



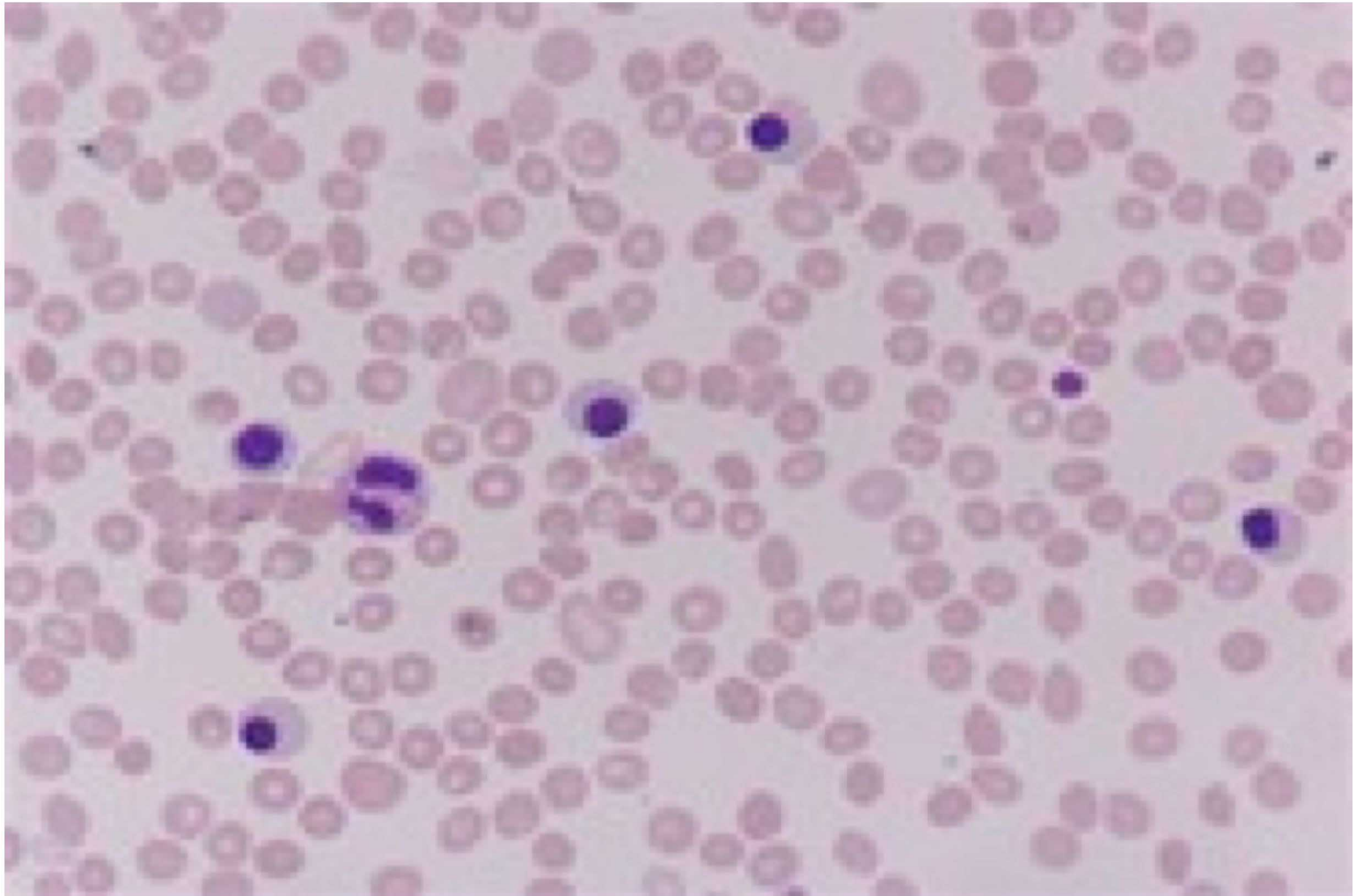
The Royal College of Pathologists
Pathology: the science behind the cure

The story of your blood

**Dr Archie Prentice
President
The Royal College of Pathologists**



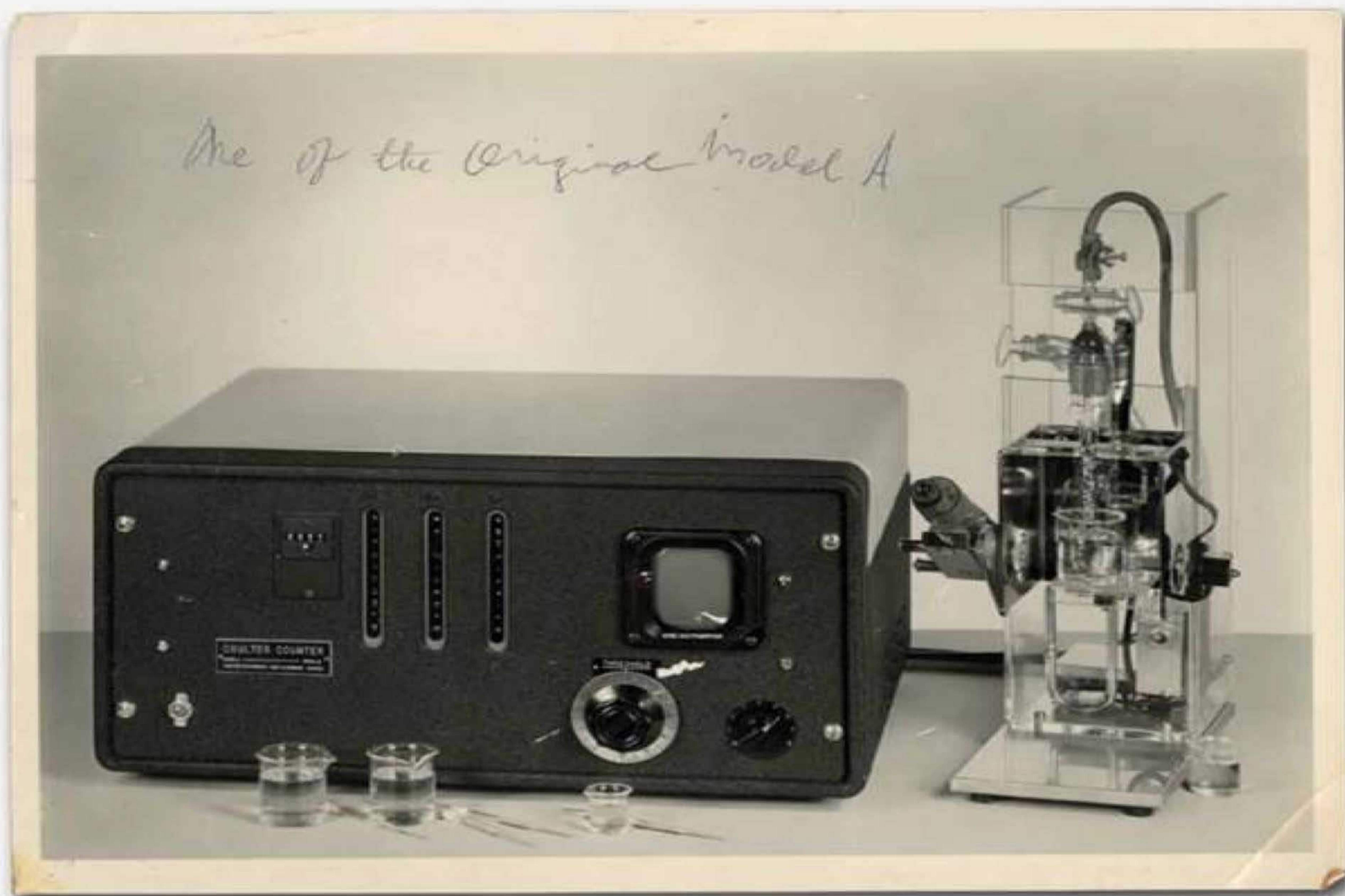




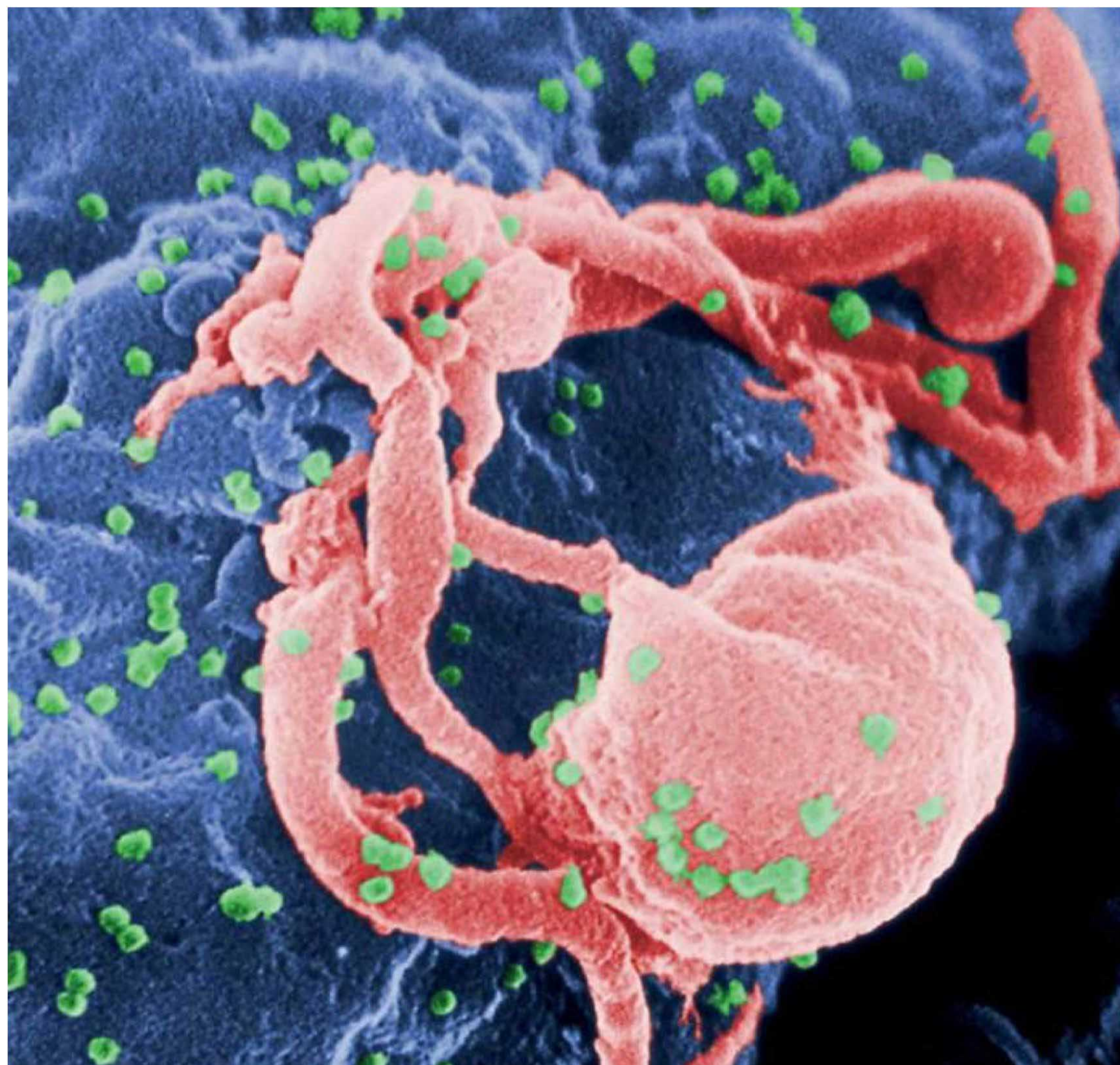
Rhesus HD of the Newborn

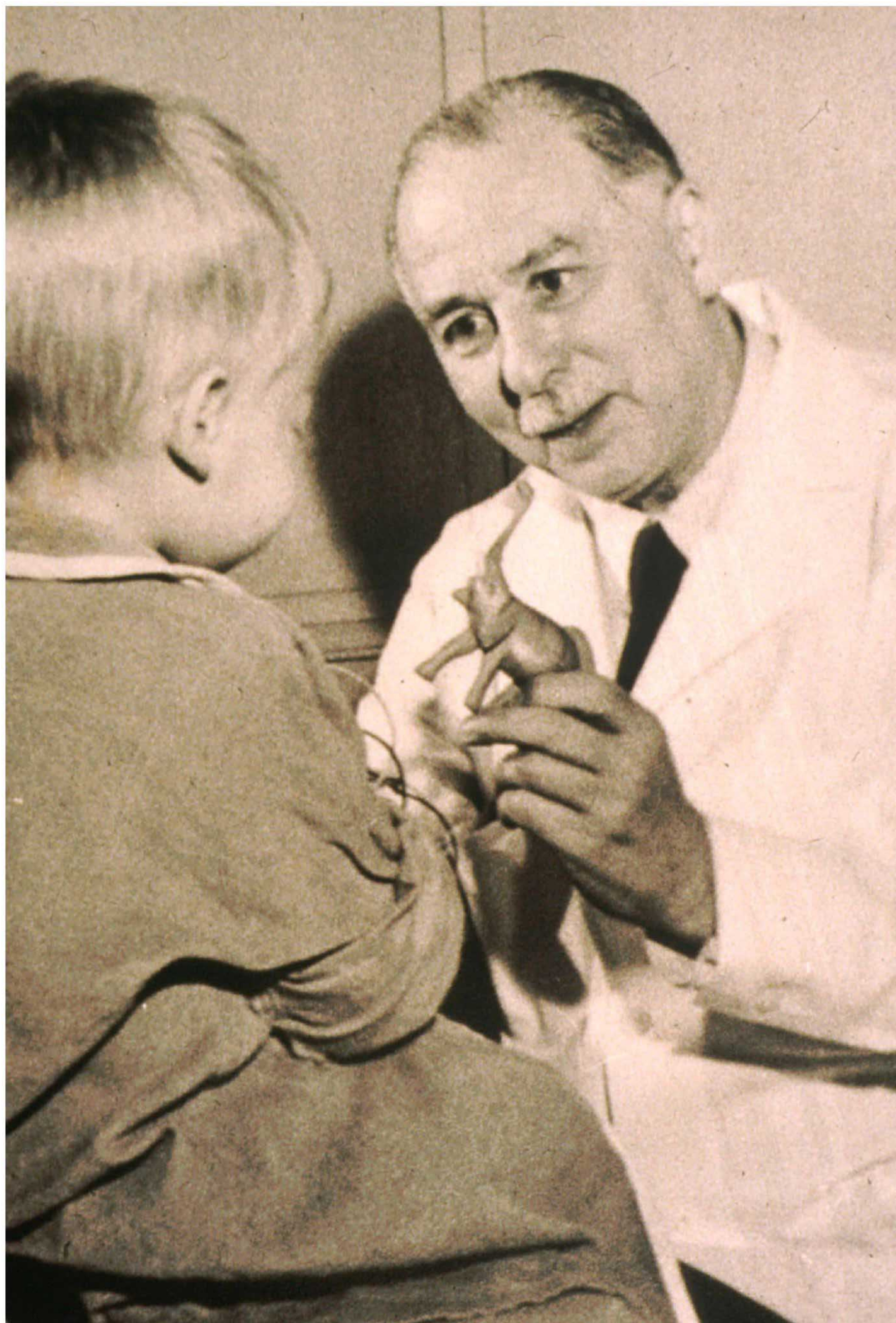


One of the Original Model A

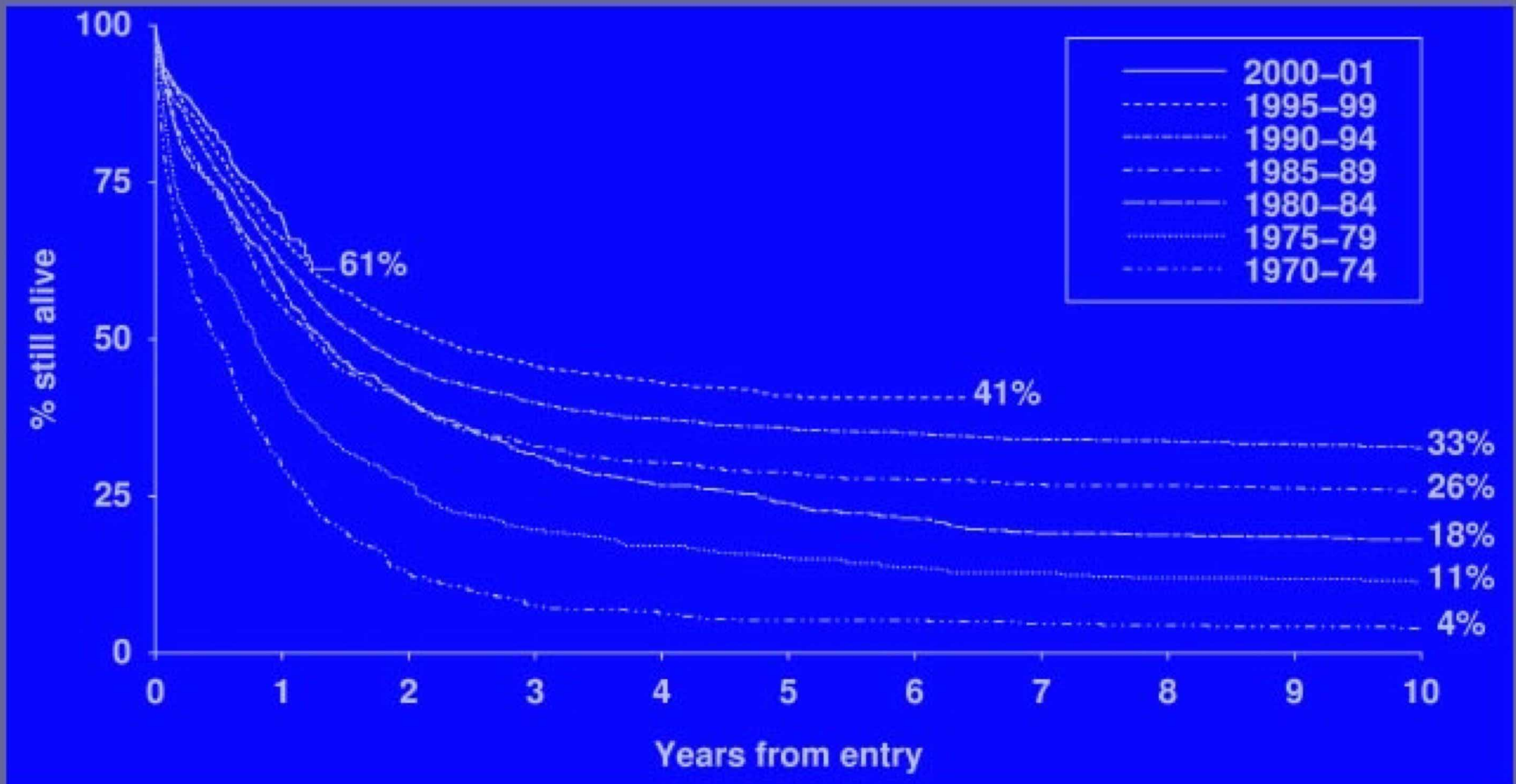








MRC AML Trials – Age 15-59

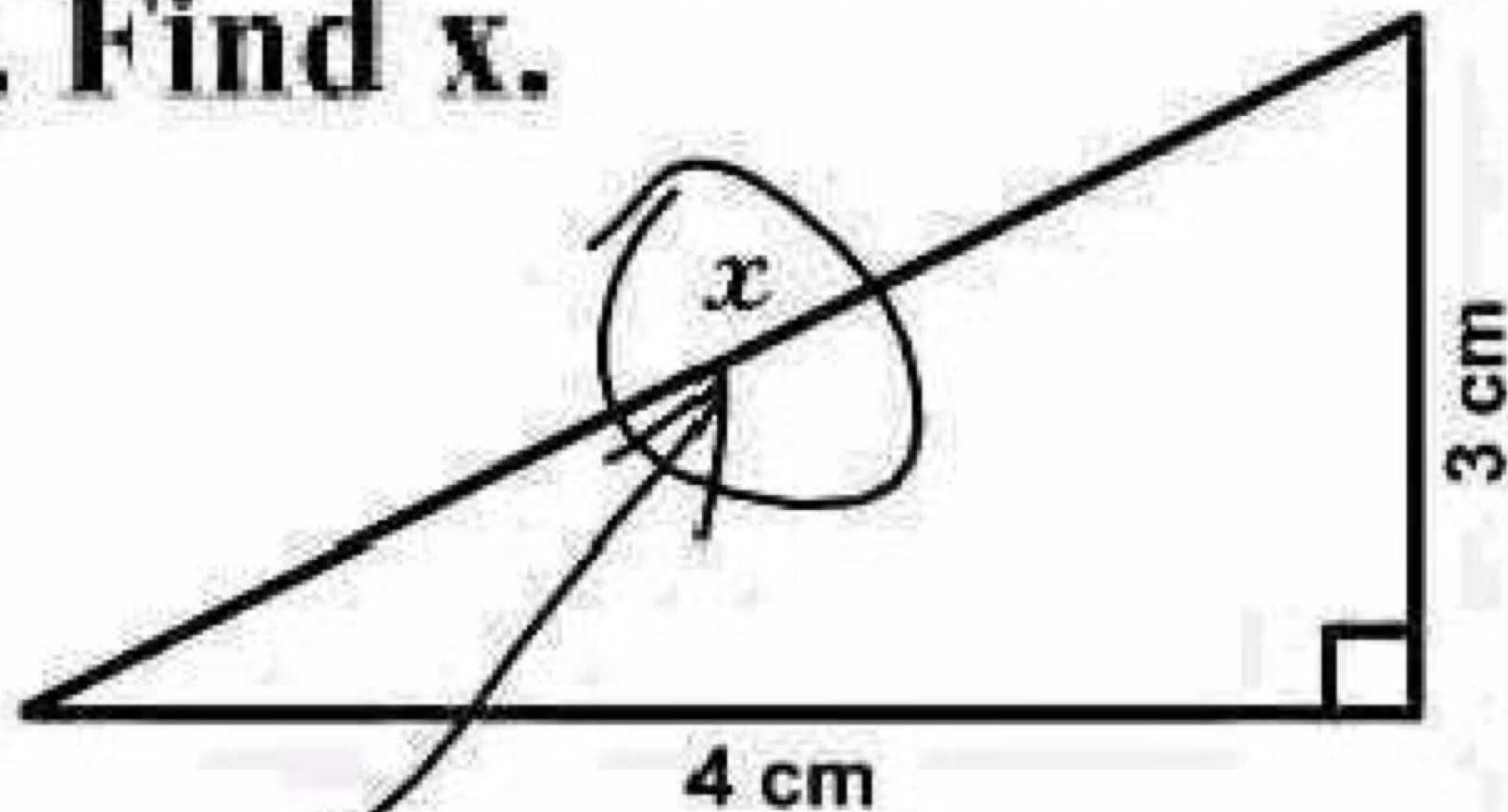


Versatile donations



Blood & platelet transfusion

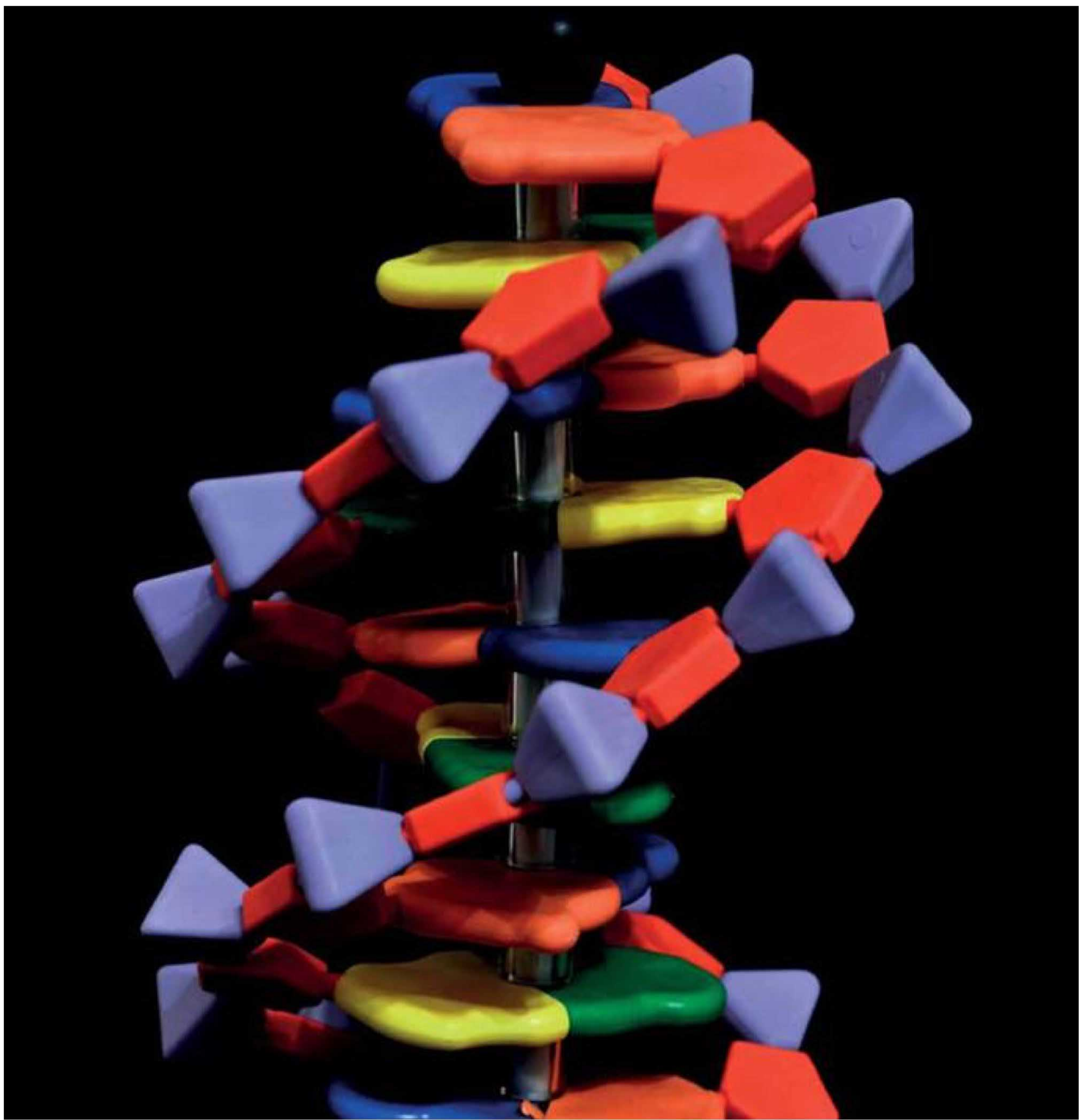
3. Find x .



Here it is



The image shows a yellow NHS pathology request form. At the top, there is a section for patient details, including name, date of birth, and sex. Below this is a section for the pathologist's details, including name, address, and contact information. A barcode is visible in the center. At the bottom, there is a section for the pathologist's signature and a date field. The form is partially filled out with handwritten text. There are four red circular marks numbered 1 to 4 on the right side of the form.

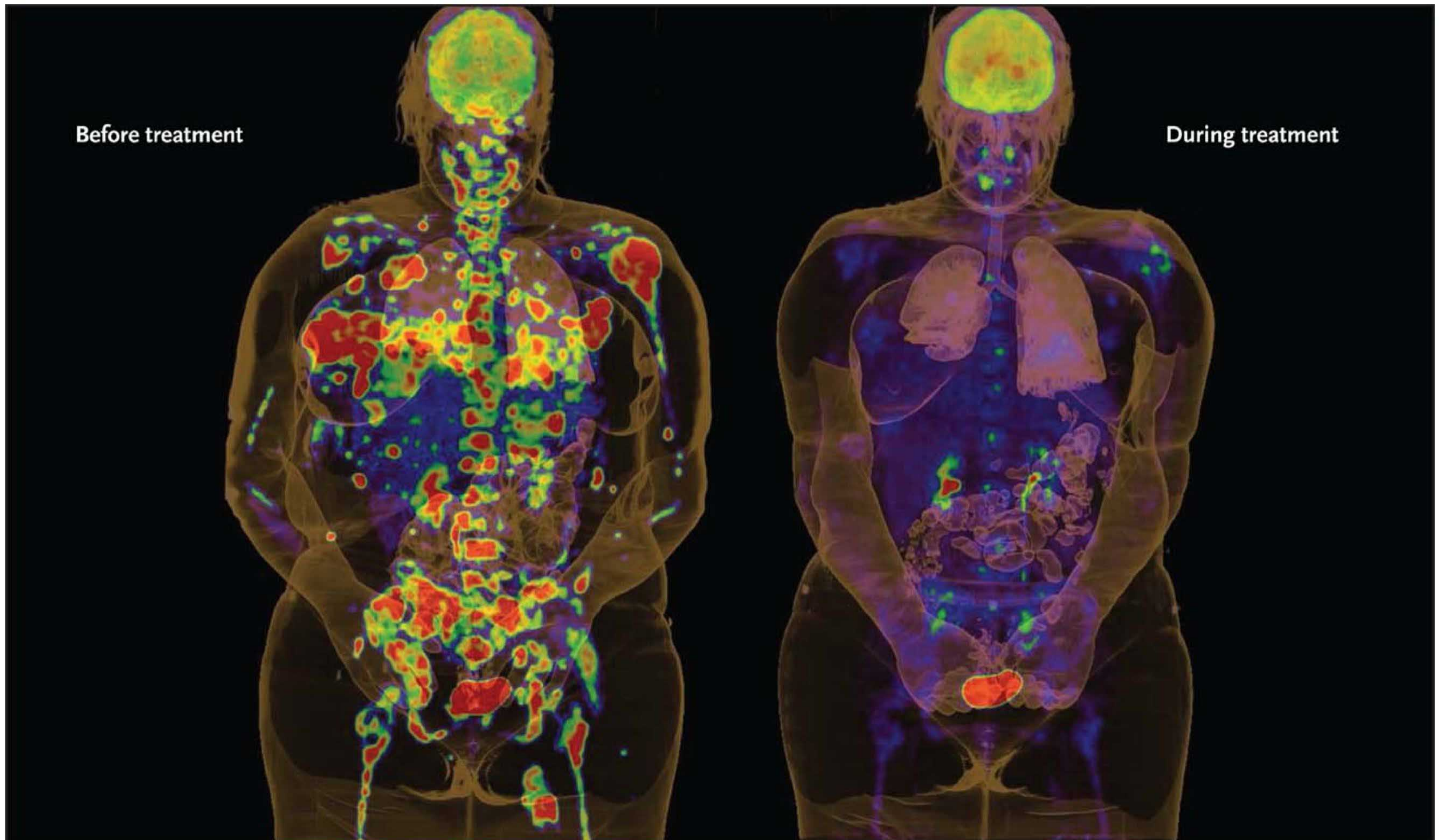




Diseases and Traits with Single Abnormal Genes

- Macular Degeneration
- Exfoliation Glaucoma
- Cancer: Lung, Prostate, Breast, Colorectal, Bladder
- Neuroblastoma
- Melanoma
- *TP53* Cancer Predispos'n
- Chr. Lymph. Leukemia
- Inflamm. Bowel Disease
- Celiac Disease
- Gallstones
- Irritable Bowel Syndrome
- QT Prolongation
- Coronary Disease
- Coronary Spasm
- Atrial Fibrillation/Flutter
- Stroke
- Subarachnoid Hemorrhage
- Intracranial Aneurysm
- Hypertension
- Hypt. Diuretic Response
- Peripheral Artery Disease
- Lipids and Lipoproteins
- Warfarin Dosing
- Ximelegatran Adv. Resp.
- Parkinson Disease
- Amyotrophic Lat. Sclerosis
- Multiple Sclerosis
- MS Interferon- β Response
- Prog. Supranuclear Palsy
- Alzheimer's Disease in $\epsilon 4+$
- Cognitive Ability
- Memory
- Hearing
- Restless Legs Syndrome
- Nicotine Dependence
- Methamphetamine Depend.
- Neuroticism
- Schizophrenia
- Sz. Iloperidone Response
- Bipolar Disorder
- Family Chaos
- Narcolepsy
- Attention Deficit Hyperactivity
- Personality Traits
- Rheumatoid Arthritis
- RA Anti-TNF Response
- Syst. Lupus Erythematosus
- Sarcoidosis
- Pulmonary Fibrosis
- Psoriasis
- HIV Viral Setpoint
- Childhood Asthma
- Type 1 Diabetes
- Type 2 Diabetes
- Diabetic Nephropathy
- End-St. Renal Disease
- Obesity, BMI, Waist, IR
- Height
- Osteoporosis
- Osteoarthritis
- Male Pattern Baldness
- F-Cell Distribution
- Fetal Hgb Levels
- C-Reactive Protein
- ICAM-1
- Total IgE Levels
- Uric Acid Levels, Gout
- Protein Levels
- Vitamin B12 Levels
- Recombination Rate
- Pigmentation

Targeting Treatment to a Specific Variant in the Melanoma Gene.



McDermott U et al. N Engl J Med 2011;364:340-350

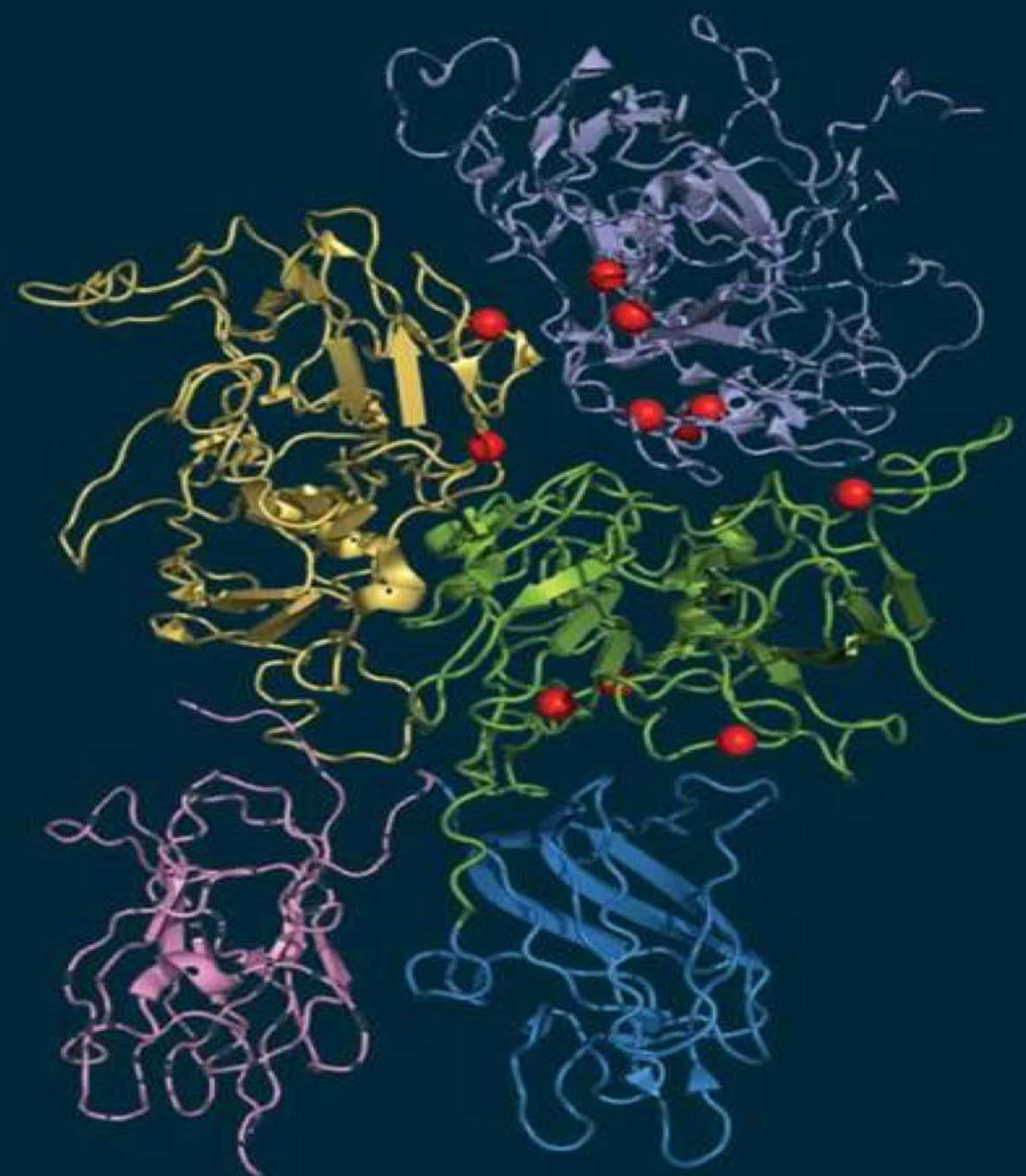


The NEW ENGLAND
JOURNAL of MEDICINE

Haemophilia



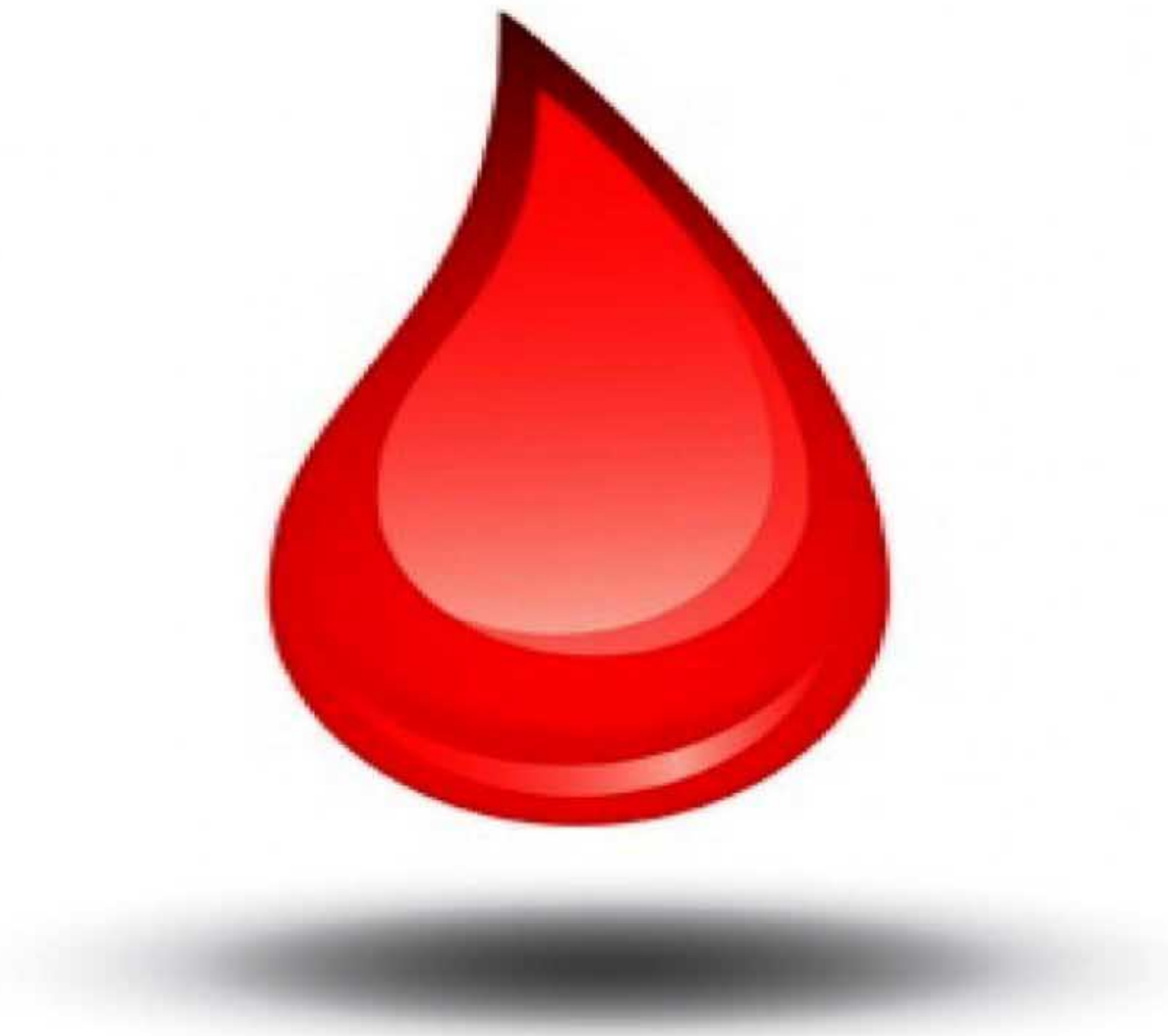






The Royal College of Pathologists
Pathology: the science behind the cure

The story of your blood – the present



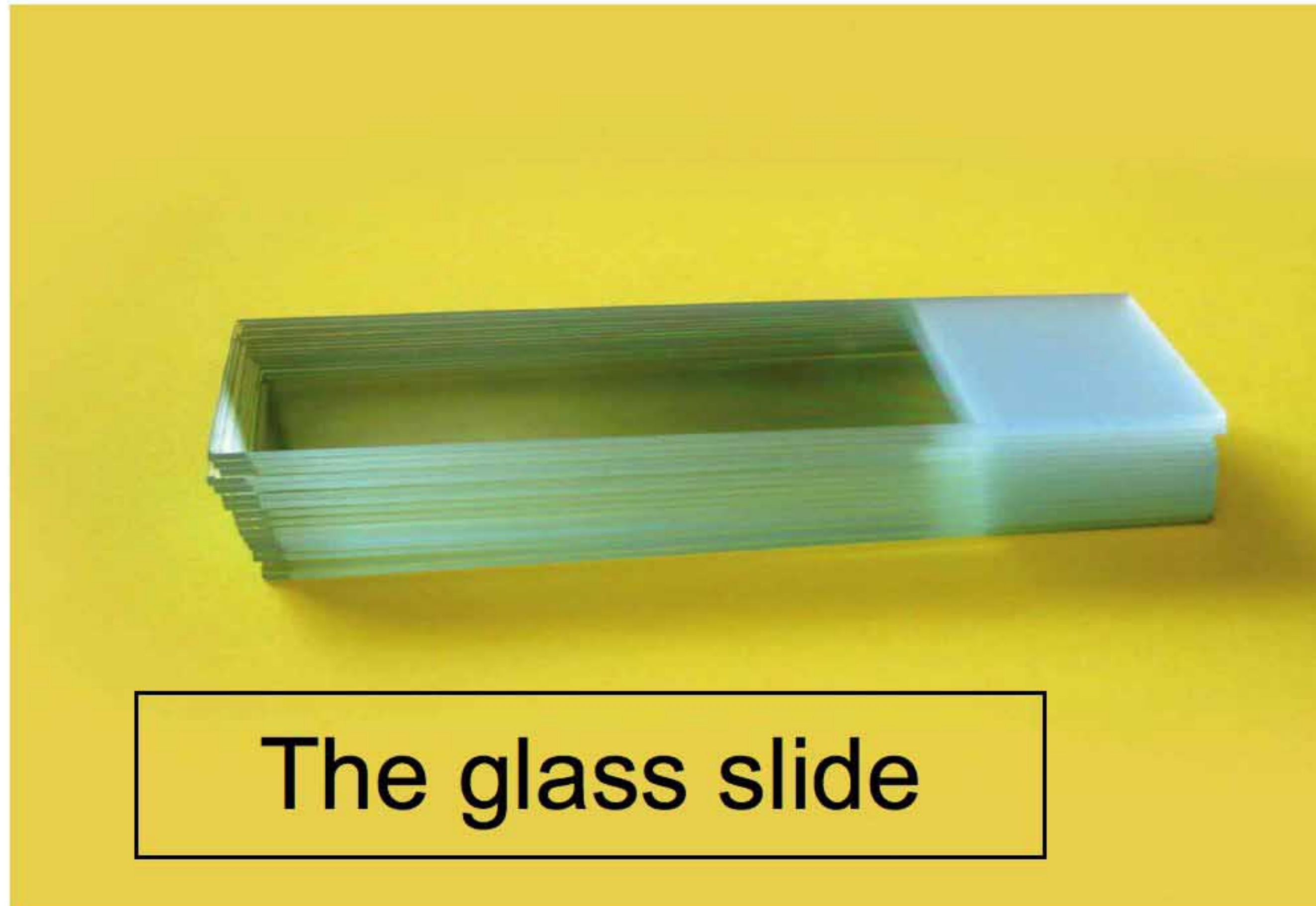
Dr Deepti Radia
Haematology Consultant
Guys and St Thomas' Hospitals
NHS Foundation Trust



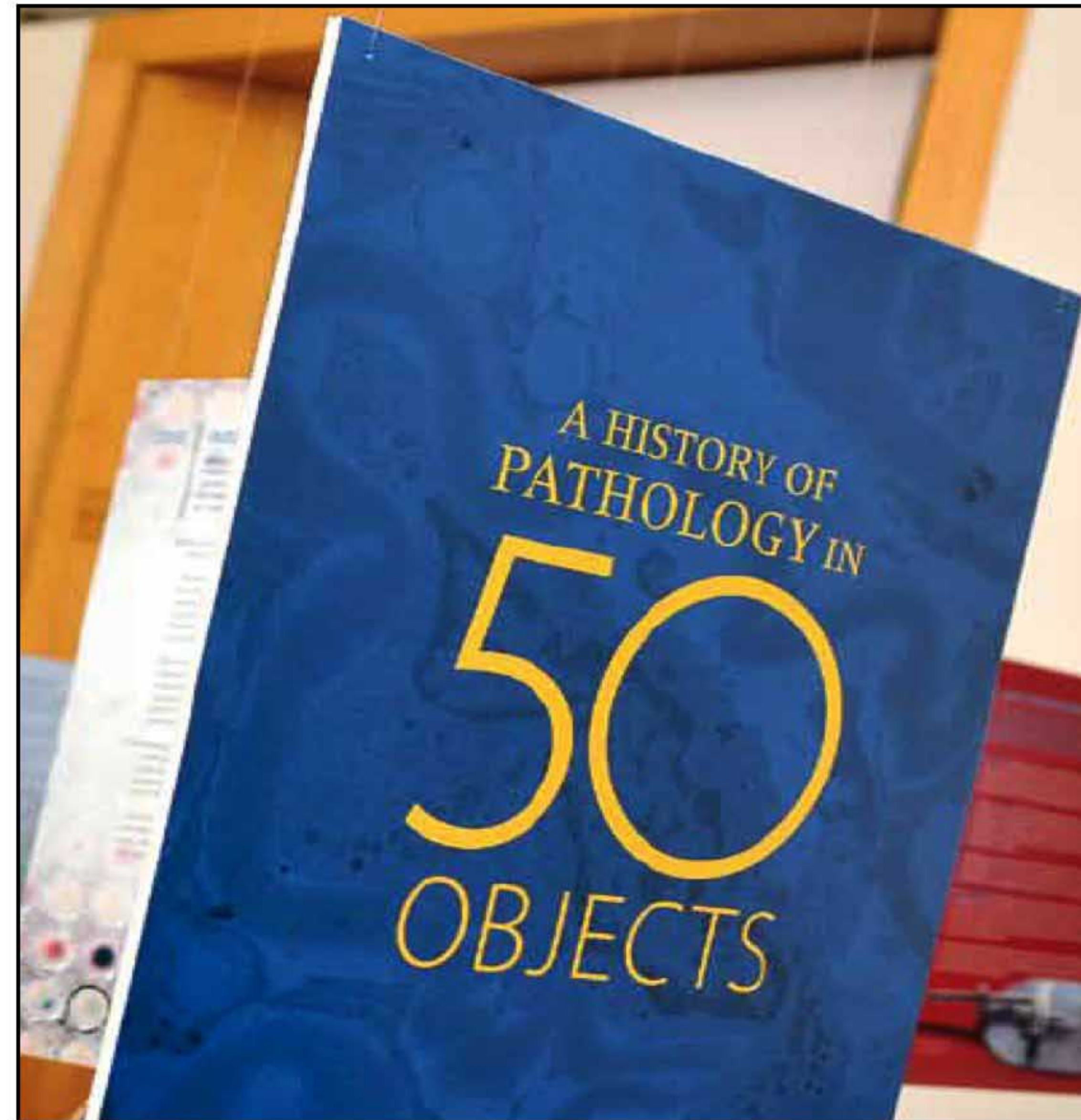


The Royal College of Pathologists
Pathology: the science behind the cure

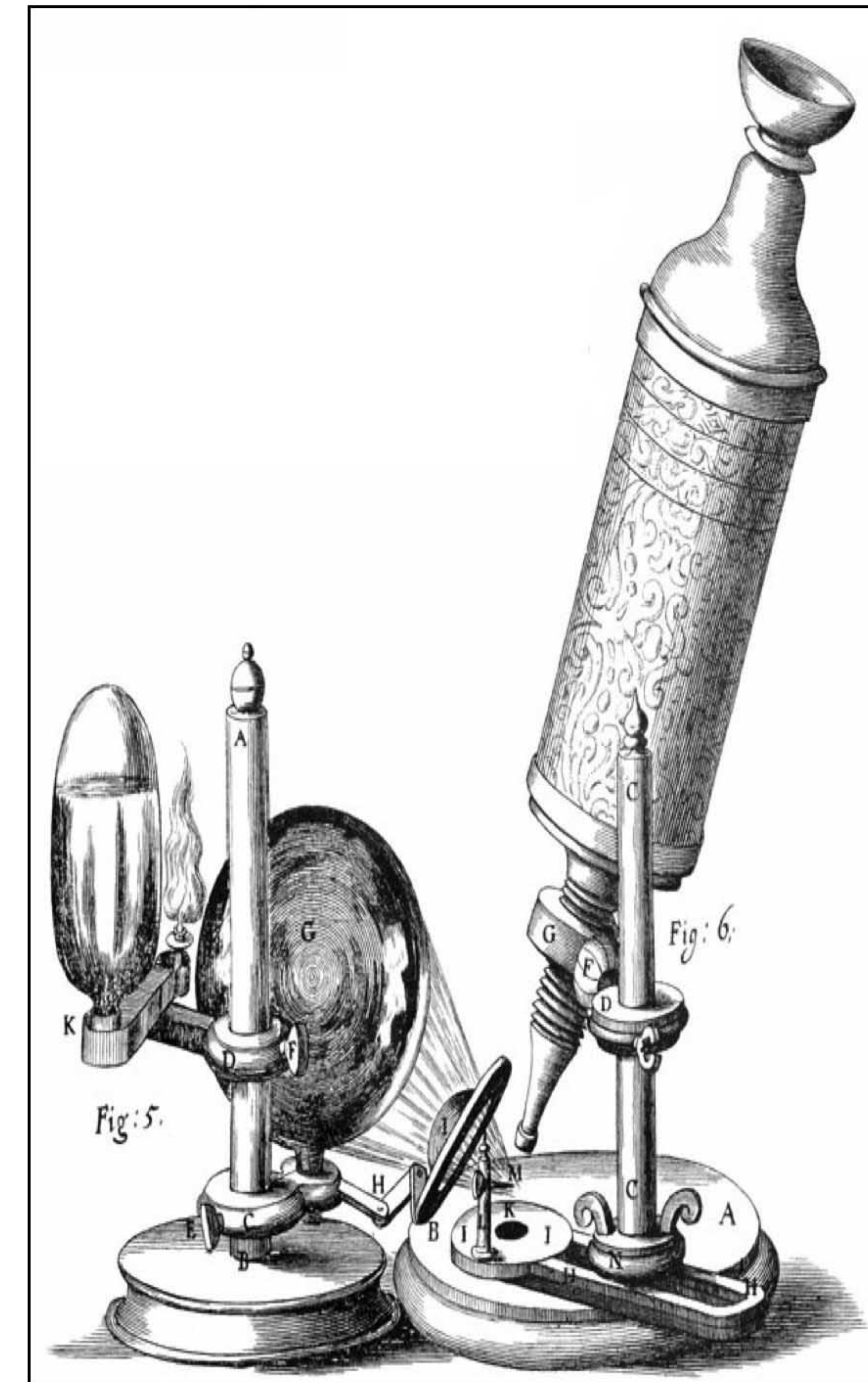
3 Objects



The glass slide

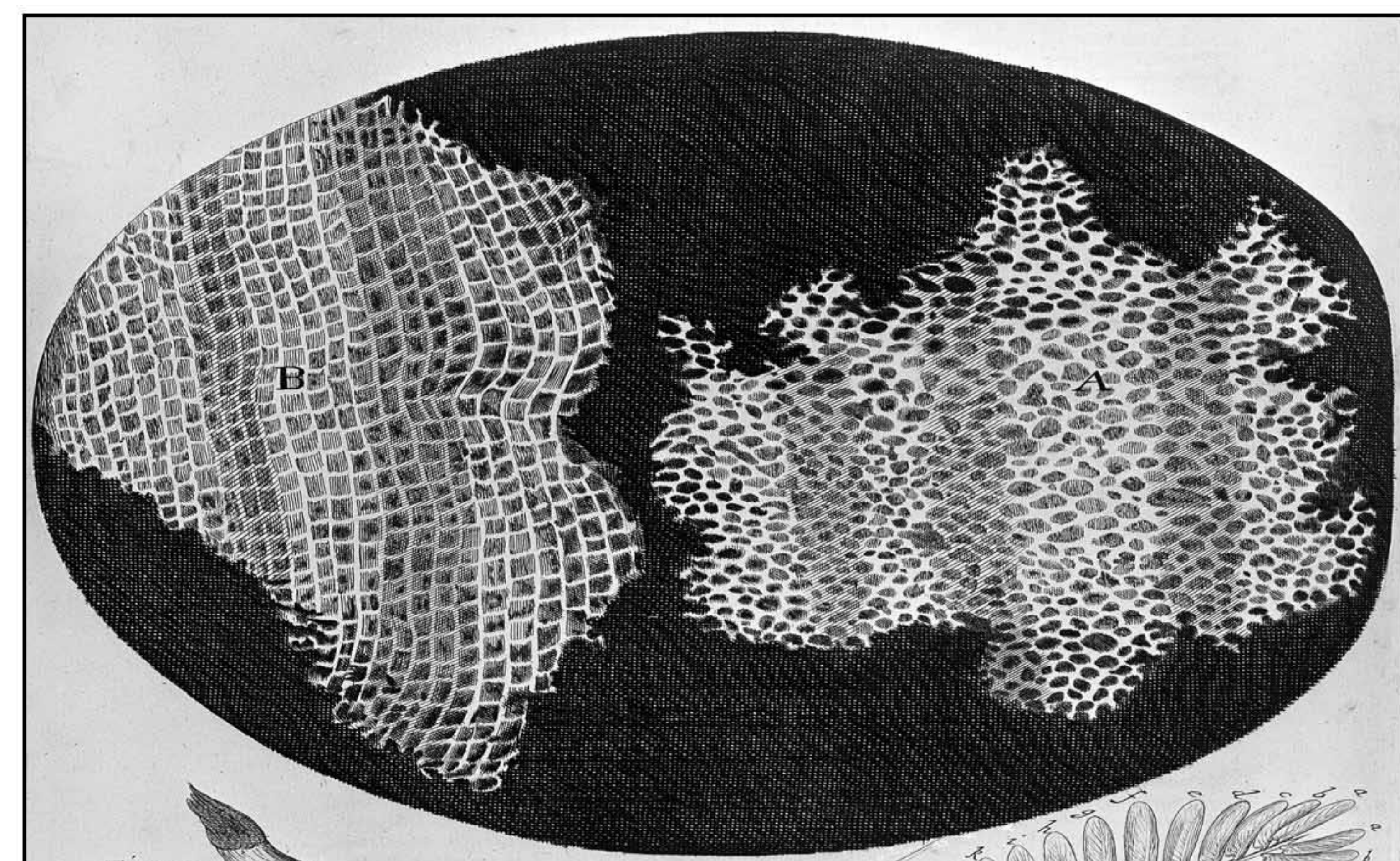
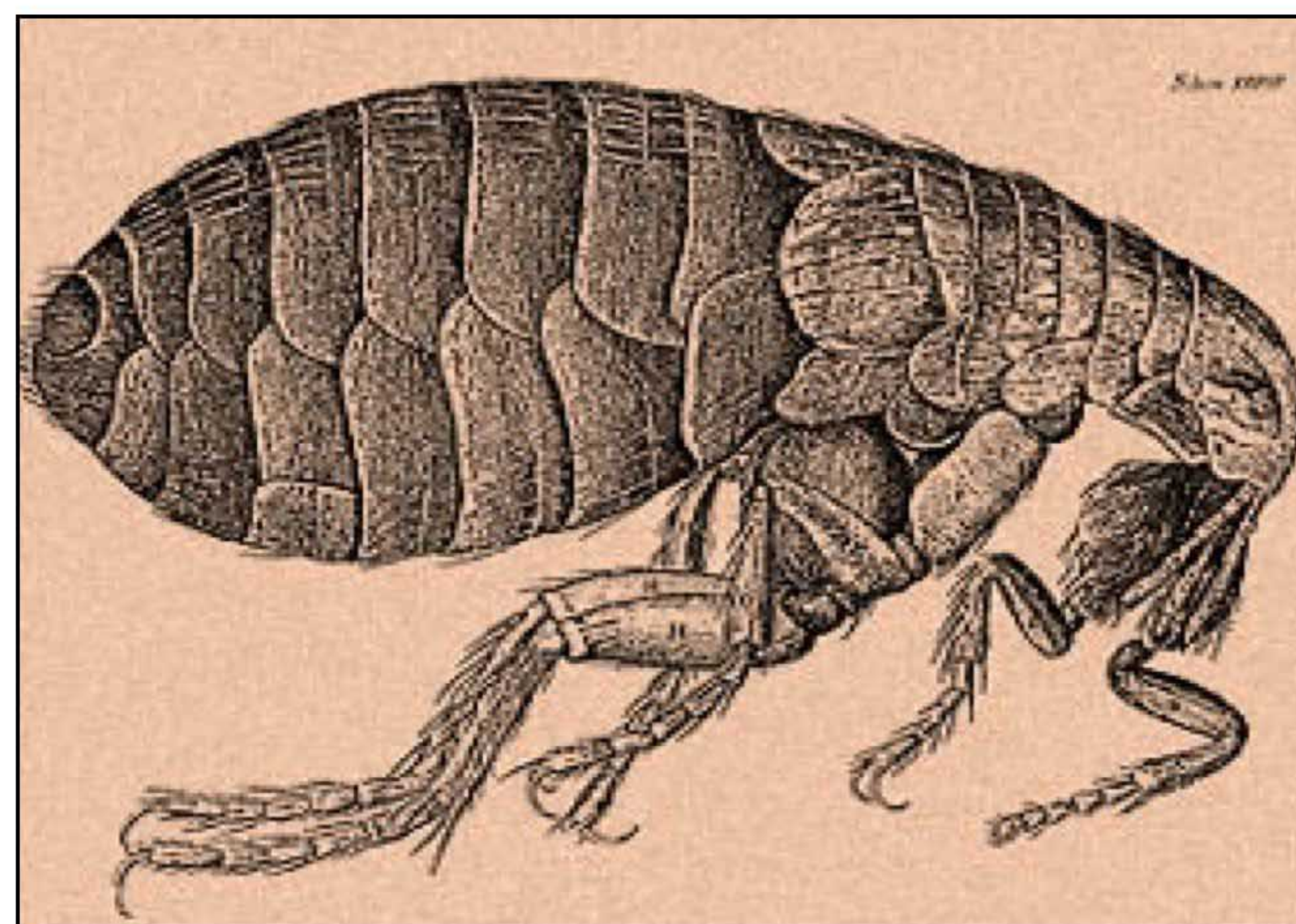
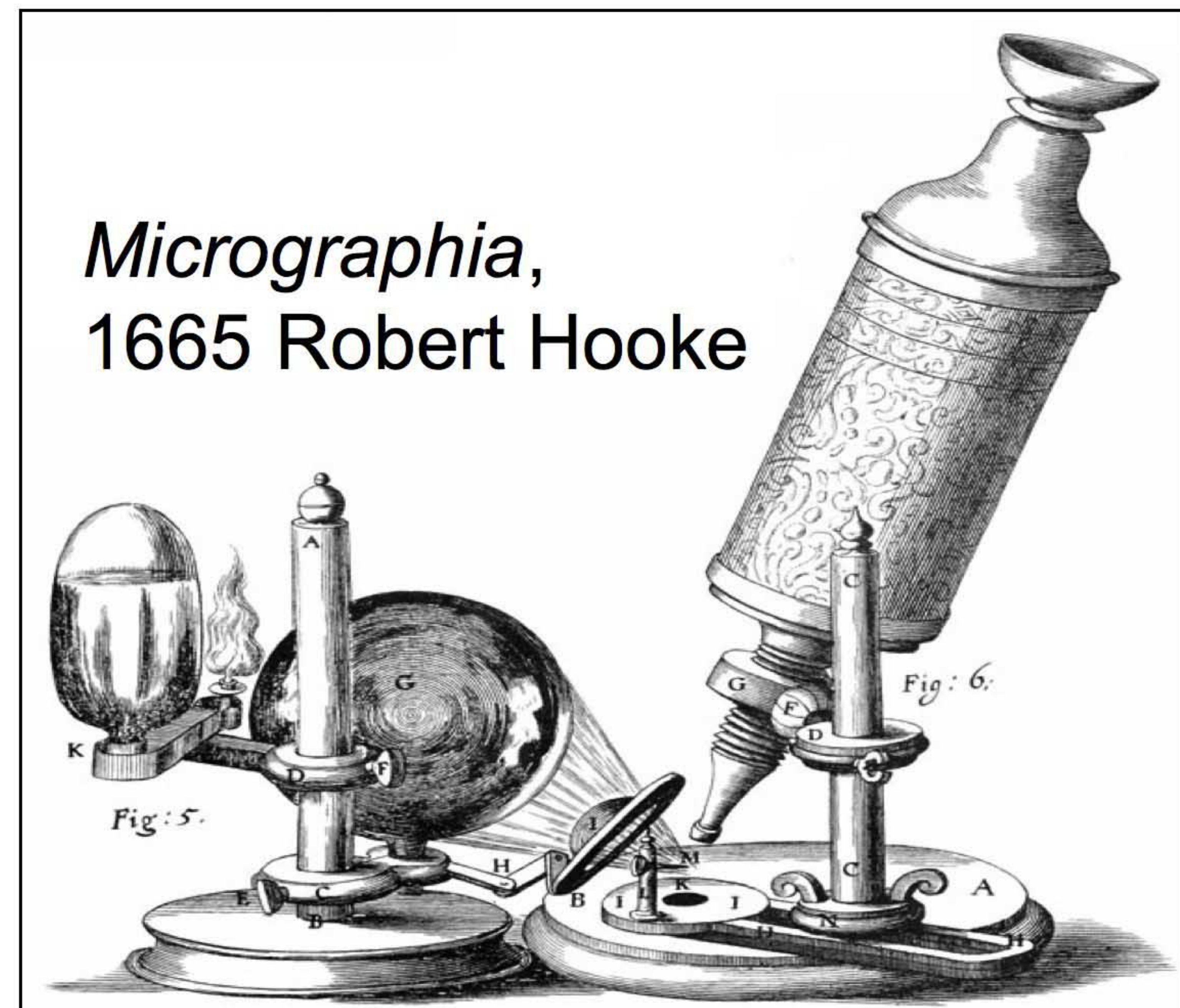


Coulter Counter



The microscope

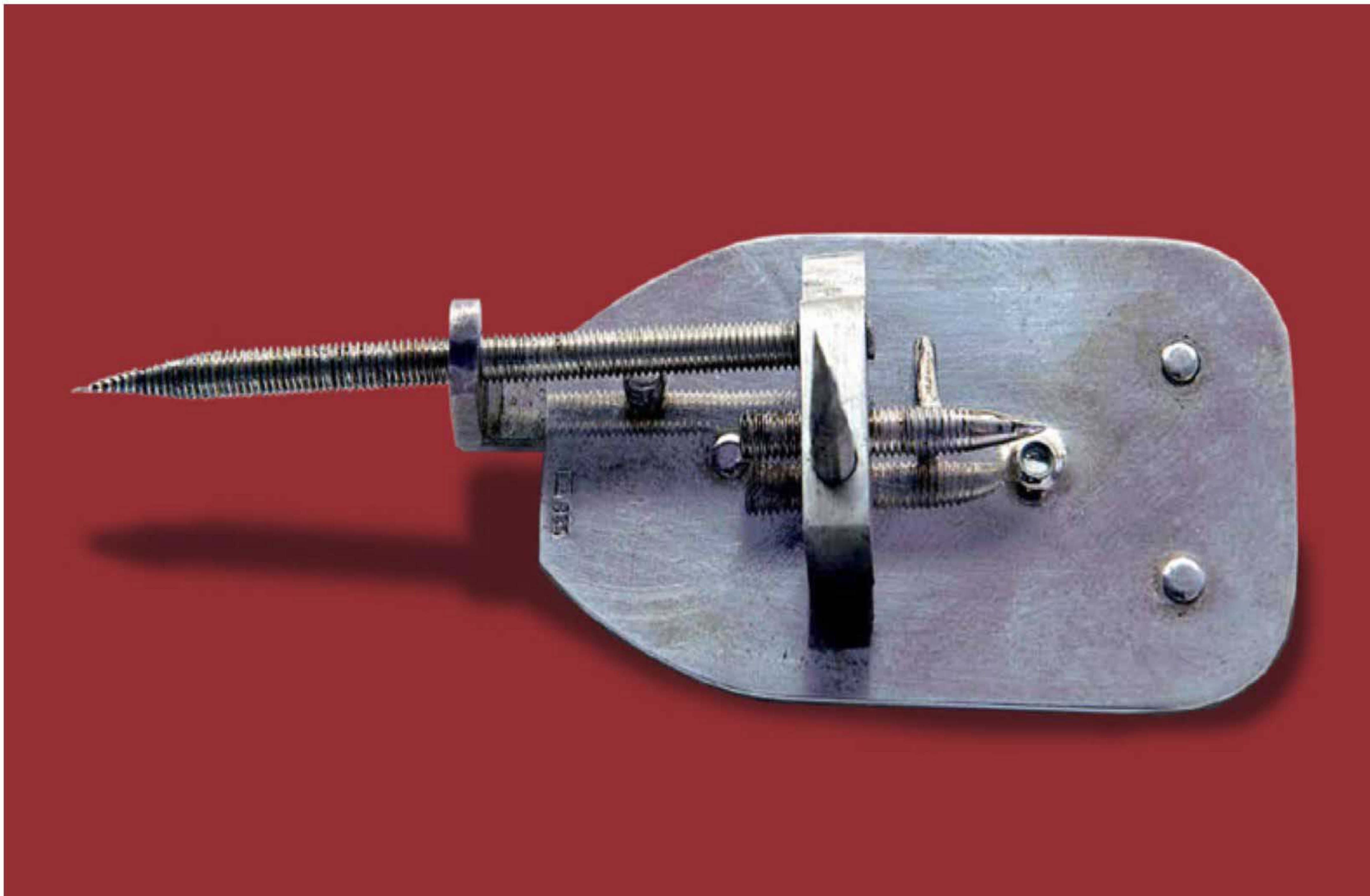
Robert Hooke 1665



Anton van Leeuwenhoek 1674

‘...and my work, which I have done for a long time , was not pursued in order to gain the praise, I now enjoy, but chiefly from a craving after knowledge, which I notice resides in me more than most other men. And therewithal, whenever I found out anything remarkable, I have thought it my duty to put my discovery on paper, so that all ingenious people might be informed thereof.’

Letter of June 12, 1716



CARSWELL, Robert

Professor of Pathology, University College Hospital

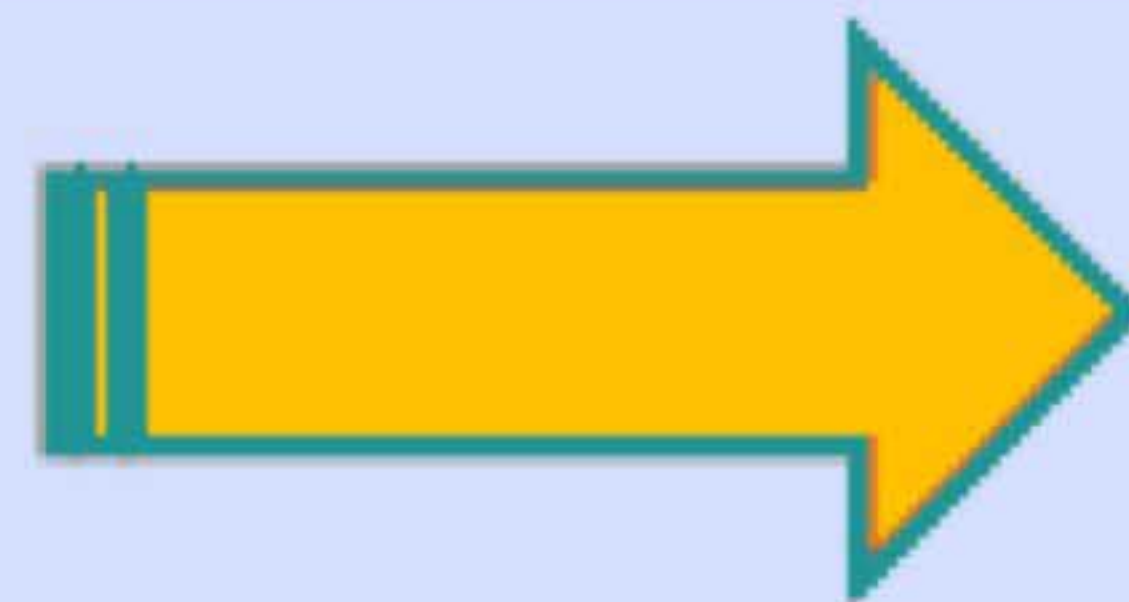
Pathological Anatomy.

Illustrations of the Elementary Forms of Diseases.

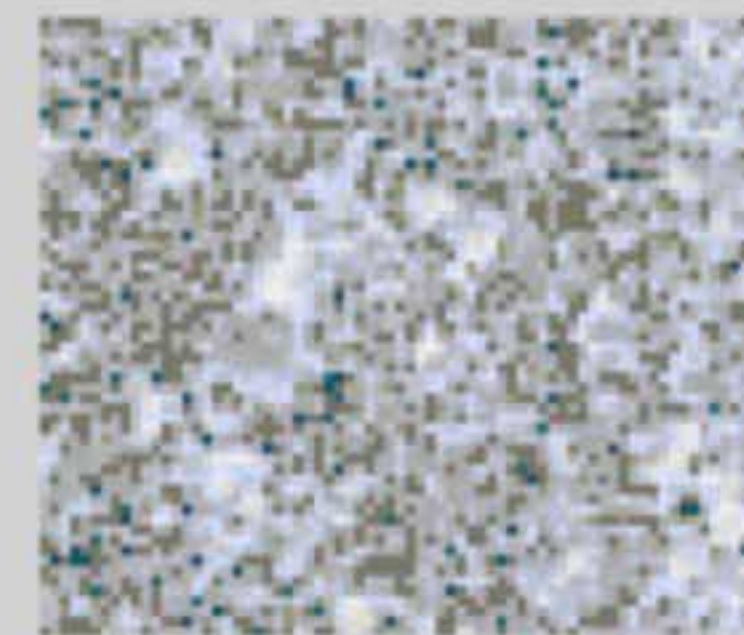
London: Longman, Rees, Orme (and others) for the author, **1838.**



But 'gave up pathology' as living too poor - copy sold on ebay 2004 \$25,000



Back to Technology



Benjamin Martin
1747

Made early 1800s



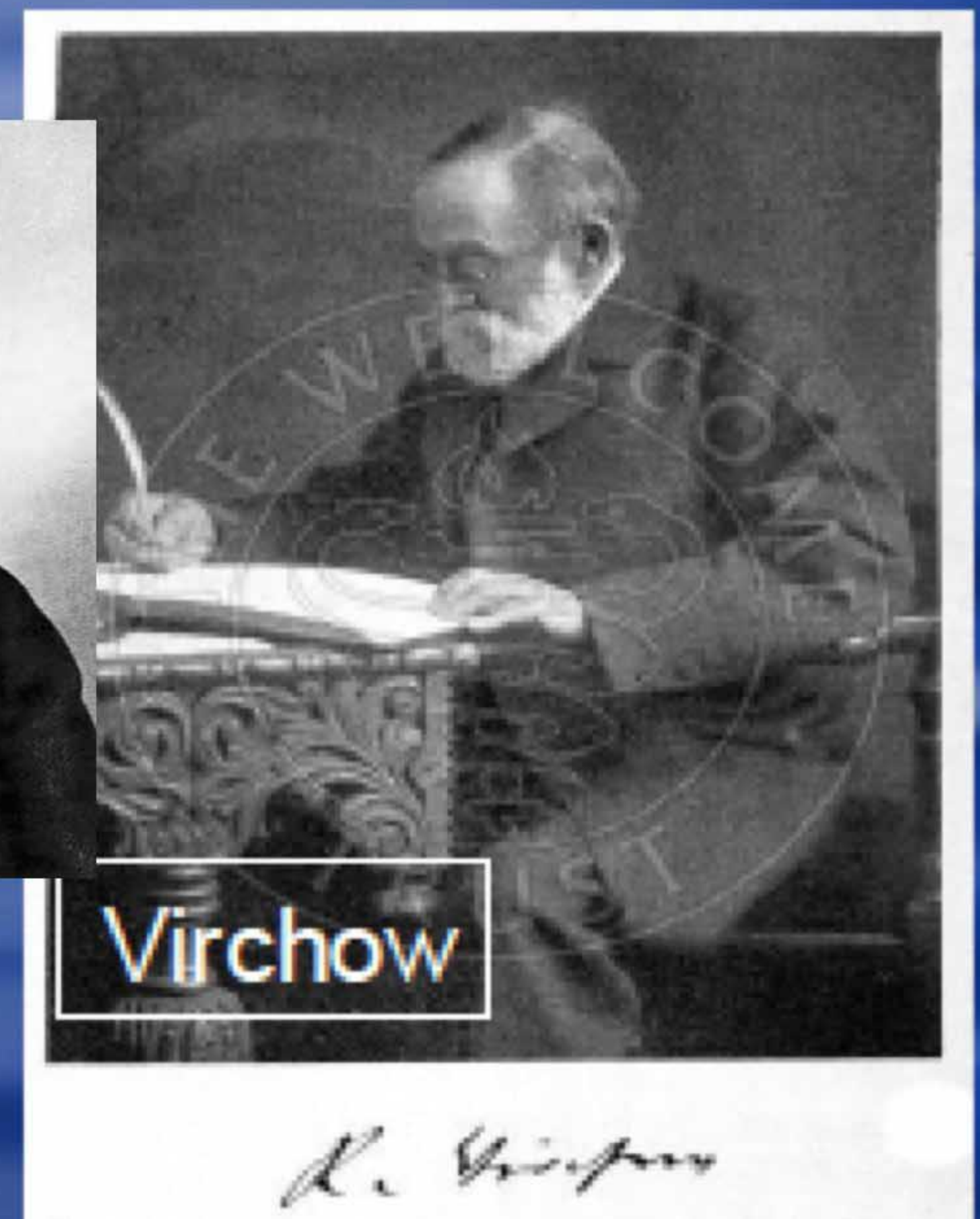
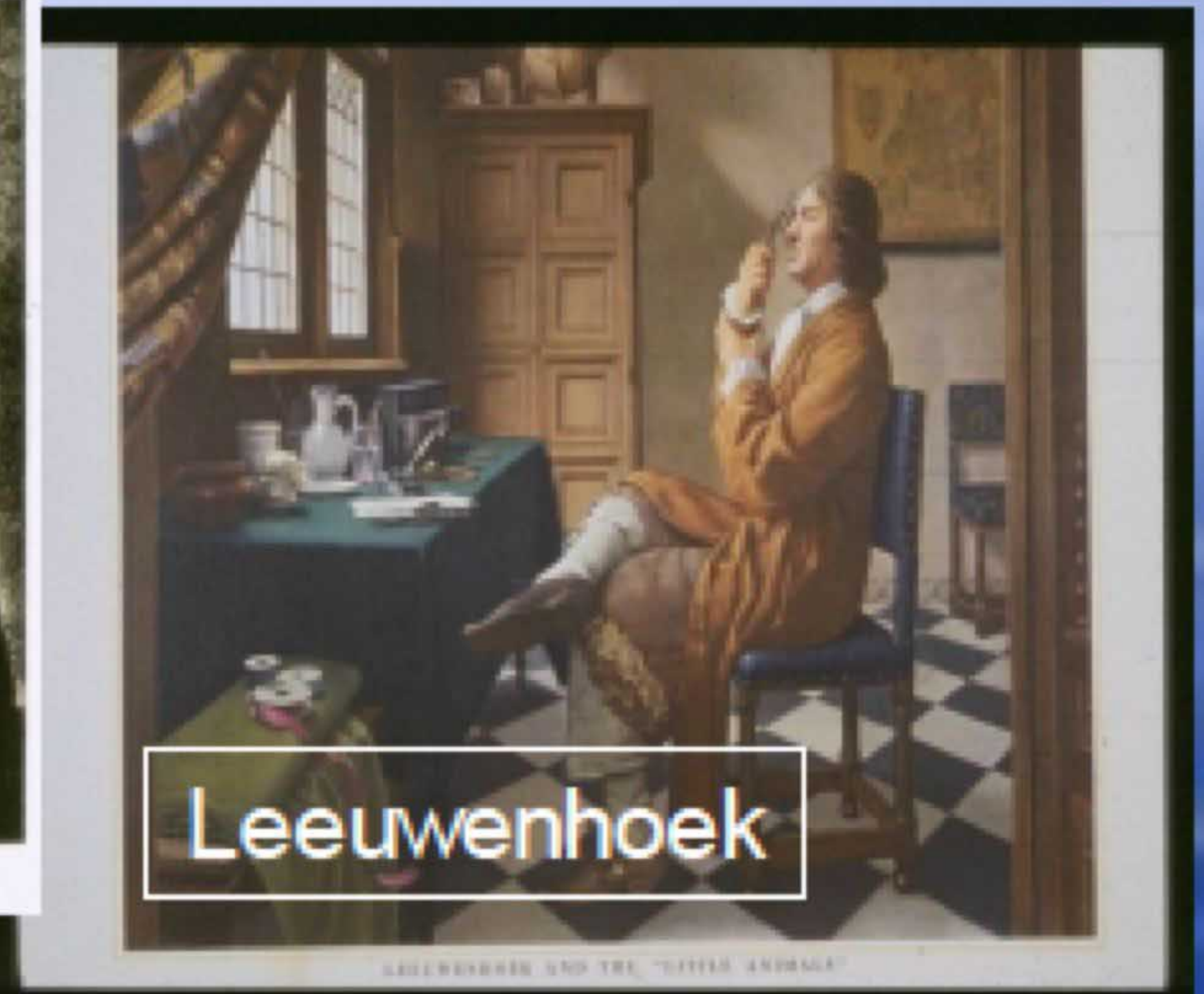
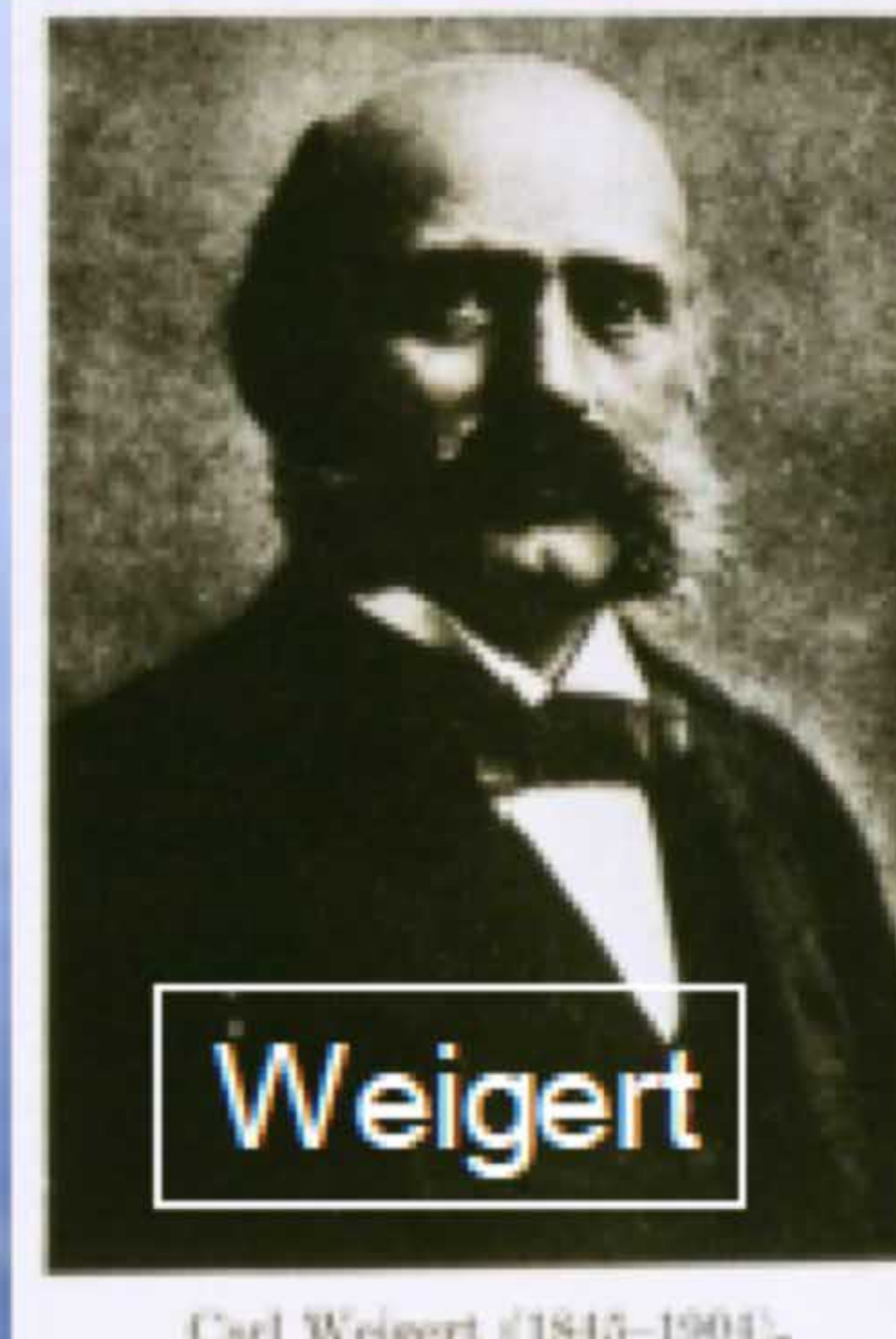
R K Beck
London 1840?



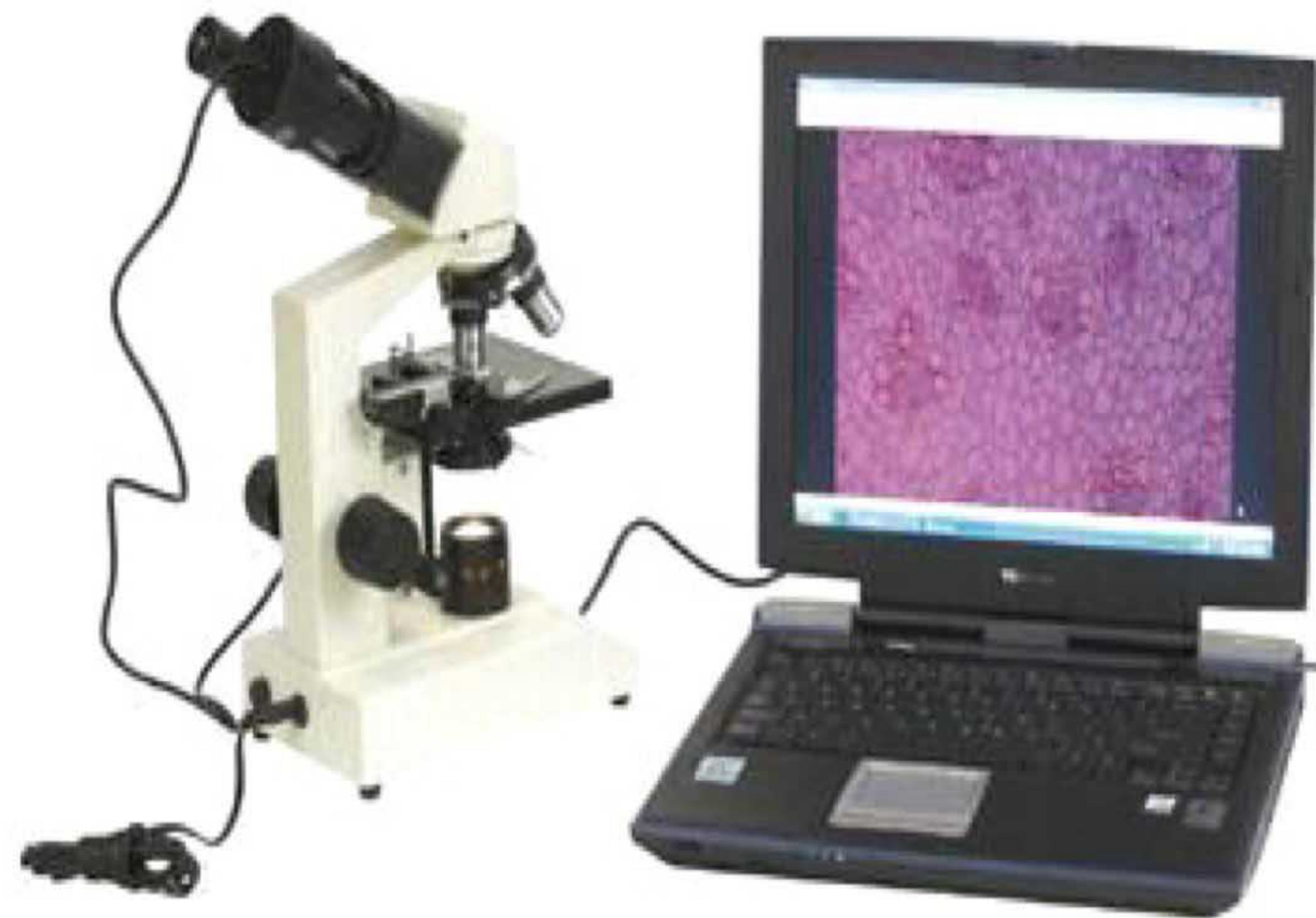
Henry Crouch
London
1870

A Century and a half of image analysis

- mind and microscope !!! 1850 - 2000



Today's microscopes



Today's microscopes



Virtual microscopes and scanners

Scanner

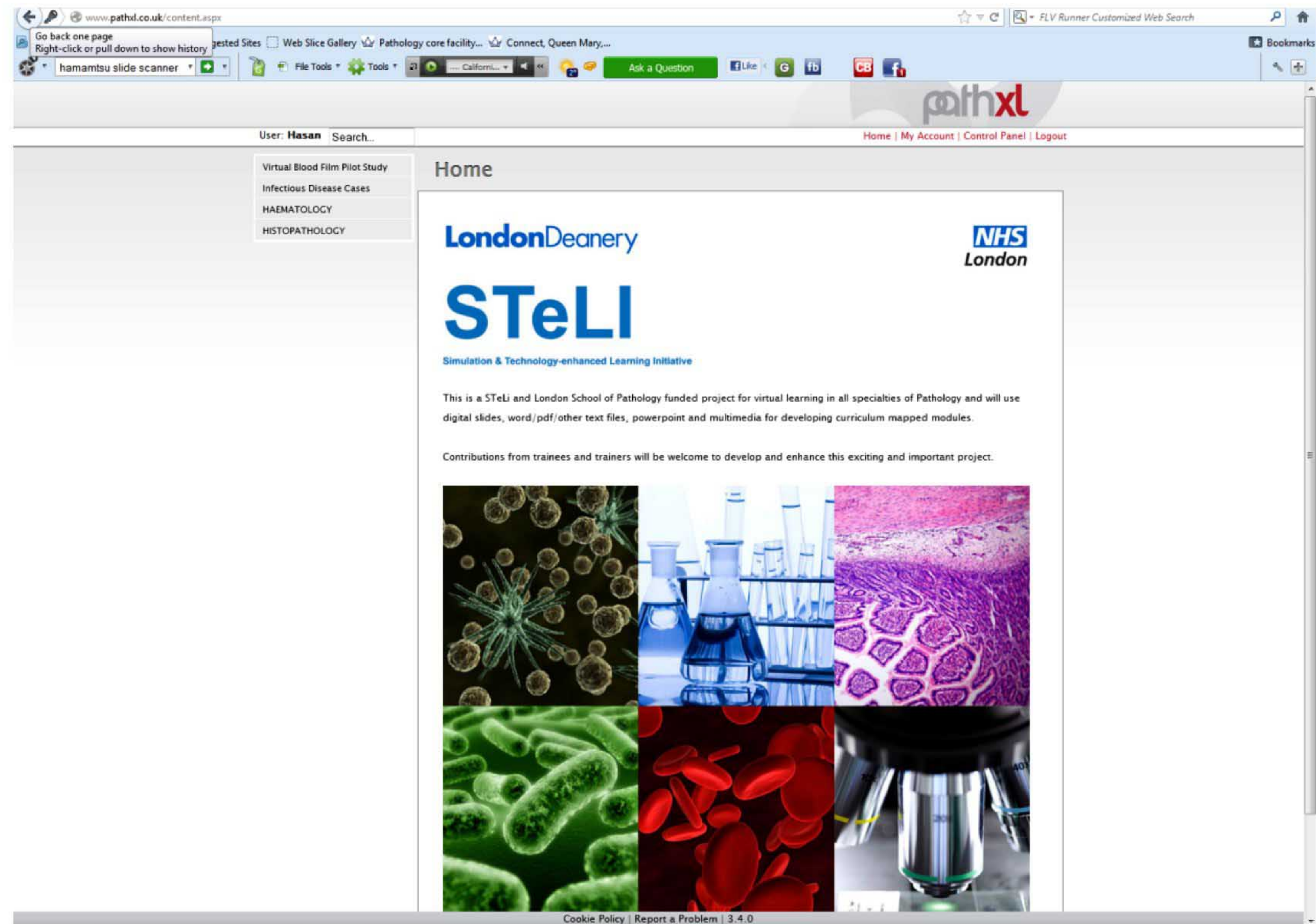
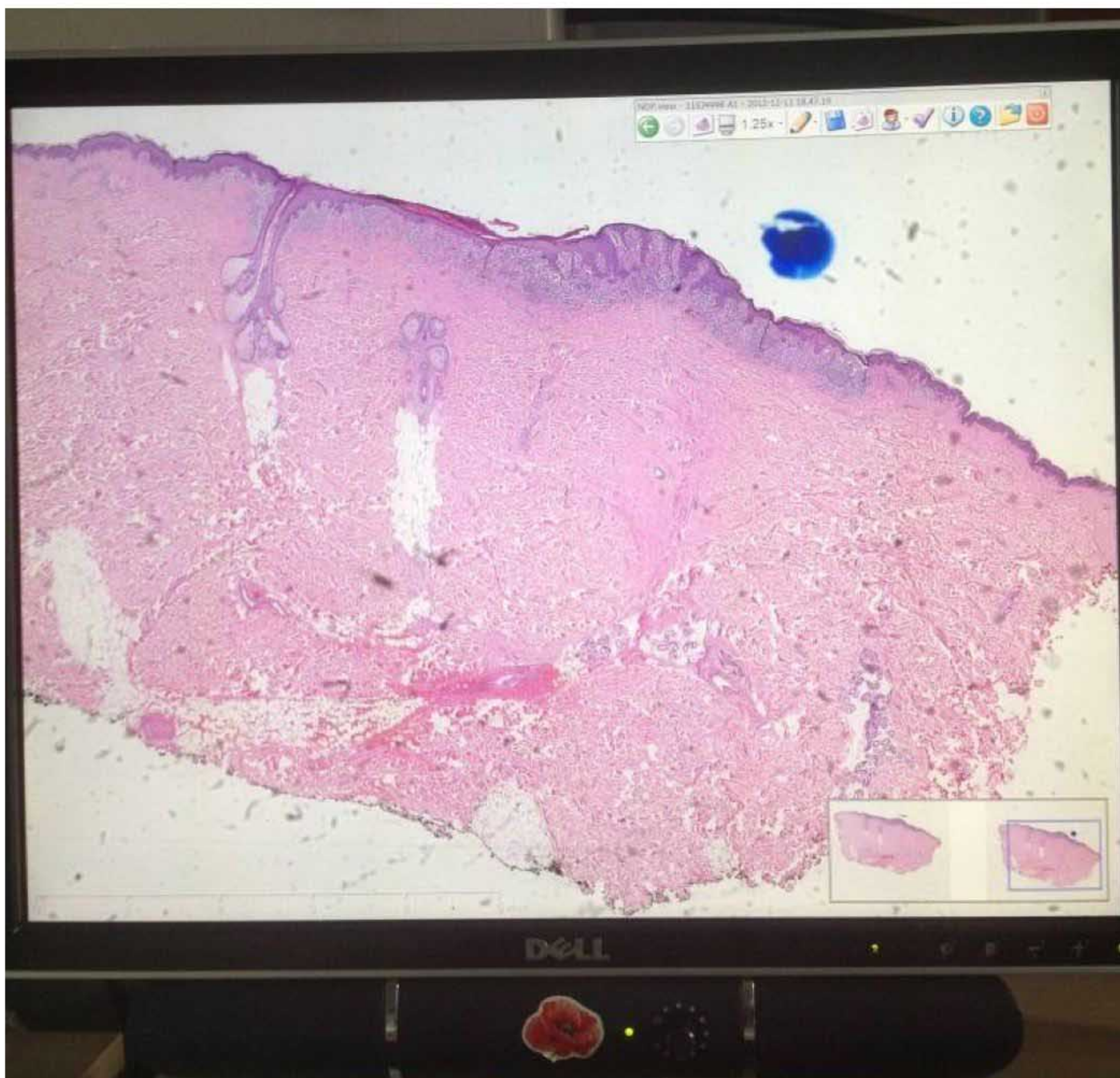


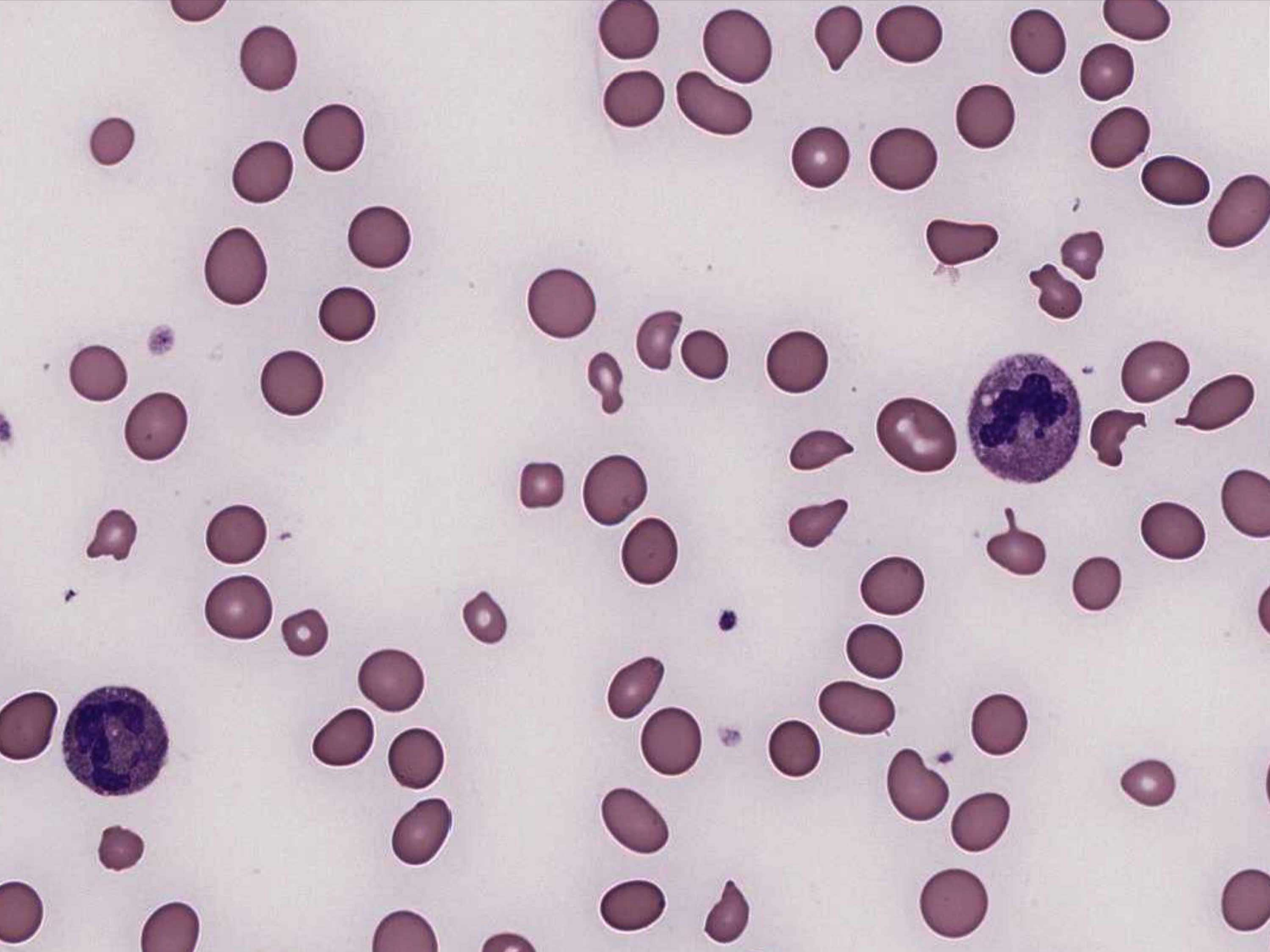
Storage



Hosting – Internet/Web based

Virtual Slide





Blood sampling



Ivory Syringe

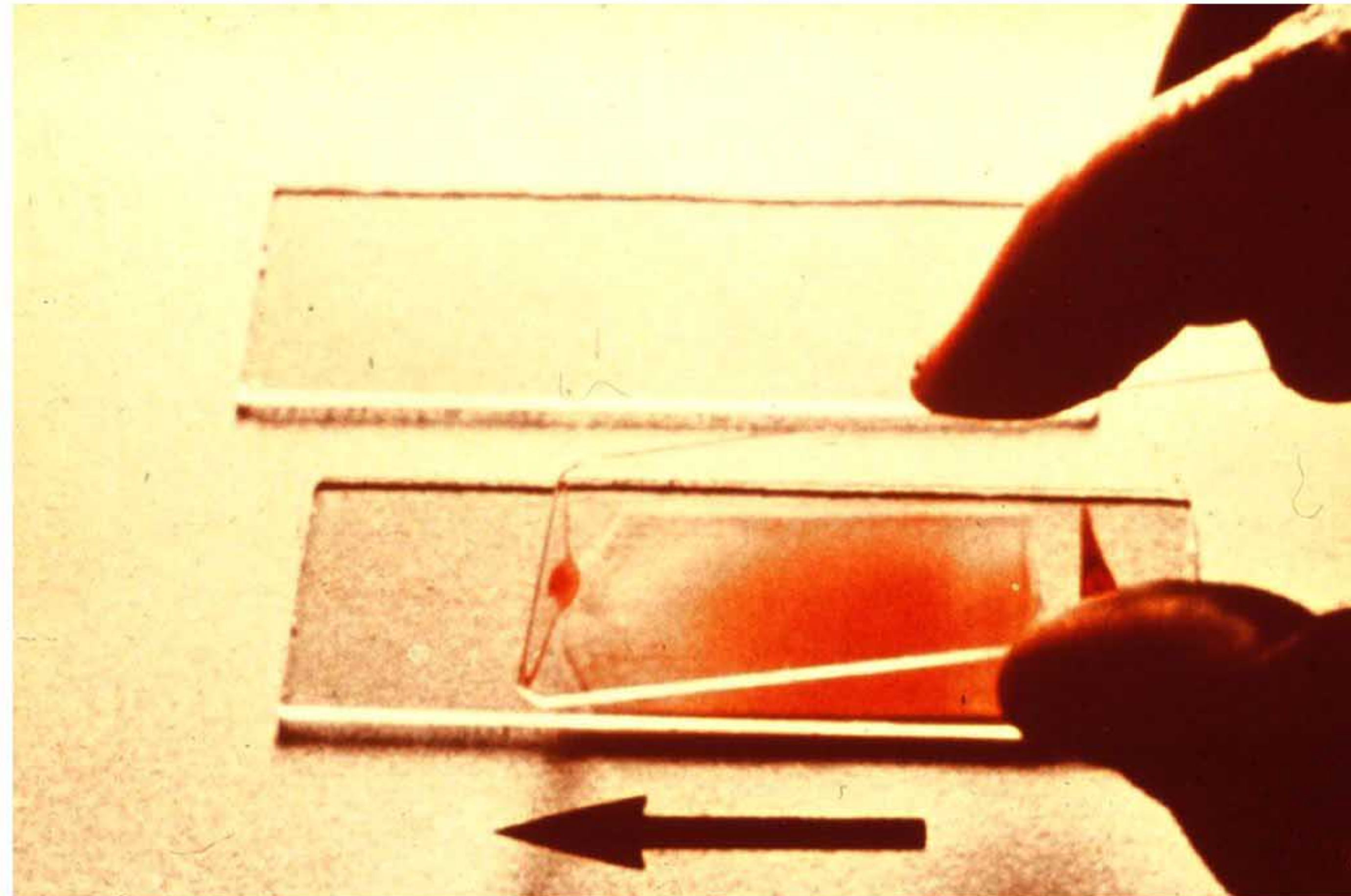




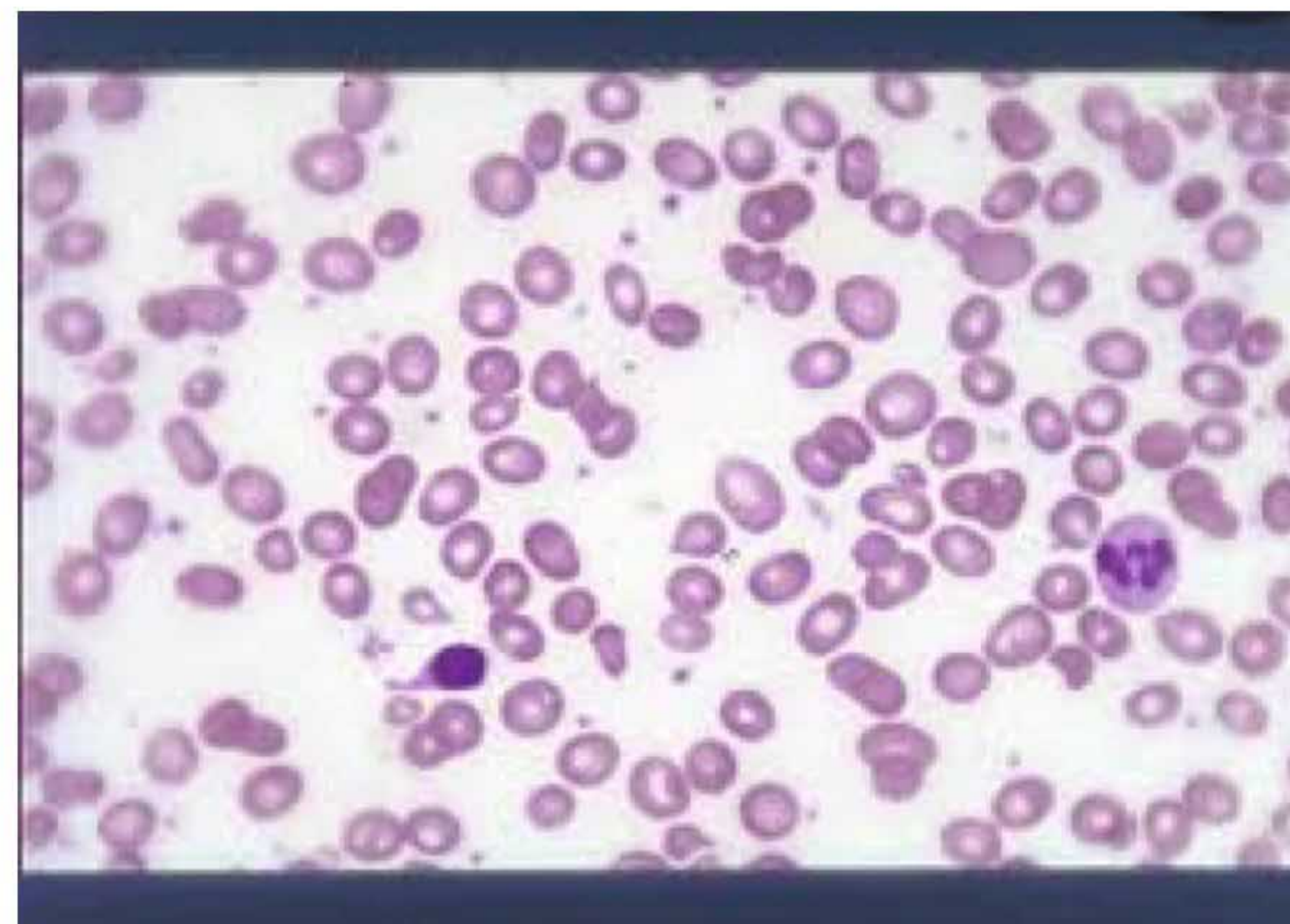
ZACHARIAS IANSEN,

sive Ioannes primus Conspicilliorum inventor.

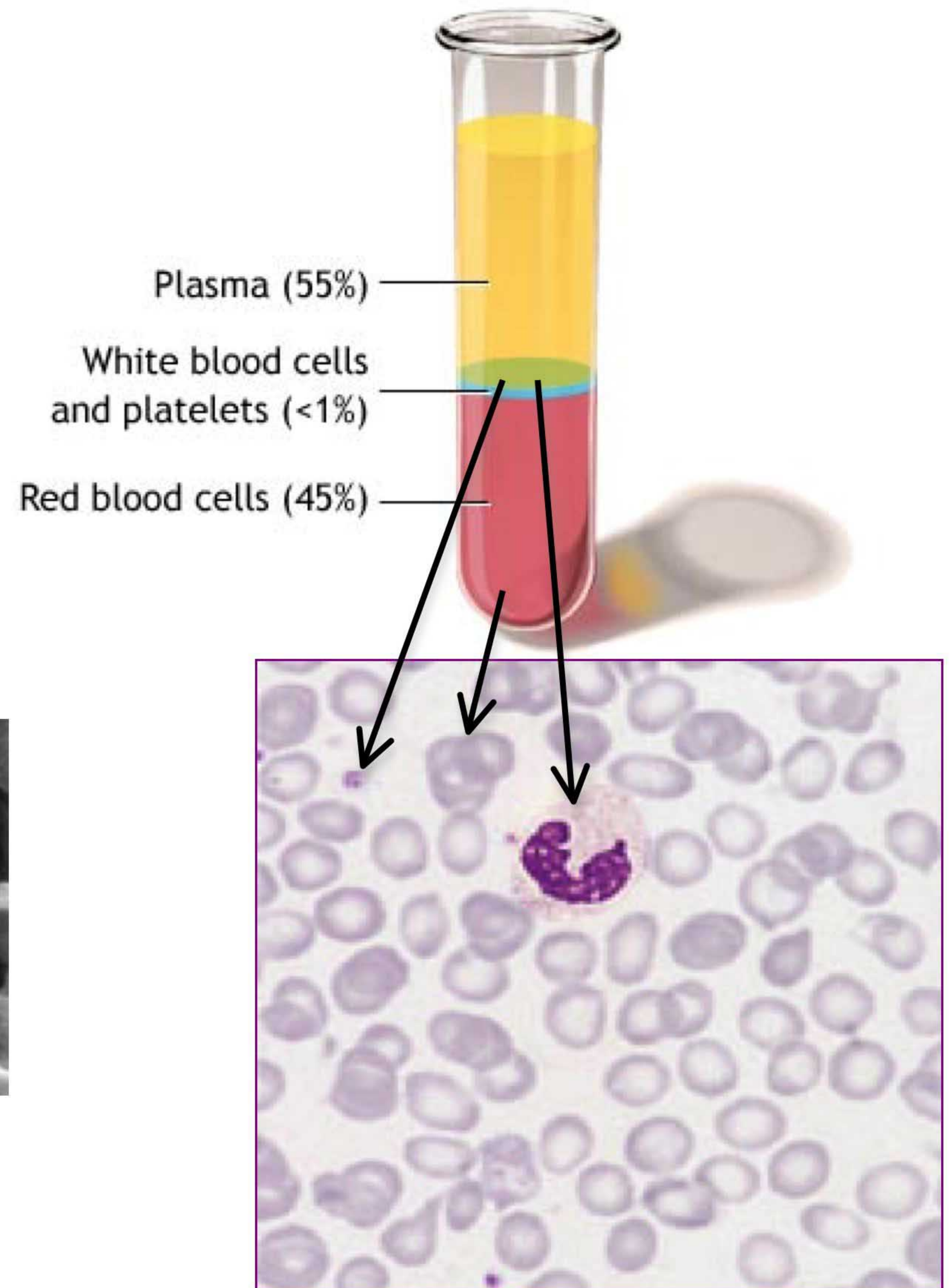
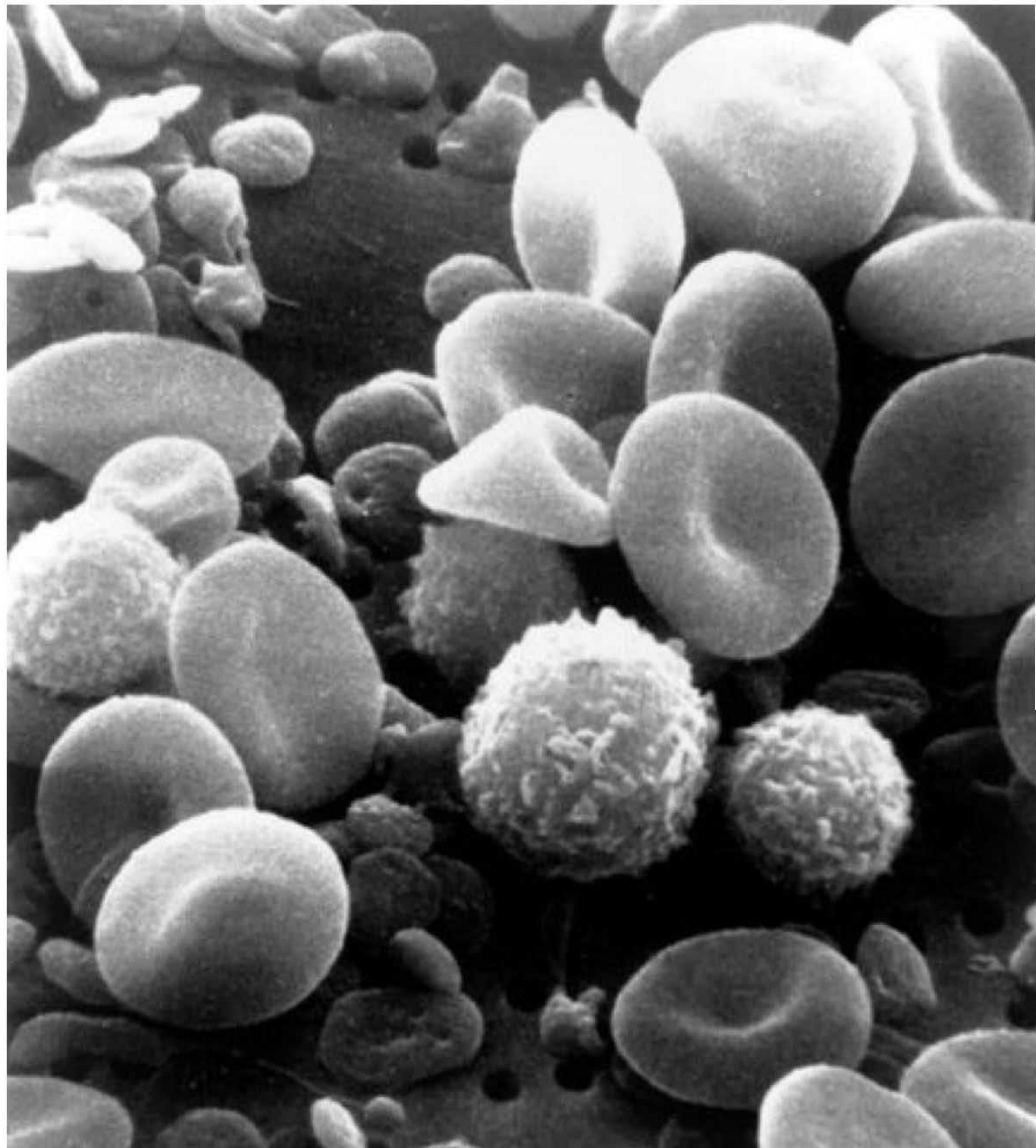
The Glass Slide



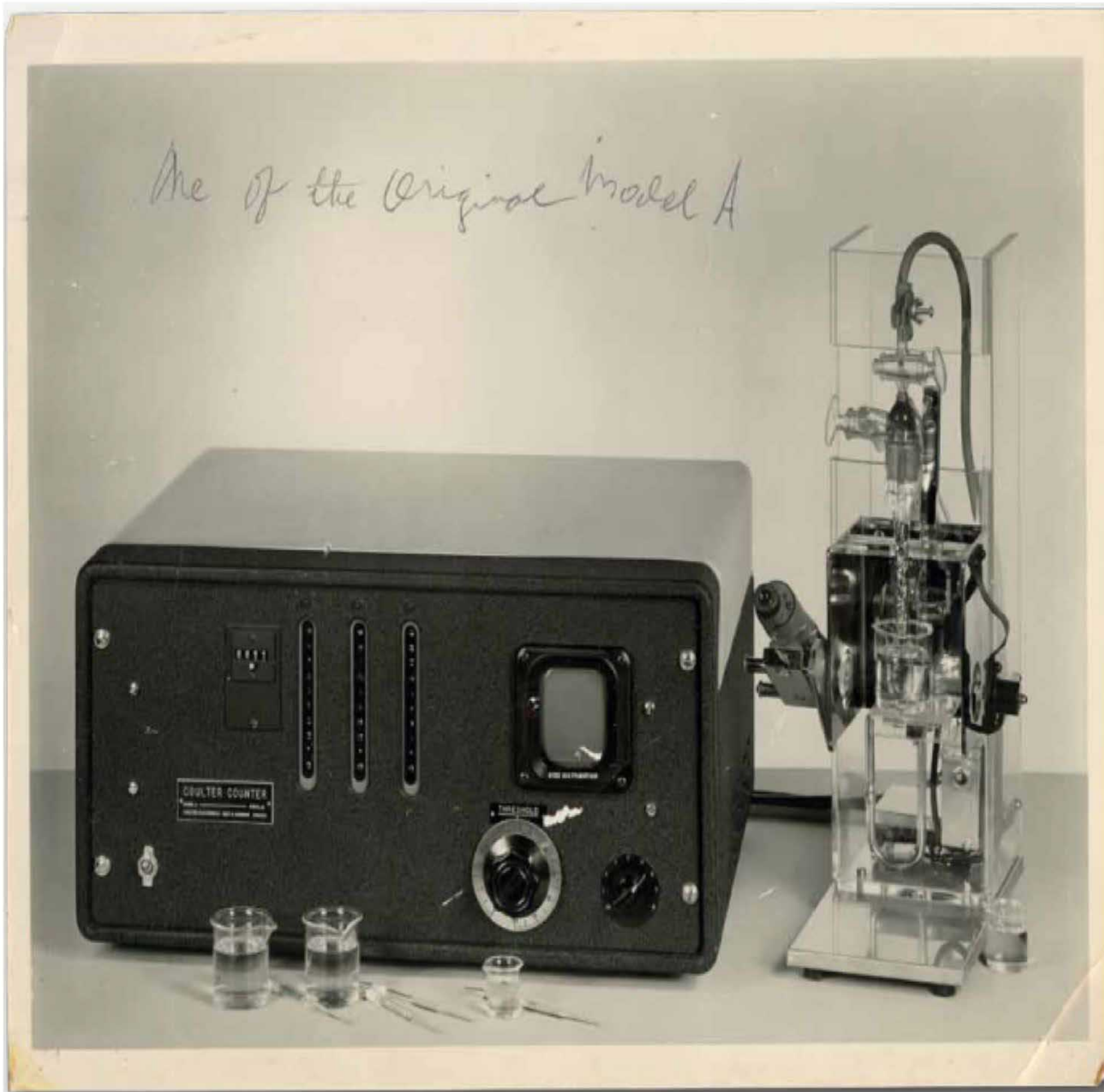
A blood film



The Full Blood Count



Automated Cell Counters



Haematology lab in 21st Century

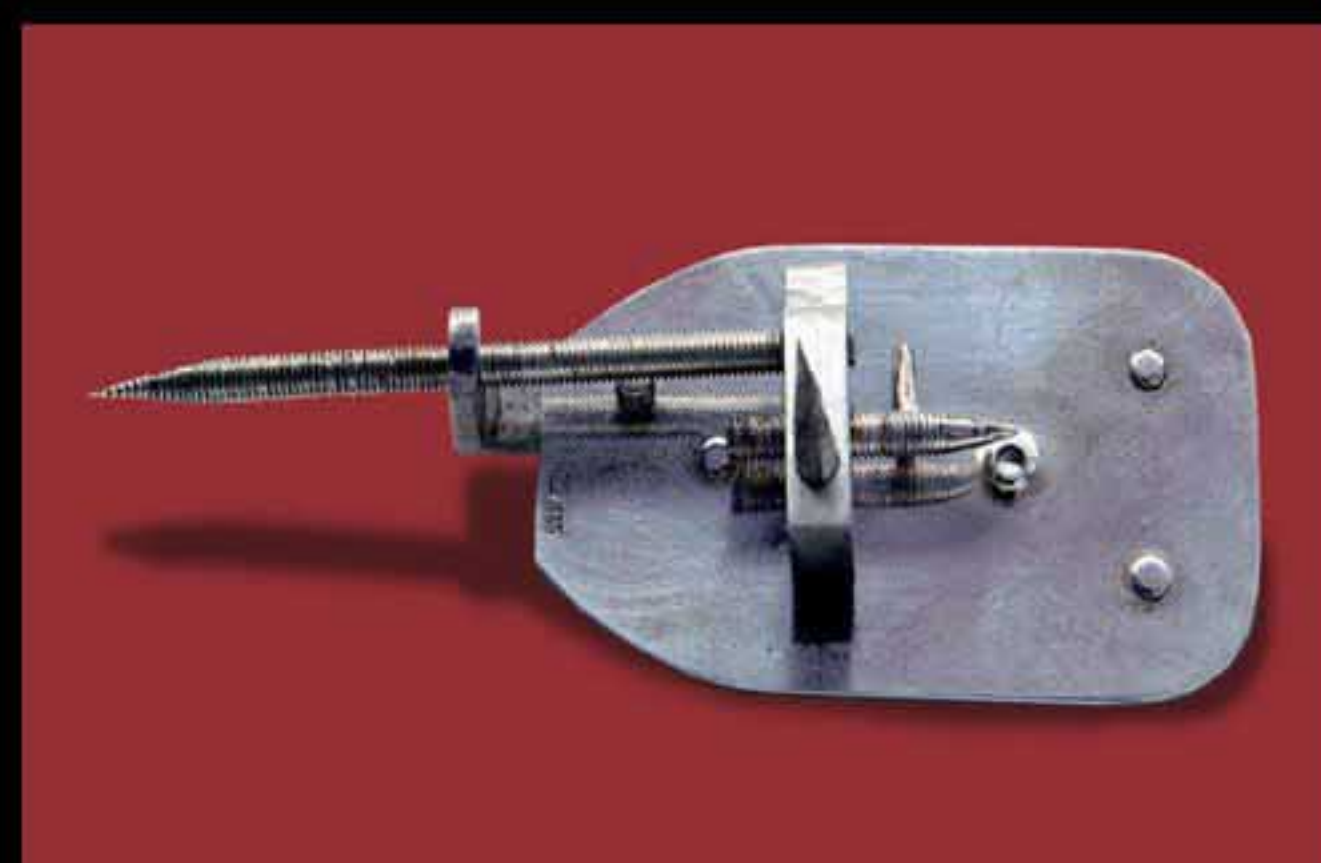
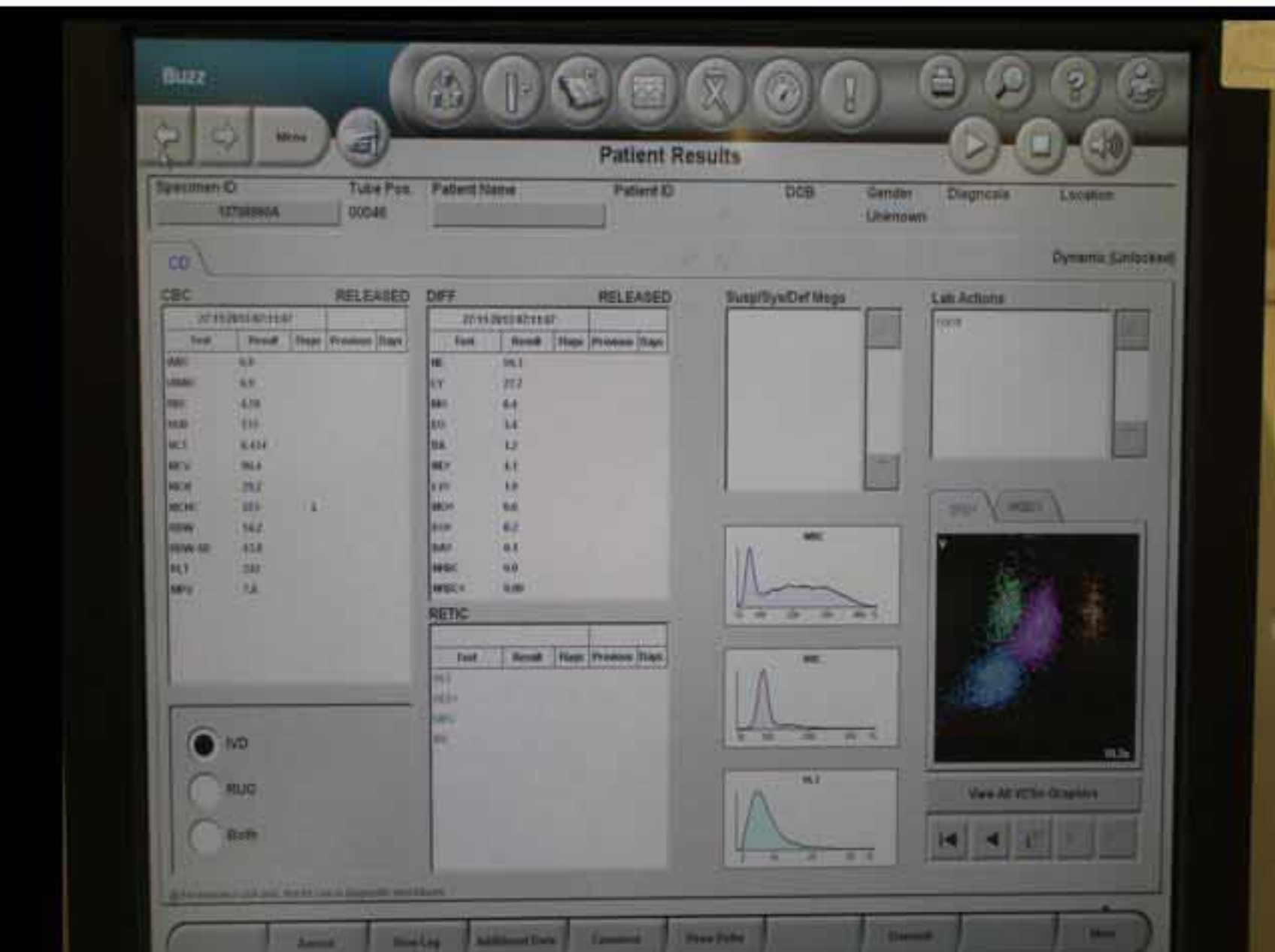




U.S. Patent Pending

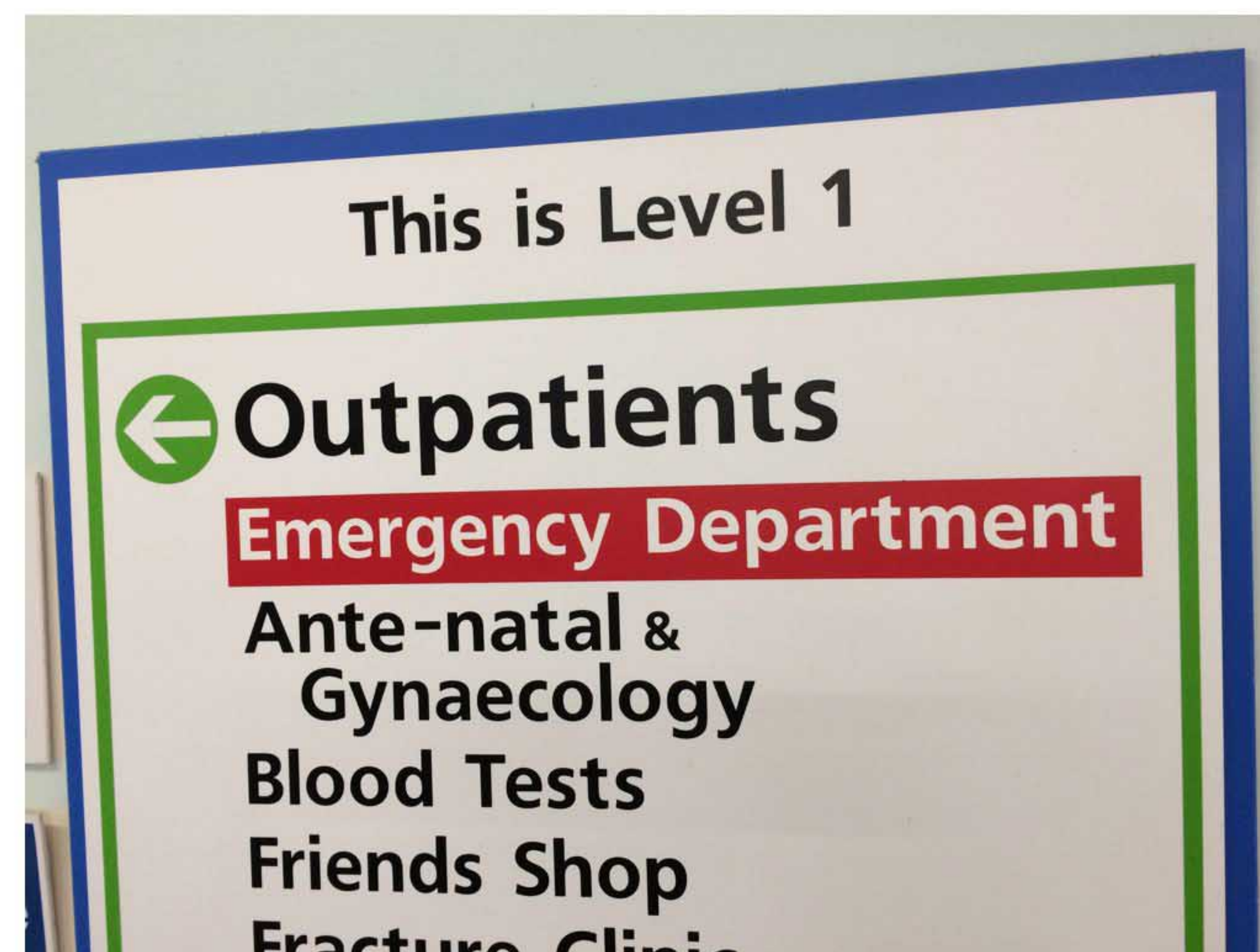


dreamstime

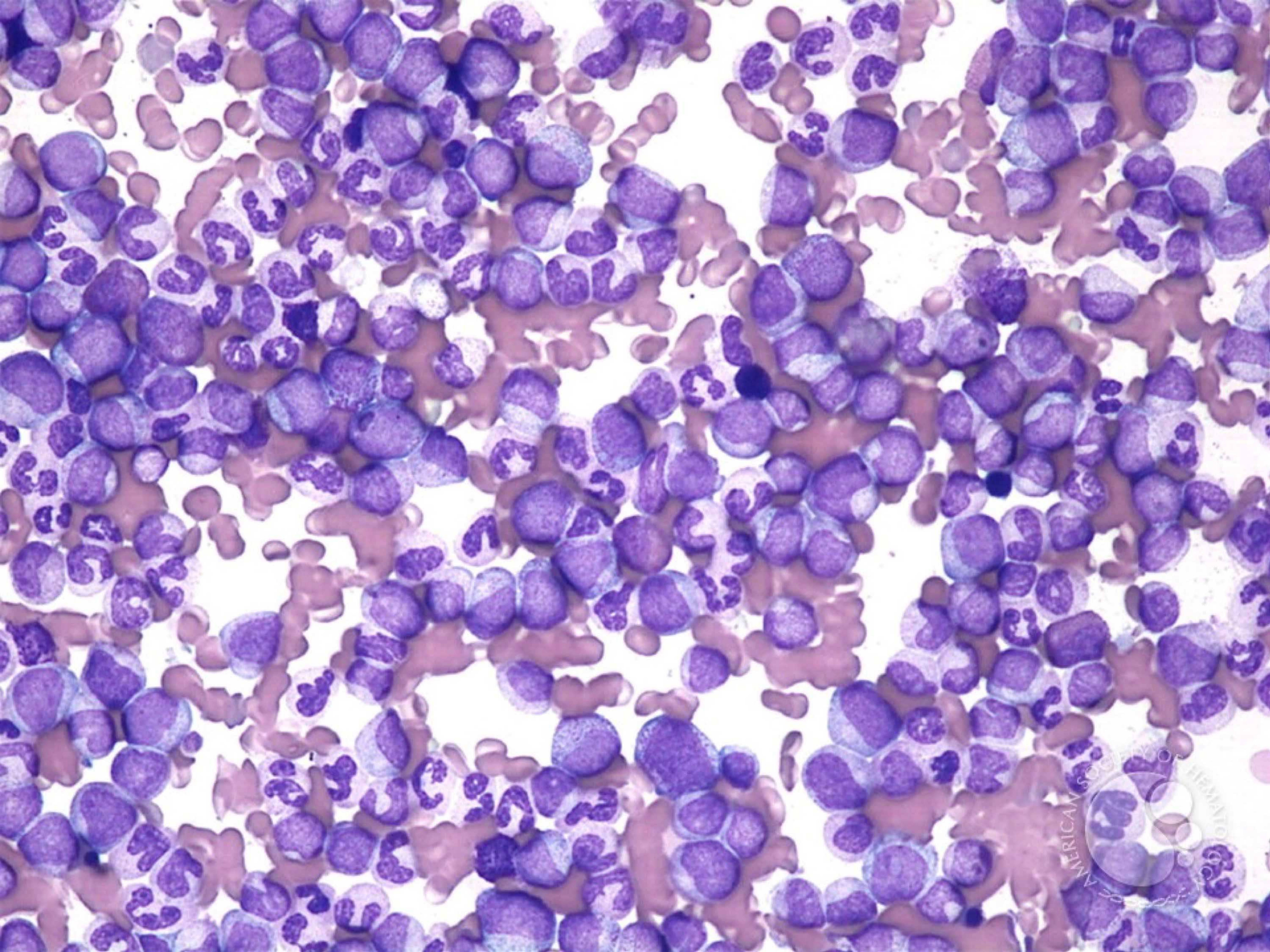


A photograph of Dr. Joel Newman, a man with glasses wearing a dark suit and a purple tie, standing in a hospital corridor with his hands clasped. In the background, a reception desk is visible with two staff members in light blue uniforms. The corridor has light green walls, a polished floor, and several cylindrical pendant lights hanging from the ceiling. A poster is partially visible on the right wall.

Dr Joel Newman
Specialist Registrar in
Haematology
East Sussex Healthcare NHS Trust



**Medical
Assessment
Unit**





DNA

The Nucleosome

"Beads-on-a-String"

The 30nm Fibre

Active Chromosome

The Metaphase Chromosome

Isolated patches.

Genes under active transcription.

Less active genes.

During interphase.

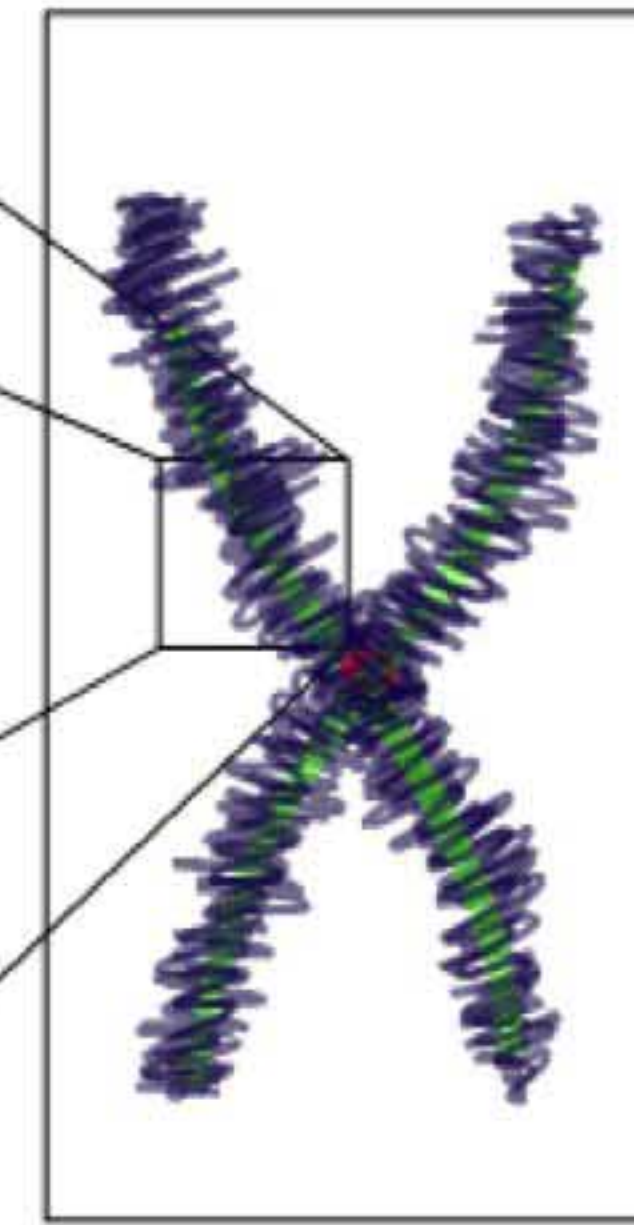
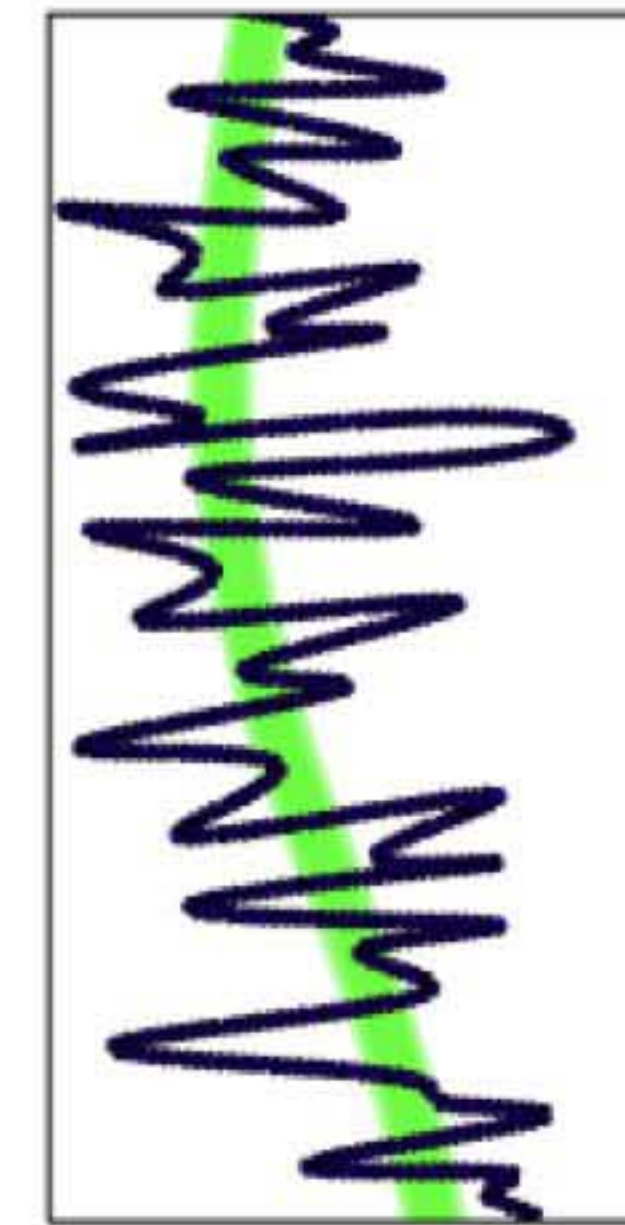
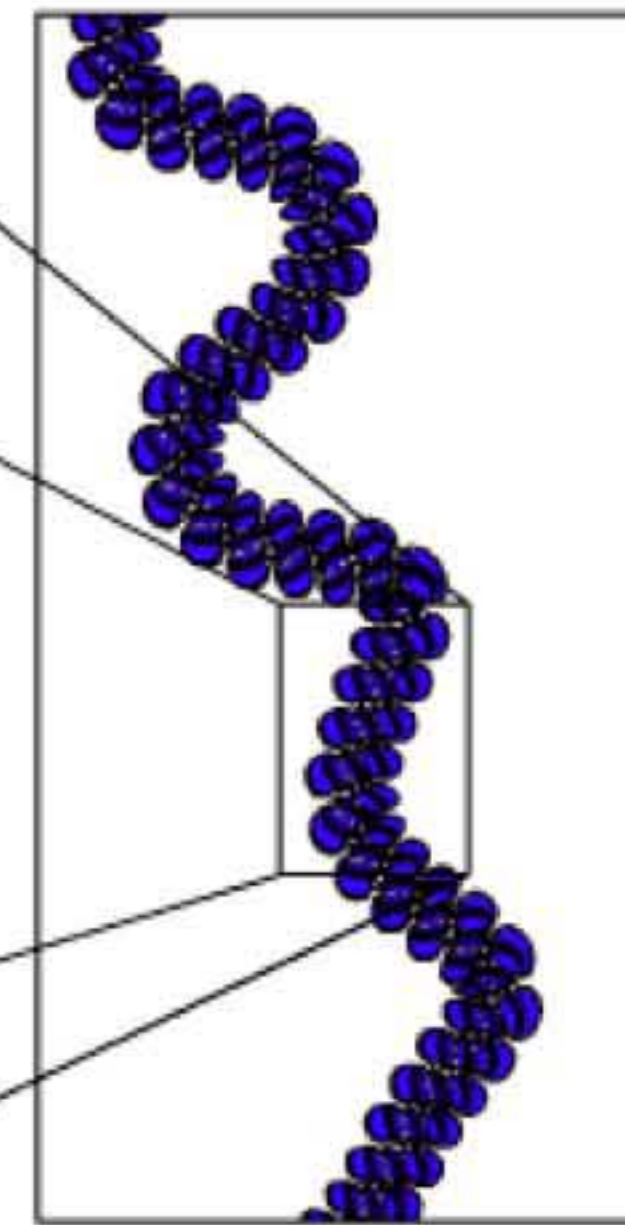
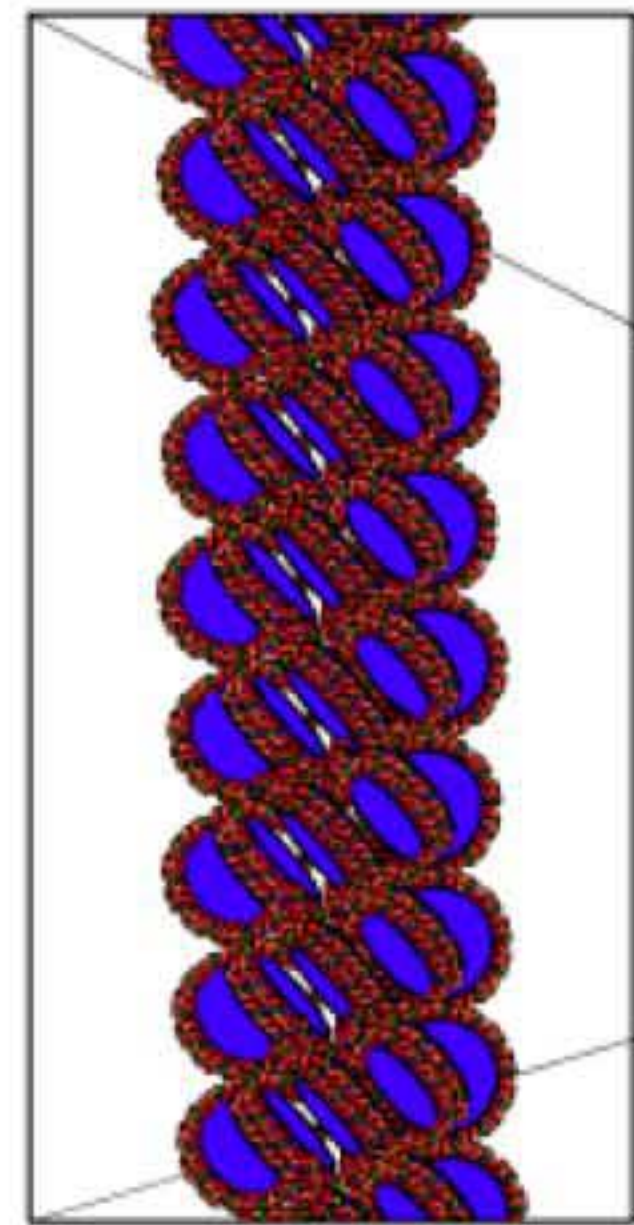
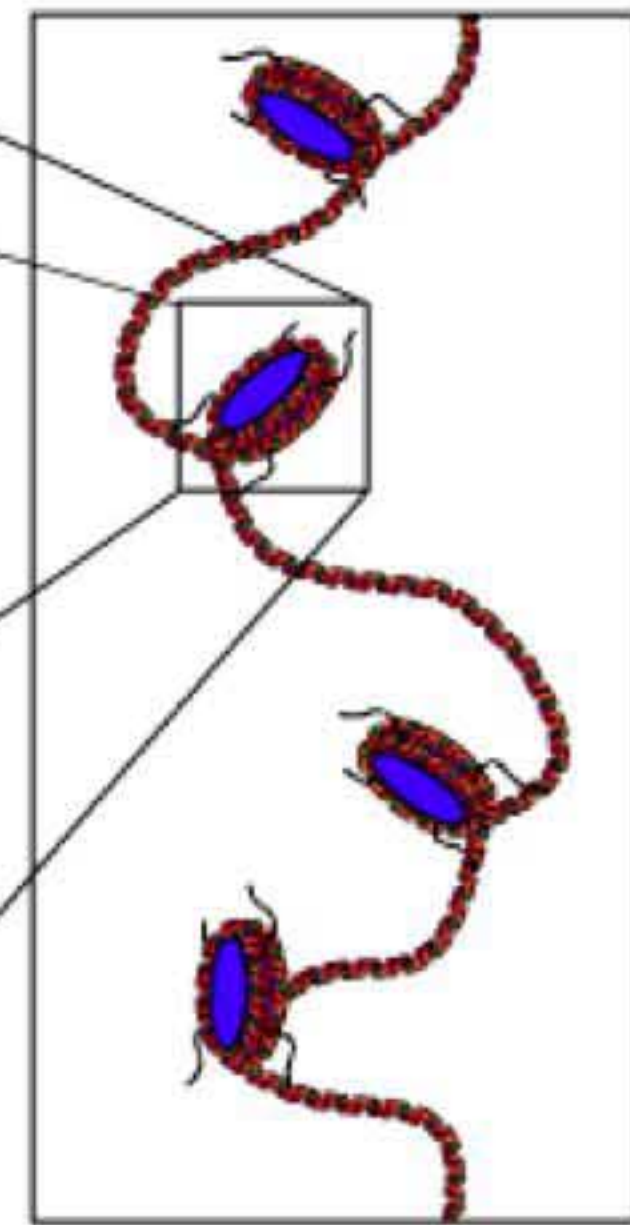
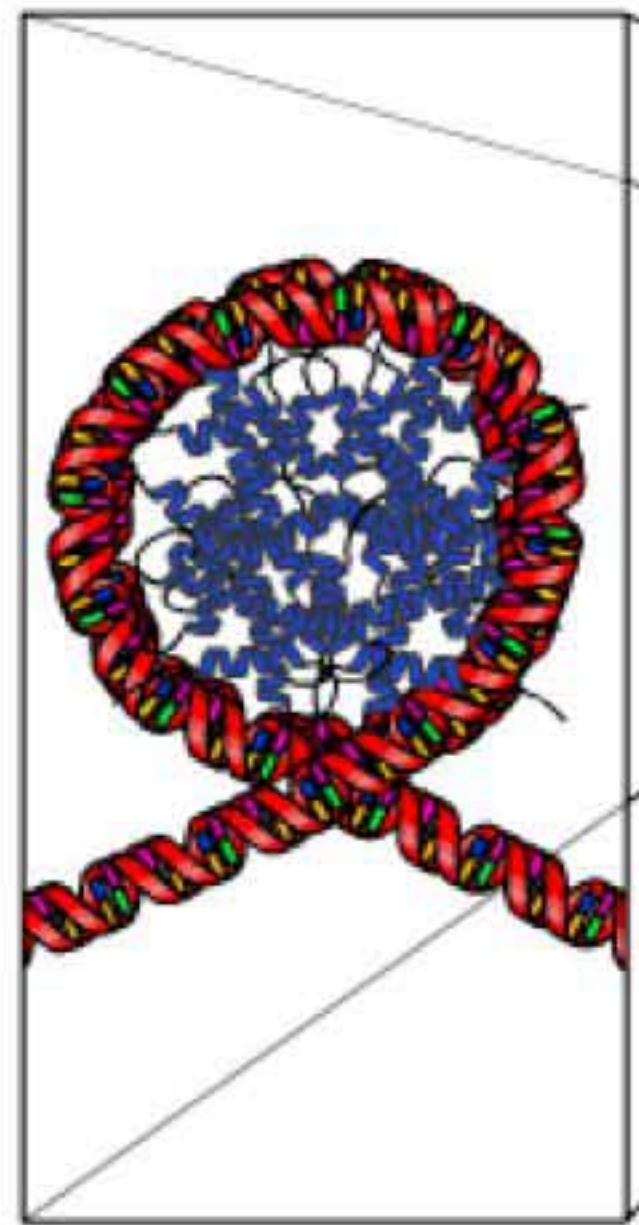
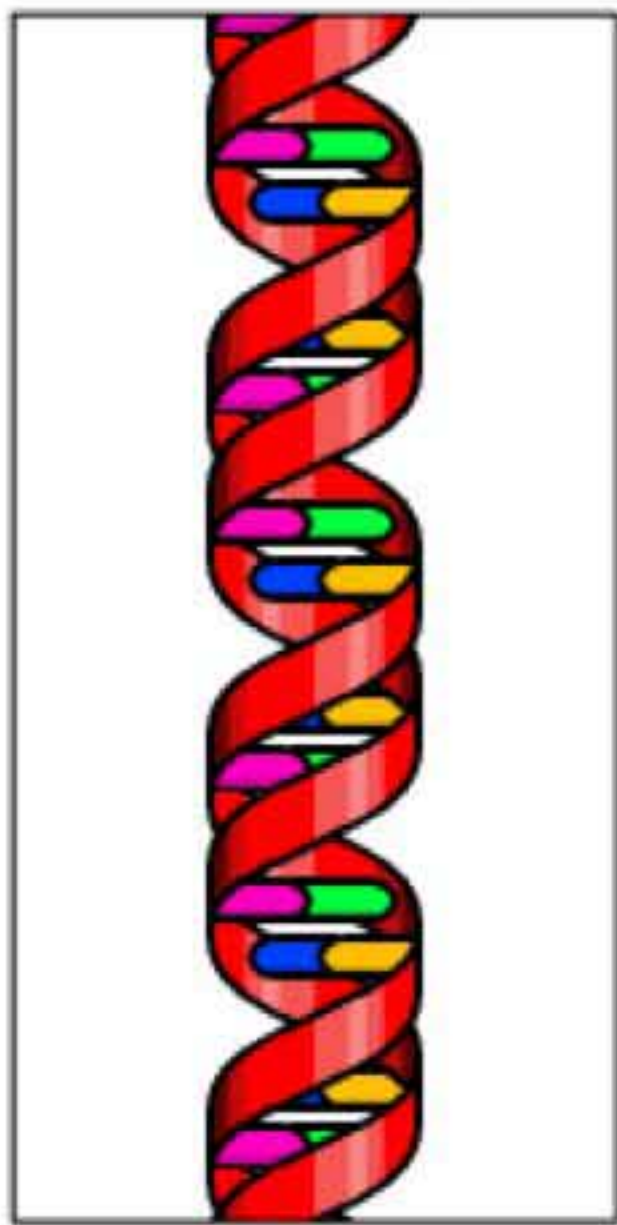
During cell division.

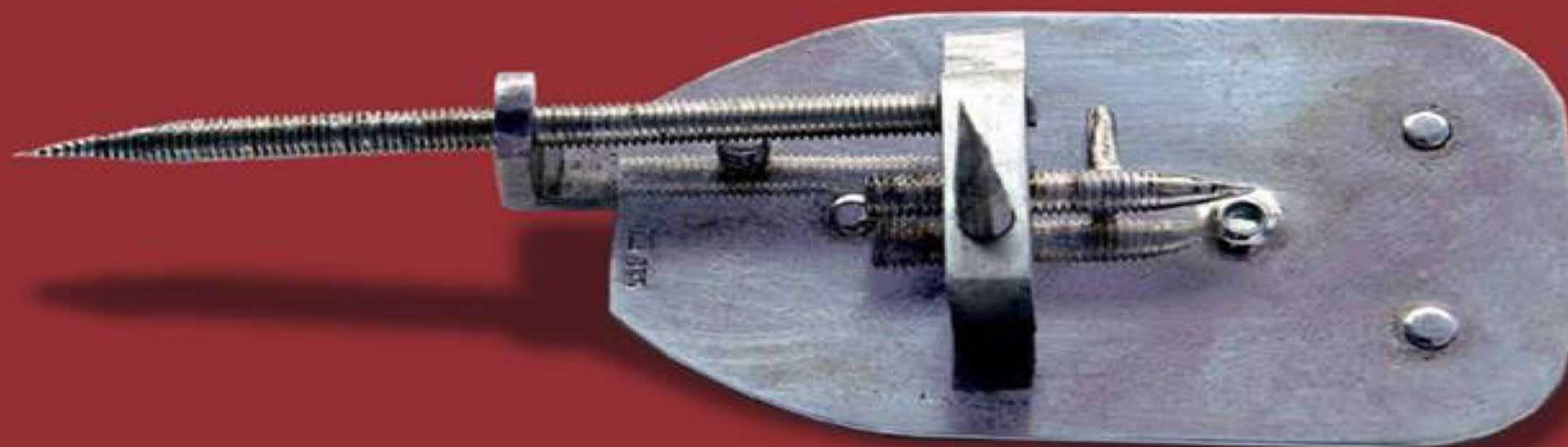
Add core histones.

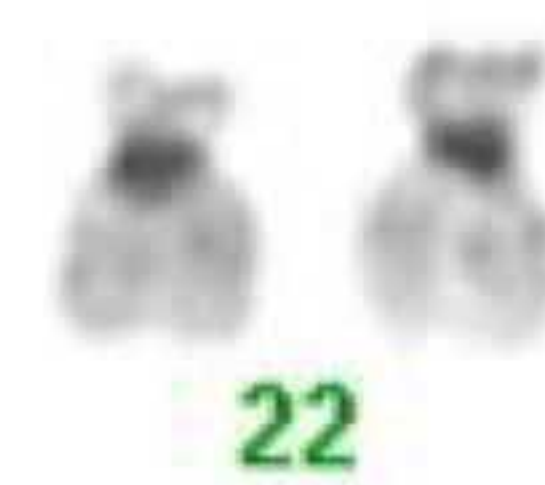
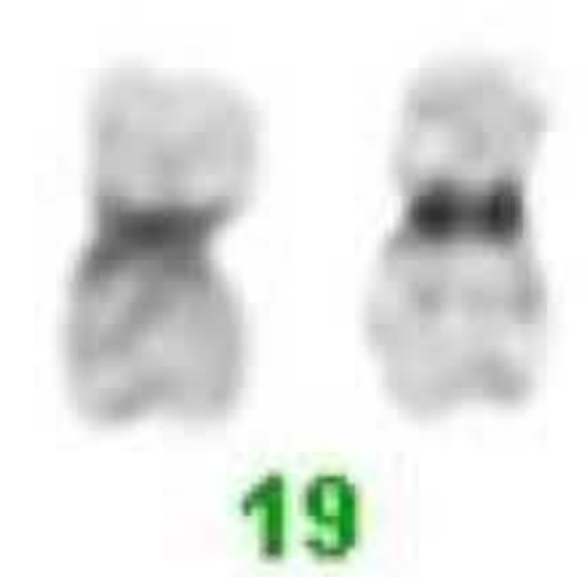
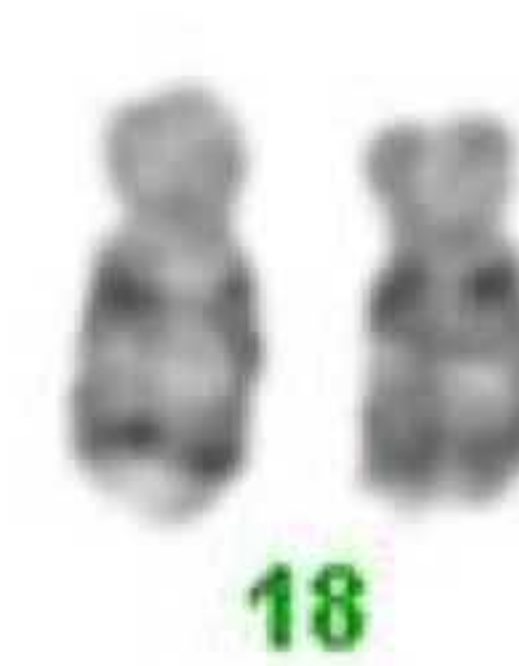
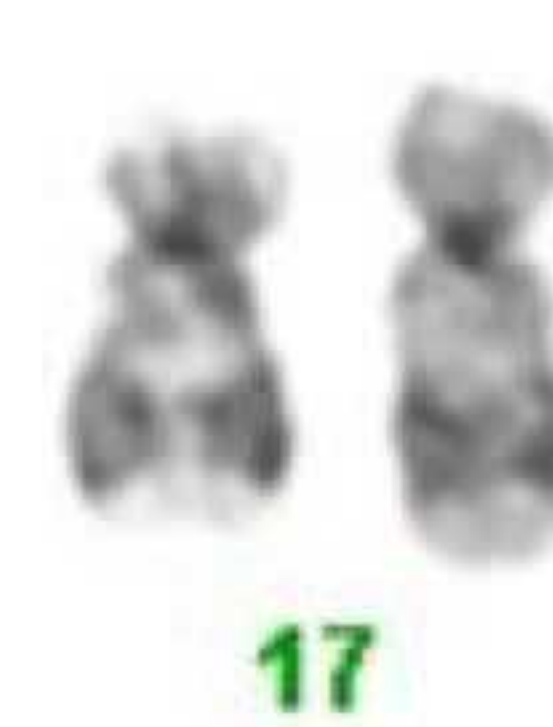
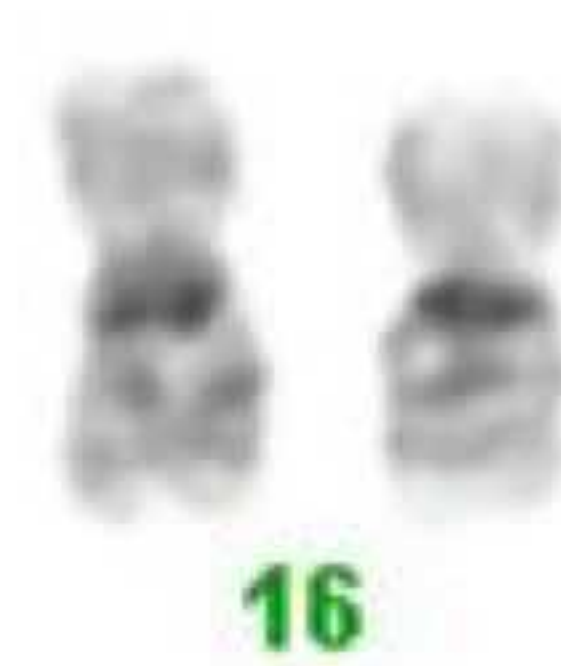
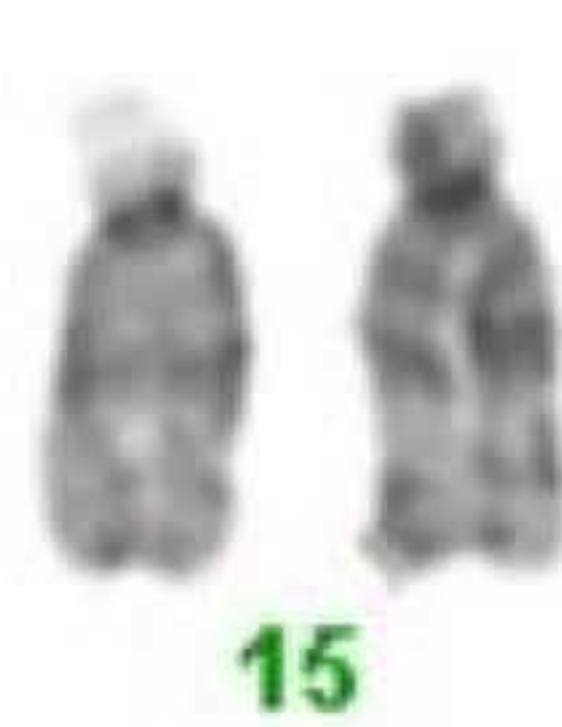
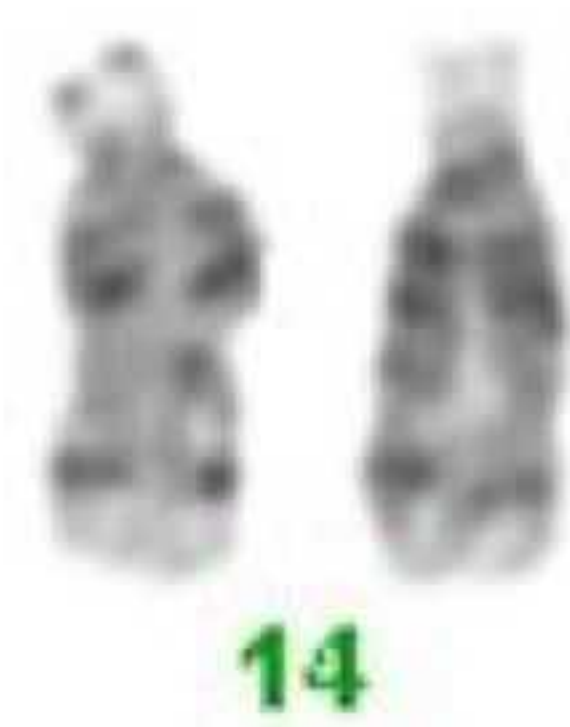
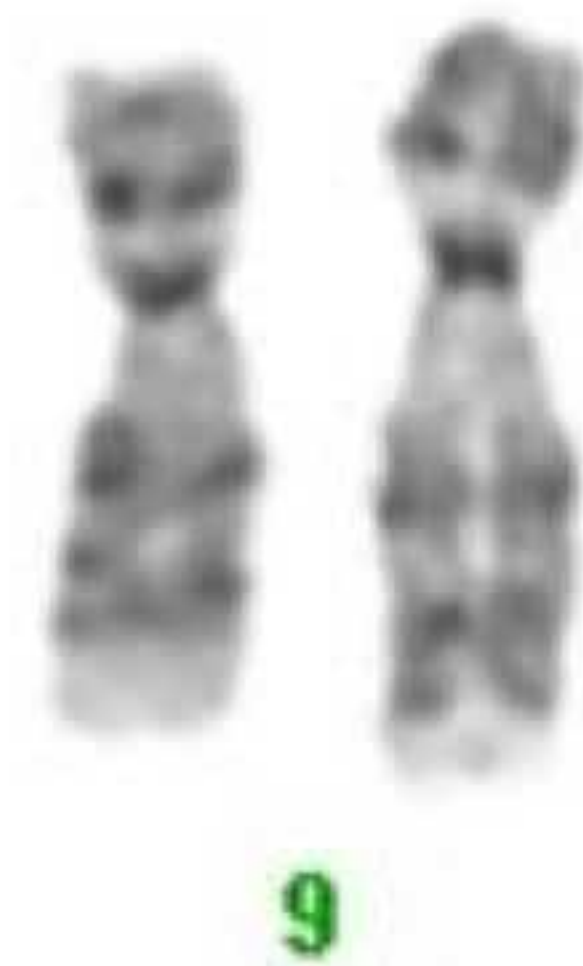
Add histone H1.

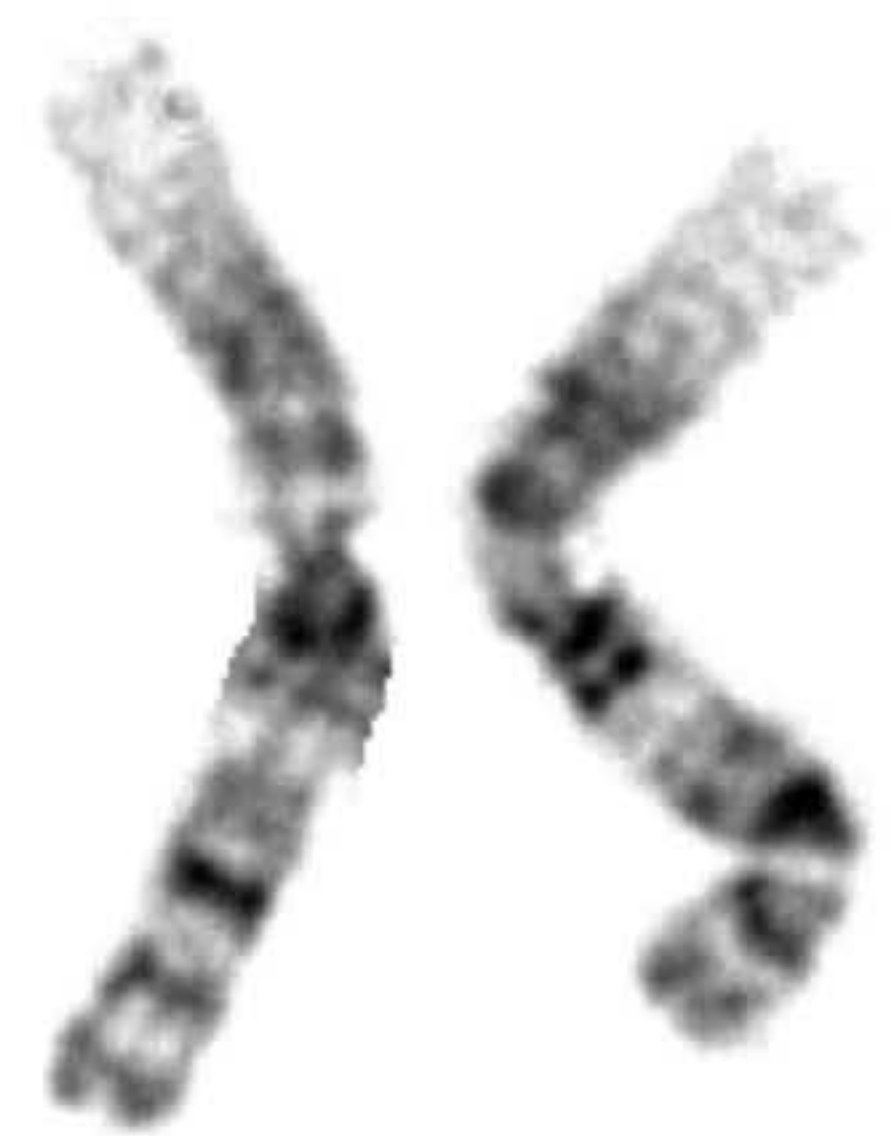
Add further scaffold proteins.

Add further scaffold proteins.









1



2



3



4



5



6



7



8



9



10



11



12



13



14



15



16



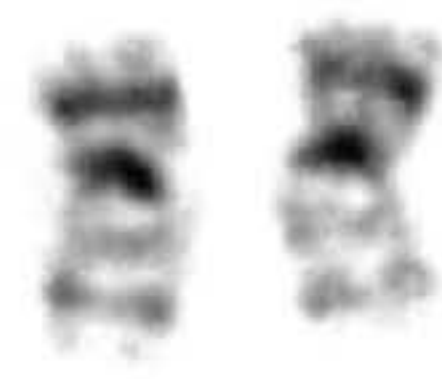
17



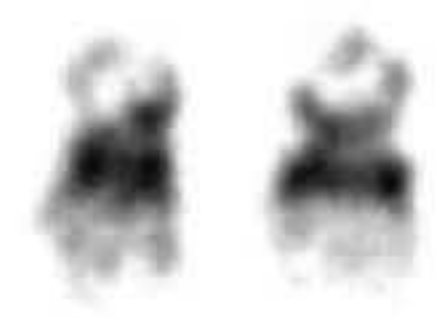
18



19



20



21



22



X



Y

 NOVARTIS

glivec[®] 400 mg
Filmtabletten
Imatinib

90 Filmtabletten zu 400 mg

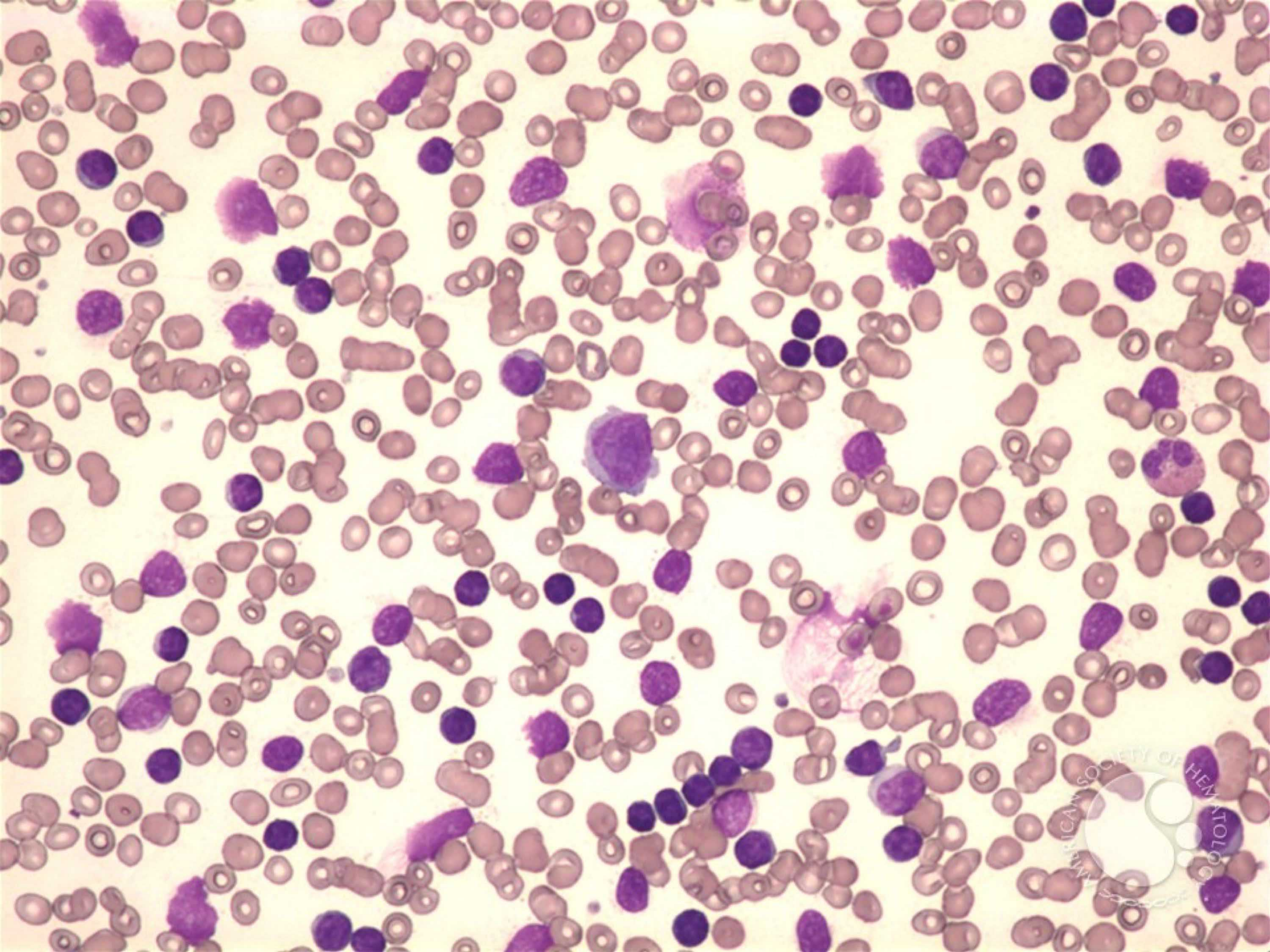


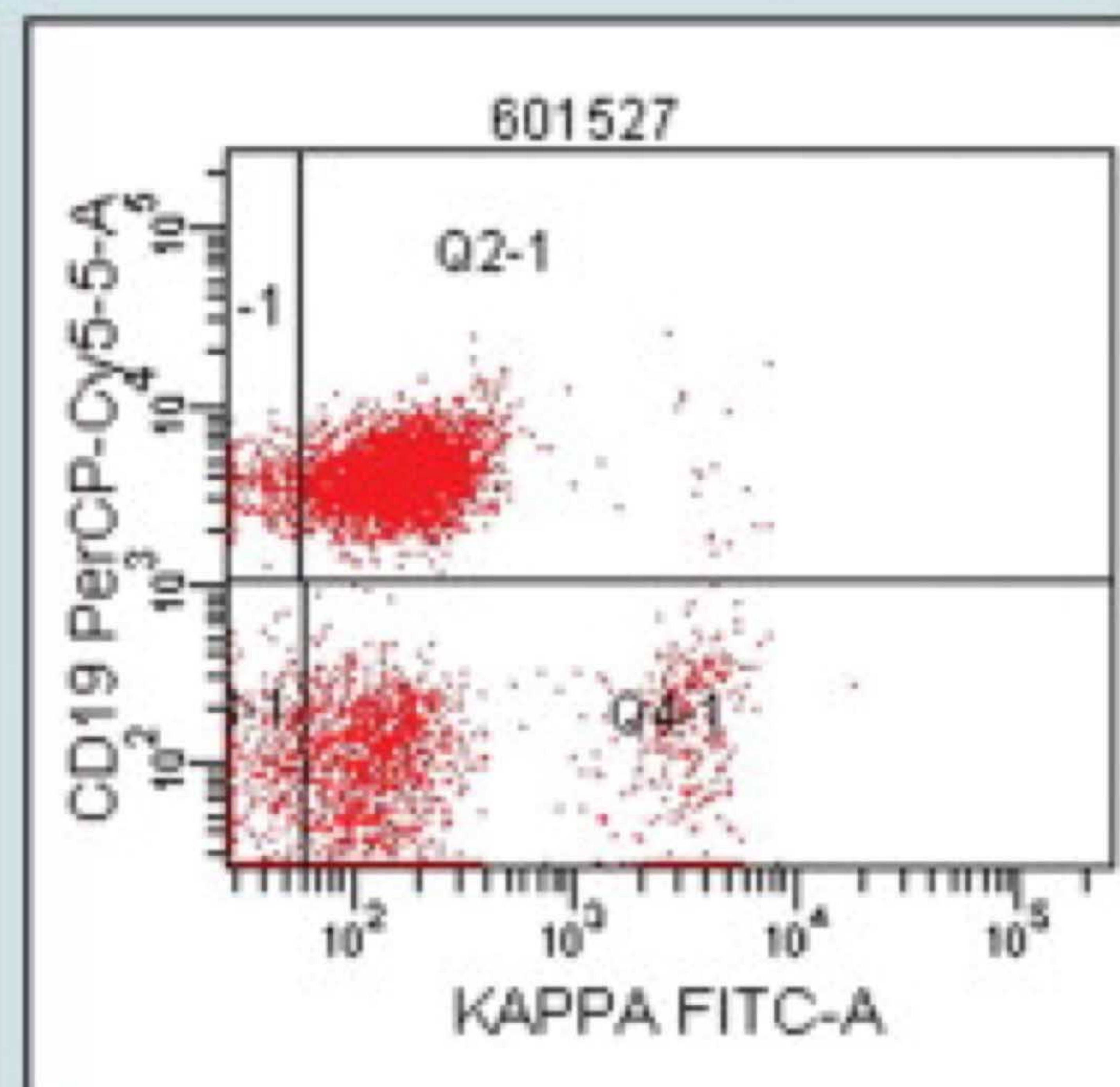
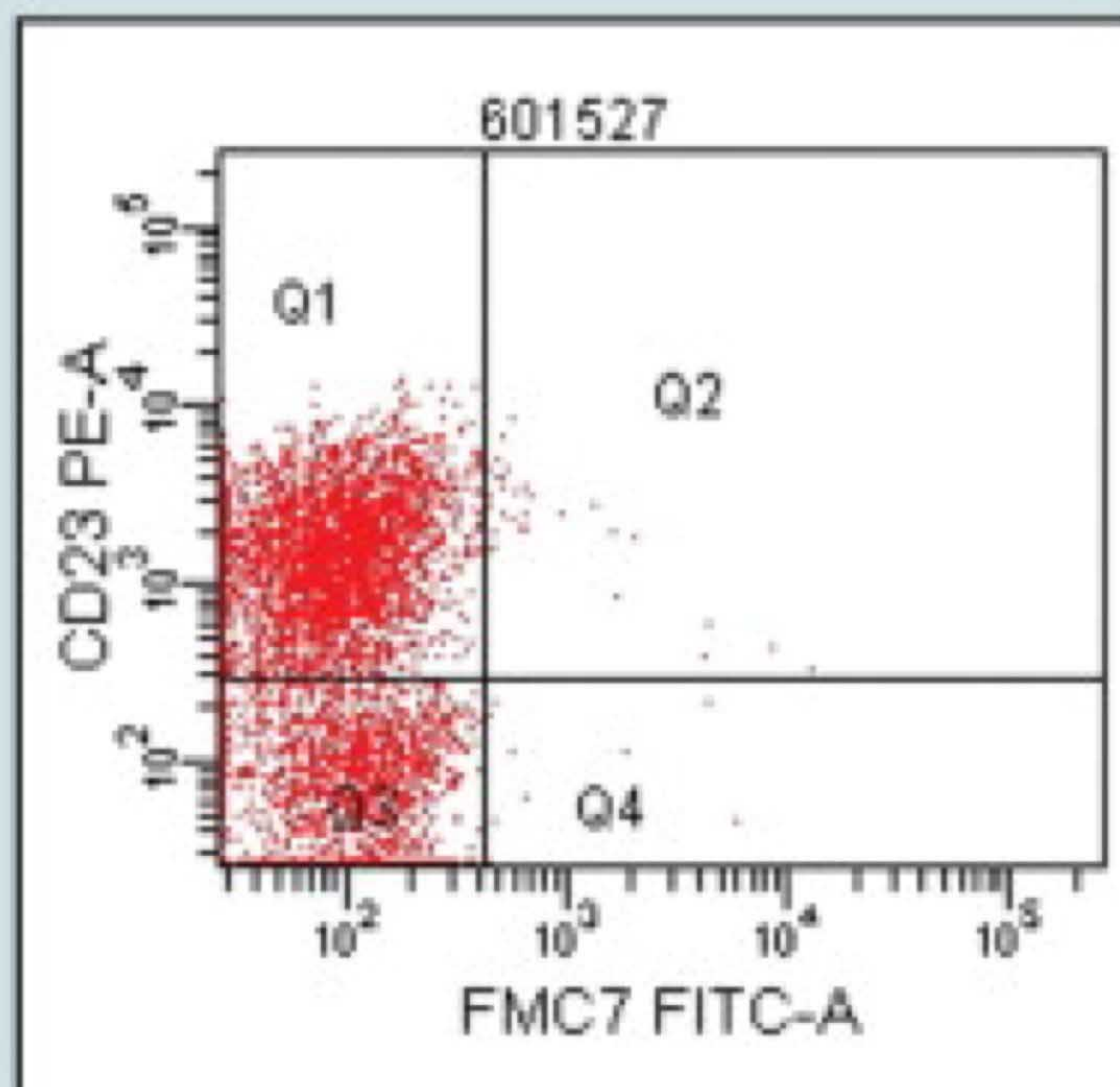
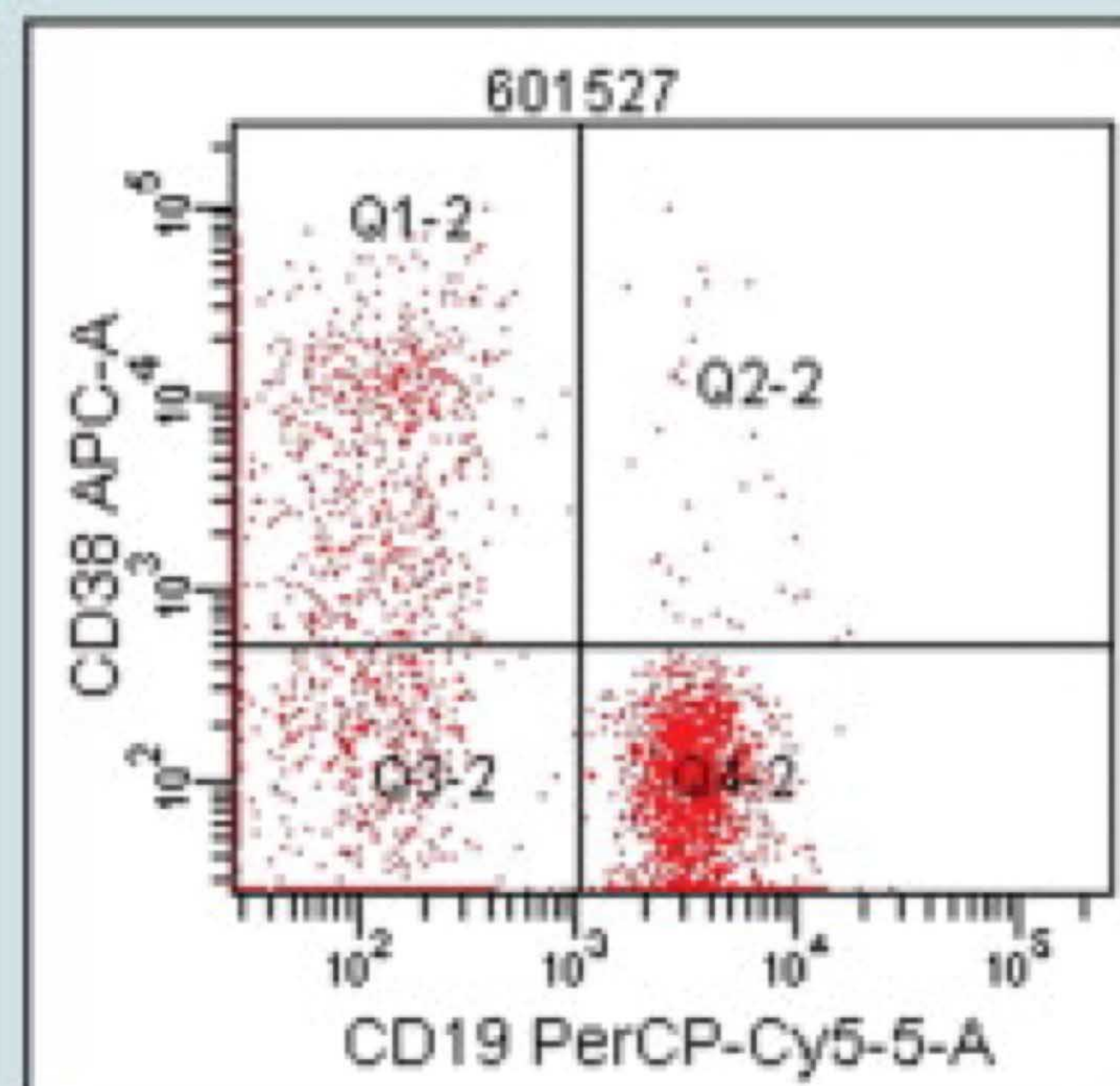
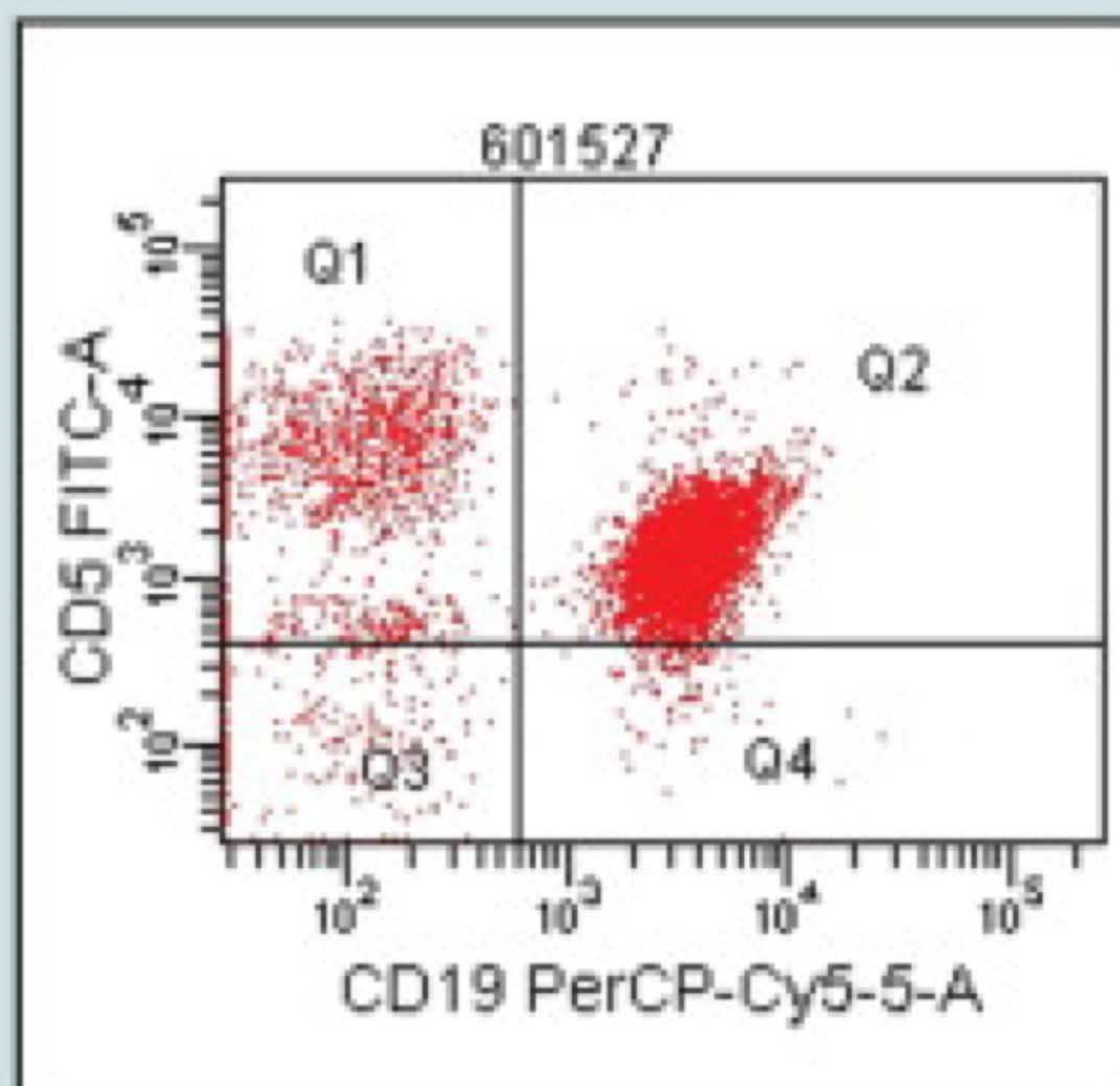
GP Practice

GP Consult G62-65











OUT PATIENTS
DEPARTMENT.

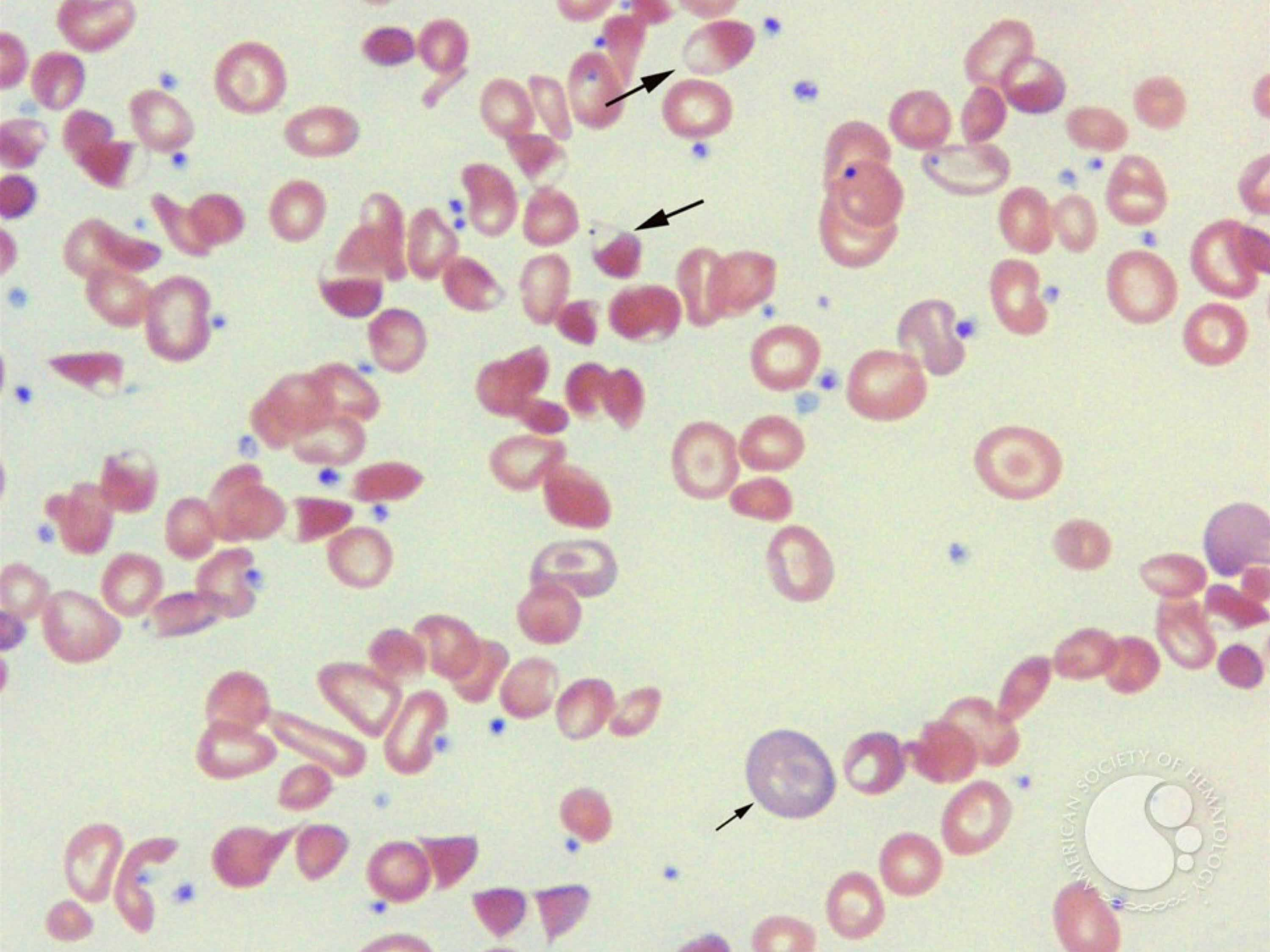




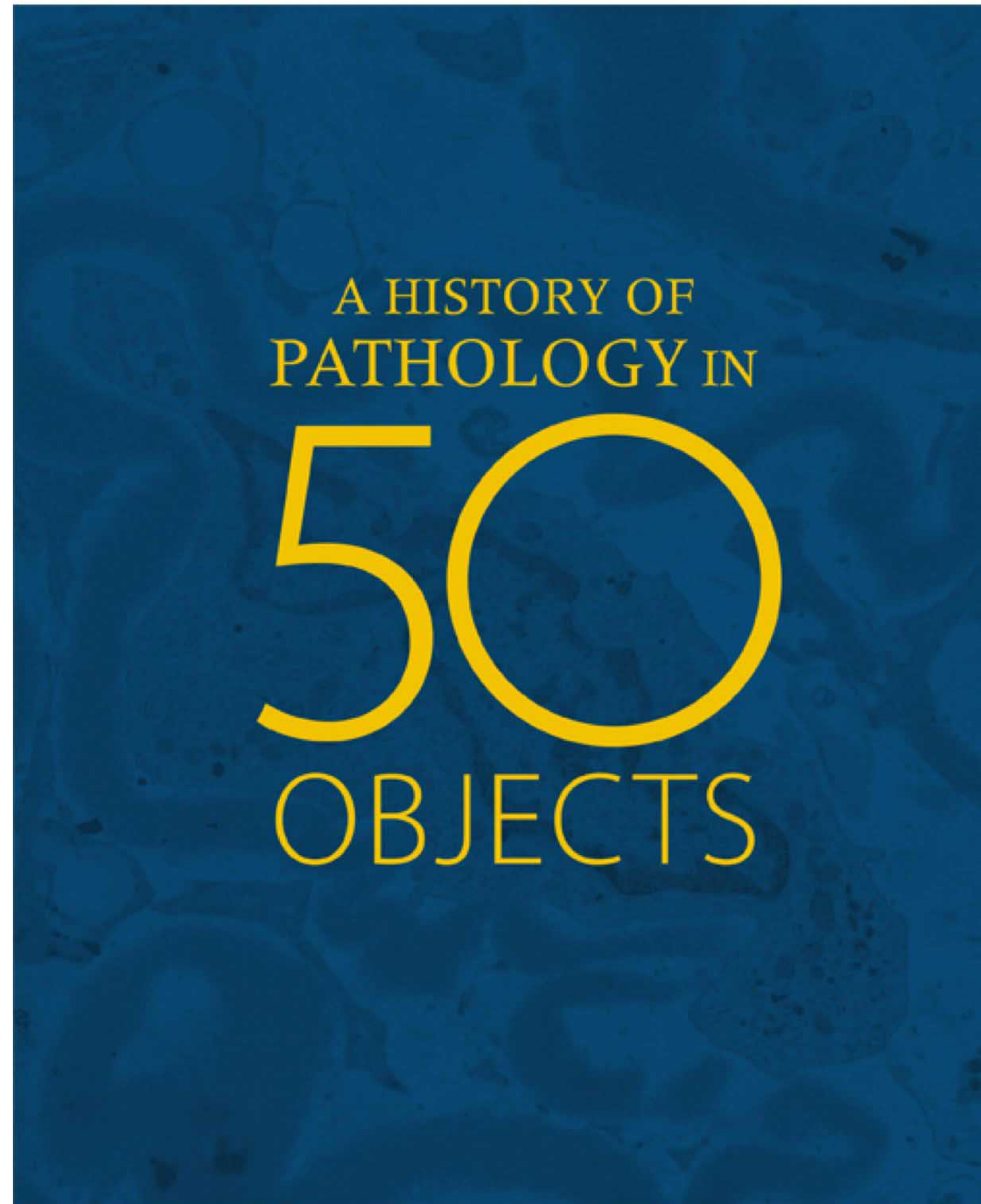
Accident & Emergency

Visitors Car Park





QUESTIONS?



Hewson: the Father of Haematology; 1739



