

# A short history of the evolution of surgery

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- Evolution of surgery
- Introduction to modern surgery
- Short history of the Medical School of Debrecen and the Surgical Institute

„The abdomen, the chest and the brain will forever be shut from the intrusion of the wise and humane surgeon.”

Sir John Ericksen, Surgeon  
Extraordinaire to Queen Victoria,  
1837

- „Today our colleagues perform an average of 80.000 operations each day (in the USA), many in the abdomen, chest or brain”

Daniel J. Riskin, UCLA, 2006

# Epochs of Surgery

- Characteristics of the pre-modern phase:
  - Lack of significant anatomical knowledge
  - Progress was made by the isolated achievement of outstanding personalities
  - Methods were tested during major wars under the pressure of necessity
  - Clerical dogmas prevailed over scientific contributions

# Medical heritage of early civilizations

- The earliest written piece of medical history, 1600-1500 B.C. **Edwin Smith Egyptian papyrus:**

- surgery was well defined, having important role in medicine

- contains case reports in a logically arranged series

- personal cleanliness, hygiene and correct diagnosis before treatment was important



# Scope of surgical activities

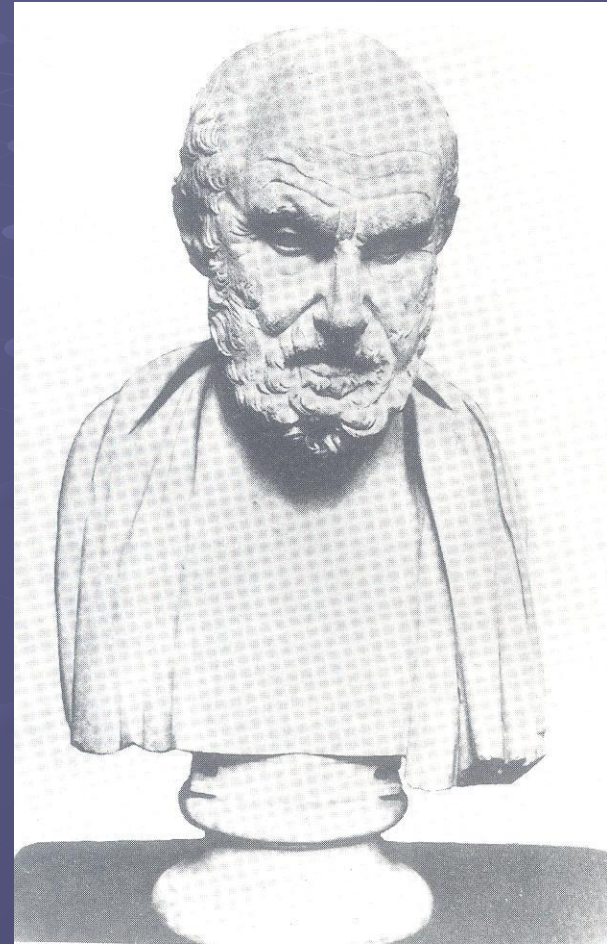
- Bandages, dressings
- Circumcision
- Opening abscesses
- Fractures, dislocations
- Lithotomies (urolith)
- Hemorrhoides, fistulas
- Amputations
- Tooth extractions
- Herniotomies





# Hippocrates (460-375 b.c.)

- „The father of medicine”
- **Medicine** and **surgery** was one discipline
- Great attention to observation, detail, record keeping, gathering knowledge about diseases, cleanliness, order, practice
- „Humoralpathology”
- Corpus Hippocraticum, devotion to the patient,



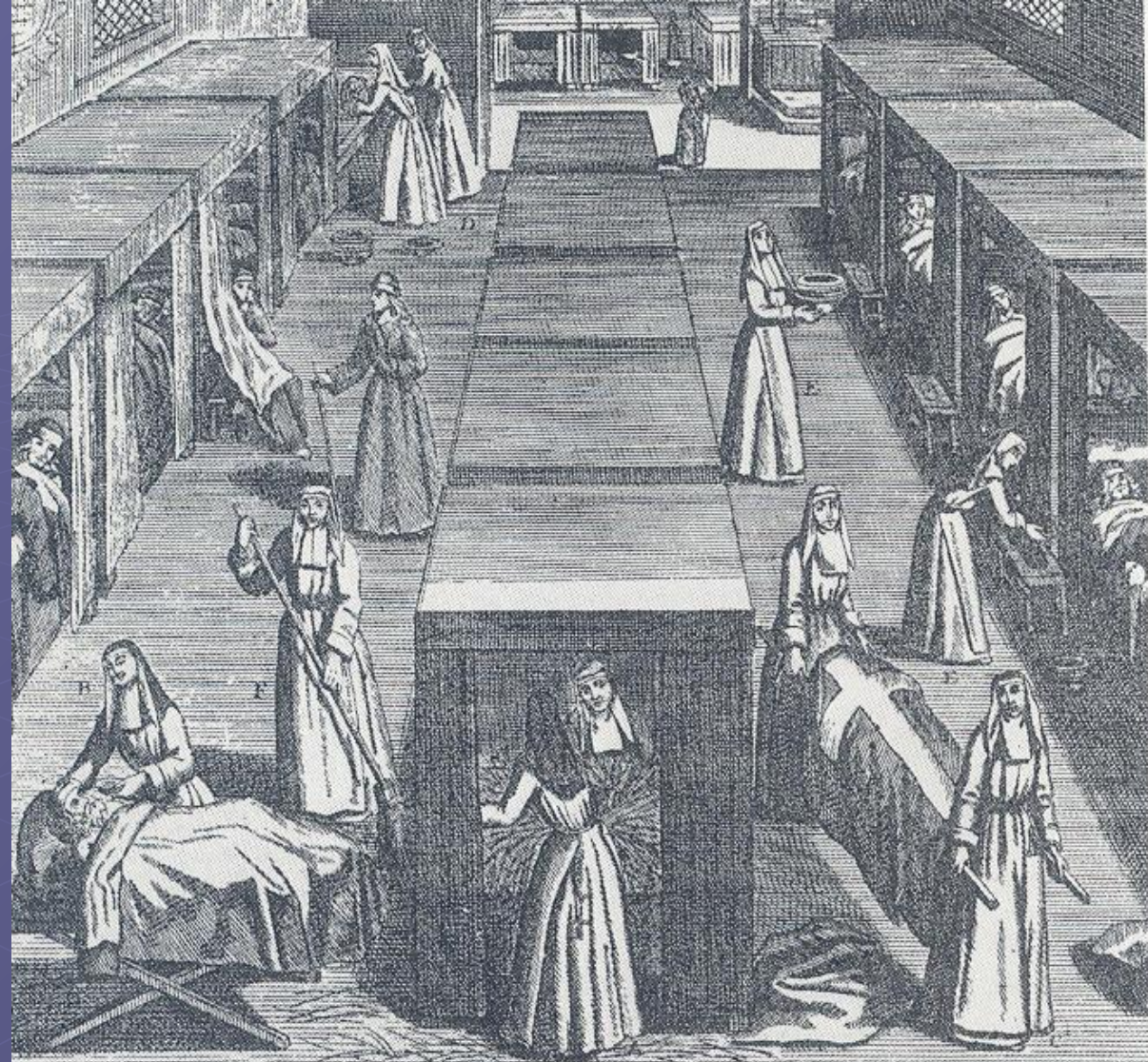
# Ancient textbooks

- **Ayur Veda** (The book of life) India, China
- **Code of Hammurabi** 2000 B.C.  
Mesopotamia) (Surg., Medical, Legal text)
- **Alexandria**: Aristotle, Herophilos, Erasistratos
- **Roman empire**: Celsus 8 books, Galenus  
(treated gladiators, dissected pigs, many errors, great impact until XV. century, disagreement was heresy)
- **Arabic period**, Avicenna (Persian) Xth century:
  - The Canon (surgery as a necessary evil, Baghdad, Damascus, Cairo: hospital-med. schools)

# Medieval medicine (476-1453)

- Religious medicine, dogmas
- Low social status of surgeons
- Surgery practiced by barber surgeons
- Clerical ban on autopsies, absence of anatomical knowledge (dissection on pigs)
- Miracles made by saints
- Illness is a retribution from heaven
- Hospitals maintained by the church
- The sick taken care of by nuns





*Exercice des Religieuses de l'Hotel Dieu de  
Paris a 5 heures et demy du matin.*

- A. Religieuses faisant les lits a la paille des malades avec une Novice*
- B. jeune Religieuse faisant boire un malade*
- C. Religieuse et une novice portant un mort a la Salle des morts*
- D. Novices ecurant les bassins des malades*
- E. Jeunes Novices rendant les bassins aux malades.*
- F. Novice balayant la Salle.*

# The Salerno School

- First school of formal training, commenced in the 12th century, southern Italy
- The first secular medical school
- Revival of ancient knowledge
- Dissection on pigs
- More emphasis on surgery
- Recording own experience of surgeons
- Roger of Salerno: *Cyrurgia Rigerii* 1170- the first independent surgical work in the West
- The school moves to Bologna after his death

# Development of medicine in the middle ages

- **Lanfranc** 1315. France, against „pus bonum et laudabile” keep it clean
- **Pope Sixtus IV.** (1414-1484) appr. autopsies, stimulation of studies
- **Leonardo da Vinci,** Michelangelo, Dürer, Titian...
- **Jacob Sylvius,** Paris: Galen's anatomy
- **Andreas Vesalius,** Brussels: at age 23, professor of surgery  
De Humani Corporis fabrica (at age 28)
- **Paracelsus,** Basel:  
„internal medicine and surgery must not be separated”



MOSO · DOCTOR

PARISI SV



ANDREAE VESALII  
BRUXELLENSIS, INVESHITIMI  
CAROLI V. Imperatoris  
medici, de Humani corporis  
fabrica Libri septem.

CPM CAROLUS  
Anno 1543. Collatum aegroti Joanni Vesalio quia et  
prodigium in a primis anatome instituit.



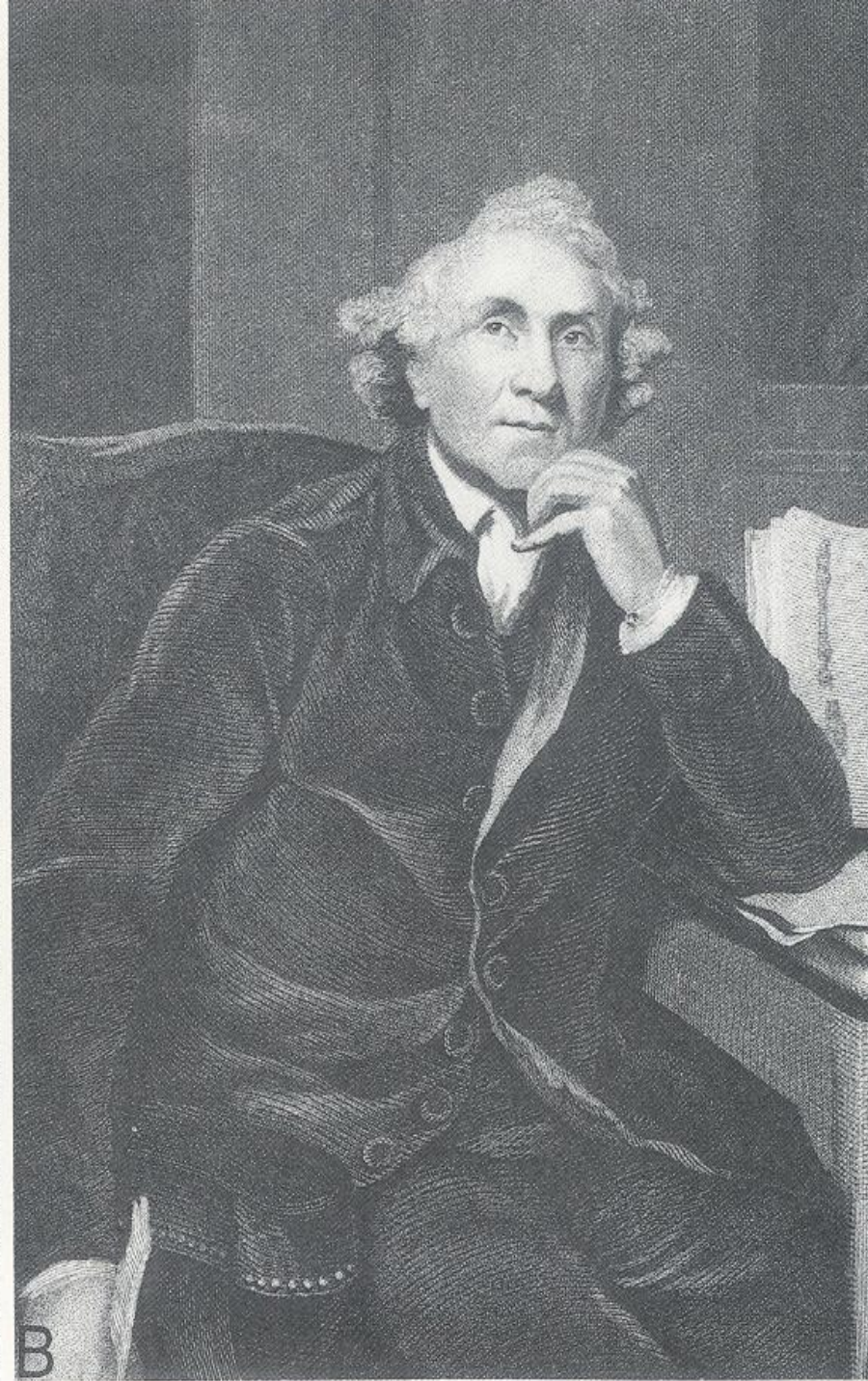
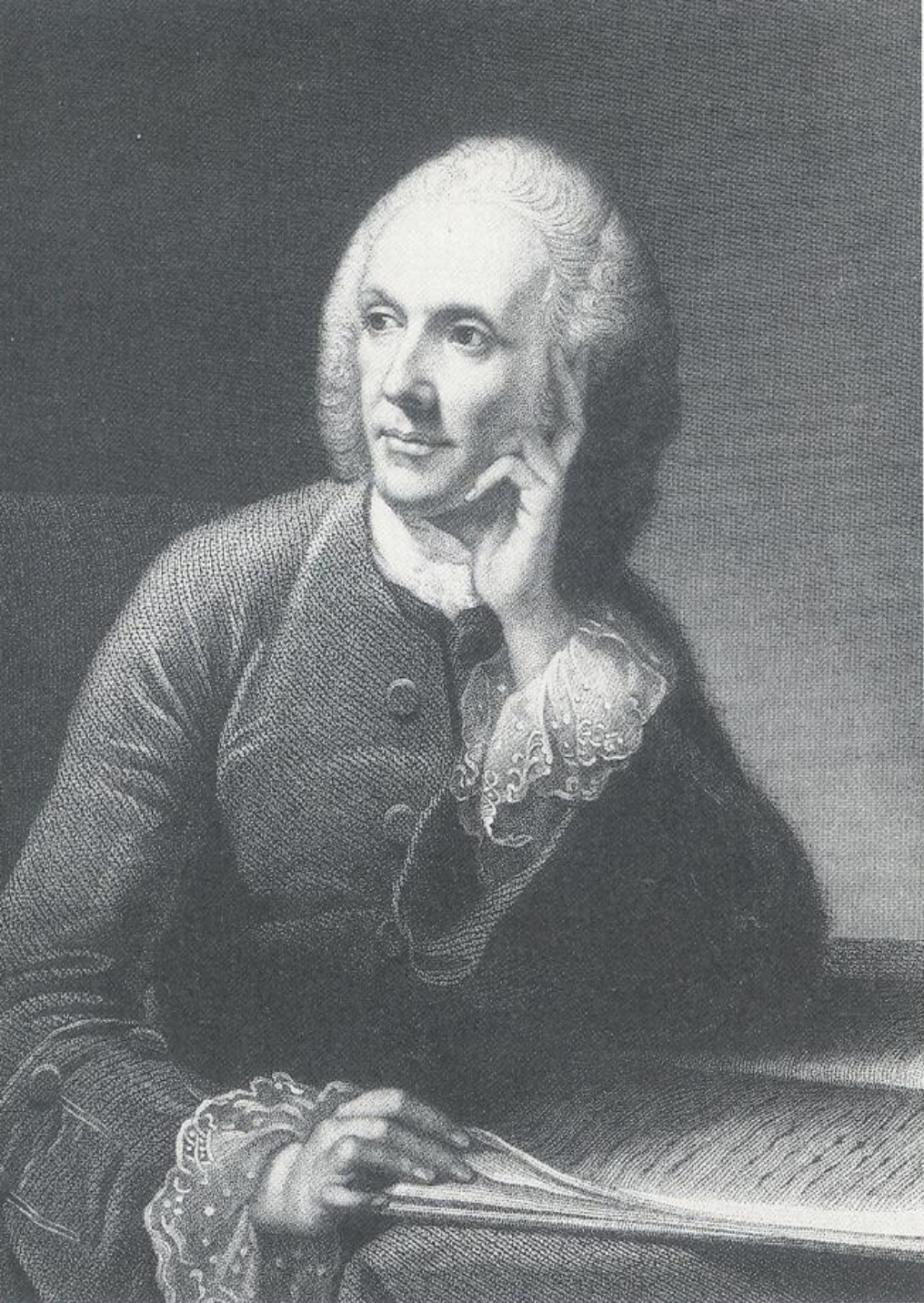
# Ambroise Paré 1510-1590

- Apprentice of Vesalius
- Field surgeon in the French army
- Performed autopsies
- Used turpentine, instead of burning oil to treat gunshot wounds, amputated limbs
- Routine ligation of vessels
- Invented new instruments, limb prostheses



# XVIII. Enlightenment

- Revival of ancient medical knowledge
- **William and John Hunter**
- Anatomy of the gravid uterus (William)
- Ligature of the aneurysm of the superficial fem. art. (instead of amputation) in four cases successfully
- Angina pectoris in his own case (John)



# Beginning of modern surgery

- Phase I:  
introduction of anaesthesia (Morton)  
anesthetic – the agent

1842. January: William E. Clarke tooth extraction under ether narcosis Rochester, NY

- 1846. October: Dr. John C. Warren (NEJM, AMA, 1st dean of Harvard) jaw tumor removal under ether narcosis performed by William T.G. Morton



Warren  
and  
Morton

# Early development of biomedical sciences

- Edward **Jenner**  
(surgeon): 1749-1823  
Vaccination, pox
- Theodor **Schwann**:  
1810-1882, cells
- Rudolf **Virchow**  
1821-1902, cellular  
pathology
- Francois **Magendie**  
1783-1855, nervous  
system anatomy
- Claude **Bernard**  
1813-1878,  
experimental physiology  
homeostasis

# Antisepsis-asepsis, II. phase

- Louis **Pasteur**: correlation between rotting and oxygen content of the air, discovery of bacteria
- Joseph **Lister**: carbolic acid used for sanitation in Carlisle, wound toilette, and operating instruments, death rate dropped to 1/3, lead and zinc plates to cover wounds
- **Semmelweis Ignác**: hypochloric acid for decontamination of the hand after autopsies
- **R.Koch**: TB, anthrax, steam for sterilization
- **Trendelenburg, Schimmelbusch**: steam sterilization
- Steril rubber gloves: **Halsted** 1891.
- Face mask: **Hunter** 1900.



# The first (surgical) Nobel Prize in medicine

- **Theodor Kocher** 1841-1917. Bern

1909:

„...for his work in physiology, pathology  
and surgery on the thyroid gland...”

# Features of modern surgery

- High degree of specialization (heart, vascular, chest, pediatric, colorectal...)
- Maximum use of related sciences (rtg, US, CT, MRI, laboratory tests, endoscopy...)
- Fast and wide share of information
- Research oriented development of surgery guided by the rules of science and law and grants!

# Independent disciplines sprouting from general surgery

- Urology
- Orthopedics
- Radiology
- Traumatology
- Chest surgery
- Heart surgery
- Pediatric surgery
- Hand surgery
- Vascular s.
- Transplantation s.
- Neurosurgery
- Head and neck s.
- Ophthalmic s.
- Plastic s.

# Cooperation between disciplines

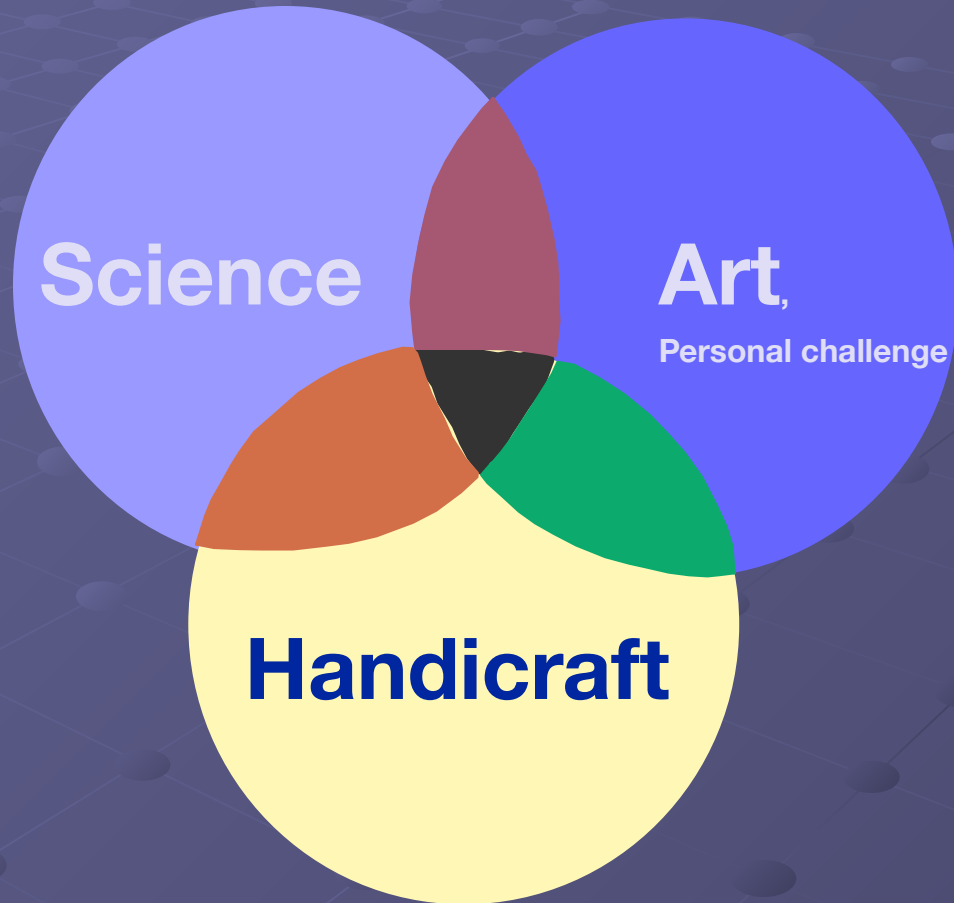
## • „Clinical Sciences”

- Anesthesiology, ICU
- Imaging: US, CT, MR, PET, nuclear medicine
- Laboratory diagnostics, microbiology lab
- Internal medicine (gastroent., endocrin., cardiol., nephrol...)
- Surgery

## • Theoretical Sciences”

- Anatomy, physiol., chemistry, physics
- Pharmacology
- Engineering (sterilization, lighting, laparoscopy, endoscopy, US cutting devices, staplers, implants)
- Immunology (transfusion, transplantation...)
- Genetics (FAP, HNPCC...)

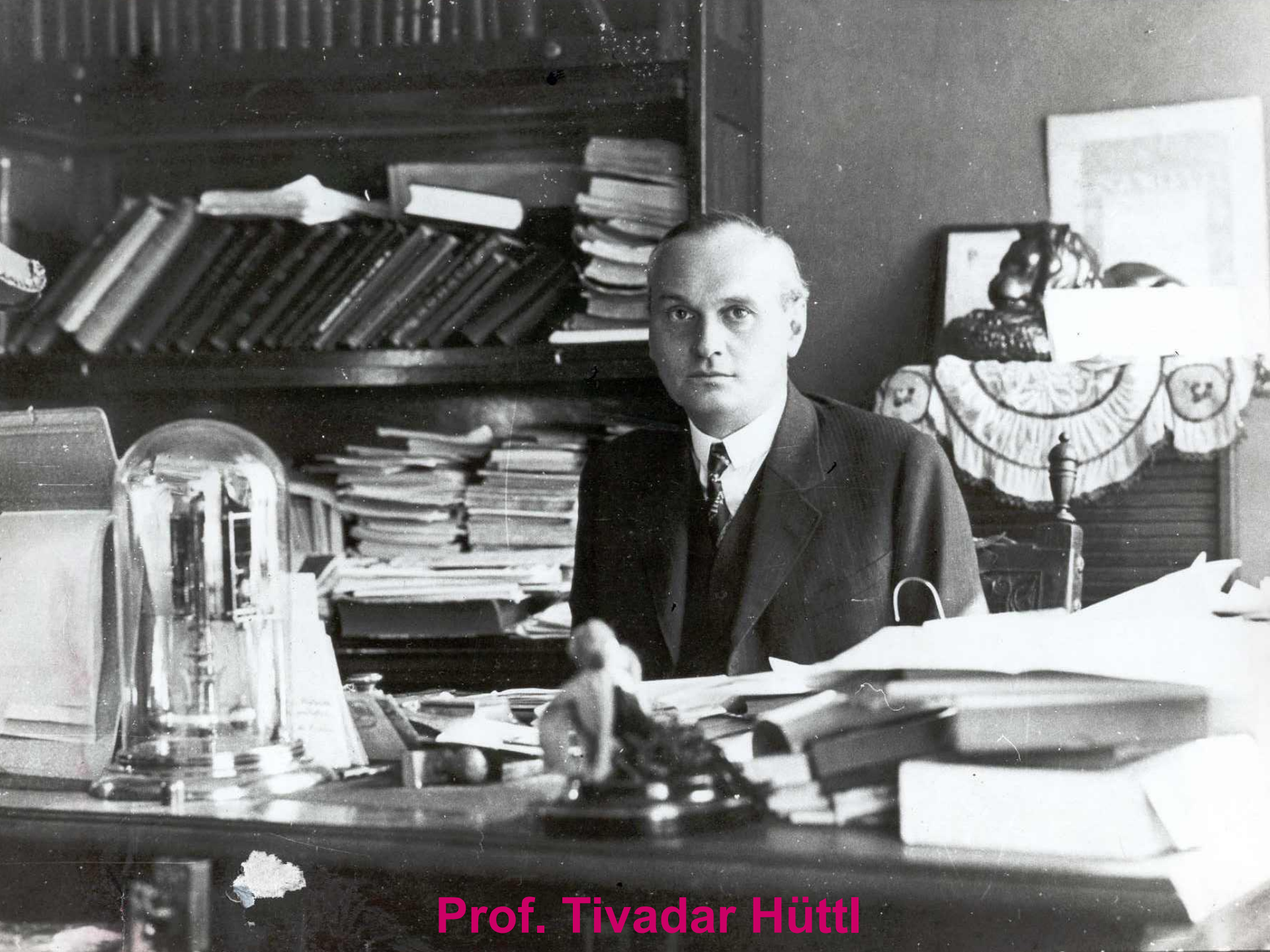
# Surgery



# Historical moments of the University of Debrecen

- Calvinist Coll. 1541
- University XVII th century
- 1750- István Hatvani: natural sciences in the curricula
- 1906. Gyula Kenézy, theolog., law, science and medical faculties
- 1914-1918. University of Arts and Sciences, Floris Korb
- 1921: Inauguration of the Medical Faculty
- Four out of 15 professors stay in Debrecen during WW II
- 1951: Med. Fac. becomes and independent university: DOTE
- 1977: Dentistry Fac. founded
- 1987: English Program initiated
- 1998: University Assoc. of Debrecen DATE, DOTE, KLTE, KFRTF, LFZFDK, ATOMKI, DRHE
- 2000: UD MHSC





**Prof. Tivadar Hüttl**



