

Radiation resistance in *Arthrospira* sp. PCC 8005

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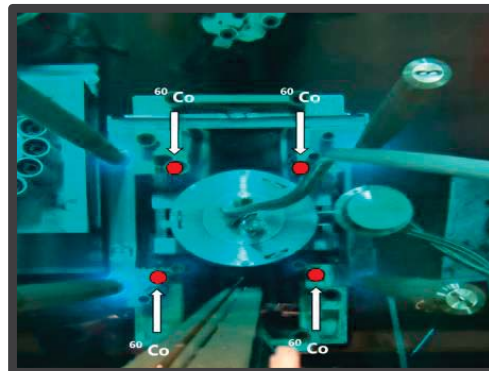
Arthrospira

- Medicinal importance- Antioxidant
- Food industry- Pigments and nutritious value
- Part of MELiSSA loop- Oxygen producer and Edible bacteria

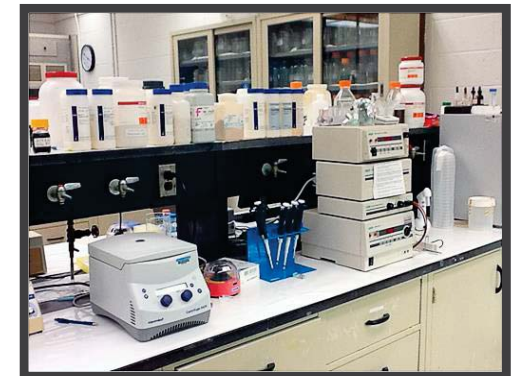
General experimental layout



Growth at predetermined conditions



γ -irradiation at SCK•CEN facility

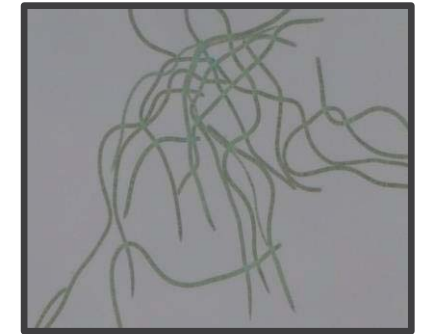
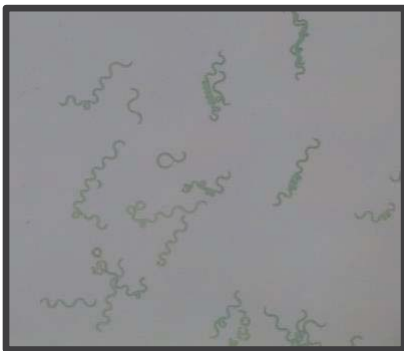
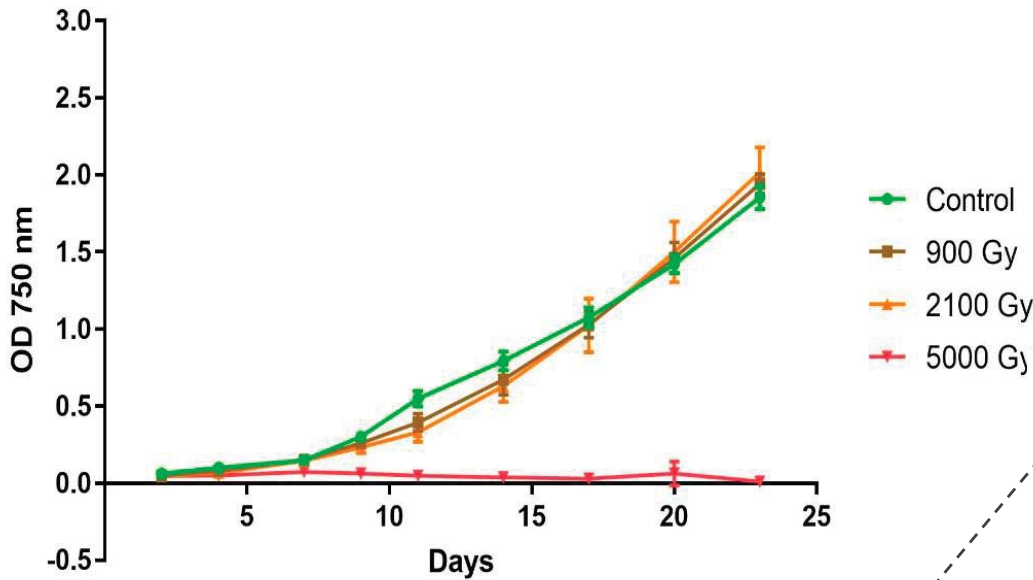


Cell and molecular analysis

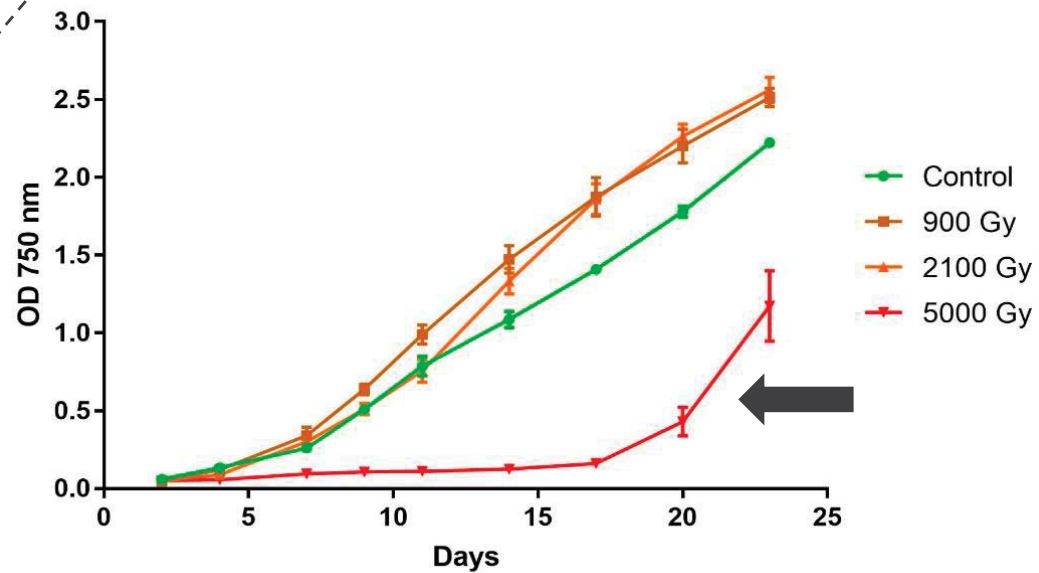
Growth at OD 750 nm after γ -irradiation

original PCC 8005

P6



P2



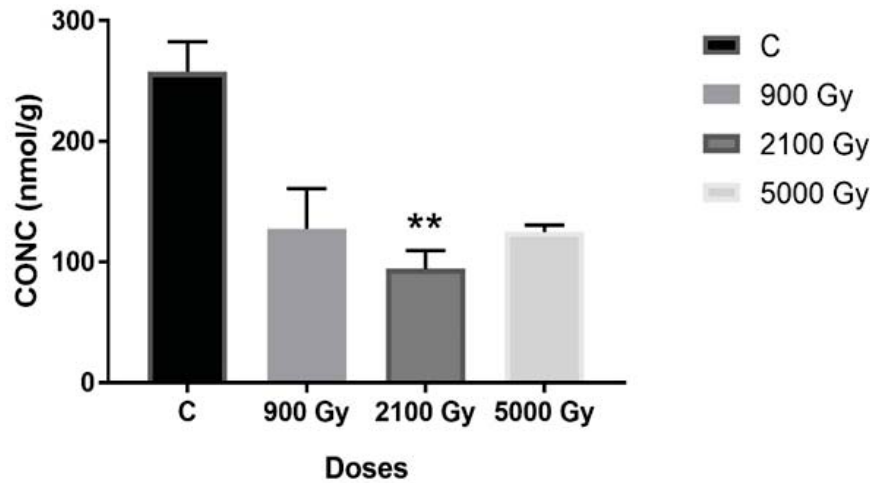
variant PCC 8005
(mutant?)

Glutathione: Role of antioxidants?

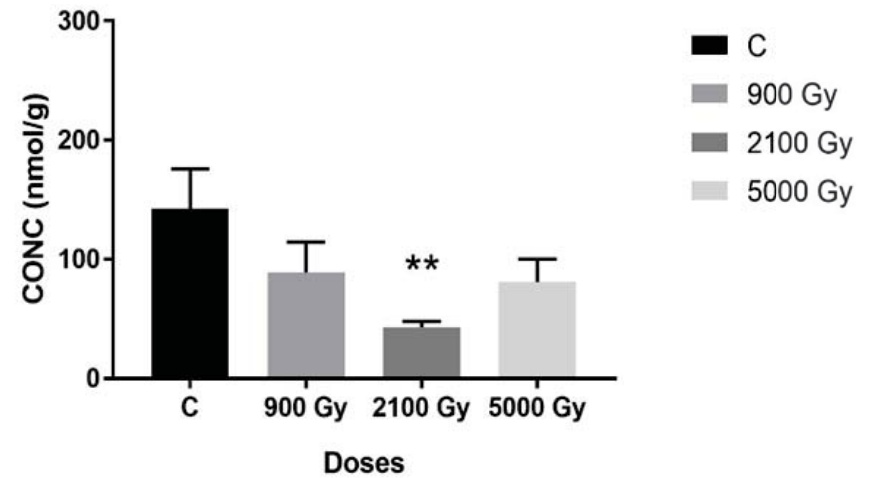
helical trichomes, normal IR resistance

straight trichomes, enhanced IR resistance

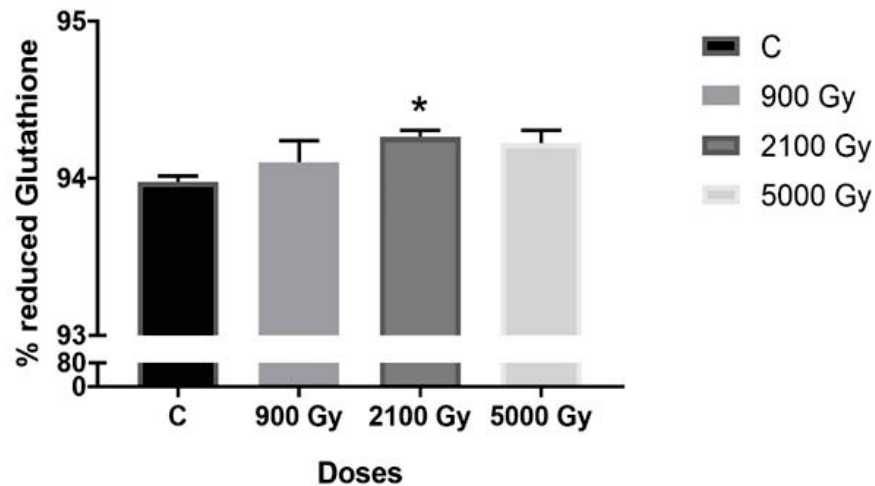
P6 GSH+GSSG



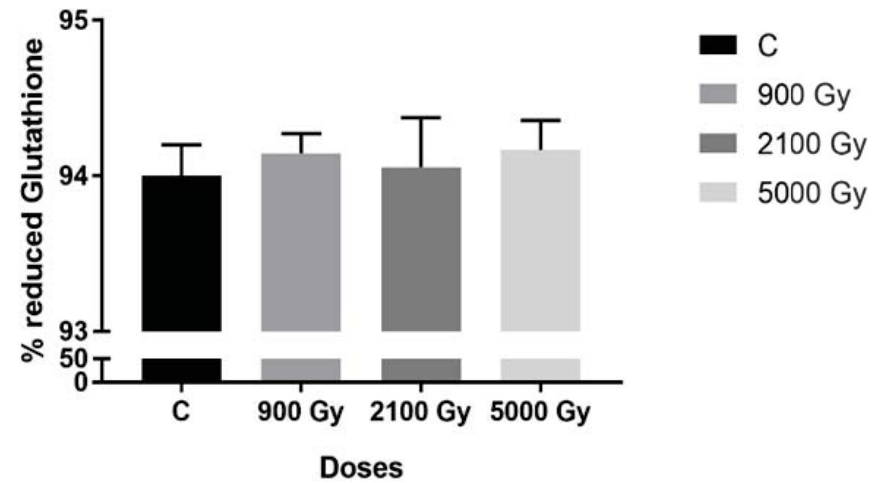
P2 GSH+GSSG



P6 GSH

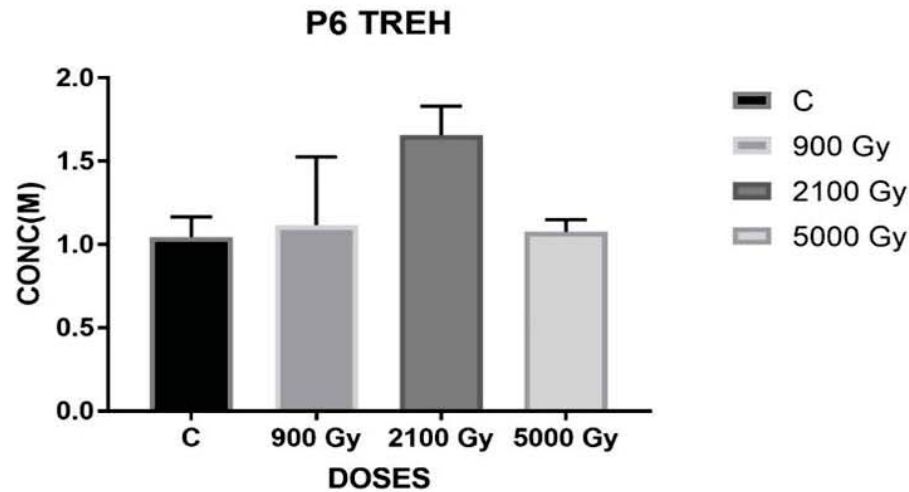


P2 GSH

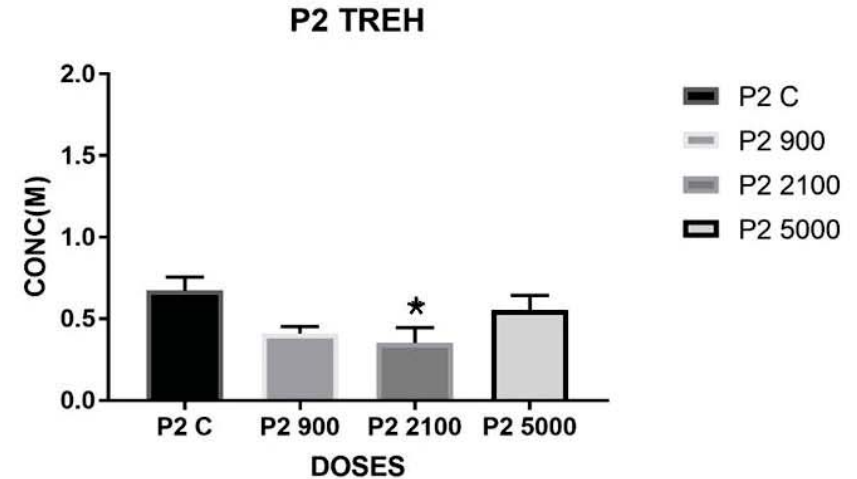


Trehalose content

helical trichomes, normal IR resistance



straight trichomes, enhanced IR resistance



Possible combination of mechanisms:

- trehalose as a radical (ROS) scavenger
- trehalose protects/stabilizes proteins and membranes

Mutant does it more efficiently?



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