



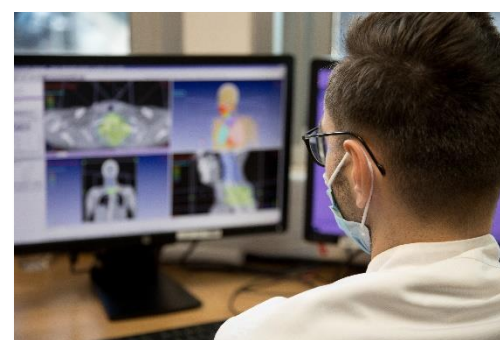
Antoine Lacassagne
CENTRE DE LUTTE CONTRE LE CANCER DE NICE



DISPOSITIF SPÉCIFIQUE
RÉGIONAL DU CANCER



Nouveautés dans le traitement des tumeurs cérébrales



Ateliers de Recherche Clinique

Accès à l'innovation en région Paca, Corse et Monaco

- Une organisation en réseaux nationaux labellisés par l'Inca

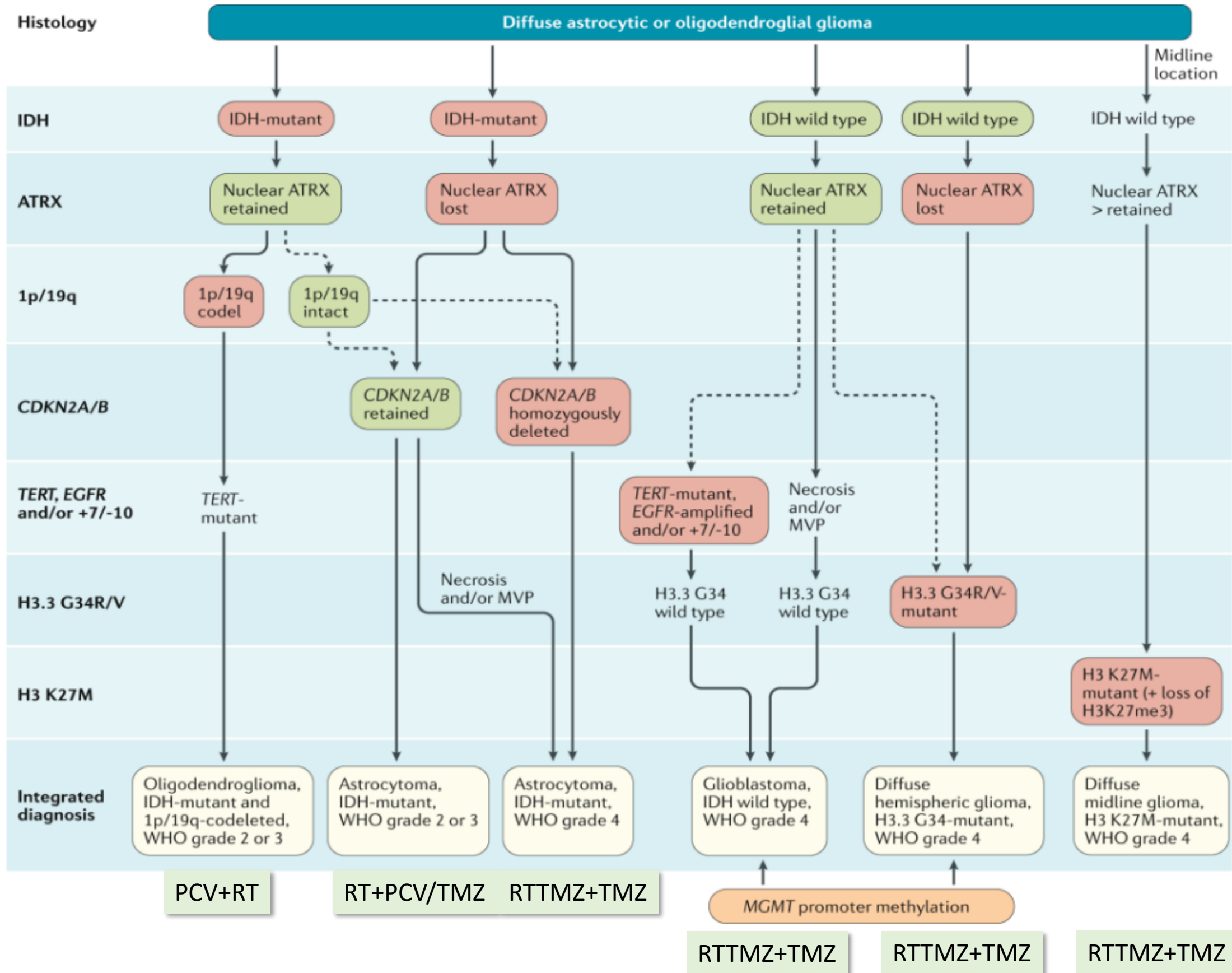
- Les Nouveautés

- Classification
- Chirurgie
- Techniques d'irradiation
 - Cyberknife
 - Protonthérapie.
- Médical
 - les essais en cours



- A Nice, la RCP de Neuro oncologie coordonnée par le CHU et le CAL

Classification moléculaire des gliomes

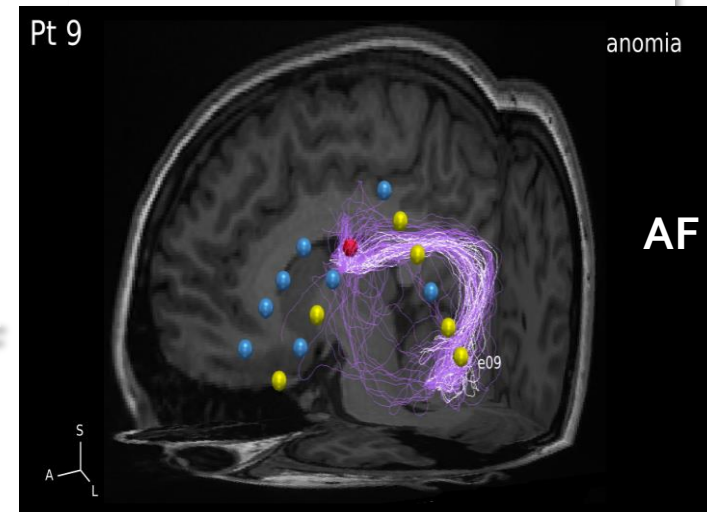
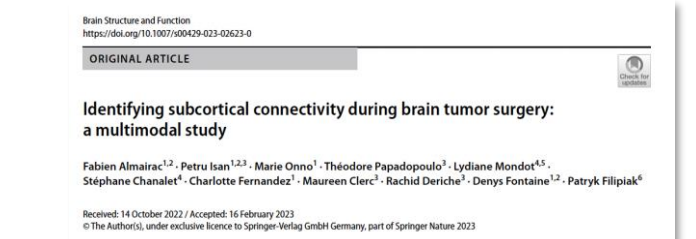
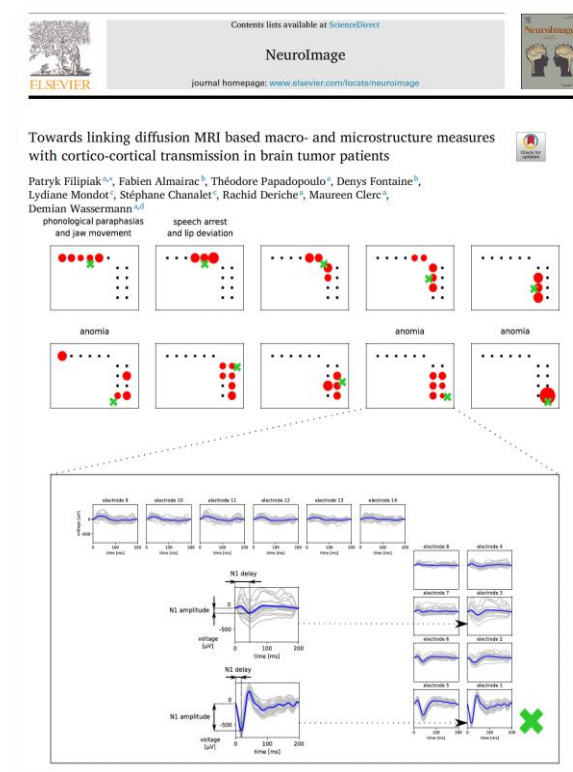
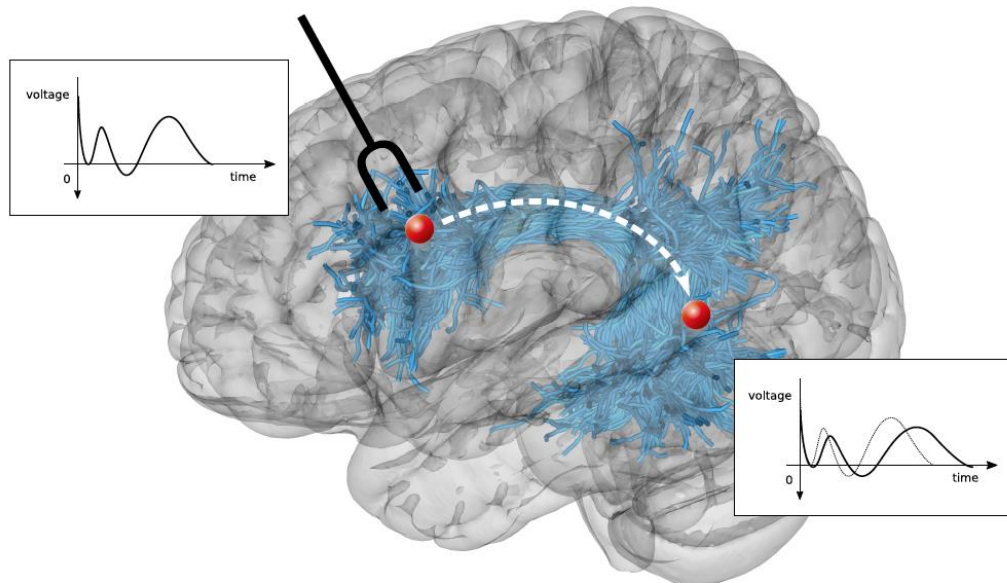




Neurochirurgie CHU de Nice: F. Almairac, D. Fontaine, P. Isan, M. Onno
 Neuroradiologie CHU de Nice: L. Mondot, S. Chanalet
 INRIA Sophia Antipolis: T. Papadopoulo, S. Deslauriers, M. Clerc

Chez les patients opérés en condition « éveillée »

1. Etude de l'association des faisceaux « fonctionnels » de SB avec:
 - connectivité structurelle (tractographie)
 - connectivité effective (ECoG)
2. Etude des mécanismes électrophysiologiques de la SED





Base de données clinico-biologique Glioblastomes FGB





French Glioblastoma Biobank

Coordonnateur : Pr Philippe MENEI – Neurochirurgien CHU d'Angers

Coordonnateurs associés :

Pr D FIGARELLA-BRANGER – Neuro-pathologiste AP-HM et coordinatrice du RENOCLIP

Dr L BAUCHET - Neurochirurgien CHU Montpellier et responsable du recensement RhnTPSNC

Pr B CHAUFFERT - Coordinateur de l'IGCNO (InterGroupe Coopérateur de Neuro-Oncologie) de l'ANOCEF

Pr K HOANG XUAN - Président de l'ANOCEF (Association des Neuro-Oncologues d'Expression Française)

French Glioblastoma Biobank

PROJET NATIONAL → 20 centres participants



Objectifs :

Collection clinico biologique de qualité de **500 GB sur 2 ans**

→ Utilisation de la base par des projets de recherche

Investigateurs CHU de Nice: Dr Almairac, Pr Burel-Vandenbos, Dr Bourg, Dr Mondot



RX par Röntgen

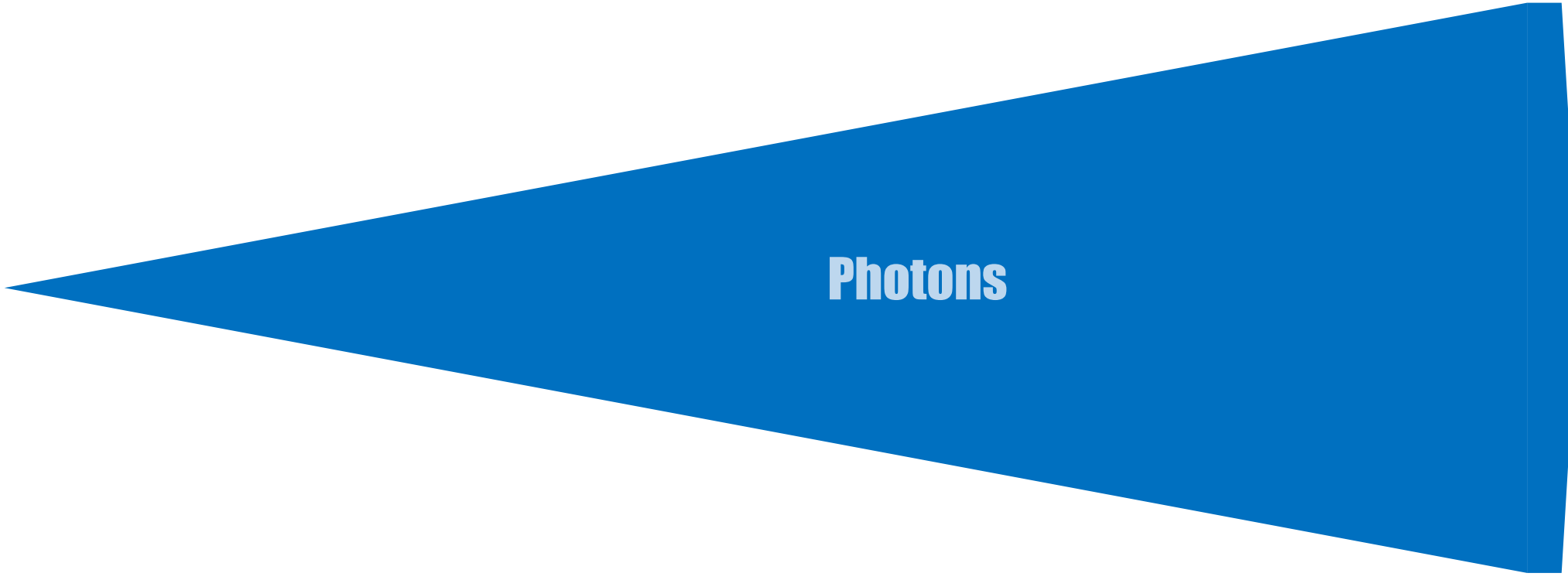
radioactivité par Becquerel

Radium par Pierre et Marie Curie

**générateurs de 200 KV
télécuriethérapie**

**accélérateurs de photons de 1 MV
télécobaltothérapie**

**Accélérateurs linéaires
Informatique**





RX par Röntgen

radioactivité par Becquerel

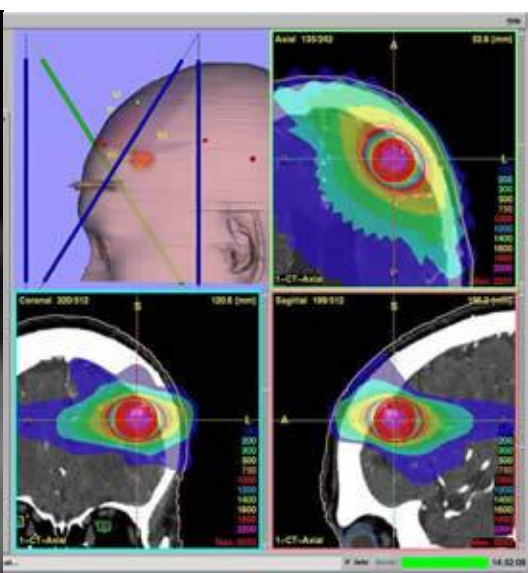
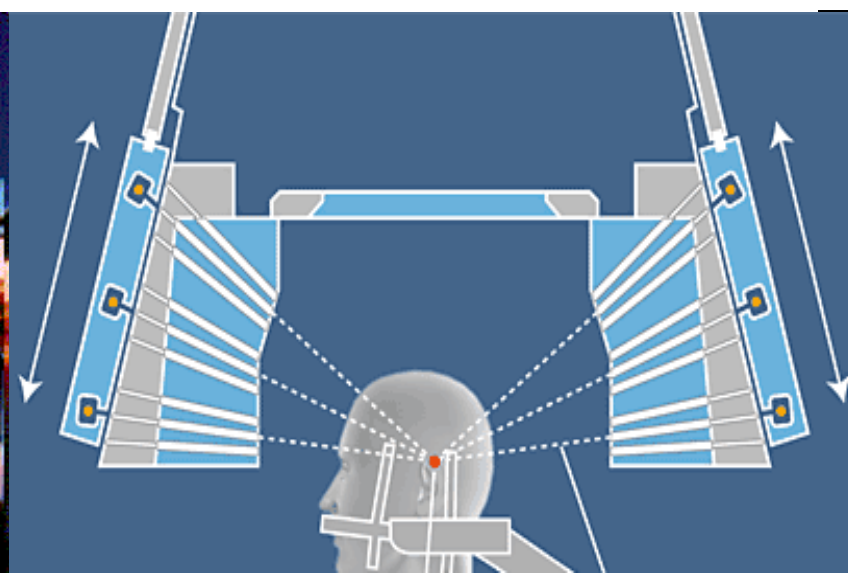
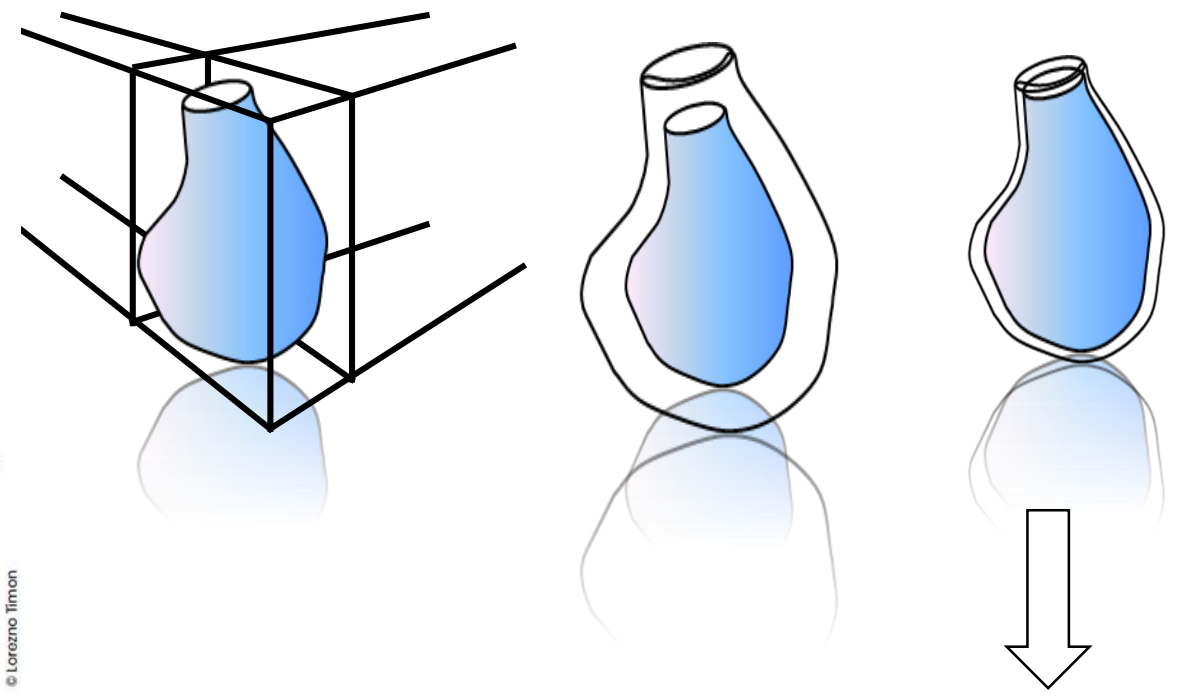
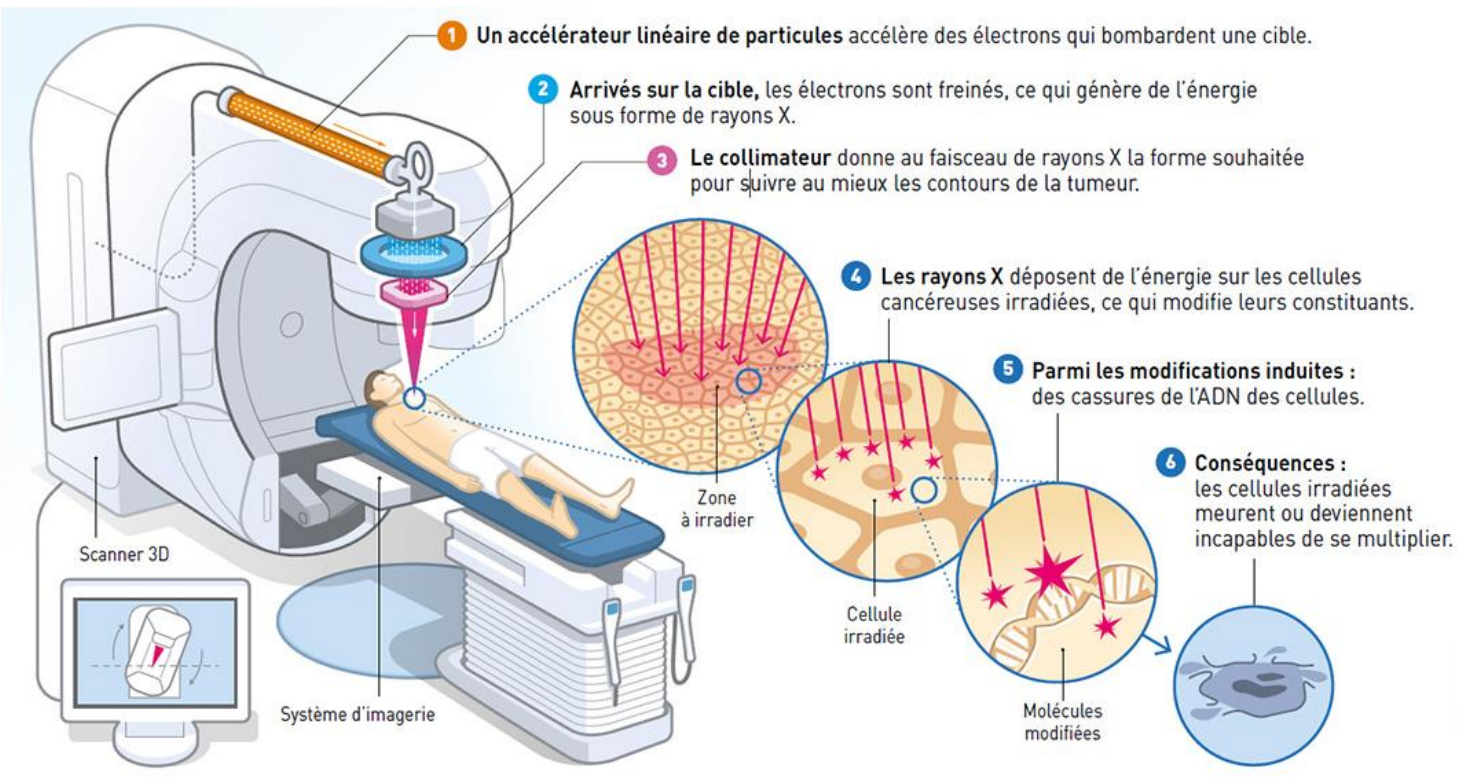
Radium par Pierre et Marie Curie

générateurs de 200 KV
télécuriethérapie

accélérateurs de photons de 1 MV
télécobaltothérapie

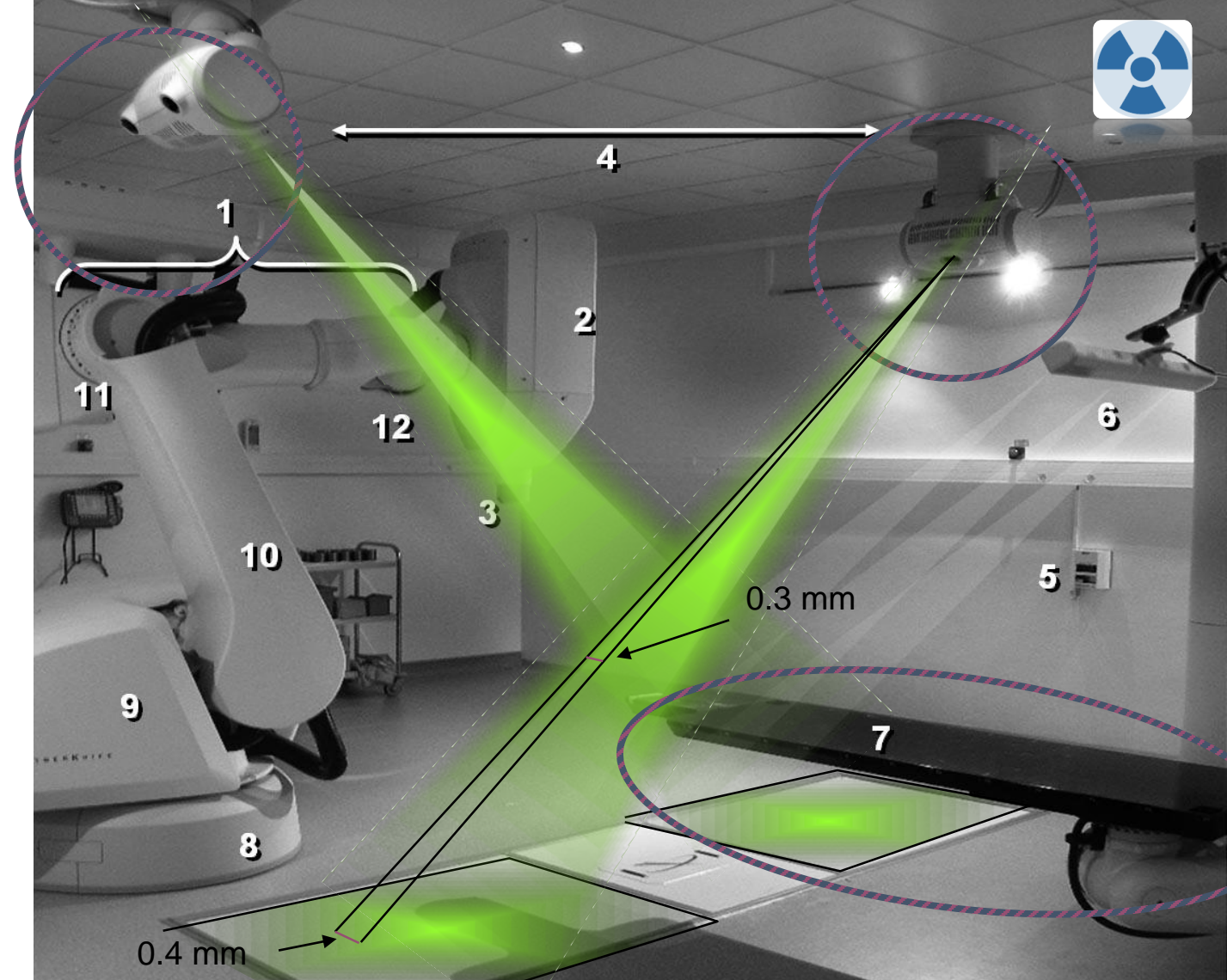
Accélérateurs linéaires
Informatique

1895 1896 1898 1918 1925 1936 1948 1952 1958 1990 2000



Patient Positioning

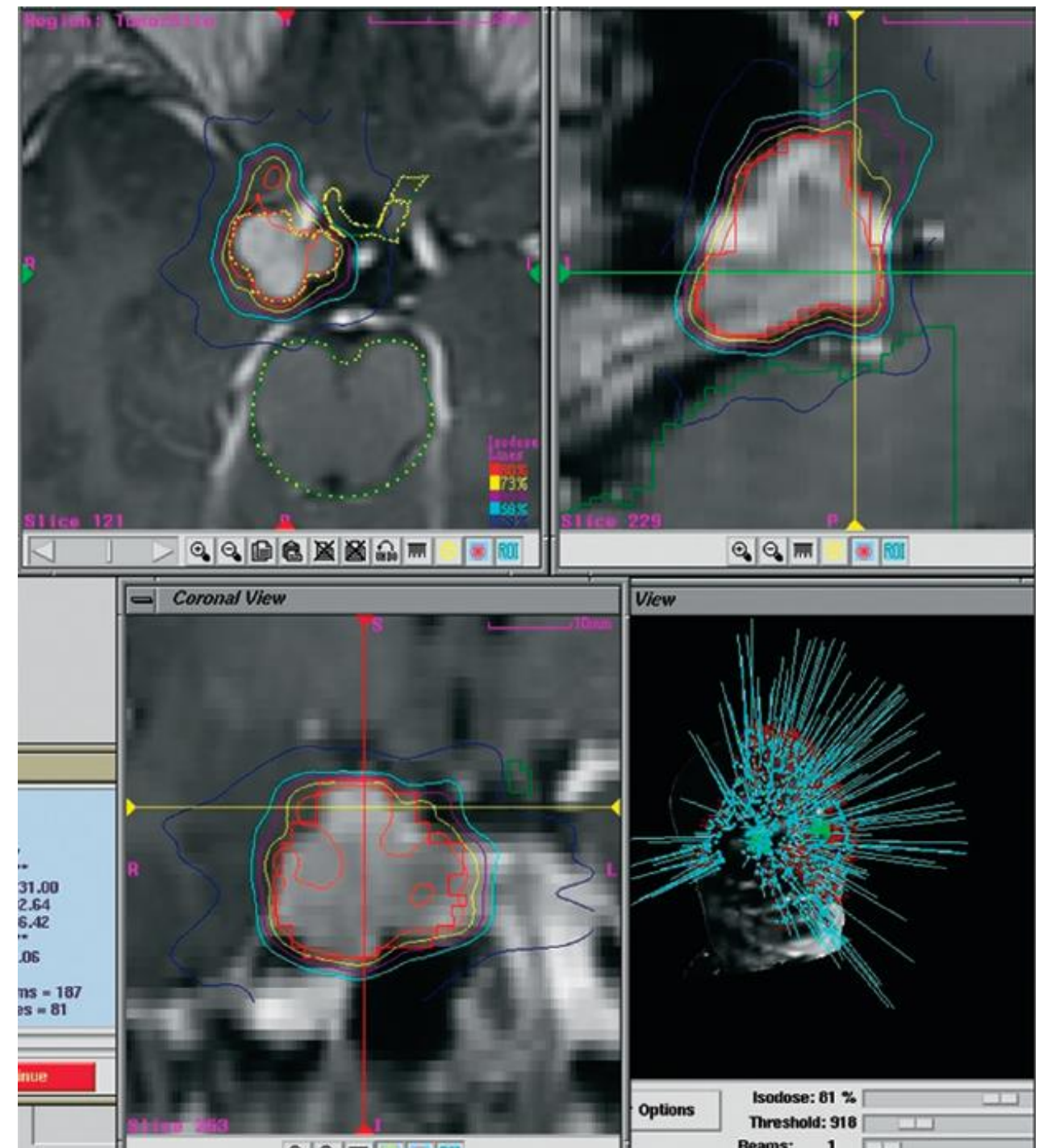
- Robotic couch
 - 3 rotations
 - 3 translations
- Numeric X Rays
 - 2 sources of X Rays with 2 flat panels at 90°
 - Automatic.
 - Discontinued
 - 41 * 41 cm 1024 *1024 pxl
 - Pxl : 0.4 mm²

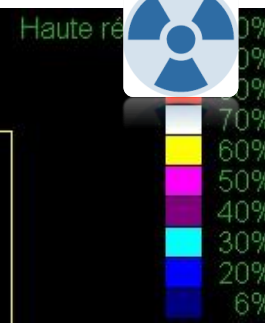




Hypophyse

- 20 patients (adult) with pituitary adenomas < 3 mm of the optic chiasm
- CyberKnife : 5*5 Gy
- Follow- up 26.6
- Vision : 16 pts =, 3 pts +
MRI :12 tumors St, 8 PR
- CONCLUSION: good tolerance of optic nerve and chiasm





- Afficher isocentres
- Afficher faisceau sur 3D

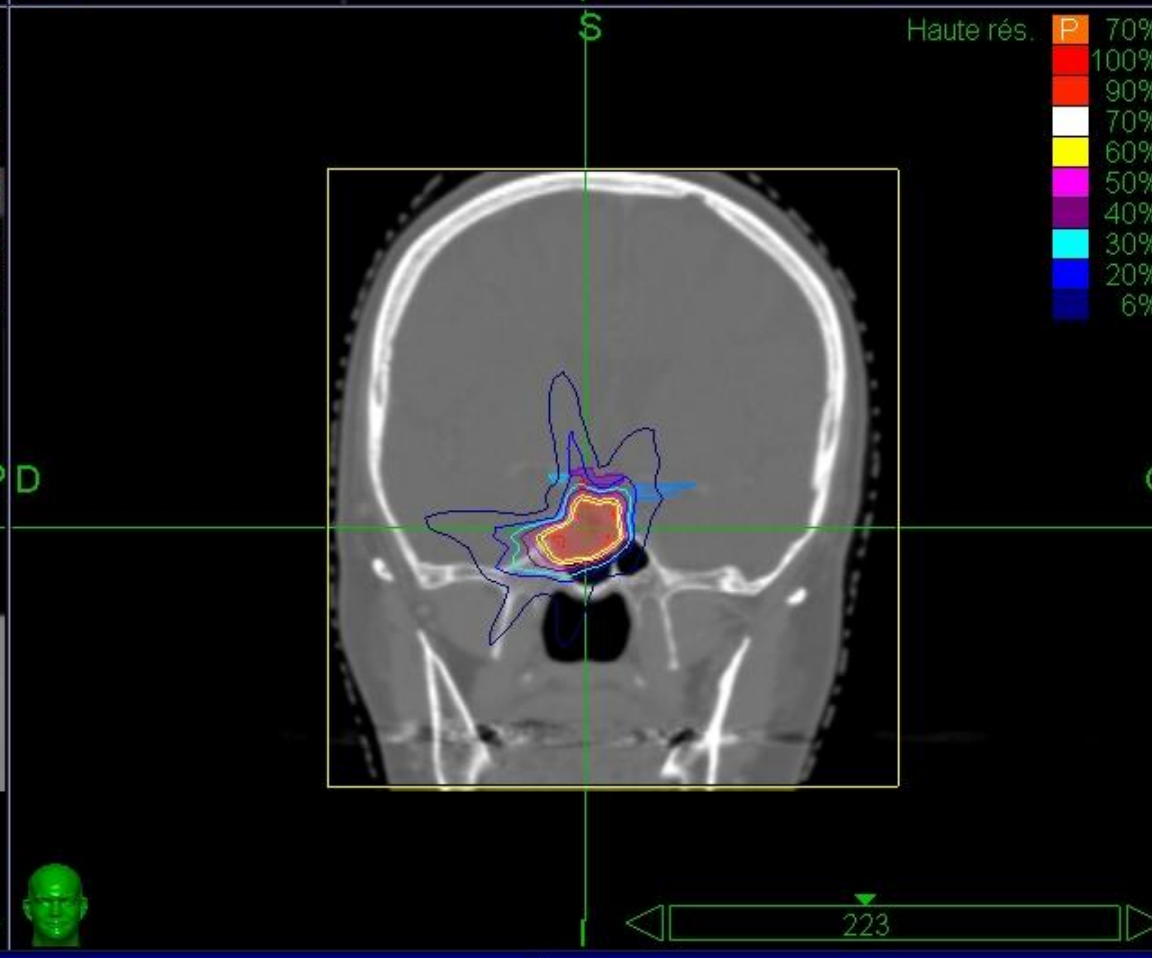
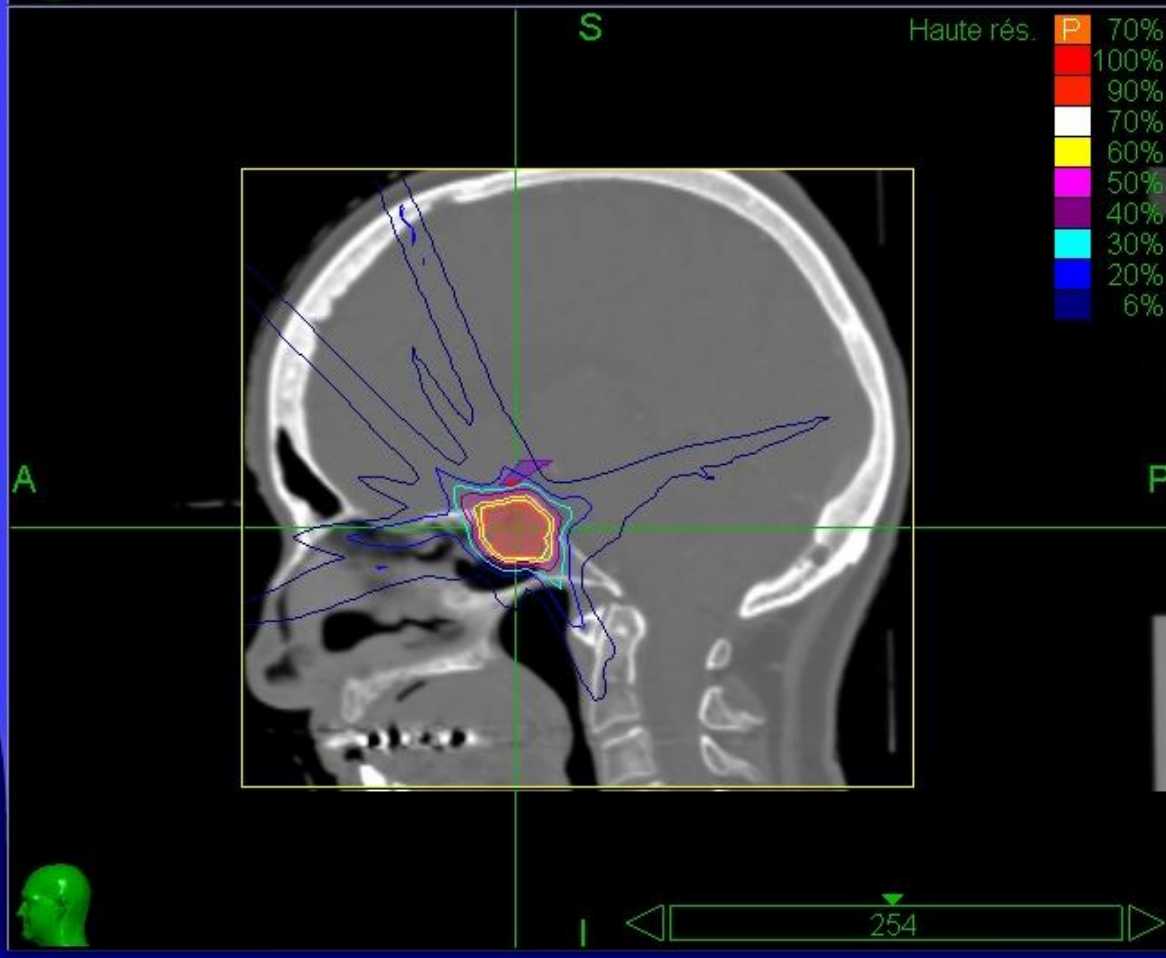
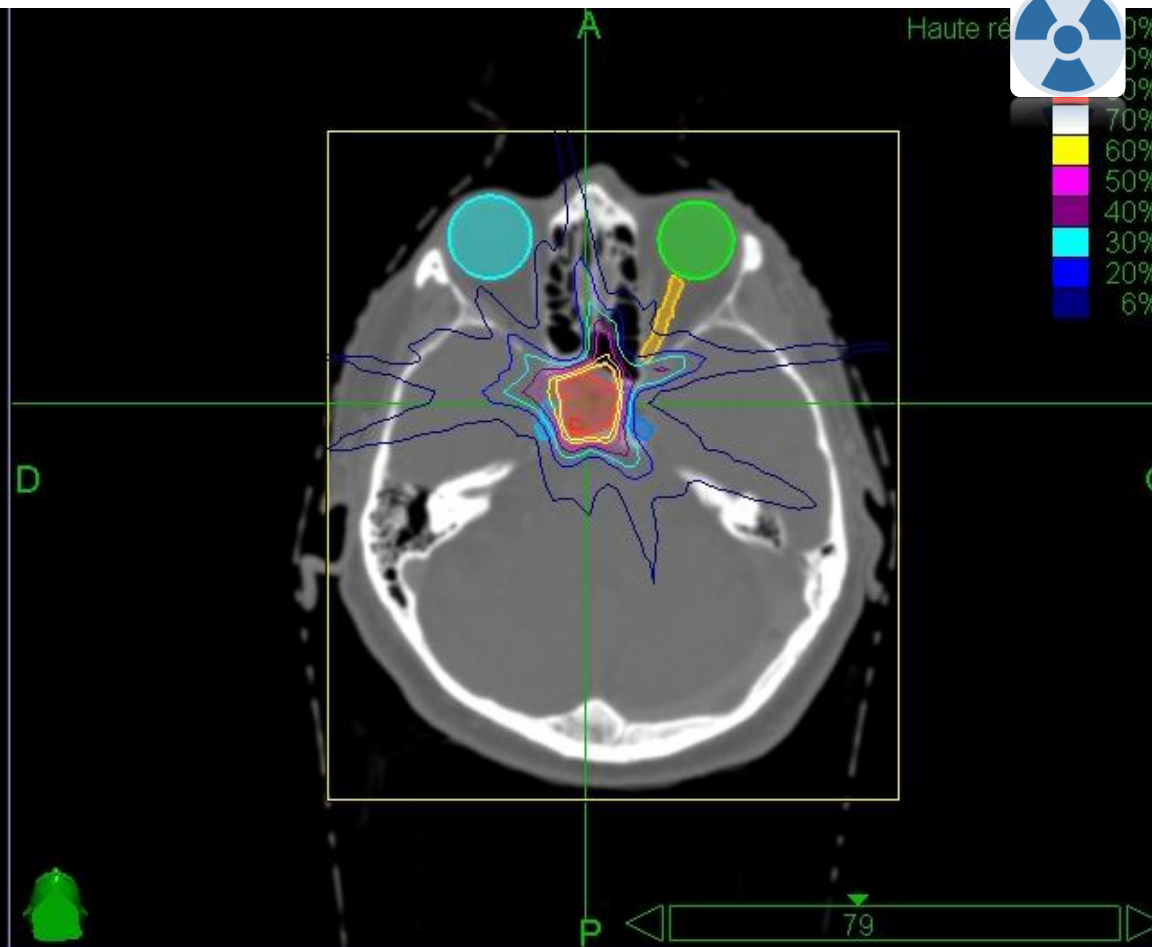
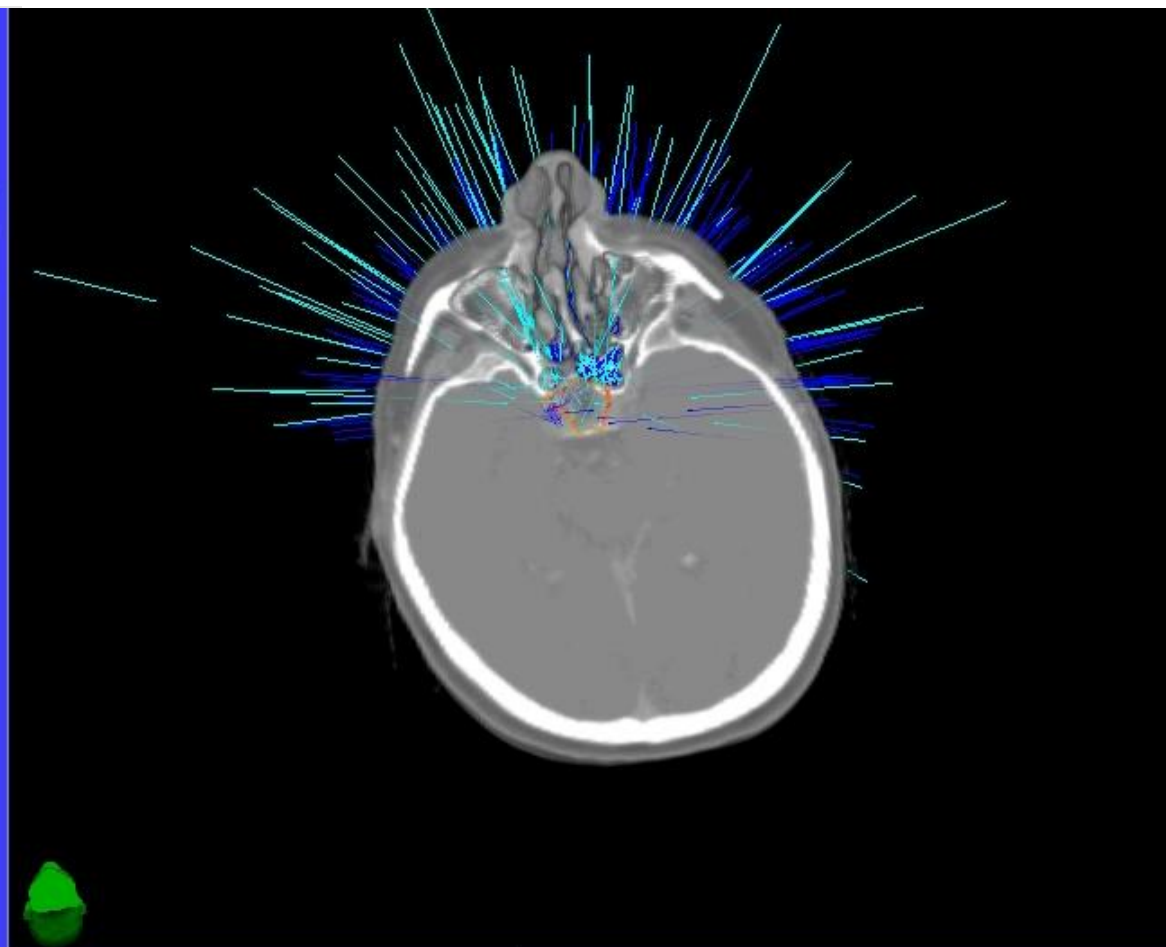
Afficher VOI 3D

Mo...	VOI
<input type="checkbox"/>	GTV
<input type="checkbox"/>	Left Eye
<input type="checkbox"/>	Right Eye
<input type="checkbox"/>	Critical 7
<input type="checkbox"/>	nod
<input type="checkbox"/>	chiasma
<input type="checkbox"/>	nog
<input type="checkbox"/>	siphon_car_d
<input type="checkbox"/>	siphon_car_g

Dispositions

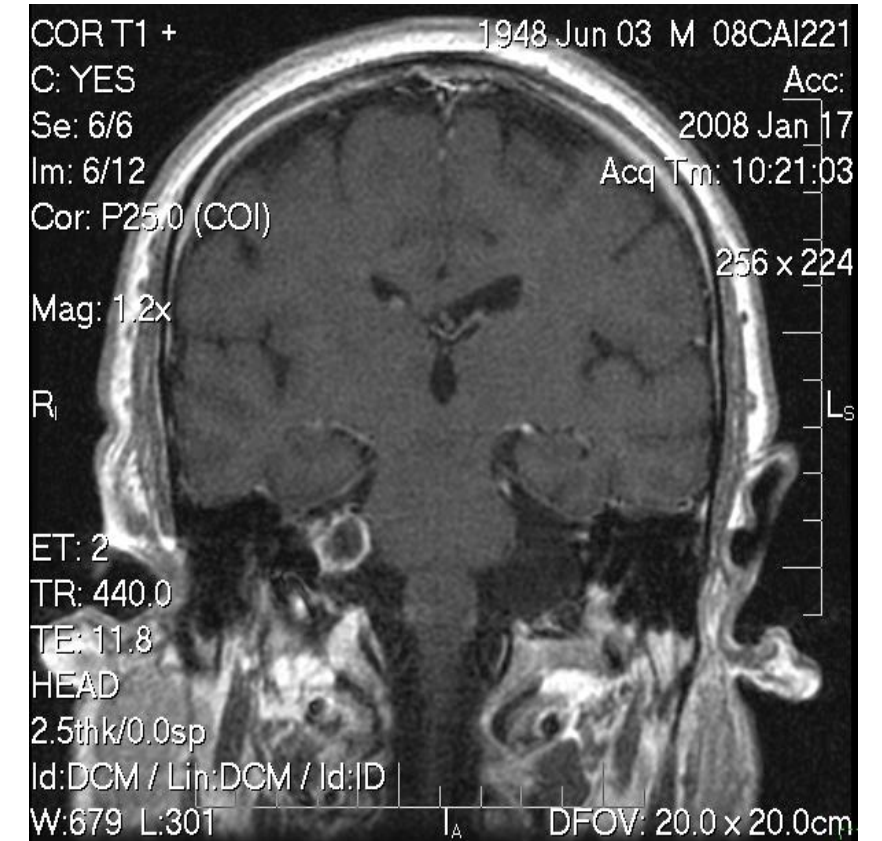
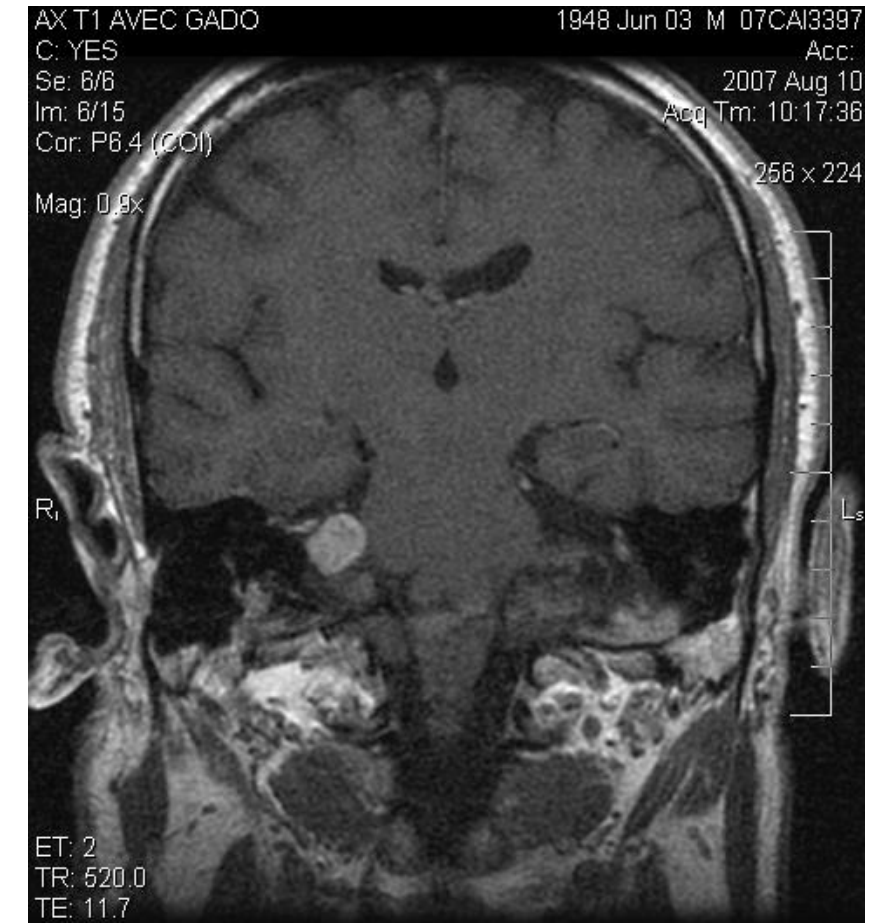
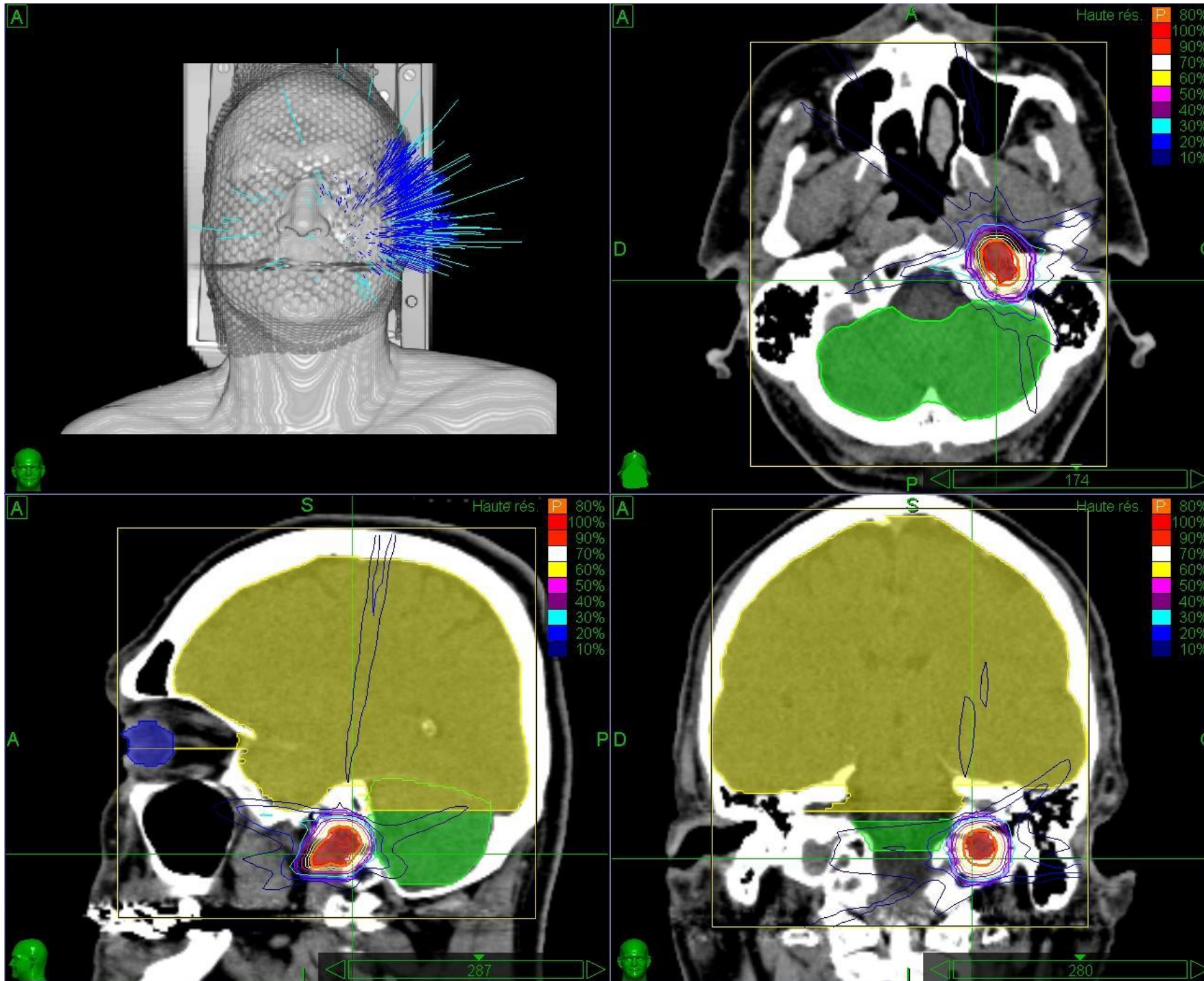
3D	DVH	3D	DVH
A	Dose	S	Dose
3D	DVH	3D	A
C	Dose	S	C

Standard [Afficher](#)



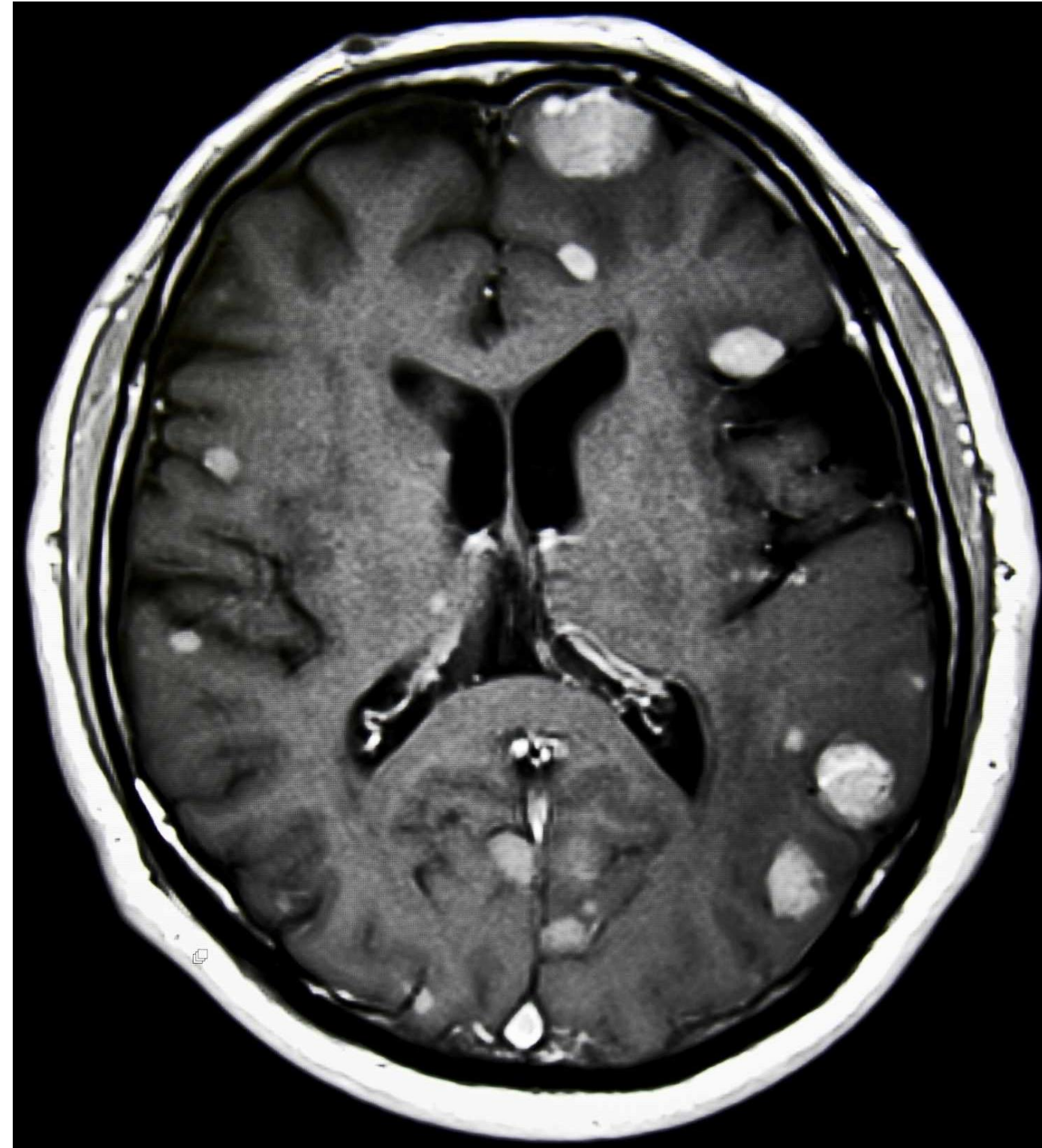


Schwannoma



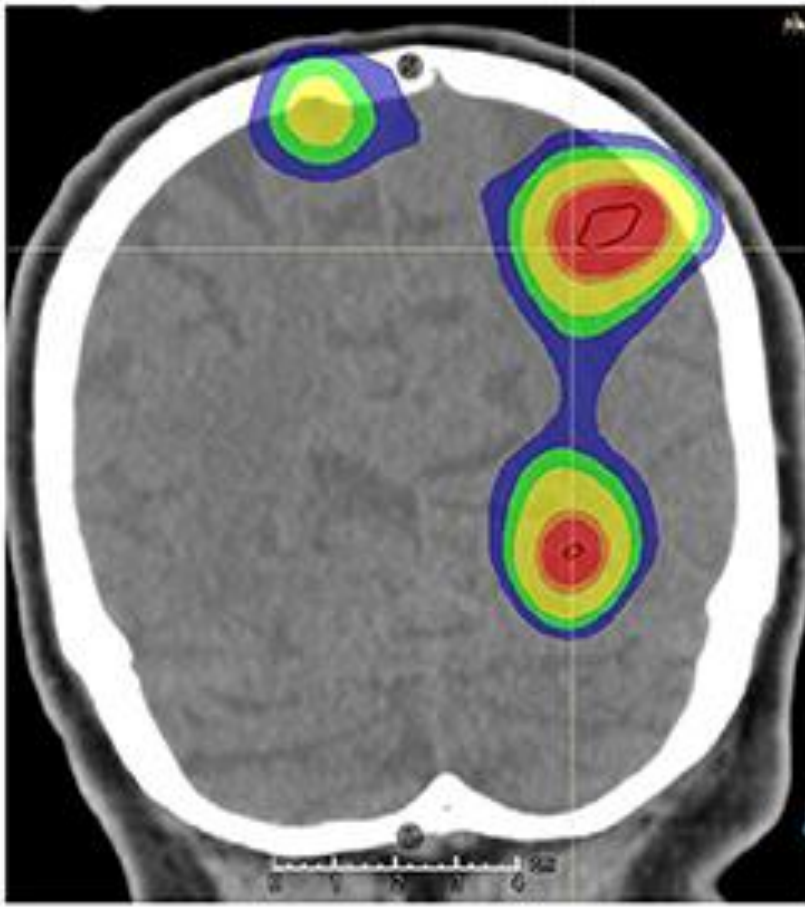
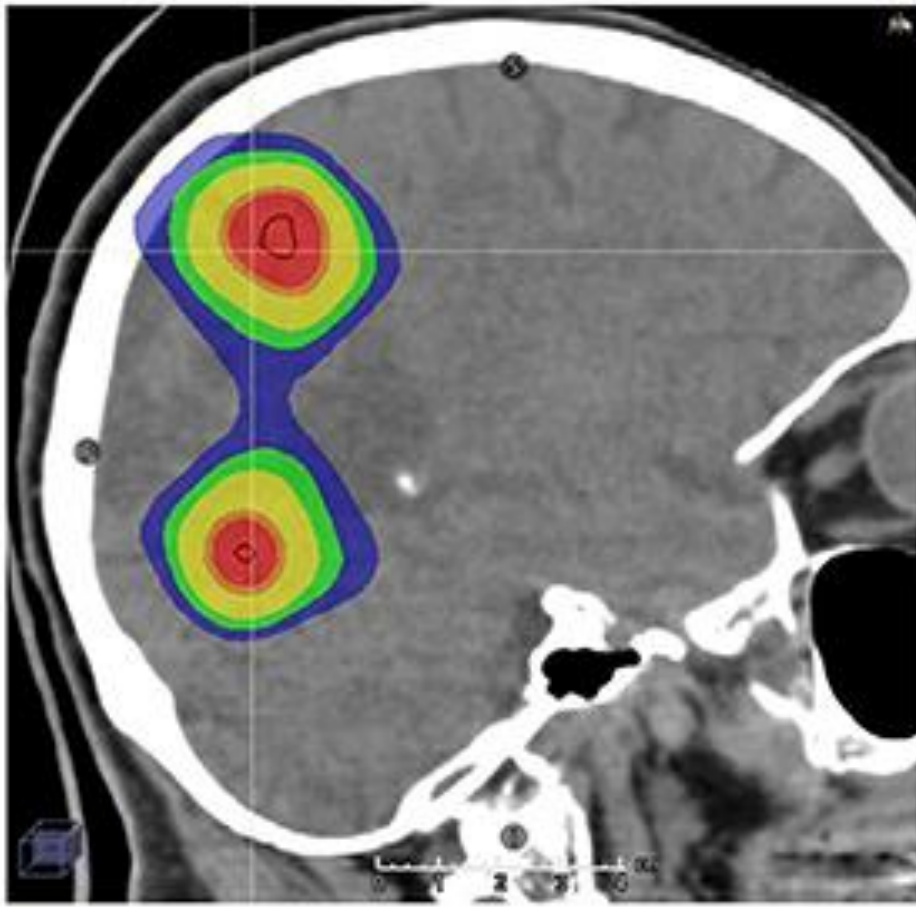
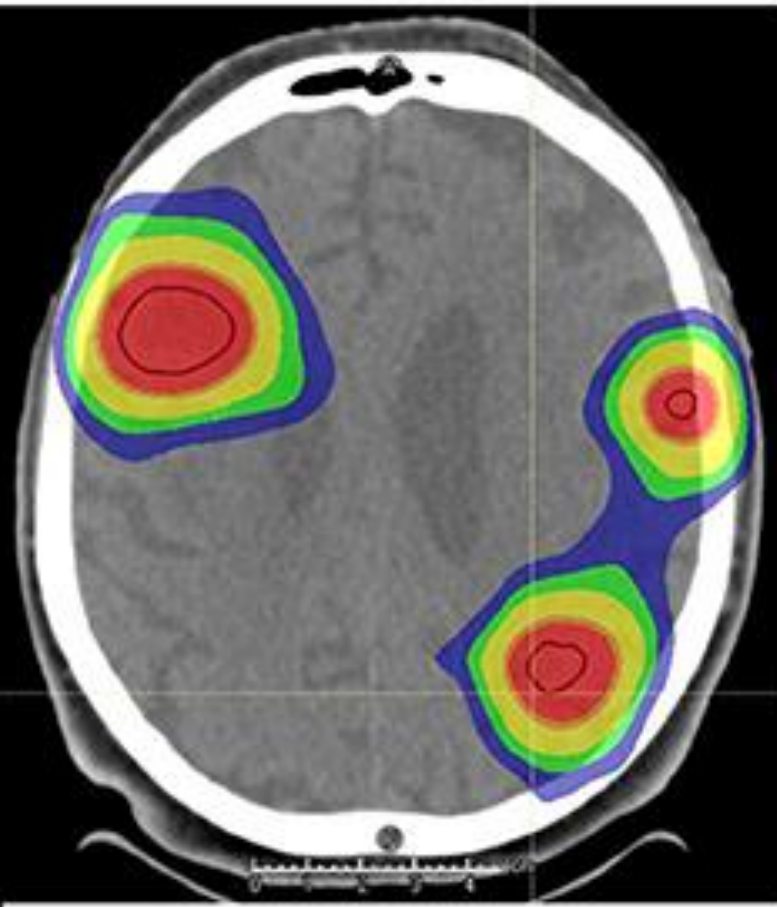


Métastases cérébrales

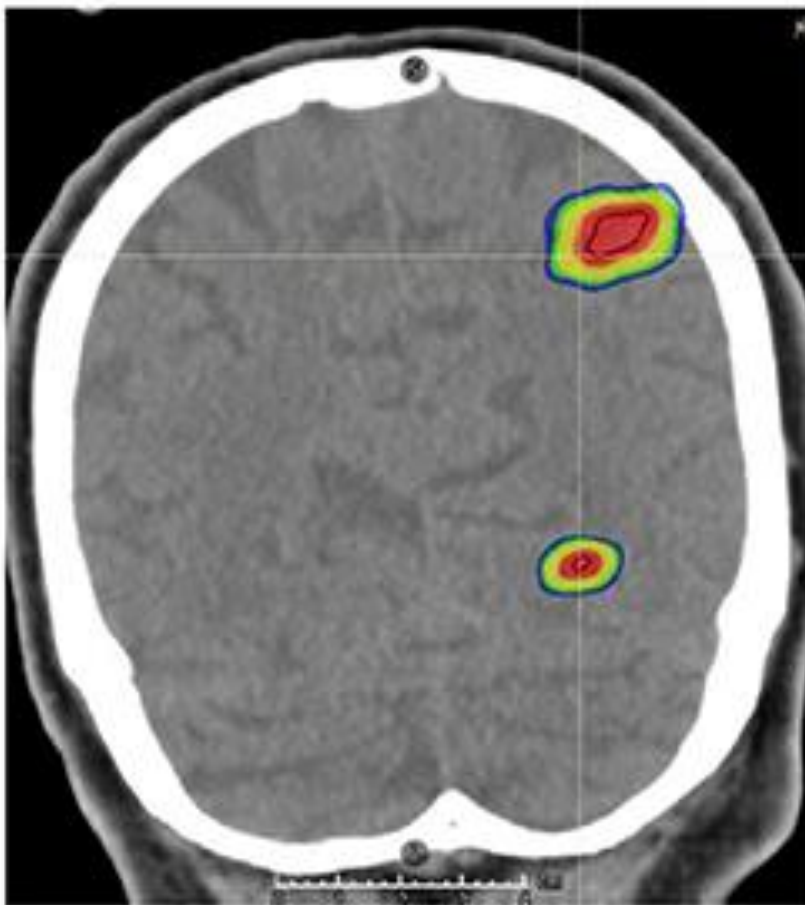
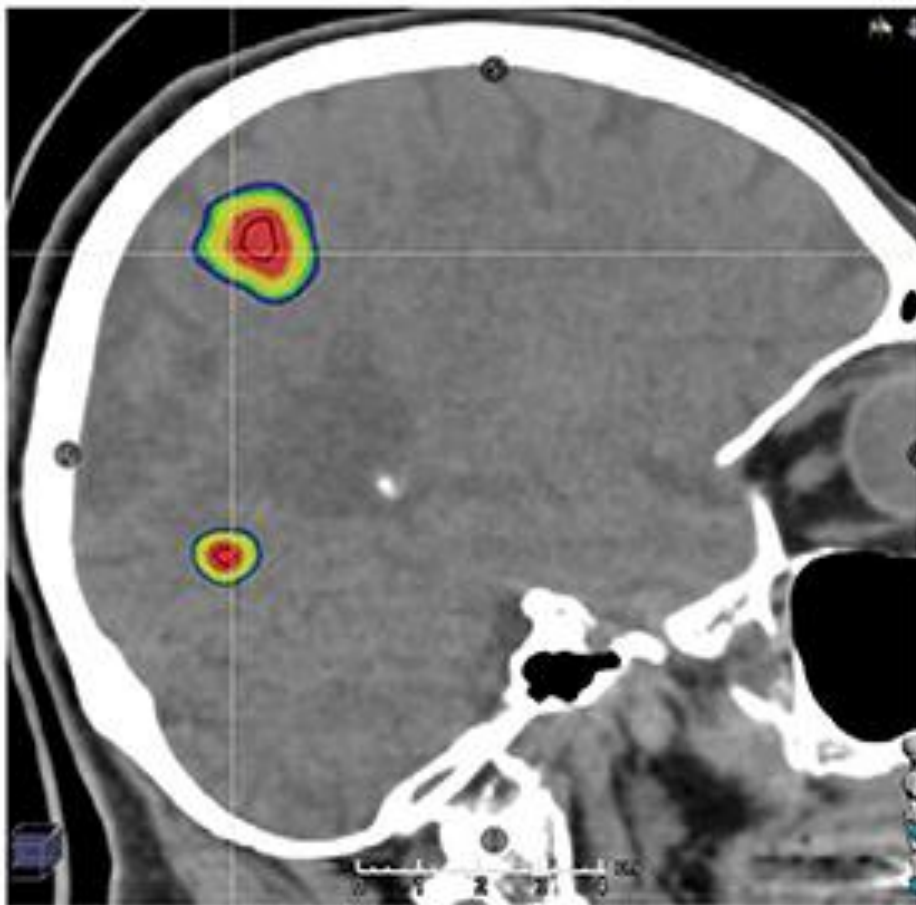
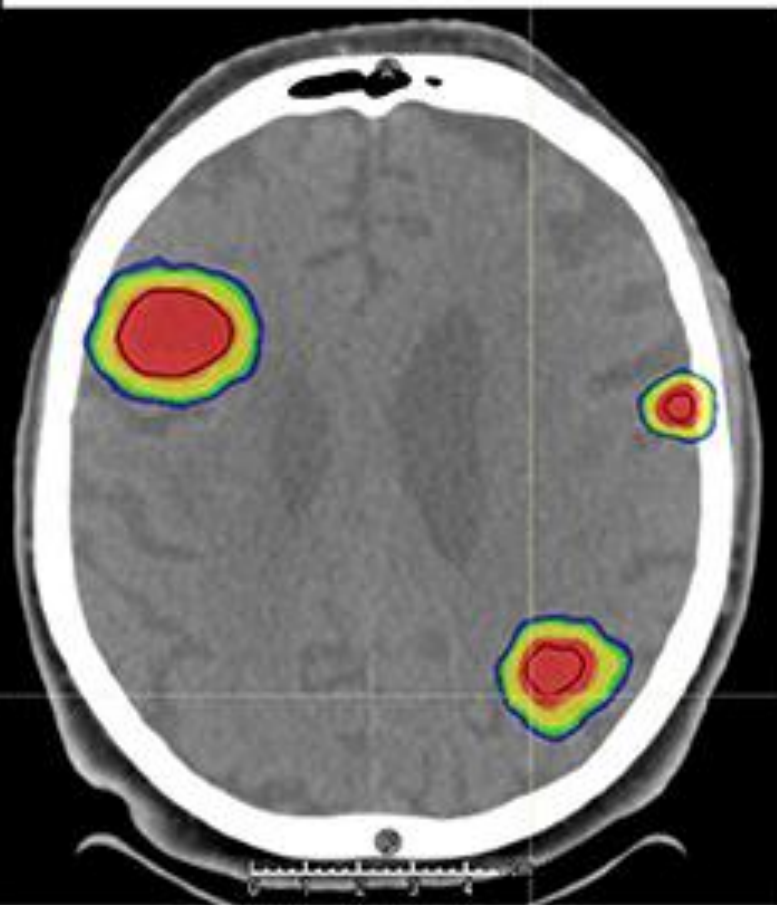




SI-VMAT



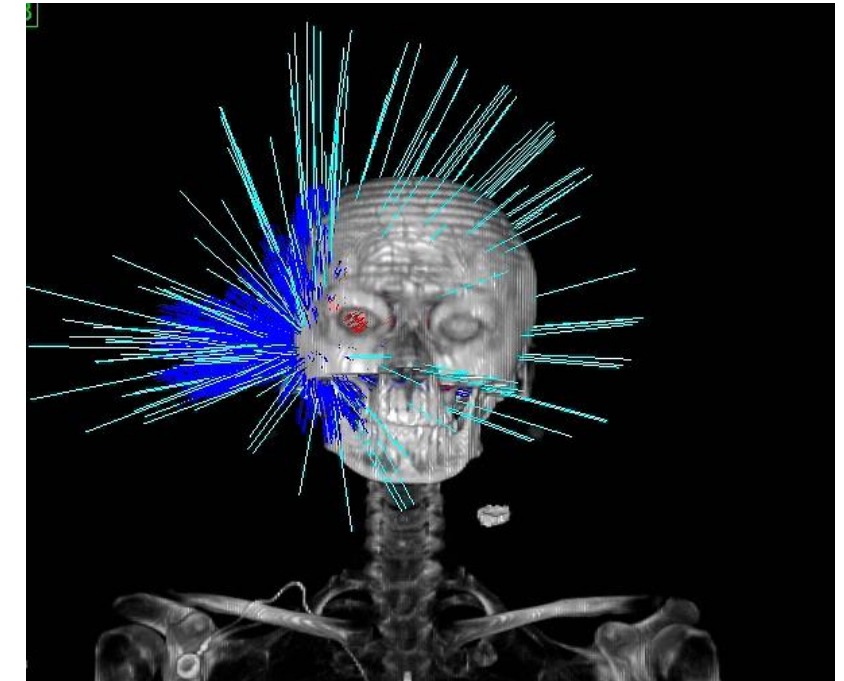
CyberKnife





Indication for fractionnated RS-Cyberknife

- Diameter up to 5 cm.
- Near optic pathway
- Number of mets more than 8-10?
- Re-irradiation
- Breakthrough RS (one fraction) limits



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Clinical Investigation

Treatment of Five or More Brain Metastases with Stereotactic Radiosurgery

Grant K. Hunter, M.D.,* John H. Suh, M.D.,* Alwyn M. Reuther, M.P.H.,*
Michael A. Vogelbaum, M.D., Ph.D.,† Gene H. Barnett, M.D.,† Lilyana Angelov, M.D.,†
Robert J. Weil, M.D.,† Gennady Neyman, Ph.D.,* and Samuel T. Chao, M.D.*

Departments of *Radiation Oncology and †Neurosurgery, Cleveland Clinic, Cleveland, OH

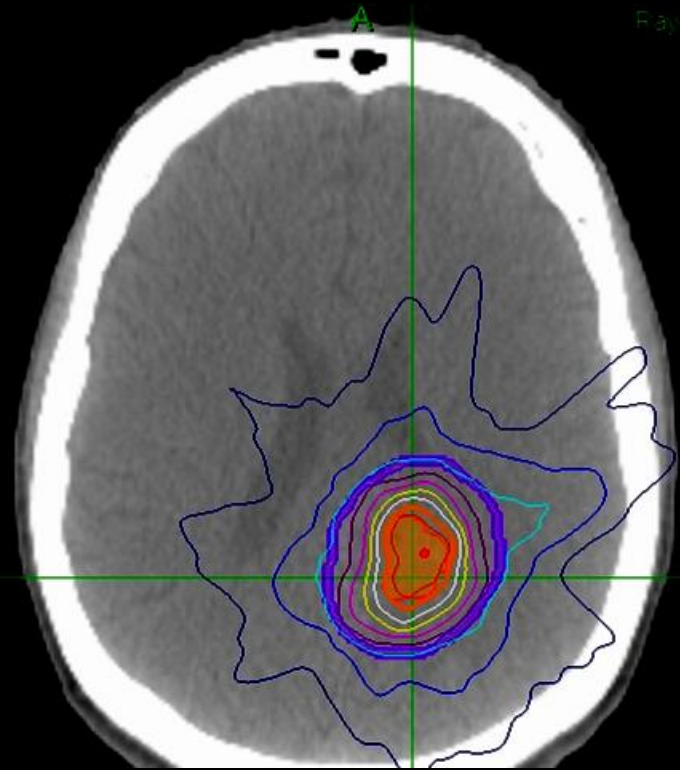
Received Jun 6, 2011, and in revised form Sep 29, 2011. Accepted for publication Oct 4, 2011



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 PatPos:HFS

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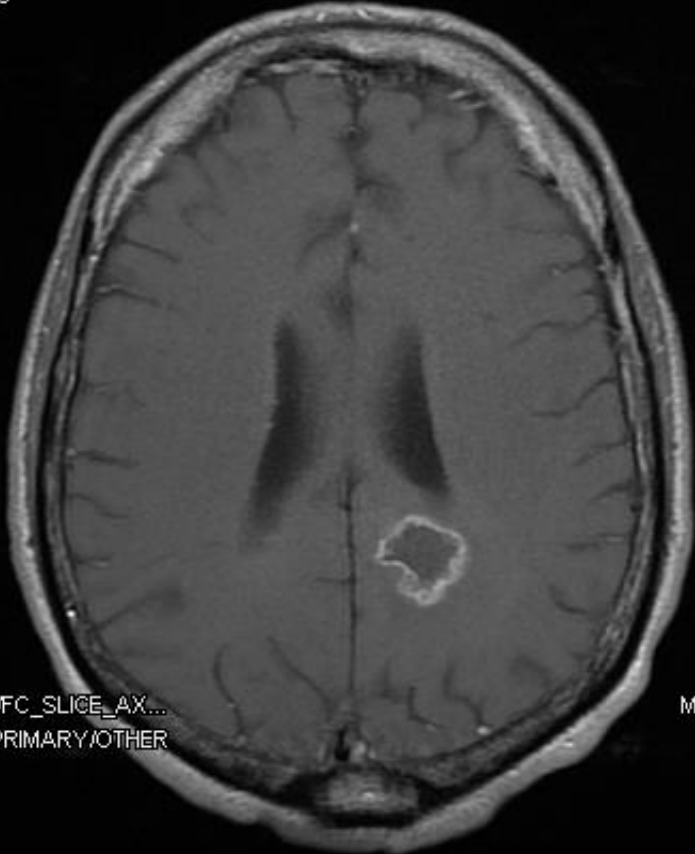


Rayon haut

x 0.926

RPH

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 TI:0.000
 TT:



ImC:

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 C 1292

x 0.926

RFP

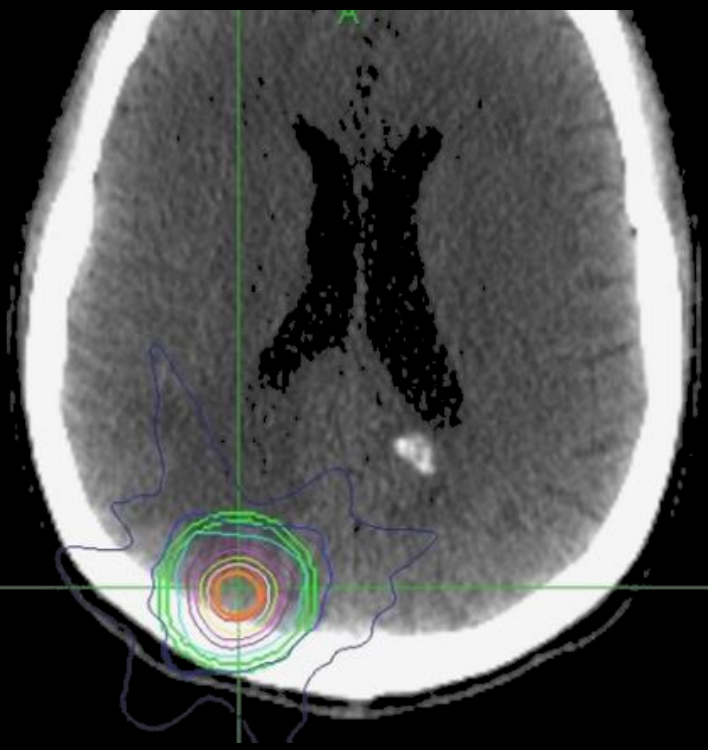
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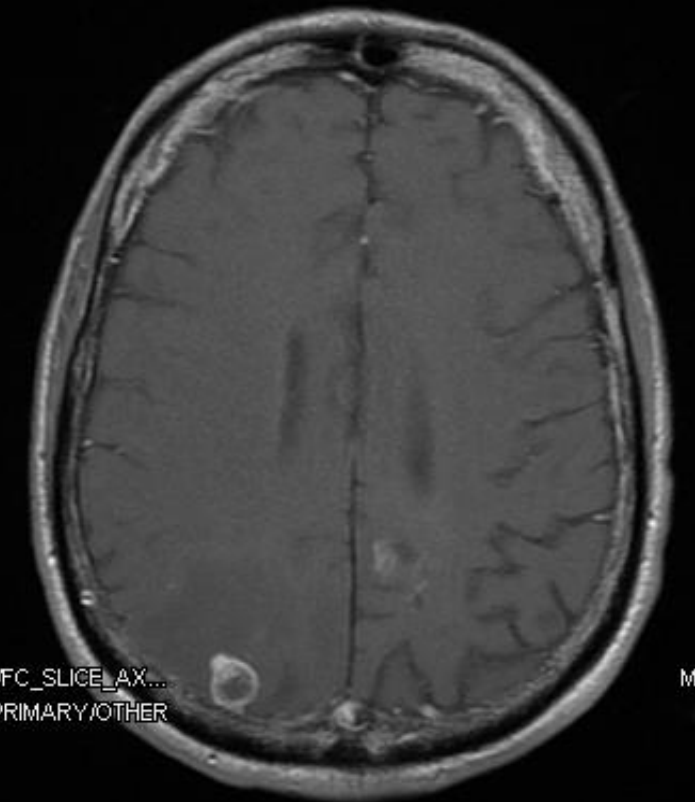
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x 0.926

RPF

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 TI:0.000
 TT:



Matrix:0/384/256/0
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 SL:42.432
 SV:SK
 W 2040
 C 1292

x 1.863

RFP

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 TI:0.000
 TT:

ImC:



Évaluation de dose

Dose Rx(cGy)

Rx (%)

Prescrire

Revue finale

Haute résolution

Correc de contour

Calculer

Enregistrer plan

Afficher faisceau sur 3D

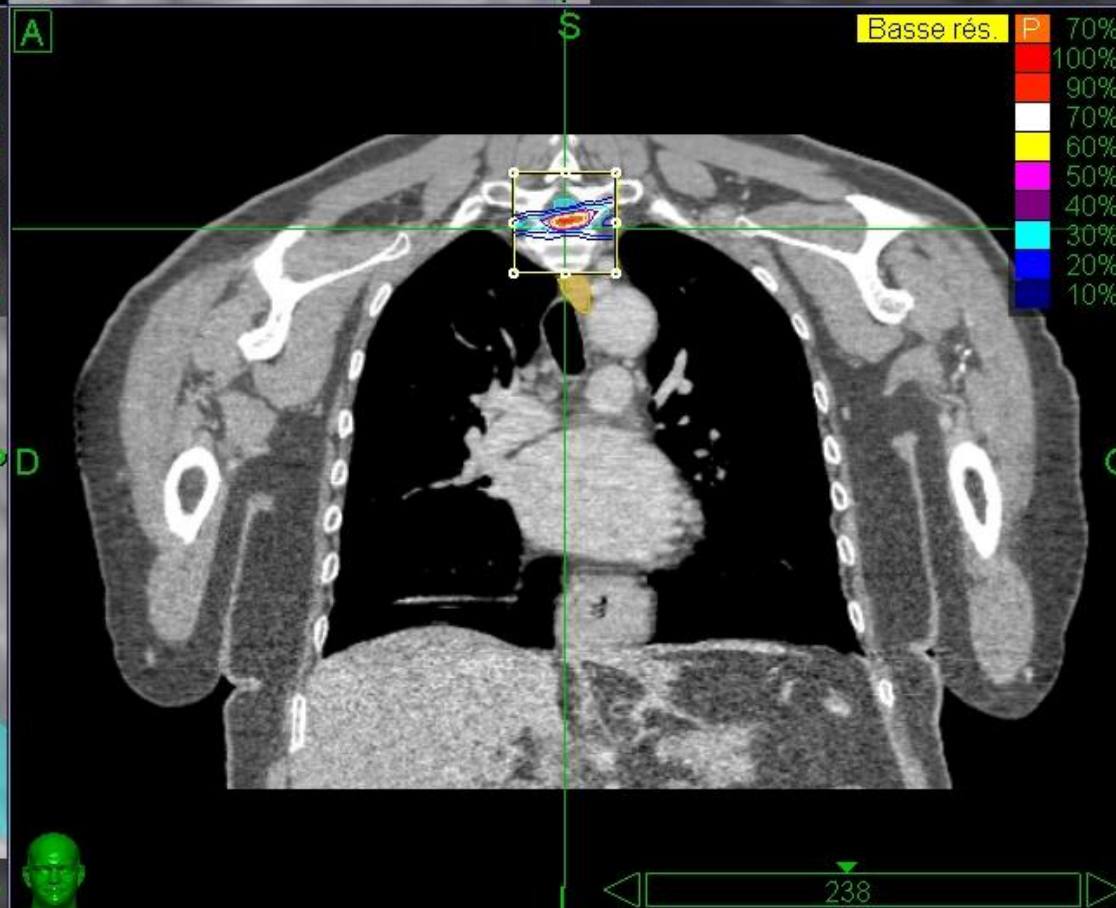
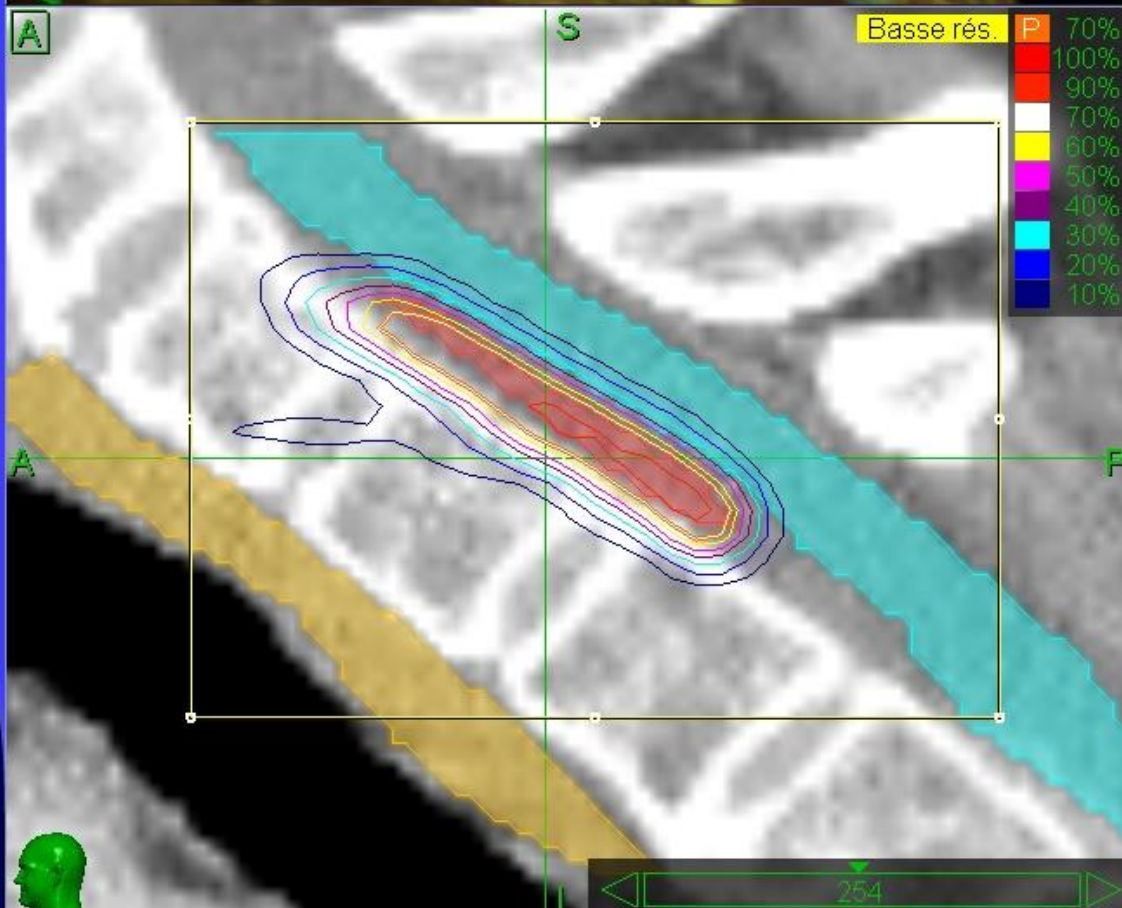
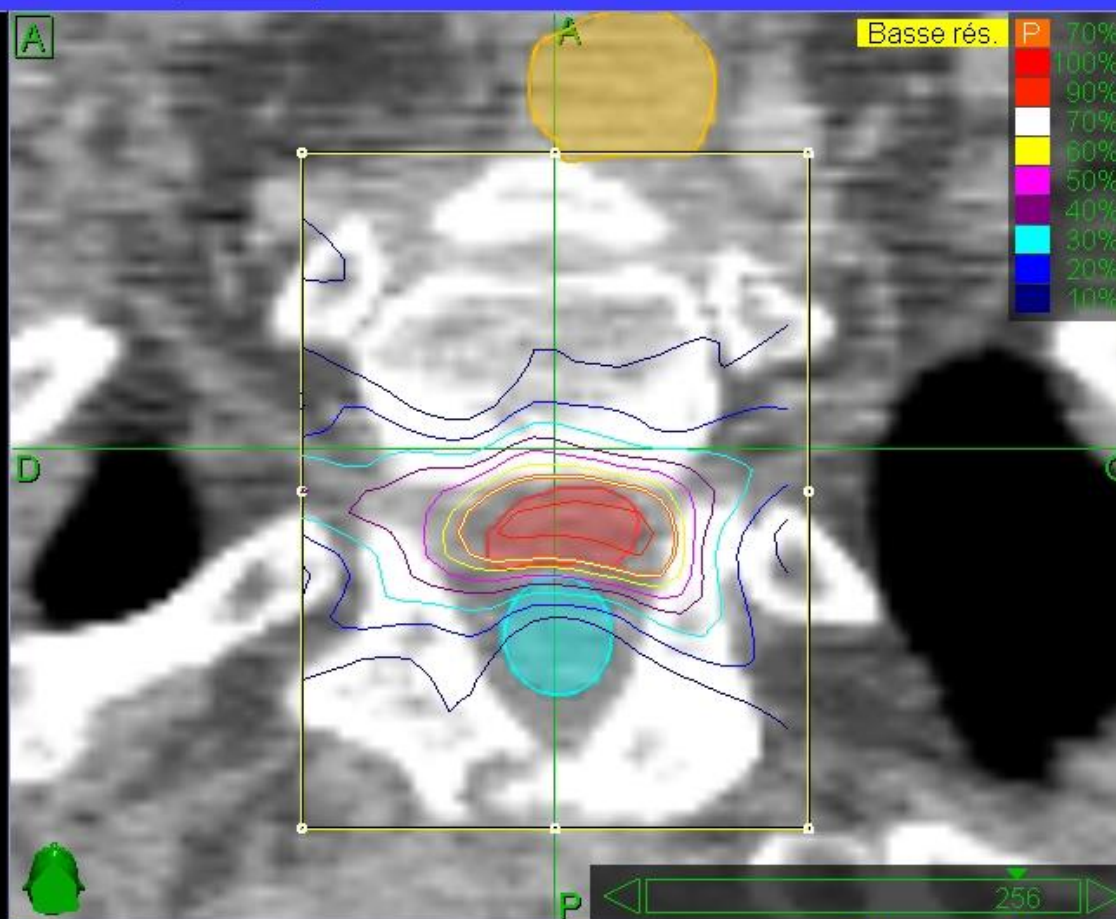
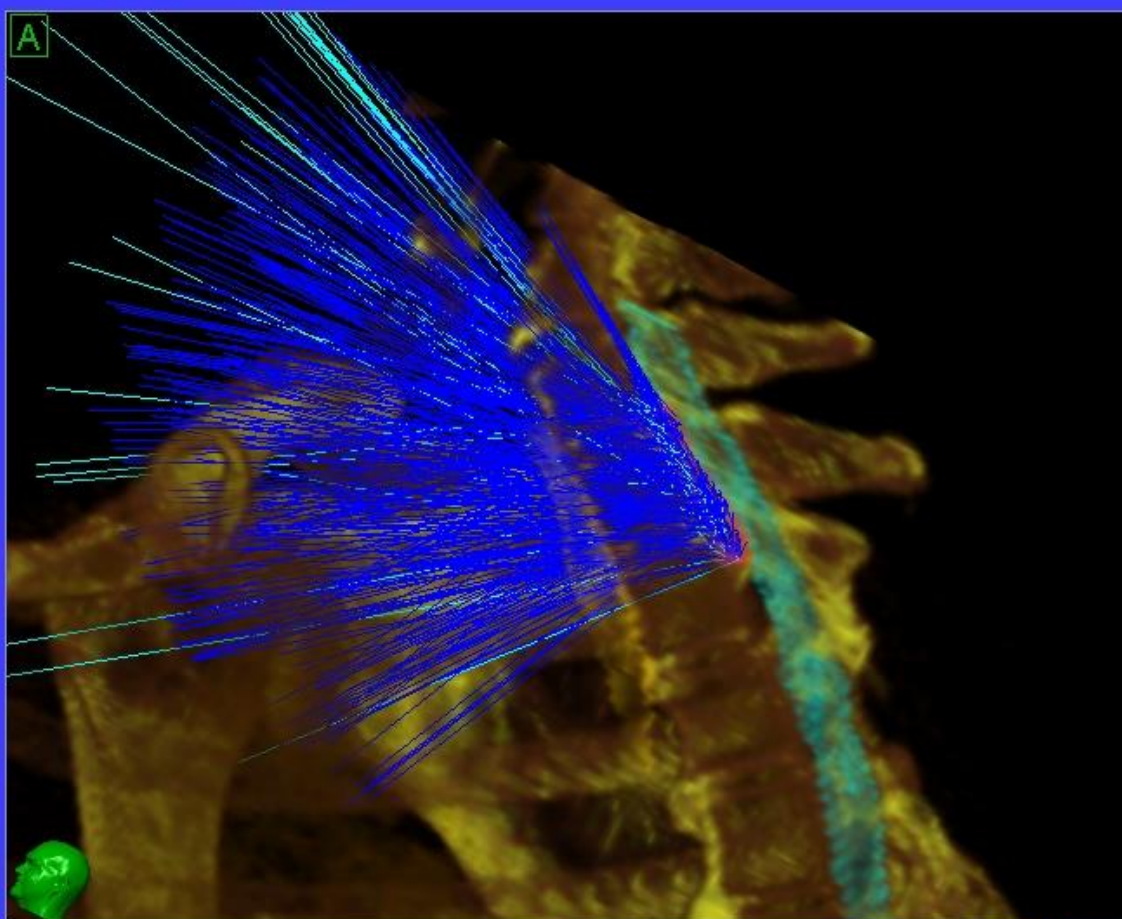
VOI disponible

Nom

- Spinal Cord
- Esophagus
- GTV

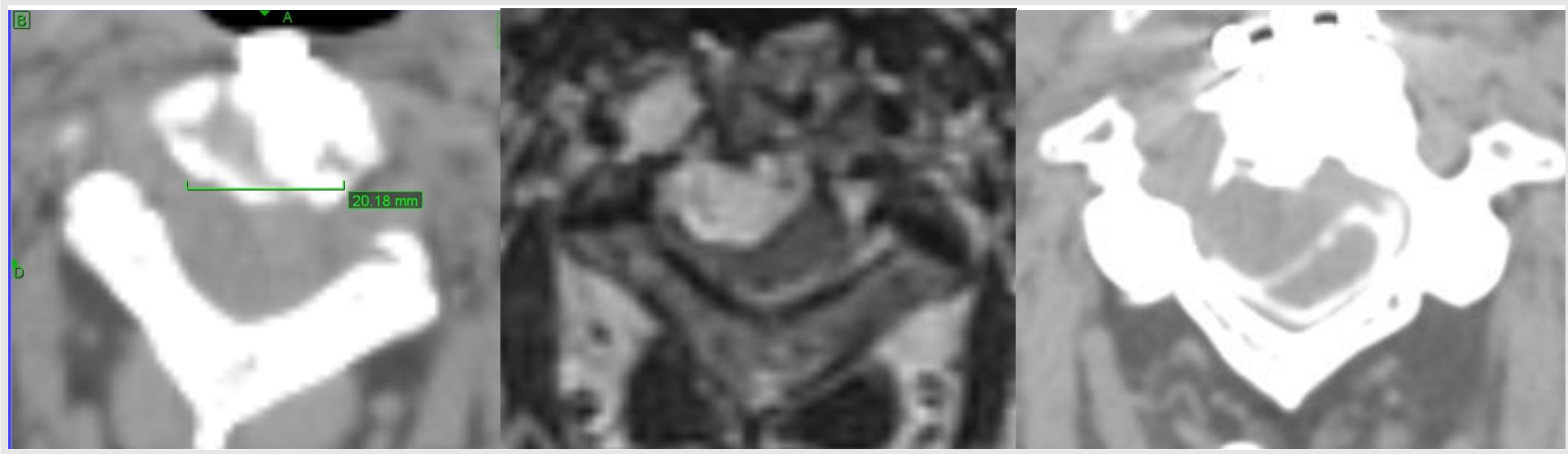
Dispositions

3D	DVH	3D	A
A	Dose	S	C

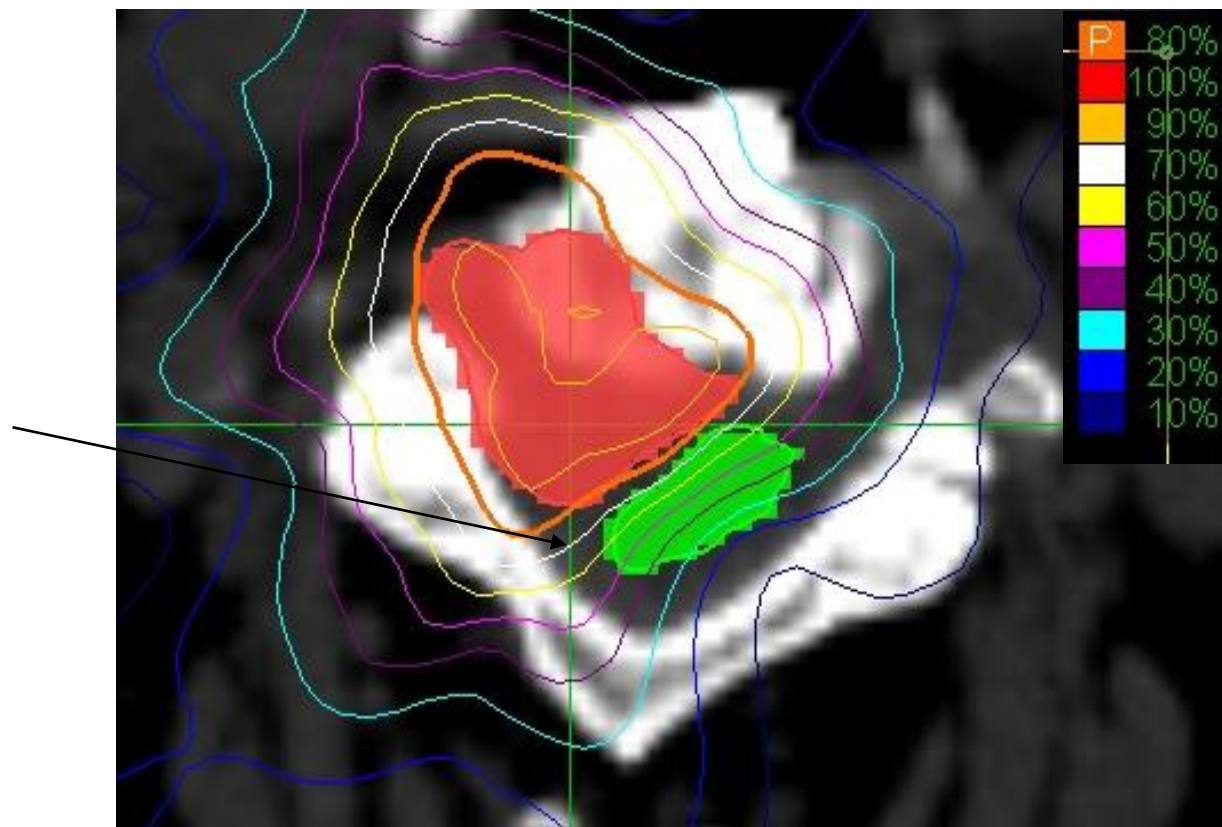




Example of dosimetry

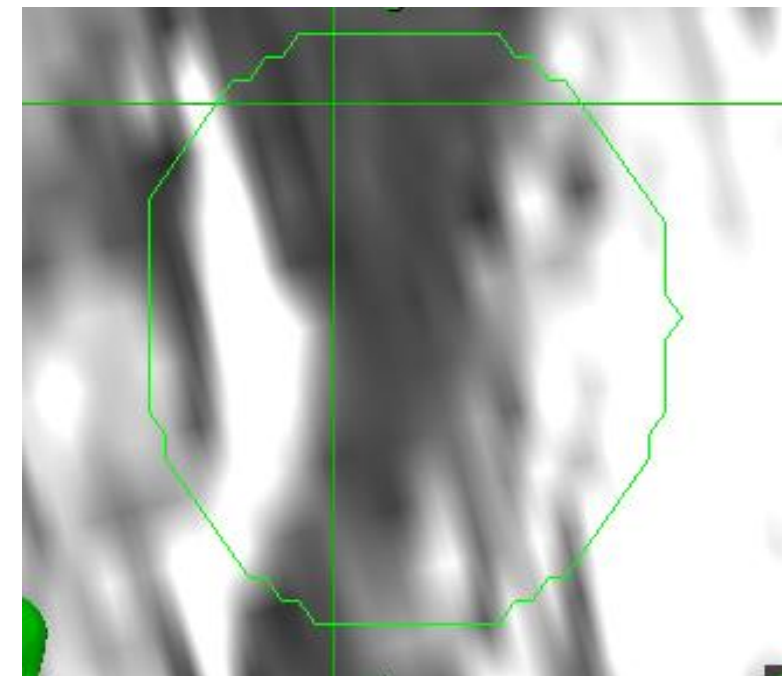
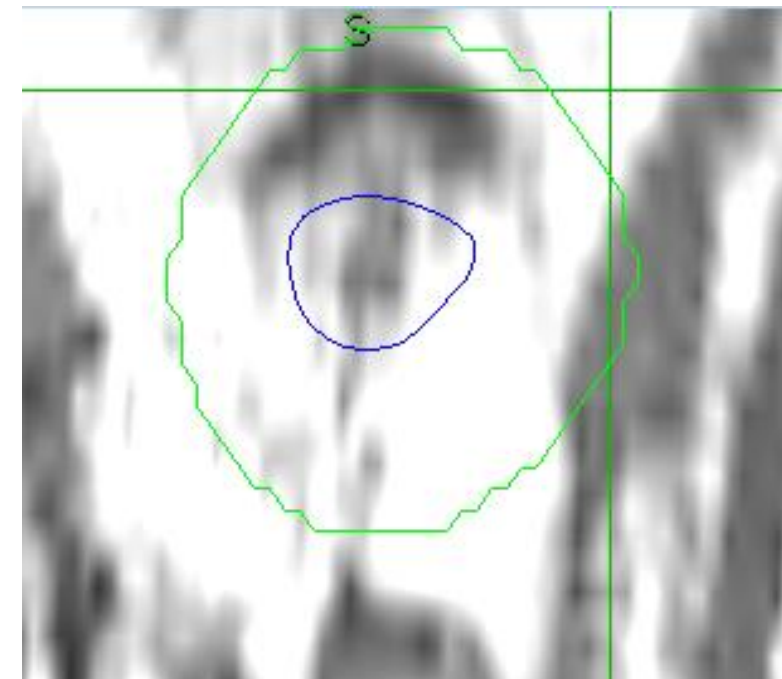
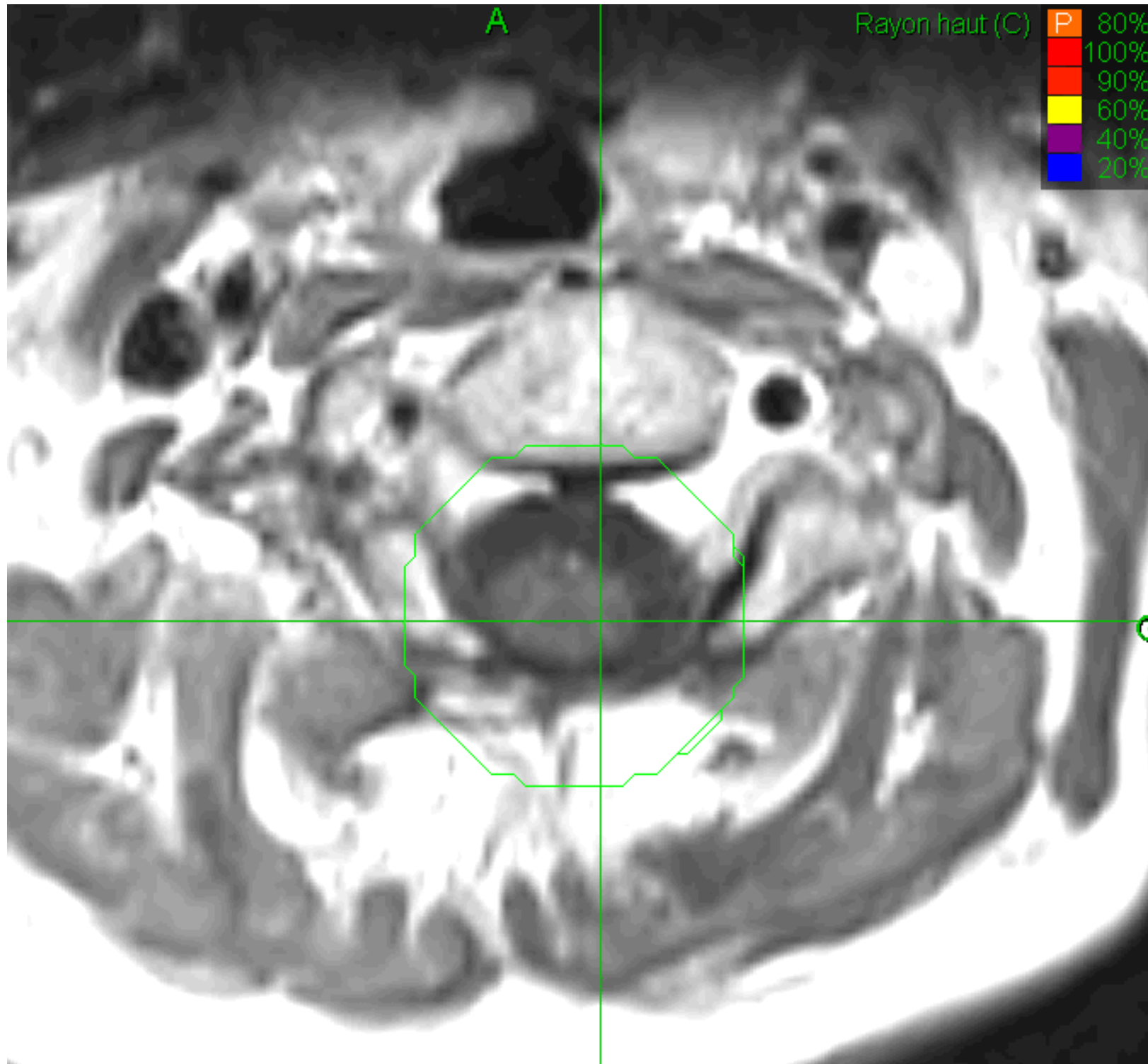


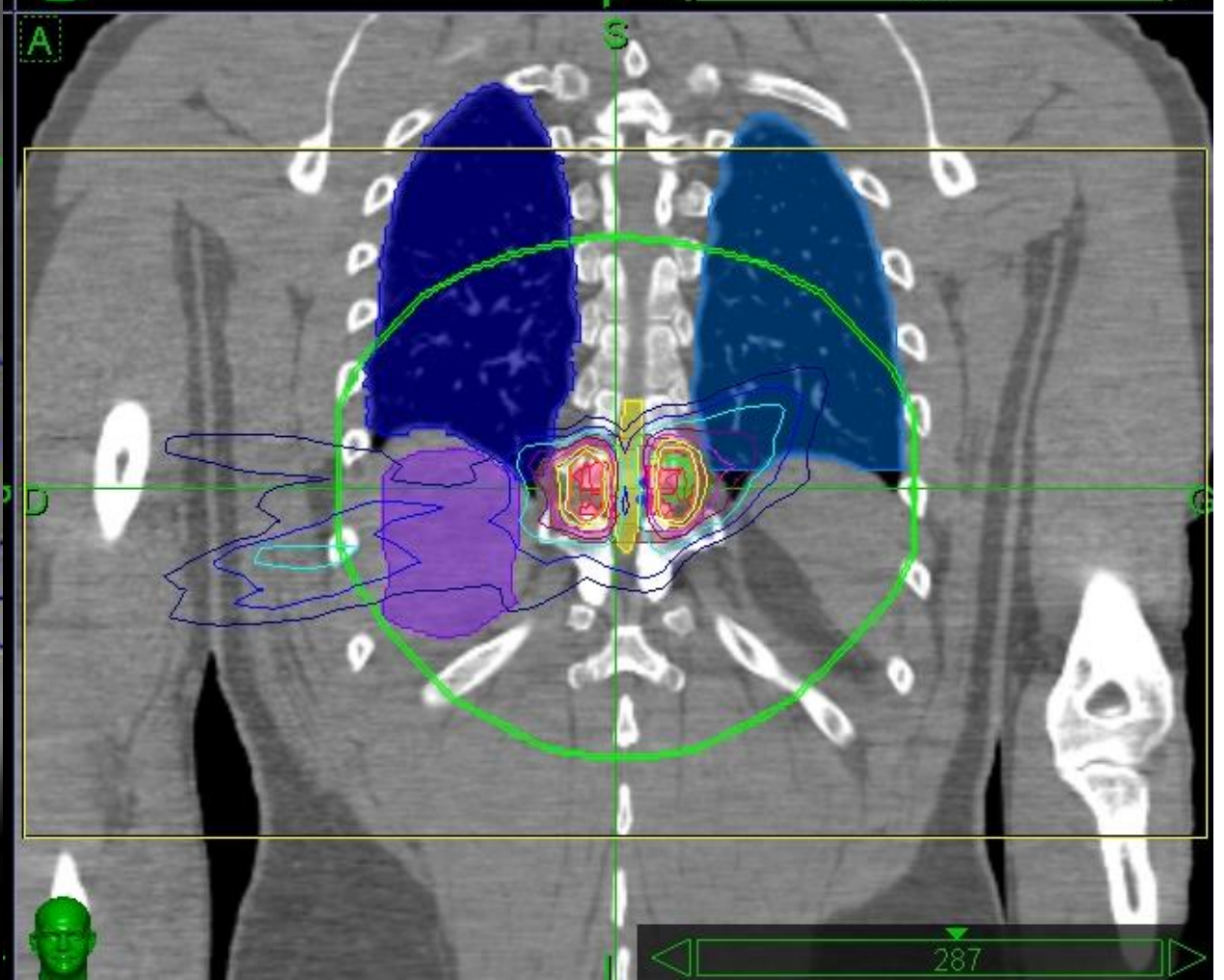
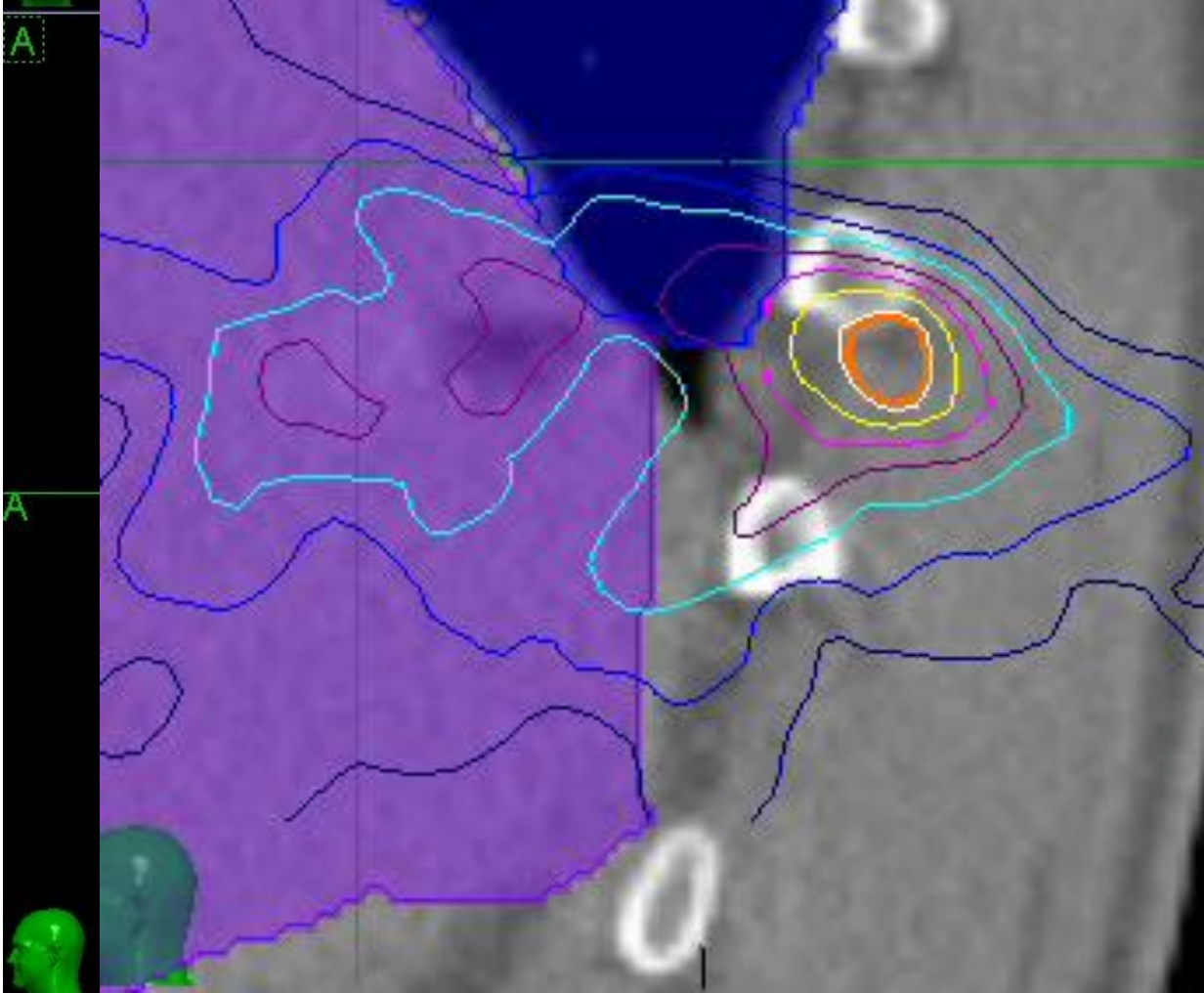
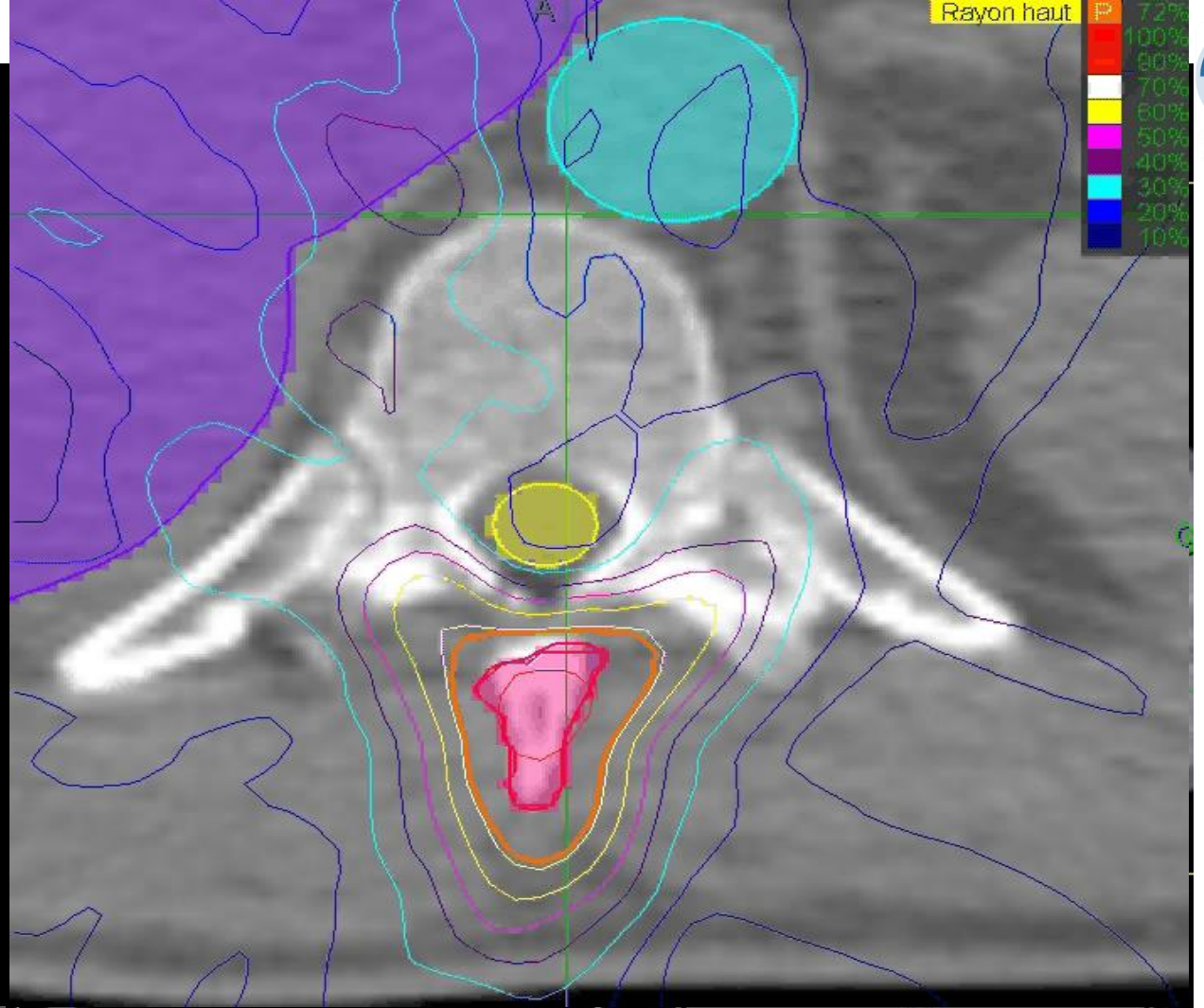
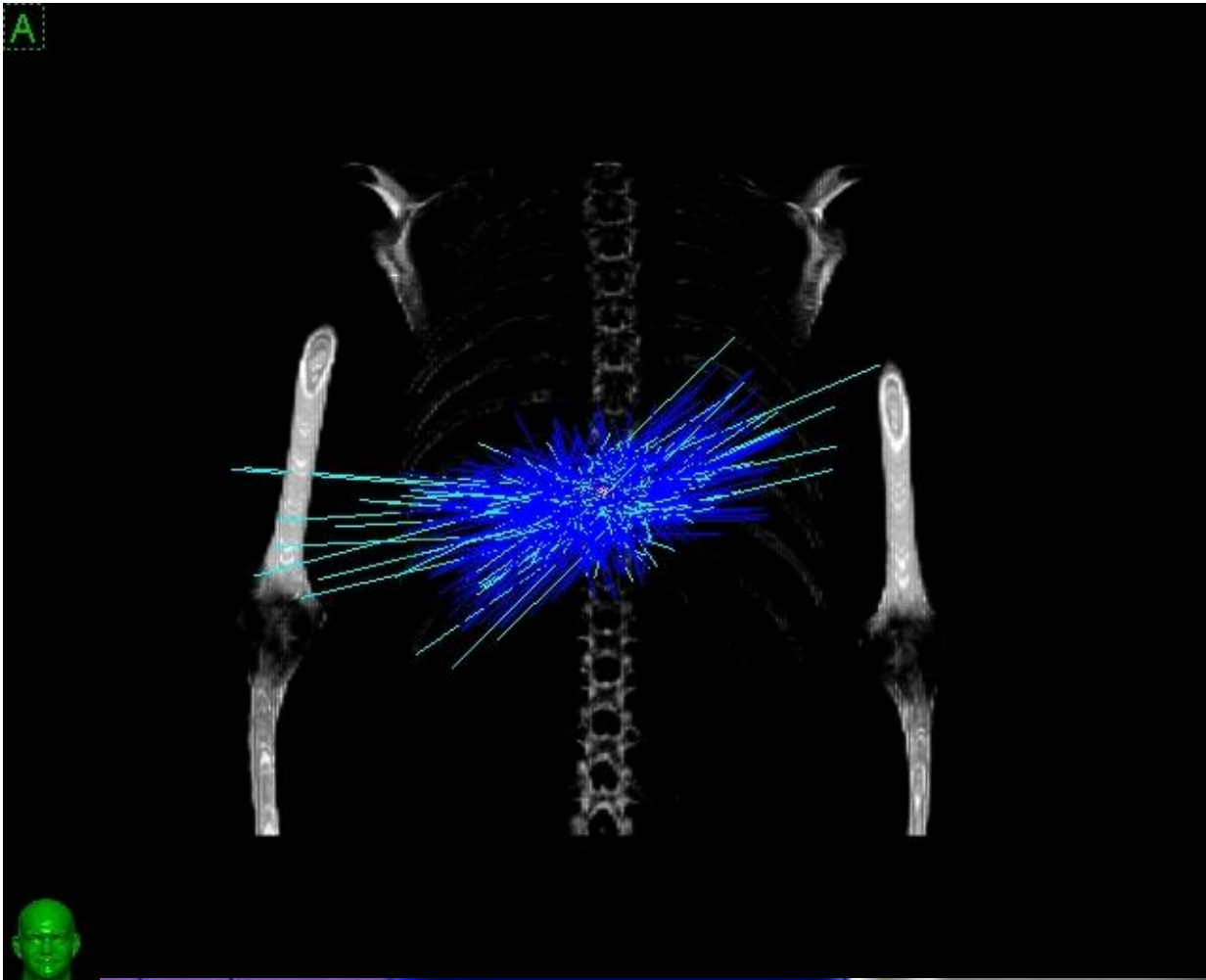
5 Fractions
5 Gy
Isodose 70%





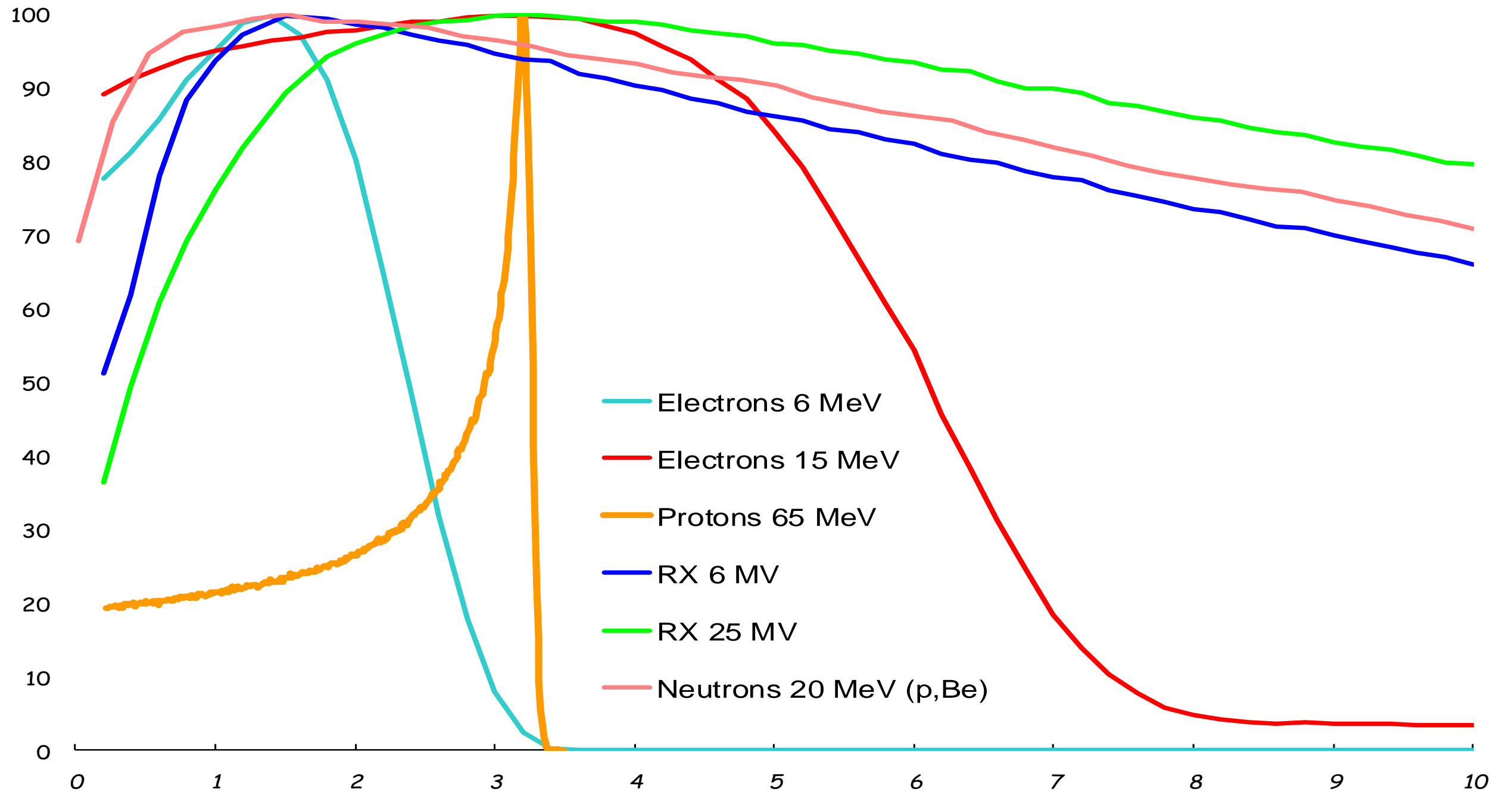
Spinal cord treatment







La protonthérapie



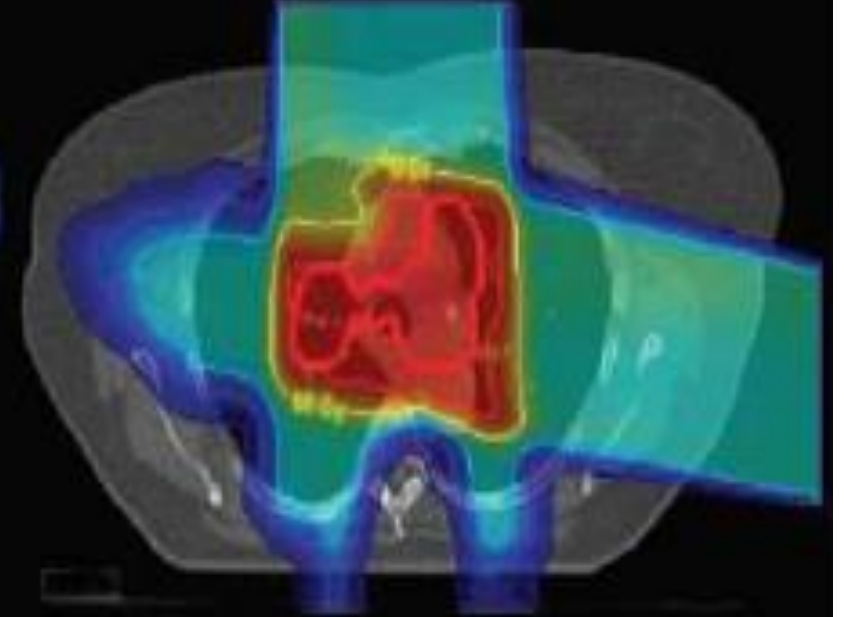
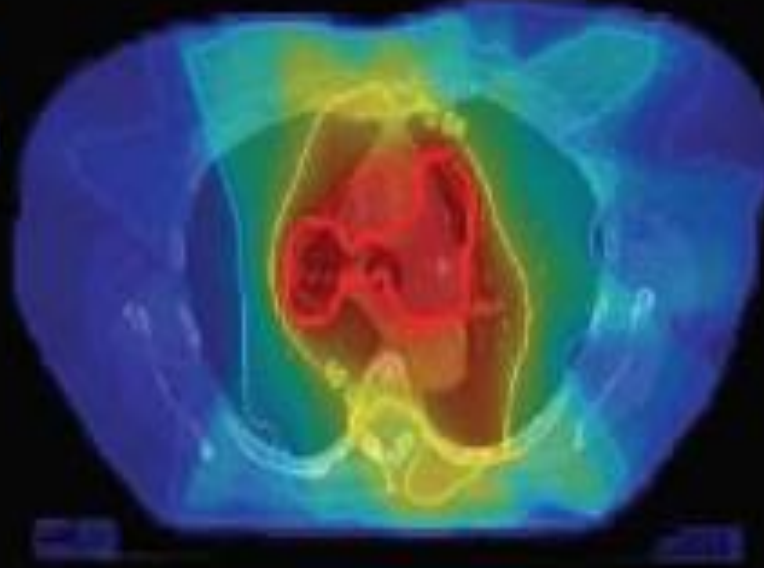
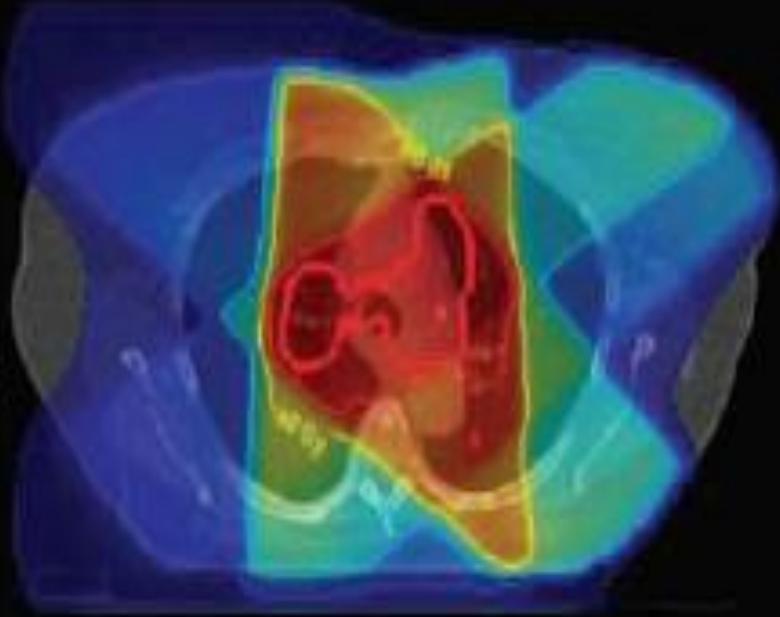


3DCRT

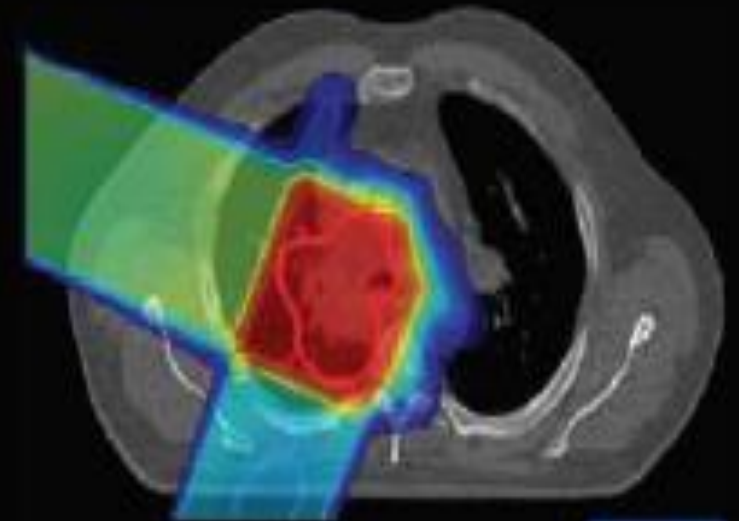
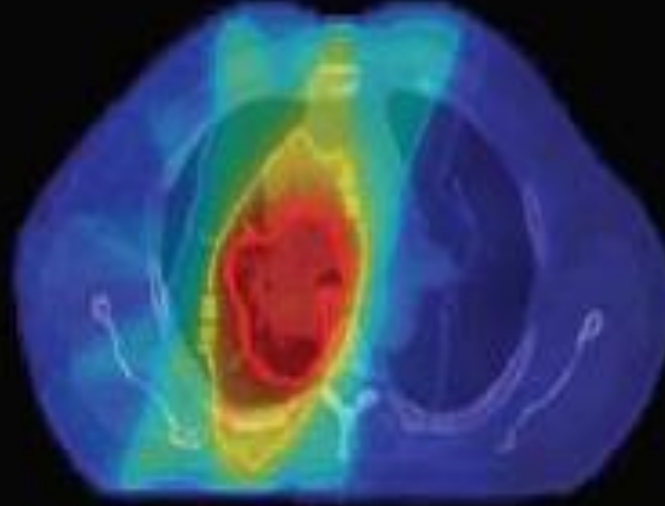
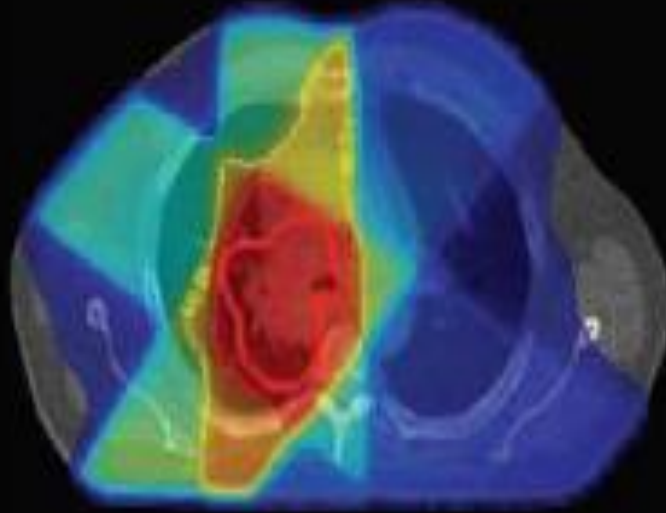
IMRT

PSPT

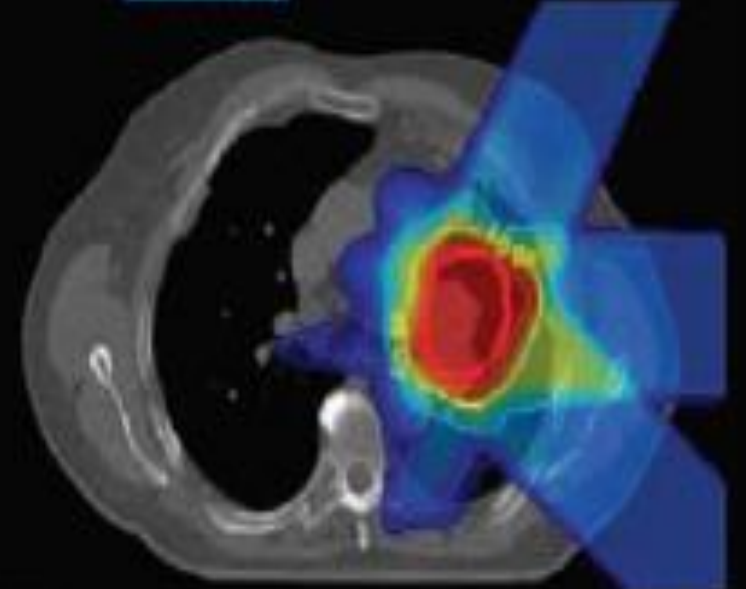
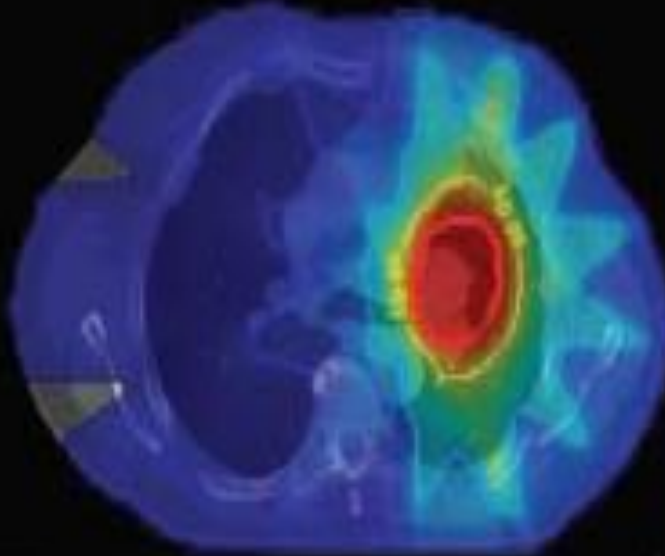
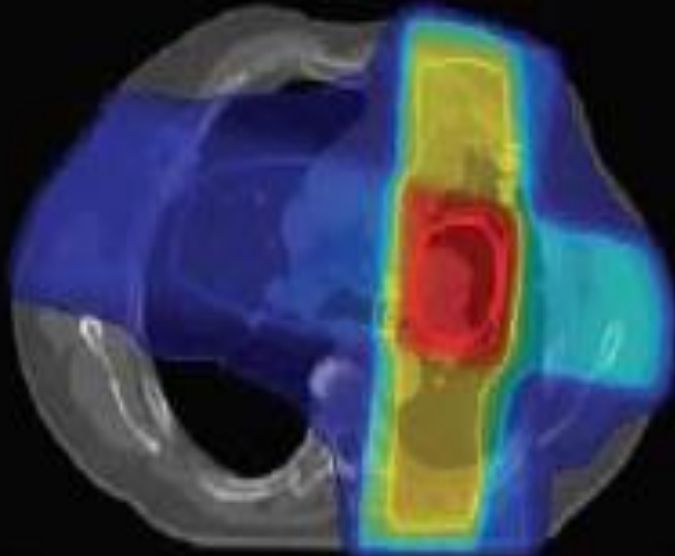
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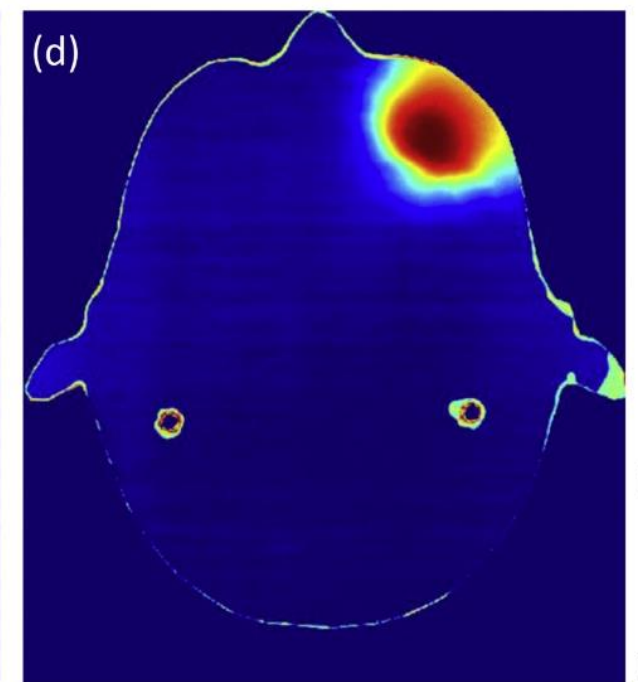
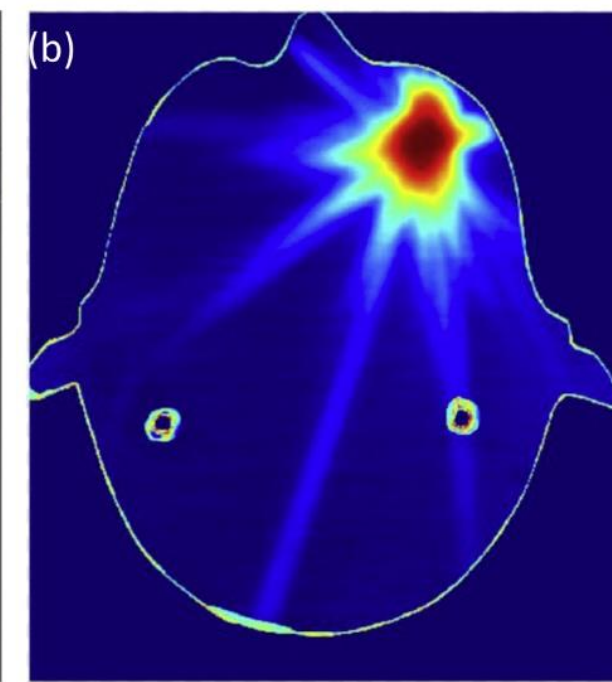
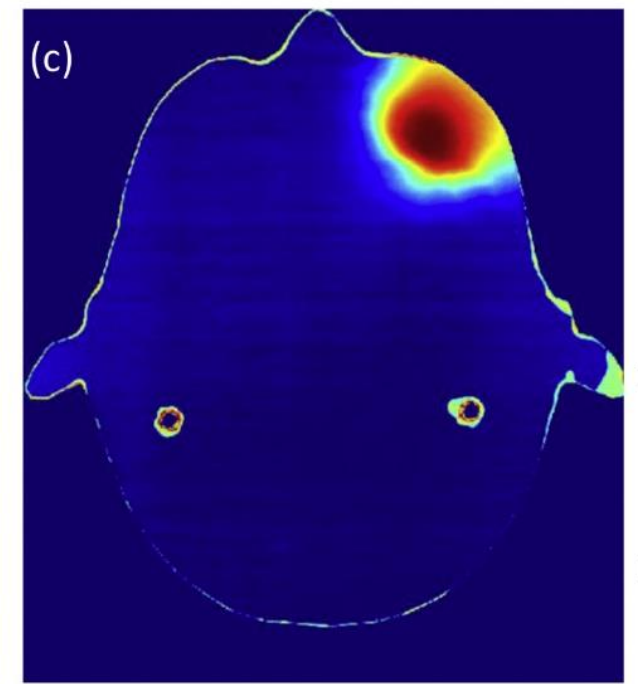
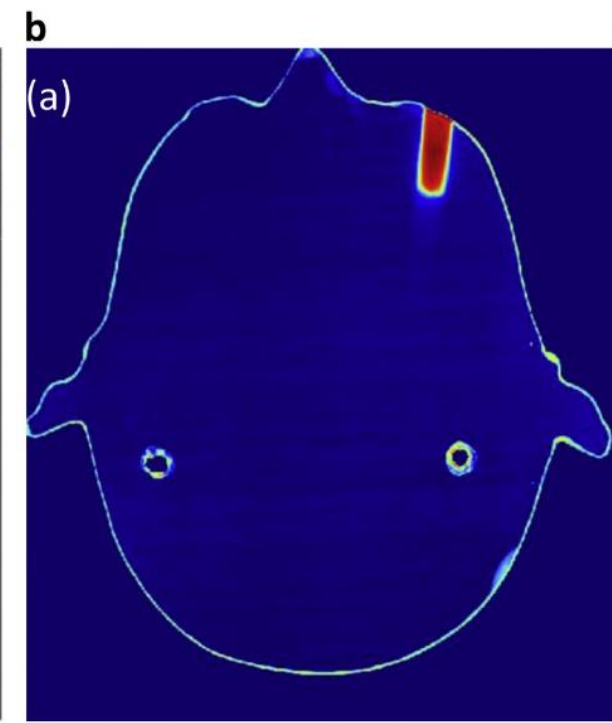
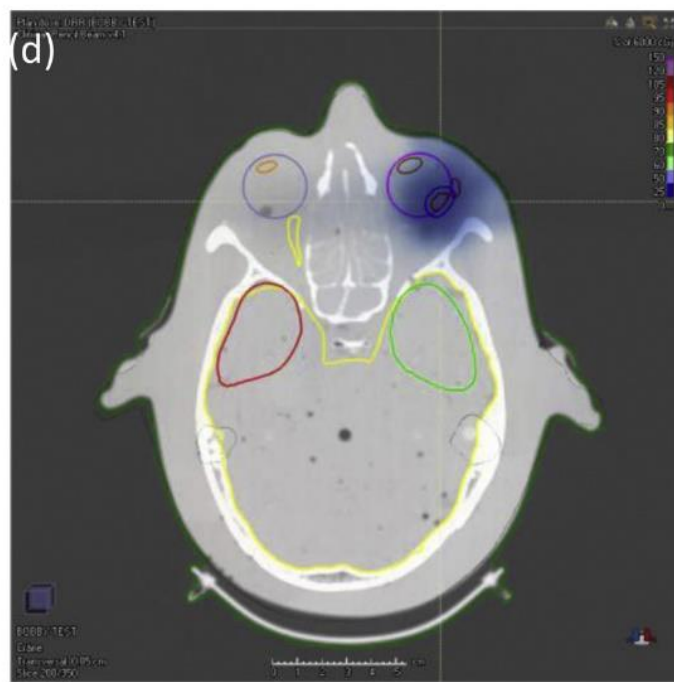
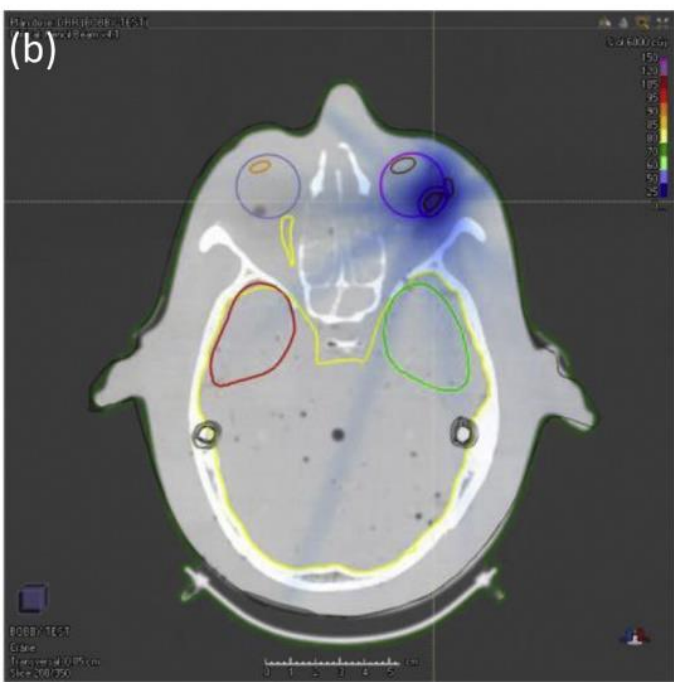
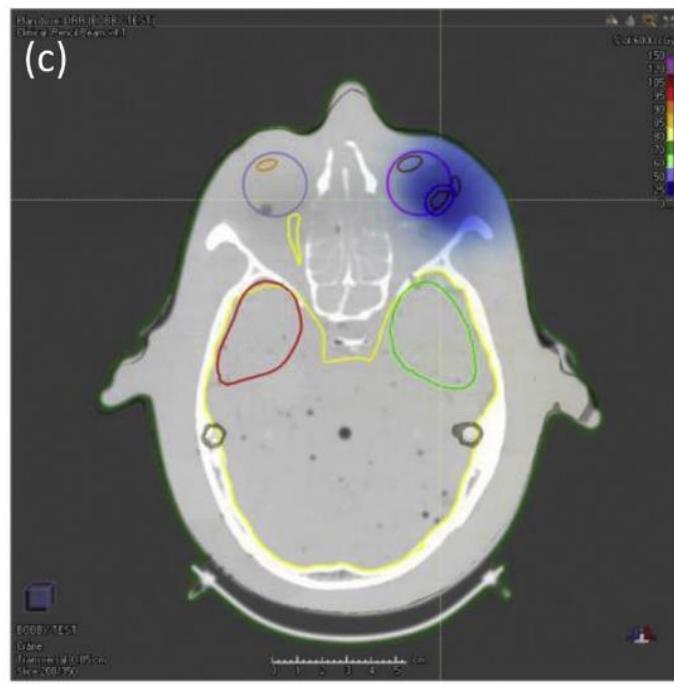
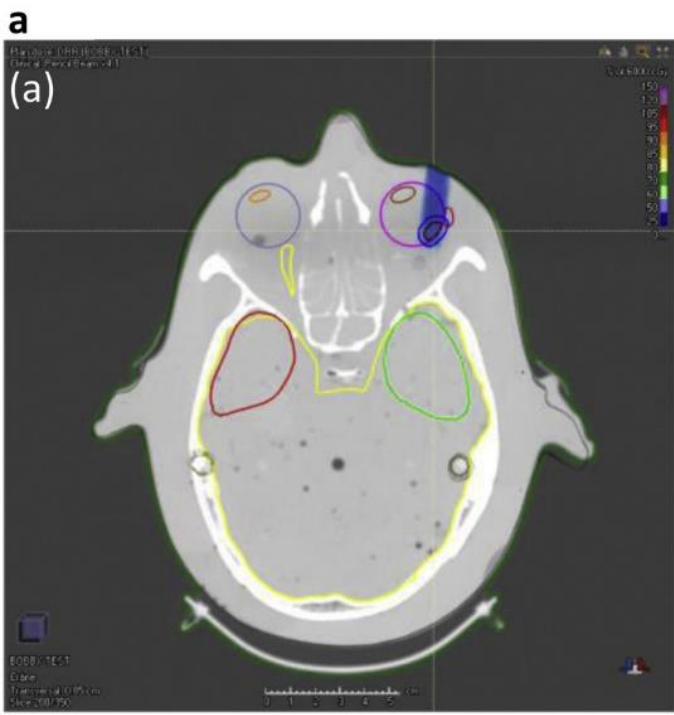


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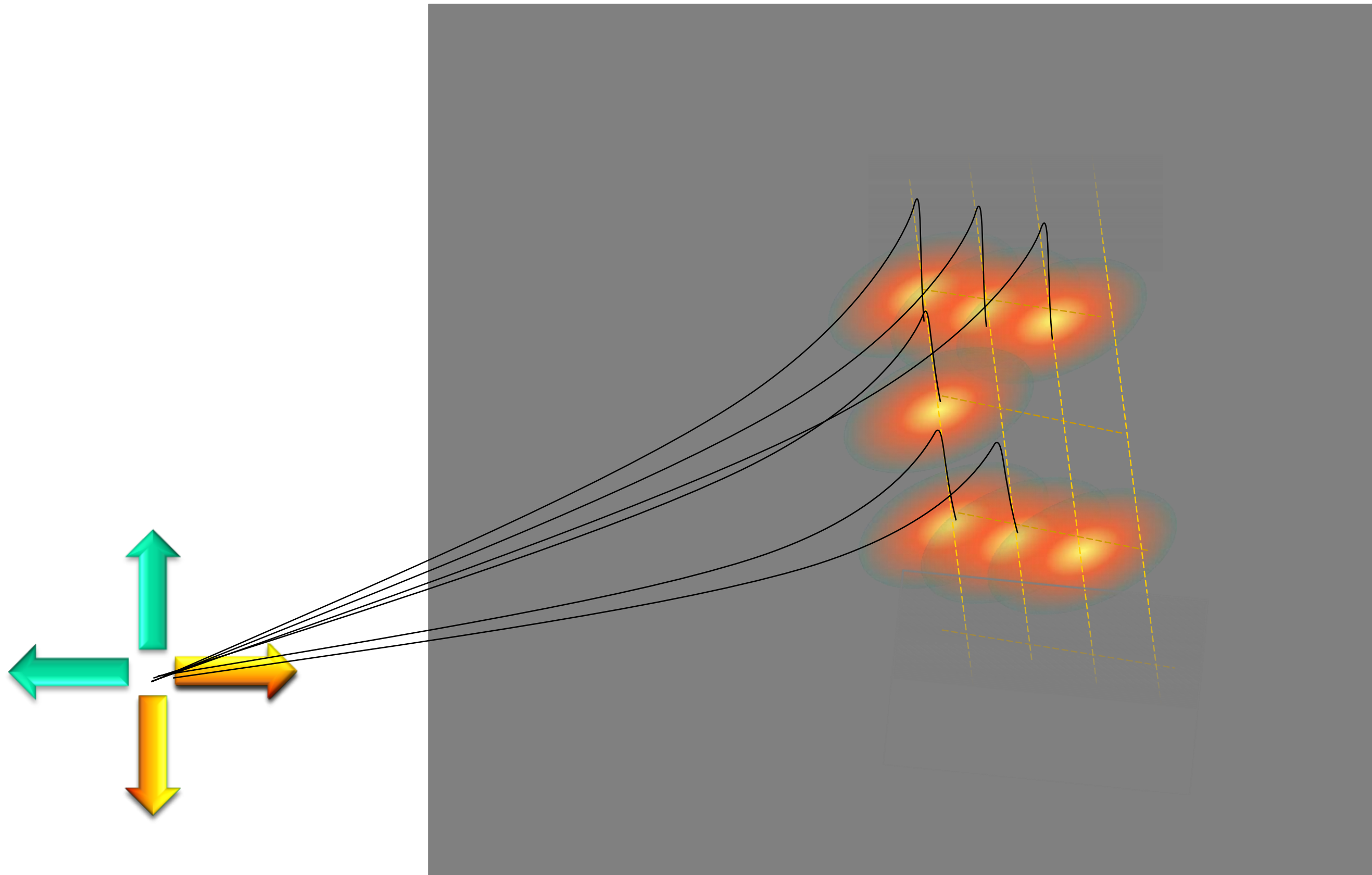
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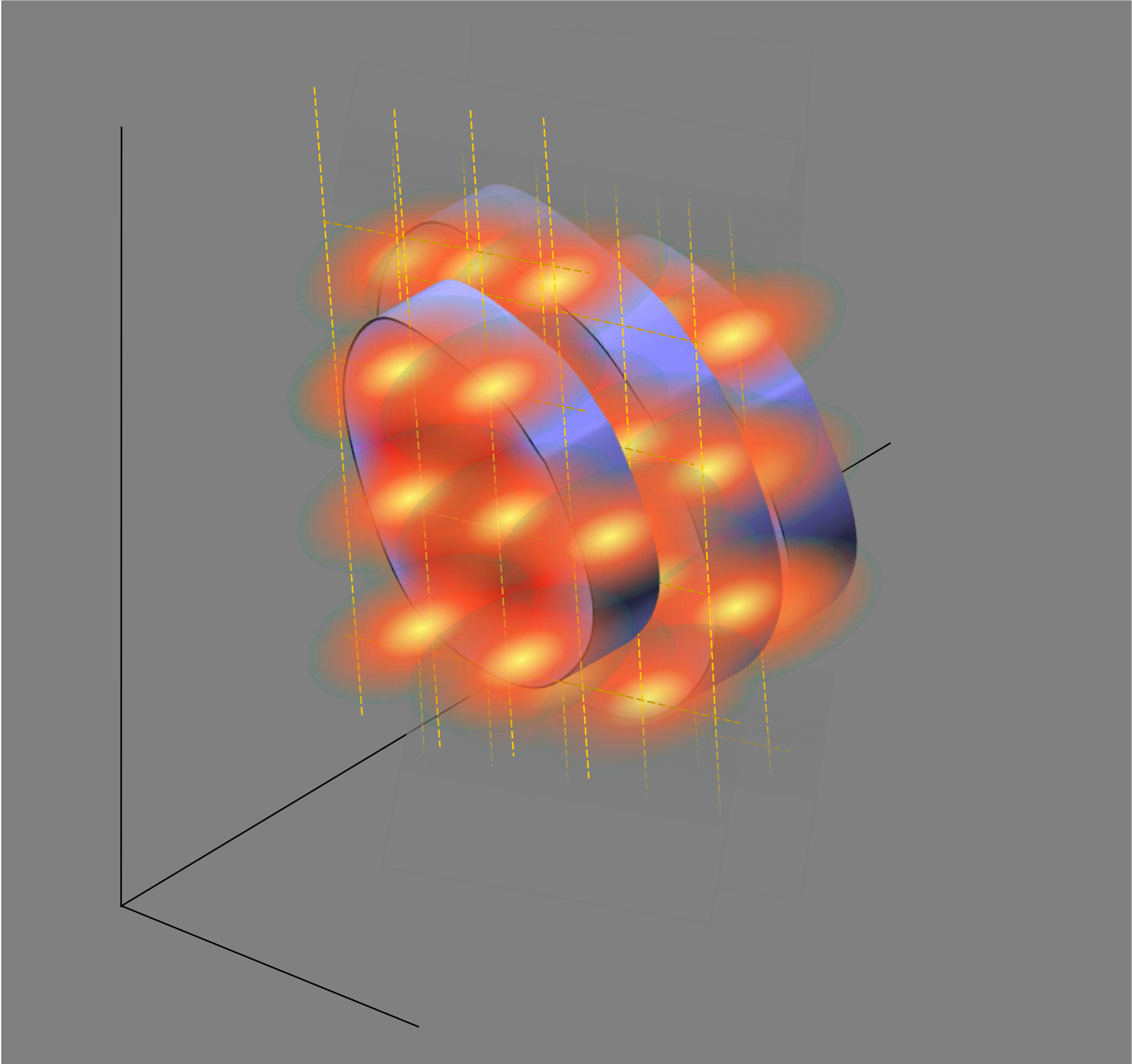






“Pencil beam scanning”







Cyclotron

- champ magnétique B constant entre les deux Dees
- Tension U
- La particule est accélérée entre les « Dees » et décrit un demi-cercle de rayon R à l'intérieur des Dees. Elle est donc accélérée deux fois par tour.

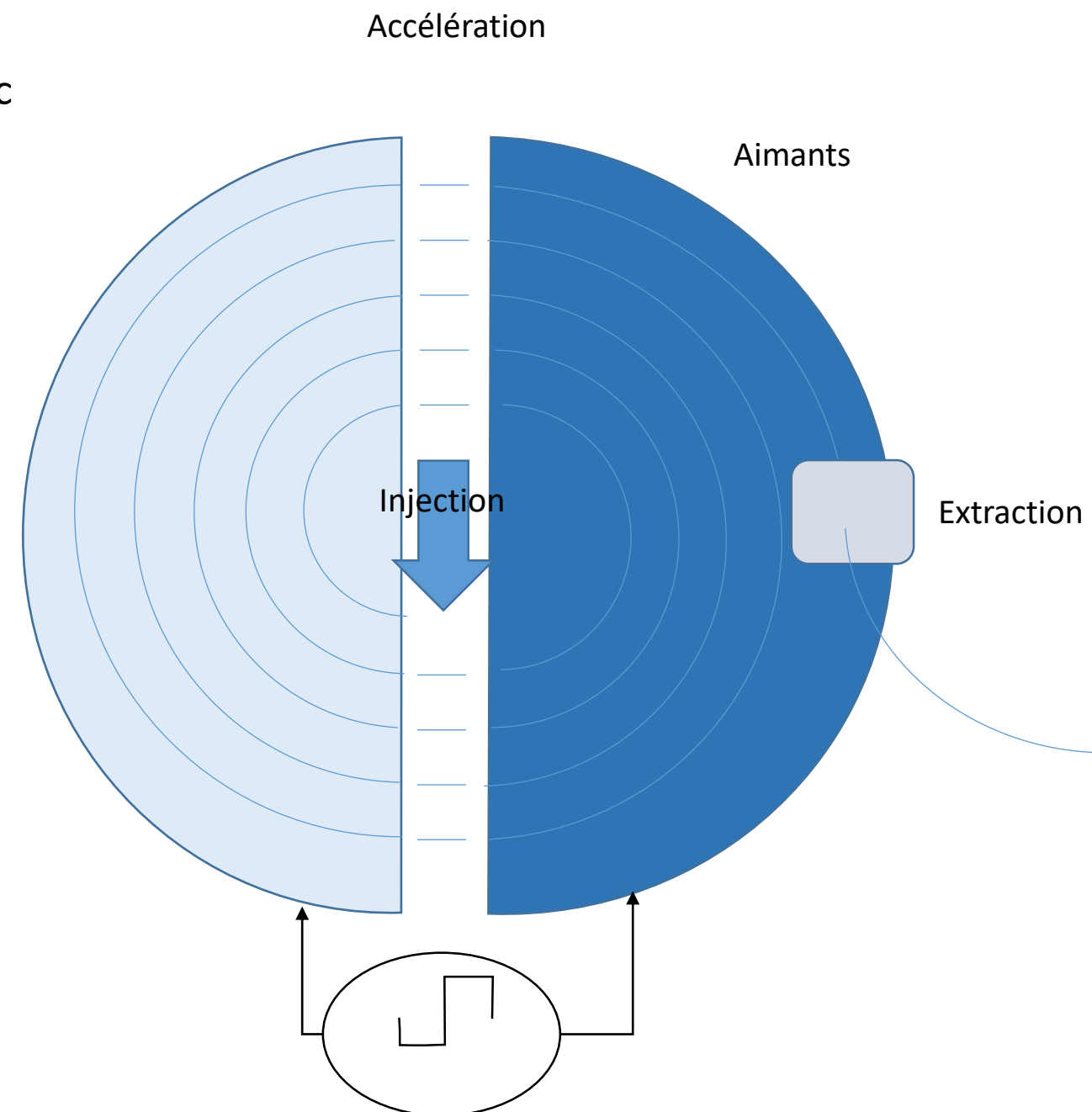
Ion Beam Applications
Cyclotrons

Sumitomo Heavy Industries
Cyclotrons

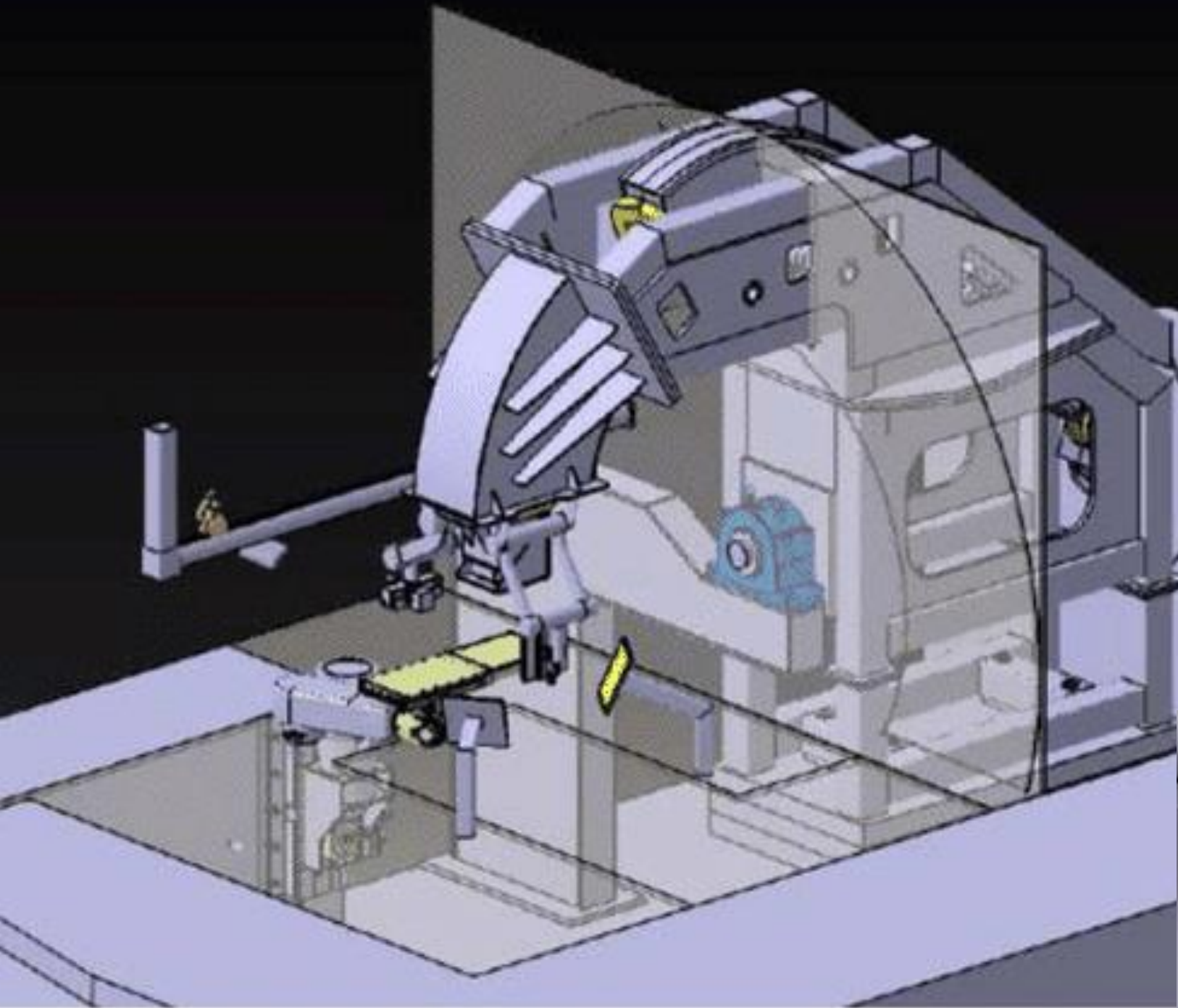
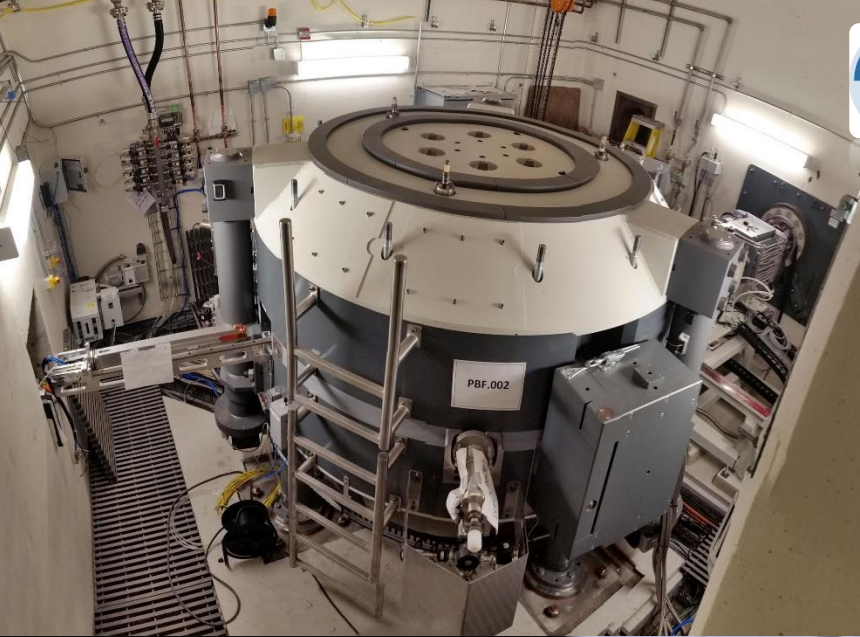
Varian Medical Systems
Cyclotrons

Mevion
Cyclotrons

Provision
Cyclotron



La Protonthérapie





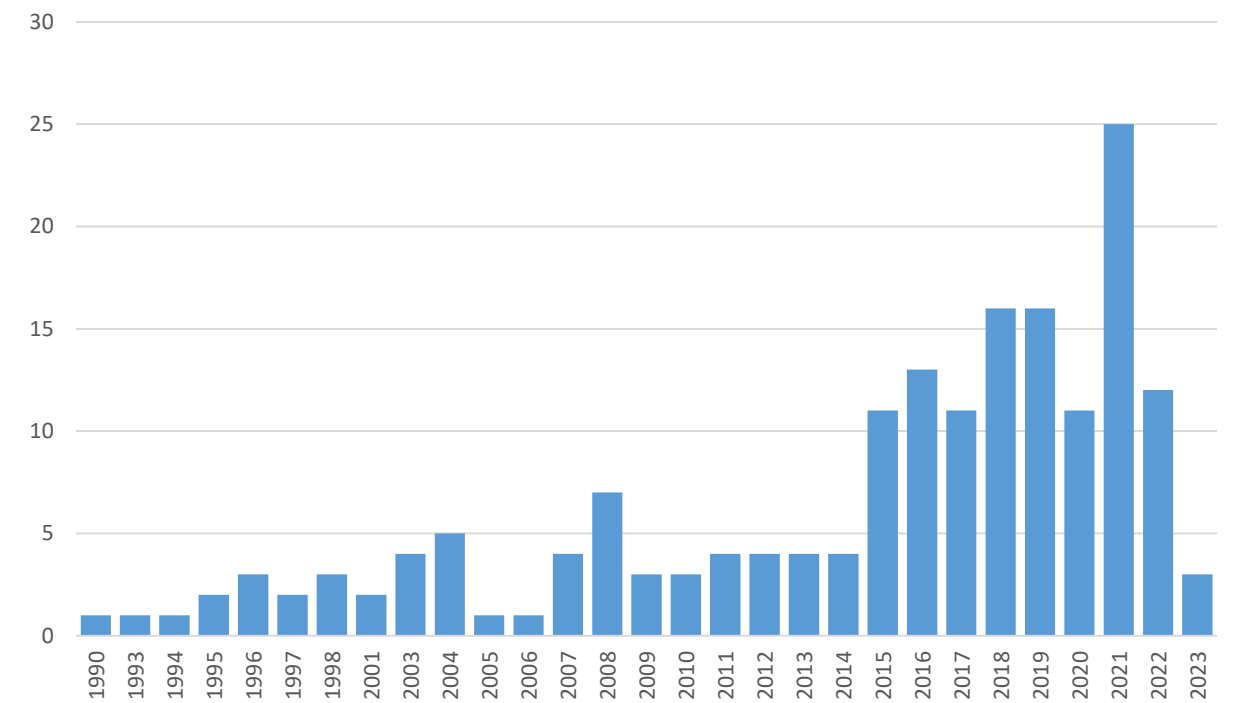
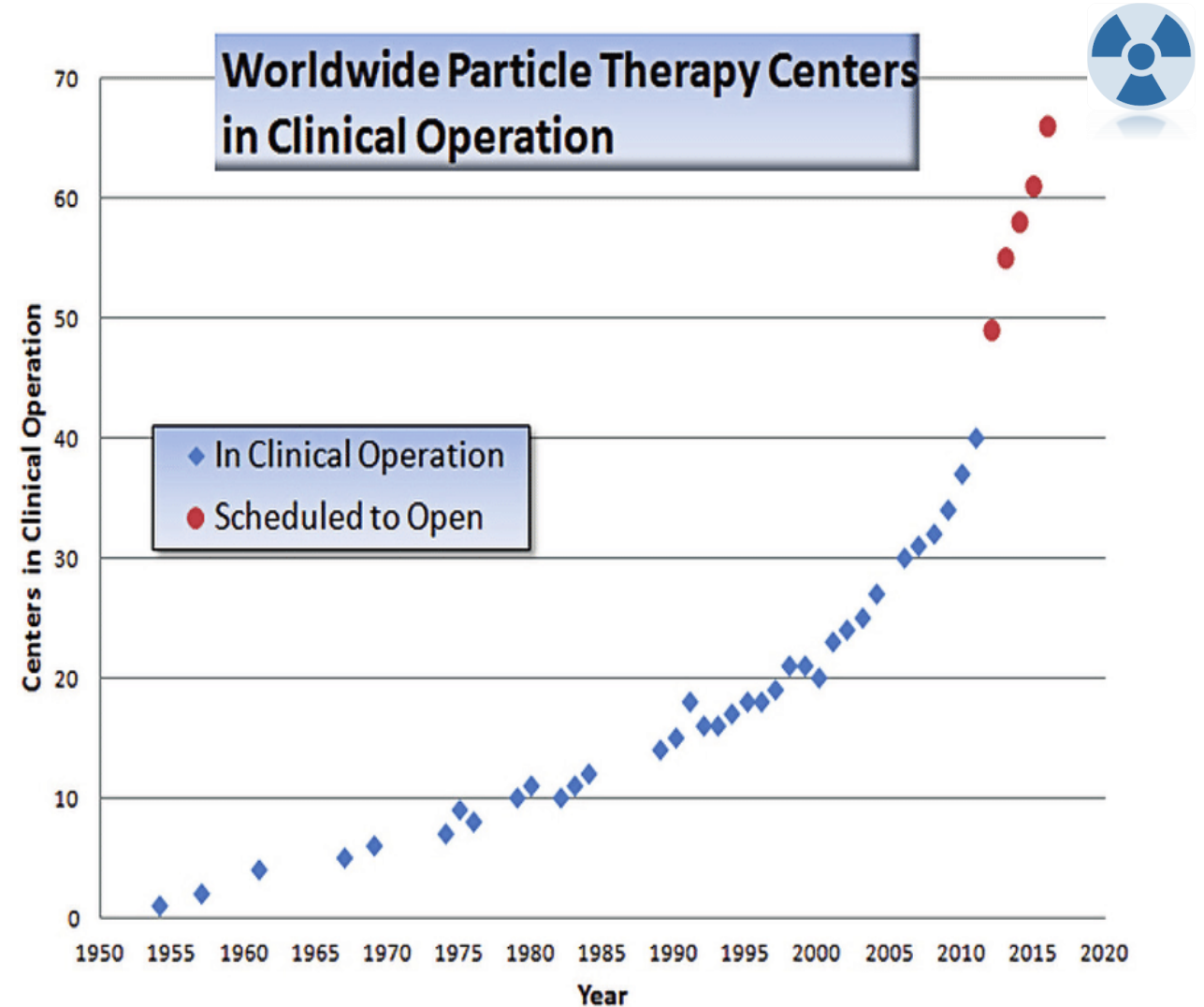
Bâtiment spécifique

- Synchrocyclotron : 50 tonnes
- Bras isocentrique : 40 tonnes
- Supraconduction
- Mitsubishi



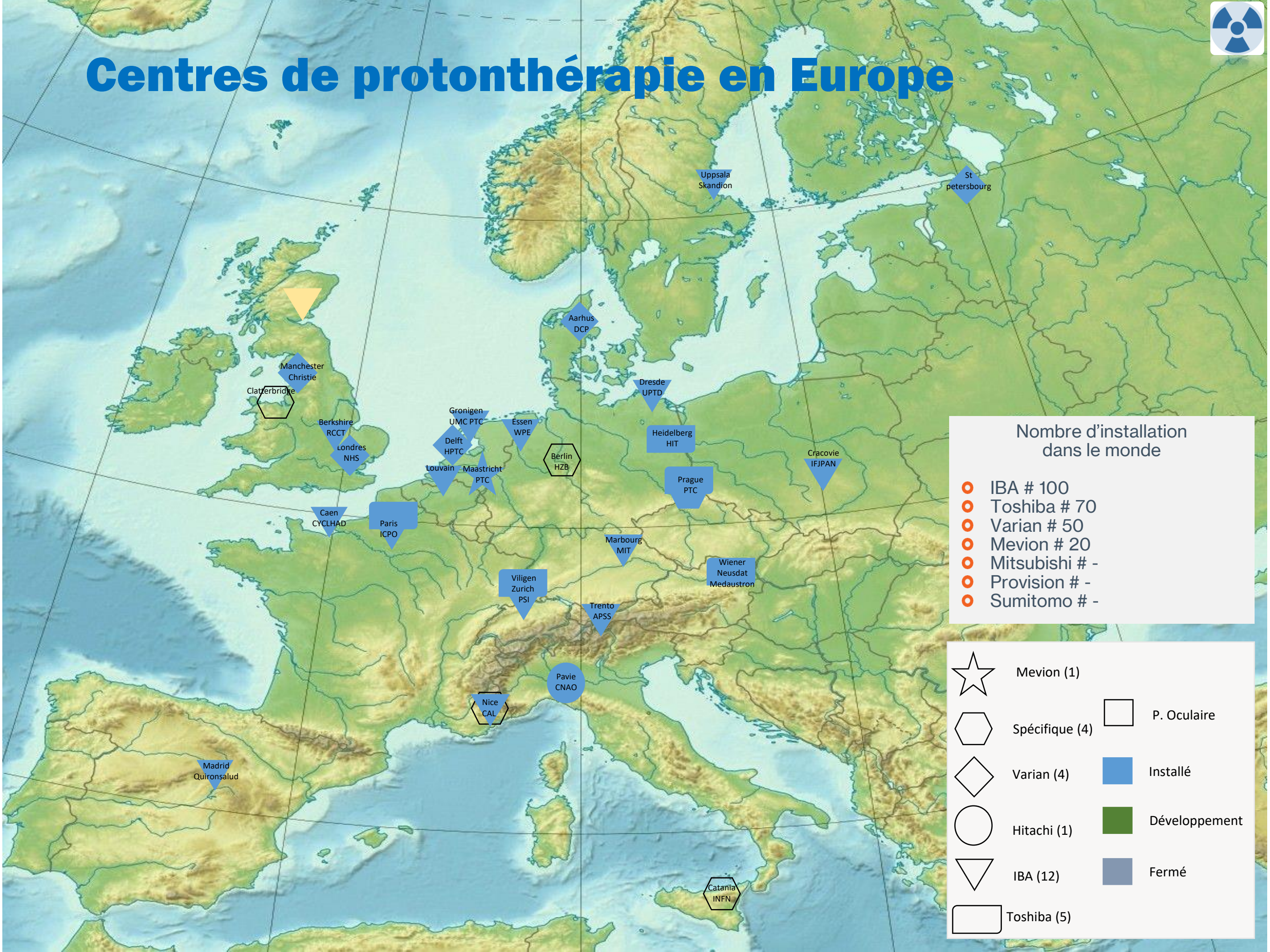
Développement

- 1954 Le premier patient est traité par protonthérapie en utilisant le synchrocyclotron à l'Université de Californie, Berkley (Lawrence)
- 1957 Traitements aux protons : Université d'Uppsala, Suède
- 1961 Protonthérapie hospitalière est ouverte au Massachusetts General Hospital.
- 1967 Doubna, Moscou, 1975 St Petersburg
- 1979 Chiba Japon
- 1984 PSI Villigen, Centres de protonthérapie au MD Anderson Cancer Center (MDACC) à Houston
- 1990 Loma Linda, en Californie, installation de protonthérapie en milieu hospitalier
- 2006 L'installation MDACC a été la première au monde à disposer de faisceaux de balayage bidimensionnels.





Centres de protonthérapie en Europe

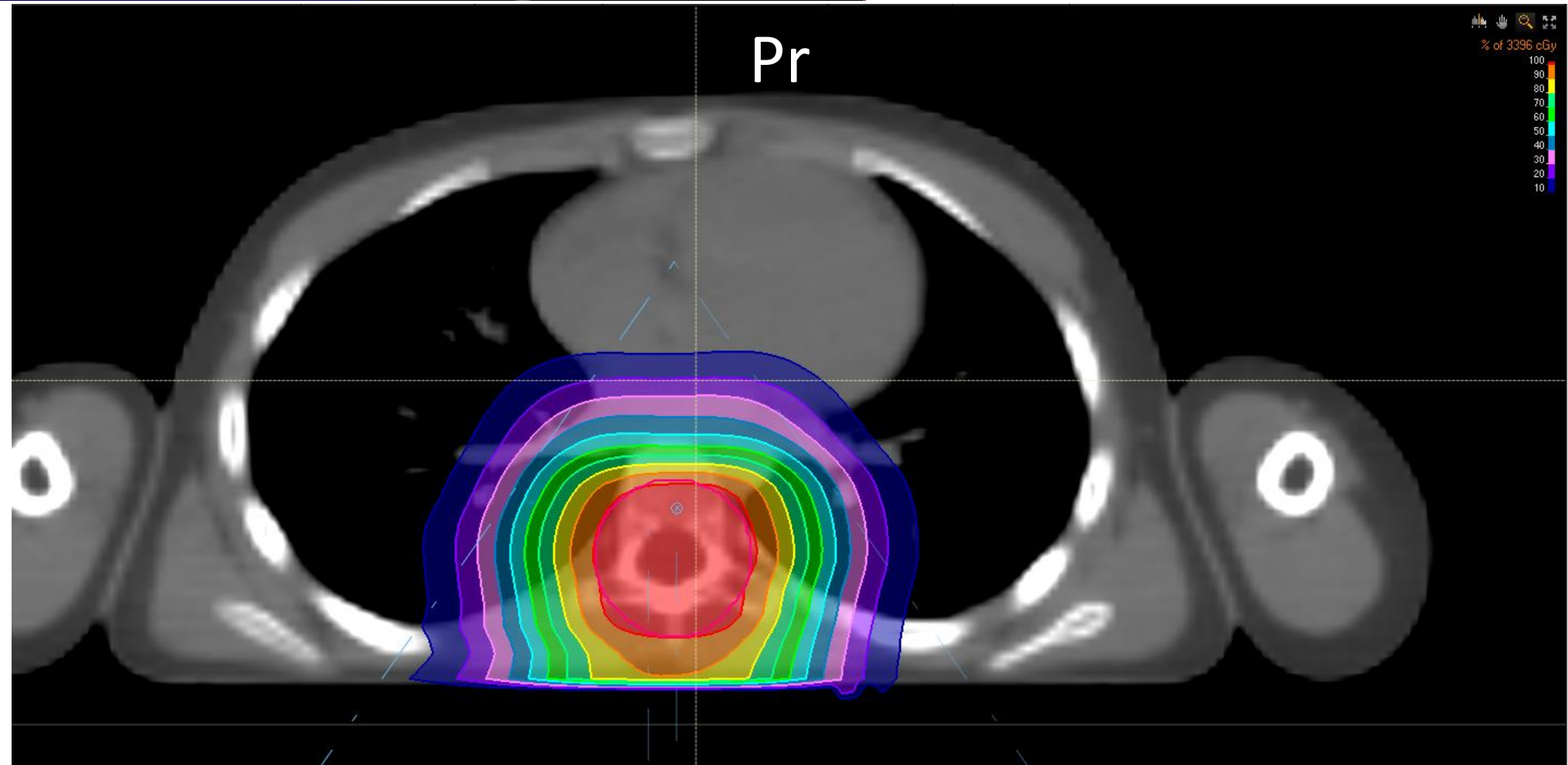
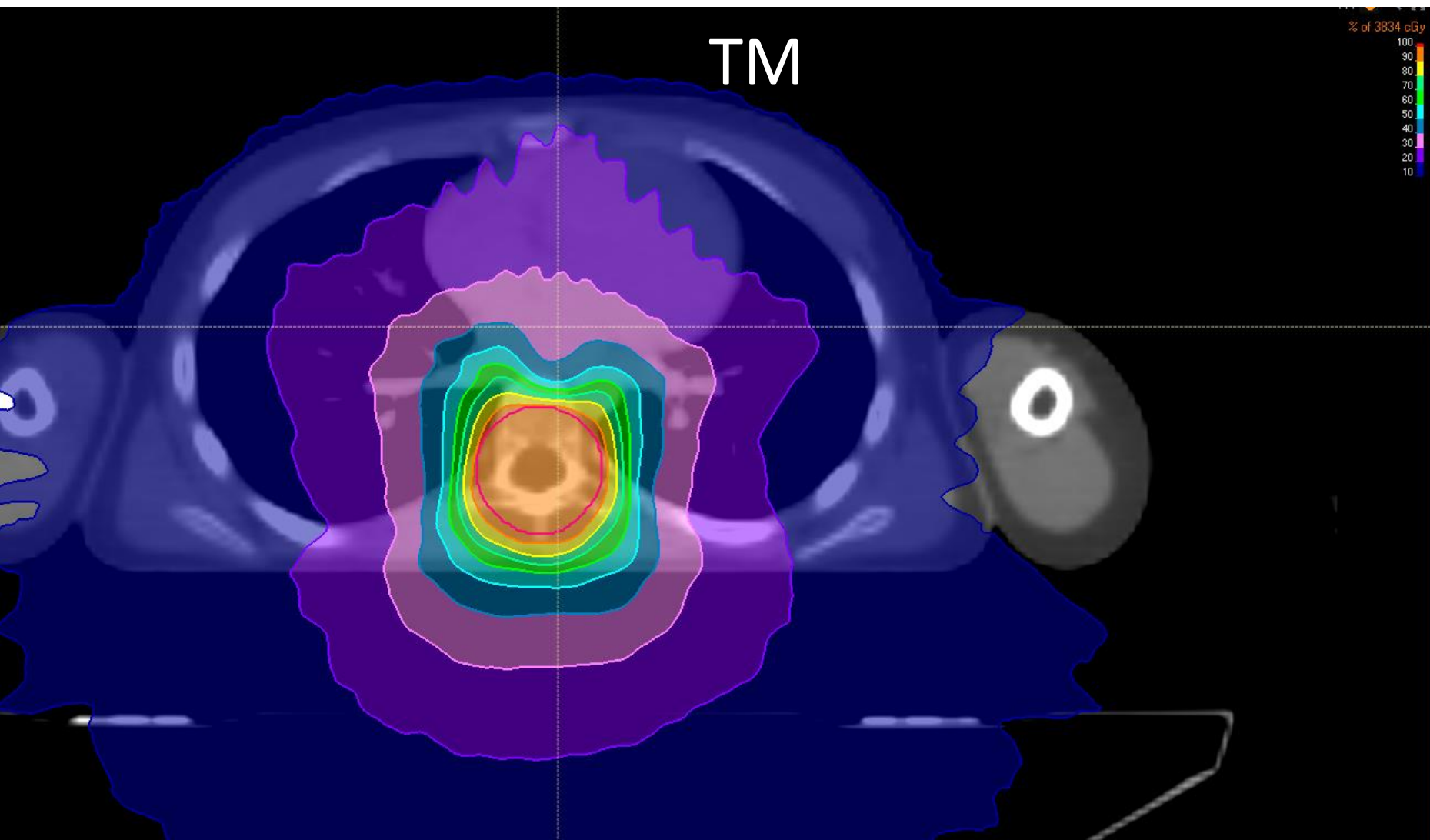


Nombre d'installation dans le monde

- IBA # 100
- Toshiba # 70
- Varian # 50
- Mevion # 20
- Mitsubishi # -
- Provision # -
- Sumitomo # -

☆	Mevion (1)	□	P. Oculaire
⬡	Spécifique (4)	■	Installé
◇	Varian (4)	■	Développement
○	Hitachi (1)	■	Fermé
▽	IBA (12)		
□	Toshiba (5)		

- Uppsala Skandion
- St petersbourg
- Aarhus DCP
- Dresde UPTD
- Heidelberg HIT
- Prague PTC
- Cracovie IFJPAN
- Marbourg MIT
- Wiener Neusdat Medastron
- Trento APSS
- Pavie CNAO
- Nice CAL
- Catania INFN
- Madrid Quironsalud
- Caen CYCLHAD
- Paris ICPO
- Viligen Zurich PSI
- Essen WPE
- Berlin HZB
- Grönigen UMC PTC
- Delft HPTC
- Louvain Maastricht PTC
- London NHS
- Berkshire RCCT
- Manchester Christie
- Clatterbridge



TM



Spécialisé en pédiatrie et anesthésie





La Consolata

Archet 2
If chemo is needed

Consolata
To stay and eat

5 km/10 min

5 km/10 min

Lenval
If surgery is needed

1500 m/2 min

5 km/10 min

IMPT
To make proton with
or without anesthesia

Airport
Nice côte d'azur

500 m





BDCAL- IA de contourage

Adulte

ACCUEIL ANNOTATE SMARTFUSE ADMINISTRATION À PROPOS CLAIRE

RÉGIONS D'INTÉRÊT

- ORGANE (27)
- Cerebellum_A
- Cerebellum_P
- Chiasm
- Cochlea_L
- Cochlea_R
- Cornea_L
- Cornea_R
- Encephalon
- Hippocampus_L
- Hippocampus_R
- Hypothalamus_L
- Hypothalamus_R
- LacrimalGland_L
- LacrimalGland_R
- Lens_L
- Lens_R
- MedullaOblangata
- Midbrain
- OpticNerve_L
- OpticNerve_R
- Pituitary
- Pons
- Retina_L
- Retina_R
- Spinal cord
- Version de prêt VSCC1

FONCTIONS AUTOMATIQUES

OUTILS D'ÉDITION

AFFICHAGE

AXIAL MR - PU-AX 3D T1 GADO - 18 MAY 2017

SAGITTAL MR - PU-AX 3D T1 GADO - 18 MAY 2017

CORONAL MR - PU-AX 3D T1 GADO - 18 MAY 2017



Image primaire: Coupe: 134/166
 Curseur: -
 Intensité: -
 Contraste: 954.69/1909.38

Image primaire: Coupe: 248/512
 Curseur: -
 Intensité: -
 Contraste: 954.69/1909.38

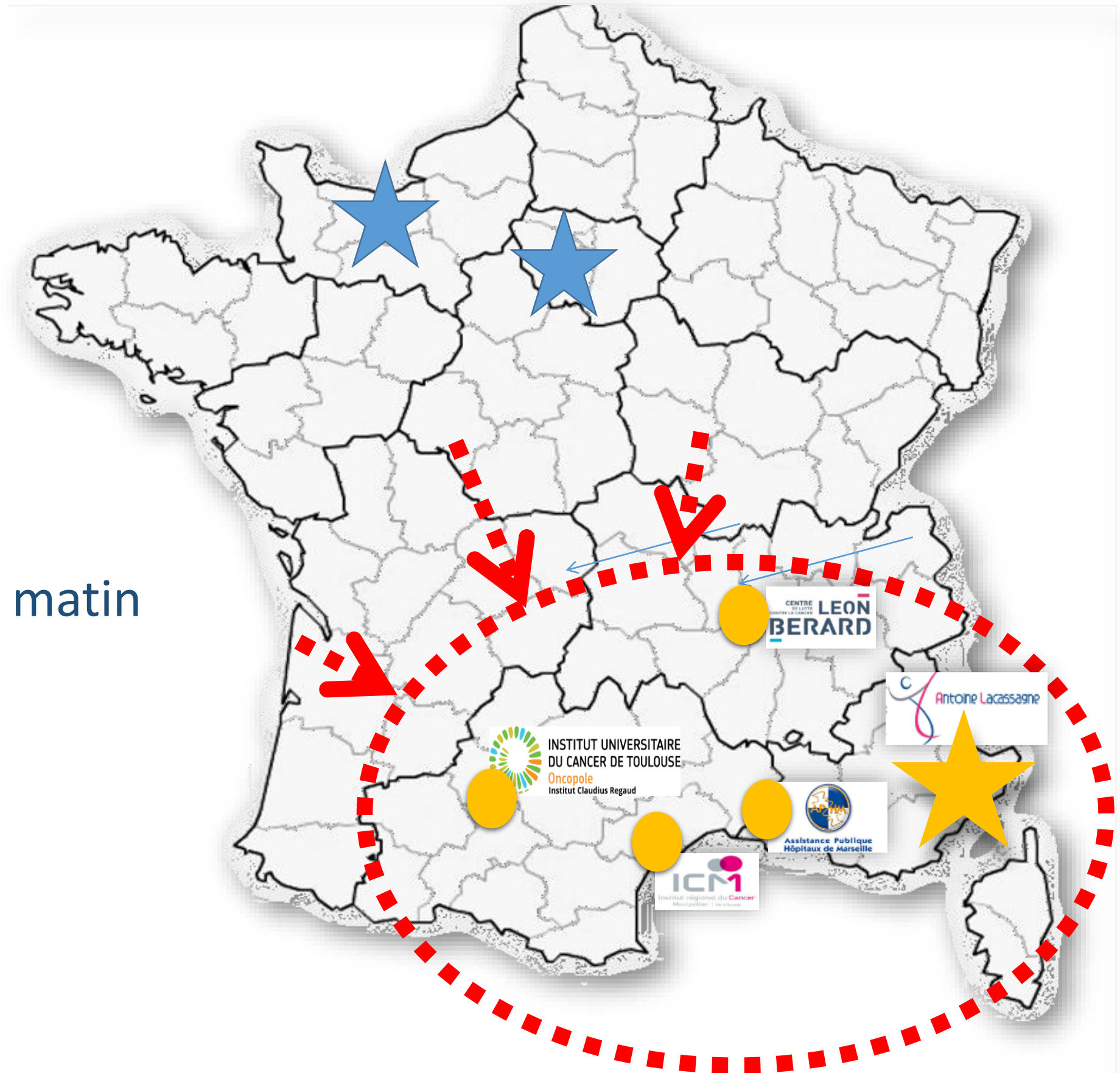
Image primaire: Coupe: 291/512
 Curseur: -
 Intensité: -
 Contraste: 954.69/1909.38



Réseau collaboratif

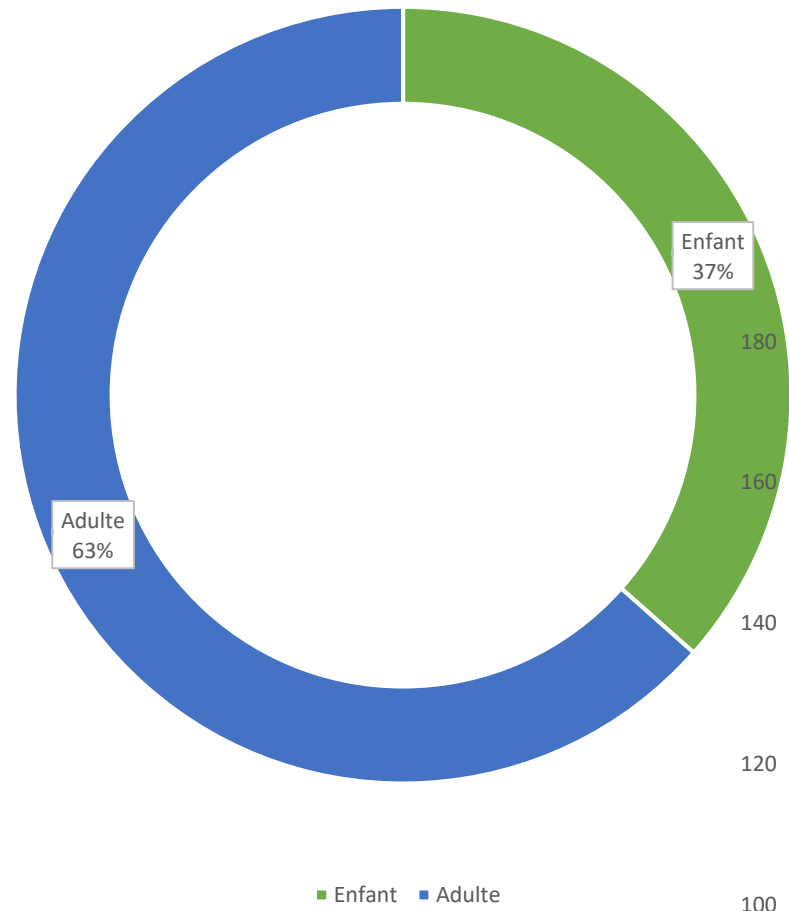
-  Centre pediatrie - AJA
-  Centre proton

Comité technique de protonthérapie par visioconférence lundi matin de 08:30 à 09:30





Répartition Enfants/Adultes



Patients par an

Covid



Médulloblastomes de l'adulte:

EORTC 1634-Brain Tumour Group trial in Post-Pubertal Patients with Newly-Diagnosed Medulloblastoma (PersoMed-I) – *début des inclusions Mai 2023*

Oligodendrogliomes

- **POLA:** suivi longitudinal des oligodendrogliomes anaplasiques
- **POLCA :** A randomized trial of delayed radiotherapy in patients with newly diagnosed 1p/19q codeleted anaplastic oligodendrogial tumors: the POLCA trial. (numéro NCT = NCT02444000) *fin des inclusions en décembre 2022*
- **POLO** = A Randomized Trial of Delayed Radiotherapy in Patients Low-grade Oligodendrogliomas Requiring a Treatment Other Than Surgery (POLO) (NTC = NCT04702581) *inclusions en cours*
- **EORTC 1721 :**
Comprendre les implications à long terme du traitement des tumeurs cérébrales rares sur la qualité de vie liée à la santé : une étude transversale européenne *inclusions terminées en décembre 2022*

- **TEMOTRAD :** First-line Chemotherapy With Temozolomide Alone for Non-enhancing Adult Brainstem Gliomas, With a Diffuse Subtype and Showing Clinical and/or Radiological Infiltrative Pattern of Progression (TEMOTRAD01) (NTC = NCT03932981) – *inclusions en cours*
- **SACHA:** Sécurisation de l'Accès aux molécules innovantes en Cancérologie et en Hématologie pour les enfants, les Adolescents et les jeunes adultes en situation d'échec thérapeutique ou en rechute et non éligibles à un essai clinique – *inclusions en cours*



Glioblastomes:

1^{ère} ligne:

- **STRATEGLIO** : Treatment Intensification With Temozolomide in Adults With a Glioblastoma (StrateGlio) (Numéro NCT = NCT03663725) *inclusions en cours*

TTF

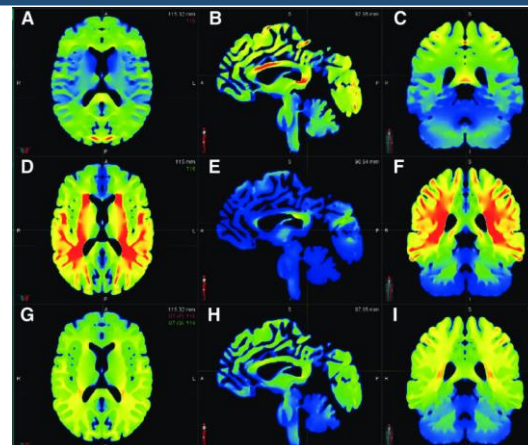
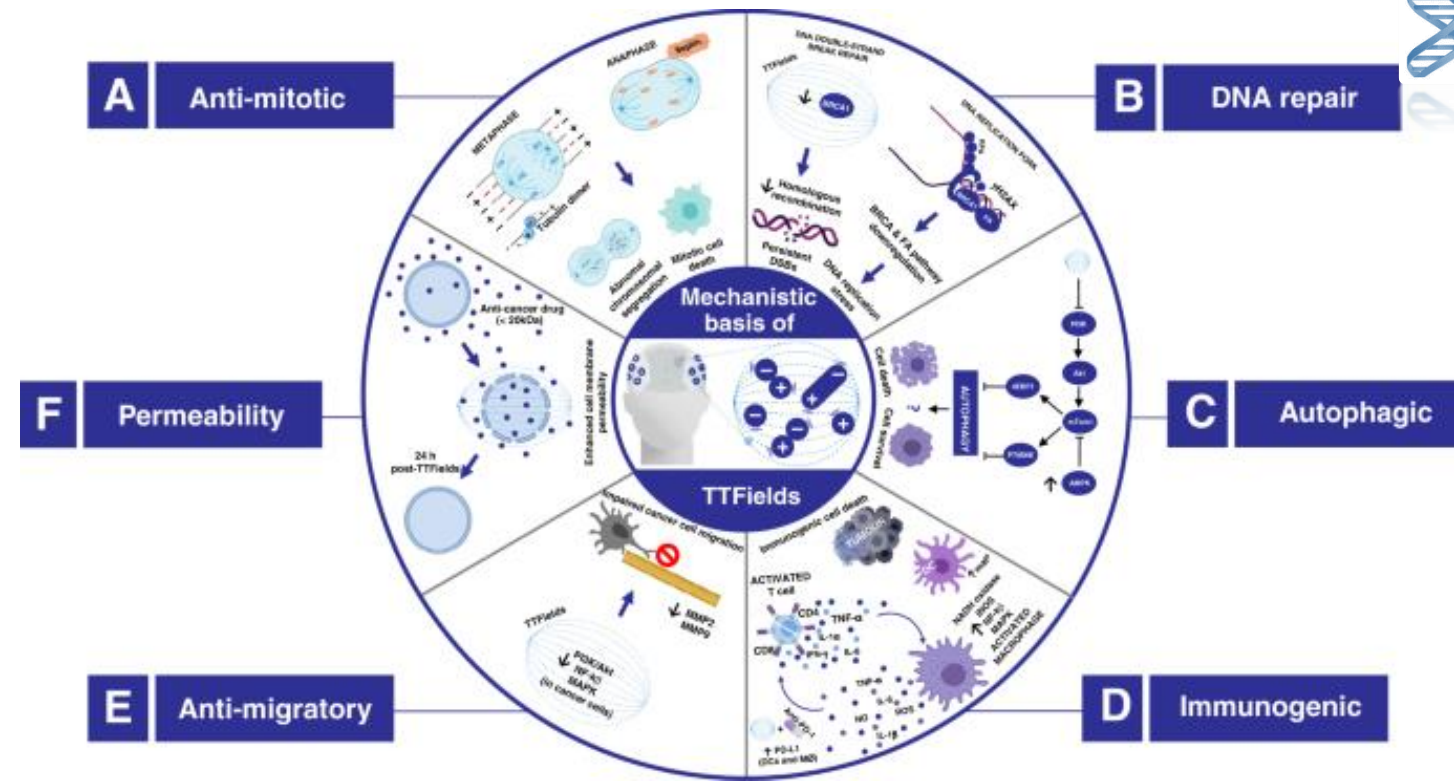
- **TIGER-FR**: Tumor Treating Fields General Routine Clinical Care in Newly Diagnosed Glioblastoma Patients: a French Prospective Non-Interventional Study - *étude en cours d'ouverture*
- **Novocure Etude EF-32/TRIDENT**: Pivotal, Randomized, Open-label Study of Optune® (Tumor Treating Fields) Concomitant With RT & TMZ for the Treatment of Newly Diagnosed GBM (EF-32) – *fin des inclusions en décembre 2022*

1^{ère} récurrence

- **EORTC 2227-BTG**: Lomustine with and without reirradiation for first progression of glioblastoma: a randomized phase III study – *en cours d'ouverture*

Cohortes:

- **Eternity** : **EORTC 1419** = Molecular Genetic, Host-derived and Clinical Determinants of Long-term Survival in Glioblastoma (Numéro NCT = NCT03770468) *fin de inclusions courant 2022*



Les essais CAL

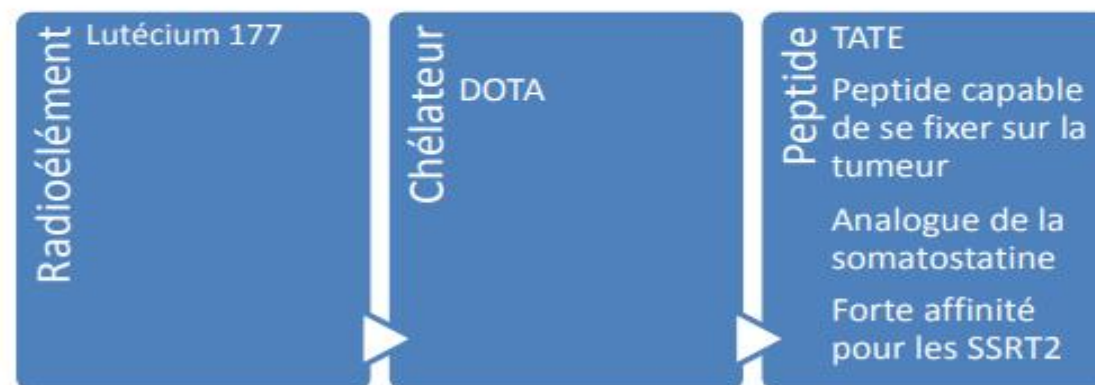
- Récidive : Biologie moléculaire
 - **Day 101-102a**
 - Indiqué si fusion des gènes CRAF/RAF1 ou une amplification des gènes
 - **APL-101** est un nouvel inhibiteur de MET
 - Indiqué dans les altérations de MET : mut c-Met EXON 14 et mut avancées de la dérégulation c-Met
 - étude Apollomics Sparta
 - Fusion ou réarrangement FGFR1-3 : étude Incyte Fight
 - Fusion activatrice du gène BRAF

Les essais CAL

- First-in-Human : CNS-201
- Novartis Lutathéra : Lu-oxodotrétotide
- tumeurs neuroendocrine gastro-entéro-pancréatiques (TNE-GEP)
 - inopérables ou métastatiques,
 - progressives, (critères RECIST)
 - bien différenciées (G1 et G2)
 - exprimant des récepteurs de somatostatine (octréoscan ou TEP analogues somatostatine)
 - chez les adultes.

Thérapeutique	Emission rayonnement β	E max 0,497 Mev, E moy 0,130 Mev	Parcours max 2,2 mm P moy 0,67 mm	Diamètre optimal du volume irradié 2 mm
Imagerie scintigraphique	Emission rayonnement γ	17%	208 et 113 keV	Radioprotection

+ oxodotrétotide : DOTATATE



Irradiation ciblée des cellules tumorales: 80% des tumeurs neuro endocrines expriment des récepteurs de la somatostatine

Etudes CAL : PAZOGLIO

- Étude de phase I/II visant à évaluer, chez les patients opérés d'un Glioblastome puis traités par Radiothérapie-TEMOZOLOMIDE en induction, l'efficacité et la tolérance de l'association du PAZOPANIB au TEMOZOLOMIDE comme traitement d'entretien
Promoteur E. Saada, CAL

Phase I/II Study of Pazopanib and Temozolomide in Patients with Newly Diagnosed Glioblastoma Multiforme: PAZOGLIO trial.

Esmā SAADA-BOUZID, Jean-Sébastien FRENEL, Paule AUGEREAU, Jocelyn GAL, Frédérique JACQUINOT, Véronique BOURG, Yann CHATEAU, Jérôme BARRIERE, Pierre-Yves BONDIAU.

Abstract

Background

Pazopanib, an anti-angiogenic tyrosine kinase inhibitor, has shown activity in pre-treated advanced glioblastomas. There is a biological and clinical rationale for evaluating the activity of Pazopanib in earlier stage of the disease.

Patients and methods

Pazoglio (NCT02331498) is a phase I/II, prospective, multicenter, non-randomized, open-label trial to evaluate the safety and efficacy of Pazopanib combined with temozolomide (TMZ) during the maintenance phase as defined by the Stupp protocol in patients with glioblastoma after complete or partial resection surgery. We present here the data of the dose escalation phase I (standard 3+3) part whose main objective is to determine the maximum tolerated dose (MTD) and the recommended Phase II dose (RP2D) of Pazopanib combined with TMZ during the maintenance phase of the Stupp protocol. The dose limiting toxicities (DLT) was assessed in the first two cycles. Pazopanib was daily and orally dosed according to four dose levels: 200 mg (level 1), 400 mg (level 2), 600 mg (level 3) and 800 mg (level 4).

Results

From September 2015 to March 2022, 42 patients were recorded, and 20 patients finally enrolled. Median age was 54 years [min: 25 – max: 69], 14/20 (70%) were women, 15/20 (75%) had a complete resection. Three patients were enrolled in the level 1 and in the level 2 without DLT. In the level 3, 8 pts were enrolled and one DLT was observed among the 7 patients evaluable for DLT (grade 2 thrombopenia leading to a postponement of the pazopanib of more than 7 days). Two DLT were recorded among the 6 patients enrolled in the level 4: one grade 3 thrombopenia (postponement and decrease of Pazopanib and TMZ dosage) and one grade 3 hypertension (decrease of Pazopanib dosage). Overall, 328 Adverse Events were recorded during the 6 cycles of treatment, most of which being Grade 1-2 (hypertension, decreased appetite, increase ALT, asthenia, nausea, diarrhea, thrombopenia, neutropenia, anemia). Twenty-three grade ≥ 3 AEs were recorded (hypertension, thrombopenia, neutropenia, lymphopenia, epilepsy). No grade 4 or 5 AE was observed.

Conclusion

The addition of pazopanib to TMZ during the maintenance part of the "Stupp protocol" is feasible in resected and fit glioblastoma patients. The RP2D is 600 mg daily pazopanib in combination with TMZ during the maintenance phase of the Stupp protocol. The phase II part of Pazoglio aims to evaluate the efficacy of this combination and is currently enrolling.

Etude PAZOGLIO : étude de phase 1-2 évaluant l'efficacité et la tolérance de l'association du pazopanib et du témozolomide comme traitement d'entretien après chirurgie, chez des patients ayant un glioblastome.

Étude de phase I/II visant à évaluer, chez les patients opérés d'un Glioblastome puis traités par Radiothérapie-TEMOZOLOMIDE en induction, l'efficacité et la tolérance de l'association du PAZOPANIB au TEMOZOLOMIDE comme traitement d'entretien.

TYPE D'ESSAI

thérapeutique

AVANCEMENT

Ouverture prévue le : -
Ouverture effective le : 15/11/2014
Fin d'inclusion prévue le : 30/08/2020
Fin d'inclusion effective le : -
Dernière inclusion le : 10/11/2014
Nombre d'inclusions prévues:
France: 51
Tous pays: -
Nombre d'inclusions faites :
France: -
Tous pays: -
Nombre de centre prévus :
France: 3
Tous pays: -

ÉTENDUE D'INVESTIGATION

PHASE

1-2

ORGANISME PROMOTEUR

Centre Antoine Lacassagne

ÉTAT DE L'ESSAI

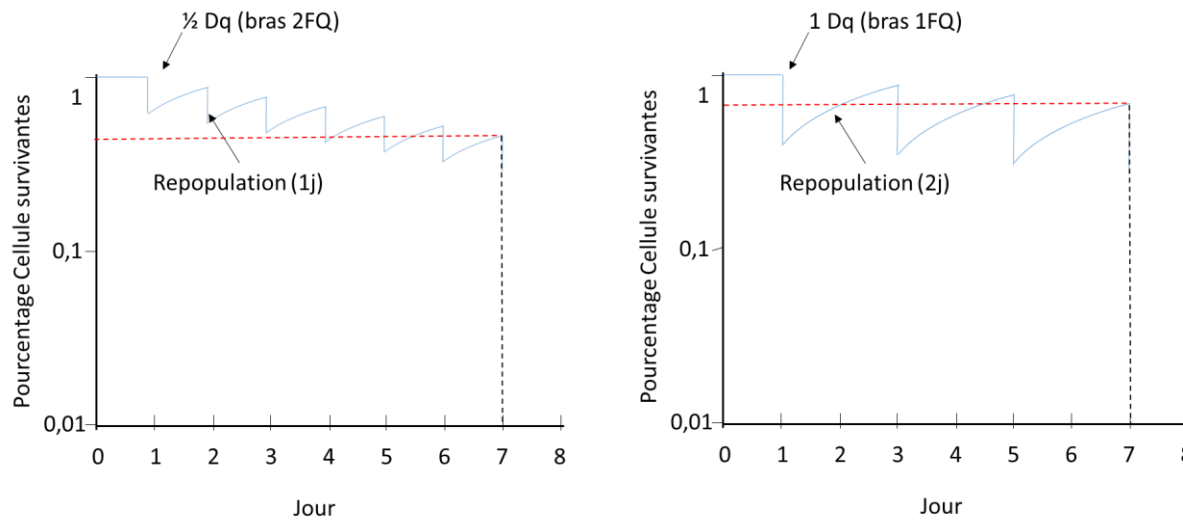
clos aux inclusions

FINANCEMENT(S)

PHRC National Cancer 2012
GlaxoSmithKline (GSK)

Etudes CAL : P1V2

- Analyse de la toxicité et de l'efficacité de la protonthérapie 1 vs 2 faisceaux quotidien – Promoteur : PY Bondiau, CAL



Analyse de la toxicité et de l'efficacité de la protonthérapie 1 vs 2 faisceaux quotidien

Essai monocentrique phase II randomisé en ouvert

P1V2



N° ID-RCB [Mots clés]

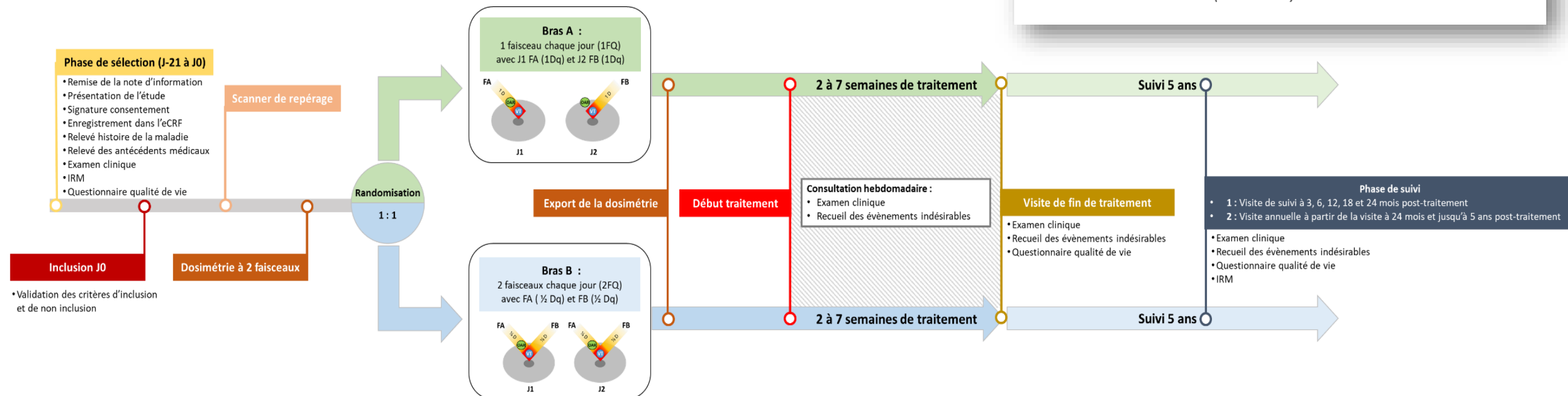
Promoteur
Centre Antoine Lacassagne
33 avenue de Valombrose
06189 NICE CEDEX 2



Dr Pierre-Yves BONDIAU
Chef du département de radiothérapie Oncologique
Centre Antoine Lacassagne
33 avenue de Valombrose
06189 NICE CEDEX 02

☎ 04-92-03-10-70 📠 04-92-03-10-10
Email : pierre-yves.bondiau@nice.unicancer.fr

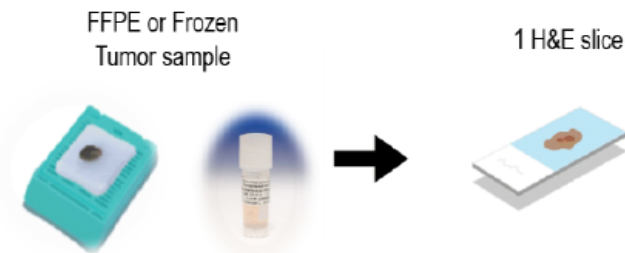
Version n°0.1 du 14/03/2023 ayant reçu :
un avis favorable initial du CPP (comité + date)



Etudes Unicancer : PROTONBIOMARKS

- Recherche de biomarqueurs de réponse à la Protonthérapie chez des patients pédiatriques et adultes.
 - Analyse génomique, épigénétique et immunologique
- Promoteur : L. Claude, CLB

1. Pathological Review Of Tumor Sample



The central pathological review will be performed i) to confirm the diagnosis and ii) to check if quality and quantity of material is acceptable: all tumor sample should present at least 20% of tumor cells, surface area > 5mm² and > 90µm of depth

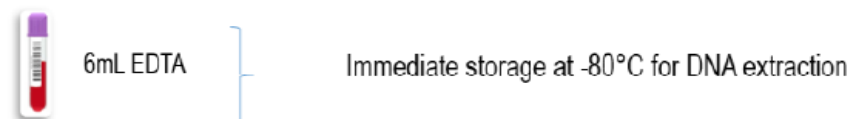
1. If Diagnosis & QC confirmed → Validation of inclusion → Initiation of biological analyses
2. If QC failure : a new sample can be send to the Sponsor
3. If diagnosis not confirmed or definitive QC failure → Inclusion not validated (= screening failure), sample will be send back to the participating center.

2. Derivative Products & Biological analyses



1. IHC	1 slice 3-4 µm thickness for H&E and IHC CD8
2. HTG	1-5 slices (at least 2) according to the surface of the region of interest selected by the pathologist
3. WES	5 slices of 5µm thickness (archival resected specimen) or 10 slices of 10µm (non-surgical biopsies) → DNA extraction
4. RNAseq	3 slices of 5µm thickness (archival resected specimen) or 5 slices of 10µm (non-surgical biopsies) → RNA Extraction

3. BLOOD SAMPLE For All Alive Patients



CLINICAL TRIAL PROTOCOL

PROTONBIOMARKS

Research of Biomarkers of response to proton beam therapy in pediatric and adult patients

A genomic, epigenetic, and immunological analysis

Version 1.0 dated 30 January 2020

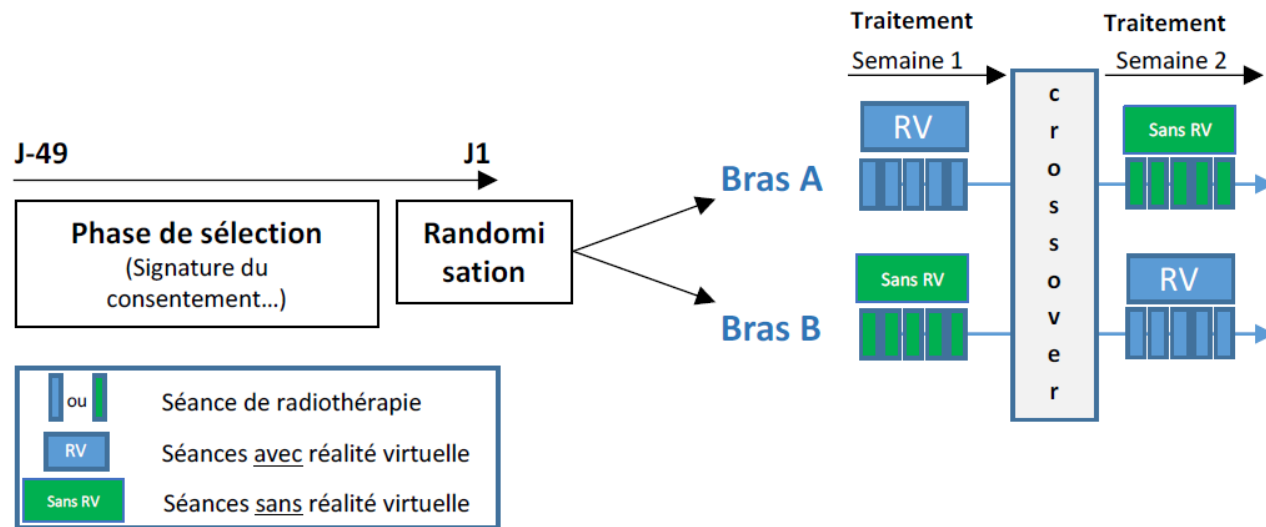
COORDINATING INVESTIGATOR	
Name	Line CLAUDE
Address	Centre Léon Bérard 28 Rue Laennec 69008 Lyon – France
E-mail	Line.claude@lyon.unicancer.fr
BIOLOGICAL COORDINATOR	
Name	Pierre SAINTIGNY
Address	Centre Léon Bérard 28 Rue Laennec 69008 Lyon – France
E-mail	Pierre.saintigny@lyon.unicancer.fr
COORDINATING CENTER	
Name	Direction de la Recherche Clinique et de l'Innovation (DRCI)
Address	Centre Léon Bérard 28 Rue Laennec 69008 Lyon – France
SPONSOR	Centre Léon Bérard, France

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Etudes Unicancer : REVER

- Analyse de la efficacité de la réalité virtuelle en positionnement pour l'enfant

Promoteur : PY Bondiau, CAL



Réalité Virtuelle pour l'Enfant en Radiothérapie

REVER



N° ID-RCB 2021-A00424-37

Promoteur
Centre Antoine LACASSAGNE
33 avenue de Valombrose
06189 NICE CEDEX 2



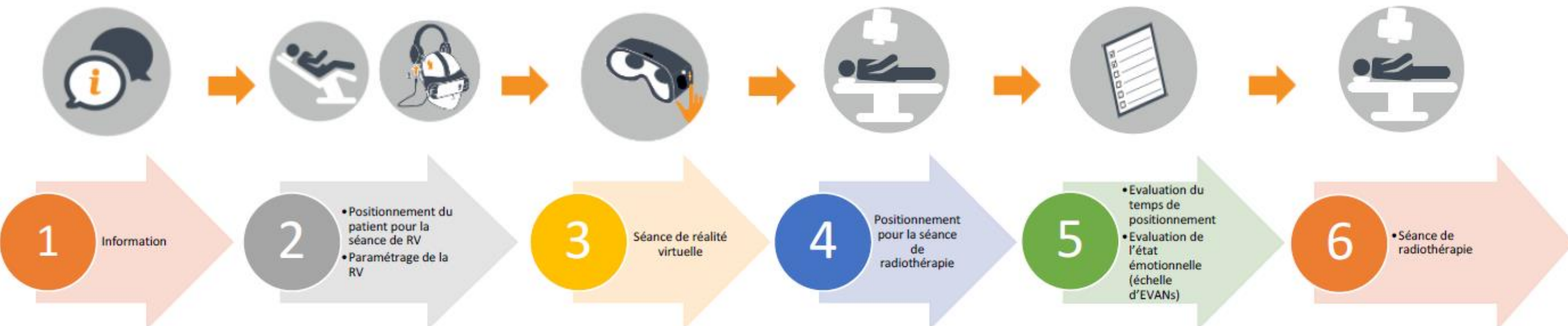
Investigateur coordonnateur
M^{me} Anne GARCIA
Département de Radiothérapie
Centre Antoine LACASSAGNE
33 avenue de Valombrose
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☎ 04-92-03-19-44 - 📞 04-92-03-10-30
Email : Anne.GARCIA@nice.unicancer.fr

Version n°1.0 du 06/01/2021 ayant reçu :
• un avis favorable du CPP Ouest 1 en date du 11/05/2021

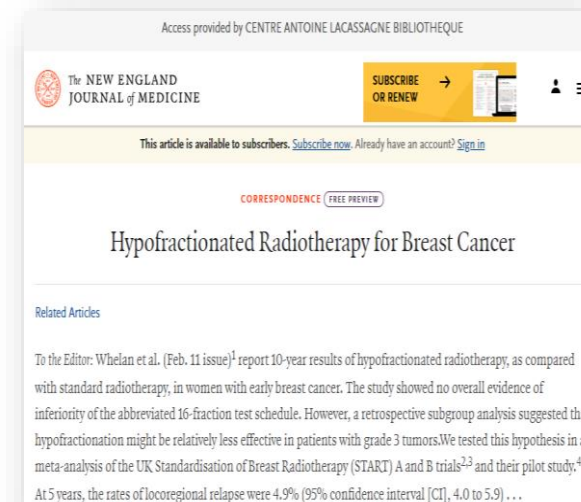
Protocole REVER Version 1.0 du 06/01/2021

Page 1 sur 50



AU total : les nouvelles techniques permettent

- Amélioration du pronostic?
 - Protocoles et Etudes en cours
- Diminution de la toxicité
 - CK
 - Proton
- Diminuer la durée du traitement
 - En délivrant une dose quotidienne supérieure
 - CK
- Nouveau espoirs
 - Immunotherapie
 - Nouvelle molecule
 - TTF



Sein	Possibilité de traitement en 5 jours au lieu de 5 semaines Toxicité identique option sûre et efficace chez 4000 ptes
Prostate	Possibilité de traitement en 5 jours au lieu de 7 semaines Toxicité identique
Poumon	Possibilité de traitement en 3 jours au lieu de 6,5 semaines Toxicité identique Résultats nettement améliorés



MERCI



Pierre-Yves BONDIAU



04 92 03 12 61



Bondiau.pierre-yves@nice.unicancer.fr

Établissement habilité à recevoir des dons et legs
Pour soutenir le Centre www.centreantoinelacassagne.org

Membre du groupe UNICANCER

