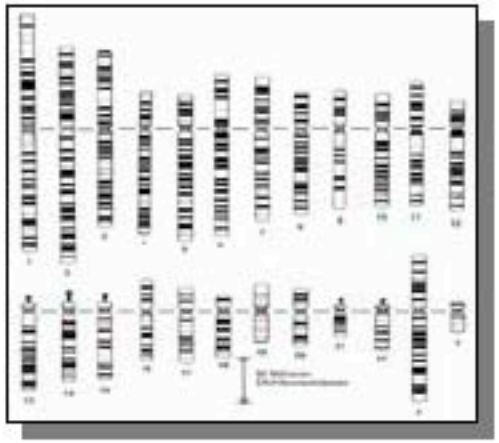
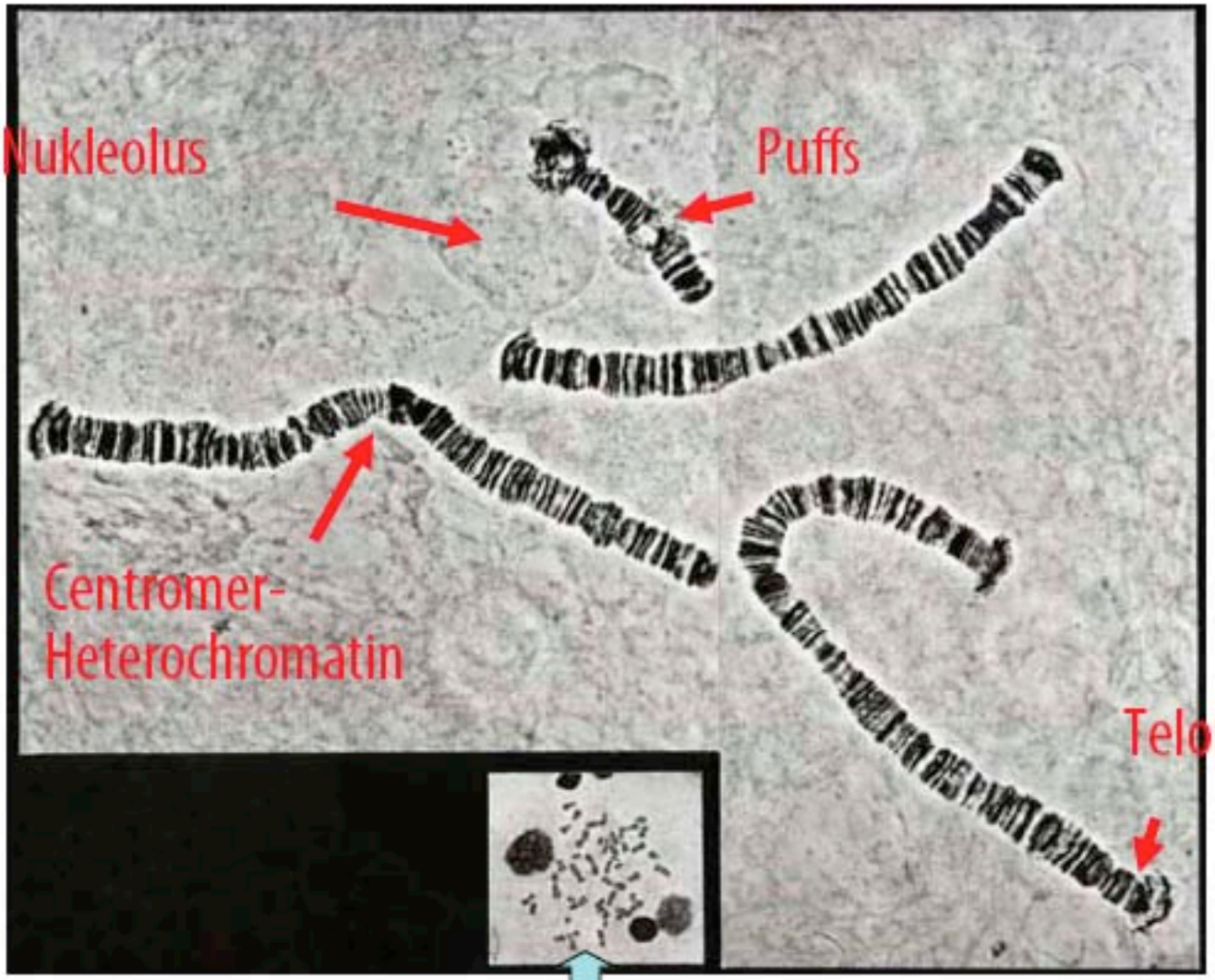
Genetik

Präparation und mikroskopische Auswertung eukaryotischer Chromosomen“



Warum Riesenchromosomen?



Was soll man sehen?

- Genaktivität in der Interphase
  (Puffs, Nukleolus)

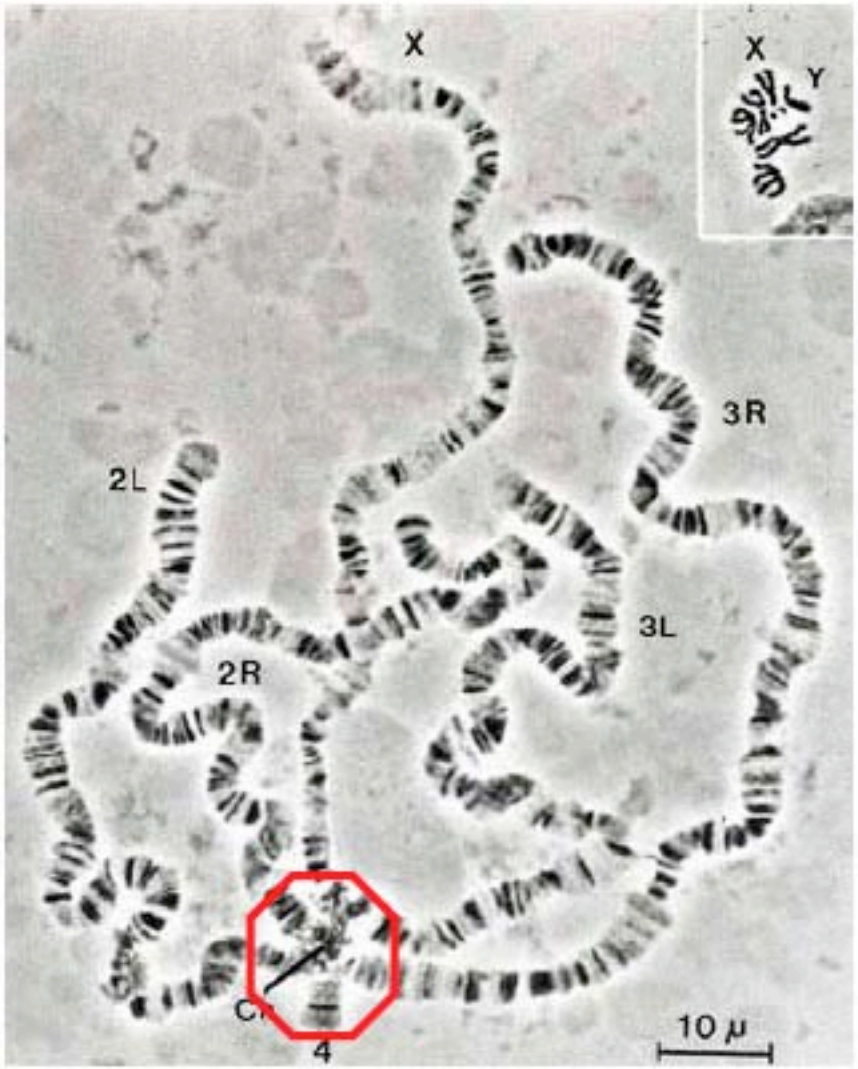
- Centromer

Chironimus? Chironomus!!

- nicht-stechende Zuckmücken (Nematocera, Diptera)
- weltweit verbreitet
- > 10 000 Spezies!

- rote Mückenlarven (Hämoglobin!)
- im Sediment von Pfützen, Tümpeln, Seen . . .
- beliebtes Fischfutter

Warum nicht aus Drosophila?

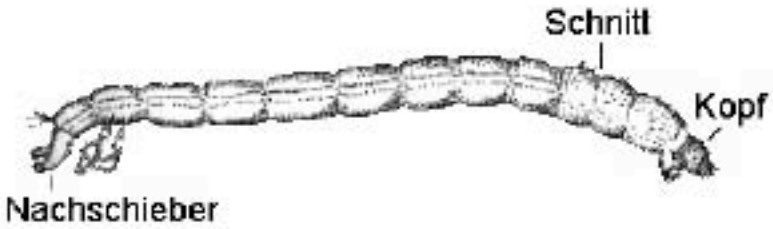


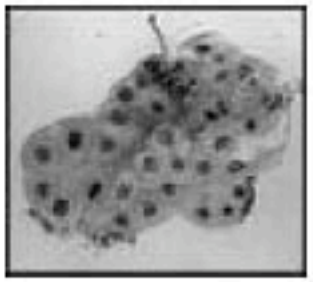
•viel geringerer Polytäniegrad (meist bis 2048x)

•das konstitutive Hetero-Chromatin der Centromere wird bei der Polytänisierung in Speicheldrüsenzellen von Drosophila nicht mitrepliziert!

Es verschmilzt zum „Chromo-zentrum" und ist kaum zu sehen.

Präparation von polytänen Riesenchromosomen

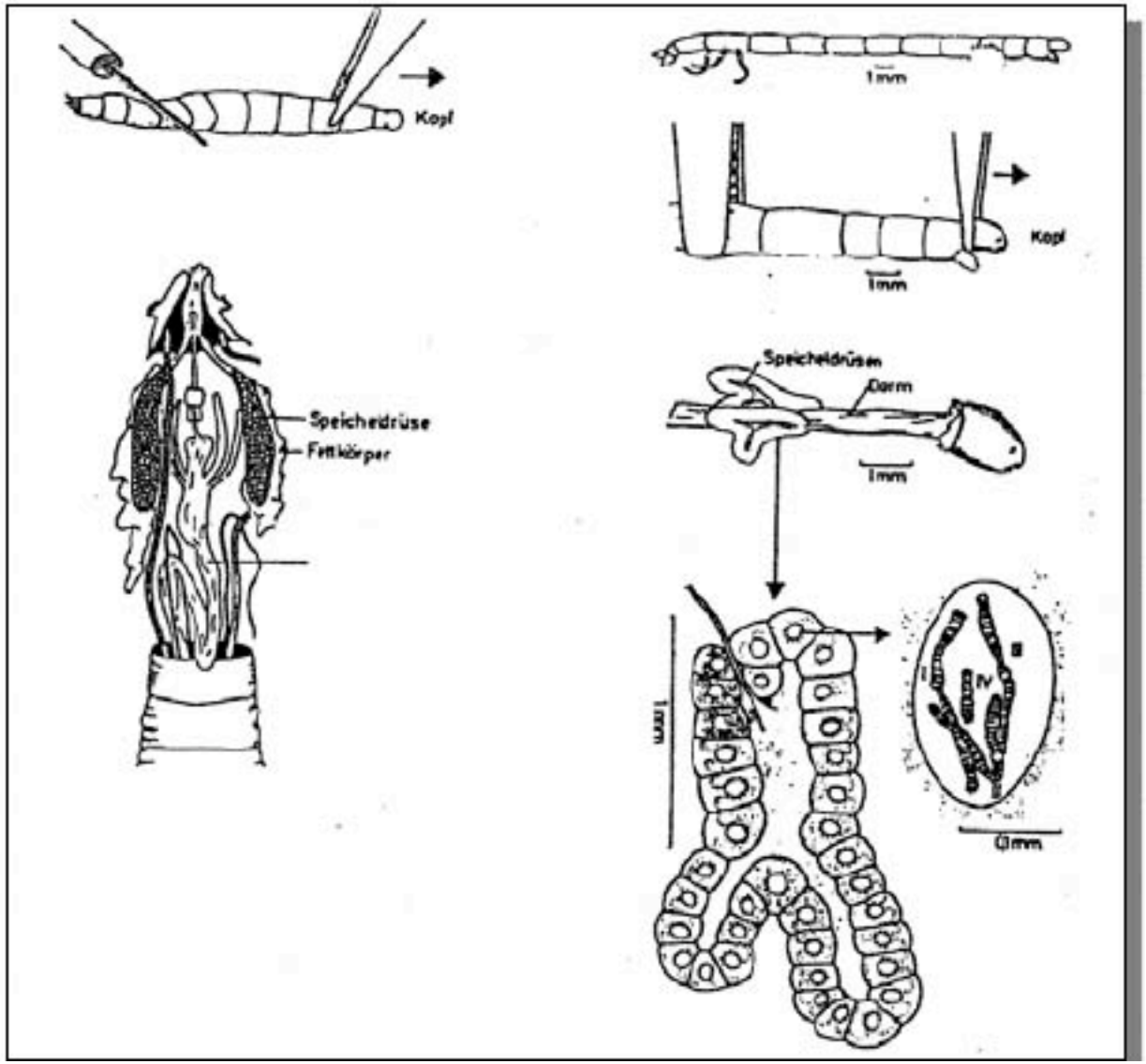




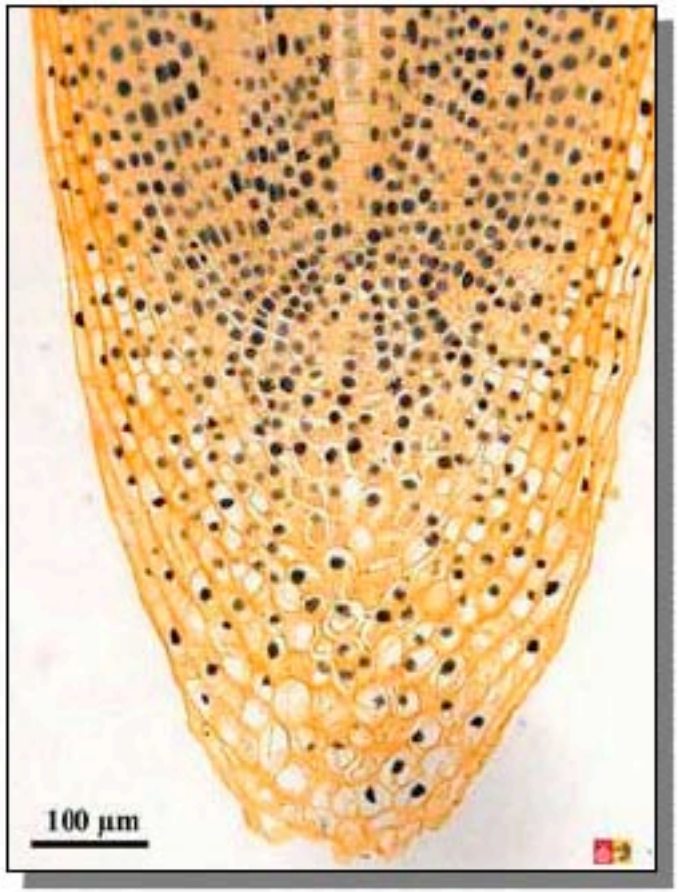
„Speicheldrüsen“

Zerzupfen
Fixieren (50% Essigsäure)
Färben (Karminrot)
Quetschen

Präparationsdetails



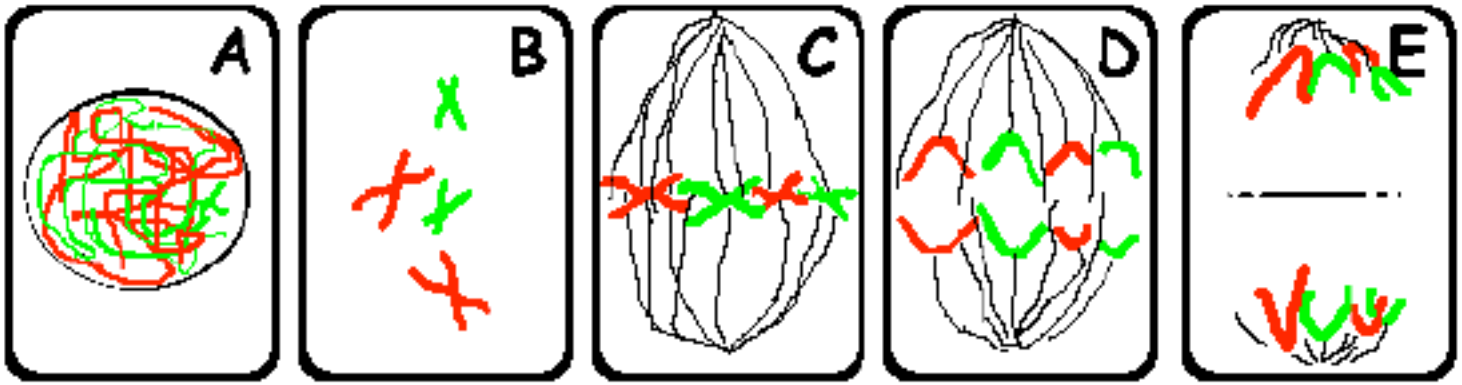
Mitose-Stadien



Wurzelspitzenmeristem

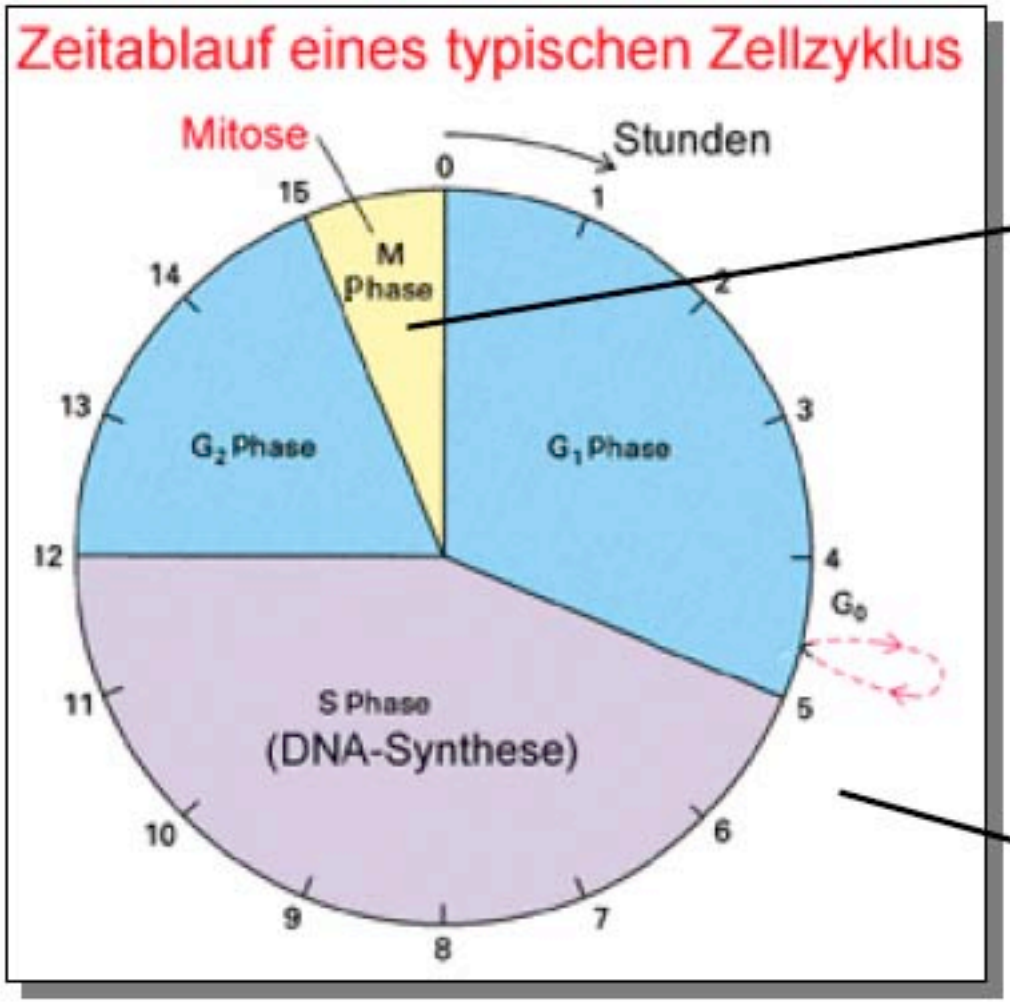
www.vcbio.science.ru.nl/en/virtuallessons/mitostage

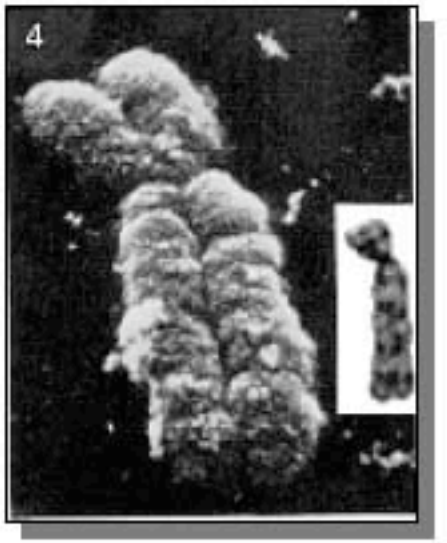
Mitose



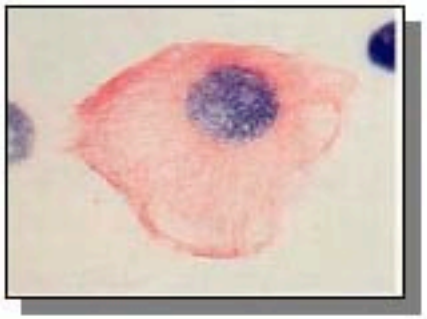
2n 4c → 2n 2c, 2n 2c

Chromosomen im Zellzyklus



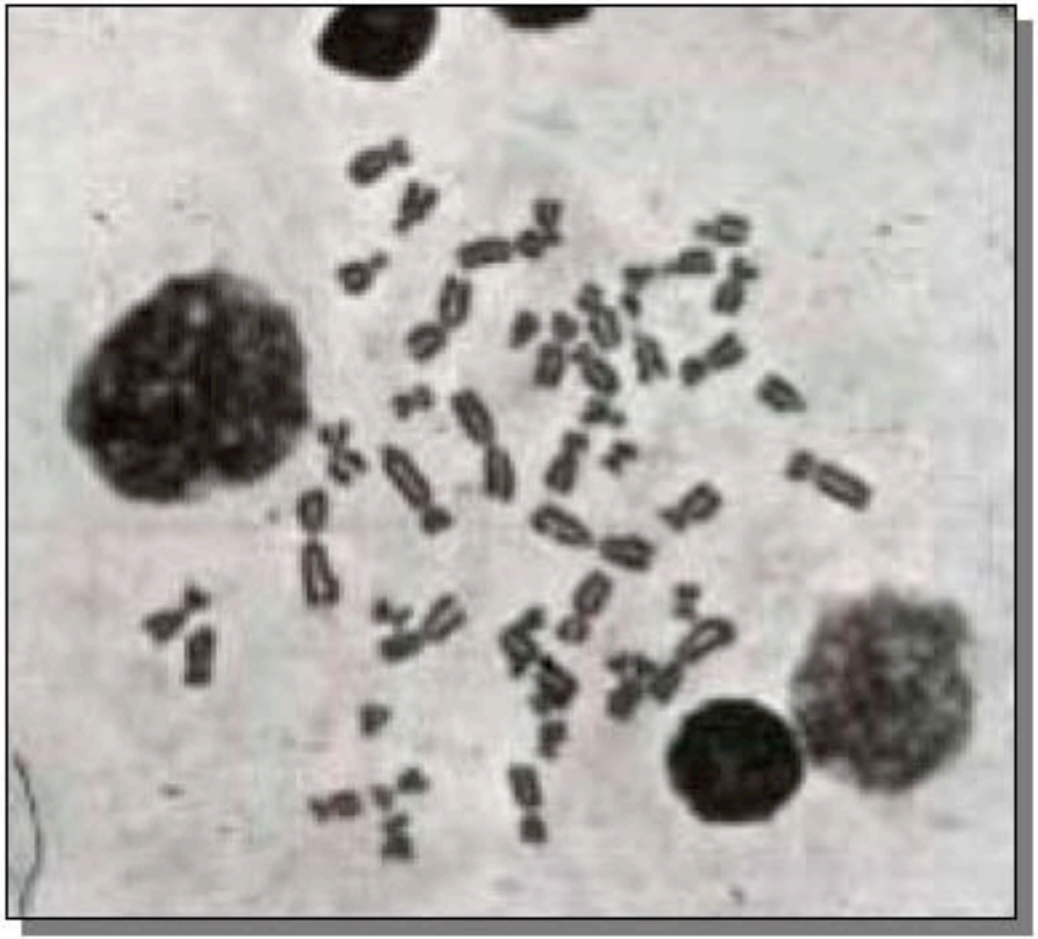


Mitot.Metaphase



Interphase

Menschliche Metaphase-Chromosomen



$2n = 46$

(Tijo & Levan 1956!)

Färbetechniken

Giemsa-Banden
(syn. GTG, G-bands by Trypsin using Giemsa)

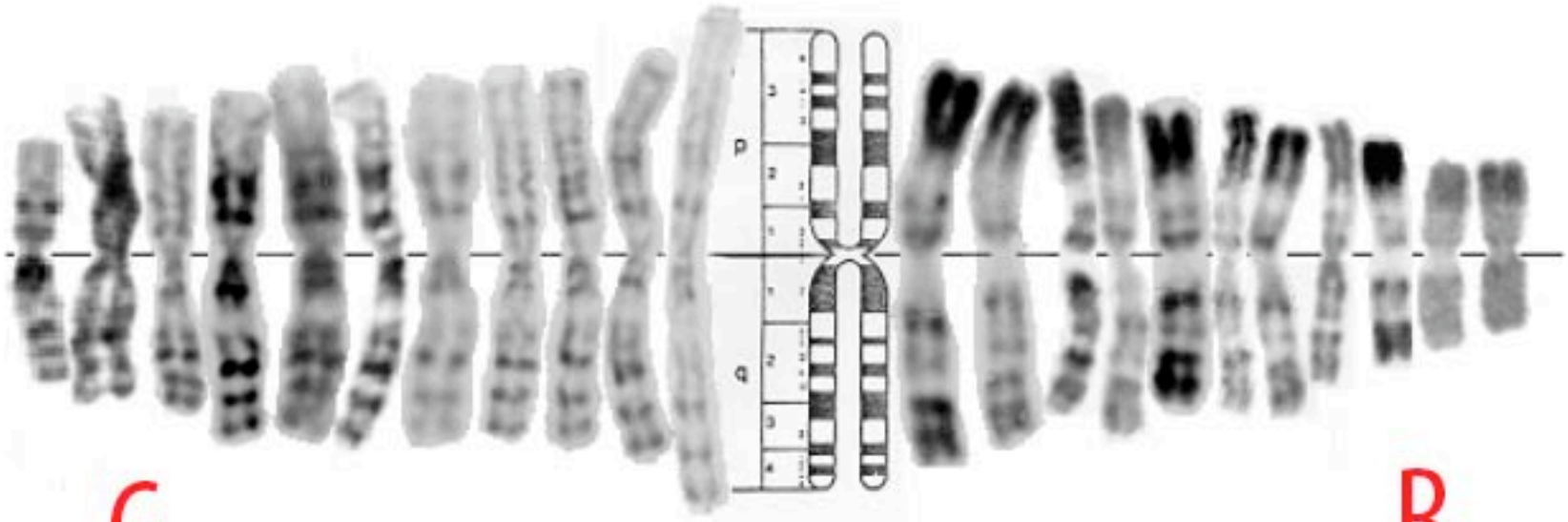
Reverse-Giemsa-Banden
(heisse Pufferlösung anstatt Trypsin)

C-Banden (nur Centromere)

Q-Banden (Quinacrin-Fluoreszenz ~ G-Banden)

www.infobiogen.fr/services/chromcancer/Backpage.html

G- und R- Bandierung

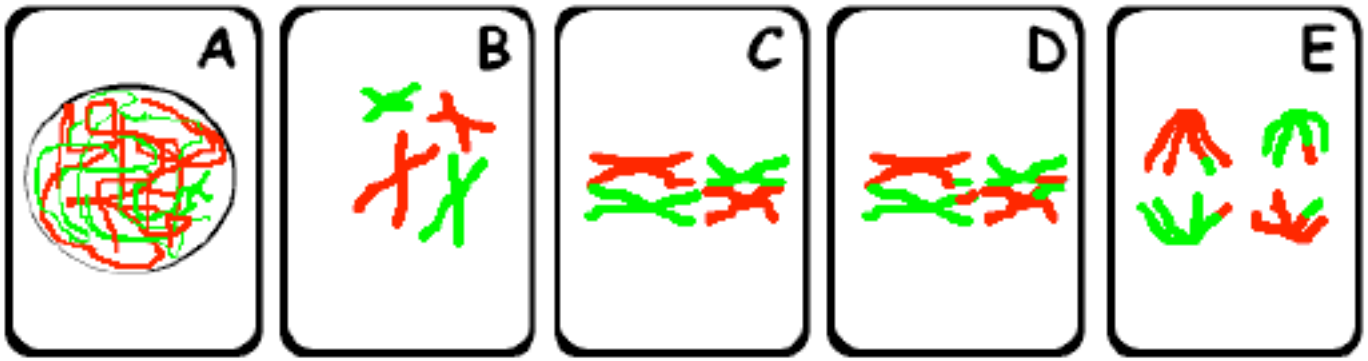


www.infobiogen.fr/services/chromcancer/Backpage.html

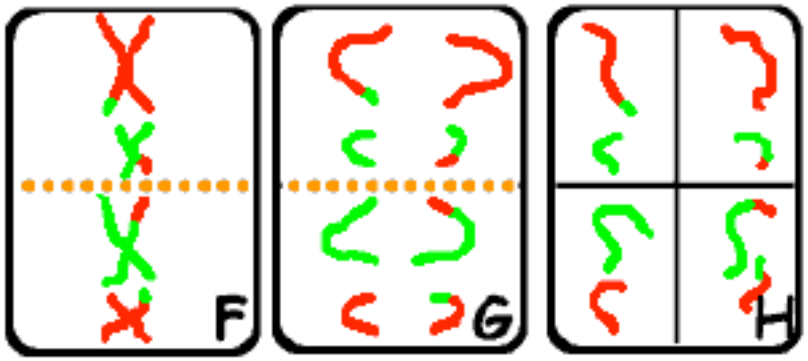
Meiose-Stadien

meion *gr.* = reduzieren

Meiose I



Meiose II



Vereinfachte Animation: http://www.digischool.nl/bioplek/animaties/cel/meiose.html

Meiose-Stadien

www.vcbio.science.ru.nl/en/
virtuallessons/meiostage