Quality of Life and Management of Living Resources

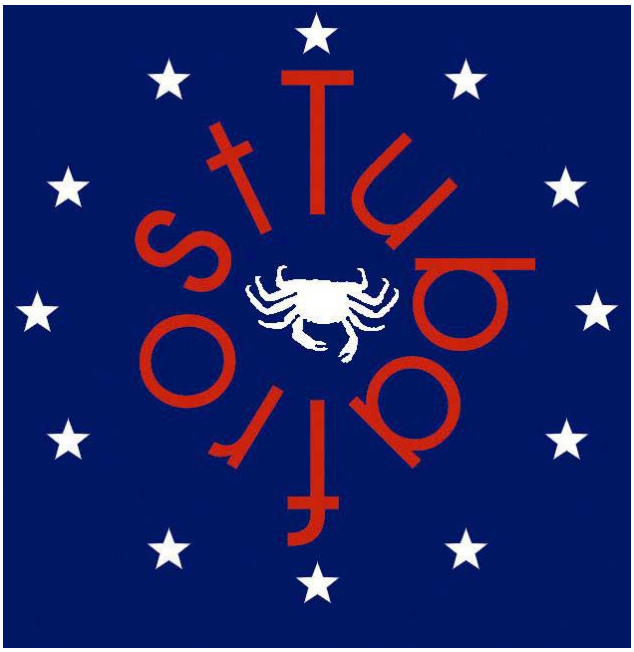
European Human Frozen Tumour Tissue Bank

TUBAFROST

QLRI-CT-2002-01551

Deliverable D 4.2

Central Database



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This deliverable (4.2) concerns the central information database system for co-ordination of the networked tissue banks. It is part of Work Package 4: "Hard and software for coordinated tissue storage".

Final minimal and facultative datasets for Central Database System

The minimal dataset is the list of data items that is completed, if the wanted information is available, by the collector when entering samples into the TuBaFrost database.
The facultative dataset is the non-compulsory list of the data items they can be completed if the collector feels is relevant.
The collector can add or update any of these data items contained in the tissue record anytime using the central database system (especially important if the requestor requests further specific information regarding a frozen tissue record).

Minimal dataset:

- Local inventory code
- Site of tumor (i.e. anatomic location and organ: e.g. respiratory system, left lung; urinary system, bladder)
- Tissue type (e.g. epidermal, muscle (smooth, skeletal or cardiac), connective, nerve or mixed tissue)
- Tumor classification (i.e. normal, benign, or malignant)
- Histopathological diagnosis 1,2,3 (inc SNOMED Code) (e.g. Squamous cell carcinoma; SNOMED code: M80703)
- Stage (and TNM) (e.g. T2N1M0, stage IIB)
- Grade (e.g. G3 High grade)
- Age at time of biopsy/sampling (years)
- Date of biopsy/sampling (dd/mm/yyyy)
- Gender/sex
- Involved in clinical trial (yes/no); if yes: trial and patient reference (e.g. yes; EORTC Melanoma protocol: 18991; EORTC seqid=18...)
- Time (in hours and mins) elapsed after biopsy was performed and tissue sample was frozen
- Comments (e.g. further information on diagnosis, tissue type, clinical trial involvement etc…)
- Current Location of Tissue Sample (e.g. pathology lab number, institution name, city, country)

Facultative dataset:

- Medical history and treatment (i.e. current and past medical problems and treatments)
- Concomitant disease (i.e. secondary symptoms that occur with main symptom; e.g. anemia; SNOMED code: C0002871...)
- Secondary Tumors (e.g. yes; metastasis found in left lung...)
- Survival Status (i.e. alive, dead or unknown)
- Other Demographic data (e.g. patient's weight, height, country of residence, birthplace residence, race etc..)

- Other (e.g. data on toxicity, biochemical, cytology, genetics, immunology, biomarkers etc..)

Structure (tables and formats) for Central database system

- Tables in TuBaFrost central database:
    - **Tissue** (contain data fields for minimal and facultative dataset as well as TIssueID, TuBaFrost code and collectorID)
    - **Images** (ImageID, TissueID, Image title, image comment, image file server address)
    - **TrackTissue** (TrackTissueId,TissueID, date of tissue record entry, date tissue record last updated)
    - **Collector_Instits** (collectorInstituteID, Institute name, Institute address details)
    - **Collectors** (collectorID, collectorInstituteID, username, password, title, firstname, lastname, e-mail address, phone/fax numbers, department/office address)
    - **Requestors** (requestorID, username, password, title, firstname, lastname, e-mail address, phone/fax numbers, institution name and address, projectID)
    - **Projects** (projectID, project title, short project description(max:255 char), full project pdf file server address, number and address of local medical ethics commission approval, requestorID)
    - **TissueOrders** (TissueOrderID, projectID, TissueIDs, date tissue order made, status of order, request for further data/comments, date collector responded to tissue request)
    - **TissueShoppingCart** (CartID,TissueID, requestorID)

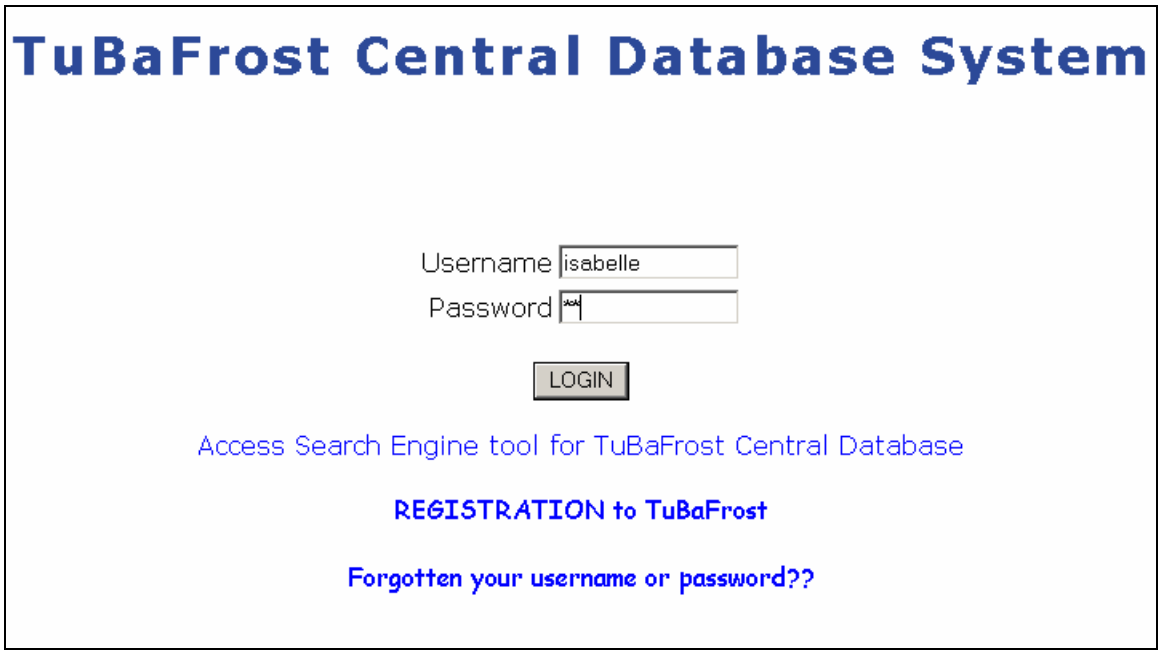
See appendix A for complete database table listings with table names, data field names, descriptions and format types.

Tables are contained in a Microsoft Access database contained on a fire-walled and secure EORTC server (includes data encryption).

Central Database system for Tissue record management

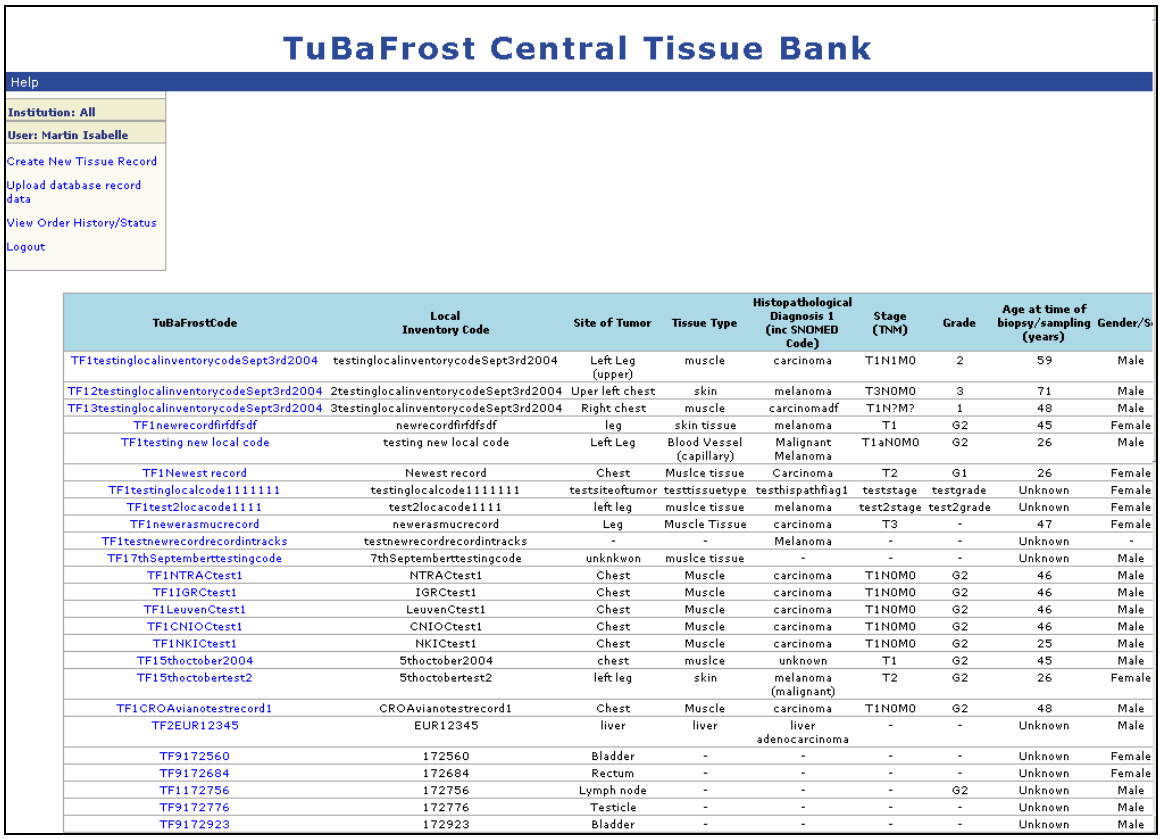
The central database system consists of a number of web pages written in ASP web programming language that uses SQL language to communicate with the data contained in the TuBaFrost Microsoft Access database.

1. Login into Central Database system



- Collector_user enters his/her username and password into system and click LOGIN
- The system checks the username and password exists in database (table: Collectors) and if it does the system gathers the collector's user data (i.e. collectorInstituteID, firstname, lastname etc..).
- Register as new requestor (search engine only)
    - this link takes user to a page where he/she can complete a form with their details in order to use the tissue search engine tool
    - the system administrator then issues the user with a username and password for the search engine tool via e-mail.
- Forgotten password
    - If a user (collector or requestor) has already registered with the system but have forgotten their username and password, they can click this link where they will be taken to a page to enter their e-mail address.
    - If their e-mail address is in the central database (table: Collectors or Requestor), the system sends the user an e-mail (containing he/her username and password) to their e-mail account.
- Search Engine tool for TuBaFrost Central Database
    - The search engine tool will be discussed in deliverable 4.3 ('Make the search engine accessible on the Internet') due in August 2005.

2. List of Tissue records for Collector's Institute



TuBaFrost Central Tissue Bank

Help

Institution: All

User: Martin Isabelle

Create New Tissue Record

Upload database record data

View Order History/Status

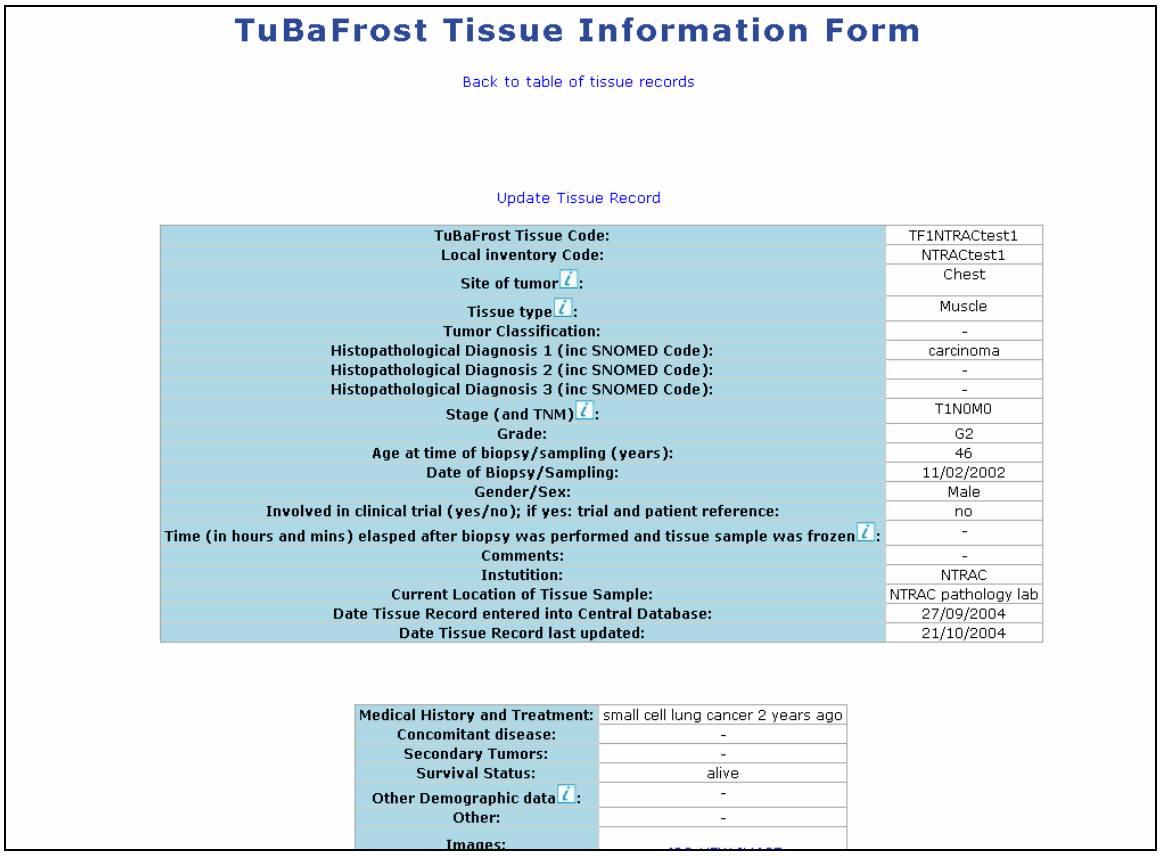
Logout

TuBaFrostCode	Local Inventory Code	Site of Tumor	Tissue Type	Histopathological Diagnosis 1 (inc SNOMED Code)	Stage (TNM)	Grade	Age at time of biopsy/sampling (years)	Gender/S
TF1testinglocalinventorycodeSept3rd2004	testinglocalinventorycodeSept3rd2004	Left Leg (upper)	muscle	carcinoma	T1N1M0	2	59	Male
TF12testinglocalinventorycodeSept3rd2004	2testinglocalinventorycodeSept3rd2004	Uper left chest	skin	melanoma	T3N0M0	3	71	Male
TF13testinglocalinventorycodeSept3rd2004	3testinglocalinventorycodeSept3rd2004	Right chest	muscle	carcinomadf	T1N?M?	1	48	Male
TF1newrecordfirfdfsdf	newrecordfirfdfsdf	leg	skin tissue	melanoma	T1	G2	45	Female
TF1testing new local code	testing new local code	Left Leg	Blood Vessel (capillary)	Malignant Melanoma	T1aN0M0	G2	26	Male
TF1Newest record	Newest record	Chest	Muslce tissue	Carcinoma	T2	G1	26	Female
TF1testinglocalcode1111111	testinglocalcode1111111	testsiteoftumor	testtissuetype	testhispathflag1	teststage	testgrade	Unknown	Female
TF1test2locacode1111	test2locacode1111	left leg	muslce tissue	melanoma	test2stage	test2grade	Unknown	Female
TF1newerasmucrecord	newerasmucrecord	Leg	Muscle Tissue	carcinoma	T3	-	47	Female
TF1testnewrecordrecordintracks	testnewrecordrecordintracks	-	-	Melanoma	-	-	Unknown	-
TF17thSeptemberttestingcode	7thSeptemberttestingcode	unknkwon	muslce tissue	-	-	-	Unknown	Male
TF1NTRACtest1	NTRACtest1	Chest	Muscle	carcinoma	T1N0M0	G2	46	Male
TF1IGRCtest1	IGRCtest1	Chest	Muscle	carcinoma	T1N0M0	G2	46	Male
TF1LeuvenCtest1	LeuvenCtest1	Chest	Muscle	carcinoma	T1N0M0	G2	46	Male
TF1CNIOCtest1	CNIOCtest1	Chest	Muscle	carcinoma	T1N0M0	G2	46	Male
TF1NKICtest1	NKICtest1	Chest	Muscle	carcinoma	T1N0M0	G2	25	Male
TF15thoctober2004	5thoctober2004	chest	muslce	unknown	T1	G2	45	Male
TF15thoctobertest2	5thoctobertest2	left leg	skin	melanoma (malignant)	T2	G2	26	Female
TF1CROAvianotestrecord1	CROAvianotestrecord1	Chest	Muscle	carcinoma	T1N0M0	G2	48	Male
TF2EUR12345	EUR12345	liver	liver	liver adenocarcinoma	-	-	Unknown	Male
TF9172560	172560	Bladder	-	-	-	-	Unknown	Female
TF9172684	172684	Rectum	-	-	-	-	Unknown	Female
TF1172756	172756	Lymph node	-	-	-	G2	Unknown	Male
TF9172776	172776	Testicle	-	-	-	-	Unknown	Male
TF9172923	172923	Bladder	-	-	-	-	Unknown	Male

- The system displays all the tissue records of the collector_institute that the collector is from (using collectorInstituteID) in a table with column headers for:
    - TuBaFrostCode, Local Inventory code, site of tumor, tissue type, histopathological diagnosis 1, stage (TNM), grade, Age (at time of biopsy), and gender/sex.

3. View Tissue Record and Image Upload Tool

- to view a tissue record, the collector_user can click on the TuBaFrostCode link for the relevant tissue record row
- the system then collects the information about the tissue record (table: Tissue) and displays in two tables: one for minimal dataset items and one for facultative dataset items (incomplete data fields are marked by "-")



TuBaFrost Tissue Information Form

Back to table of tissue records

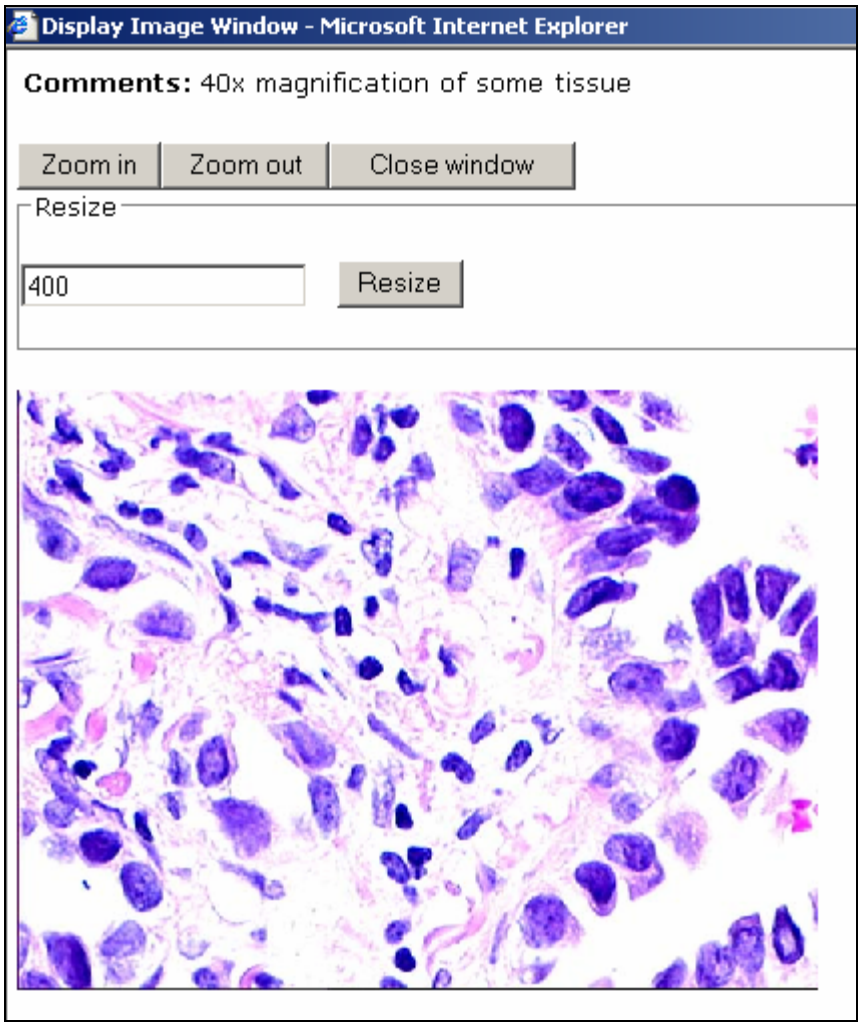
Update Tissue Record

TuBaFrost Tissue Code:	TF1NTRACtest1
Local inventory Code:	NTRACtest1
Site of tumor:	Chest
Tissue type:	Muscle
Tumor Classification:	-
Histopathological Diagnosis 1 (inc SNOMED Code):	carcinoma
Histopathological Diagnosis 2 (inc SNOMED Code):	-
Histopathological Diagnosis 3 (inc SNOMED Code):	-
Stage (and TNM):	T1N0M0
Grade:	G2
Age at time of biopsy/sampling (years):	46
Date of Biopsy/Sampling:	11/02/2002
Gender/Sex:	Male
Involved in clinical trial (yes/no); if yes: trial and patient reference:	no
Time (in hours and mins) elasped after biopsy was performed and tissue sample was frozen:	-
Comments:	-
Instutition:	NTRAC
Current Location of Tissue Sample:	NTRAC pathology lab
Date Tissue Record entered into Central Database:	27/09/2004
Date Tissue Record last updated:	21/10/2004

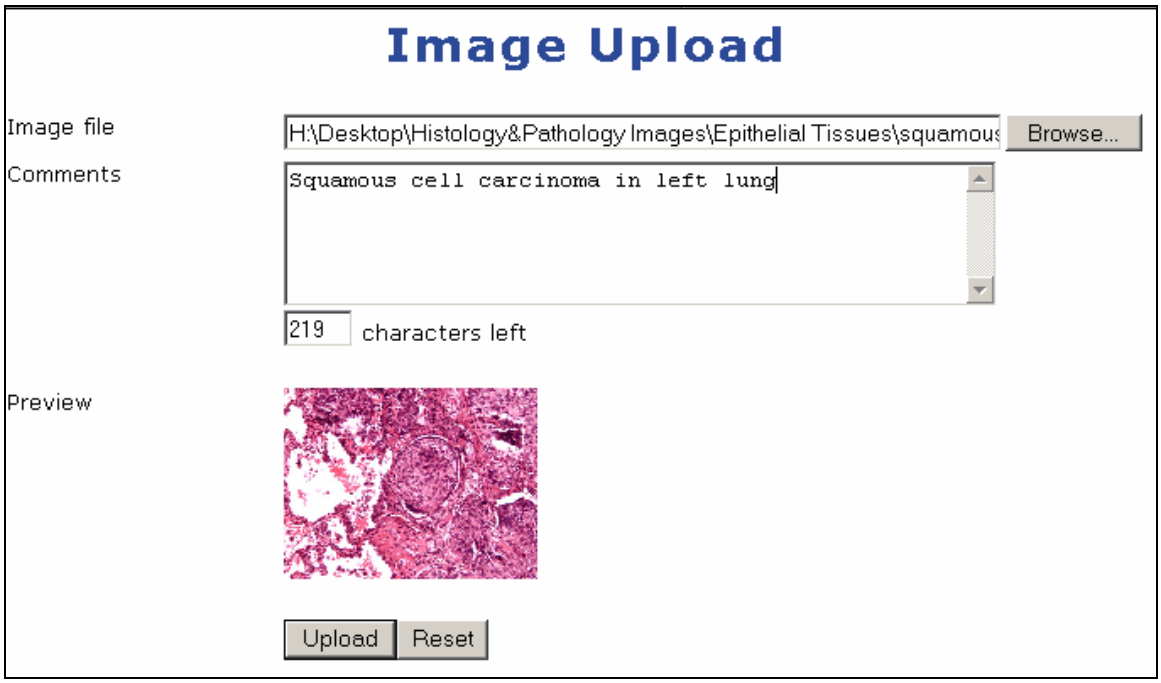
Medical History and Treatment:	small cell lung cancer 2 years ago
Concomitant disease:	-
Secondary Tumors:	-
Survival Status:	alive
Other Demographic data:	-
Other:	-
Images:	

- If there are images associated with the tissue record (table: Images) they are displayed at the bottom of the page and the collector_user can click on the image thumbnail to view the full image (at its original image resolution) in a new separate window. The collector_user can also delete images that he/she has uploaded into the tissue record by clicking 'Delete this image' link located next to the image

Medical History and Treatment:	-
Concomitant disease:	-
Secondary Tumors:	-
Survival Status:	-
Other Demographic data:	-
Other:	-
Images:	DELETE THIS IMAGE ADD NEW IMAGE



- The collector_user can also upload his/her representative slide images into the tissue record by clicking on 'Add Image' link which takes the collector_user to a new page where he/she can select the file from their hard drive. They then complete the Image Comment field and click upload. The system saves the image on the image server and the image details are entered into the table :Images along with the TissueID.



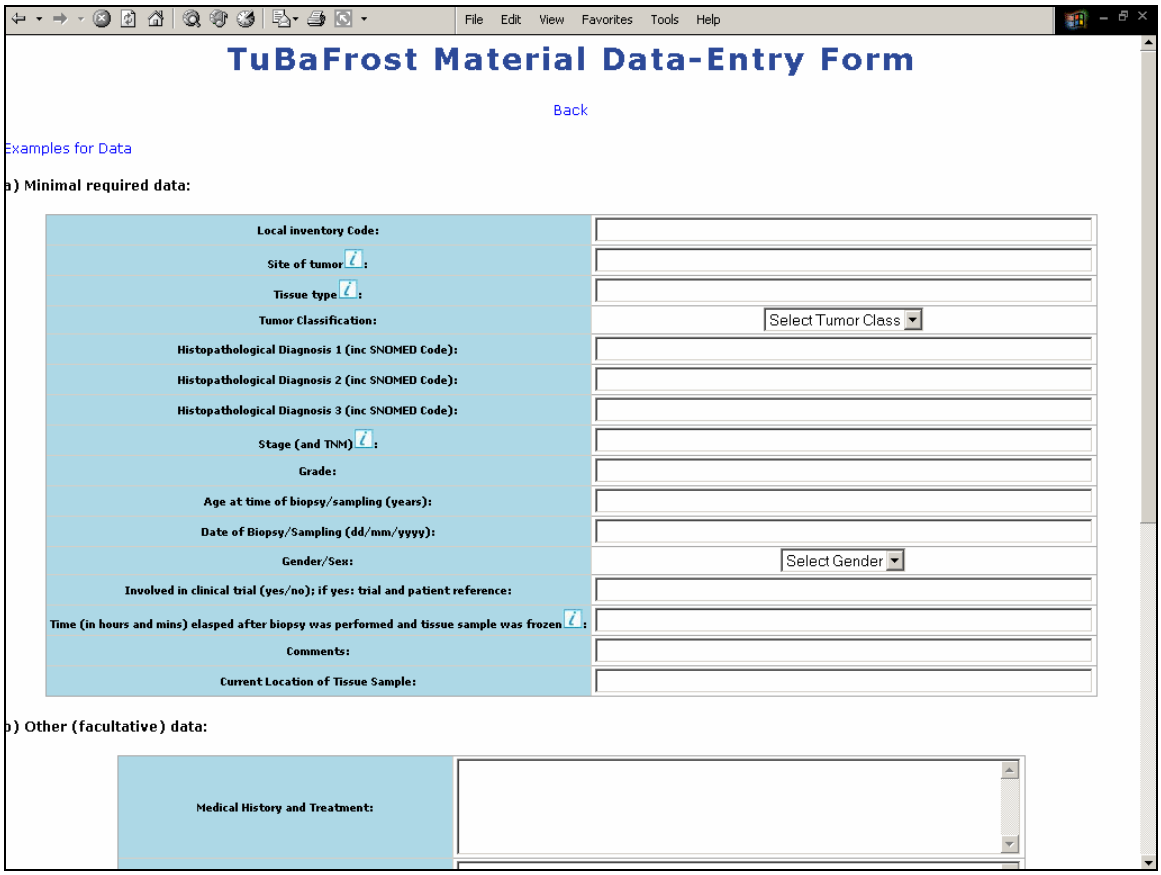
Tissue Record Management

The collector_user has two main methods to enter or update tissue record(s): Single Record or Multi-Record.

4. Single Record Tissue management

a) Single Tissue Record Entry

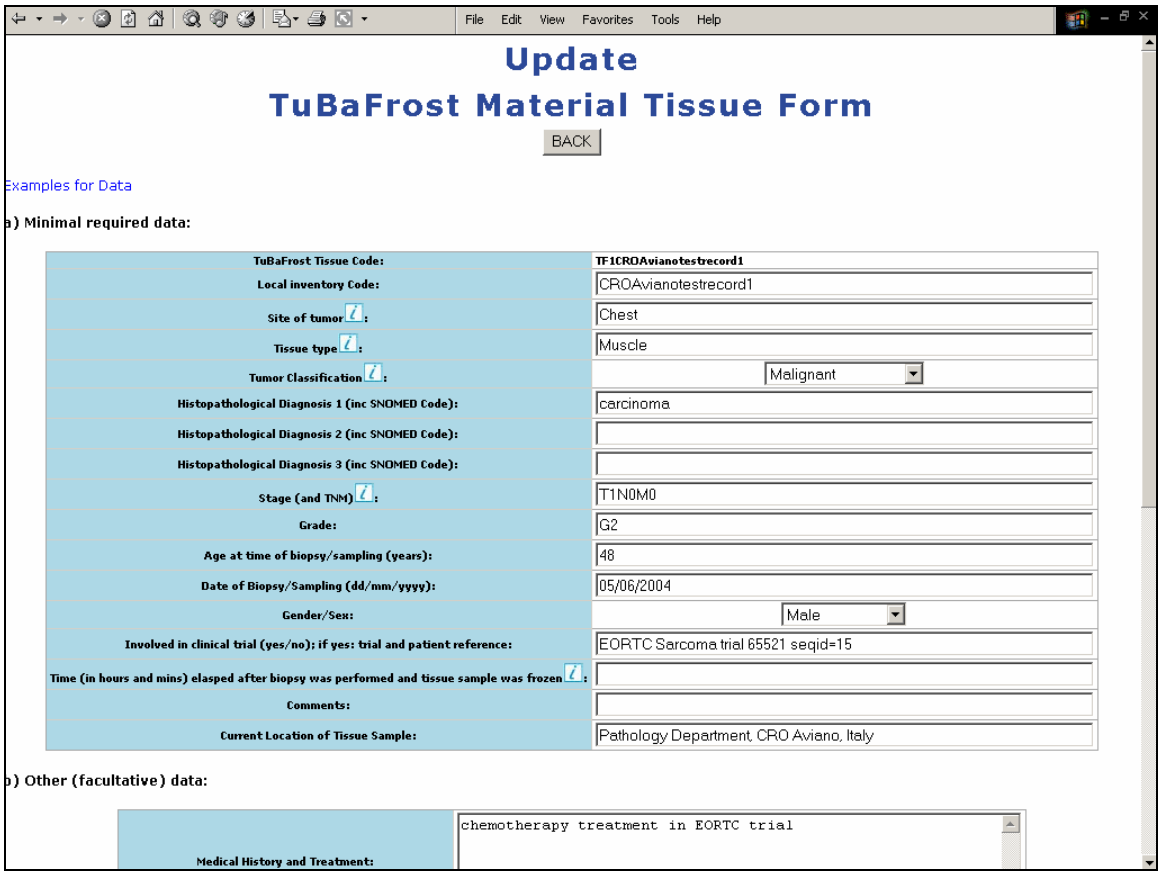
- This method allows the user to enter a single tissue record at a time.
- They can click on 'Create New Tissue Record' link that sends the user to a form where they can enter data into two tables (minimal and facultative datasets) using a combination of drop down boxes and text fields.



- When the collector_user clicks submit form the system checks that an inventory code has been entered and does not already exist in the central database. It then creates a new tissue record, enters the tissue data into the database (table: tissue) and creates a tissue track which will record the date the tissue record was entered into the central database (table: TrackTissue).
- Now that the tissue record has been entered into the central database, the user can enter slide images into the record (see above)

b) Single Tissue Record Update

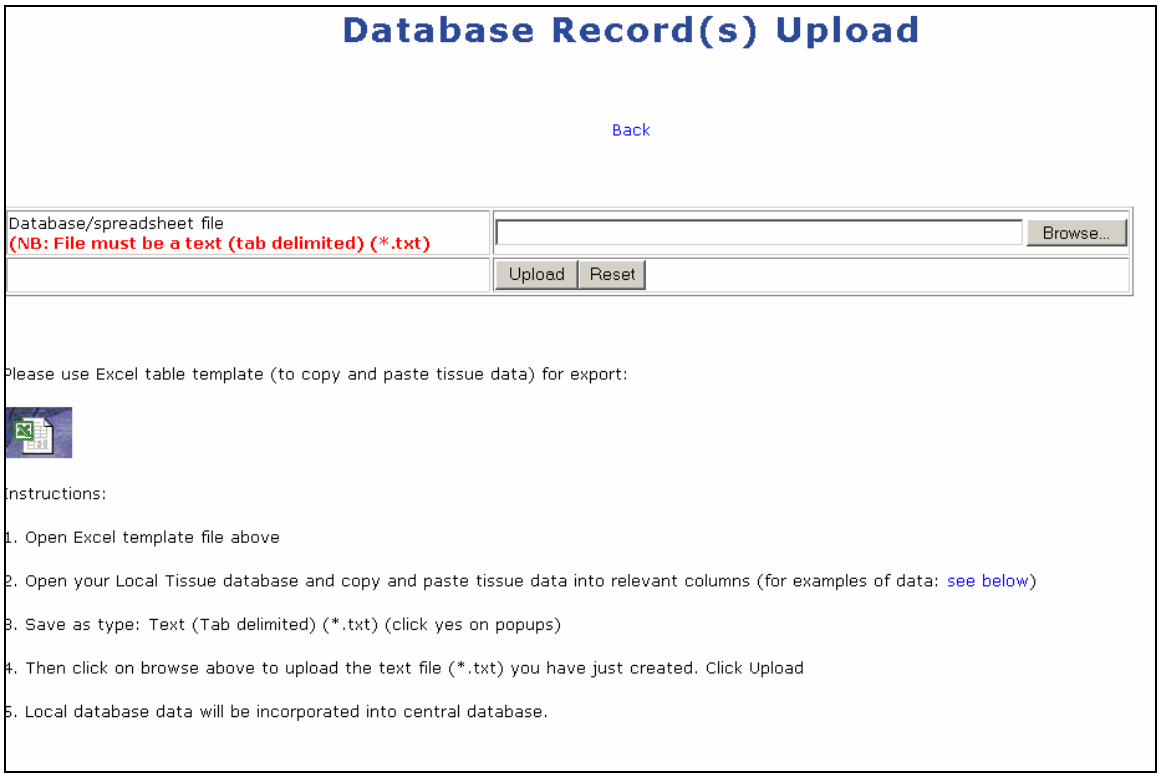
- the collector_user can update a single tissue record (useful when, for example, updating the current location of the tissue material) by clicking 'Update Tissue Record' when viewing a tissue record.
- The system takes the user to new page which displays a form with all the current data entered/selected. The user can enter/select new data in the form.



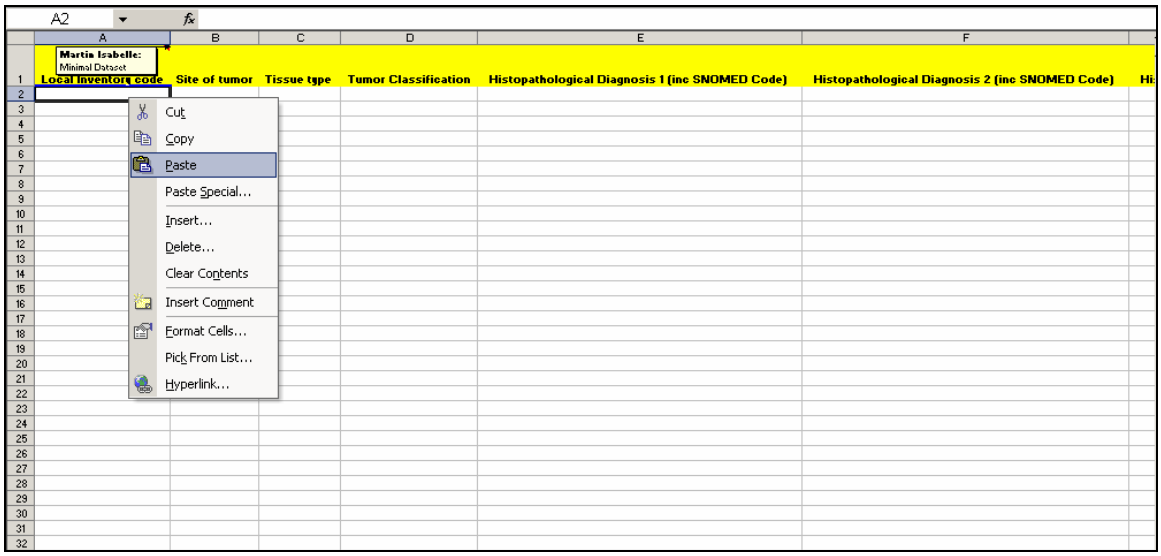
- When the user clicks "Update Record" the system opens the tissue record in the database (table: tissue) and updates the relevant fields.
- The system also updates the tissue tracking by updating the date the tissue record was last updated in the central database (table:TrackTissue) with the current date.

5. Multi-record Tissue management (Batch upload (using tab delimited text files) record entry/upload method)

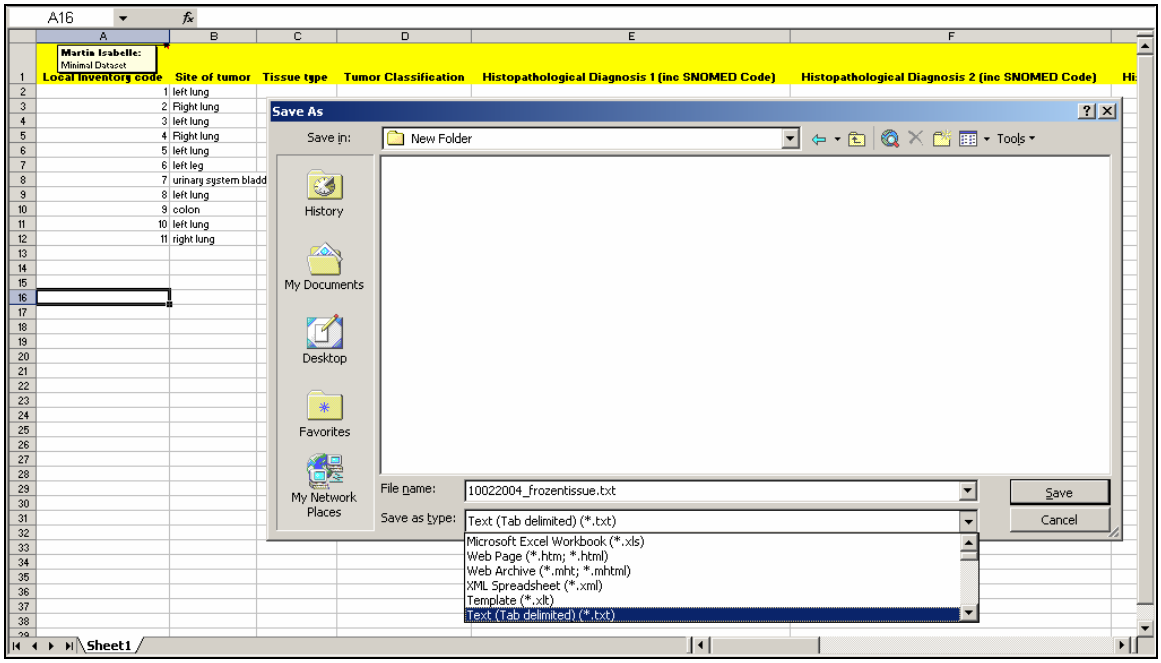
- This method allows the user to enter or update multiple tissue records at one time.
- They can click on 'Upload database record data' link that sends the user to a page containing an excel template file link and file upload.



- When the collector_user clicks on the excel file link  containing the template (column divisions) for entering minimal and facultative data, it opens on the computer of the collector_user.
- The collector_user then opens his/her local database and copies and pastes data into this excel file using the column headers.
- The collector_user then saves the file on their hard drive as a **Text (tab-delimited) (*.txt)** file under a directory and filename of their choosing.
- Alternatively, the collector_user can use the column divisions to prepare a data export from his/her database directly in this tab-delimited text file format or indirectly via Excel.



- **It is important that the tab-delimited text file is created from an Excel or other type of database that have headers matching the template.**



- The collector_user then goes back to the page with the file upload and selects the **Text (tab-delimited) (*.txt)** file from their hard drive.

- When the collector_user clicks 'upload' the system opens the text file and splits up the tissue records and processes them individually automatically (a copy of the text file is saved on the server).
- For each tissue record in the text file, the system checks that an inventory code has been entered and whether or not the record already exists in the central database (table: Tissue).
    - If the record already exists: the system opens the existing tissue record within the central database (table: Tissue) and updates with any data that is different (NB: blank fields in the text file will be updated as blank). The system also updates the tissue track by updating the date the tissue record was last updated in the central database (table:TrackTissue) with the current date.
    - If the record does not already exists: the system creates a new tissue record in the central database (table: Tissue) and enters the new tissue data. The system creates a tissue track which will record the date the tissue record was entered into the central database (table: TrackTissue).
- After the text file has been processed by the system, it displays the output to the user on a new page in a table indicating (by color) which records have been entered and which records have been updated (and which individual data items have been updated).

Updated Record

Updated Item

New Record

Local Inventory code	Site of tumor	Tissue type	Tumor Classification	Histopathological Diagnosis 1 (inc SNOMED Code)	Histopathological Diagnosis 2 (inc SNOMED Code)	Histopathological Diagnosis 3 (inc SNOMED Code)	Stage (TNM)	Grade	Age at time of biopsy/sampling (years)
1	left lung	connective	normal	normal			T1N0M0		25
2	Right lung	connective		small cell lung cancer					26
3	left lung	connective		small cell lung cancer					89
4	Right lung	connective		small cell lung cancer					45
5	right lung	connective	malignant	non small lung cancer					32
6	left leg	connective	benign	benign					56
7	urinary system bladder	connective	benign	benign					58
8	left lung	connective							56
9	colon	muscle	benign	benign					
10	left lung	connective							
11	right lung	connective	malignant	non small lung cancer					

Number of records created/updated: 11

-Number of records created/entered: 6

-Number of records updated: 5

- Now that new tissue records have been entered into the central database, the user can enter slide images into them (see above)

Frozen Tissue Search Engine, Bio-Shopping Cart and Tissue request system

The first version of the search engine, BioShopping Cart and Tissue request system has been developed and is currently being tested. This system and its link to the TuBaFrost Central Database system will be discussed in deliverable 4.3 due in August 2005.

Appendix A - Central Database table structures

Table: Tissue

Field Name	Field Format	Field Description
TissueID	Autonumber	Unique TissueRecord ID
LInCode	Text field (255 char)	Local inventory code
SiteTumor	Text field (255 char)	Site of tumor
TissType	Text field (255 char)	Tissue type
TumClass	Text field (255 char)	Tumor classification
HisPath1	Text field (255 char)	Histopathological diagnosis 1
HisPath2	Text field (255 char)	Histopathological diagnosis 2
HisPath3	Text field (255 char)	Histopathological diagnosis 3
StageTNM	Text field (255 char)	Stage (and TNM)
Grade	Text field (255 char)	Grade
Agebiop	Text field (10 char)	Age at time of biopsy/sampling (years)
Datediop	Date (dd/mm/yyyy)	Date of biopsy/sampling
Gensex	Text field (10 char)	Gender/sex
InvClinTrial	Text field (255 char)	Involved in clinical trial (yes/no); if yes: trial and patient reference
Timelapfroz	Text field (255 char)	Time (in hours and mins) elapsed after biopsy was performed and tissue sample was frozen
Comments	Text field (255 char)	Comments
CurrLocTiss	Text field (255 char)	Current Location of Tissue Sample
MedHisTre	Text field (255 char)	Medical history and treatment
ConCDis	Text field (255 char)	Concomitant disease
SecTum	Text field (255 char)	Secondary Tumors
SurvSta	Text field (255 char)	Survival Status
OtherDemodata	Text field (255 char)	Other Demographic data
Other	Text field (255 char)	Other
TuBaFrostCode	Text field (255 char)	Automatically generated by system: (TF_InstitutionID_Local inventory code)
CollectorID	Number	Taken from Table: **Collectors**
CollectorInstituteID	Number	Taken from Table: **Collector_Instits**

Table: Images

Field Name	Field Format	Field Description
ImageID	Autonumber	Unique Image ID
TissueID	Number	Taken from Table: **Tissue**
ImageTitle	Text field (255 char)	Image title
ImageCom	Text field (255 char)	Image Comment
ImgFileaddress	Text field (255 char)	Image file server address

Table: TrackTissue

Field Name	Field Format	Field Description
TrackTissueID	Autonumber	Unique Track Tissue ID
TissueID	Number	Taken from Table: **Tissue**
DateTissueEnt	Date	Date tissue record entered
DateTissueUpdtd	Date	Date tissue record last updated

Table: Collector_Institis

Field Name	Field Format	Field Description
CollectorInstituteID	Autonumber	Unique Collector Institute ID
InstitName	Text field (255 char)	Institute name
InstitAdd	Text field (255 char)	Institute address details

Table: Collectors

Field Name	Field Format	Field Description
CollectorID	Autonumber	Unique Collector ID
CollectorInstituteID	Number	Taken from Table: **Collector_Institis**
UserNam	Text field (255 char)	Username
Passwd	Text field (255 char)	Password
Title	Text field (50 char)	Title
FstName	Text field (255 char)	Firstname
LstName	Text field (255 char)	Lastname
Email	Text field (255 char)	E-mail address
Phone	Number	Phone number
Fax	Number	Fax number
DepartOffAdd	Text field (100 char)	Department/Office Number

Table: Requestors (for tissue requesting/search engine)

Field Name	Field Format	Field Description
RequestorID	Autonumber	Unique Requestor ID
UserNam	Text field (255 char)	Username
Passwd	Text field (255 char)	Password

Title	Text field (50 char)	Title
FstName	Text field (255 char)	Firstname
LstName	Text field (255 char)	Lastname
Email	Text field (255 char)	E-mail address
Phone	Number	Phone number
Fax	Number	Fax number
DepartOffAdd	Text field (100 char)	Department/Office Number
InstitAdd	Text field (255 char)	Institution Name and Address
ProjectID	Number	Taken from Table: **Projects**

Table: Projects (for tissue requesting/search engine)

Field Name	Field Format	Field Description
ProjectID	Autonumber	Unique Project ID
ProjectTit	Text field (255 char)	Project Title
ProjDescp	Text field (255 char)	Project Description
ProjfileAdd	Text field (255 char)	Project pdf file server address
LocMedECapp	Text field (255 char)	Local Medical Ethics approval number and details
RequestorID	Number	Taken from Table: **Requestors**

Table: TissueOrders (for tissue requesting/search engine)

Field Name	Field Format	Field Description
TissueOrderID	Autonumber	Unique Tissue Order ID
ProjectID	Number	Taken from Table: **Projects**
RequestorID	Number	Taken from Table: **Requestors**
TissueID	Number	Taken from Table: **Tissue**
DateOrdEnt	Date	Date tissue order made
StatOrder	Text field (255 char)	Status of Order
ReqFurInfo	Text field (255 char)	Request for further data / comments
DateCollRespd	Date	Date collector responded to tissue request

Table: TissueShoppingCart (for tissue requesting/search engine)

Field Name	Field Format	Field Description
CartID	Autonumber	Unique Cart ID
TissueID	Number	Taken from Table: **Tissue**
RequestorID	Number	Taken from Table: **Requestors**