

Anthem

AdvaNced Technologies for Human-centEred Medicine

Atto costitutivo della Fondazione firmato il 9 novembre 2022 alle ore 12:00
Presidente Stefano Paleari

HUB: Università di Milano Bicocca

23 partners located throughout the country

8 public and 1 private universities

1 national public research centre

4 public hospitals

1 health agency

4 private research & healthcare institutes

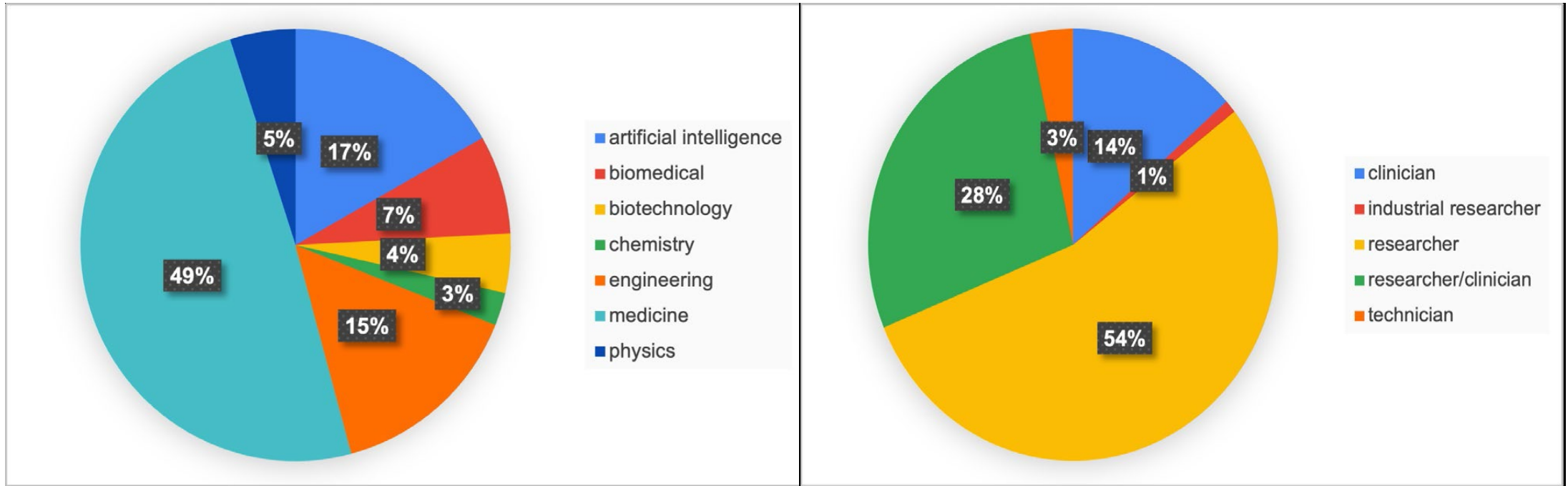
4 private companies.

Call Budget 500.000.000 €

4 Projects approved

DENOMINAZIONE AFFILIATO	TIPOLOGIA SOGGETTO
HUB	Organismo di ricerca
Università degli Studi di Bergamo	Organismo di ricerca
Università degli Studi di Milano Bicocca	Organismo di ricerca
Università degli Studi di Messina	Organismo di ricerca
Università degli Studi della Campania "Luigi Vanvitelli"	Organismo di ricerca
Azienda Socio Sanitaria Territoriale di Bergamo Est	Organismo di ricerca
Fondazione Europea Ricerca Biomedica - Ferb Onlus	Impresa
Diapath S.p.A.	Impresa
Azienda Socio Sanitaria Territoriale Papa Giovanni XXIII	Organismo di ricerca
Istituto di Ricerche Farmacologiche Mario Negri	Organismo di ricerca
Azienda Socio Sanitaria Territoriale di Monza	Organismo di ricerca
Università degli Studi di Milano Bicocca	Organismo di ricerca
Università degli Studi di Bergamo	Organismo di ricerca
Università degli Studi della Calabria	Organismo di ricerca
Azienda Socio Sanitaria Territoriale Papa Giovanni XXIII	Organismo di ricerca
Agenzia di Tutela della Salute della Città Metropolitana di Milano	Organismo di ricerca
Artemide S.p.A.	Impresa
Azienda Socio Sanitaria Territoriale di Monza	Organismo di ricerca
Fondazione Europea Ricerca Biomedica - Ferb Onlus	Impresa
Azienda Socio Sanitaria Territoriale di Bergamo Est	Organismo di ricerca
Politecnico di Milano	Organismo di ricerca
Università Humanitas	Organismo di ricerca
Università degli Studi del Salento	Organismo di ricerca
Chiesi Farmaceutici S.p.A.	Impresa
Ab Medica S.p.A.	Impresa
Università degli Studi di Catania	Organismo di ricerca
Università degli Studi della Calabria	Organismo di ricerca
Università degli Studi di Messina	Organismo di ricerca
Università degli Studi della Campania "Luigi Vanvitelli"	Organismo di ricerca
Istituto Nazionale di Fisica Nucleare	Organismo di ricerca
Azienda Ospedaliera per L'Emergenza Cannizzaro	Organismo di ricerca
Università degli Studi del Salento	Organismo di ricerca
Politecnico di Milano	Organismo di ricerca
Università Humanitas	Organismo di ricerca
Biogem S.c.a r.l.	Impresa
Istituto Oncologico Del Mediterraneo S.p.A.	Impresa

The main scope of the project is to cover the existing gap in healthcare of **frail and chronic patients** within specific target territories and high-incidence, and orphan pathology-defined communities.



Our project vision considers AI as a key element in the implementation of our activities.

The motivation of this project is **technological**, because it is necessary both to develop new systems of diagnosis, monitoring and treatment and to adapt them to the context of territorial medicine and to the areas of intervention; **scientific**, because it is necessary to understand and analyse remote-collected parameters and data to make diagnoses and treatments as efficient as in a hospital context; **educational**, as both the medical and nursing community and the citizens must change their approach to the treatment of diseases.

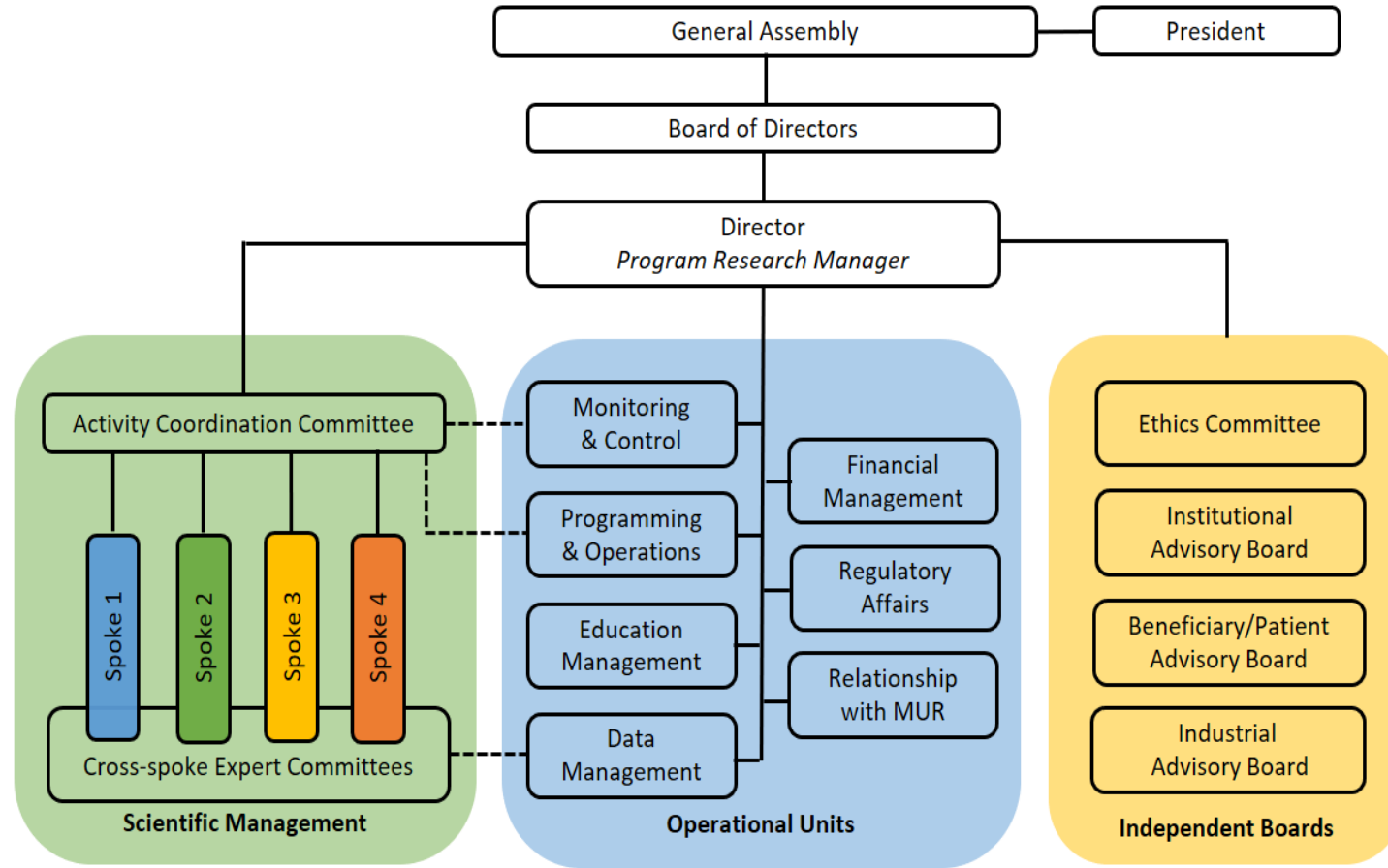
136.949.006,32 € Costi complessivi

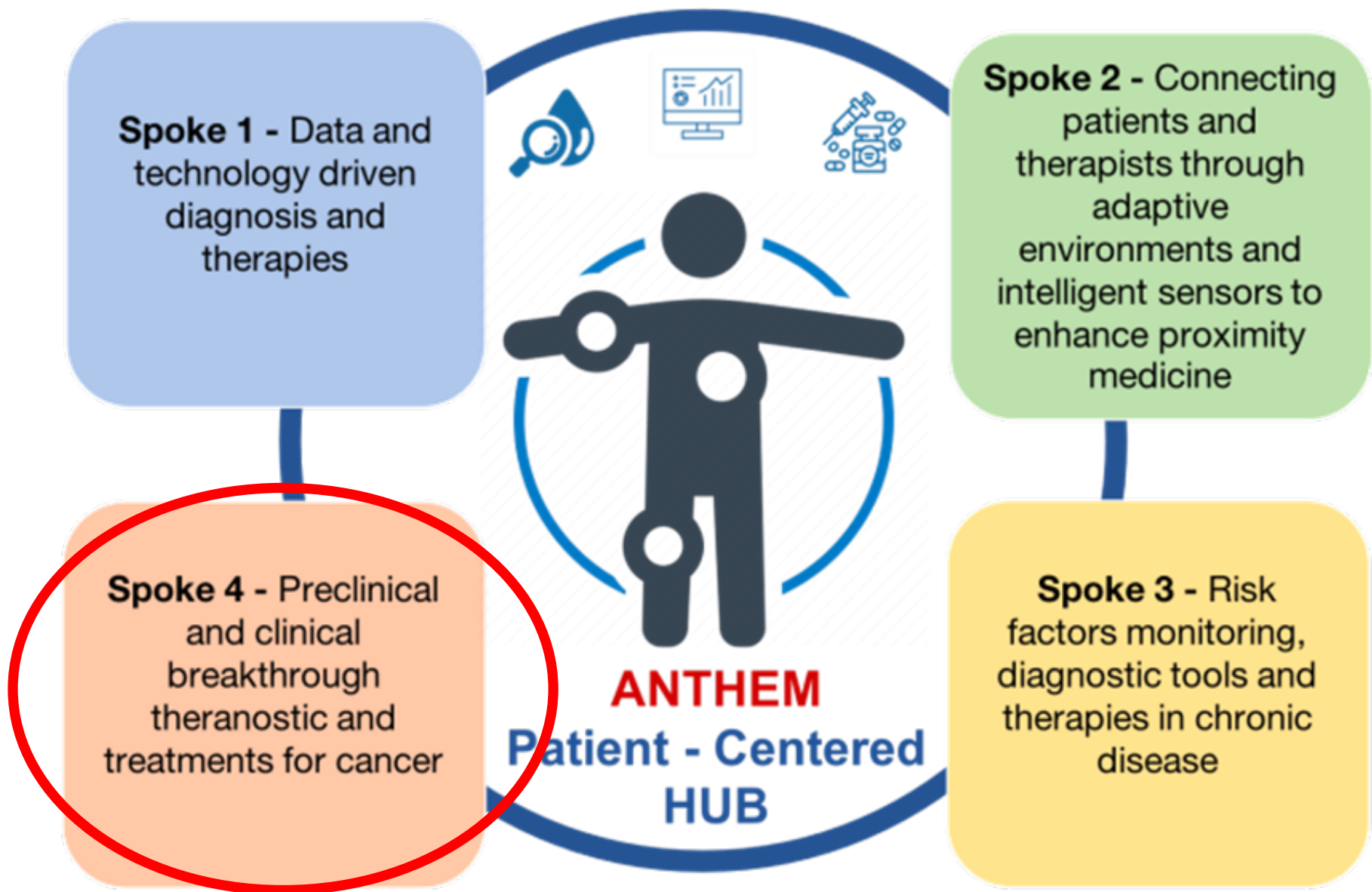
125.841.999,39 € Agevolazione attesa

123.000.000 € Agevolazione negoziata

12.500.000 € INFN

ANTHEM Foundation





Progetto Anthem

HUB Leader Mi-Bicocca

Spoke 4 Leader Uni CT

INFN Units of LNS, CT, NA, PV, LNL

Spoke 4:

Innovative radiotherapy techniques and
imaging
(Flash therapy & BNCT)

PNRR-PE30

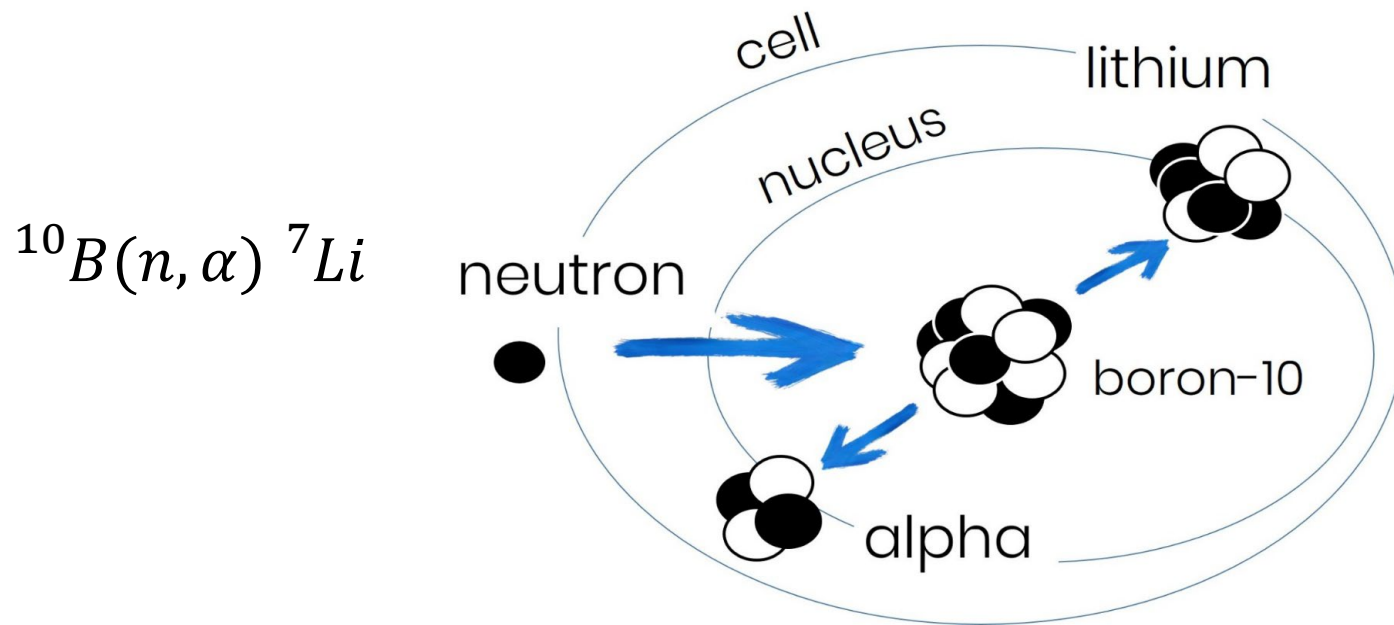
For FLASH: explore testing different types of particle beam detectors and monitoring systems, and define a dosimetric protocol for Flash regime beams of both electrons and protons

For BNCT: the accelerating system has unique performances, the best neutron beam and radiobiology studies concentrate on boron carriers and their ability to be internalised

Boron Neutron Capture Therapy

A binary form of radiotherapy

- Administration of BORON
- Irradiation with low energy NEUTRONS



Selectivity

Range of charged particles in tissue: around 10 micron.
Biological targeting, selectivity at the cell level

Effectiveness

High-LET radiation:
high biological effectiveness



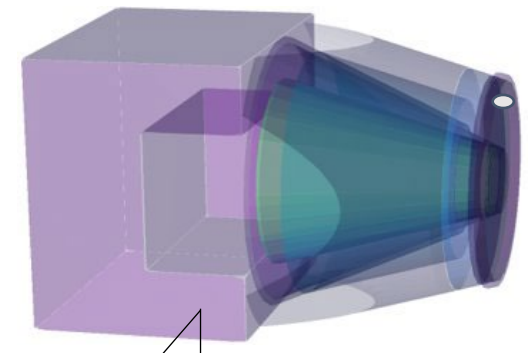
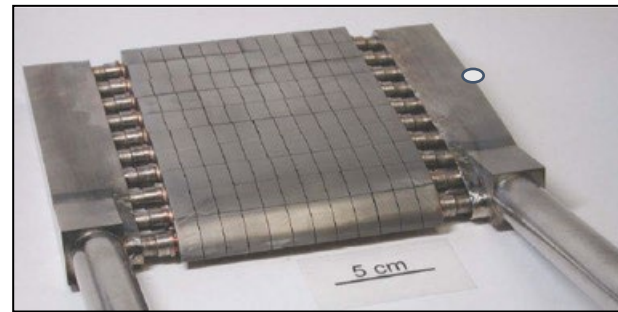
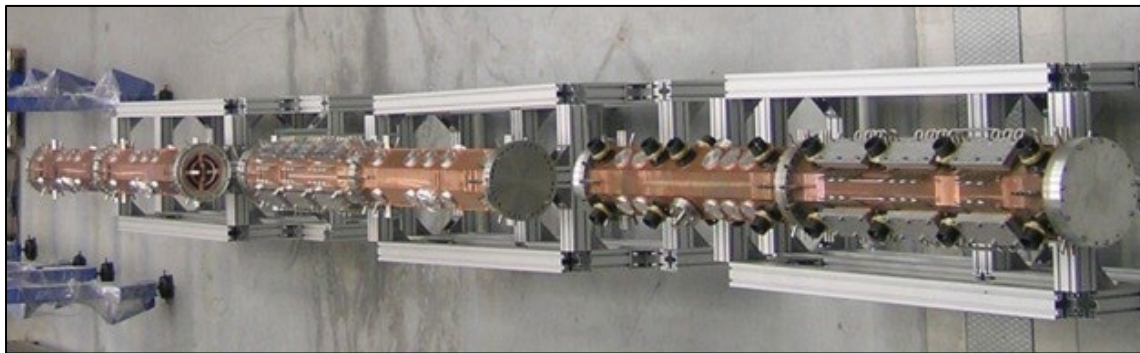
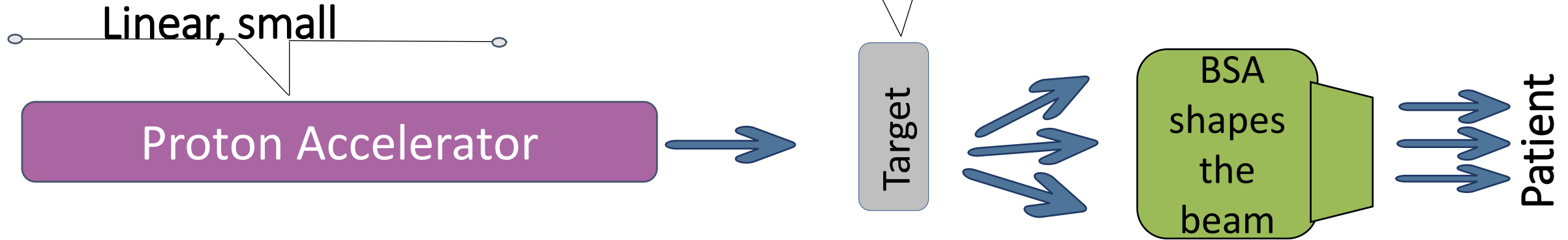
PNRR PE30 Spoke 4

- Executive project for the installation of the high technology for a clinical centre BNCT@Caserta – [INFN](#)
- Preclinical studies (radiobiology-dosimetry-treatment planning): Univ. Vanvitelli + Polyclinic with support by [INFN](#)



MUNES: Acceleratore RFQ 5 MeV, 30 mA, CW
Target di Be sottile, BSA basato su AlF3

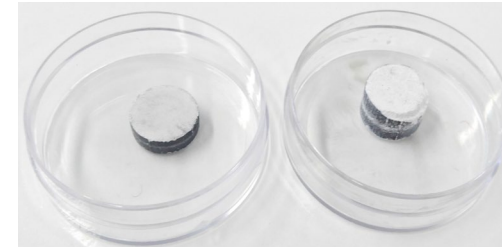
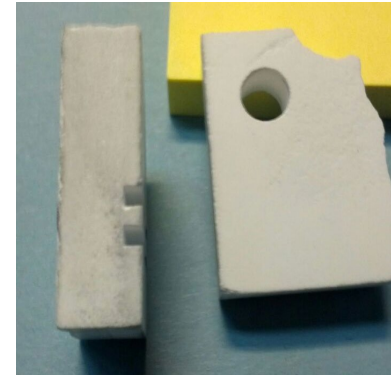
Neutron production via nuclear reaction



Changes spectrum and collimates



Densified AlF_3 and $\text{AlF}_3 + 2\% \text{LiF}$ High density ($\sim 100\%$)



Study of mechanical properties ongoing

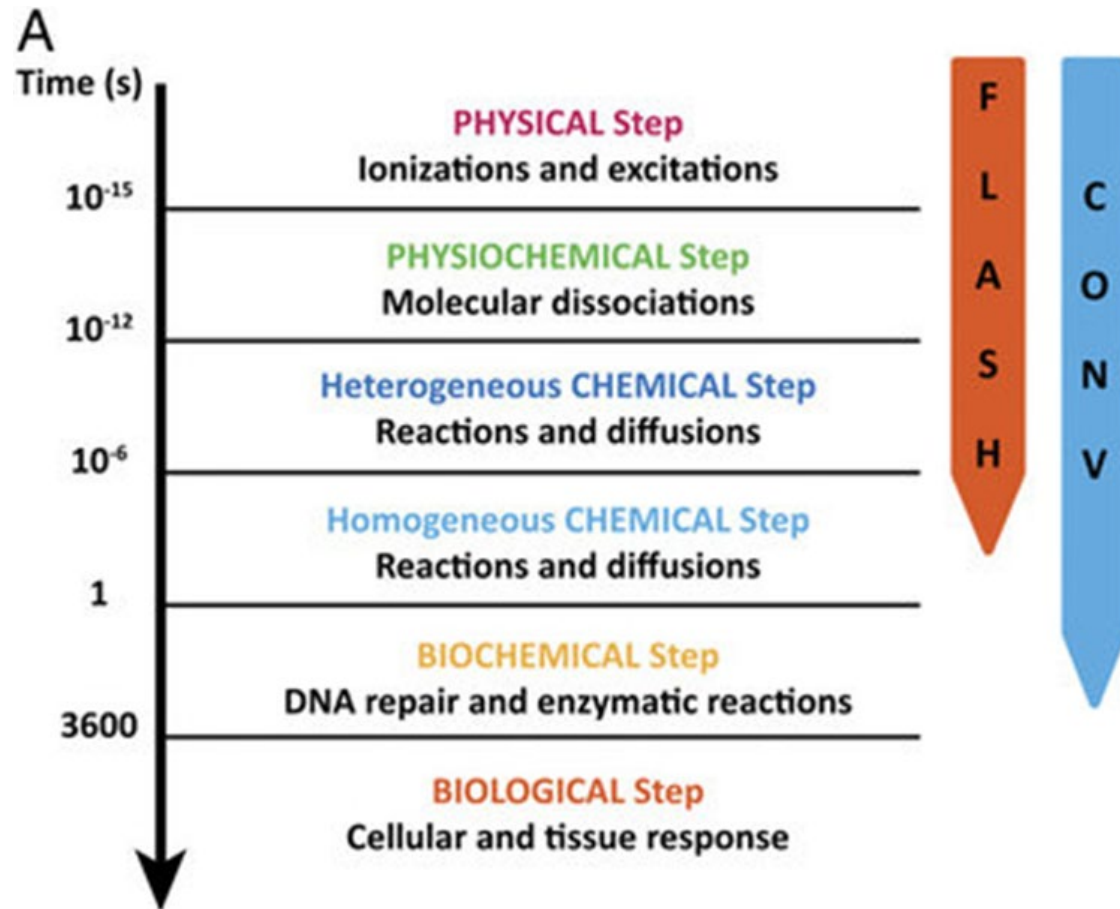
Developed within R4I INFN Initiative

1 machine almost ready for LNL for target isotopes production

1 machine «sold» to Winsconsin for same purpose

FLASH Therapy

Ultra-high dose rate (uHDR) shows promise to improve efficiency and efficacy



PNRR PE30 Spoke 4

Study of FLASH therapy effect on glioblastoma (GBM)
(UNICT, [INFN](#), CANNIZZARO, IOM, BIOGEM)

Achievement of a biological response to FLASH and ULTRA-FLASH therapies of tumour and healthy tissues by

1. 2D and 3D in vitro tumour and healthy cells response to therapy
2. in vivo tumour and healthy tissues response to therapy, in a murine GBM model
3. development of complementary therapies to improve the efficacy of treatment and quality of patient's life