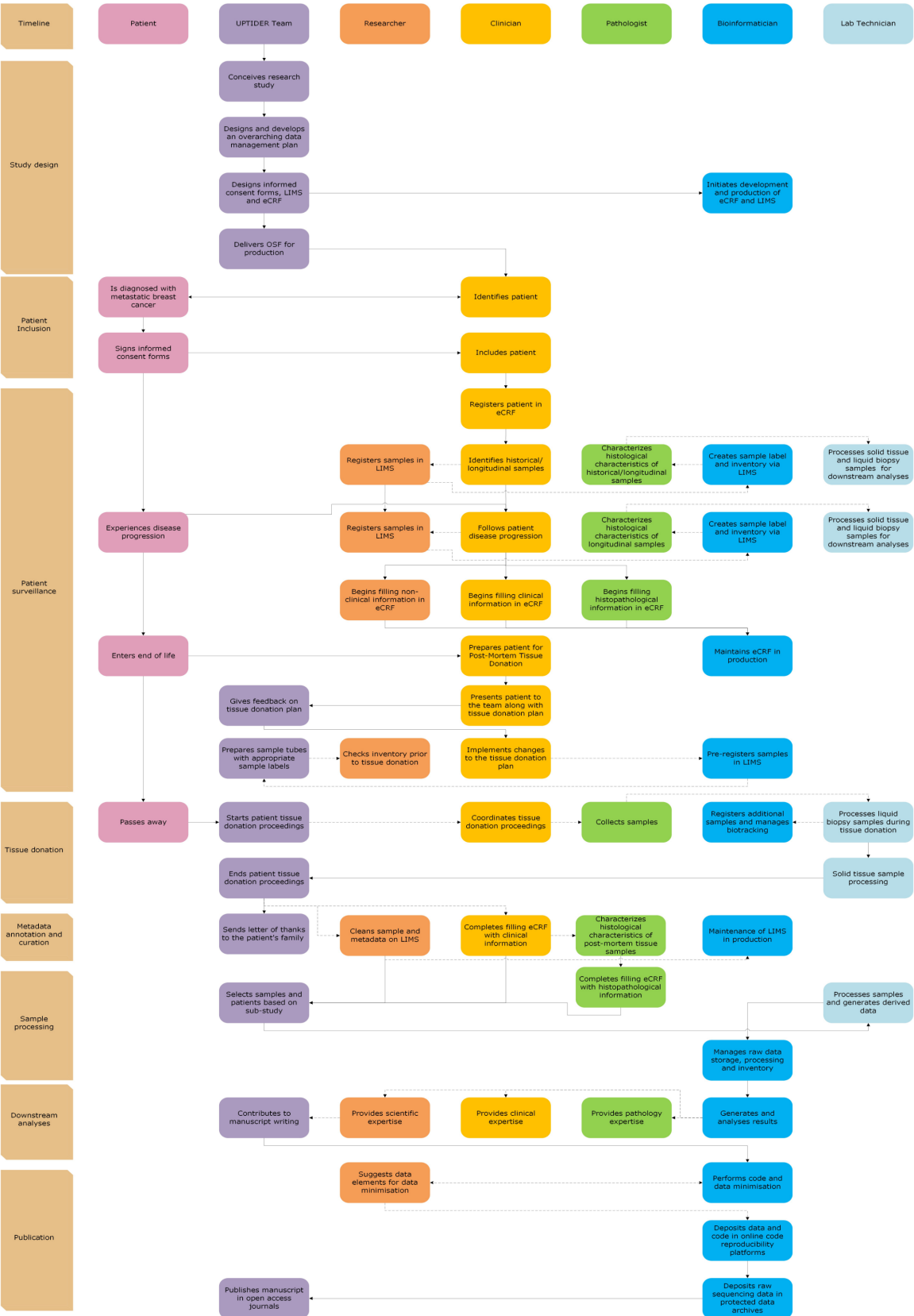


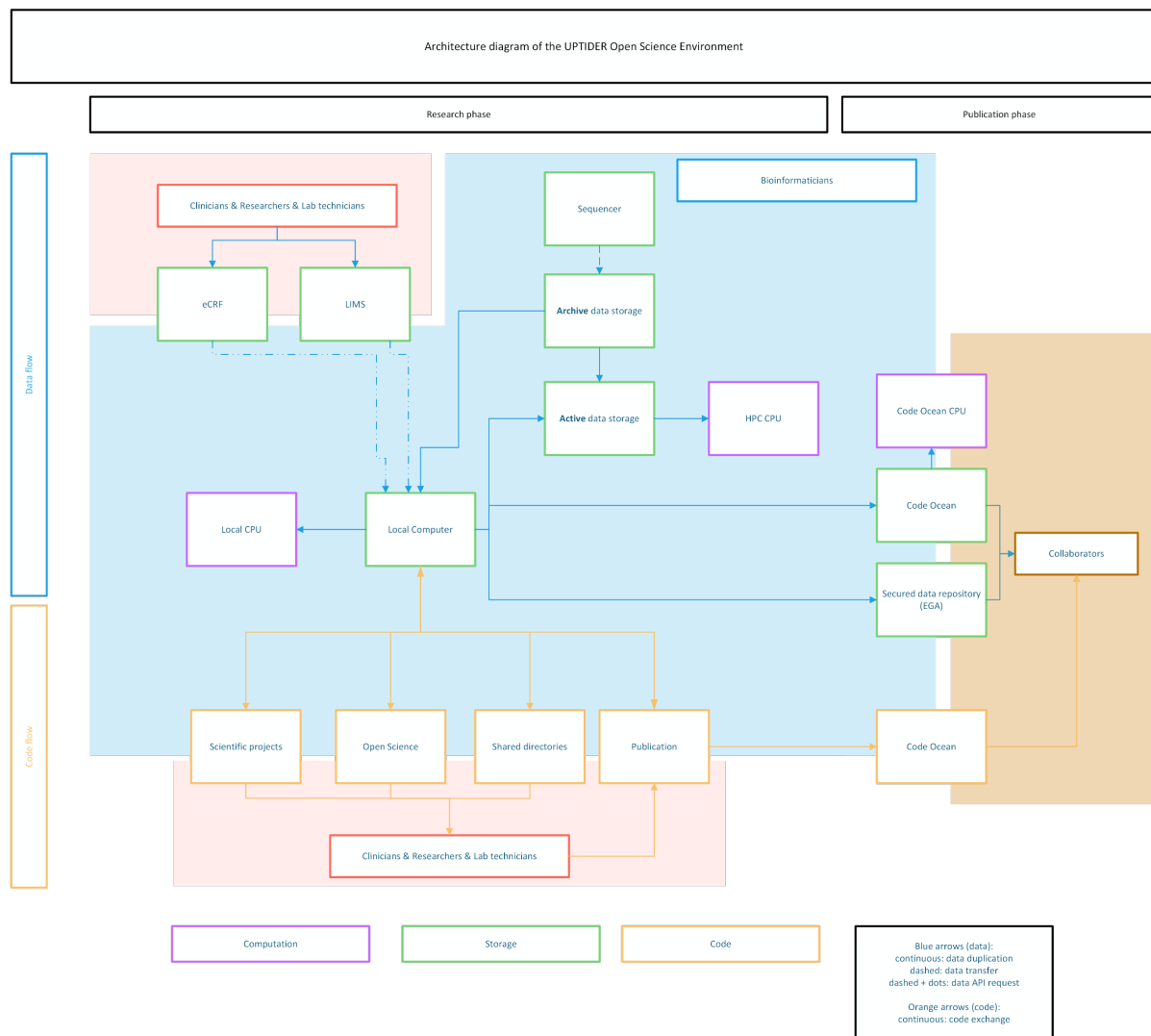
Supplementary Information

**Enhancing translational research in metastatic cancer through an open science
environment: the UPTIDER experience**

Pabba, et al.



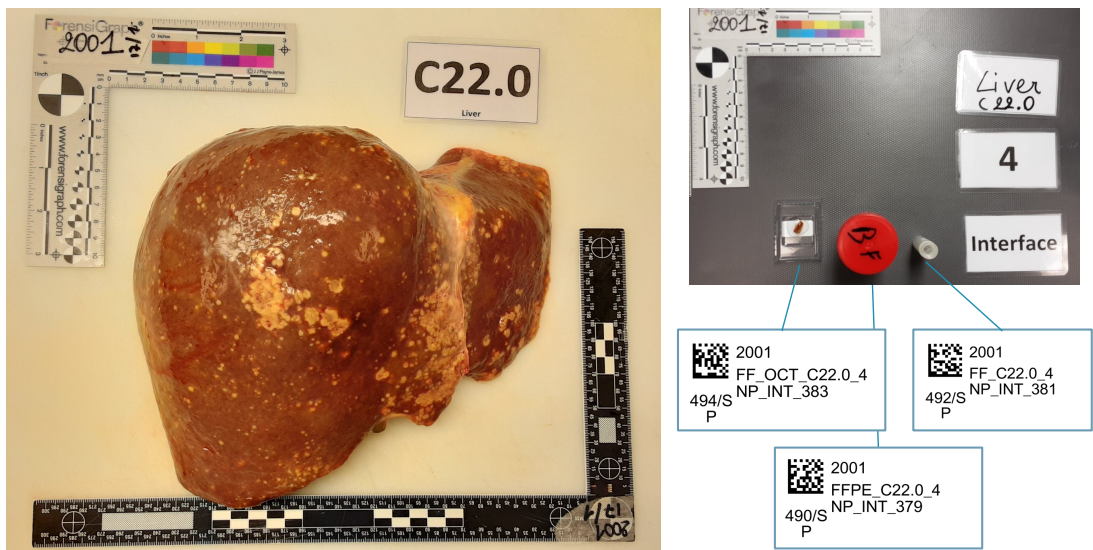
Supplementary Figure S1. **The UPTIDER process from study design to patient inclusion and study publication, extended from Figure 2.** A flowchart and timeline describe the key processes within UPTIDER attributed to each of the players in the team. Here, additional actions prior to patient inclusions and during patient surveillance have been described here. eCRF: electronic case report form, LIMS: lab information management system, OSE: open science environment, UPTIDER: UZ/KU Leuven Post-mortem Tissue Donation to Enhance Research. Created with Microsoft Visio.



Supplementary Figure S2. **The architecture diagram of the UPTIDER OSE.** A flowchart describes the key interactions between logistical units: computation, storage and team players within the OSE, highlighting data and code flow. Here, arrows outline flow of data and code between players and tools between research and publication phases. Additionally, computation has been used to reflect the tool-based actions for data and code computation.

Team players have also been re-classified into three key groups (bioinformaticians, non-bioinformaticians and collaborators) to provide a simplified architecture. Arrow type reflects actions such as duplication, transfer and API request. API: application programming interface, CPU: central processing unit, eCRF: electronic case report form, EGA: European genome-phenome archive, HPC: high performance computing, LIMS: lab information management system, UPTIDER: UZ/KU Leuven Post-mortem Tissue Donation to Enhance Research. Created with Microsoft Visio.

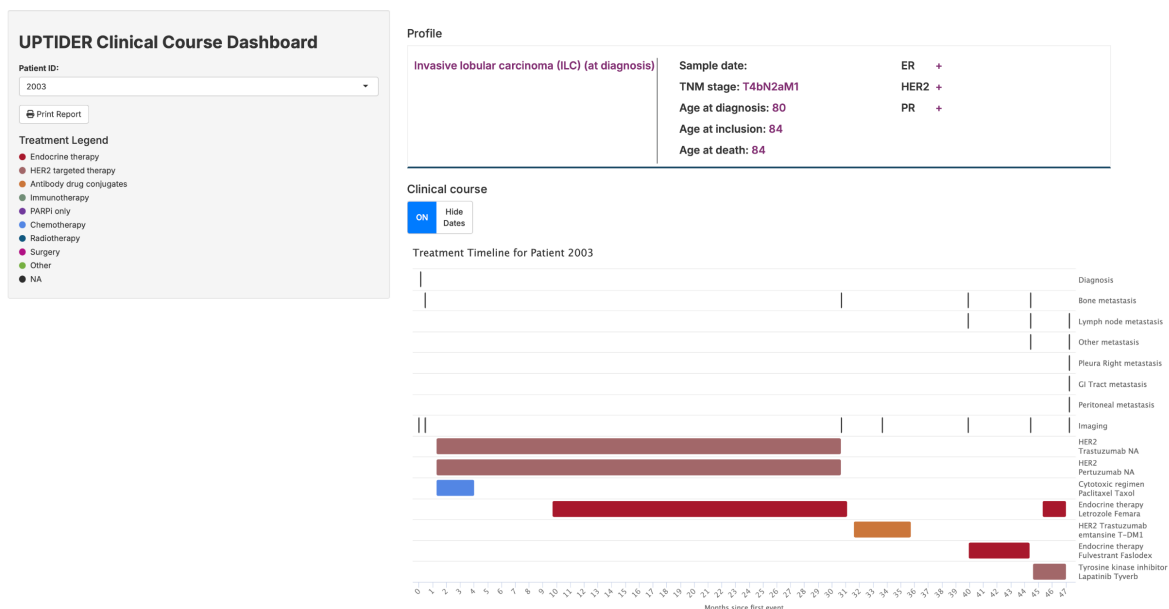
a



b

Figure b is a screenshot of the LabCollector software interface. The top bar shows 'LabCollector' and navigation icons. The main area displays a sample record for 'UPTIDER_2001_FF_OCT_C22.0_4_NP_INT_383'. The record includes fields for NAME INSTITUTION, STUDY NAME, DONOR ID, SAMPLE CONDITIONING, COLLECTION DATE, TIMEPOINT OF COLLECTION, SERIAL ID, T OR S NUMBER, FIRST LINE LABEL AUTO, SECOND LINE LABEL AUTO, SLIDE LABEL AUTO, LABEL AUTO, INFORMED CONSENT TYPE, ANONYMOUS/CODED, AGE AT SAMPLE COLLECT (YEARS), AGE AT SAMPLE COLLECT (Months), GENDER, DIAGNOSIS AT SAMPLE COLLECTION, INFORMED CONSENT FORM PRESENT, COLLECTION SITE TYPE, MD RESPONSIBLE FOR COLLECTION, STREET + NUMBER, POSTAL CODE, CITY/TOWN, COUNTRY, COLLECTION TIME HHMM, RECEIVED BY, RECEIVED DATE, and USED FROM PARENT QUANTITY. The right sidebar shows 'Storage' information, including 'BOX R5B3', '1 Tube', 'G2', 'auto', 'BIOBANK ON1 > T323805_biobank > rack_5 > 3', 'Owner: Marion Maertens', and 'Total Stock: 1 Tube'.

Supplementary Figure S3. **An example of the LIMS metadata.** a. On the left is a liver (ICD-O-3 code: C22.0) from patient 2001 that was completely invaded with a diffused tumour pattern seen at autopsy during tissue donation. On the right are metastases collected from the tumour interface of segment 4 of the liver using our mirrored sample approach. The sample labels give information on key metadata such as sample conditioning, organ location, patient ID, sample ID and LIMS ID along with a QR code for metadata collection and revision on LIMS. b. Completed metadata of the same metastasis on a pre-registered LIMS record after sample collection at the autopsy. FF: fresh frozen, FF-OCT: fresh frozen in OCT medium, FFPE: formalin fixed paraffin embedded, INT: interface, NP: non-pathologic. Schematic based on Labcollector (v6.262).



Supplementary Figure S4. **An example of the eCRF dashboard.** The dashboard displays the clinical disease course of patient 2003 starting from the diagnosis of the primary tumour. Key clinical characteristics including age at diagnosis, inclusion and death, date of sampling, tumour staging, status of tumour biomarkers and tumour histology at primary diagnosis, along with incidence of various metastases and duration of various treatments are also mentioned here. +: positive, ER: estrogen receptor, GI: gastrointestinal, HER2: human epidermal growth factor receptor 2, PR: progesterone receptor, T-DM1: trastuzumab emtansine, TNM: tumour, node and metastasis staging. Created using RShiny. Schematic based on REDCap (v15.0.37).

a

1 result found | Show/Hide all records on page

ID

Label

NAME IN...

SERIAL ID

FIRST LL...

SECOND...

ORGAN/...

LOCALIZ...

Comments & DescriptL...

Main Op...

SAMPLE ...

101

UPTIDER_2003_FFPE_C50.8_L_P_15

✓ UZL

15

FFPE_C50.8_L

P_15_CD

C50.8

L

match with 22

Francois Rich
ard

✓ YES

Creation Date

2020-12-30 17:06:31 (Last Update: 2024-03-08 09:56:13)

S-NUMBER

✓ S64410

NAME INSTITUTION

✓ UZL

STUDY NAME

✓ UPTIDER

DONOR ID

2003

SAMPLE CONDITIONING

✓ FFPE

COLLECTION DATE

2021-01-04

TIMEPOINT OF COLLECTION

✓ AD

SERIAL ID

15

T OR B NUMBER

T-18288-05

FIRST LINE LABEL AUTO

FFPE_C50.8_L

SECOND LINE LABEL AUTO

P_15_CD

SLIDE LABEL AUTO

2003_T-18288-05

LABEL AUTO

UPTIDER_2003_FFPE_C50.8_L_P_15

Storage

BOX D1B3

LTBCR > FFPE_cabinet > FFPE_drawer_1

Owner: Francois Richard

Total Stock: No Stock

Add Secondary Storage

b

LC App: Find FFOCT Samples by LCID

Enter LCID(s) (tab-separated):

101

Query FFOCT Samples

Download Results

Matching FFOCT Samples

Show 10 entries

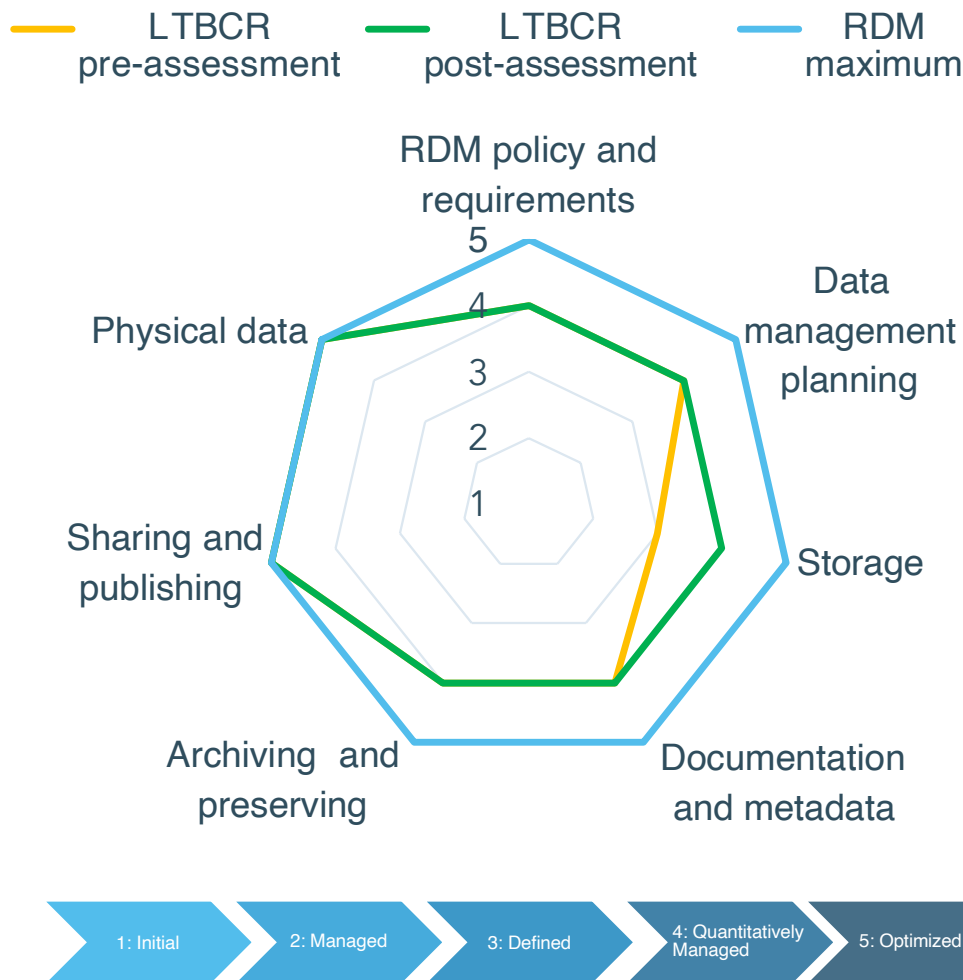
Search:

count	label	mirrored_sample_1	mirrored_sample_2
1	102	UPTIDER_2003_FF_OCT_C50.8_L_P_16	UPTIDER_2003_FFPE_C50.8_L_P_15
			UPTIDER_2003_FFPE_C50.8_L_P_486

Showing 1 to 1 of 1 entries

Previous 1 Next

Supplementary Figure S5. **An example of the LIMS tool.** a. A LIMS record of a breast (ICD-O-3 code: C50.8) FFPE mirrored sample collected at autopsy during tissue donation of patient 2003, along with all the metadata linked to the sample. b. LIMS tool identifying the appropriate FF-OCT mirrored sample linked to the FFPE sample mentioned above, which will be used for library preparation prior to next-generation DNA or RNA sequencing. Mirrored sample 1 represents the closest FFPE link to any FF-OCT sample within the LIMS database, with successive mirrored samples (2, 3, 4...) as possible links based on the available metadata. FF-OCT: fresh frozen in optimal cut temperature medium, FFPE: formalin fixed paraffin embedded, ID/LCID: LIMS ID, L: left, LIMS: lab information management system, P: pathologic. Created using RShiny. Schematic based on Labcollector (v6.262).



Supplementary Figure S6. **Results of the RDM assessment.** A radar plot describes the performance of our open science environment standards before and after the first assessment session (yellow and green) when compared to the reference standard set by our institutional research data management (blue). The scores reflect the status of our environment across 5 levels from initial to optimized. This assessment rated our environment to be between advanced and optimized across 7 different categories. LTBCR: laboratory for translational breast cancer research, RDM: research data management. Created with Microsoft powerpoint.

Supplementary Data 1: Supplementary Table S1 (eCRF founder document)

Supplementary Data 2: Supplementary Table S2 (eCRF codebook)

Supplementary Data 3: Supplementary Table S3 (LIMS founder document)

Supplementary Data 4: Supplementary Table S4 (LIMS codebook)

Supplementary Data 5: Supplementary Table S5 (Bridge document biobank to data warehouse)

Supplementary Data 6: Supplementary Table S6 (LIMS QC)

Supplementary Data 7: Supplementary Table S7 (Software components and versions)

Supplementary Data 8: Supplementary Table S8 (Good practices checklist)