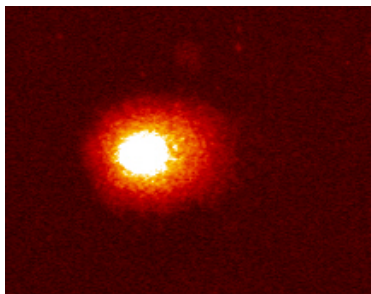


The capacity of the moss *Physcomitrella patens* to repair DNA damage.

Karel J. Angelis

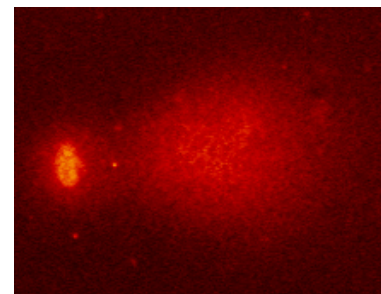
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In comparison to other plants the moss *Physcomitrella patens* is often mentioned for its efficient homologous recombination (HR) that might take part in removal of various types of DNA damage. We were particularly interested to compare *Physcomitrella* and *Arabidopsis* repair of double strand breaks (DSB) and DNA-DNA cross-links (CL). For this purpose we used single cell gel electrophoresis (Comets) assay that enables detection of global damage in genomic DNA to study removal of UV pyrimidine dimers (Py[^]Py), Mitomycin C induced CL and Bleomycin induced DSB at the stage of protonema.



Left: Control cell with undamaged DNA

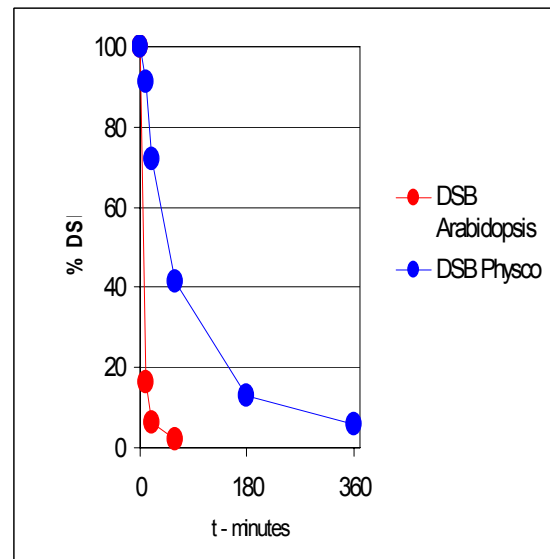
Right: Cell with DNA damaged by 1 hr treatment with 30µg/ml Bleomycin (detection of DSB)



We found out that repair of Py[^]Py and CL has similar kinetics in *Physcomitrella* as in *Arabidopsis*.

Nevertheless in comparison to *Arabidopsis* repair of DSB is surprisingly much slower (see Fig right). Also DSB repair is slower in protonema 2 weeks after plating in comparison to 1 week old tissue.

This raises an important question whether *Physcomitrella* repairs DSB exclusively by “slow” HR pathway and alternative pathways e.g. NHEJ or direct ligation are attenuated or missing, at least in haploid protonema?



Research in *Physcomitrella* is in our Lab supported by Czech Science Foundation (project # 521/04/0971) and Ministry of Education, Youth and Sports of the Czech Republic (projects # 1M0505 and LC06004).