


1 μm



Elektronová mikroskopie v mikrobiologii
makromolekuly, makromolekulární komplexy, buňky,
biologické povrchy

Oldřich Benada

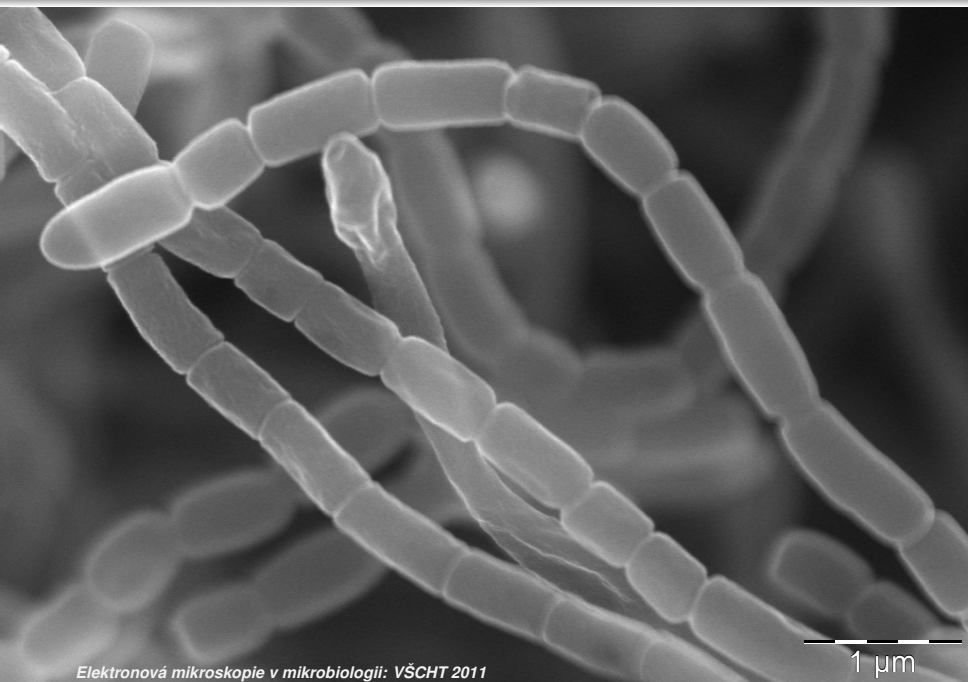
Laboratoř charakterizace molekulární struktury
Skupina elektronové mikroskopie
MIKROBIOLOGICKÝ ÚSTAV AV ČR, v.v.i.
Videňská 1083

142 20 Praha 4 - Krč

benada@biomed.cas.cz

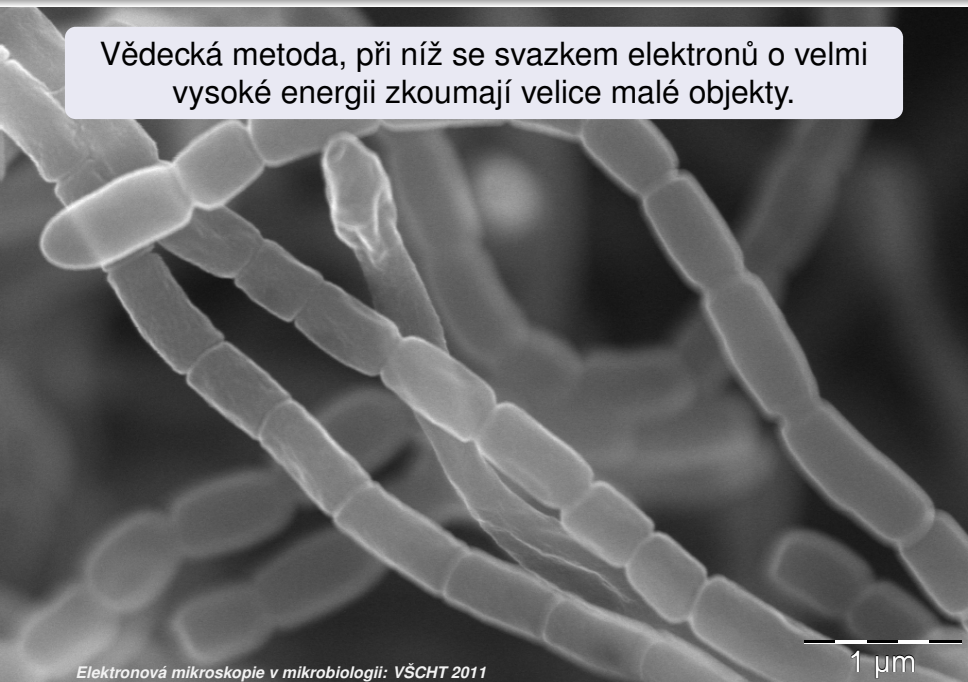
2. prosince 2011

Co je to elektronová mikroskopie?



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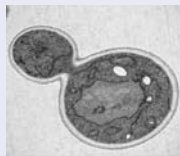
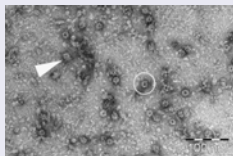
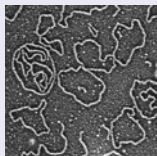
Vědecká metoda, při níž se svazkem elektronů o velmi vysoké energii zkoumají velice malé objekty.



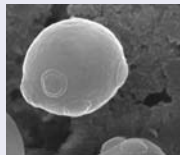
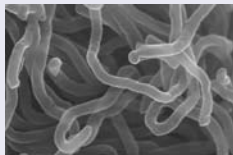
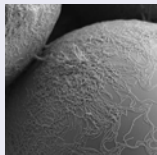
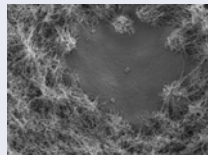
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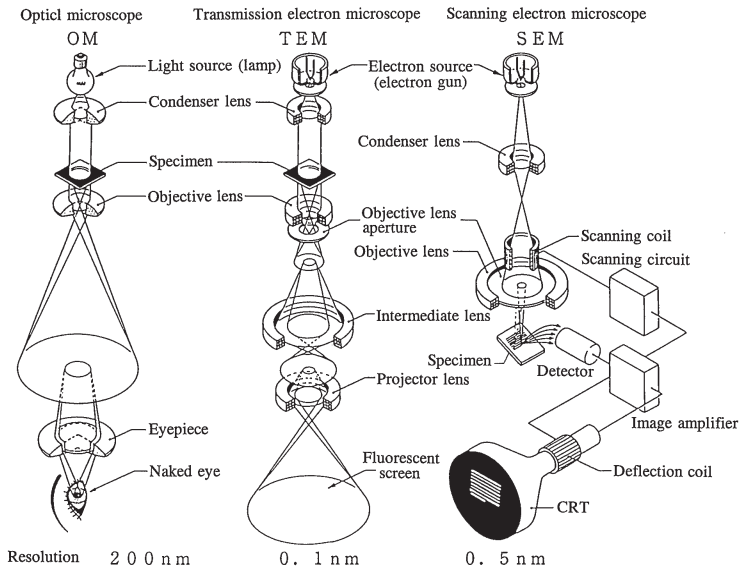
Transmisní elektronová mikroskopie - TEM (ultrastruktura)



Rastrovací elektronová mikroskopie - SEM (topologie)



OM, TEM a SEM

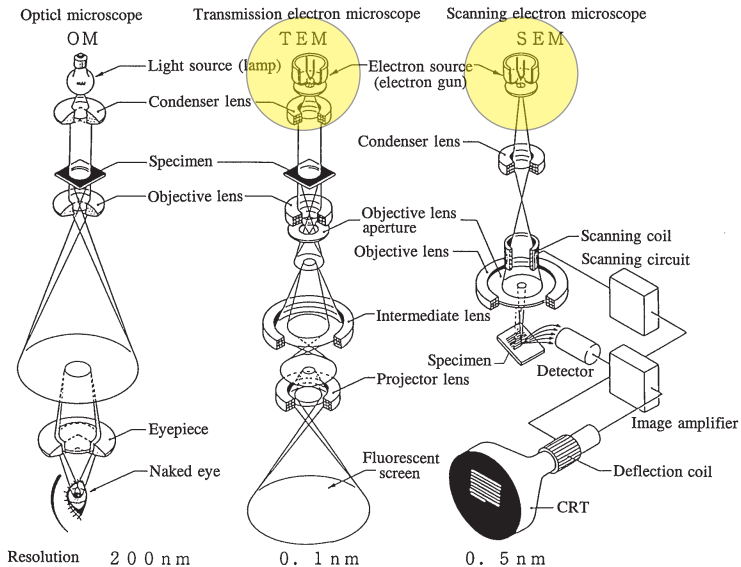


Magnification $\sim \times 2000$

$\times 50 \sim \times 1,500,000$

$\times 10 \sim \times 1,000,000$

TEM a SEM: Shodují se ve zdrojích elektronů

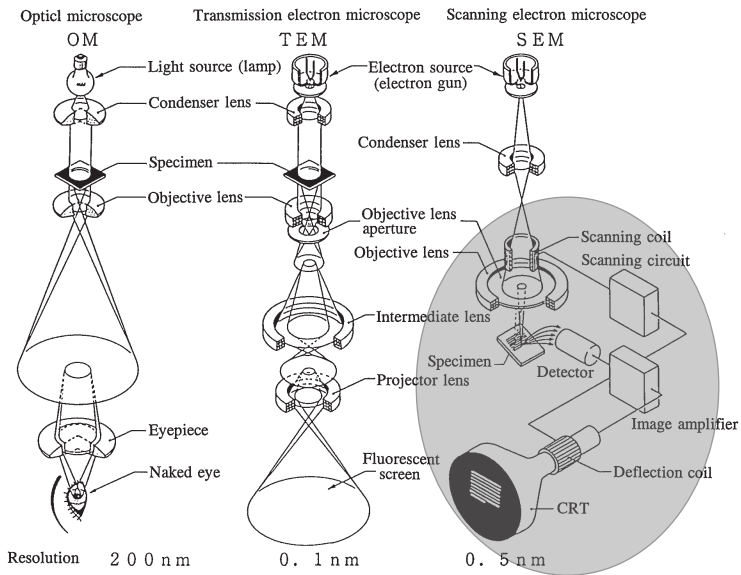


Magnification $\sim \times 2000$

$\times 50 \sim \times 1,500,000$

$\times 10 \sim \times 1,000,000$

SEM: Zpracování el. paprsku, tvorba obrazu i zvětšení se liší od TEM

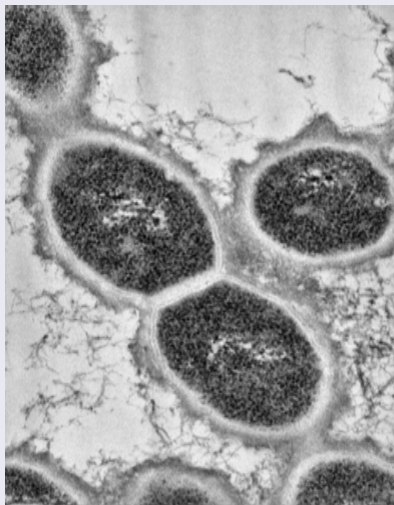


Magnification $\sim \times 2000$

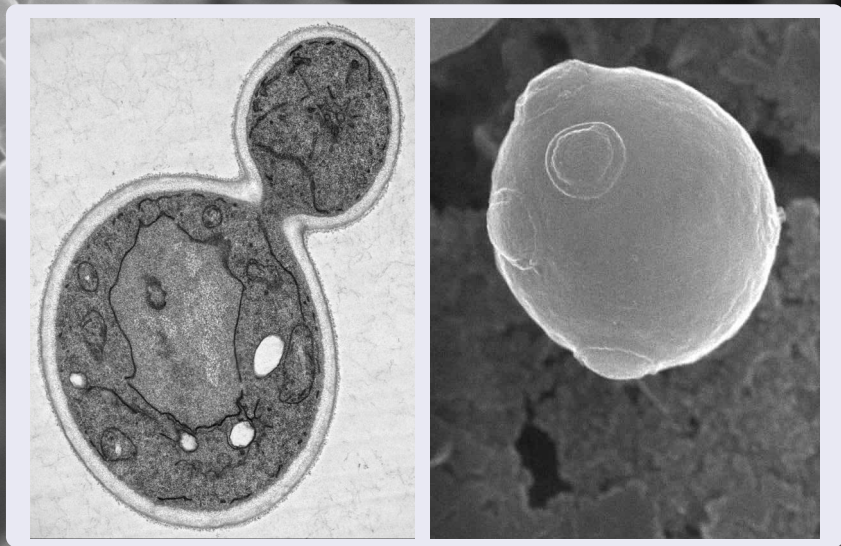
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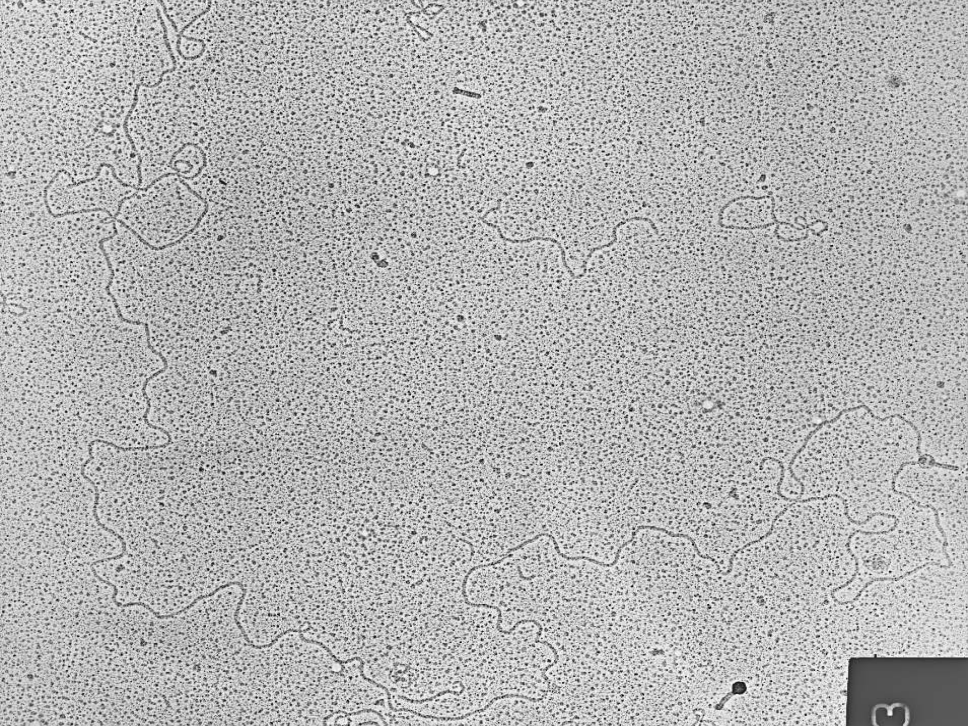
TEM a SEM bakteriálních buněk *Streptococcus pneumoniae*

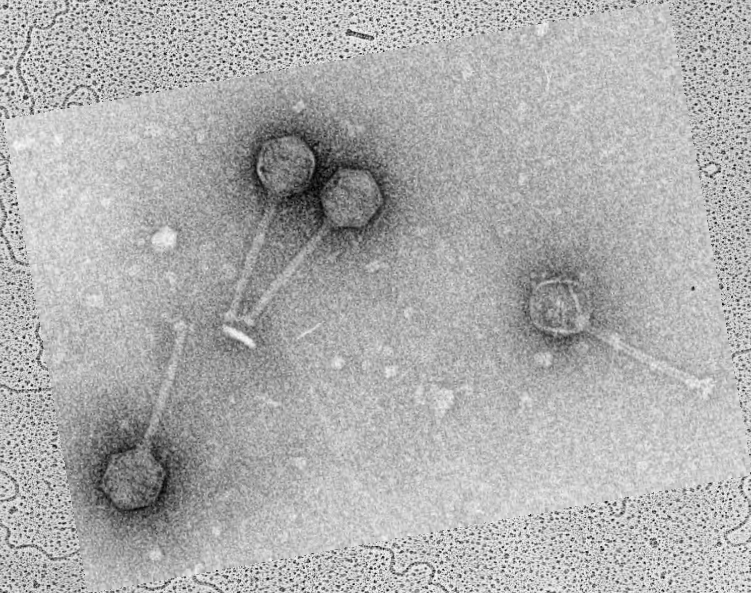


TEM a SEM kvasinkové buňky - *Saccharomyces cerevisiae*

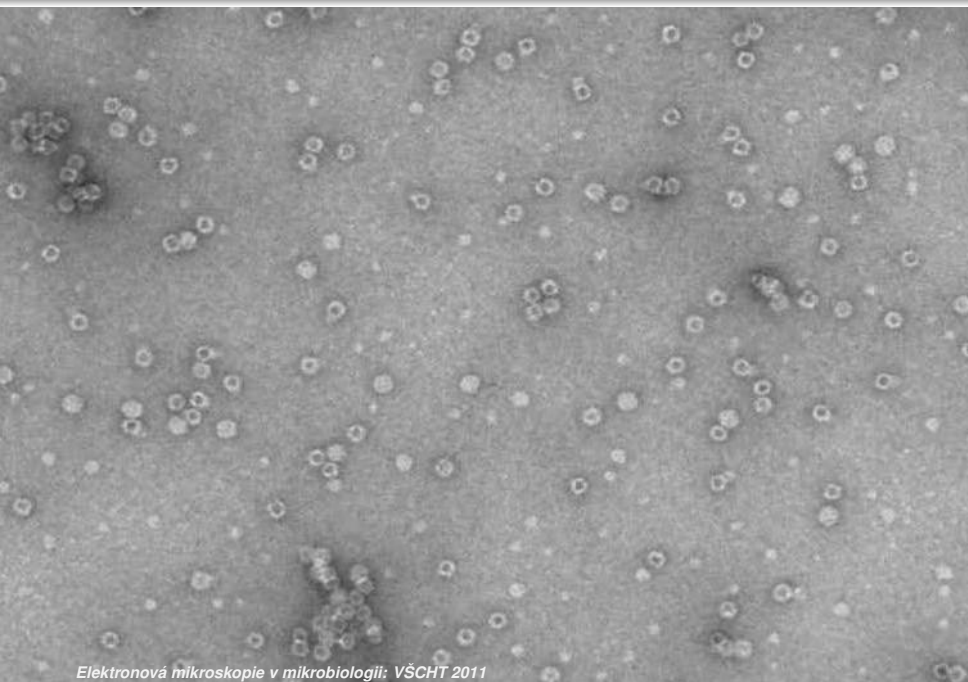




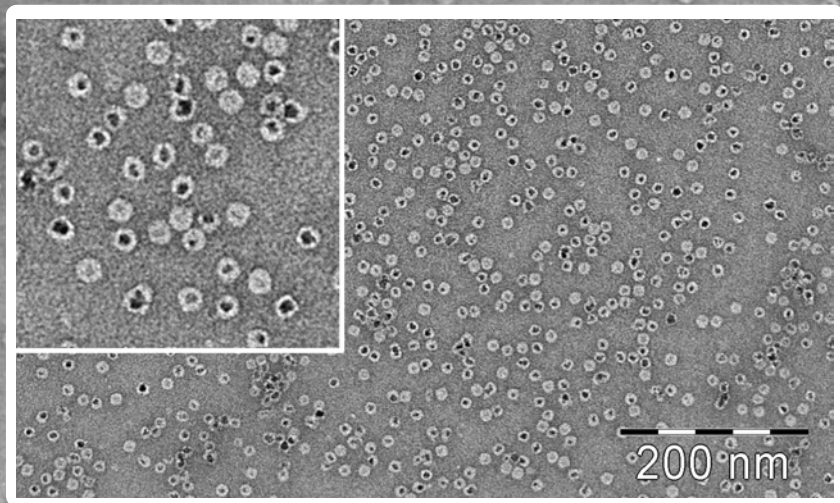




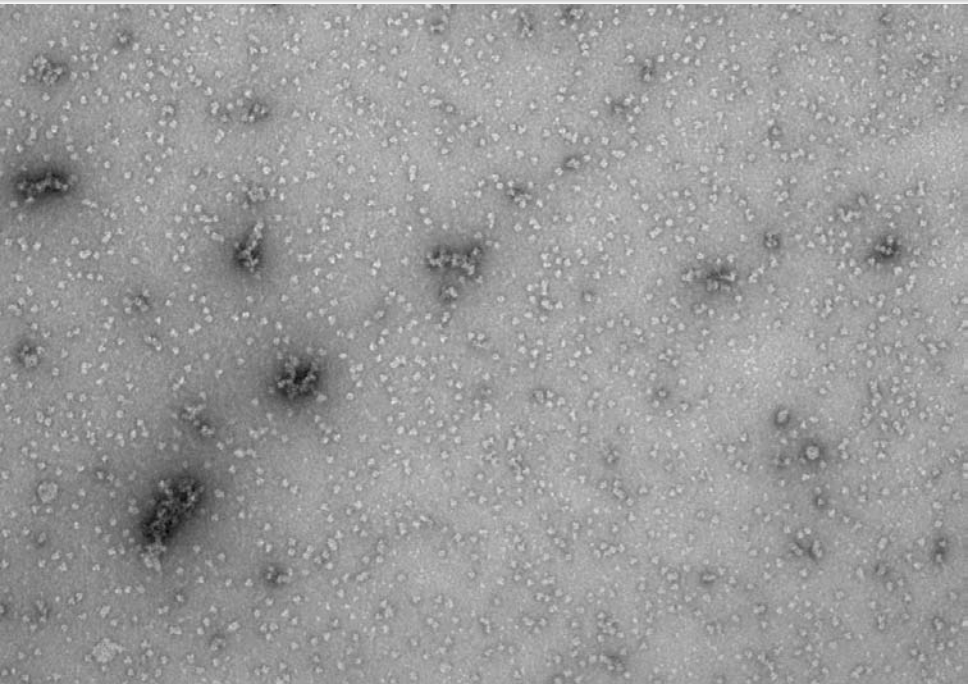
Příklad totálního preparátu - negativní barvení ferritinu



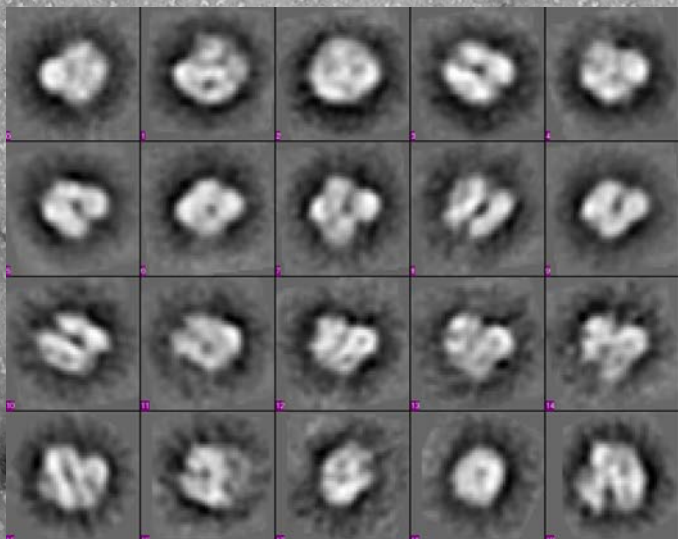
Příklad totálního preparátu - negativní barvení ferritinu

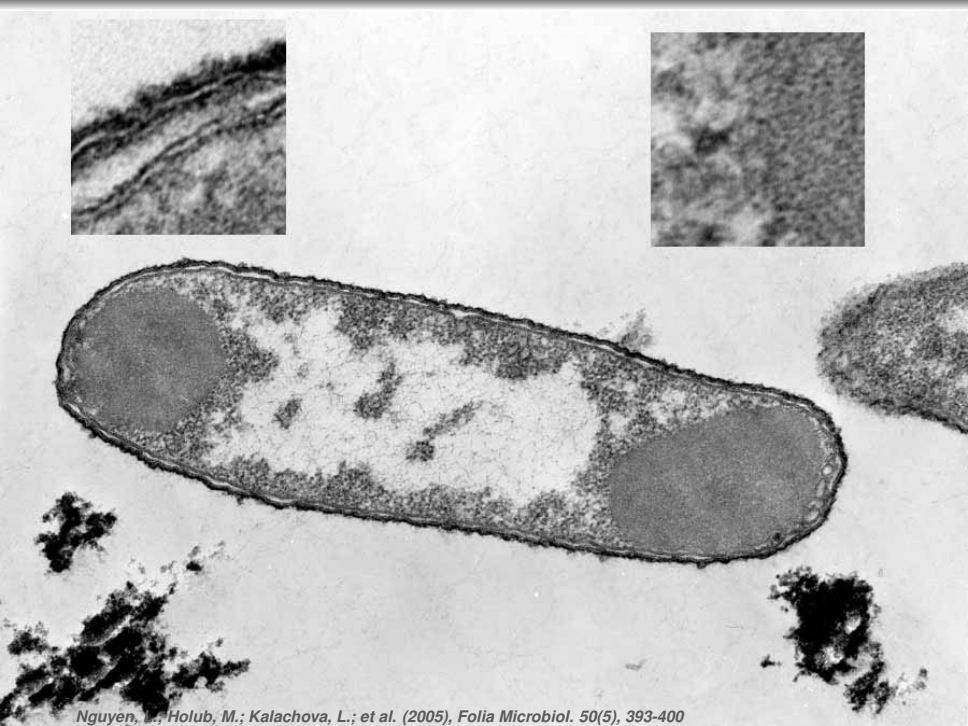


Single particle analysis



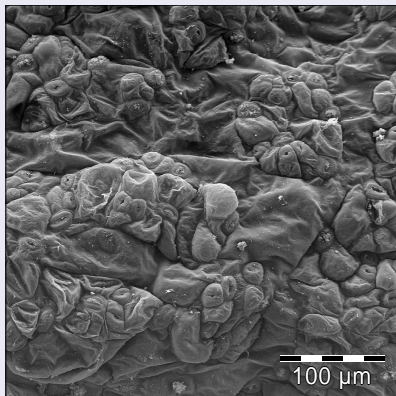
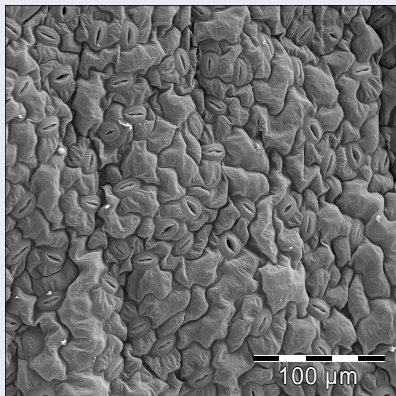
Single particle analysis

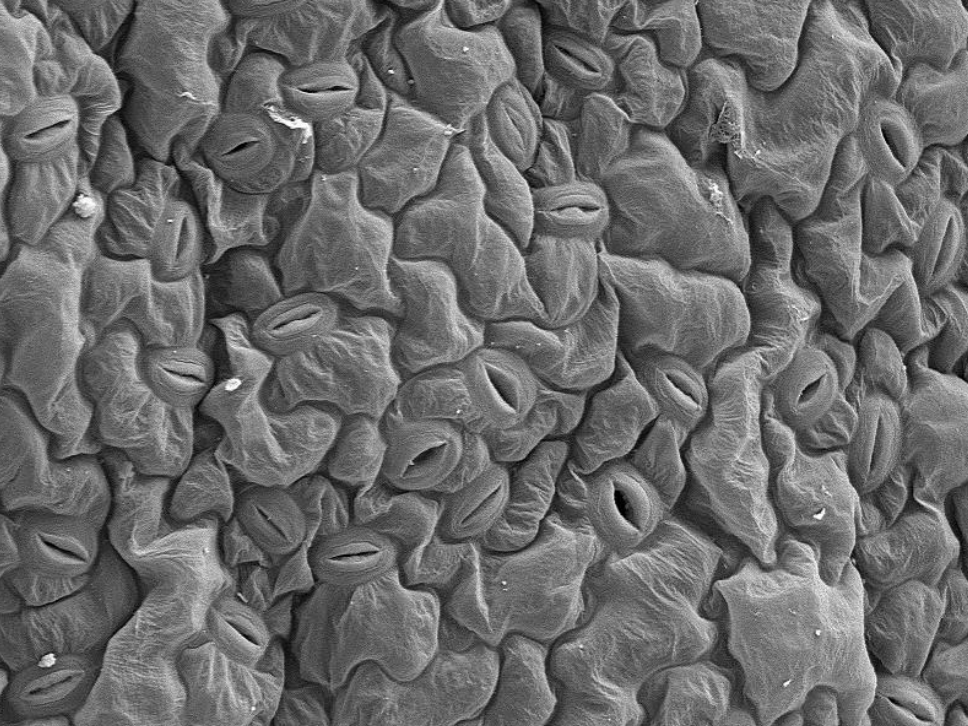


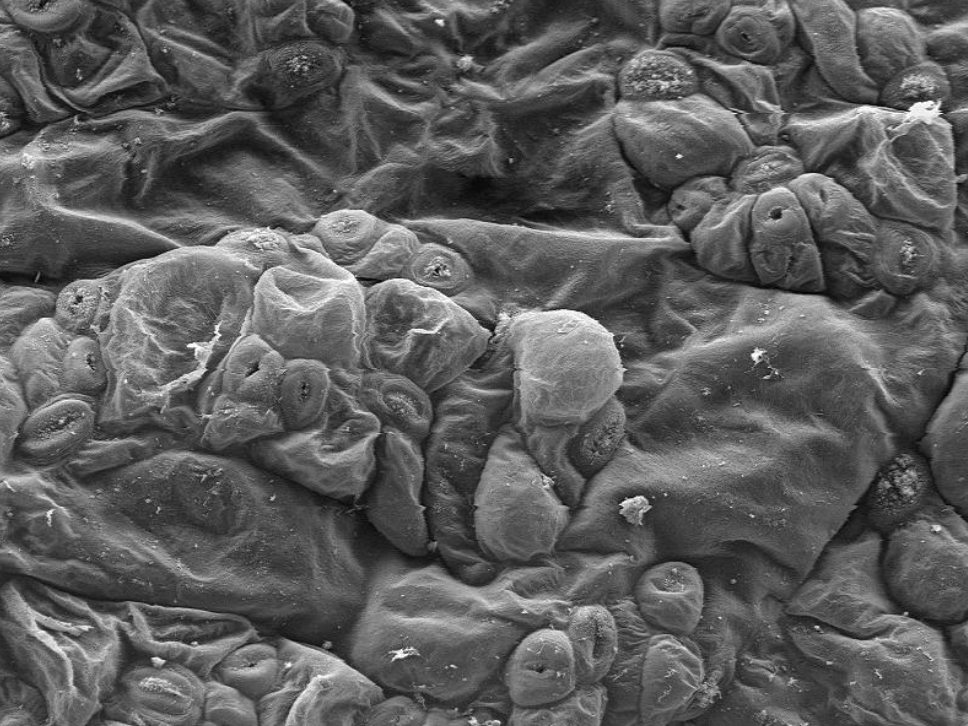




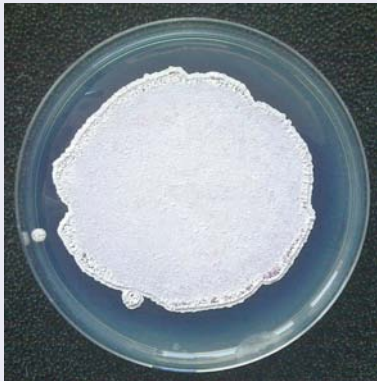
RNA interference - Huseníček rolní (*Arabidopsis thaliana*)





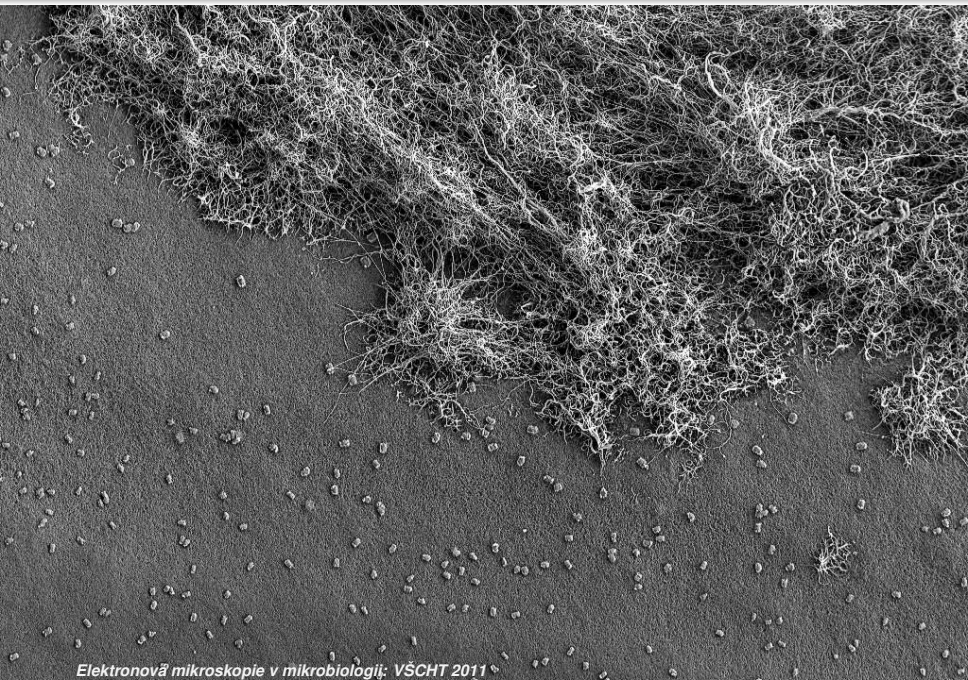


Mycelia streptomycet

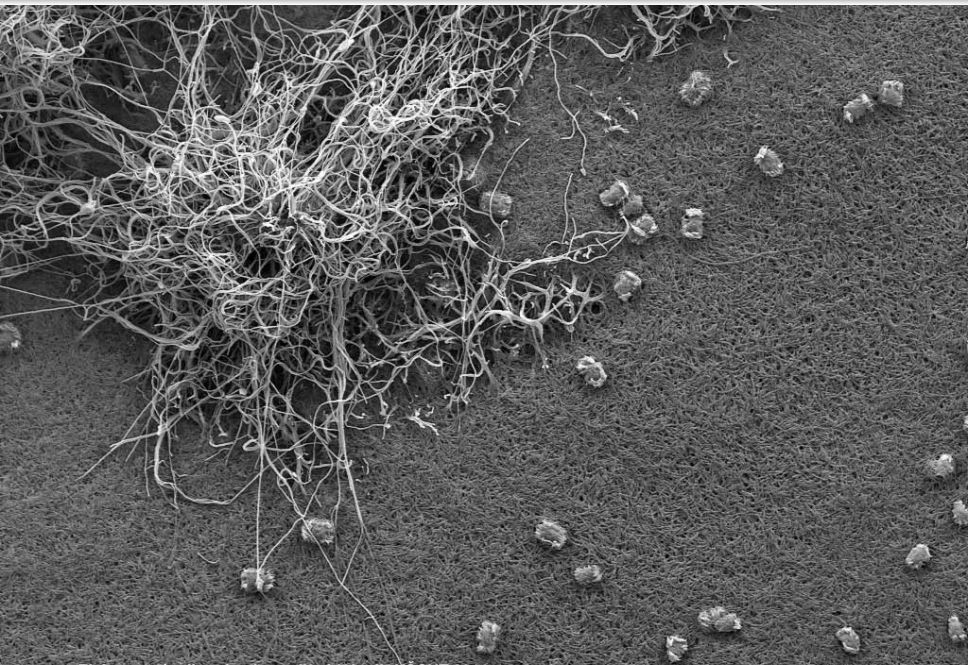


1 μm

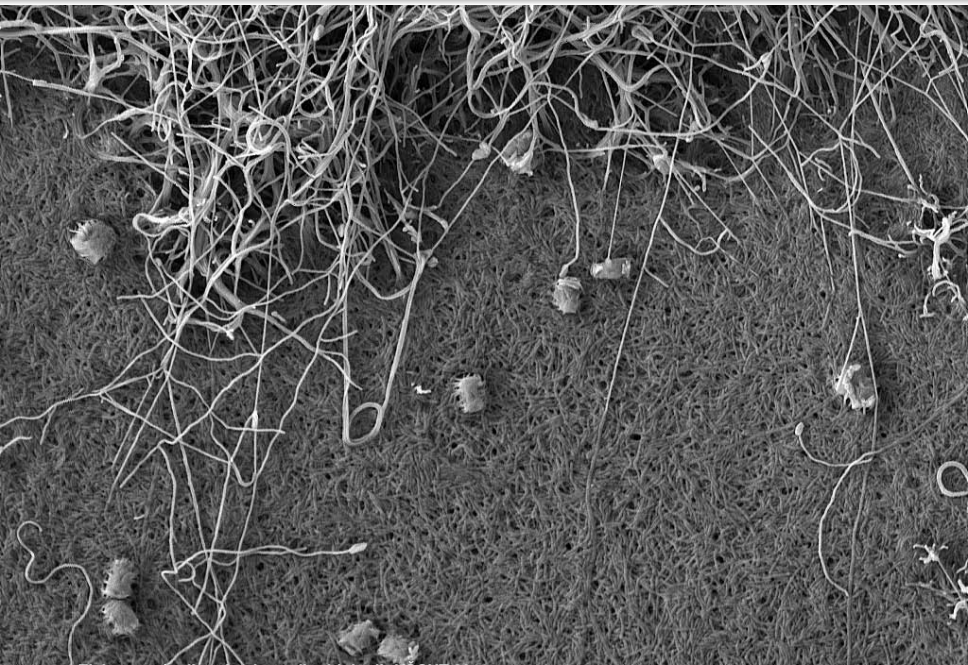
Streptomyces coelicolor na pevném médiu



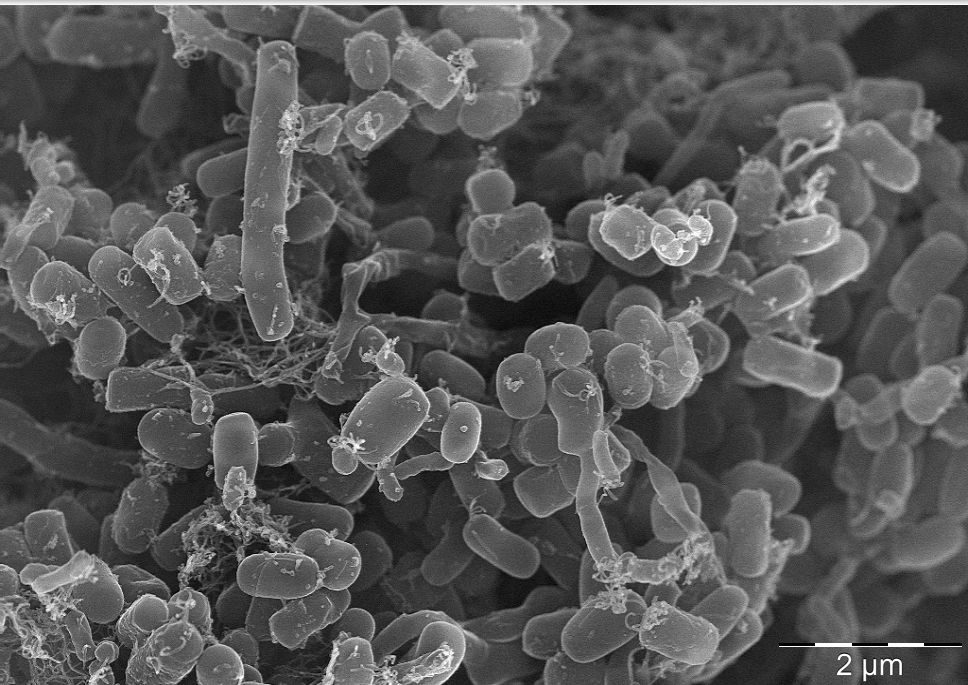
Streptomyces coelicolor na pevném médiu



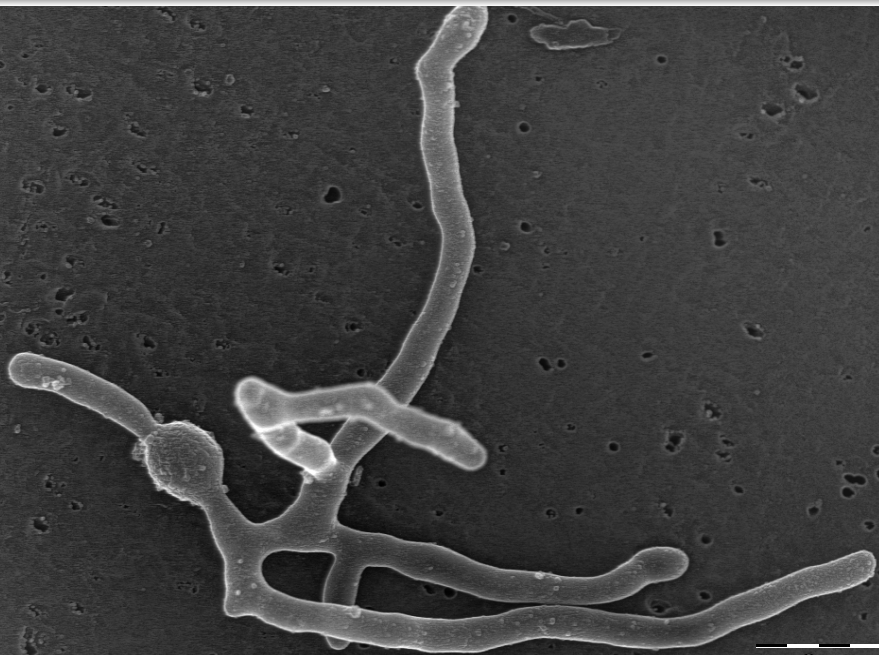
Streptomyces coelicolor na pevném médiu



Spóry Streptomyces coelicolor

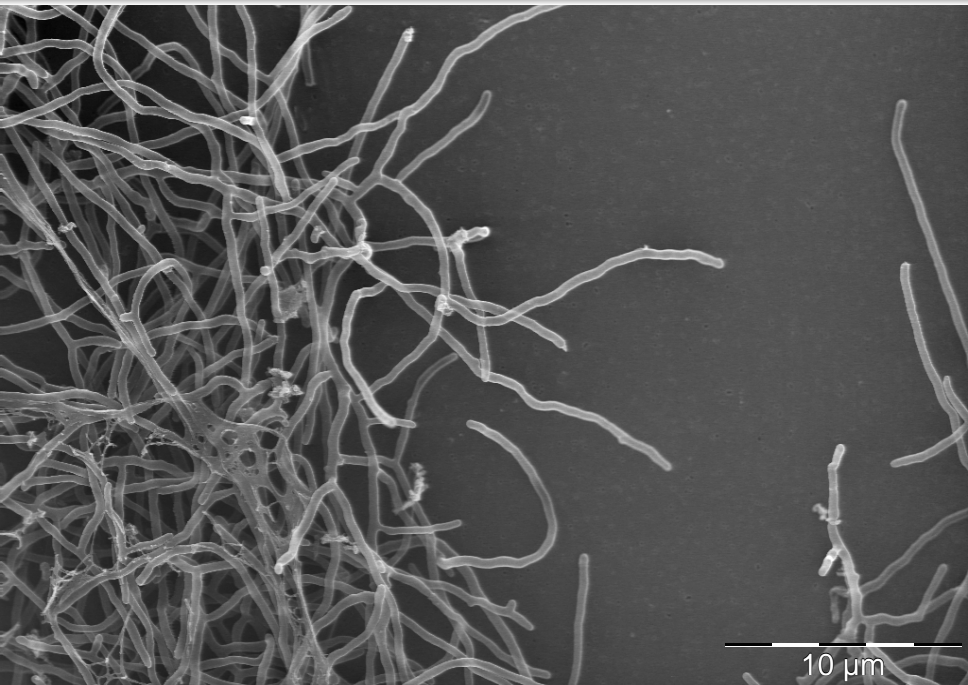


Klíčení spór *Streptomyces coelicolor*

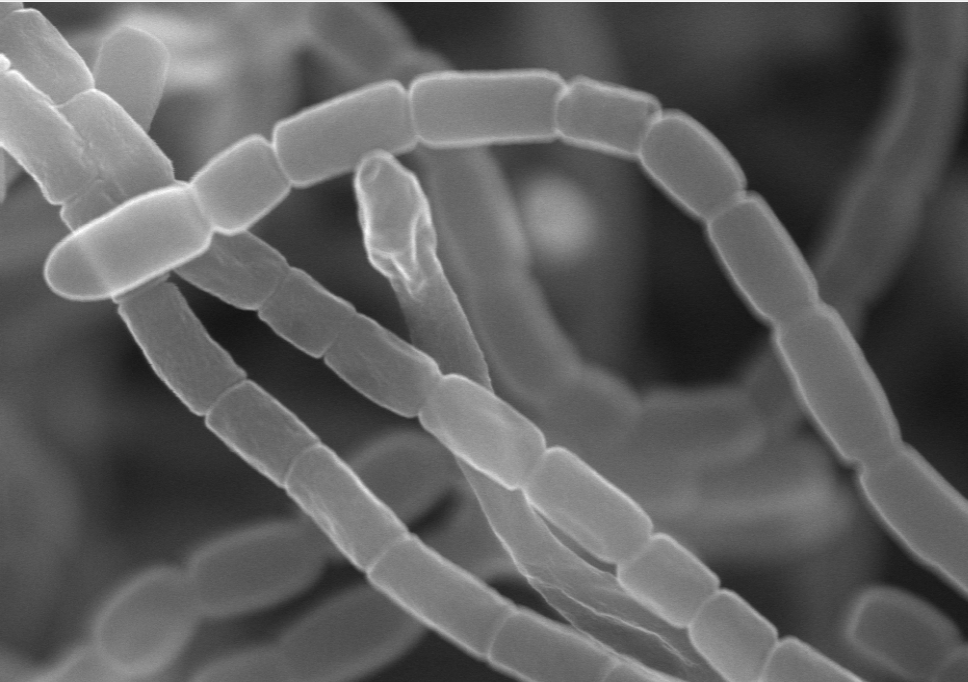


2 μm

Substrátové mycelium *Streptomyces coelicolor*



Sporulující mycelium *Streptomyces coelicolor*



Oldřich Benada

benada@biomed.cas.cz

Struktura makromolekulárních komplexů, ultrastruktura prokaryot, vysokoresoluční rastrovací elektronová mikroskopie biologických povrchů, kvalitativní X-ray mikroanalýza

Olga Kofroňová

kofra@biomed.cas.cz

Rastrovací elektronová mikroskopie biologických povrchů

Zdeněk Žižka

zizka@biomed.cas.cz

Ultrastruktura prokaryotických a eukaryotických organismů
Pokročilé metody optické mikroskopie

Zuzana Večerková

zuzka@biomed.cas.cz

Příprava preparátů pro TEM, ultratenké krájení, *podílí se technickou prací na projektech EM*