

Activity report - Center for Translational Science (2014-2018)

The CRT aims to facilitate links between researchers and clinicians in order to develop more projects related to human health. Created in 2014, the center was initially directed by Matthew Albert. In 2015, a team comprised by Stanislas Pol (Hôp. Cochin, AP-HP) and Odile Gelpi (Dir. Medical Affairs and Public Health) were named as co-Directors and later joined by James di Santo (Scientific Director).

The CRT comprises three integrated structures that provide support to researchers: these include a ‘clinical core’(CC-CRT), a ‘technology core’ (UTech-CB) and a human biological resources (ICAReB). The CRT is foremost a support structure for researchers that offers services but also provides key opinions to the General Management on strategic orientations of translational research projects. In order to improve its efficiency and to better satisfy its users, the CRT began the process of quality certification in 2017.

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Strategic Objectives for the CRT 2014 - 2018

1. Provide integrated support for translational research

The CRT ‘Open Desk’ (OD) was launched in January 2017. This service aims to guide researchers interested in developing a research project involving human samples or data. Each Thursday, OD reunites representatives from the three key CRT structures (clinical core, technology core and ICAReB) as well as the legal department and the ethics service (and if needed, the international and technology transfer departments). OD provides researchers with the necessary information to initiate their translational research projects at Institut Pasteur and to anticipate appropriate actions, in particular those relating to regulatory requirements.

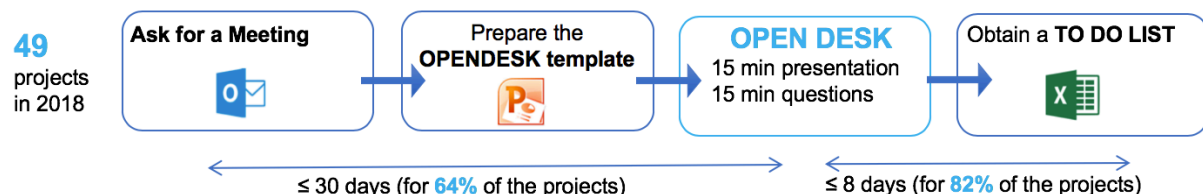


Figure 1 Process of the Open Desk

Ongoing actions:

- Improve project’s follow-up
- Revise institutional procedures for project’s evaluation (CorC)

2. Attract clinicians to the campus through medical partnerships

The Institut Pasteur signed a framework agreement with Parisian hospitals (AP-HP) as well as Hôpital Sainte-Anne (Nov 2015) and more recently, a partnership agreement with Hôpital Necker (Jun 2017) to reinforce translational research collaborations. Importantly, the CRT funds clinicians at various stages of their careers (residency, professor) to develop projects at Institut Pasteur. In order to maintain our links with the medical community, the CRT has organized in January 2017 its first MD and PharmD alumni reunion.

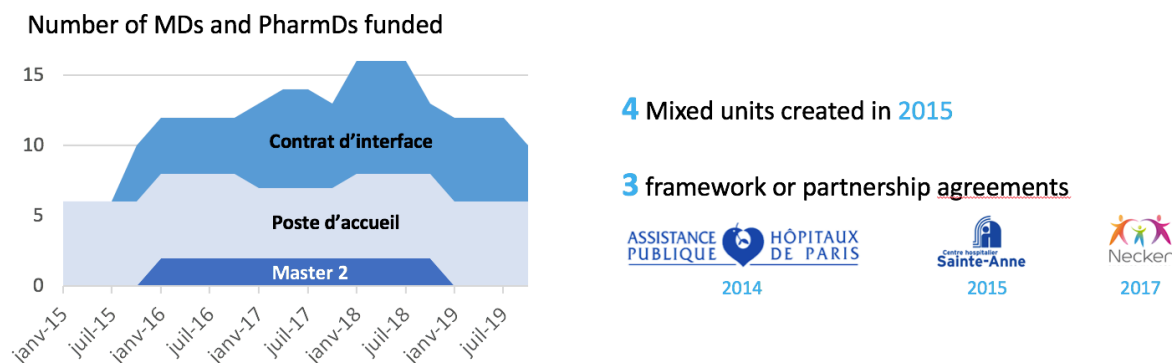


Figure 2. Number of MDs and PharmDs funded and partnership agreements

Ongoing actions:

- Increase the visibility of calls to attract more MDs
- Provide a personalized support to “researcher-clinical” pairs

3. Facilitate the emergence and visibility of translational research

The CRT organizes a series of scientific events in order to facilitate interactions between clinicians and researchers and to increase awareness of medical research at Institut Pasteur.

In the context of the ‘Quart d’heure Médecine’, invited clinicians give medical talks (in French ; videotaped) at Institut Pasteur. In a complementary fashion, in the ‘Quart d’heure Science’, Pasteur scientists present their results during meetings during staff meetings at Paris hospitals. The latter can be coupled to more extensive stays within clinical services. Finally, ‘Storms’ are a half-day forum that provide scientists and physicians to confront ideas on specific topics (neurostorm, cancerstorm, ageingstorm).

The Journée de la Recherche Translationnelle is an annual one-day symposium that highlights Institut Pasteur activities in a particular area of translational research. Since 2016, the CRT is an active member to the “Ateliers de Giens”, which provide key links with industrials. The CRT website¹ provides a summary of translational research activities at IP.



Figure 3. Major scientific events organized by the CRT

¹ crt.pasteur.fr

Ongoing Actions :

- ☑ Validate the count of participation in the Center's events as doctoral school modules
- ☑ Reinforce the training of researchers on ethics and clinical research
- ☑ Focus the scientific event on the campus scientific strategy (notably Storm)
- ☑ Give more visibility on internet to translational projects

4. Develop stronger links with patient's associations

In order to better answer tomorrow's health challenges via the Horizon 2020 European funding program, the CRT works with patient associations. The CRT has organized events with INSERM, Institut Curie, National Health Service (UK), Vrije university (Netherlands), patient's organisations ... in order to benchmark the practices in other French and European institutions. IP has signed in June 2018 a convention with Thellie, a crowdfunding platform, that allows patients to facilitate research projects of interest.

Ongoing actions:

- ☑ Organize Patients/researcher's days during 2019 and following years

5. Modernize tools for clinical research

Together with the IT department, the CRT has computerized some of its process notably by choosing a software, REDCap, to collect clinical data online. A benchmark has been organized by a translational research team concerning for LIMS (Laboratory Information Management System) in order to better handle samples and clinical data related to clinical studies. An electronic recording tool² has been set up in order to facilitate the access to the technology core.

Ongoing actions:

- ☑ Choose and implement a software for translational project's management.
- ☑ Test electronic solutions to improve interactions with research's participants (eg: electronic dynamic consent)

6. Improve clinical research in the IP international network (RIIP)

After an evaluation of the current clinical research capacity in 6 institutes of the RIIP, both global and specific actions have been put in place to support research on infectious diseases (INCREASE initiative). In this context new software to collect clinical data in remote areas (REDCap) as well a new tool for communication (Together) have been put in place. The CRT is co-leader of a workpackage in the ALERRT³ project, funded by a European call (EDCTP), an African coalition for epidemic research, response and training. Targeted actions consisted in the implementation of clinical research projects on infectious diseases. These actions are led together with the technology transfer, international, IT & legal departments as well as with all researchers willing to implement clinical research projects with the RIIP.

Budget obtained for IP and RIIP:

- For Capacity building: 2 M€
- For projects related to CRT: 3 M€



Figure 4. Budget, countries and major topics of the INCREASE initiative

Ongoing actions:

- ☑ Provide template for common documents (protocol, budget...)
- ☑ Help to develop international standard clinical procedures
- ☑ Facilitate the funding of clinical research projects through international grants or industrial partnerships

² <http://crtechnologycore.pasteur.fr/v2/forms/login.php>

³ <https://www.alerrt.global/>

The three key structures that comprise the CRT

Via three key services, the Center for Translational Science offers guidance for initiating and pursuing clinical studies, provides access to samples from healthy volunteers and offers cutting-edge technological support for the evaluation of biomarkers to the scientific community at Institut Pasteur as well as its clinical collaborators, both locally and world-wide.

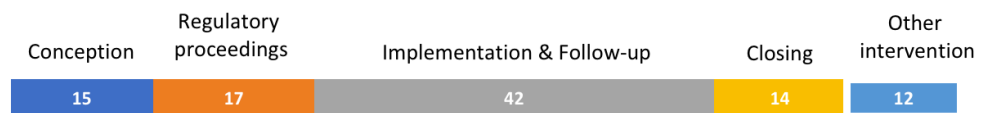
1. Clinical core of the CRT

(1 leader, 8 projects managers, 1 clinical research associate)

After an Open Desk presentation, the clinical core offers its support to scientists depending on their experience in translational research and their demand. This can include simple advice, or can include coordination of the ethical, legal and administrative procedures for every step of the clinical project from its conception to its completion. The multi-service Open Desk (legal, ethics, industrials, international departments) at the very beginning of the project allows one to anticipate requirement and to take in account the intrinsic risks associated with research on human beings. The clinical coordination also assures regulatory compliance of already initiated research projects.

176 projects in 2018

- Classified by **progress** (%)



- Classified by **risk qualification** (%)

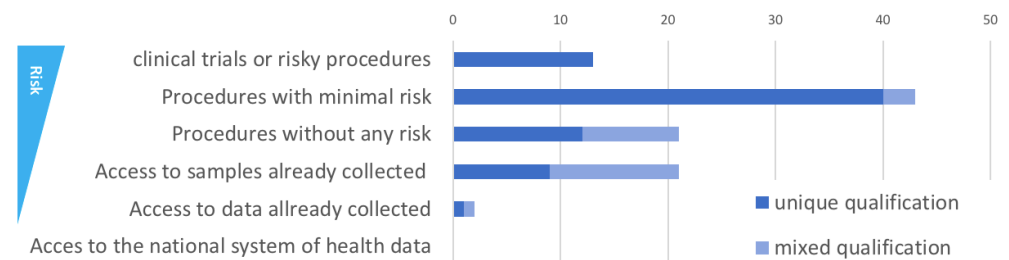


Figure 5. Number and distribution of projects managed by the CRT-CC according to the progress and the risk

Ongoing actions:

- Adapt the support according to risks and strategic aspect of the project

2. ICAReB: Clinical Investigation and Research Bio-resources Platform

(1 leader, 9 members among them 2 technicians, 2 MDs and 4 PhD)

The ICAReB platform is a human bioresources facility established at the Institut Pasteur since 2008. It has a double activity: first, Clinical investigation – mainly through its more than 200 healthy volunteers who participate to the 2 main cohorts dedicated to infectious diseases and the immune system, which satisfy annually the bioresources requests from more than 30 research teams (IP and external teams).

The second activity is focused on biobanking with operational facets (sample preparation, preservation and distribution). Samples are mainly represented by blood derived products (DNA, RNA, serum and plasma, PBMCs), but also by other types – e.g. stools, urine, saliva, biopsies, swabs... This activity implies also the management of a growing body of data, from medical history of the participants, to biological and experimental data resulting from their samples and derived products analysis. ICAReB is involved at any given time in a dozen projects directly involving humans or management of their bio-medical data.

ICAReB is one of the well-known biobanks from the French national Biobanks network, an active member of the Pasteur International Biobanks Network (PIBnet) and also associated member of BBMRI, the pan-european Bioresources and BioMolecular Research Infrastructure.

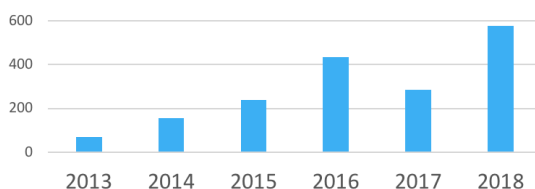


Figure 6. Number of distribution actions

Ongoing actions:

- Rethink the business model for internal service
- Increase the visibility towards industrials (requests represent 15% of activity)
- Set up a governance and form of financing for collections from closed projects

3. Technology core of the CRT – Cytometry and Biomarker UTechS

(1 leader, 1 platform leader, 5 research engineers, 1 bioinformatician and 2 technicians)

The CRT-TC was created in 2014 to provide cutting-edge technological support to biomedical projects. New laboratories were attributed to the structure to optimize the layout of cytometers and sorters and to open dedicated space for RNA and DNA manipulation and analysis.

The CRT-TC is partner and the official technology platform of the LabEx project Milieu Interieur and has developed a capacity to efficiently support large-scale immunomonitoring studies. It is leading the Pasteur FCE (Federation for Clinical Immunology Center of Excellence). In 2015, we have conceived the annual practical work for Advanced Immunology M2 Course.

The close interaction of the CRT-TC with the other three entities of the CRT has allowed to increase the visibility of our technologies to clinicians through presentations at AP-HP or Sainte-Anne Hospital and to initiate several collaborations with clinical teams. Since 2017, the CRT-TC has a double affiliation with the C2RT.

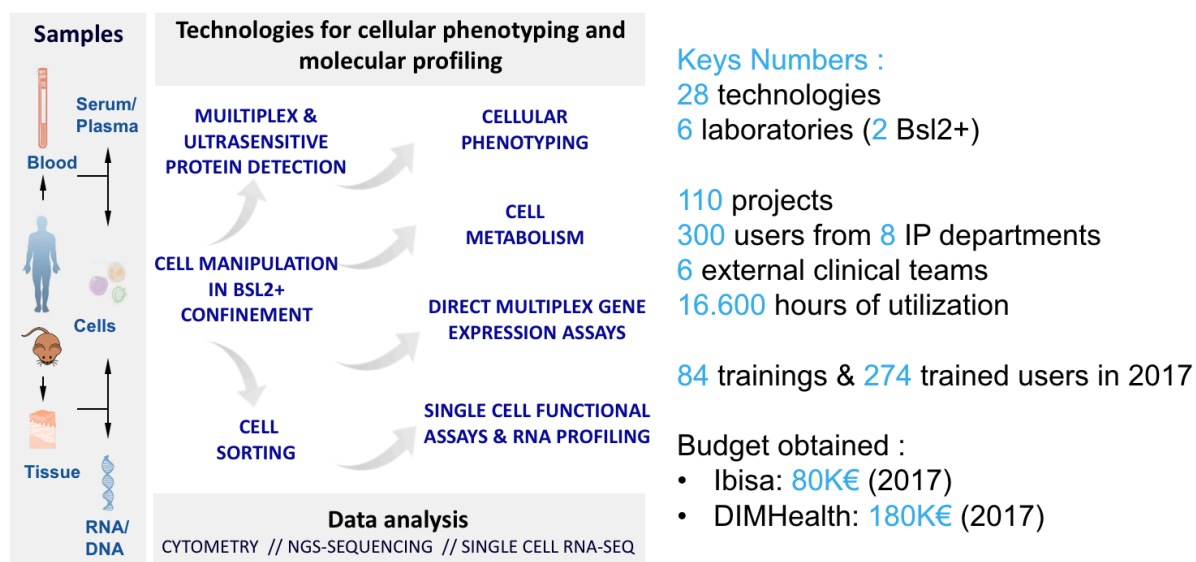


Figure 7 Key numbers, budget obtained and major technologies in the CRT-TC

Ongoing actions:

- Extension of its BSL2+ laboratory to introduce new technologies.
- New instrument to support analysis of cells under controlled gas composition.
- Introduce microfluidics-based technologies to the BSL+ laboratory.

Support to the scientific vision of the strategic plan 2019-23

Through the aforementioned activities, the CRT is positioned as the focal point to coordinate translational research on the campus and with national and international partners. In that sense, the CRT plays a crucial role to enable actions planned in the new strategic plan, notably:

- Establish a network of clinicians on antimicrobial resistance
- Link with clinicians on neurodegeneration and brain connectivity diseases
- Develop translational projects in partnership through the common PTR grant with APHP
- Link with expert in public health and clinicians on infectious diseases at international level
- Creation of a center for vaccinology integrated in the IP