RADIOLOGY

As Clinical Anatomy

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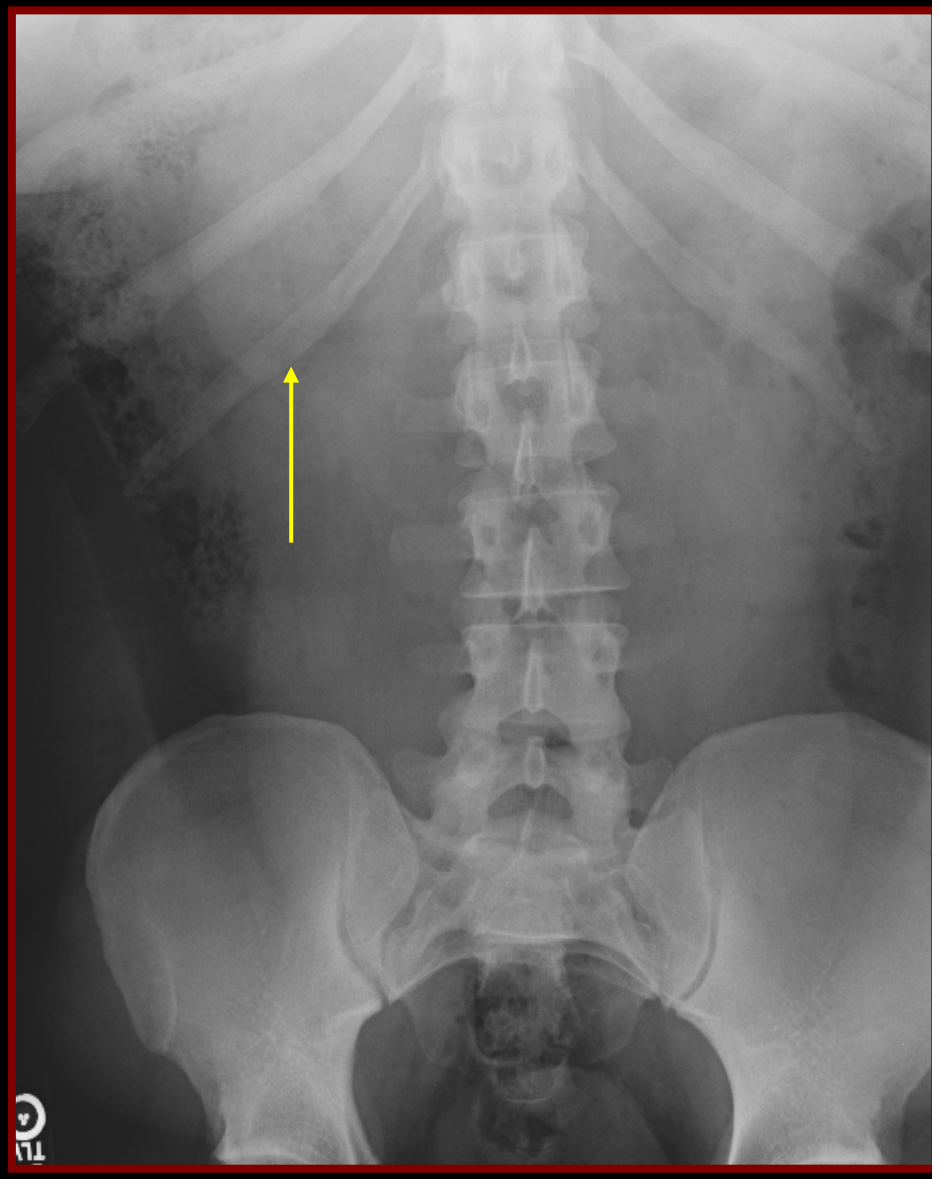
AP FOOT

OUCH !

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 SPECALITY 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

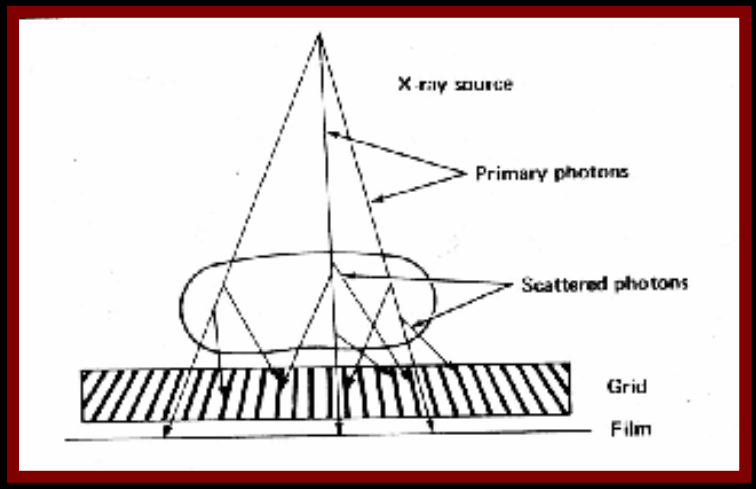
NUCLEAR MEDICINE

MAGNETIC RESONANCE

COMPUTED TOMOGRAPHY

X- RAY

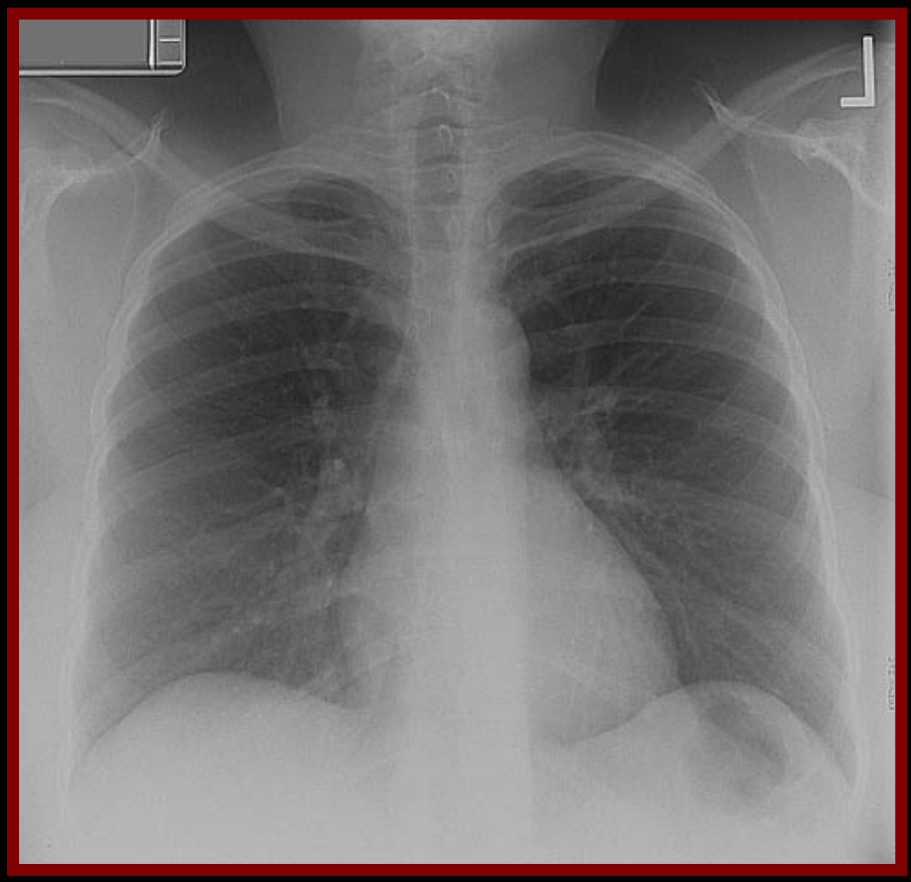
- HIGH ENERGY PHOTON
- IONIZING RADIATION
- EXPOSES FILM / DETECTOR
- PROJECTION DATA



XRAYS

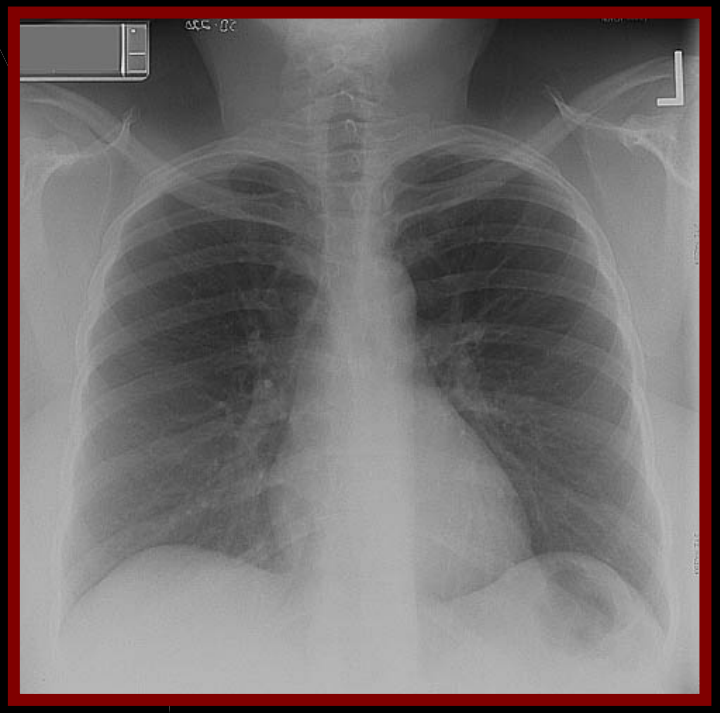
PLAIN FILM RADIOGRAPHY

- **CXR**
- **MAMMOGRAPHY**
- **ABDOMEN**
- **SPINE**
- **EXTREMITIES, BONES & JOINTS**
- **SKULL**



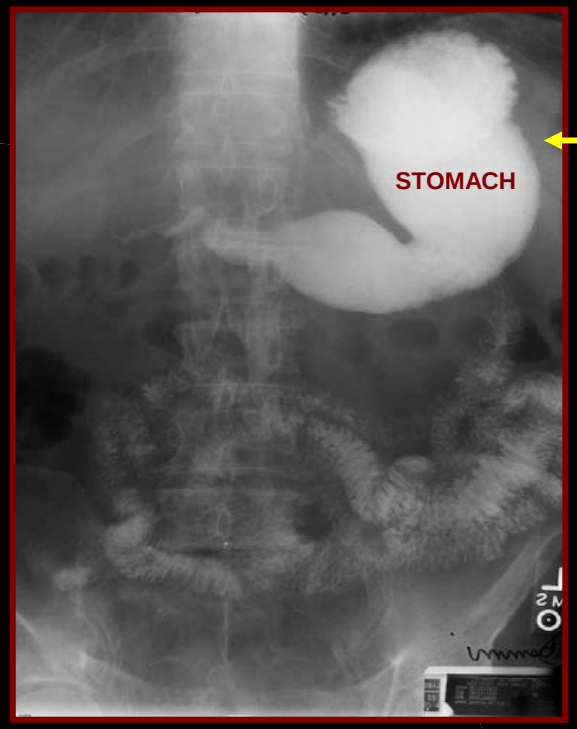
X - RAY -- FOUR BASIC DENSITIES

- BONE
- SOFT TISSUE
- FAT
- AIR



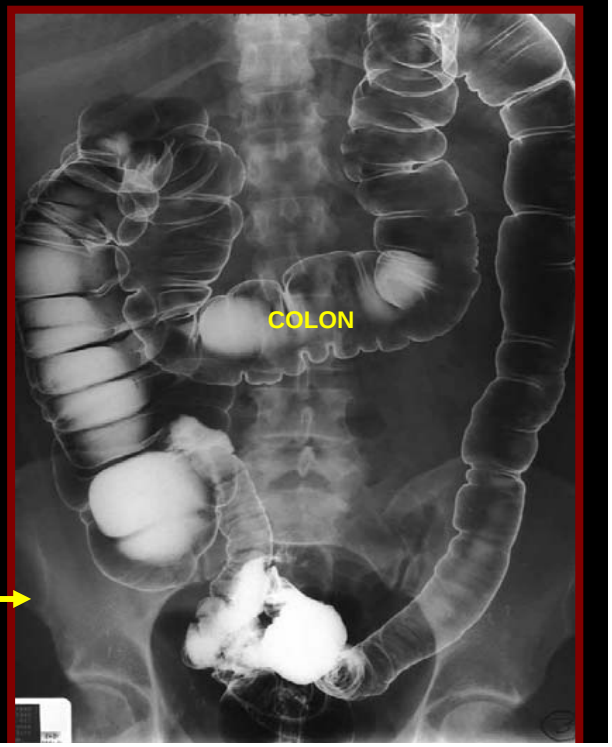
CONTRAST RADIOGRAPHY

- 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

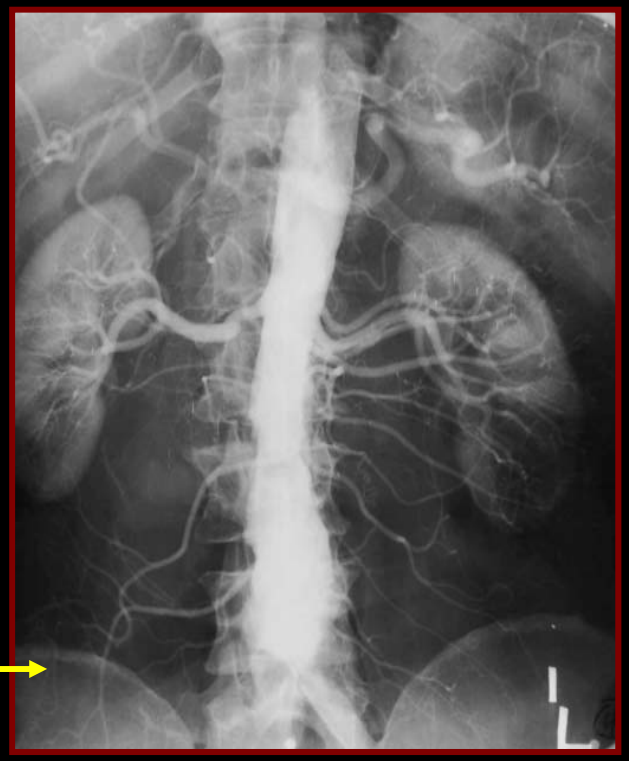
WITHOUT CONTRAST



BARIUM ENEMA - RECTAL BARIUM CONTRAST

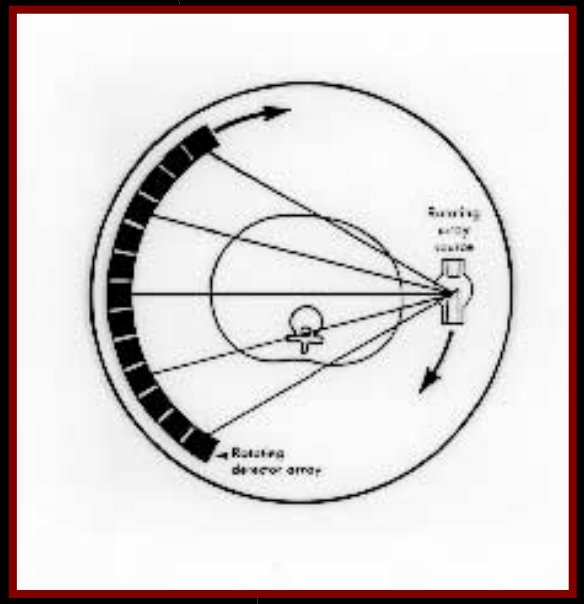
INTRAVENOUS PYELOGRAM – IVP
INTRAVENOUS IODINE CONTRAST

ARTERIOGRAM
INTRAARTERIAL IODINE CONTRAST

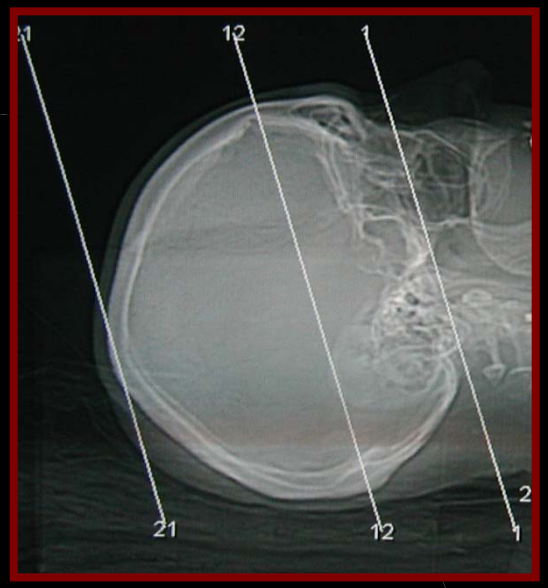


COMPUTED TOMOGRAPHY

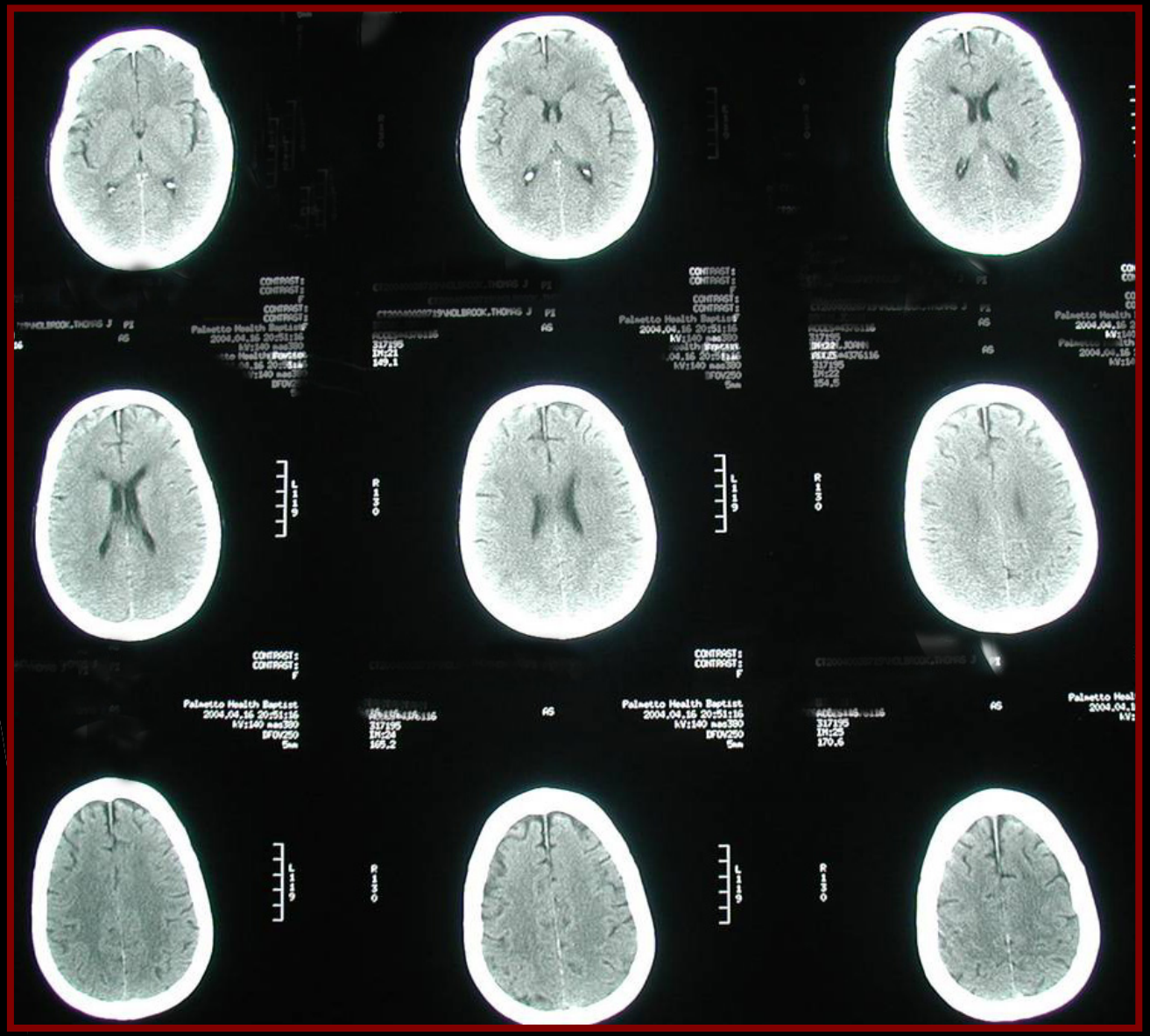
- HIGH ENERGY PHOTON
- IONIZING RADIATION
- EXPOSES DETECTOR
- TOMOGRAPHIC DATA



CT- EXAMPLE



CT REFERENCE FILM



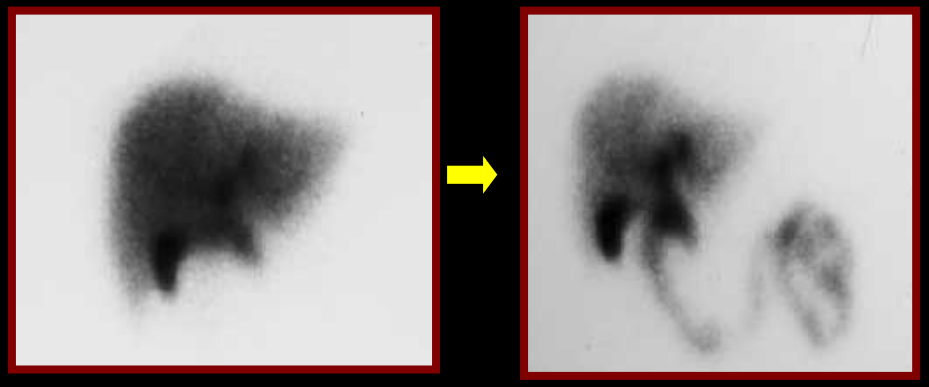
NUCLEAR MEDICINE

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

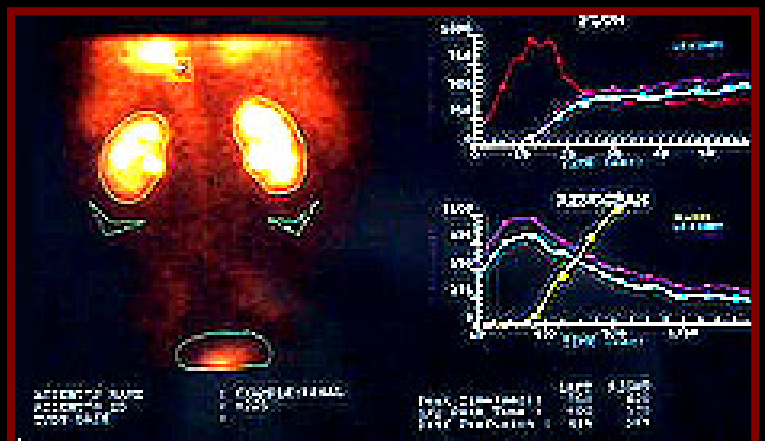
NM - EXAMPLES

- BONE

- **HEPATOBILIARY**



- RENAL

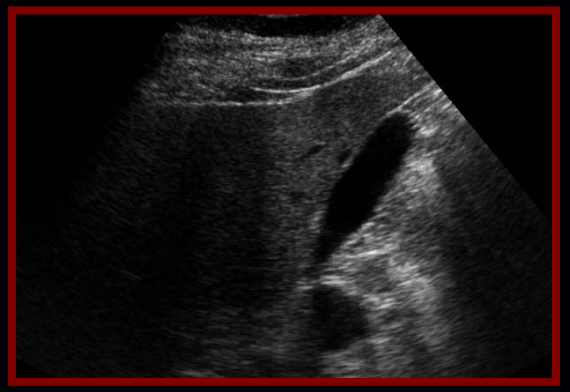


ULTRASOUND

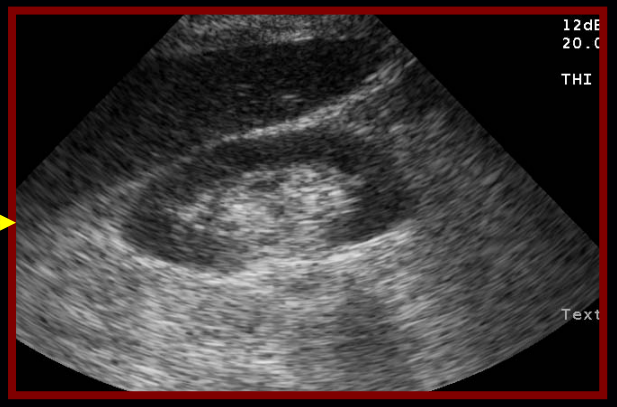
- **SOUND WAVE**
- **NO IONIZING RADIATION**
- **REFLECTED TO DETECTOR**
- **TOMOGRAPHIC DATA**

US - EXAMPLES

GALLBLADDER



KIDNEY



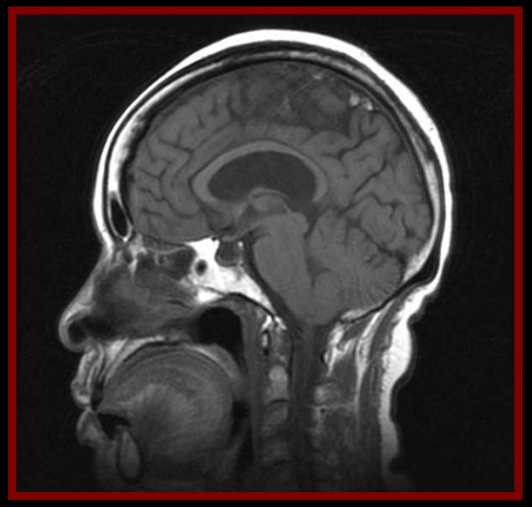
OB

MAGNETIC RESONANCE

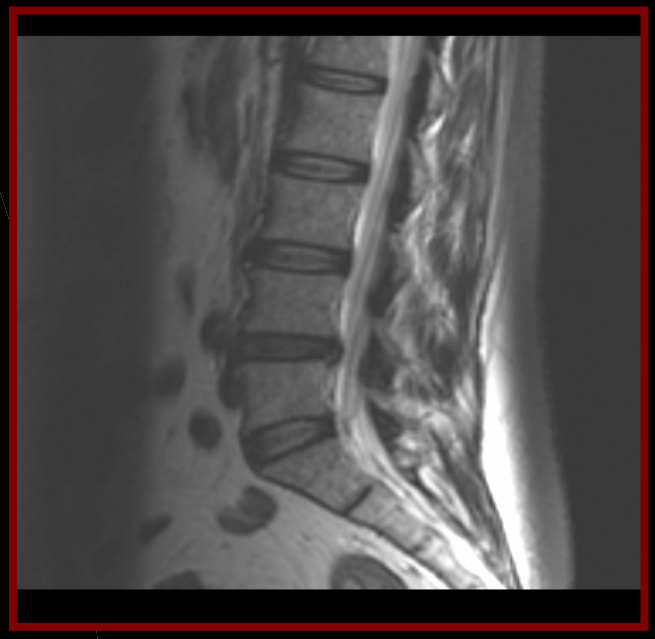
- HYDROGEN PROTONS IN A MAGNETIC FIELD
- RADIO WAVE SIGNAL TRANSMISSION
- NO IONIZING RADIATION
- TOMOGRAPHIC DATA

MAGNETIC RESONANCE EXAMPLES

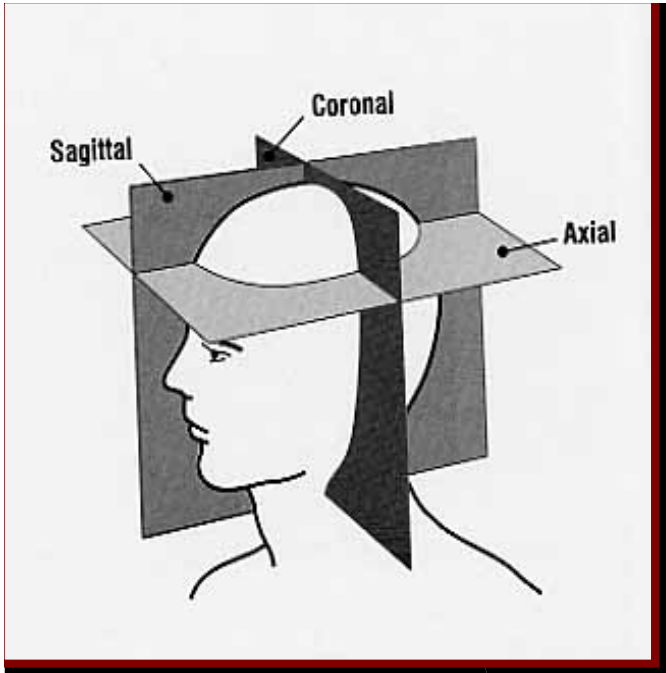
- **BRAIN**



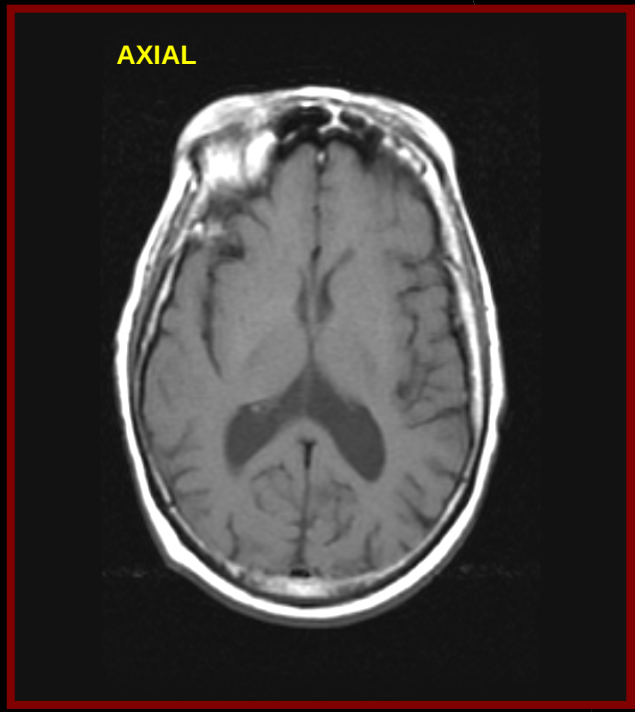
- SPINE



- JOINT



MR HAS ADVANTAGE OF MULTI PLANAR IMAGING



HOSPITAL LINGO

YOU WILL HEAR AND SEE THESE ABBREVIATIONS USED FREQUENTLY IN THE MEDICAL COMMUNITY

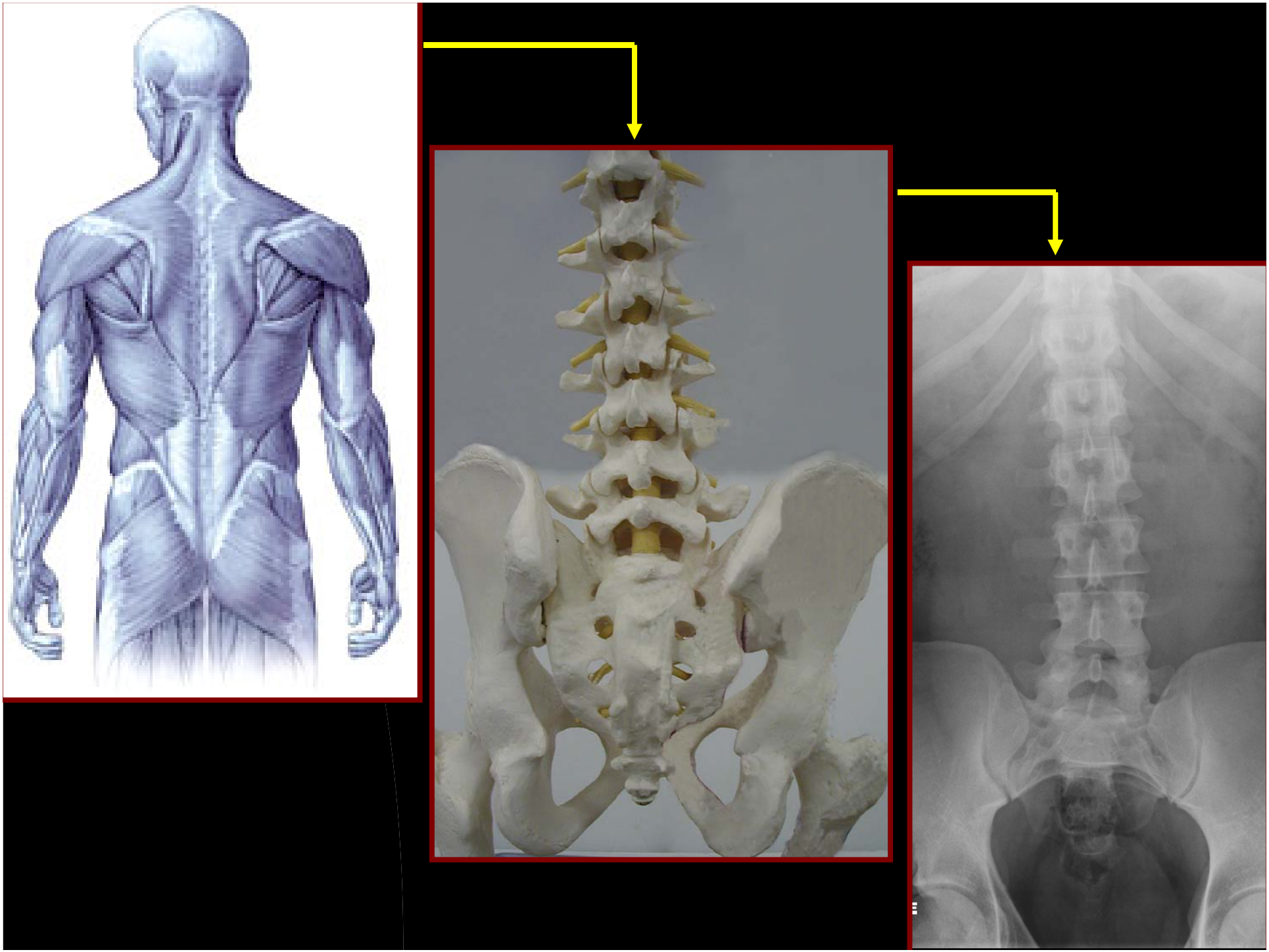
X- RAY → PLAIN FILM

COMPUTED TOMOGRAPHY → CAT SCAN → CT → SCAN

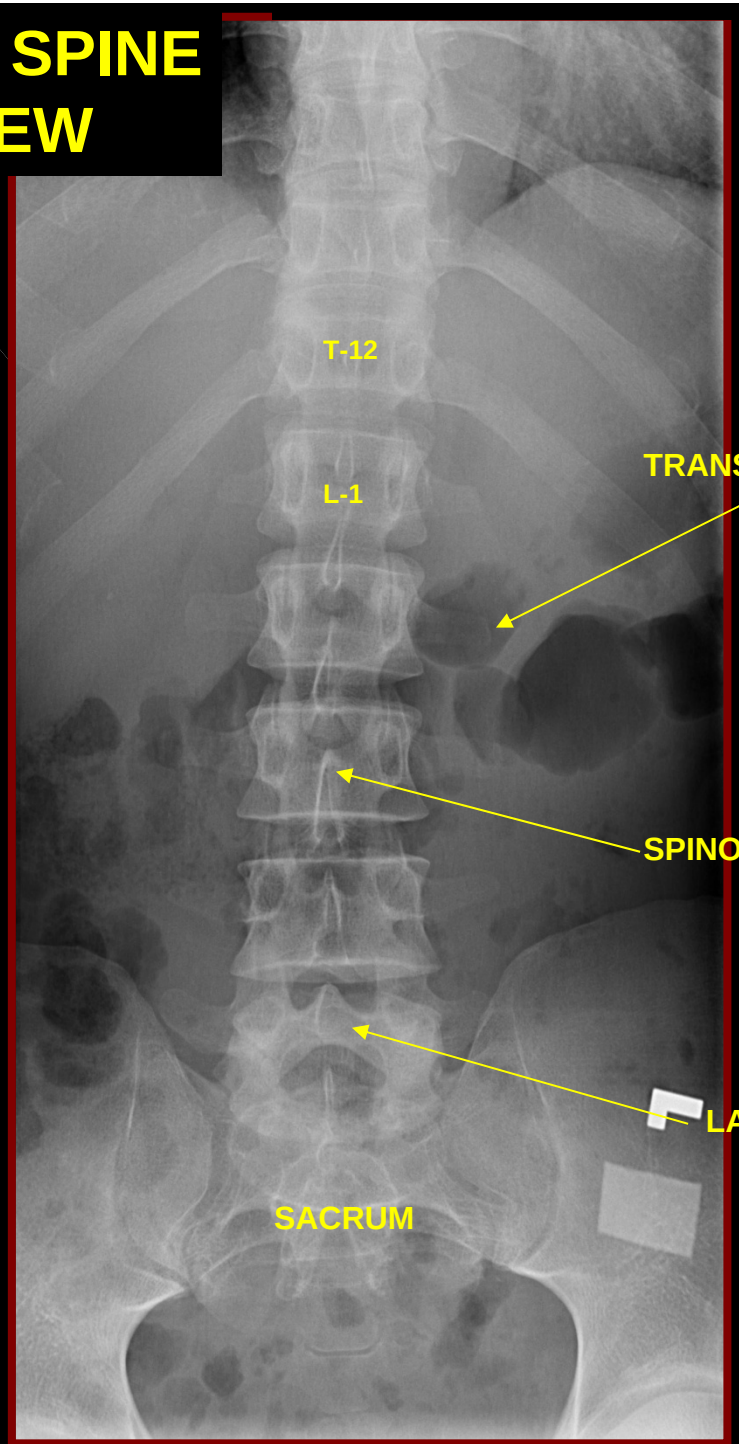
NUCLEAR MEDICINE → NUC MED

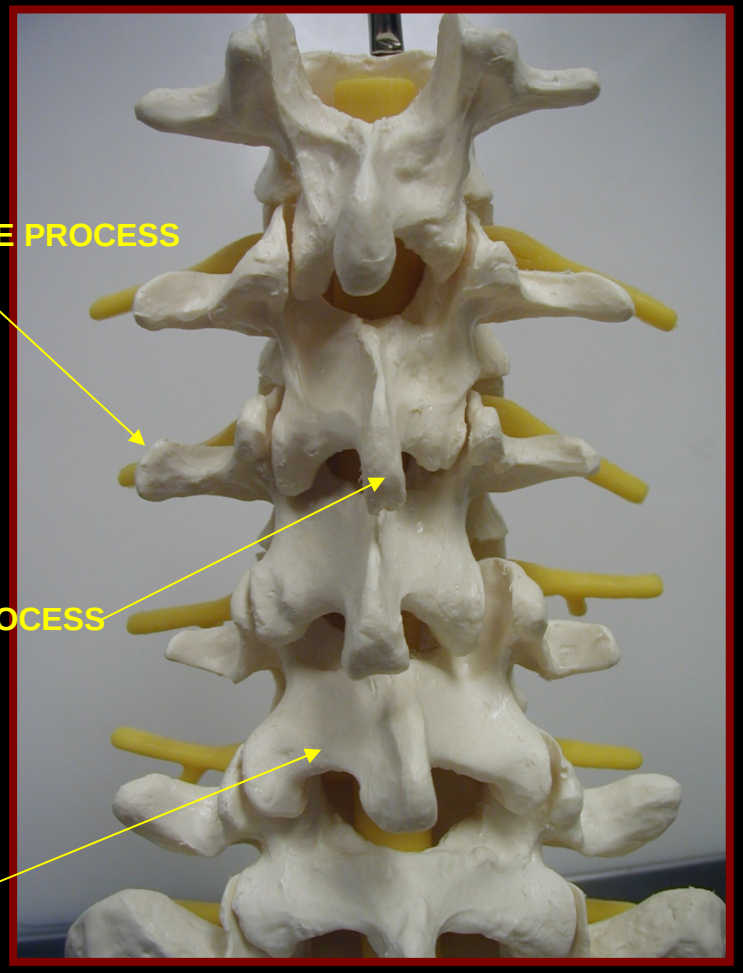
ULTRASOUND → ULTRASOUND

MAGNETIC RESONANCE → MR → MRI → MRA

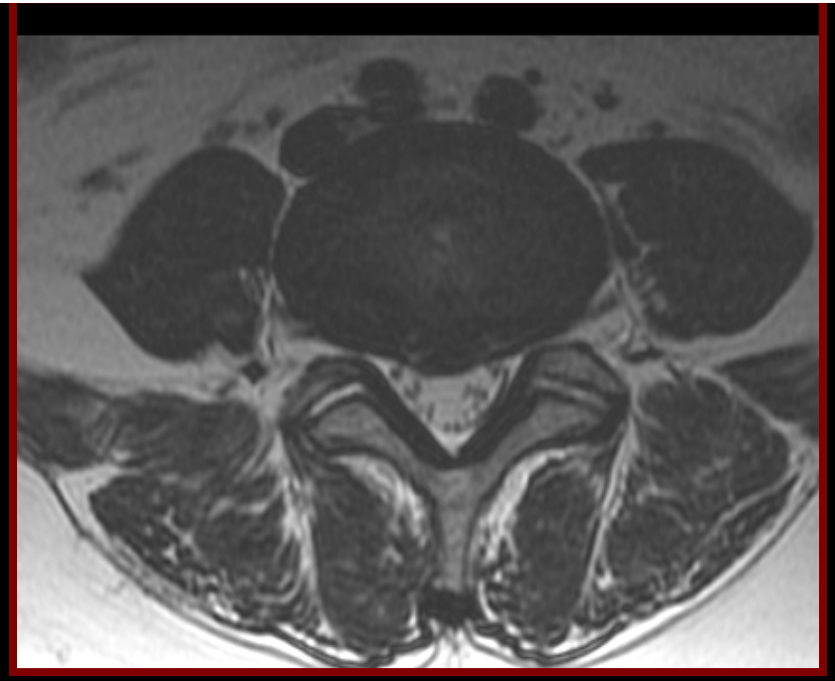


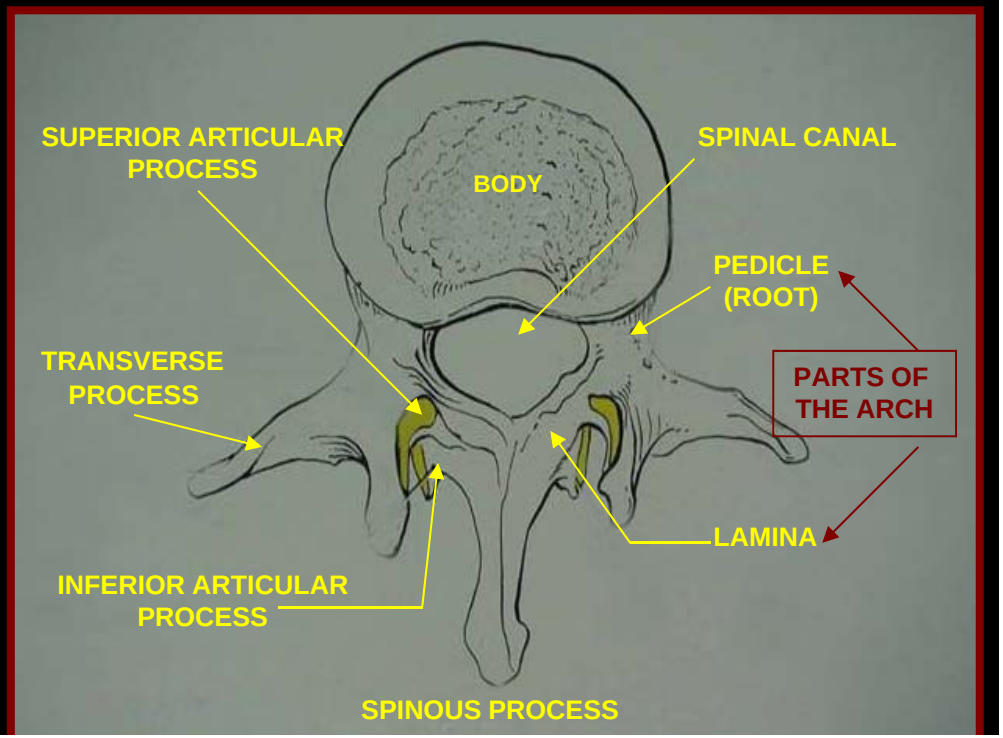
LUMBAR SPINE AP VIEW

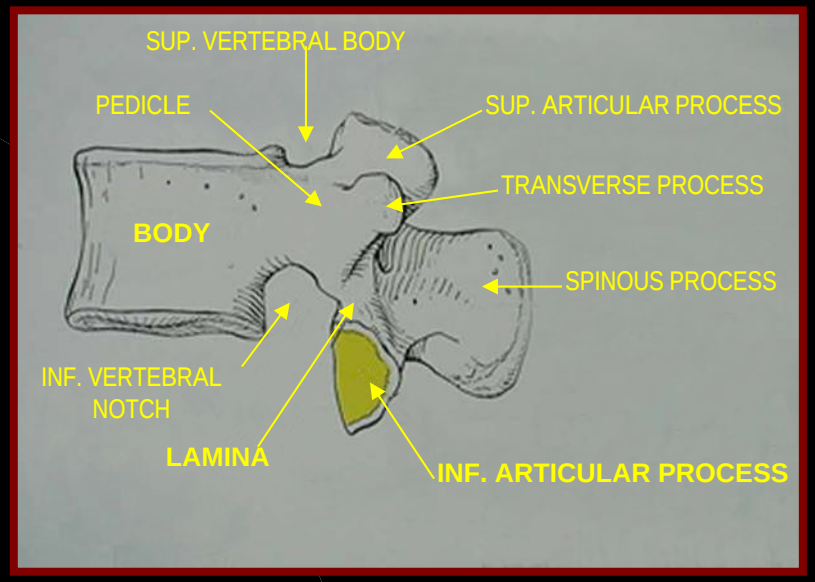


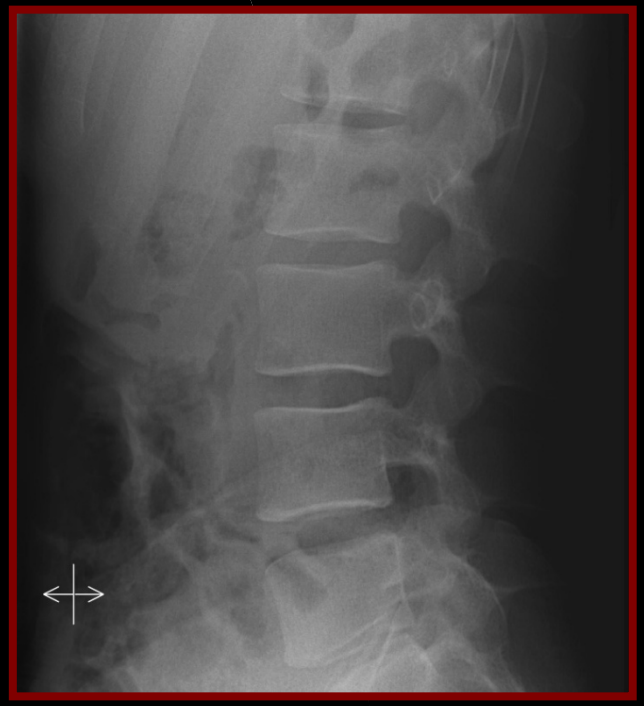


VERTEBRA




SUPERIOR ARTICULAR PROCESS
BODY
SPINAL CANAL
PEDICLE (ROOT)
TRANSVERSE PROCESS
PARTS OF THE ARCH
LAMINA
INFERIOR ARTICULAR PROCESS
SPINOUS PROCESS


SUP. VERTEBRAL BODY
PEDICLE
SUP. ARTICULAR PROCESS
TRANSVERSE PROCESS
BODY
SPINOUS PROCESS
INF. VERTEBRAL NOTCH
LAMINA
INF. ARTICULAR PROCESS



OH… THE MANY USES OF

MODERN IMAGING ?