

# ANNUAL REPORT

## Service Platforms 2022



## Inhoud

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## Summary

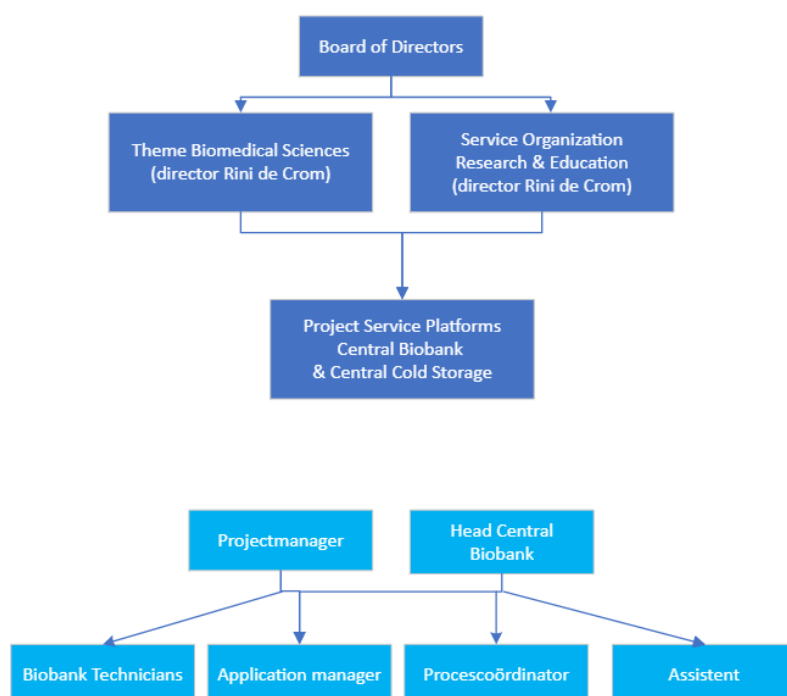
The project Service Platforms consists of two facilities: The Central Biobank and the Central Cold Storage. The Central Biobank facilitates researchers with the infrastructure to collect biomaterials and manage their biobank collections of which the biomaterials are stored in the Central Cold Storage. The Central Cold Storage facilitates long term storage of all research materials of the Erasmus MC.

In 2022 the Central Biobank has grown tremendously in the 3,5 years since being open. We are very pleased with the growth and expect it to continue in 2023. Quality Management was the main focus in 2022, see 4.2 and 4.3 for more information.

The Central Cold Storage -80°C facility has been open for 2,5 years and has exceeded all expectations and is currently for 95% full. The number of conventional freezers in the Erasmus MC is steadily decreasing and the aim is to reduce to a maximum of 180 conventional freezers in the next 5 to 8 years, see 5.1 for more details.

## Organisation

The project Service Platforms started as part of the Eread (Erasmus MC Research & Education Accommodation Development) programme. The personnel is employed under the theme bureau of theme Biomedical Sciences but financially the Service Platforms are positioned within the Service Organization Research & Education (Figure 1).



## Locations

The Service Platforms operates at different locations throughout the Erasmus MC. Biomaterials are processed in **Nb-414** at a dedicated 'Centrale Biobank' bench at the Triallab, Core Laboratory. There are NORDIC freezers in **Nc-503k** and **Ee-262a**, and there are pilot N2 vessels in **Eg-002kb**.

## Personnel

The Service Platforms team has grown with three new members in 2022, a process coordinator was appointed to help the Central Biobank and Central Cold Storage improve their quality management and processes. She also guides researchers with the set-up and management of their biobank study. In addition, two technicians were appointed, primarily to help with the processing of the biomaterials for the large cohort study Generation R, which collects biomaterials outside of office hours. The total Fte of the Service Platforms was **10,73 Fte** by December 2022.

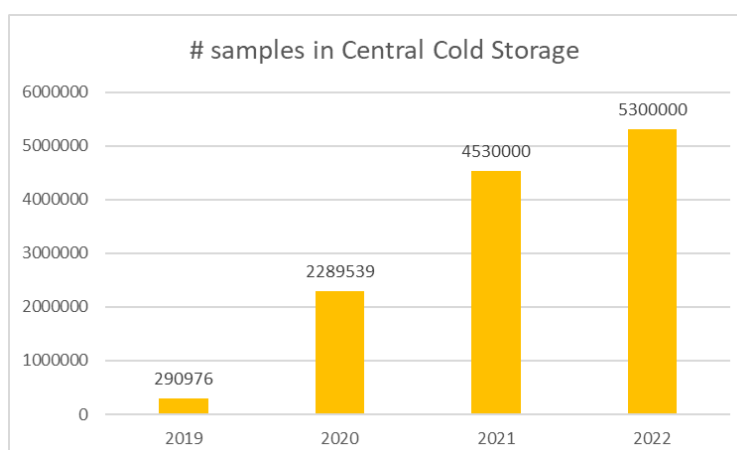
## Storage in Central Cold Storage

### Biobank collections

In total there are **236 distinct sample collections** stored in the Central Cold Storage, of these collections there are **209 biobanks**, defined by being structured human material collections stored for medical research in the future. A few of these biobank are newly started collections but most of them are collections which were previously stored in decentral freezers and are now migrated to the Central Biobank.

### Number of samples

At the end of 2022 there were **5,25 million samples** stored, registered to more than 68.000 storage boxes. Of these samples, 95,3% were samples stored in a biobank. Table 1 shows the growth since the opening.



### Sample requests

Because of technical limitations of the Biobank Information Management System (BIMS, Labtrain mSample), the samples request from non-biobank collections are not yet registered digitally. Therefore we only present data on sample request from biobank collections. There were **34.982 samples retrieved** for the purpose of using them for scientific research. Another 29.679 samples were retrieved from the storage to be destroyed as the retention period was exceeded.

### Percentage use

One of the goals of the Central Biobank is to increase the use of the stored biomaterials for scientific research. We aim to reach that goal by giving the researchers insight in their biomaterial collections and providing easy and free sample retrieval services. Whereas most decentral stored collections are poorly registered and as a consequence, not used for research. In 2022 however, only **0,7%** of all the stored samples from biobank collections were used in research, whereas in 2021 this numbers was 1,2%, indicating that more collections remain unused. The Central Biobank aims to increase this percentage in the coming years.

### Processing of biomaterials by the Central Biobank

The Central Biobank works together with collection points Clinical Chemistry (Triallab), Pathology (Tissue Bank) and Core Facility HuGeF for processing of biomaterials. These collection points process biomaterials following standard biobank protocols. Since the 1<sup>st</sup> of January 2022, the Central Biobank is responsible for the central sample processing at the Triallab, only for the biobank studies registered at the Central Biobank. The Triallab is now part of the newly formed Core Laboratory. By the end of 2022, the Central Biobank was responsible for the processing of 46 biobank studies according to the National Health-RI Biobank protocol ([link](#)).

Number of samples processed.

In 2022 the Centrale Biobank **processed 121.291 samples** of which 57.010 were of material type plasma (either heparin, EDTA or citrate) or serum. Other materials include for example urine, feces or breastmilk.

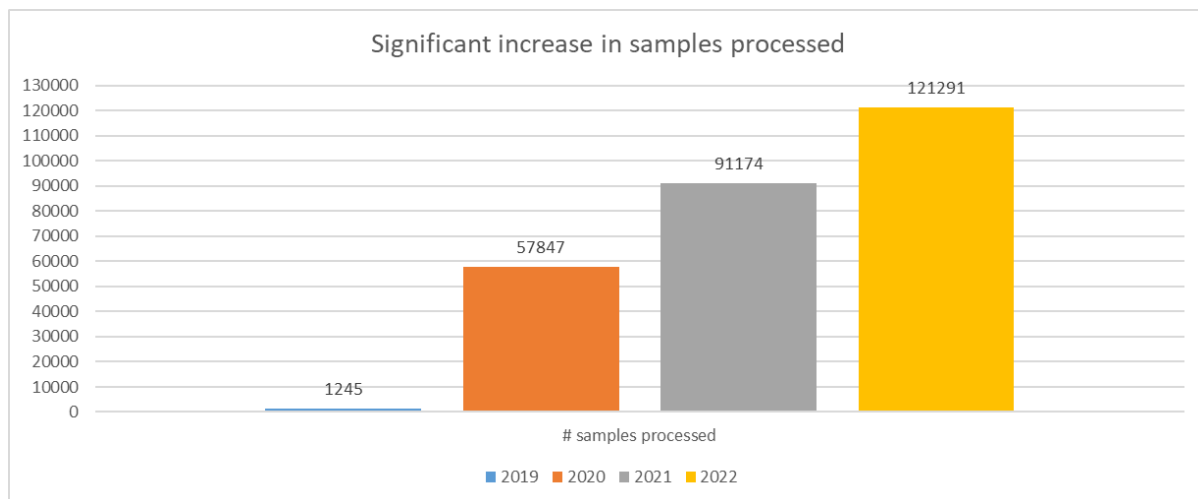


Figure 1. Sample processed by central biobank

Standard Operating Procedure (SOP) deviations

The Central Biobank processes biomaterials according to the national biobank protocol of Health-RI ([link](#)) and this protocol states that SOP deviations must be registered. The Central Biobank implemented this SOP deviation registration in March 2022 and since that time, **3340 SOP deviations** (2,75% of all samples) were registered.

Sample processing time

The national biobank protocol describes stringent processing times. Serum and plasma (either heparin, EDTA or citrate) should preferably be stored within 2 hours after blood draw, with a maximum of 4 hours. From the total 57.010 plasma en serum samples, 44.773 samples (**78,54%**) were stored within 2 hours and 54.294 (**95,24%**) were stored within 4 hours. The samples that not meet the storage criteria came to the laboratory outside workhours or from external institutes. After 24 hours, 98,54% of the samples were stored.

Central freezer and nitrogen facility

In 2022, the -80 °C NORDIC Central Cold Storage facility was extended with 6 additional NORDIC freezers.

Number freezers

In 2022, there was a reduction in total of 10 ULT's throughout the Erasmus MC. In total, the content of 29 conventional -80°C ultra-low temperature (ULT) freezers was discharged. The additional space that was realized from discarding content was used for growth of current collections and new collections. Further reduction was not possible due to the lack of space in the Central Cold storage.

A significant decrease has been seen in the number of conventional freezers, compared to the original trend before the Service platforms project started, which showed a growth of 3% each year (Figure 2).

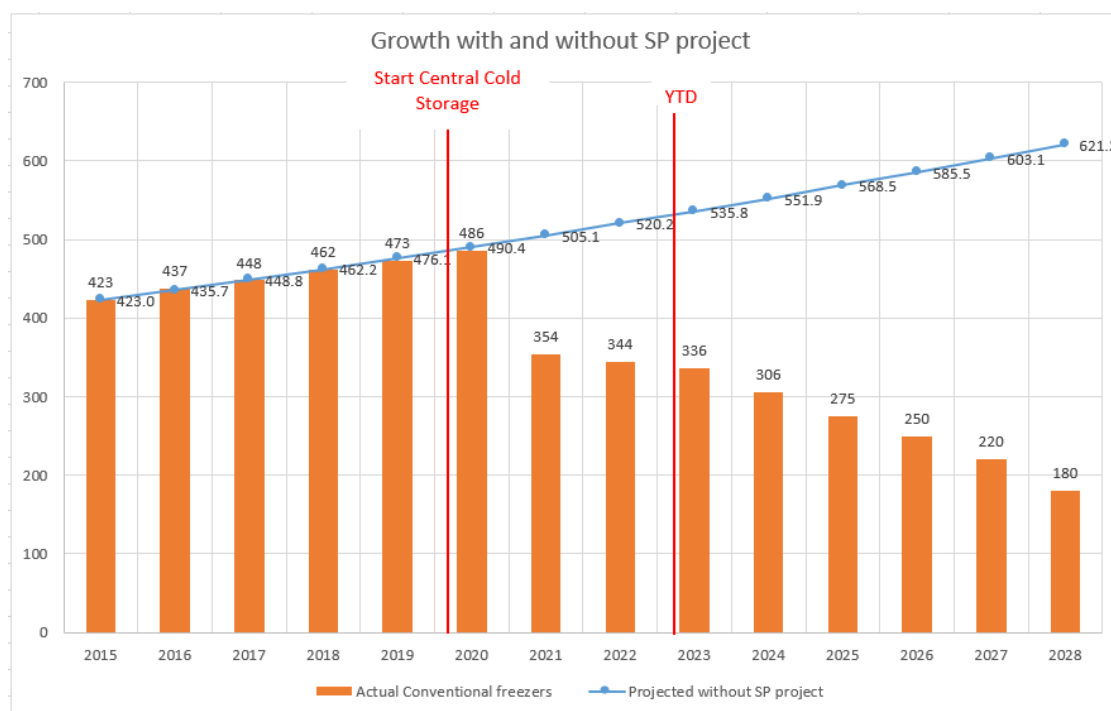


Figure 2. Projected growth Erasmus MC cold storage

The ambition of the Service Platforms project is to keep only 180 conventional ULT's by 2028. These ULT's are for decentral, (mostly) short term storage. Most long term storage collections, such as biobanks, should be transferred to the Central Cold Storage. To be able to facilitate this, the amount of Nordic freezers will increase the coming years as can be seen from figure 3. Phase 1-3 are completed and phase 4-6 should be completed by 2028.

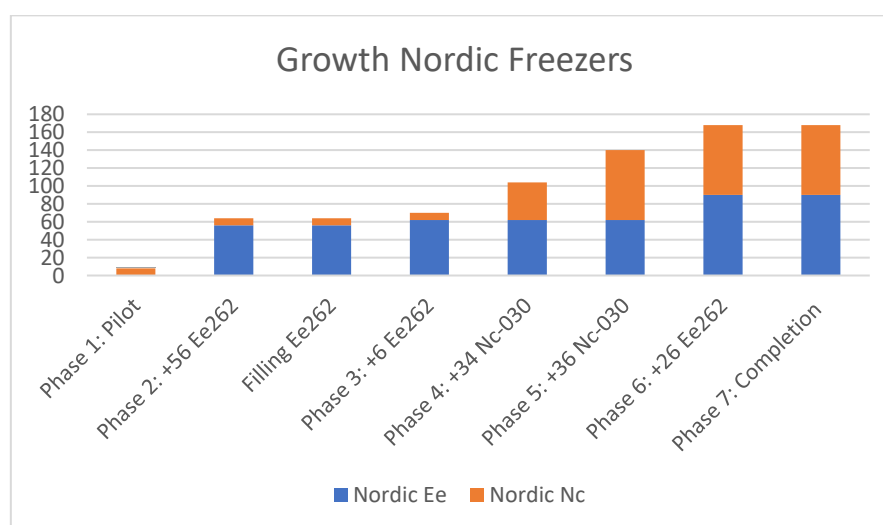


Figure 3. Growth Nordic freezers

## Savings due to the Central Cold Storage

One of the objectives to centralize the freezer and nitrogen storage is to save energy and costs. We express the total energy savings in euro's.

Total savings in 2022 amount to €747.145. This is due to the conversion of 128 freezers to the NORDIC Storage system, and 48 freezers in total not being purchased due to the project Service Platforms (Figure 2 and table 1).

Table 1. Savings central cold storage

| Year | Projected freezers without SP project | Actual Conventional freezers | Nordic Freezers converted* | Savings per converted freezer per year | Annual Savings | Savings due to freezer discarded or not bought | Total actual cost per freezer per year | Annual Savings | Total Annual savings |
|------|---------------------------------------|------------------------------|----------------------------|--|----------------|--|--|----------------|----------------------|
| 2022 | 520.2                                 | 344                          | 128                        | € 2,964.00                             | € 379,392.00   | 48.2   | € 7,623.94                             | € 367,753.08   | € 747,145.08         |

Using the above mentioned calculations the project has saved **€ 1,397,376.94 in costs for storage (energy (and other))** from 1 January 2019 until 31 December 2022.

## Quality management

### NBS scientific payments

The Central Biobank mandates the use of 2D matrix barcoded storage tubes for storage of biomaterials. This 2D barcode uniquely identifies every single storage tube for easy traceability and efficient and reliable registration. To stimulate the use of 2D barcoded storage materials, Service Platforms subsidizes the purchase of these materials with 75%. Researchers purchase the materials and they receive 75% subsidy after the materials were paid and received. Over 2022, this was €106.192,15 worth of subsidy.

### Quality Management of incidents

To improve the quality of our facilities we started using the MIP (Melding Incidenten Patientenzorg) system to register incidents and quality improvements. By the end of 2022 we trained every Service Platforms personnel to use the MIP system. We registered 11 incidents of which 7 were about an internal Central Biobank or Central Cold Storage process. There were 2 incidents which took place at another department but had effect on the Central Biobank or Central Cold Storage process.

### Customer satisfaction

The Central Biobank and Central Cold Storage values customer satisfaction. Centralization is always a big change but we feel that researchers should stay in the lead of their own biomaterials. In 2022 we performed a customer satisfaction survey by phone, where we asked questions about reachability, reliability, expertise, our track&trace software mSample and our collection points (Figure 3). The response was 50% (16 responders out of 32 researchers). Overall satisfaction was good, we are pleased that customers are confident in our expertise and the expertise of our collection points. We continue to work on improving mSample, our reachability and reliability.





Figure 3. Satisfaction survey

## Foreseen changes in 2023

### Opening of the Central Nitrogen facility

The opening of our central liquid nitrogen storage facility is scheduled for September 2023. This facility will operate as the -80°C facility, and specifics are worked out in a working group composed of researchers working for years with liquid nitrogen.

### Opening second Central Cold storage location for -80 (Nc-030)

This location is projected to open its doors in Q4 of 2023, for this to happen, the current water cooled conventional -80°C freezers in Nc-030 will therefore be transitioned to a temporary location and content will be transferred (migrated) to the Central Cold Storage in EE-262 and later, to the Nordic freezers in Nc-030.

### ISO 20387 pilot

The Central Biobank, together with the Tissue bank collection point signed an agreement with the Raad voor Accreditatie (RvA, nation accreditation body) with two other university medical centers for the next 2 years (2023-2024). The Central Biobank will work together with these institutions on implementing the **ISO 20387 – General Requirements for Biobanking** in the Netherlands. In 2023, the RvA will visit the central biobank and tissue bank to gather input on how our biobank operates and will provide us with feedback on how to work towards ISO 20387 accreditation. If deemed ready, the central biobank can then start the accreditation process in 2024.