

# The Chernobyl Tissue Bank

Grant Agreement Number: 211712

Final Report - Figures, Tables and Annex

## CTB Logo



Web site: <http://www.chernobyltissuebank.com/>

Figure 1: Thyroid cancer Average Number of New Cases per Year and Age-Specific Incidence Rates, UK, 2006-2008. Data available from <http://info.cancerresearchuk.org/cancerstats/types/thyroid/incidence/#age>

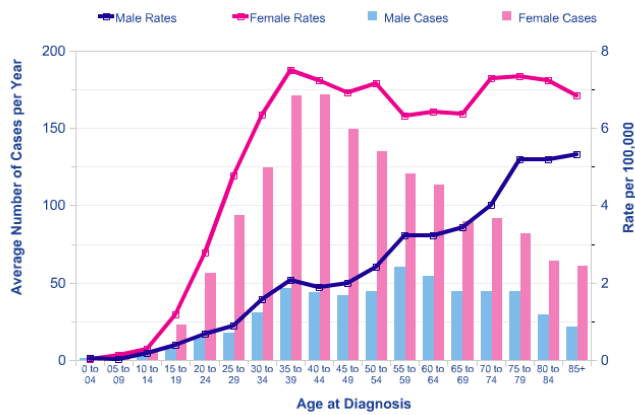


Fig. 2 CTB Governance and Management structure

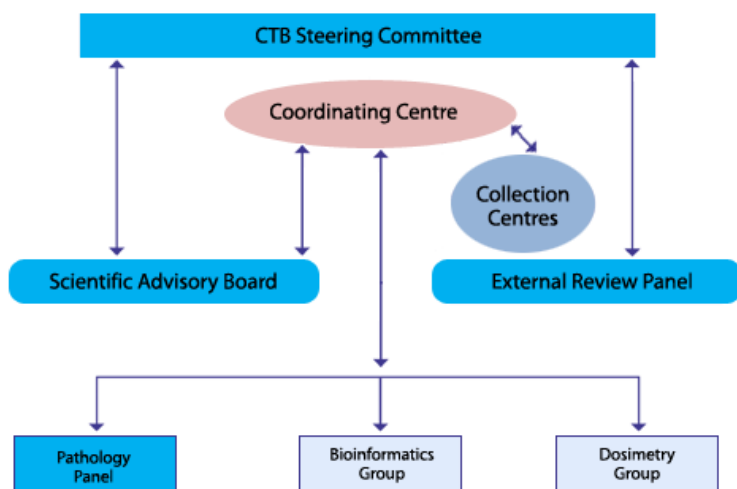


Table 1. CTB Consortium partners

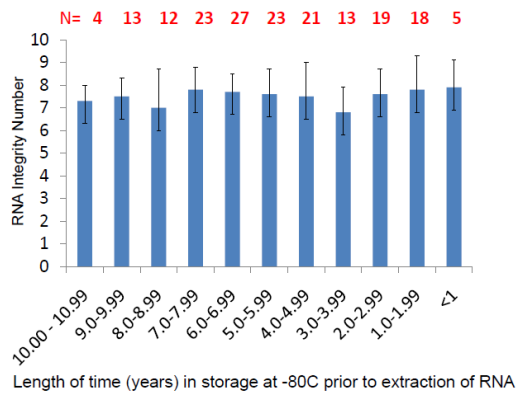
Institution	Abbreviated name	Role	Workpackage lead
Imperial College, London, UK	ICL	Coordinating Centre	6,7,10
Institute of Endocrinology and Metabolism, Kiev, Ukraine	IEM	Patient recruitment, tissue collection, processing and storage	1,2,3,4,5
Medical Radiological Research centre, Obninsk, Russia	MRRC		
Helmholtz Zentrum Munich, Germany	HMGU	Dosimetry	8
Silesian University of technology, Gliwice, Poland	SUT	Data warehouse	9

Table 2. Annual Recruitment

	2008/09	2009/10	2010/11	2011/12
<b>IEM</b>	197	212	226	288
<b>MRRC RAMS</b>	111	108	100	139

**Figure 3.** *Effect of length of time in storage on RIN*

DNA and RNA are aliquotted into standard aliquots and stored at  $-80^{\circ}\text{C}$  until required for a research project. Studies at the Coordinating Centre have demonstrated that tissue kept at  $-80^{\circ}\text{C}$  for up to 10 years does not show any significant degradation in terms of RNA Integrity Number (RIN) or in terms of mRNA expression (Maenhaut C et al., personal communication). Quality assurance of FFPE material also shows that CTB cases are of similar quality to those obtained from NHS hospitals in the UK and is suitable for aCGH.



**Fig 4.** Schematic diagram of the CTB Data Warehouse

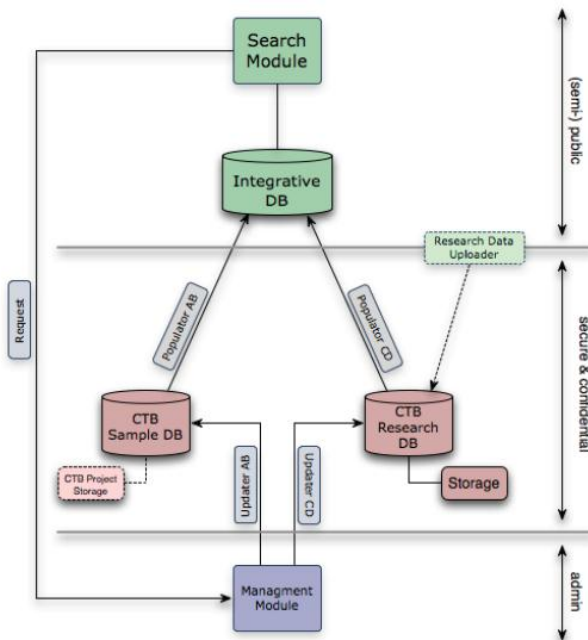


Fig 5. Samples Database - Patient data screen

Chernobyl Tissue Bank::Sample Database Search

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[Home](#) > [Patients](#) > [Patient UA0048](#)

**Actions**

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**Patient**

CTB UID	UA0048
Residence at Accident	Ivan-Frankivsk, Ukraine
Date of Birth	01-Dec-1970
Gender	female
Reference	
Dosage (Category / Arithmetic Mean)	3-3 / 7.8918
Path Panel	1

**Related Operations**

CTB UID	Histology No	Date of Operation	FFPE Blocks (T/N/M)	FF Blocks (T/N/M)	Time Until Freezing	Actions
UA0048_op	69/99	23-Feb-1999	1 / 0 / 0	4 / 1 / 0	15	<a href="#">View</a> <a href="#">Attach Micro Form</a>

**Related Biospecimens**

Biospecimen CTB UID	Format	Lesion	Diagnosis	Tissue Type	Quantity	Actions
<a href="#">UA0048_op_N1</a>	ff			normal	1 / 1	<a href="#">View</a>
<a href="#">UA0048_op_T1</a>	ff	UA0048_op_lesionA		tumour	1 / 1	<a href="#">View</a>
<a href="#">UA0048_op_T2</a>	ff	UA0048_op_lesionA		tumour	1 / 1	<a href="#">View</a>
<a href="#">UA0048_op_T3</a>	ff	UA0048_op_lesionA		tumour	1 / 1	<a href="#">View</a>
<a href="#">UA0048_op_T4</a>	ff	UA0048_op_lesionA		tumour	1 / 1	<a href="#">View</a>
<a href="#">UA0048_op_blockA</a>	ffpe	UA0048_op_lesionA	PTC	tumour	1 / 1	<a href="#">View</a>

Fig 6. Samples Database - Information about the operation, including the diagram of the thyroid showing areas from which samples have been taken.

Chernobyl Tissue Bank::Sample Database Search


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**Actions**

[View Patient UA0048](#)

### Operation

Patient CTB UID	UA0048
Date of Birth	01-Dec-1970
Residence at Accident	Ivan-Frankivsk, Ukraine
Operation CTB UID	UA0048_op
Date of Operation	23-Feb-1999
Residence at Operation	Ivan-Frankivsk, Ukraine
Histology No	69/99
Left Lobe Weight(g) / Size	31.00 / 6.5x4.2x3.2
Right Lobe Weight(g) / Size	9.00 / 5.2x2.6x1.1
Thyroidectomy	total
Specimen Type	lymphadectomy-no
External Surface	nodular
Adherent	No
Macro Image	
FFPE Blocks (T/N/M)	1 / 0 / 0
FF Blocks (T/N/M)	4 / 1 / 0
Time Until Freezing (min)	15
Note	ageop: 28.229979, op_comment: , commentx:
PP Diagnosis	PTC

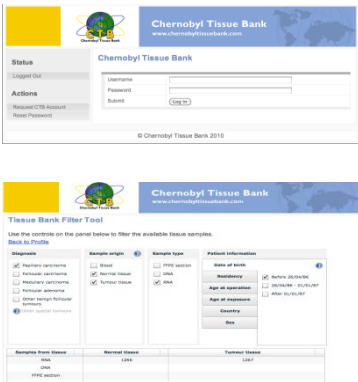
### Related Lesions

Lesion CTB UID	Histology Number	Diameter	Note	Actions
UA0048_op_lesionA	69-1/99	4.20	lesion note: , colourchanged:	<a href="#">View</a>

### Related Biospecimens

Biospecimen CTB UID	Format	Lesion	Diagnosis	Tissue Type	Quantity	Actions
UA0048_op_N1	ff			normal	1 / 1	<a href="#">View</a>

Fig 7. Representative screen shots of the CTB portal



#### CTB Tissue Bank Search Filter

Remove items from your selection using the Del buttons. Items are arranged in donor order and multiple items for a single donor (for instance matched pairs) appear under each other. Once you are happy with your selection, use the button at the bottom of the page to apply for the samples and/or data.

[Edit this search](#)

Your selection now contains 244 tissue samples from 63 cases and 123 data items  
Displaying the first 30 cases

Donor ID	Donor Information	Samples Available	Data	Del
UA0249	<ul style="list-style-type: none"> <li>Sex = Female</li> <li>DOB = Before Accident</li> <li>Country = Ukraine</li> <li>Exposed to Radiation? = Yes</li> <li>Exposure Age = 2</li> <li>Operation Age = 16</li> </ul>	<ul style="list-style-type: none"> <li>RNA : Normal tissue : Papillary carcinoma</li> <li>RNA : Tumour tissue : Papillary carcinoma</li> </ul>	<ul style="list-style-type: none"> <li>Polymorphism : Affymetrix : Genome-Wide Human SNP</li> <li>Copy Number : BAC : 1 Mb</li> <li>Gene Expression : Affymetrix : U133 Plus 2.0</li> <li>Gene Expression : Affymetrix : U133 Plus 2.0</li> <li>Gene Expression : Affymetrix : U133 Plus 2.0</li> <li>Gene Expression : Affymetrix : U133 Plus 2.0</li> <li>BRCA1/RET status = known</li> </ul>	<a href="#">Del</a>

Table 3. Samples distributed to date

No. of projects receiving samples	FFPE sections	RNA (aliquots)	DNA (aliquots)	DNA from blood
21		2428		
10			1627	
3				441
10	6756			

N.B. Some projects receive samples of more than one type e.g. aliquots of DNA and of RNA from tissue

Table 4. Projects approved for access to the resources of the CTB (2008-2012)

Project Reference No.	Principal Investigator	Title
001/2008	Professor GA Thomas	Genrisk-T – defining the risk of low dose radiation for thyroid cancer – the role of germline SNPs
002/2008	Professor B Jarzab	Expression profiling of childhood follicular tumours: a comparison of those exposed and not exposed to radiation. Defining the genetic component of thyroid cancer risk at low doses.
003/2008	Professor H Zitzelsberger	Array CGH analysis of follicular post-Chernobyl thyroid tumours
001/2009	Professor B Jarzab	Expression profiling of childhood papillary cancer: a comparison of those exposed and not exposed to radiation. Defining the genetic component of thyroid cancer risk at low doses – request for RNA aliquots for QPCR validation and for the exon arrays
002/2009	Professor JA Fagin	Identification of somatically acquired rearrangements in post-Chernobyl paediatric thyroid cancers using genome-wide massively parallel paired-end sequencing
003/2009	Professor GA Thomas	miRNA profiles in childhood thyroid cancer
001/2011	Dr K Unger	EpiRadBio
002/2011	Dr C Ory	Molecular specificities of radiation-induced thyroid tumors
003/2011	Dr K Unger	EpiRadBio - Validation of radiation-associated gain of chromosome band 7q11
004/2011	Dr L Hawthorn	A Sequence-based Approach to Identify Genetic Determinants of Tumorigenesis in Radiation-Induced Pediatric Papillary Thyroid Carcinomas

001/2012	Dr W van Wieringen	EpiRadBio
002/2012	Professor B Jarzab	Validation of the gene signature differentiating exposed from non-exposed PTCs obtained in the Genrisk-T project (no. 036495) with an independent QPCR method
004/2012	Prof GA Thomas	DNA methylation patterns and radiation induced papillary carcinoma
008/2012	Dr S Chanock	Pilot study of genomic characterisation of thyroid cancers in the UkrAm cohort

Table 5. Project meetings held in the reporting period

<b>Committee/working group</b>	<b>Meeting date</b>	<b>Venue</b>
Dosimetry Working Group	24 <sup>th</sup> June 2008	Kiev
Pathology Panel	21 <sup>st</sup> -23 <sup>rd</sup> January 2009	London
Scientific Advisory Board	23 <sup>rd</sup> March 2009	London
Steering Committee	24 <sup>th</sup> March 2009	London
Dosimetry Working Group	17 <sup>th</sup> June 2009	Kiev
Pathology Panel	1 <sup>st</sup> -3 <sup>rd</sup> February 2010	London
Scientific Advisory Board	18 <sup>th</sup> October 2010	London
Steering Committee	19 <sup>th</sup> October 2010	London
Dosimetry Working Group	17 <sup>th</sup> December 2010	Munich
Pathology Panel	2 <sup>nd</sup> -4 <sup>th</sup> February 2011	London
Dosimetry Working Group	5 <sup>th</sup> -6 <sup>th</sup> September 2011	Kiev
Scientific Advisory Board	10 <sup>th</sup> November 2011	London
Steering Committee	10 <sup>th</sup> November 2011	London
Scientific Advisory Board	10 <sup>th</sup> November 2011	London
Pathology Panel	18 <sup>th</sup> -20 <sup>th</sup> April 2012	London



**Chernobyl Tissue Bank Symposium**  
**9<sup>th</sup> November 2011**  
**NCRI Conference 2011, Liverpool, UK**  
**13:30-16:45**

## PROGRAMME

13:30-13:35	<i>Welcome and Introduction</i>	Prof. GA Thomas (CTB Director, Imperial College, London)
13:35-13:50	<i>Comparative pathological analysis of papillary thyroid carcinoma in age-matched groups of patients born before and after Chernobyl.</i>	Prof. T Bogdanova (IEM, Kiev, Ukraine)
13:50-14:05	<i>The CTB in Russia</i>	Prof A Abrosimov (MRRC, Obninsk, Russia)
14:05- 14:20	<i>Comparison of dose &amp; lifespan studies c.f. Fukushima</i>	Dr Andre Bouville (NCI, USA)
14:20 - 16:05	<p><u>Reports on CTB approved research projects:</u></p> <ul style="list-style-type: none"> <li>• <i>miRNA profiles mirroring molecular and morphological phenotypes of post-Chernobyl PTCs from young patients</i></li> <li>• <i>The Genrisk-T Consortium Defining the genetic component of thyroid cancer risk at low doses</i></li> </ul>	Dr K Unger (Helmholtz Centre, Munich, Germany)
	<i>Introduction and overview</i>	Professor GA Thomas (Imperial College, London)
	<i>RNA expression analysis</i>	Professor C Maenhaut (University of Brussels, Belgium)
	<i>Genomic copy number alterations in thyroid cancer</i>	Professor H Zitzelsberger (Helmholtz Centre, Munich, Germany)
	<ul style="list-style-type: none"> <li>• <i>Dose dependent gene expression changes in Chernobyl thyroid cancers and corresponding normal tissues</i></li> </ul>	Dr M Abend (Helmholtz Centre, Munich, Germany)
	<ul style="list-style-type: none"> <li>• <i>Genetic alterations in post Chernobyl thyroid cancers</i></li> </ul>	Dr V Saenko (University of Nagasaki, Japan)
	<ul style="list-style-type: none"> <li>• <i>RET/PTC in thyroid cancer</i></li> </ul>	Prof. M Santoro (University of Naples, Italy)
16:05 – 16:20	<i>The CTB Portal and Data Warehouse</i>	Chris Tomlinson & Mark Woodbridge



*Demonstration*

(BICC, Imperial College, London)

16:20 – 16:35 *Integrated analysis to identify radiation  
specific pathways*

Prof. W van Wieringen  
(Department of Mathematics,  
VU University, Amsterdam)

16:35 – 16:45 *Questions & answers about the CTB*

16:45 Close of Symposium