

CNAO: attività clinica



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Radiobiologist

24/04/2020



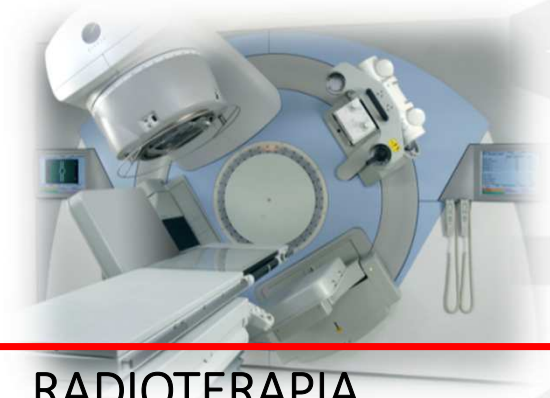
Radioterapia

Più del 50% dei pazienti oncologici viene sottoposto a RT nel corso della malattia



CHIRURGIA

Malattia Locale



RADIOTERAPIA

Introduzione

Gli obiettivi principali di un trattamento radioterapico sono:

- Aumentare la dose al tumore
- Diminuire la dose ai tessuti normali circostanti



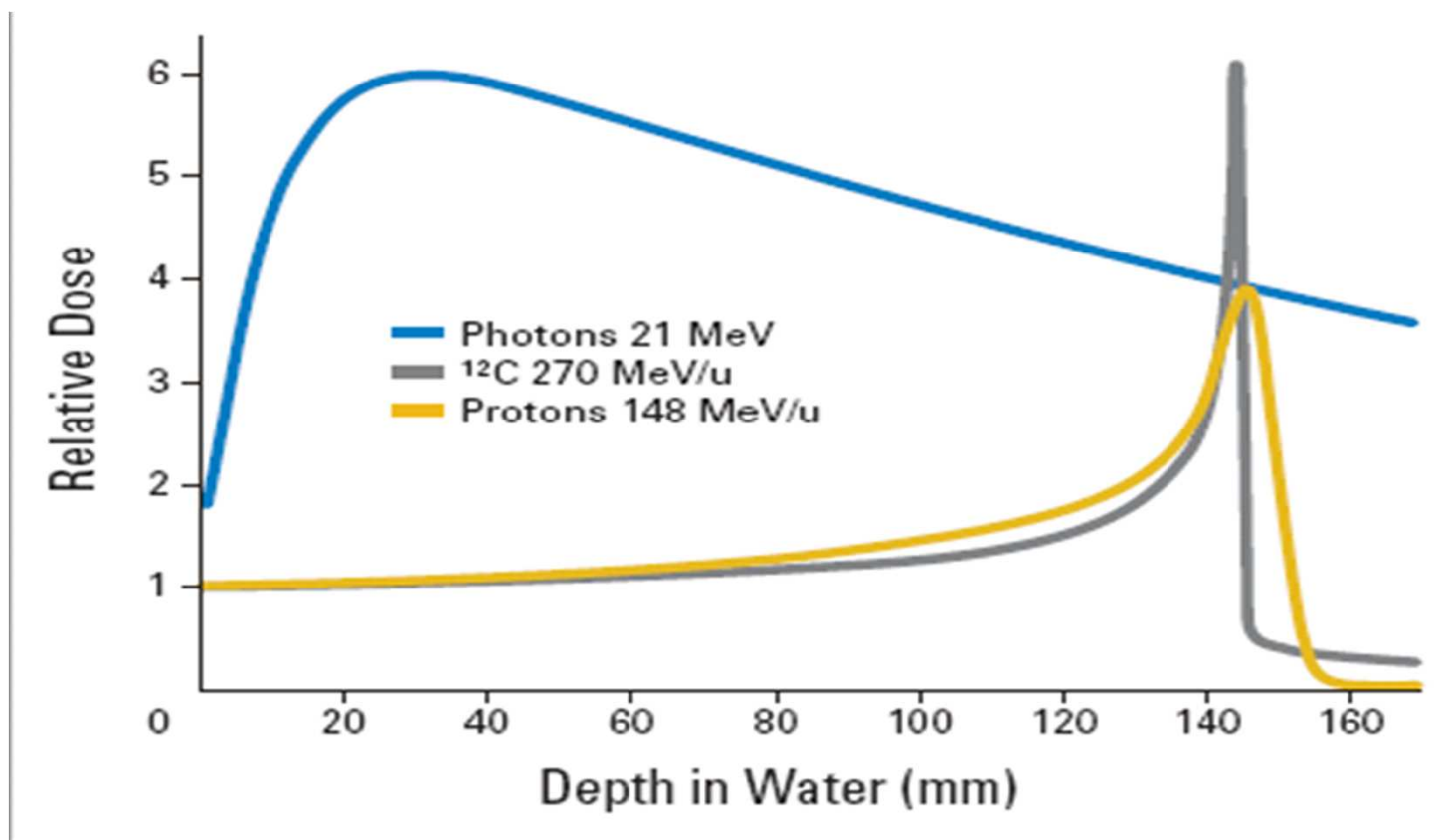
Sviluppi tecnici in radioterapia:

Tecniche moderne di radioterapia conformazionale: **IMRT e Tomoterapia**

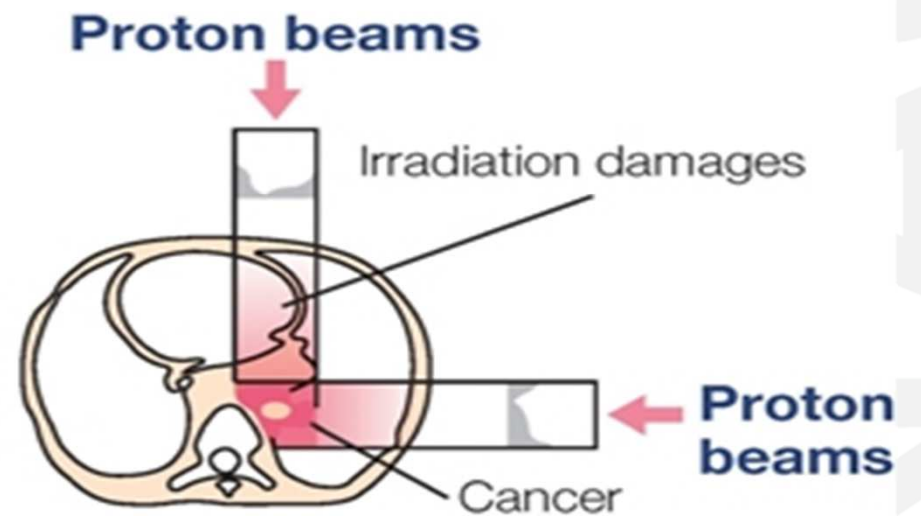
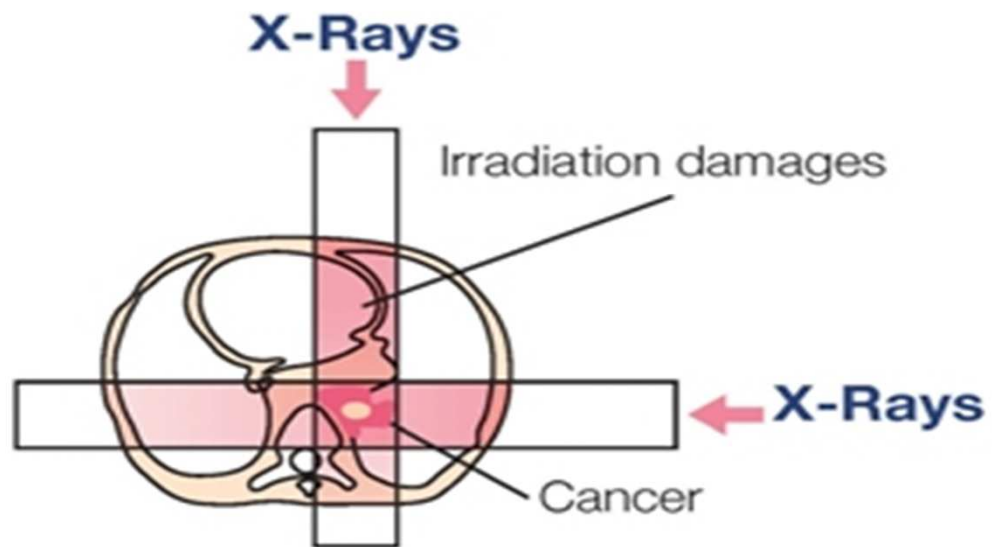
Radioterapia con particelle

Caratteristiche fisiche delle particelle cariche

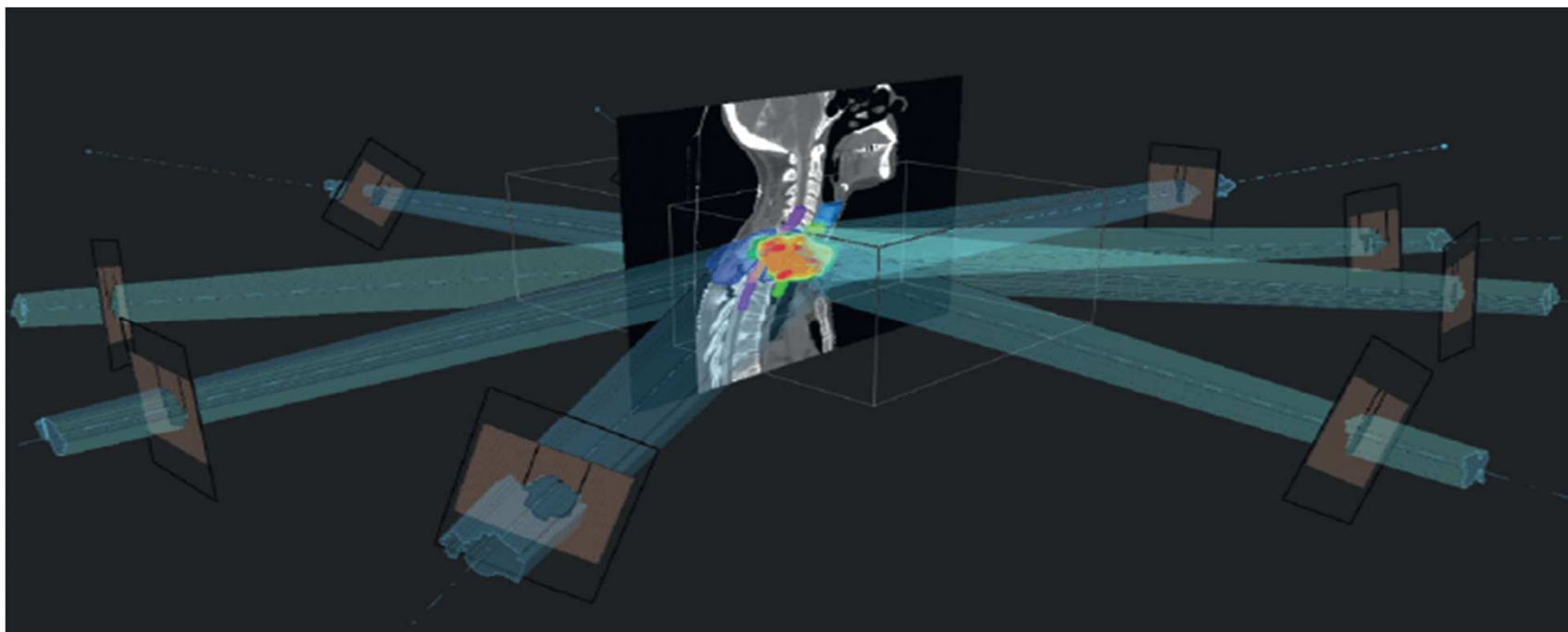
→ > dose al tumore > dose ai tessuti normali circostanti



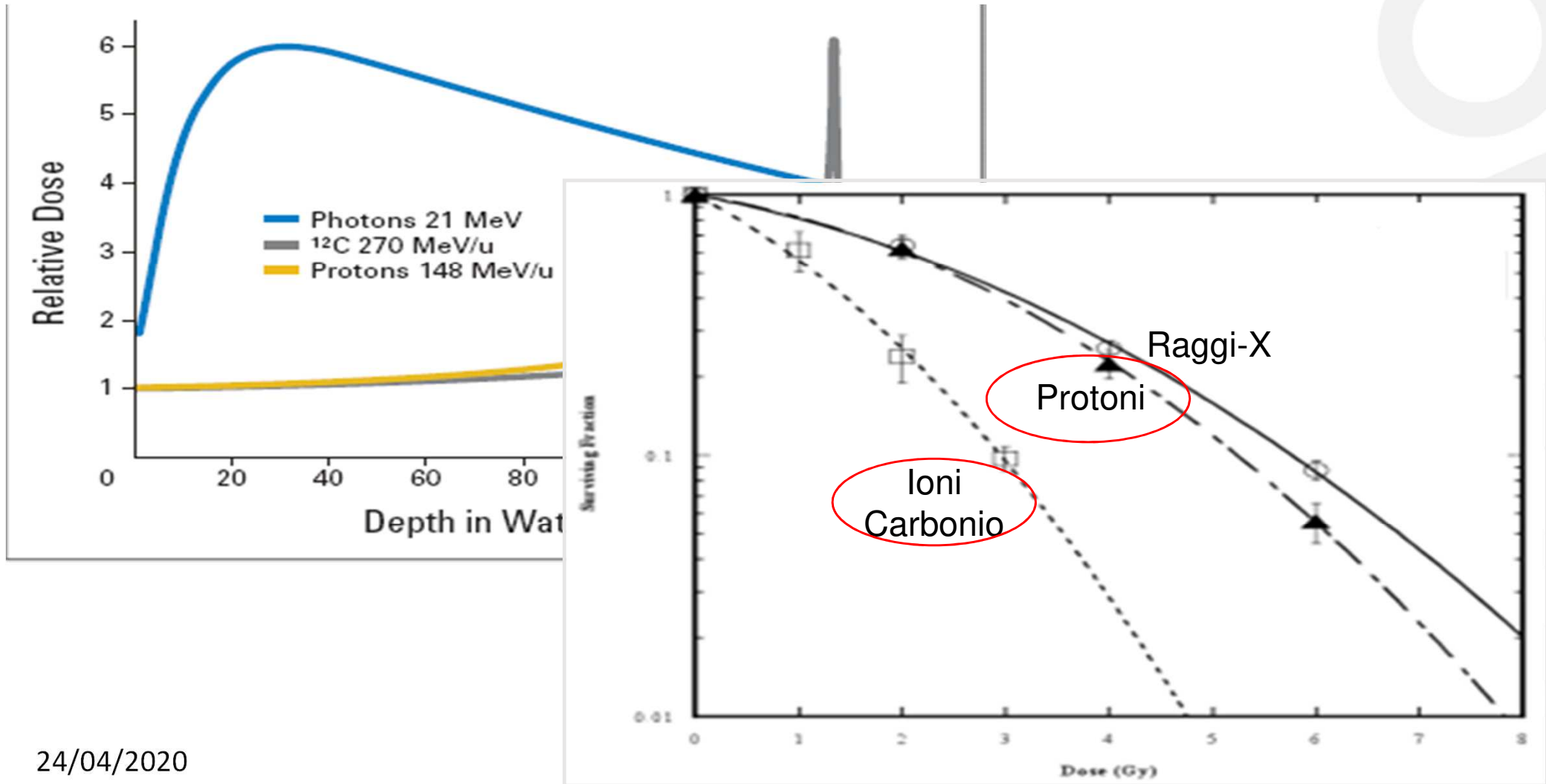
Questo implica...



... nella pratica clinica...

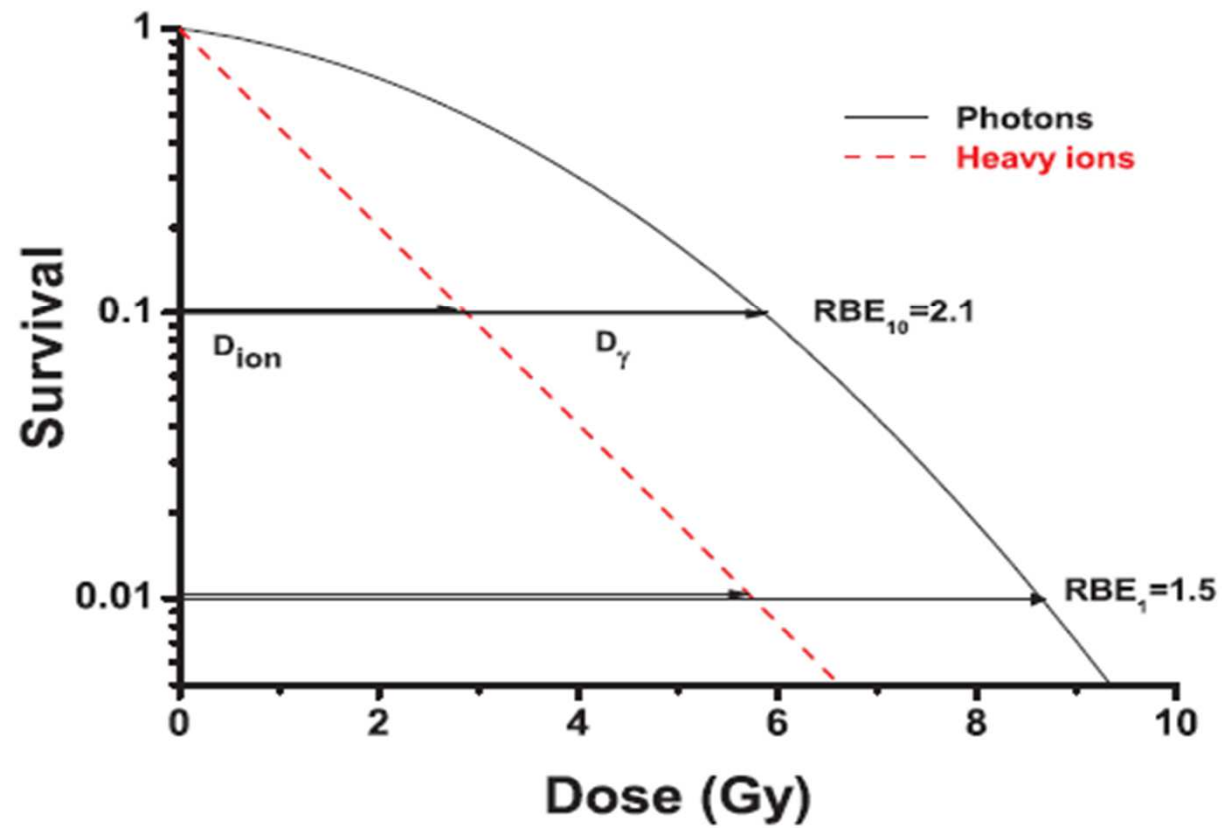


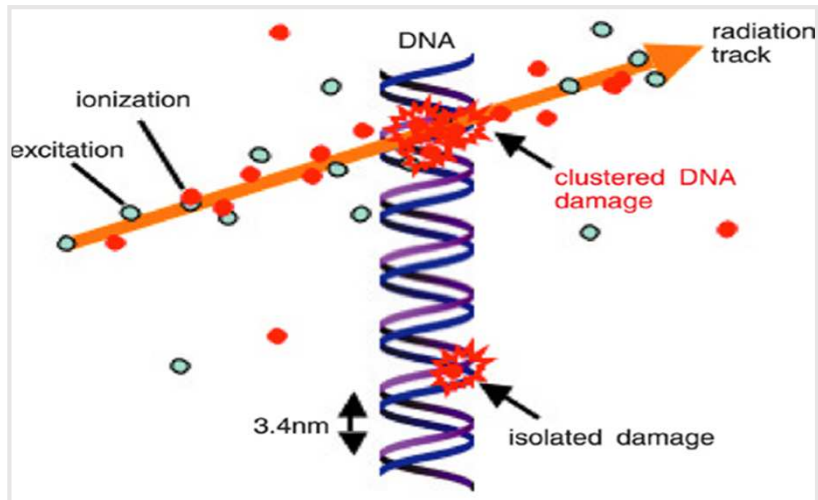
Caratteristiche radiobiologiche delle particelle cariche



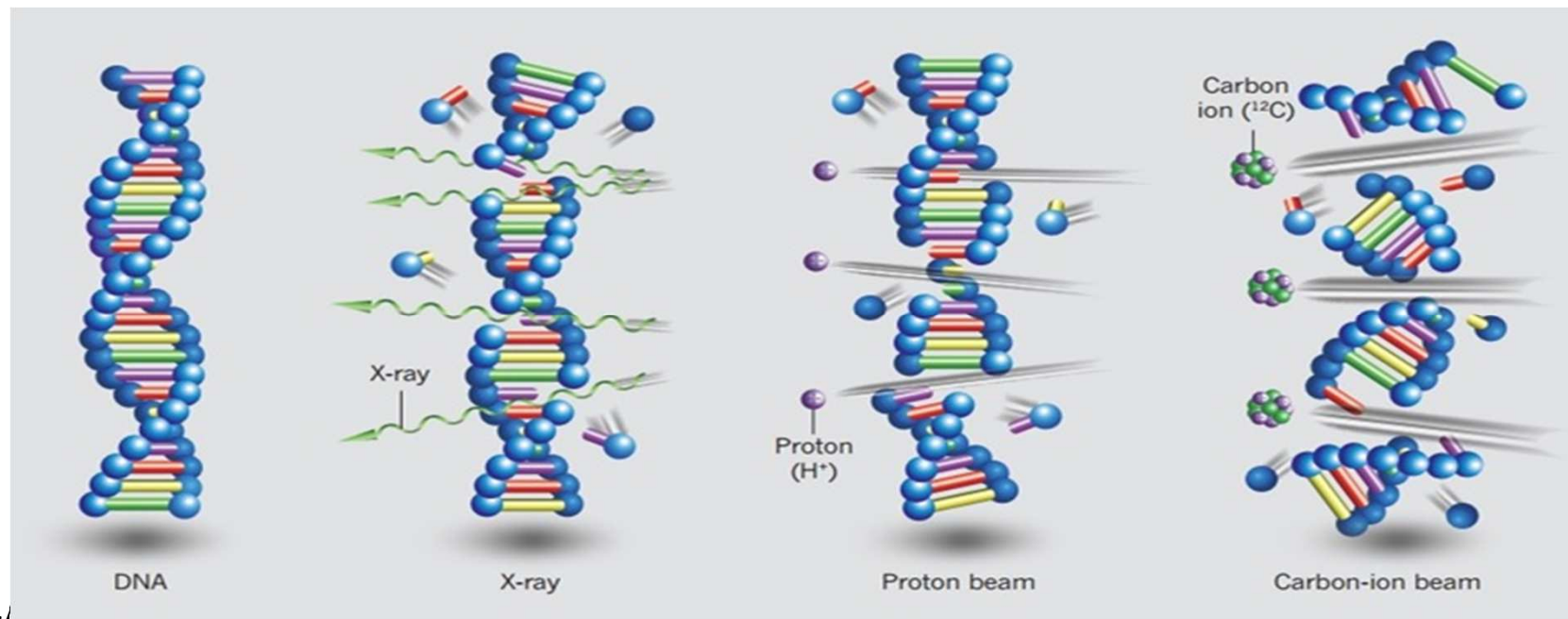
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$$\text{RBE}_{\text{iso}} = \frac{D_{\text{ref}}}{D_{\text{ion}}}$$

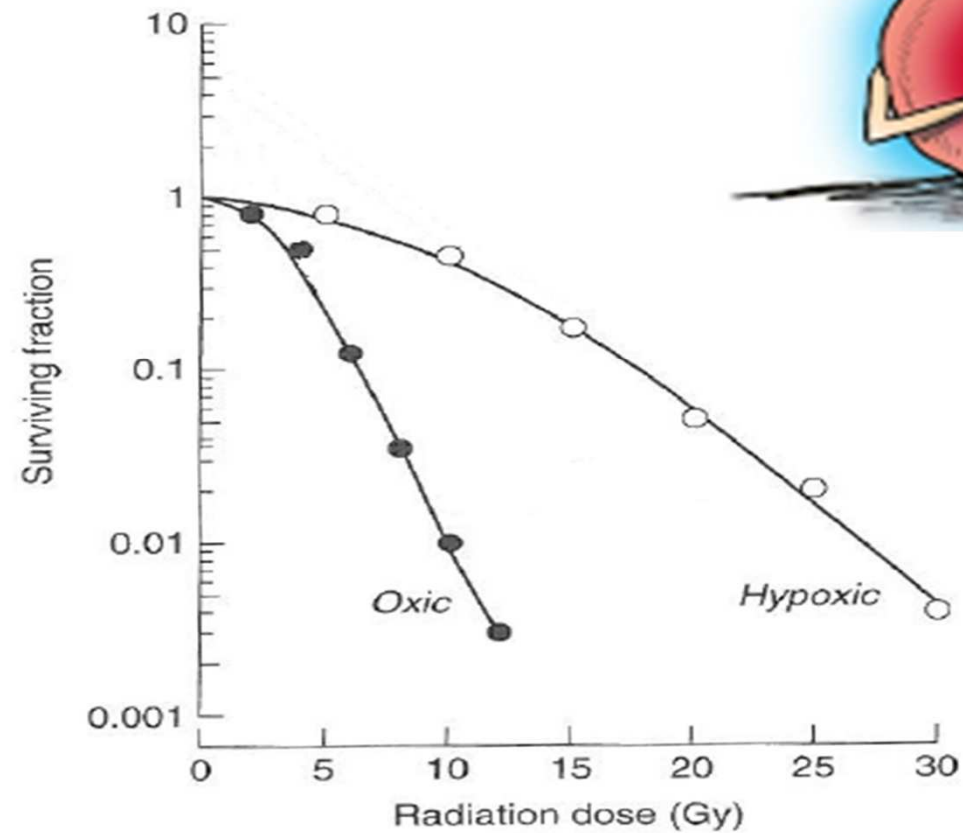


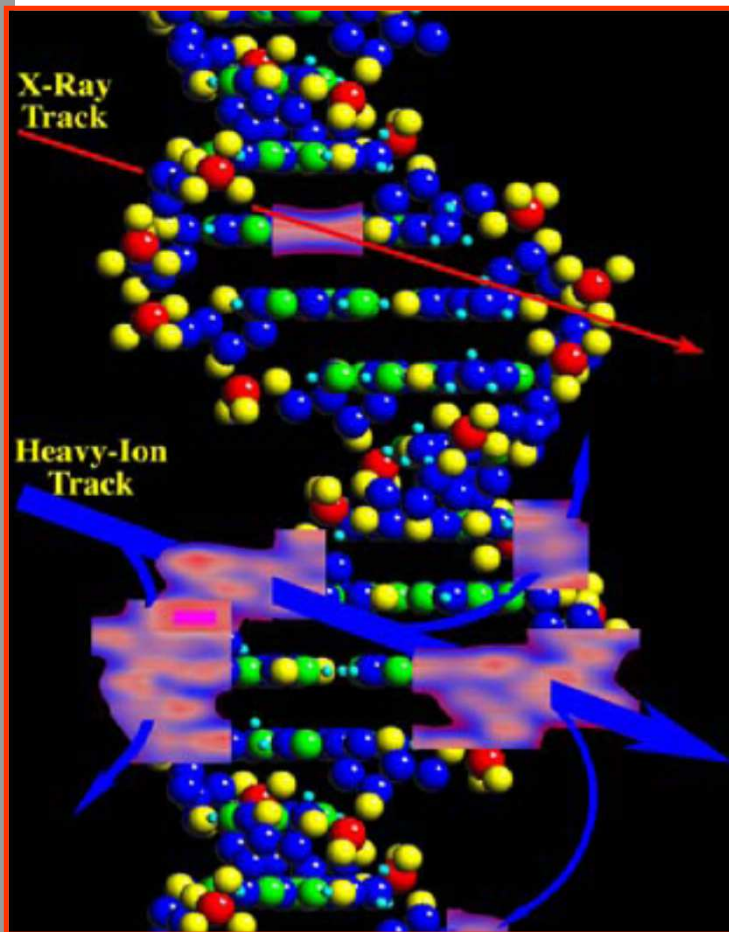


Caratteristiche radiobiologiche



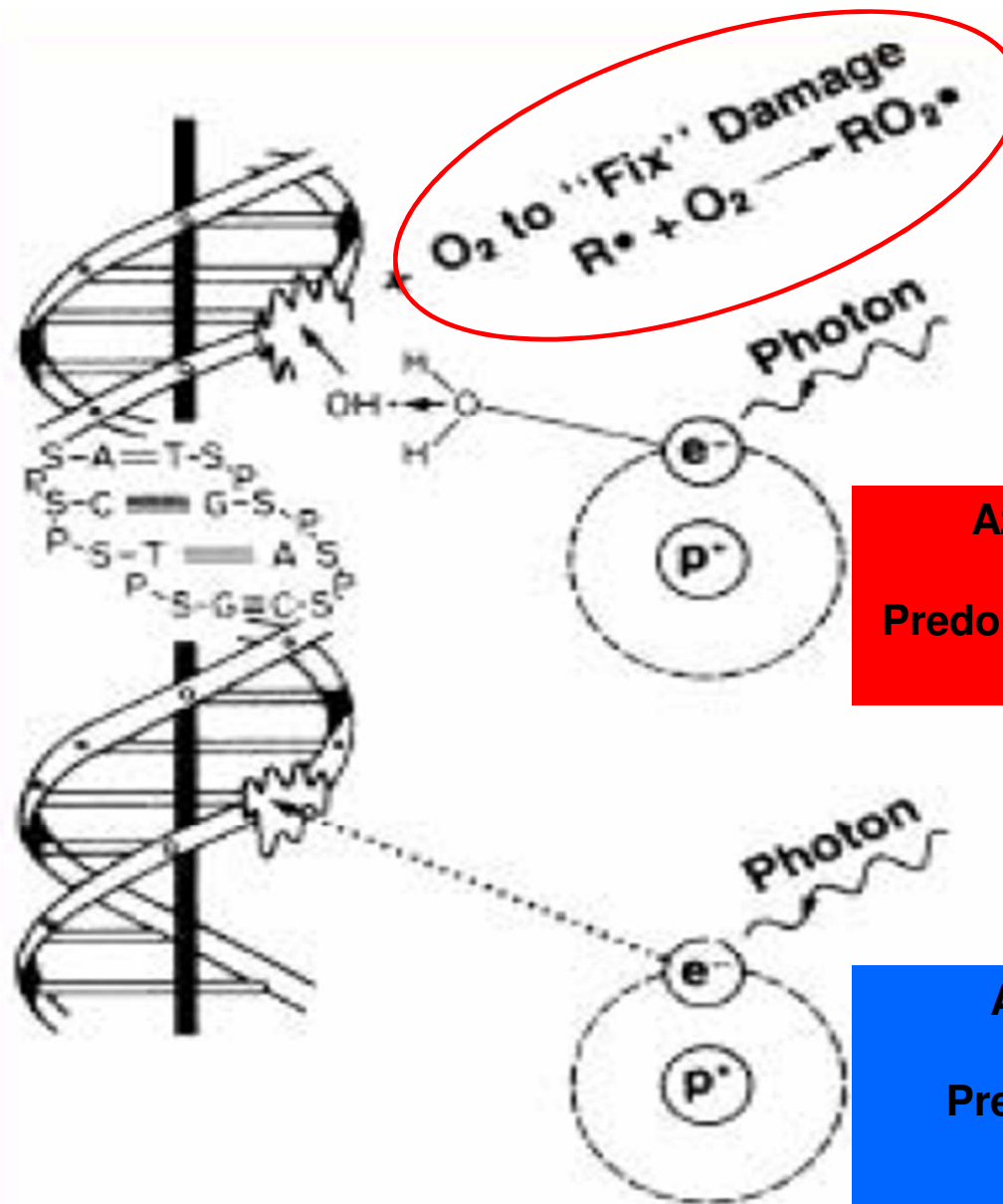
Effetto ossigeno





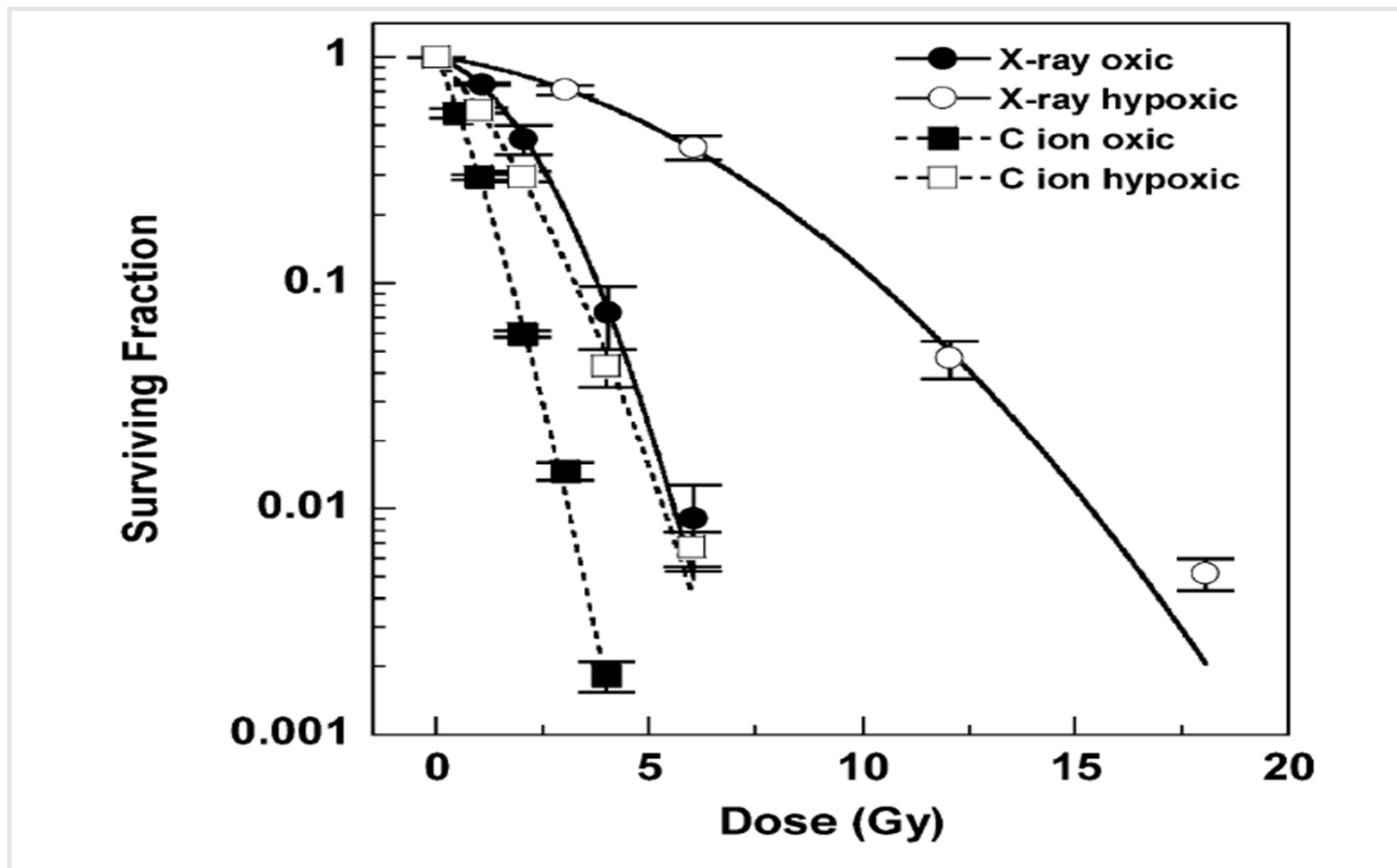
Modificato da: E. Hall, Radiobiology for the Radiologist

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Azione indiretta
Predominante con Raggi X

Azione diretta
Predominante con Radiazioni alto LET



Hirayama E et al, 2005

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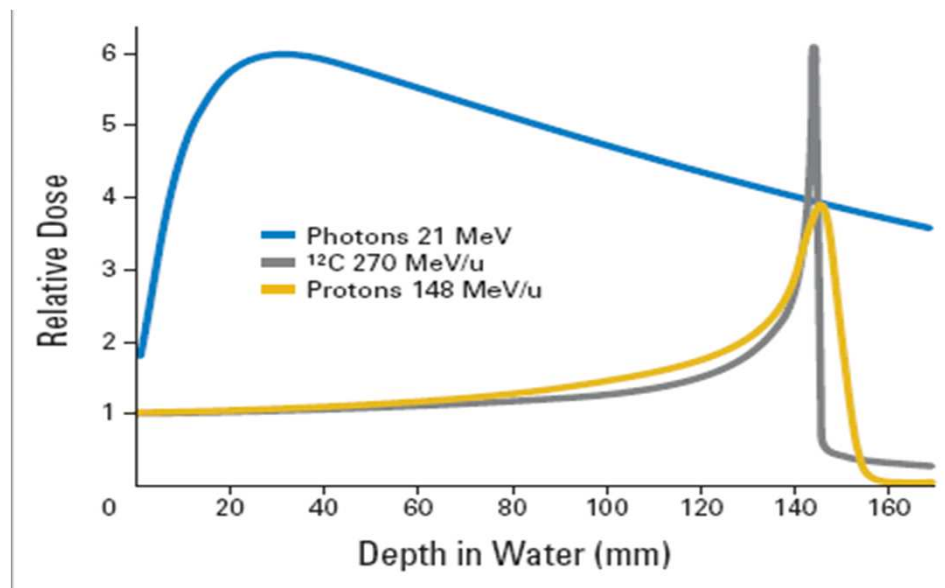
Adroterapia... per chi?

Tumori localizzati vicino ad organi a rischio

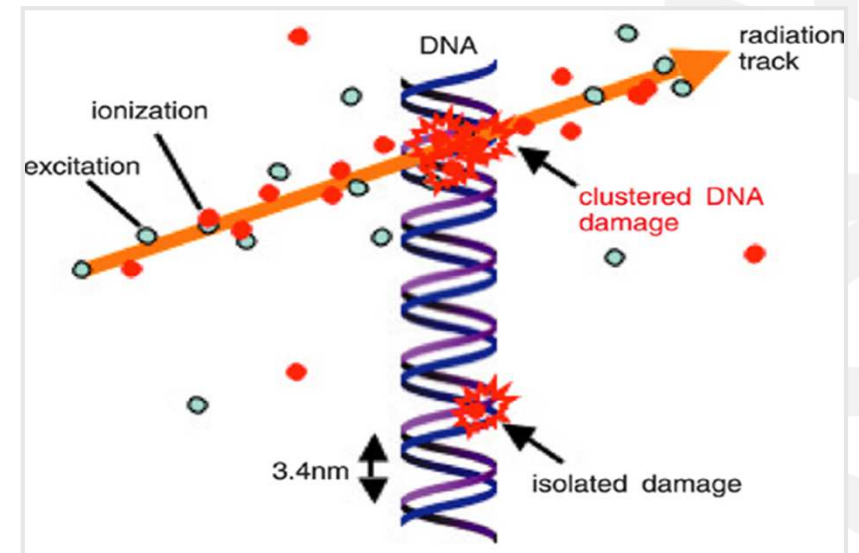
Tumori pediatrici

Tumori radioresistenti

Re-irradiazioni

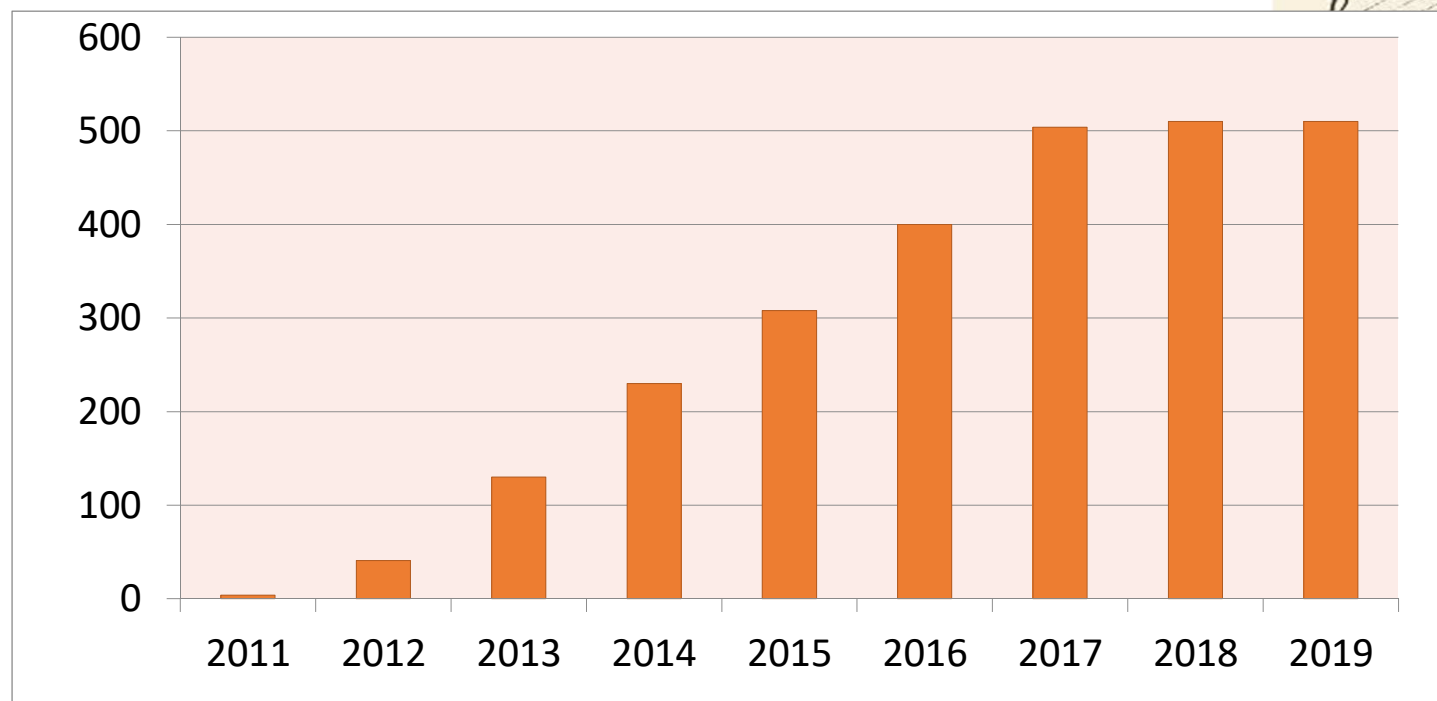


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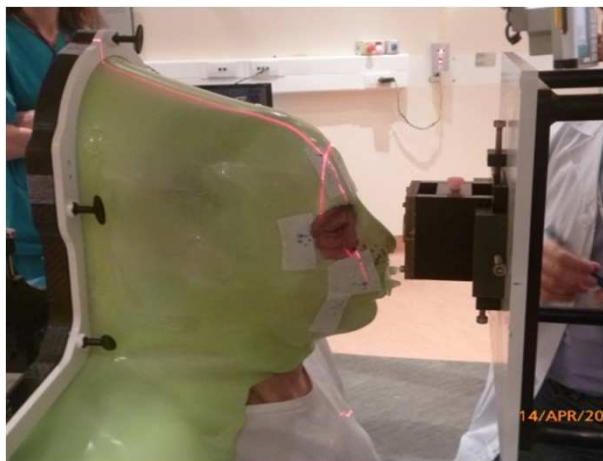
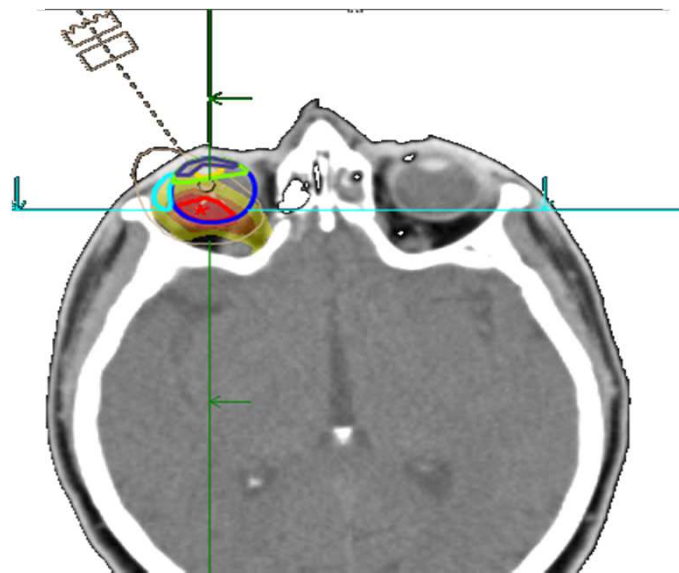
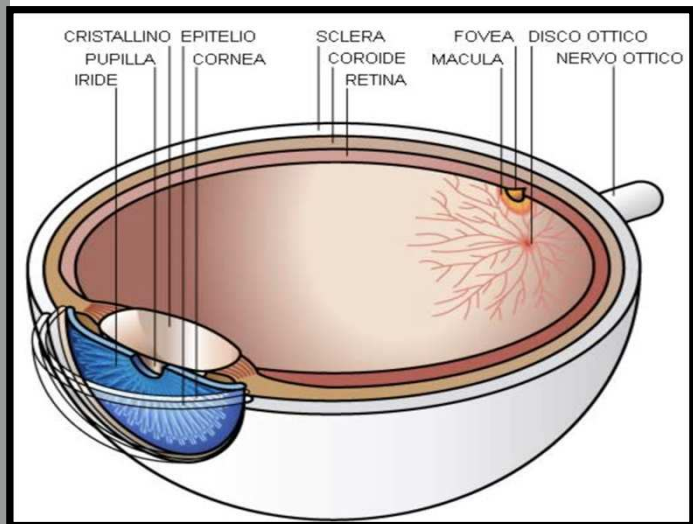
Pazienti per anno



Attività clinica:

- ✓ **Cordomi e condrosarcomi base cranica**
- ✓ **Cordomi e condrosarcomi spinali e sacrali**
- ✓ **Meningiomi intracranici**
- ✓ **Boost per tumori testa/collo in stadio avanzato**
- ✓ **Tumori delle ghiandole salivari**
- ✓ **Sarcomi dei tessuti molli e delle ossa**
- ✓ **Melanomi mucosi**
- ✓ **Adenomi pleomorfi recidivanti**
- ✓ **Re-irradiazioni di tumori testa/collo**
- ✓ **Tumori dell'orbita**
- ✓ **Tumori prostatici ad alto rischio**
- ✓ **Tumori pancreatici localmente avanzati**
- ✓ **Re-irradiazioni di recidive di tumori del retto**
- ✓ **Carcinomi pancreatici**
- ✓ **Re-irradiazioni tumori ginecologici**

Melanoma oculare

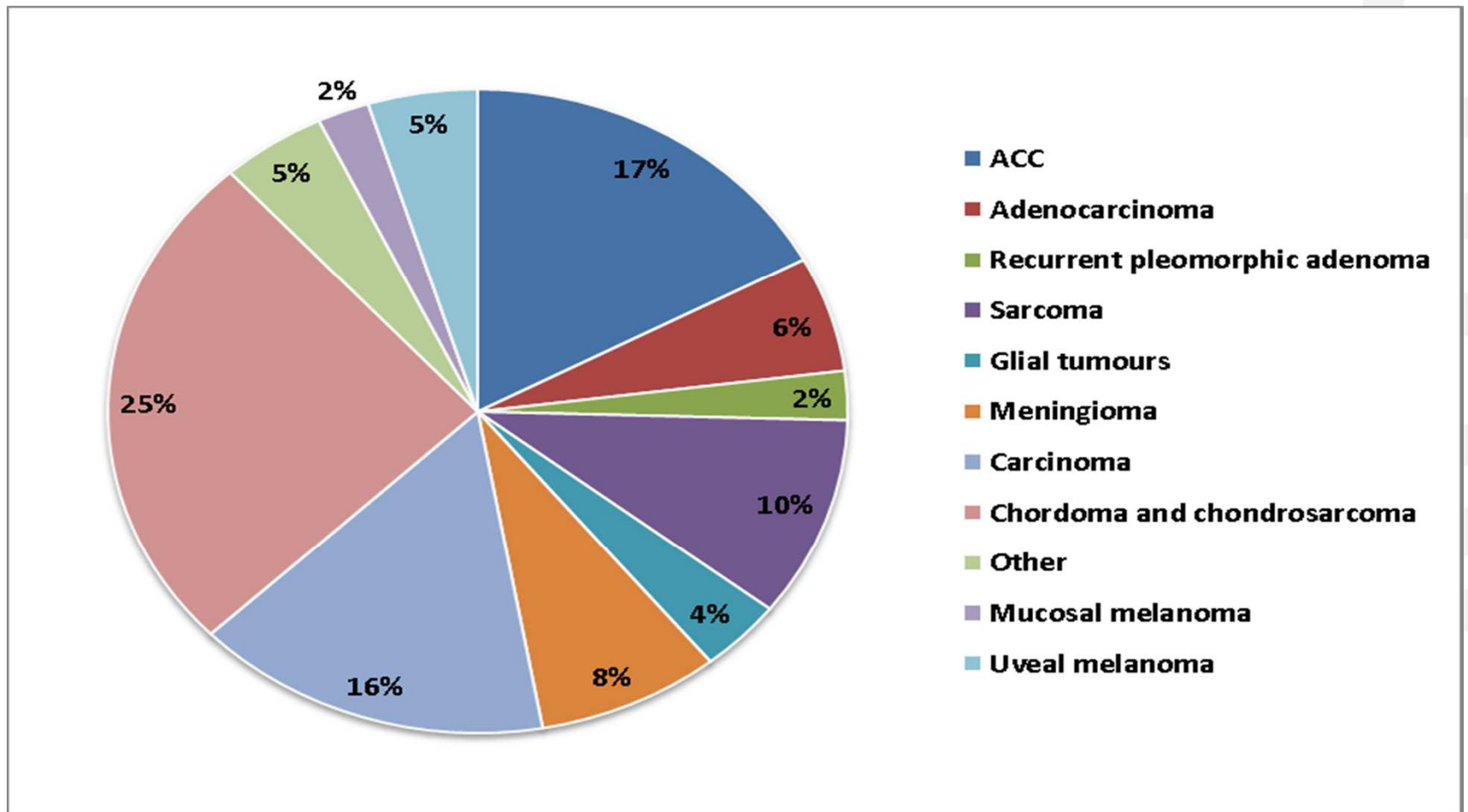


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16

CNAO Attività clinica: divisione per istologia



CNAO Attività clinica: il team

8.00 am - 9.00 pm

13 ore / 2 turni di lavoro

Staff

Radioterapisti	7
Radiologi	2
Fisici medici	6
Fisici – post Doc	2
Bioingegneri	4
Project manager	2
Amministrativi	4
Tecnici di radiologia	16
Infermieri	3

Valutazione clinica

First evaluation	3/5 giorni
Follow up	4/5 giorni

Diagnostica

TC	5/5 giorni
3T MRI	5/5 giorni
PETFDG	1/15 giorni



serviziomedico@cnao.it

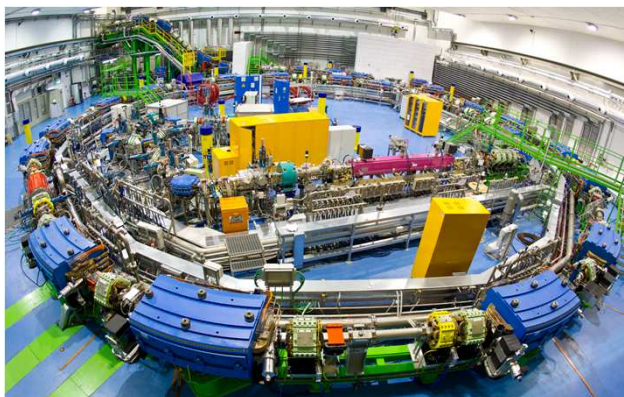


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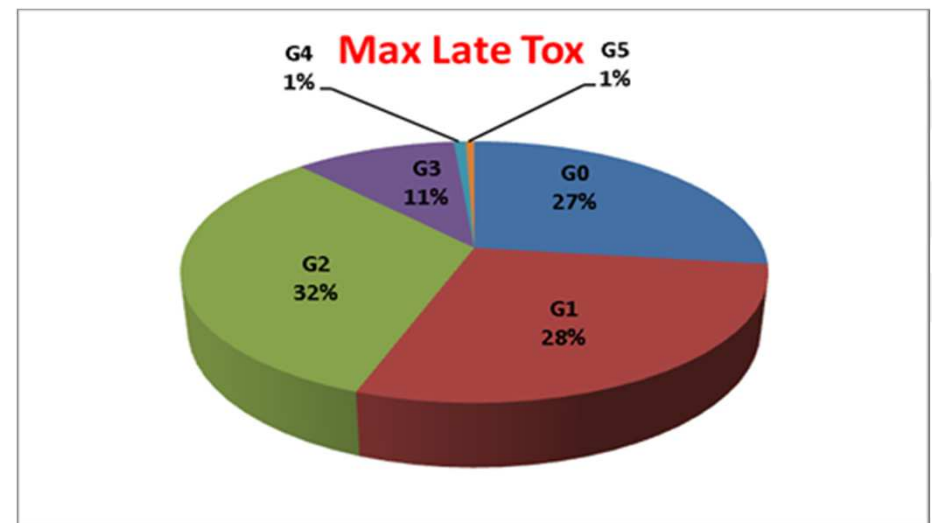
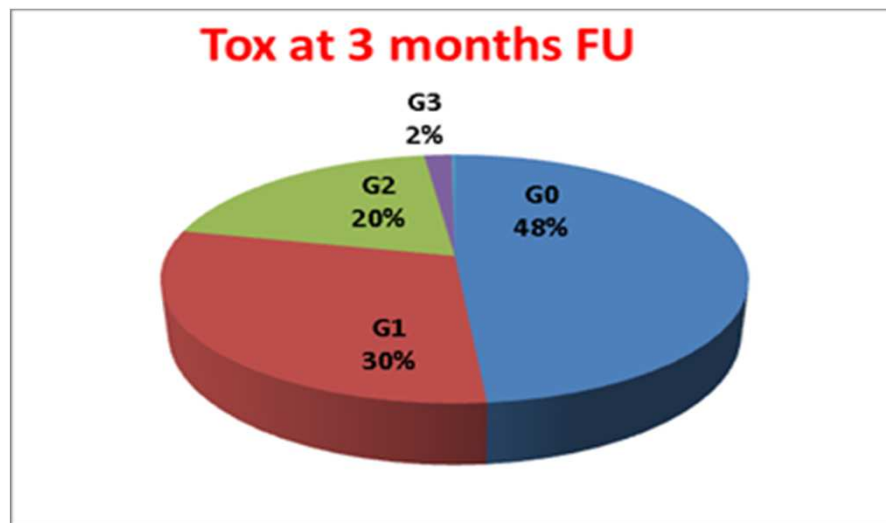
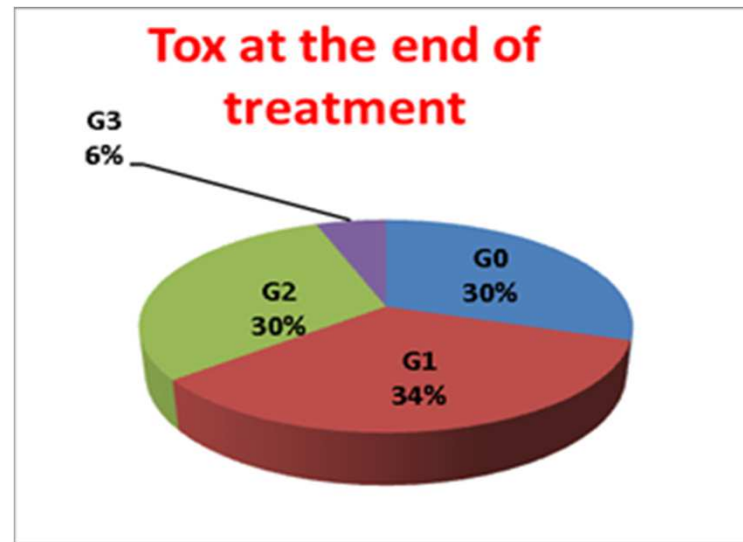
Protocolli CNAO



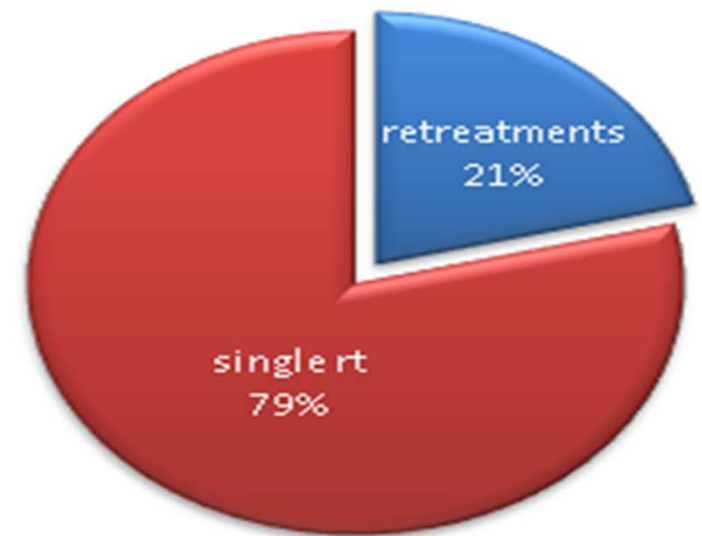
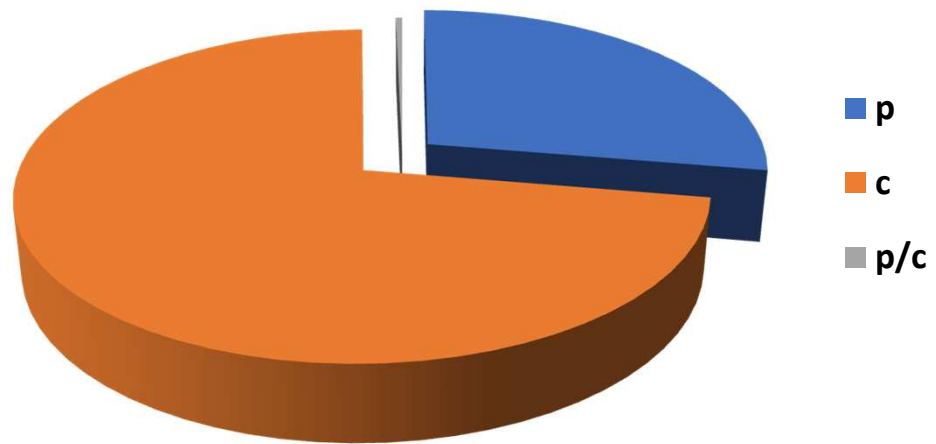
Prima Visita

“True progres is when the advantages of new technology are available for all “

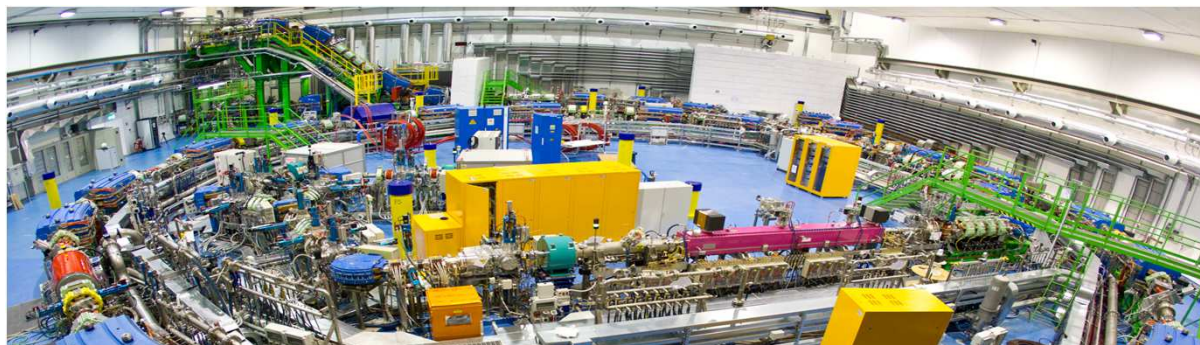
H. Ford



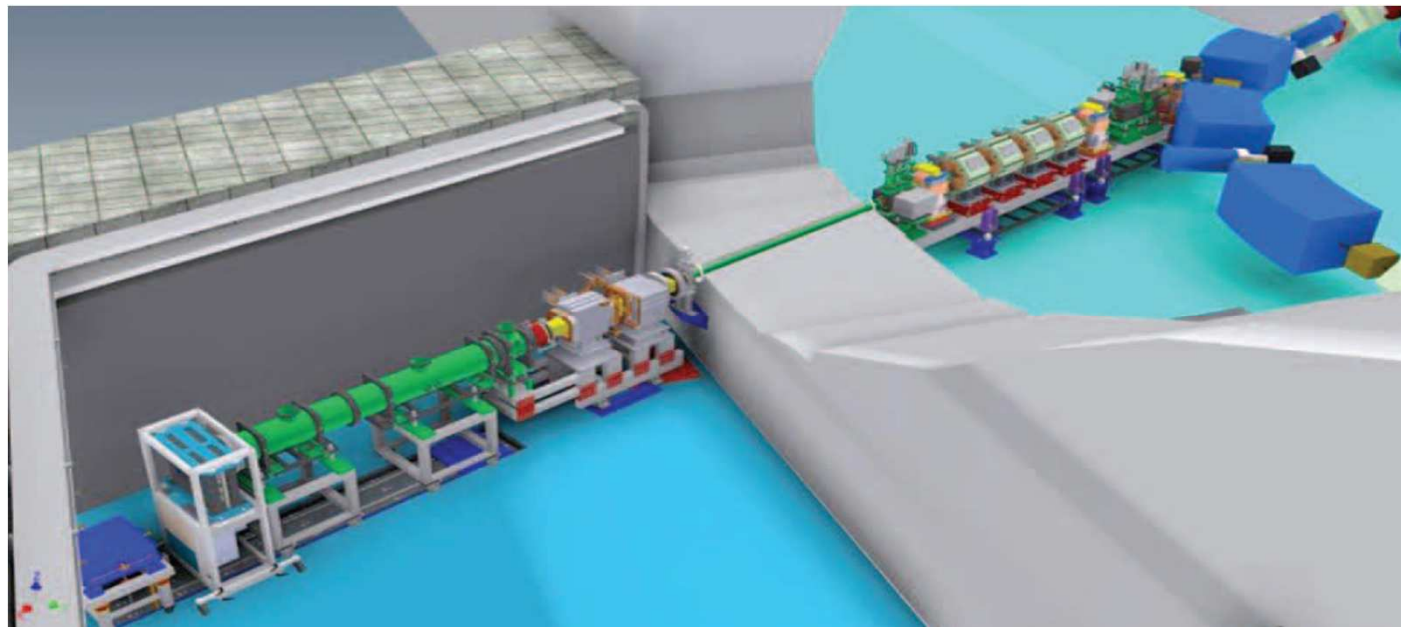
Tipologie di trattamento



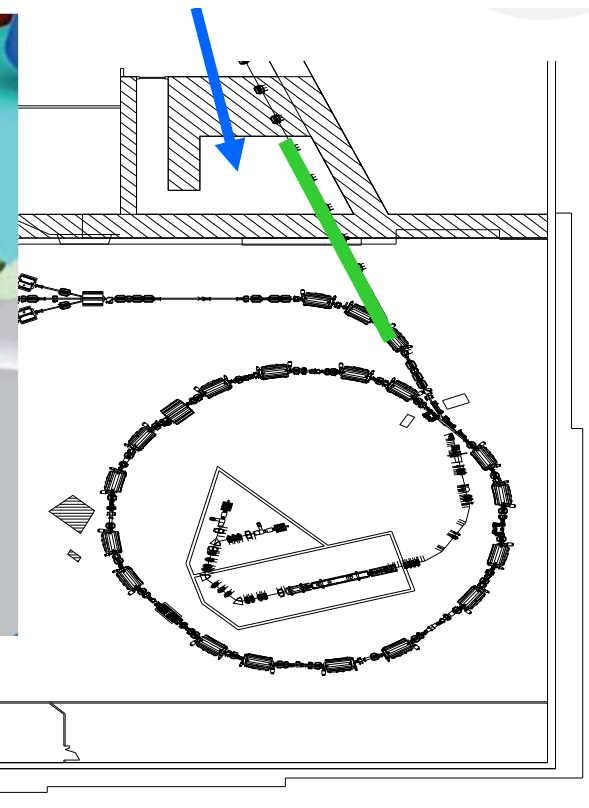
3 sale di trattamento: 52 – 55 pazienti/giorno



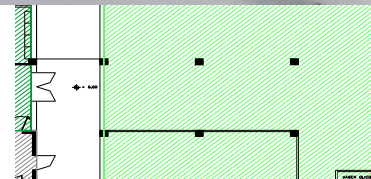
Quinta linea di estrazione dedicata alla sala sperimentale



Sala Sperimentale



In collaborazione con INFN



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ATTIVITA' RICERCA 2019		
Istituto	Ore fascio	Titolo e attività di ricerca
UNIPV	5	Meccanismi di radioresistenza di cellule vegetali e cellule tumorali
INFN-MI	16	Combining Hadron Therapy with Magnetic Hyperthermia: a New Tool for Pancreatic Cancer Treatment (INFN Experiment: HADROCOMBY
UTSW - Texas	64	Determining the response of pancreatic and head and neck cancer cell lines to carbon-12 irradiation mimicking clinical setting
INT - Milano	11	Survival and Radiation Damage Analysis of Human Skeletal Muscle Cells after Photon and Heavy Ion Irradiation: Experimental Data and Monte Carlo Simulation
ISS - INFN	2	TENORE - INFN Project
INFN-NA	16	NEPTUNE - INFN Project
INFN-TO	24	FOOT Experiment
INFN-TO	8	CMS Experiment
INFN-PI - Roma1	16	FOOT Experiment
INFN-PI	16	Spectron
INFN-PV	8	HERD Experiment
UNIROMA TORVERGATA	16	Test Lidal-Altea
INFN-TO - Roma1	16	FOOT Experiment
INFN-MI-PG	24	FOOT Experiment
24/04/2020	242	24



Grazie!

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