OH... THE MANY USES OF MODERN IMAGING?