How tech-savvy employees make the difference in core facilities

Recognizing core facility expertise with dedicated career tracks

Saskia Lippens¹, Dominique Audenaert¹, Alexander Botzki¹, Stefaan Derveaux¹, Bart Chesquièrê³, Geert Goeminne¹, Reza Hassanzadeh¹, Jurgen Haustraete¹, Francis Impens¹, Jochen Lamote¹, Sebastian Munck¹, Niels Vandamme¹, Gert Van Isterdael¹, Marijke Lein² & Geert Van Minnebruggen¹.∗

During the past two decades, core facilities have been established in many European life sciences research institutes and become fundamental cornerstones of these institutes’ research strategy (Meder et al., 2016). As other institutes, VIB has seen a steady growth in the number of independent core facilities since the first one, a micro-array facility, was established in 1999. While “core facilities” were originally mere service providers under the umbrella of one or more research groups, they evolved into fully independent service units that provide technical support for the research community of the institute and beyond and that are part of a dedicated Core Facilities Program. The growth of the number and size of VIB’s core facilities is also reflected in the number of people working there: The relative growth of core facilities staff has exceeded that of research groups (Fig 1).

Core facilities’ staff members frequently have a background in fundamental research, but are typically ‘tech savvies’ who contribute to the life sciences via their knowledge and skills rather than their expertise in a particular research field (Gould, 2015). Many staff members more or less “fell into the job” as their preference for technology grew into a fulltime occupancy. Additionally, as core facilities grew and became genuine independent technology-driven service providers, more and more people applied specifically for a job there. Yet, as core facilities are a relatively new concept in the life sciences, there are consequently no specific job descriptions of career tracks. This is also discussed regularly at core facility-related workshops and symposia, where it is broadly acknowledged that a dedicated career track and development plan is essential for maintaining the attractiveness and sustainability of core facilities.

“Core facilities’ staff members frequently have a background in fundamental research, but are typically ‘tech savvies’ who contribute to the life sciences via their knowledge and skills...”

Core facilities beg to differ

Just as in research laboratories, the staff of core facilities includes diverse levels of experience and different training backgrounds (Fig 2). Most typically, Ph.D. students and postdocs represent by far the largest fraction (± 70%) in a research team, whereas they are only a minority of core facilities’ staff (± 15%, with a complete lack of Ph.D. students). Indeed, core facility staff with a Ph.D. degree cannot be considered as “postdocs” who perform their own research projects. Instead, they often work as core facility heads or technology experts (part of technical staff in Fig 2). About 70% of the staff in core facilities are technicians compared to about 25% in research labs. This substantial difference is a direct consequence of the different skill sets and requirements of a technology-driven versus research-driven environment. Finally, the larger fraction of team leaders in core facilities reflects the fact that these are mostly smaller teams.

“... as core facilities are a relatively new concept in the life sciences, there are consequently no specific job descriptions of career tracks.”

Another fundamental difference between core facilities and research groups is the financing of operations and staff. Whereas research groups are mainly financed through research grants, core facilities rely on service income and strategic funding from the host institute. EU-LIFE conducted a survey of 10 European life sciences institutes, which showed that this fraction (fee-for-service income + structural subsidies) typically corresponds to more than 80% of the total

1 VIB Core Facilities Program, VIB, Ghent, Belgium
2 VIB Human Resources, VIB, Ghent, Belgium
*Corresponding author. E-mail: geert.vanminnebruggen@vib.be

DOI 10.15252/embr.202255094 | EMBO Reports (2022) 23: e55094
expertise and as such will impair the facility’s mission. At VIB, Ph.D. students typically spend 4.5–5 years in a research laboratory, and the average postdoc period is 4 years. In core facilities, the teams are more stable. Between 2016 and 2021, 29 people left the Core Facilities Program, which is 35% of the current number of its employees. In the same period, 1,071 people remained in academia, 37% moved to industry and 11% went into the public sector, retired or became self-employed. When looking at the career moves of staff members who left the Core Facilities Program during that same period, there seems to be a stronger trend toward industry (48%) in contrast to academia (40%) (Fig 3).

A further important aspect is the difference between the mission of a core facility and a research lab. The latter’s aim is to perform research to generate publications, patent applications, and Ph.D. graduates. The aim of a core facility is to support the research community in this endeavor. This has a direct consequence for the skills required from a core facility employee: a service-oriented attitude, team play, and ambition to help others succeed are fundamental traits. Obviously, technical know-how forms the basis of a core facility job, but within the broader context of technology service is a diverse set of responsibilities and tasks. Over the years, core facilities have evolved from merely specialized equipment providers to the go-to-place for expertise in specific technologies. In addition to generating data, core facilities are also consulted for experimental design, data analysis, and data interpretation (Lippens et al., 2019). The involvement of core facilities in the complete experimental pipeline has consequently introduced the need for a more diverse skill set, such as communication skills for interacting with users and discussing experiments and data.

Establishing tailored career tracks for core facilities staff

The fact that the composition of a team, the duration of employment contracts, and the required skill sets differ substantially between core facilities and research laboratories, together with the need to create long-term career prospects, has prompted us to revisit the career tracks matrix at VIB, which was mainly tweaked towards Ph.D./postdoc/technical personnel working in research laboratories. Simply applying these job descriptions for core facility positions creates a mismatch, especially for the technical support profiles, who are the largest group in core facilities.

Importantly, this also has consequences on employment contracts. VIB has implemented an HR policy to offer open-ended contracts to core facility staff, based on the philosophy that this facilitates a sustainable future. This strategy allows new staff to gradually establish expertise in a specific technology. It is in strong contrast to fixed-term contracts in research laboratories—especially for Postdocs and Ph.D. students—whereby contracts only last for the duration of the research grant/project. A traditional career path in a research laboratory also encourages people to switch between projects, build up international experience and work in a project-based manner. However, short contracts and limited stays of core facility staff creates gaps in in-house expertise and as such will impair the facility’s mission. At VIB, Ph.D. students typically spend 4.5–5 years in a research laboratory, and the average postdoc period is 4 years. In core facilities, the teams are more stable. Between 2016 and 2021, 29 people left the Core Facilities Program, which is 35% of the current number of its employees. In the same period, 1,071 people or 57% of employees have left the research laboratories (Fig 3). We see that 52% remained in academia, 37% moved to industry and 11% went into the public sector, retired or became self-employed. When looking at the career moves of staff members who left the Core Facilities Program during that same period, there seems to be a stronger trend toward industry (48%) in contrast to academia (40%) (Fig 3).
experience levels as determining factors, rather than diploma, publications, past trajectory, or actual duties. Matching this framework to the core facilities’ mission is also of strategic value for staff training and a foundation for creating more coherent teams across facilities.

A core facility-tailored career matrix

The daily operations in the 12 VIB Core Facilities are supervised by a Head of Core, who reports to the Head of the Core Facilities Program. The Core Facility Heads joined forces with VIB’s Human Resources to revisit career tracks in our institutional core facilities. As mentioned above, the ambition was to obtain a reference matrix that can be applied across different core facilities and cover the range of tasks and responsibilities in the whole Core Facilities Program. These tasks can stretch between mastering laboratory work, data acquisition, performing analysis, organizational tasks, and much more.

We made an overview of the different responsibilities for all core facilities staff. In the whole process, we did not start from the existing reference framework for research laboratories and we did not consider diplomas as a discriminating factor for career tracks. Within the same track, people with different levels of education and/or previous job experience can carry out a job with a similar responsibility level. For example, a Ph.D. diploma does not determine the responsibility level and is not a requirement for any of the tracks in the VIB Core Facilities Program.

To define separate tracks, we identified several factors as important discriminators including responsibility taken up in a team, working independently, supervising team members, direct reporting, and interaction with users. As an outcome, we formulated a track for Core Facility Technicians, Core Facility Experts, Core Facility Specialists and Head of Core (Fig 4; https://vibcoreprogram.sites.vib.be/en/publications).

The main task of Core Facility Technicians is executing standard operations. Based on developed experience of technical skills, know-how of the core technology, and the ability to work independently, they can move along four sub-tracks within this category—from Junior Core Facility Technician to Core Facility Technician (two sub-tracks) and to Senior Core Facility Technician.

The Technology Experts have a thorough know-how of the core technology and consult and supervise other team members.

Figure 3. Distribution of where VIB alumni move to after leaving the institute.
Possible destinations are subdivided in Academia, Industry, Other (retirement, self-employed, public sector, ...). The chart on the left shows information of people leaving VIB between 2016 and 2021. The chart on the right shows the info of people leaving the VIB Core Facilities program between 2016 and 2021.

Figure 4. VIB Core Facility Tracks, implemented in 2022.
Overview of the aspects that are used to discriminate different CF-specific tracks (upper panel). Overview of the four different Core Facility Tracks and sub-tracks and examples of signature titles (lower panel).
members and facility users, communicate with stakeholders, design experiments, make project proposals, perform analyses, interpret data, implement new technologies, and so on. For Technology Experts, we distinguish three sub-tracks based on their responsibilities in these various tasks.

Technology Specialists anchor key technology knowledge in the core facility. More specifically, they provide technical support and manage the technologies for efficiency and improvement. They keep the technologies at high standards and at the forefront of science, thereby continuously looking into opportunities for novel applications. They are also directly involved in project management and important strategic decisions—infrastructure investments, funding opportunities, establishment of new projects—which are crucial for the sustainability of the core facility. Their career tracks are not divided into sub-tracks.

Finally, the Head of Core Facility oversees core facility operations and has the ultimate responsibility for all activities. This requires leadership and a multitude of skills beyond the pure technological know-how. Here, additional sub-tracks from Junior to Senior are based on level of experience.

The responsibilities for these four tracks have been defined in detail (Fig 4; https://vibcoreprogram/sites.vib.be/en/publications). Based on this reference scheme, each core facility staff member can be positioned in a specific track and sub-track. The possibility to move forward within a track is based on increasing experience, but also increasing responsibilities. A growth trajectory is not limited within the four tracks but can occur between tracks. If the appropriate responsibilities apply, someone can for instance move from the Core Facility Technician track to the Technology Expert track.

“Without strongly empowered core facility staff, not only the future of core facilities but also the success of research organizations would be less certain.”

As indicated above, an important incentive to establish specific career tracks was the need for a wider spread in the technical support profiles. When matching the current VIB core facility staff onto the new career matrix, it is clear that the introduction of the Technology Expert track leads to a recalibration of more than 40% of the team members, who previously were positioned in the technical support or postdoc category (Fig 5). For example, a “traditional” postdoctoral research project is not generally applicable in core facilities even if a substantial part of the core staff has a Ph.D. degree. Previously, these profiles would automatically be placed in the postdoc category, even though their responsibilities are solely focused on supporting users and not on independent research. In addition, several staff members take up roles beyond the traditional role of technicians in research groups, concomitant with a substantial increase in responsibility. For this type of profiles, the “traditional” technician tracks that are applied in research groups were not matching the actual job description. The fact that a substantial part (40%) of the core facility staff has been recalibrated with the new career matrix underlines how essential a tailored career track system is in order to obtain a comprehensive view on the expertise, skills, and responsibilities that are required in a core facility.

Core facility jobs are full-fledged careers

In life sciences research organizations all over the world, core facilities have taken up a major role as important contributors to research and their strategic value is generally well recognized. The global core facilities community is constantly growing and international Consortia (ABRF, CTLS, Core For Life, EU-LIFE, etc.) organize specific conferences and workshops where a recurring discussion topic is the need for core facility-specific career paths and training (Waters, 2020; Adami et al., 2021). We think the time is right to create a framework that can be used to attract and train new talent and to acknowledge the human capital that is at the heart of these technology expertise units. We hope that the VIB Core Facilities career matrix can inspire other research organizations to create similar and clearly described positions for those employees working in technology units and as such support top-notch research. Without strongly empowered core facility staff, not only the future of core facilities but also the success of research organizations would be less certain.

Acknowledgments

The authors would like to thank Nele Vlaminck for support in gathering facts that were used in this manuscript, Christof De Bo for making the infographics, the VIB HR team for providing information and the VIB IT team for general support with analytics tools.
References