

Den Biologiske Effekt af Proton –vs. Fotonbestråling *in vivo*

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Protoner vs. fotoner

1. Protoner rammer tumoren mere præcist
2. Protoner er mere effektive i at skade cellernes DNA

Klinikken:

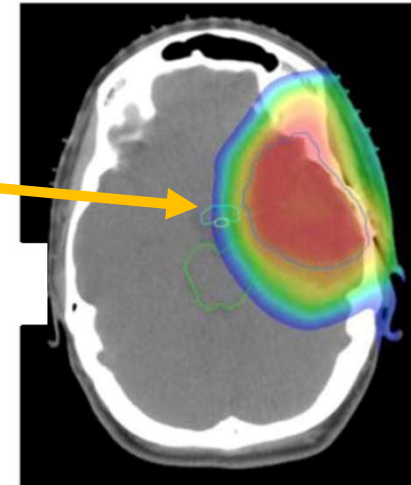
10% lavere dosis af protoner

MEN.... Så simpelt er det ikke

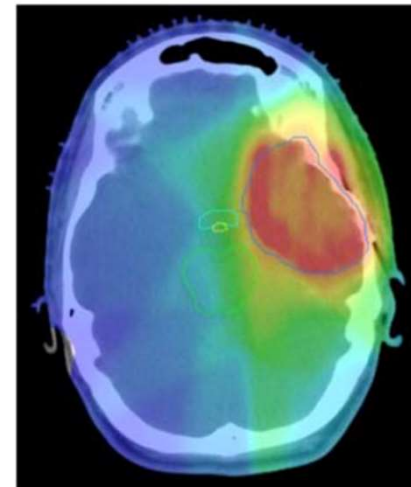
Den biologiske effekt afhænger af flere biologiske og fysiske faktorer.

⚡ Position i protonstrålens bane

Protons

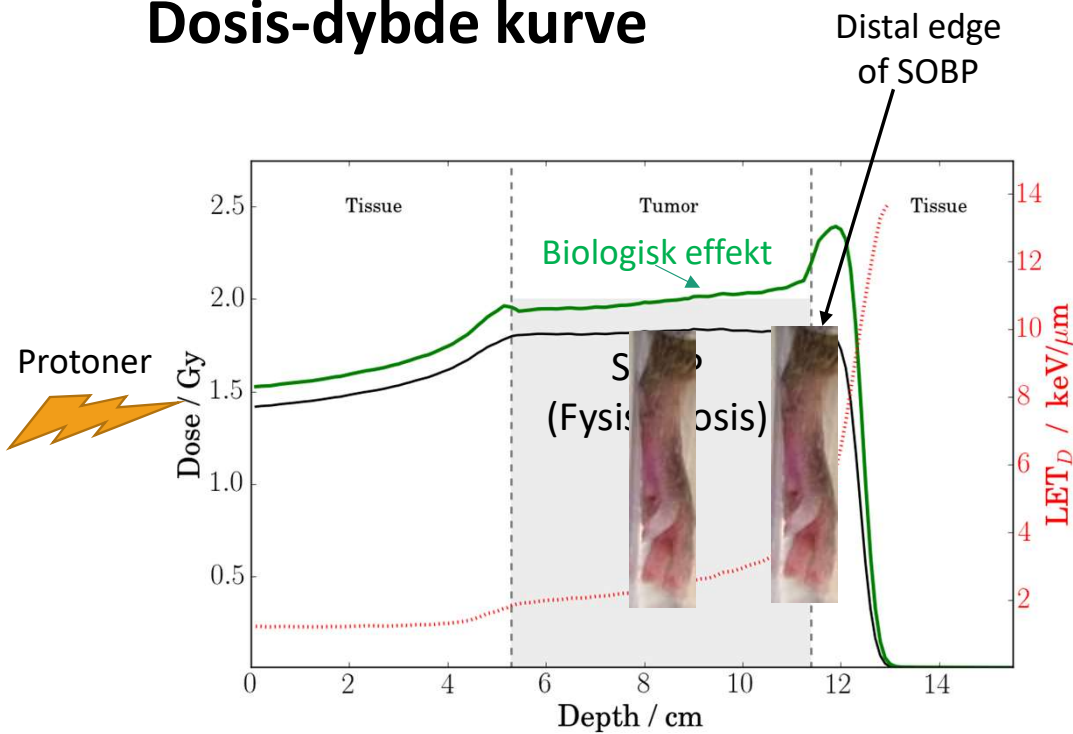


Photons



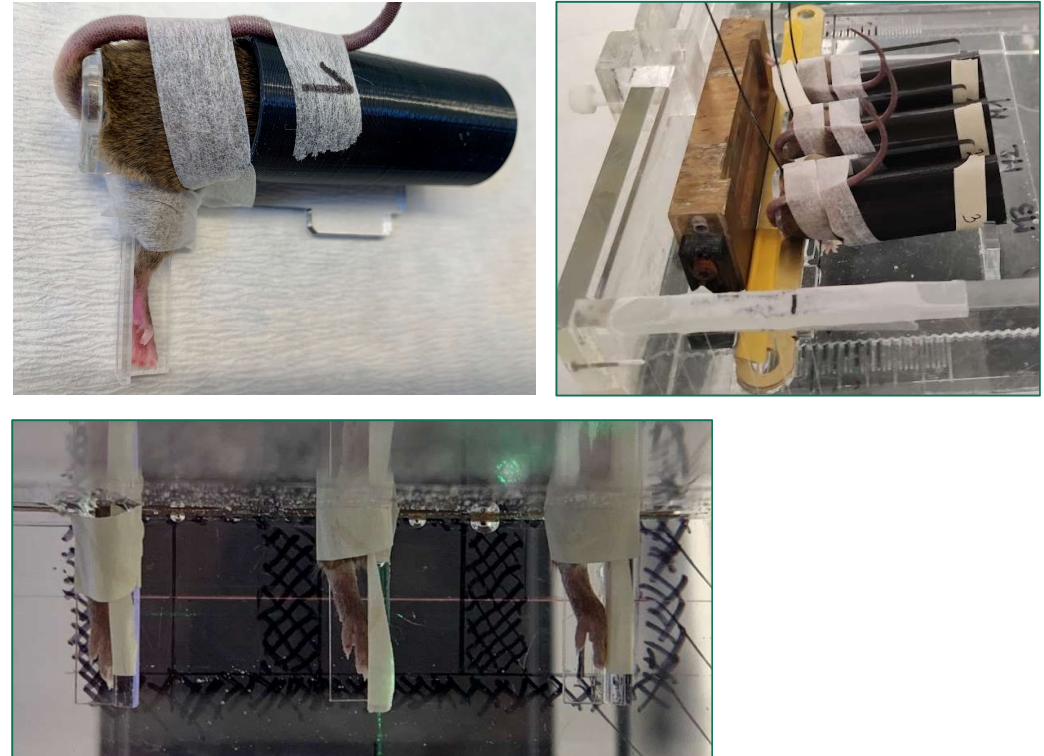
Shih et al. 2015

Dosis-dybde kurve



- ⚡ Den biologiske effekt stiger med dybden ind i vævet – specielt til sidst
- ⚡ Protonerne bremses med dybden af væv

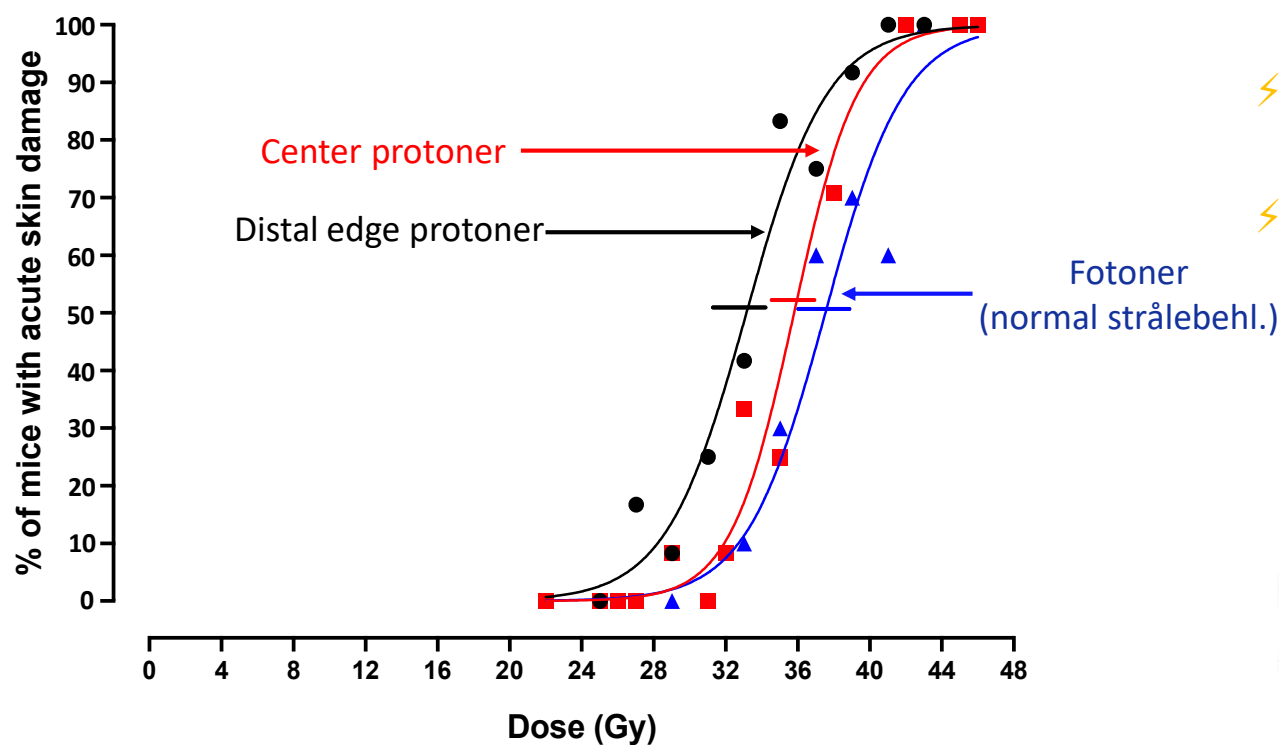
Den eksperimentelle model



3 strålerunder med enten:

- ⚡ 6 MV fotoner
- ⚡ Protoner i center af SOBP
- ⚡ Protoner i den distale ende af SOBP

Resultater



- ⚡ Lavere dosis i den distale ende af proton SOBP for samme omfang af hudskade

Konklusion:

- ⚡ Øget biologisk effekt i den distale ende af proton SOBP i mus.
- ⚡ Varierende biologisk effekt.

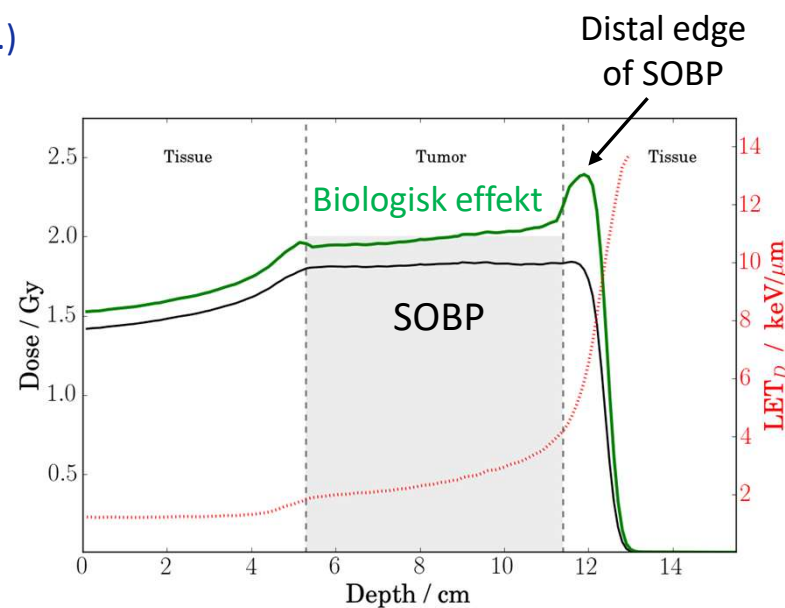


Figure by Armin Lühr

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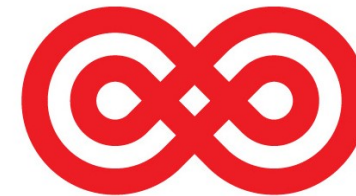
Dorthe Grand

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DCCC
Stråleterapi



AARHUS UNIVERSITET

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