



Biobank
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Cardiff University Biobank

Annual Report
February 2021
to January
2022

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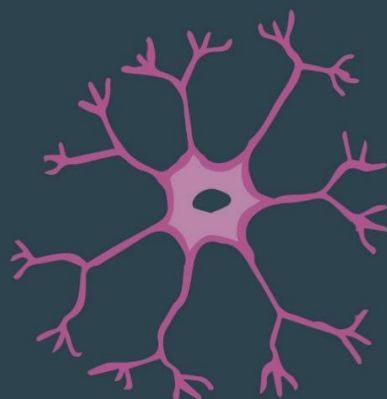
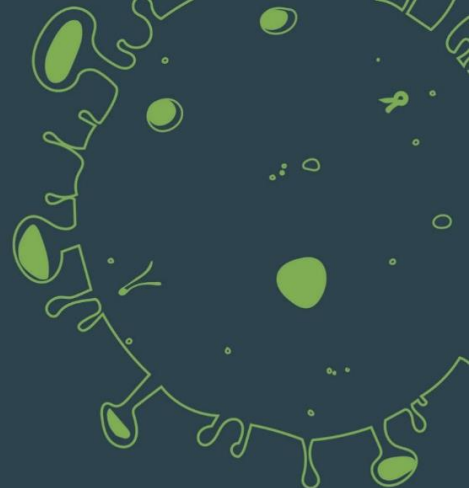
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Halter

Salvum

Salvum

ULTRALOW TEMPERATURE FREEZER

8.8°C

“ The CUB vision is to provide high quality biosamples to research organisations ”

Introduction

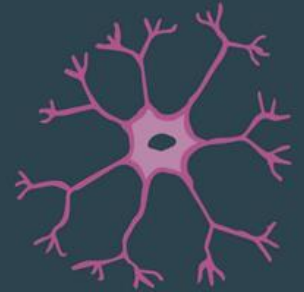
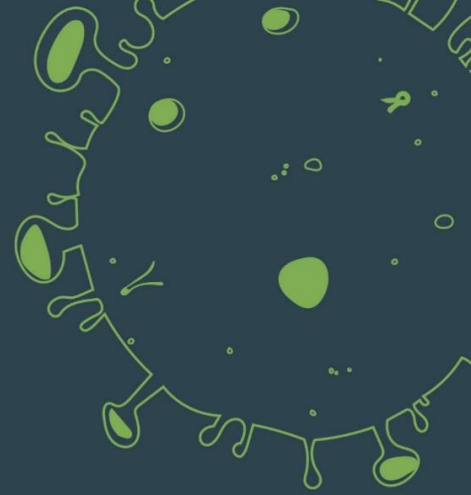
This report encompasses CUB's activity between February 2021 to January 2020. CUB, like many entities, has still been feeling the effects of the pandemic and the UK supply chain issues.

Despite this, CUB's activity in terms of donor recruitment, sample acquisition and sample release has increased on last year. CUB has also focussed on other services such as storage and project support.

Aims and Vision

The CUB vision is to provide high quality biosamples to research organisations throughout the UK, Europe and the rest of the world.

The CUB mission is to consistently meet customer expectations whilst strictly adhering to human tissue, data protection and biobanking standards and legislation. Our strategic direction is to successfully integrate the existing biobanks at Cardiff University into the CUB facility. We aim to maintain our certification and commitment to ISO 9001:2015 whilst expanding on current sample collections and creating new collections in areas not currently covered by the biobanks presently situated within Cardiff University.



CUB Academic Lead Report

Looking back at my words in last year's CUB annual report, it is gratifying to see how far we've come as a nation in overcoming some of the debilitating COVID restrictions that so majorly affected research. Thankfully, CUB is now fully back up and running and so we welcome enquiries around your future biosample requirements for your projects. That said, we haven't lost sight of some of the more positive aspects of working remotely, meaning that the CUB staff can now work more effectively and efficiently dependent on the facility's daily needs.

One key area that the biobank has been working on over the last 12 months is around our digital interface and how we connect with researchers and how researchers can connect with CUB. We are currently updating our webpages to provide more relevant information about what we provide in terms of biosamples and services and how best to access these. Key to this will be the roll out of our new sample search feature which will allow researchers to browse the biobank collections (which change regularly) at their leisure before having to actually contact the team. We hope this makes for a much better user experience.

Despite the slowdown in activity that the pandemic brought, it has been pleasing to see a growing number and variety of samples being deposited into CUB for use by researchers. These include a number of highly valuable samples deposited at the end of clinical trials. For this we very much thank the patients who donated samples and colleagues at the Centre for Trials Research, Cardiff University. Through such synergistic collaborations we can not only support valuable global research efforts but also deliver on a promise to patients that the valuable tissue they donate will be put to good use.

Whilst the provision of human biosamples is at the heart of what CUB does, we also offer a range of service to support wider research needs. Ranging from providing basic storage capacity, through to detailed project support or the provision of laboratory services we are here to help with your research requirements. This coupled with our close working interactions with the Central Biotechnology Service at Cardiff University means we can provide a one-stop-shop from, for example, tissue collection all the way through to genomic/proteomic profiling. Please get in touch if you feel this would be useful as part of your future grant applications.

As I try to look forward to 2022 and the opportunities that lie ahead, I see increasing opportunities for CUB to be part of the wider UK and global biobanking community. Through working together we can deliver so much more for research than we can as disparate biobanks, be that through the delivery of larger biosample cohorts or through linkage with critical data sets. As Abraham Lincoln once said "the best way to predict the future is to create it". Stay safe.



Professor Phil Stephens
CUB Academic Lead

“Through working together we can deliver so much more for research...”



CUB Sample Search

In 2021 the central IT team at the University undertook development of a sample search application for the biobank. This application will eventually be accessed through CUB's website. It will allow researchers to search CUB's sample collections to give a quick idea if the biobank holds samples to service their project needs. The application will allow filtering on items such as disease, sample type and demographic information. Once samples have been identified they will be able to added to a 'basket' and checked out. This will generate a list of samples that can be provided to CUB alongside an application to access those samples.

This new application will launch soon alongside a revamped CUB website.

Central Biotechnology Services

We are an ISO 9001:2015 certified and GCLP accredited not-for-profit Cardiff University Technology Facility based on the Heath Park campus. We provide access to life sciences research equipment and methodologies, with a focus on Cell Analysis/Imaging, Genomics/Bioinformatics and Proteins/Diagnostics. We welcome customers from Cardiff University, other academic institutions and industry, with our team offering a comprehensive service including advice on experimental design, sample preparation, data analysis and quality management accreditation.

We are very pleased to work closely with CUB to offer complementary services to researchers such as DNA/RNA extraction, protein profiling and gene expression. We are also both key members of the Quality Management Systems (QMS) and Auditing Working Group we set up in 2020. This initiative offers support and guidance across Cardiff University on a broad range of compliance, regulatory and auditing issues. Finally, we have enjoyed highlighting our collaboration by co-exhibiting with CUB at events. This activity has been on hold during the pandemic, but we look forward to further co-exhibiting opportunities in the future.

Find out about more about our services and training events by visiting [our website](#) and [signing up](#) for our newsletter.

Audit and Non-conformance

Audit

CUB currently conducts nine different types of audits. These are conducted for different regulatory reasons; to ensure compliance with the Human Tissue Act, to meet Health, Safety and Environmental standards and to meet ISO standards. The audits CUB conducts are as follows:

- **Health, Safety and Environmental Audits** are audits such as Work Place Inspections and Fire Safety Audits conducted as required to meet Health and Safety legislation
- **Traceability Audits** are monthly audits that trace samples from database to sample location and from sample location to database and are required to meet the HT Act
- **ISO Audits** are audits against the new international biobanking standard 20387:2018 and ISO9001:2015
- **Vertical Audits** are monthly audits that select a consent form and look at all records relating to it for completeness
- **Horizontal Audits** select a record type and look at a percentage of all that record type for completeness
- **HTA Audit** is an annual internal audit directly against the HTA standard
- **Data Audits** are monthly audits that interrogate CUB's sample database for record completeness



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Audit

CUB conducted 90 audits in total between February 2021 and Jan 2022. Figure 1 shows the number of audits conducted by type. The largest number of audits conducted were vertical audits (22%). The number of audits conducted increased by 76% in 2021 versus 2020. This was mostly due to number of audits being reduced during the pandemic. CUB also split the vertical audit previously conducted into two separate audits and introduced two monthly data audits which has increased the number conducted. Only one HTA audit was conducted as this is required annually.

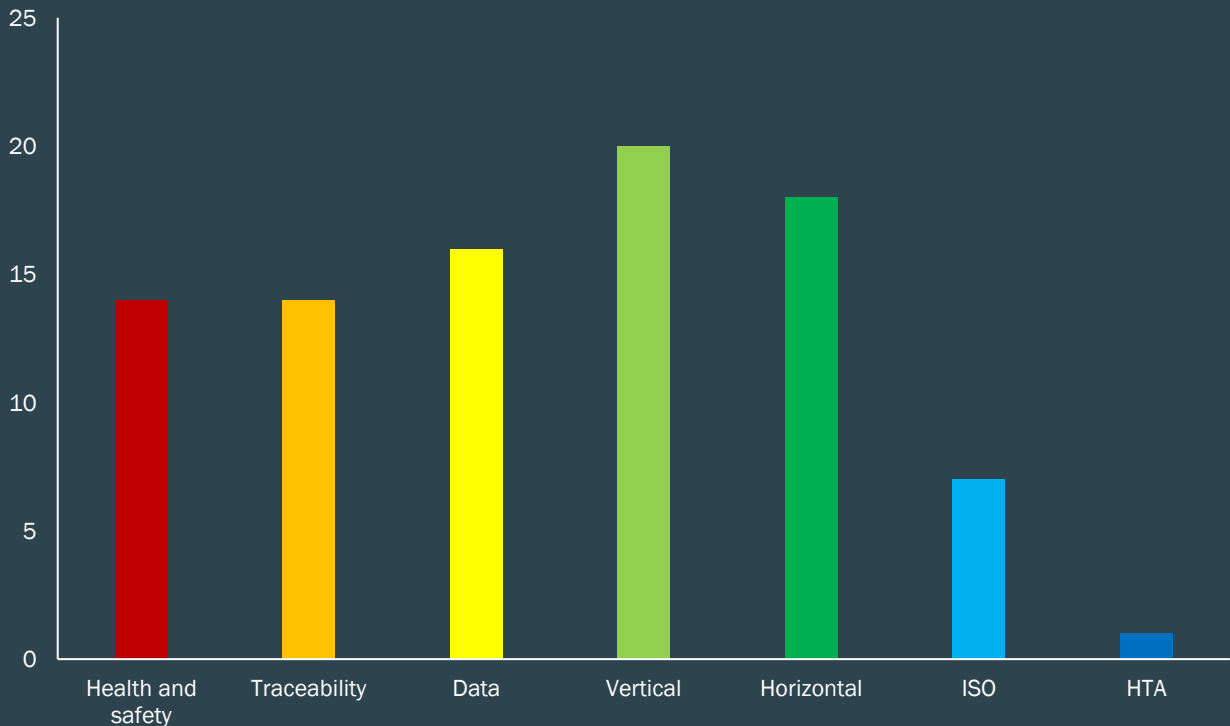


Figure 1: The Number of audits conducted by type between February 2021 and January 2022

Non-conformance

The majority of non-conformances raised within CUB were found during an audit (61%) (see Figure 2). 91% of these non-conformances were closed by their target date. The other non-conformances were found in an *ad-hoc* manner (39%) with 100% of these closed by their target date. Far more non-conformances were found during audits in 2021 in contrast to 2020 where more were found *ad-hoc*. This is likely to be due to the increase in auditing conducted by CUB in 2021 versus 2020. Across all audit types, 95% of non-conformances were minor with 3% opportunity for improvement and 2% major (see Figure 3). No non-conformances were categorised as critical.

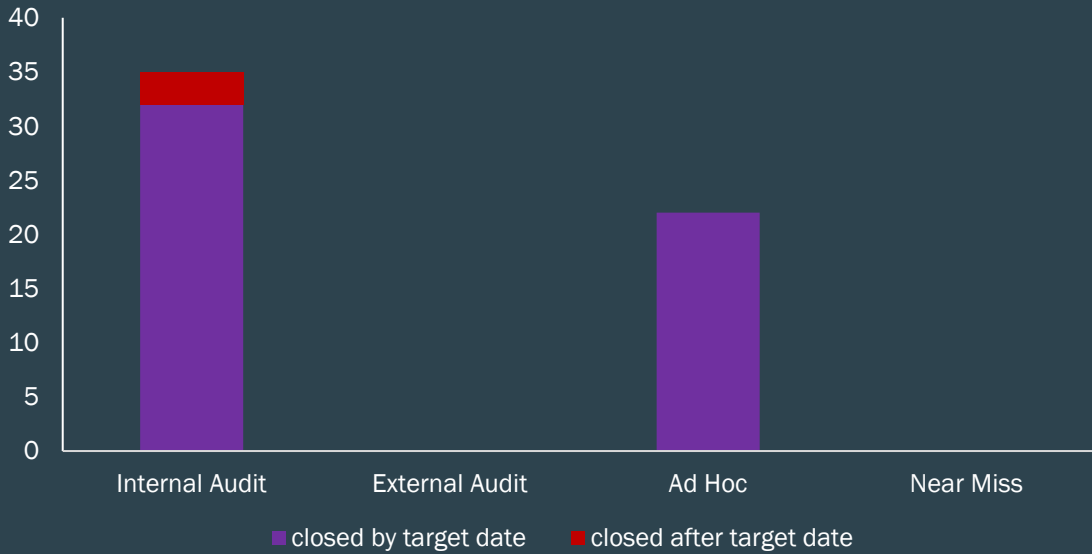


Figure 2: Number of Non-conformances raised by type



Figure 3: Number of Non-conformances raised by severity



CUB Sample collections

The CUB has a number of different existing collections within the biobank, some of which are actively recruiting and some that are closed, existing studies. All samples are supplied anonymously to approved projects.

Healthy Volunteer Collection

This collection consists of samples collected from donors that are classified as healthy. These samples are collected within the biobank using CUB's dedicated phlebotomy suite. The CUB is ethically approved to collect blood, urine and saliva samples. After sample collection, donors are asked to complete a questionnaire about their health and lifestyle. Samples from the healthy volunteer collection can be released as fresh samples or from storage.

Elite Sports Person Collection

This collection consists of samples collected from donors that are classified as elite sports persons. Samples collected from these donors are blood and saliva. Samples from the elite sports person collection can only be provided from storage.

Cystic Fibrosis Collection

This collection consists of samples collected from donors that are diagnosed with cystic fibrosis. Samples collected from these donors are blood and sputum. Samples from the cystic fibrosis collection can be released as fresh samples or from storage.





Anatomy

This collection is a collaboration between CUB and the Wales Centre for Anatomical Examination (WCAE). CUB collects samples from donations to the WCAE. These samples are all embalmed tissues. Samples from the anatomy collection can be collected bespoke if required or released from storage.

Acute Myeloid Leukaemia

This collection consists of samples from completed clinical trials from patients with acute myeloid leukaemia. Samples collected from these donors are primary cells (bone marrow mononuclear cells or peripheral blood mononuclear cells). Samples from the acute myeloid leukaemia collection can only be released from storage.



Neurofibromatosis-1

This collection consists of samples from patients with neurofibromatosis 1 (NF1). This collection is mainly frozen and formalin fixed paraffin embedded tissues. Samples from this collection can only be released from storage.

DUTY

This collection consists of samples from the completed DUTY clinical trial from child patients with suspected urinary tract infections. Samples collected from these donors are urine. Samples from this collection can only be provided from storage.

INDUCE

This collection consists of samples from the completed INDUCE clinical trial from patients with diabetic foot ulcers. Samples collected from these donors are wound swabs, swab washes and serum. Samples from this collection can only be provided from storage.

PACE

This collection consists of samples from the completed PACE clinical trial from patients with chronic obstructive pulmonary disease. Samples collected from these donors are sputum and swab washes. Samples from this collection can only be provided from storage.

Hidradenitis Suppurativa

This collection consists of samples collected from donors that are diagnosed with Hidradenitis Suppurativa. Samples collected from these donors are tissue and blood. Samples from this collection can be provided from storage only.

Dental

This collection consists of samples collected from donors that are having teeth extracted in the Dental Hospital on the Heath Park site. Samples collected from these donors are teeth. Samples from this collection can be provided from storage only currently but CUB will be looking to also provide fresh samples in the future.



STATEBOURNE

biosystem 100

www.statebourne.com

Donor Recruitment

CUB has been recruiting to a number of its collections during 2021, including the Cystic Fibrosis collection, the Hidradenitis Suppurativa collection and the Healthy Volunteer collection.

Recruitment this year has been predominantly to the Cystic Fibrosis collection (84%) (Figure 4) with a small number of participants recruited to the Hidradenitis Suppurativa collection (15%) and Healthy Volunteer collection (1%).

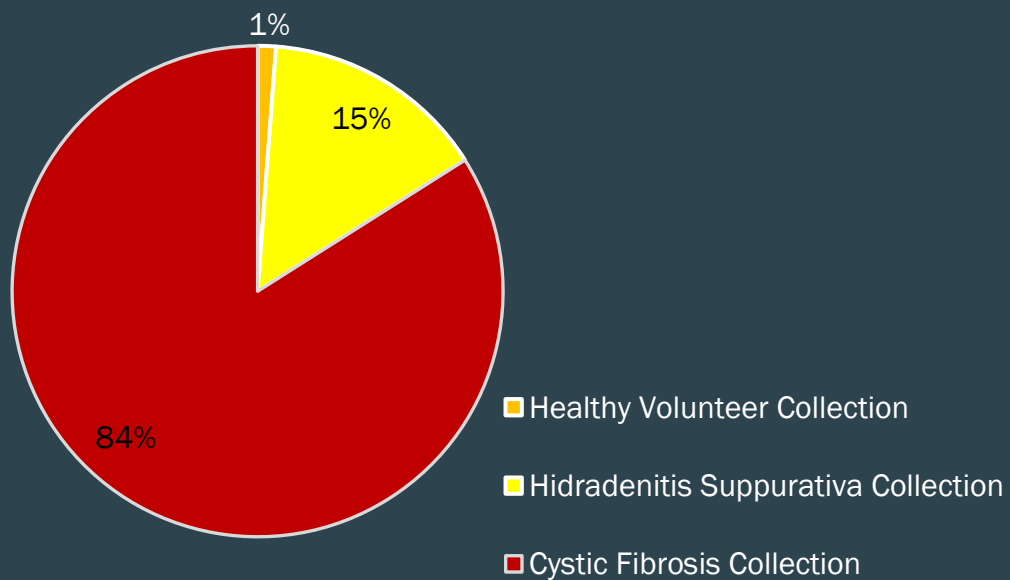


Figure 4: Percentage of donors recruited split by collection

Age and sex splits show that most participants were in the 20-29 age bracket (41%) with more female donors being recruited (58% vs 42%) (Figures 5&6). The next largest age group was 30-39 (25%) and then 40-49 (18%) with recruitment fairly evenly split across the other age groups (16-19 [9%], 50-59 [6%], 60+ [1%]). That fact that most donors were recruited in the 20-39 age group is likely because CUB's recruitment has been predominantly from patients that have Cystic Fibrosis which effects younger people.

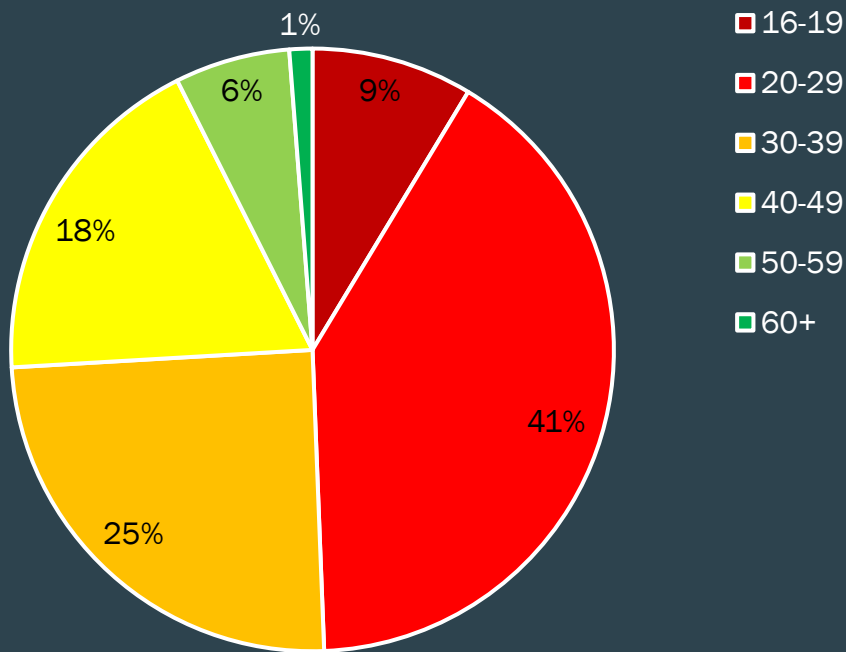


Figure 5: Percentage of donors recruited by age

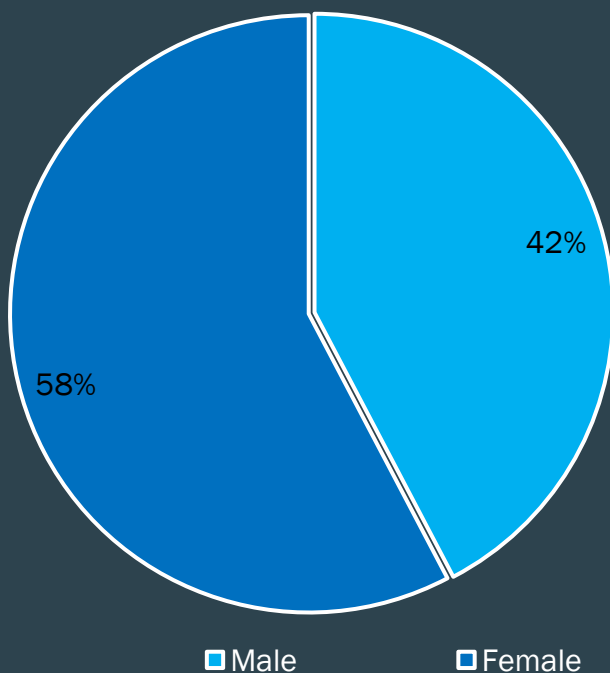


Figure 6: Percentage of donors recruited by sex

H36

WOLF
01759 301142

H37

WOLF
01759 301142

H38

WOLF
01759 301142

H39

WOLF
01759 301142

H40

WOLF
01759 301142

Total Sample Storage

CUB has samples stored as part of a number of collections. Figure 7 shows the aliquots currently stored in CUB as of January 2022 split by sample type and collection.

The largest number of aliquots stored are of urine (54% of all samples stored) with primary cells the second largest (11% of all samples stored) and whole blood the next (9% of all samples stored). The smallest number of aliquots for any sample collection is teeth (0.2% of all samples stored).

“54% of all samples stored are urine”

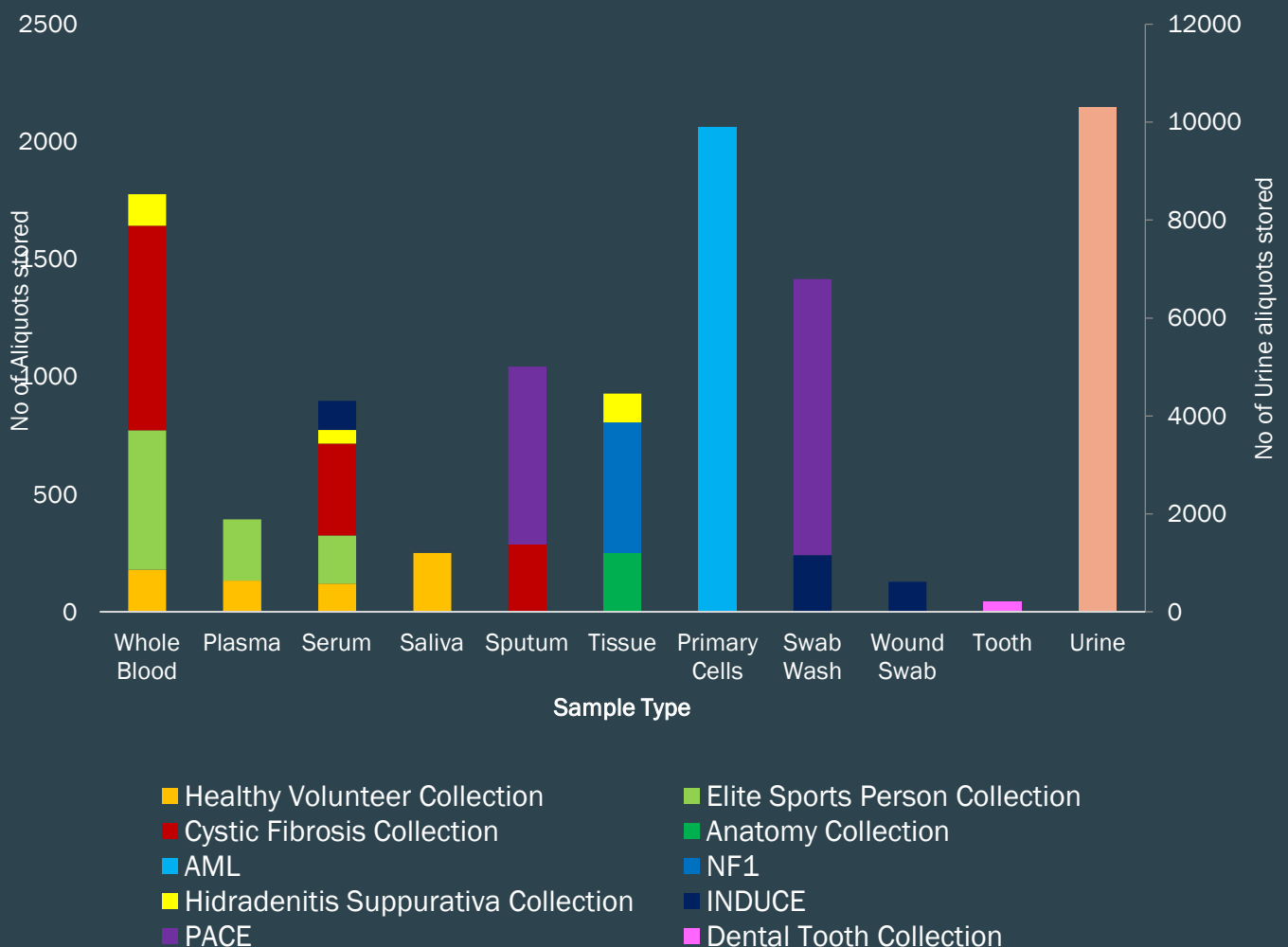


Figure 7: Number of aliquots stored by sample type and collection

Sample Release

As show in Figure 8, most samples were release from the AML trials (36%) with the Hidradenitis Suppurativa collection the next most released (30%). The majority of samples released were tissue (40%), with primary cells being the next most common (36%) (see Figure 9). The tissue released was both fresh and from storage, with the primary cells were released from storage.

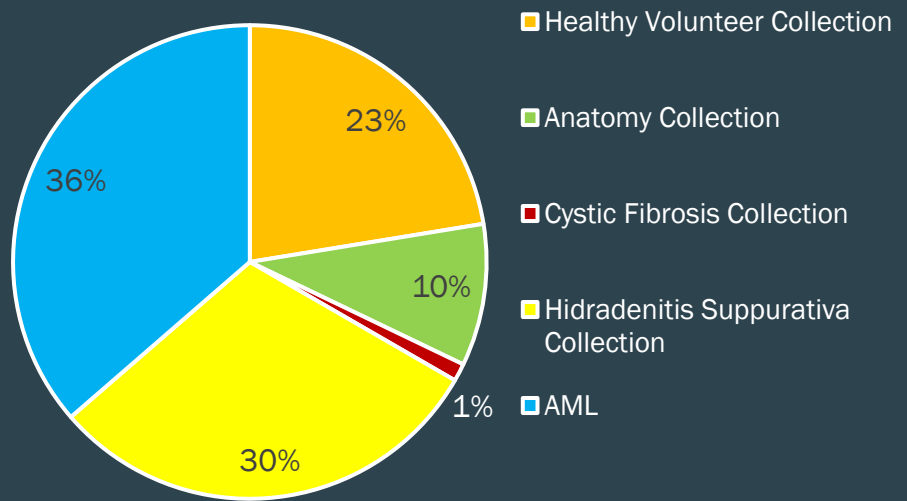


Figure 8: Percentage of samples released by collection

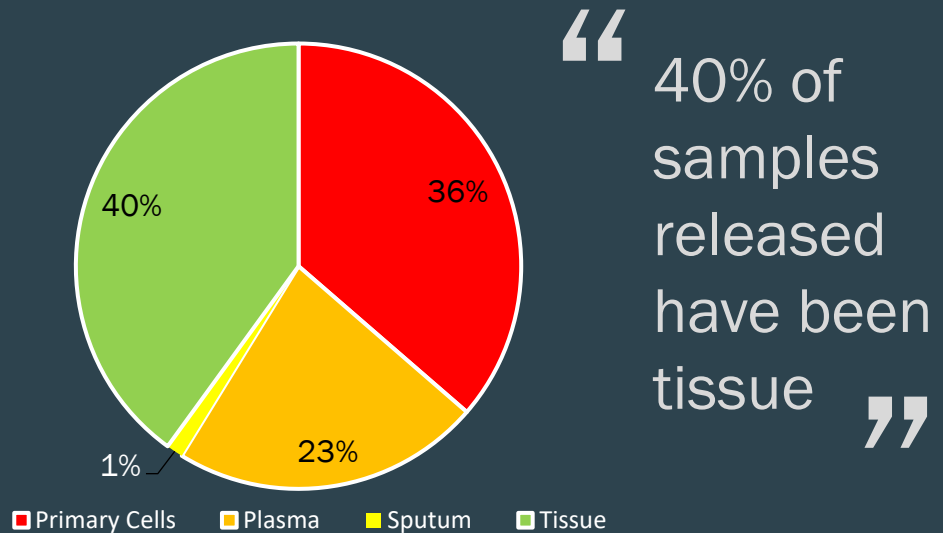


Figure 9: Percentage of samples shipped by type

Services

CUB has a number of services that it is able to offer to researchers:

Storage

CUB is able to provide storage for sample collections both small and large and short and long term. CUB will provide secure and monitored storage and ensure that any legal requirements are met. We currently have a number of both short and long term storage requests being handled by CUB.

Project Support

CUB can provide support for research projects. CUB is able to consent participants under a researcher's own ethics and then collect samples (blood, urine and saliva). CUB staff are consent and phlebotomy trained and the facility has a dedicated phlebotomy room. CUB can also process and store samples for the project. CUB is currently supporting a project in this way.

Lab Services

CUB is able to provide some basic processing of samples within the facility including the aliquoting and production of blood derivatives (serum, plasma) and the production of paraffin embedded tissue blocks. CUB has supported a project with the production of blocks for their research.





Quotations for Future Research

CUB has been providing quotations for our services and for grant applications throughout 2021 (see Figure 10). CUB provided 29 quotes in 2021 compared to 19 quotes in the same period last year. This shows that research activity is improving after the pandemic.

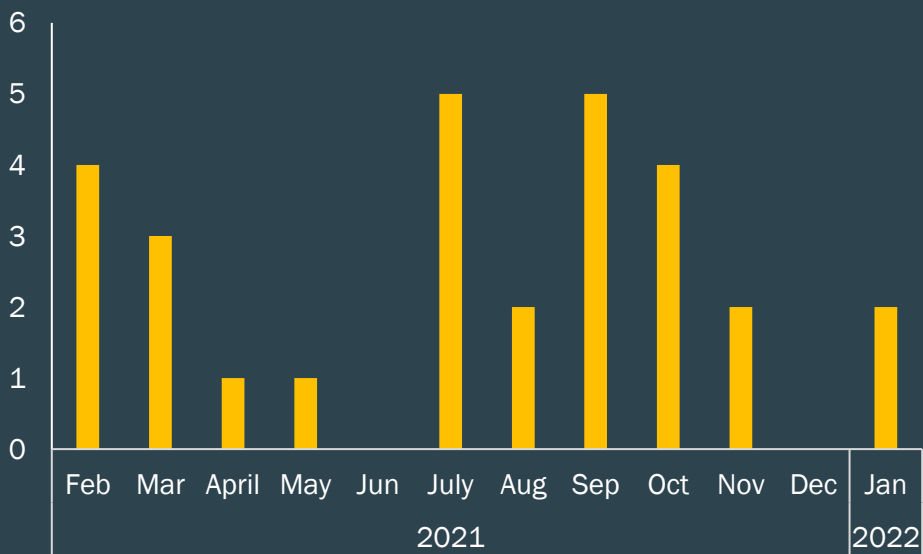
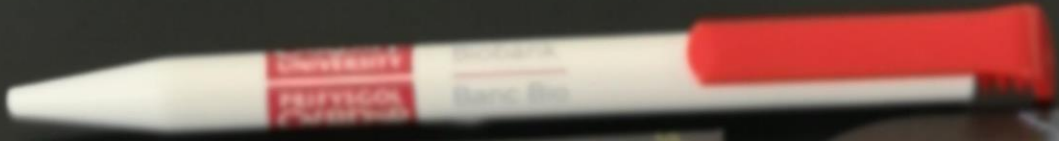


Figure 10: Quotations issued by CUB between January 2020 and February 2021



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Do you like to make a difference by taking part in research?

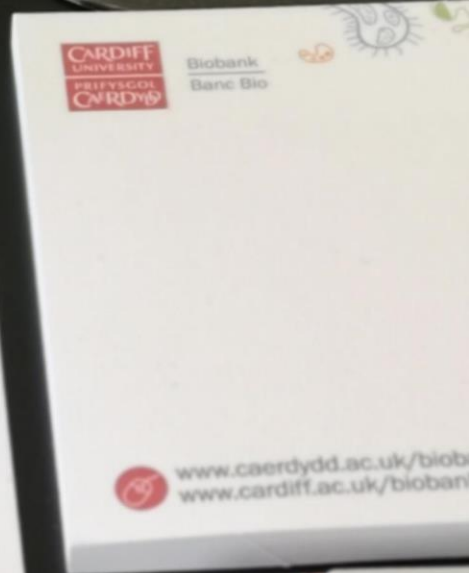
Cardiff's brand new Biobank is looking for volunteers to donate samples of blood, urine and saliva. These samples will be used by scientists to find better ways to diagnose, prevent and perhaps even find a cure to many common medical conditions and diseases.

These samples are vital for research and can help us make a difference.

If you are interested in taking part, please contact us near from you!

0775
f.ac.uk

 www.cardiff.ac.uk/biobank
 @CUBiobank



Communications

CUB has a dedicated website (<https://www.cardiff.ac.uk/biobank>) for the facility as well as a twitter account (@CUBiobank). CUB has increased its social media followers in 2021 (Figure 11).

CARDIFF UNIVERSITY
PRIFYSGOL CAERDYD

CU Biobank
@CUBiobank

604 Followers

Thank you to all the @CUBiobank followers and the international biobanking community for the support in helping us reach 600 followers! #biobanking #qualitymatters

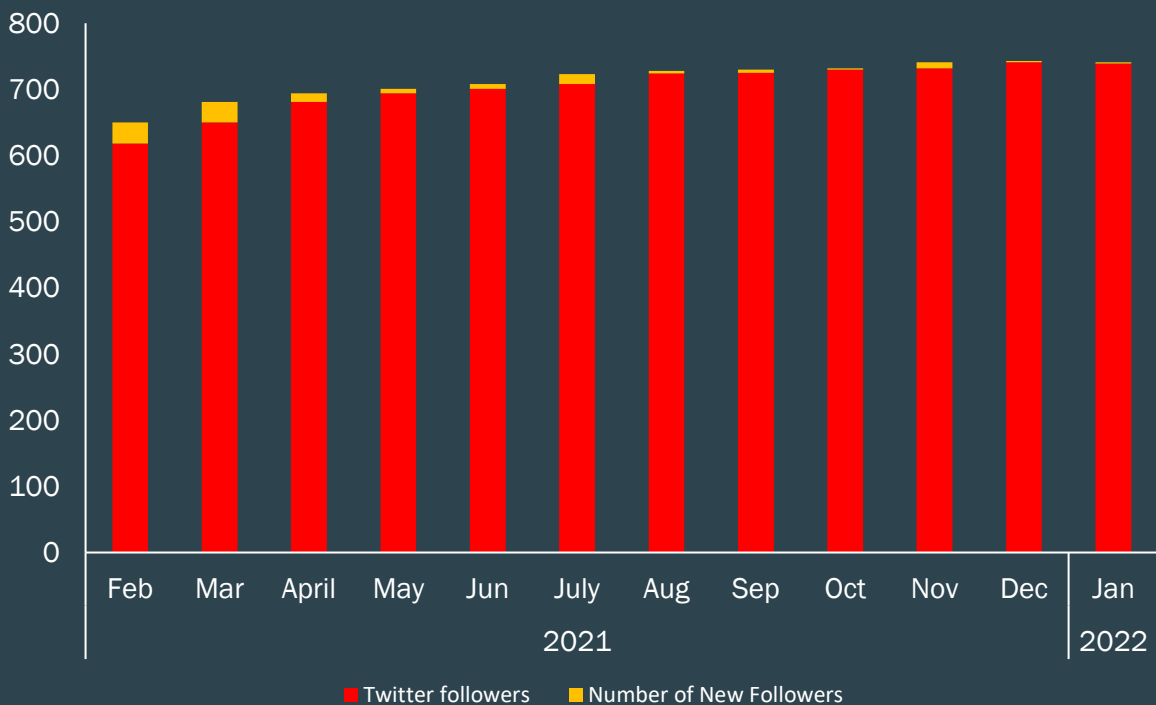


Figure 11: Number of total and new followers to CUB social media




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