The ICAReB platform of Institut Pasteur provides access to human bio-resources for academic and private research teams worldwide, essentially in the fields of infection, immunity and neurosciences. More than 134,000 human quality controlled, duly annotated samples (mainly whole-blood derived products, but also stool, urine, saliva, swabs,...), from both healthy and diseased cohorts with open, regulated access, are available upon request. Both clinical investigation and biobanking activities are certified following ISO 9001:2015 and NF S96-900:2011 standards, respectively. ICAReB is a member of PIBnet (Pasteur International Biobanking network), BIOBANQUES and BBMRI, the French and pan-european biobanking networks, respectively.

**Keywords:** biobanking; biospecimens; sample collection; cohort; healthy volunteers

**Funding statement:** Funds come from IP (facilities and staff), and from various funding organisms or agencies (for specific projects):

- *ANR* (French National Research funding Agency): *OH!Ticks* project (see https://www.ohticks.fr/ 2017–2020)
- *AP/HP* (Assistance Publique/Hôpitaux de Paris): *MonaLisa* (Multicentric Observational National Analysis on Listeriosis and Listeria) and *ListeriaGEN* projects, 2009–2022 and 2015–2024, respectively
- *AVIESAN* (French National alliance for Life Sciences and Health). Study of the innate immunity and the microbial flora during aplasia (*PAMPA* project, 2013–2016)
- *Bioaster* (French *Investissements d’Avenir* funding, Infectiology and Microbiology platform, Lyon-Paris, 2010–2020)
- *Biomérieux* (Lyon, France; cardio-vascular biomarker, 2013–2015)
- *FRM* (Medical Research Foundation): *Hidradenitis Suppurativa* project (2011–2015)
- *IBiSA* (Biology, Health and Agronomics infrastructure) selection of ICAReB platform in 2009
- *INCA* (National Institute for Cancer research): *INECOC* project, 2009–2011
- **TOTAL foundation** (Afribiota project on Environmental Pediatric Enteropathy, 2016–2020)
- **WHO** (for The WHO Human African Trypanosomiasis specimen Bank, 2008–2018, 2019–).

Since three years, public-private relationships were proposed and research collaborations accepted with industrial partners, for example the Lyon-Paris ‘Technological Research Institute’ (*BioAster*) following a national *Investissements d’Avenir* program launched in 2012.

(1) Bioresource Overview

**Project description**

The ICAReB platform has been established in 2008 to provide for access of pasteurian research teams and beyond, to high-quality human bio-resources. Its main fields of interest are infectious diseases, immunology and more recently neurosciences. Two activities were developed, hence its name ICAReB, both certified following the ISO 9001 and NF S96-900 standards, respectively. More than 134,000 samples and their associated bio-clinical data (including vaccination status, ethnicity, medical history such as chronic inflammatory diseases
and allergies) are currently collected, as well as environmental factors (lifestyle, international travels, microbial environment, dietary habits, exposition to stress and pollutants).

The Diagmicoll main cohort (Clinical trials reference: NCT03912246) affords bio-resources from healthy subjects primarily, for the National Reference Centers, so as to optimize and develop new diagnostic methods [1, 3, 4, 5, 8, 10, 13, 20, 21, 28]. The CoSImmGen cohort (Clinical trials reference: NCT03925272) has been set up to take in charge more complex needs such as longitudinal studies of the immune system and other integrative (e.g. metabolic/endocrine and neuro-cognitive) systems, encompassing their genetic and environmental determining factors [11, 14, 18, 22, 23, 25, 27, 33, 34, 35, 36, 37].

In parallel with these two open cohorts, other collections have been set up for disease-oriented projects: (i) the French African Trypanosomiasis specimen bank of the WHO [7, 15, 17, 24]; (ii) the hidradenitis suppurativa cohort followed up at the IP Medical Center [6, 19, 29]; (iii) a Cameroonian Mother-to-Child HIV transmission cohort; (iv) anal and oral Papillomavirus infection in the young DyPAVIR French women cohort; (v) the French national observational survey on Listeria and listeriosis (MONALISA) [30]; (vi) Lyme-like tickborne disease (OHTICKS); (vi) environmental pediatric enteropathy (AFRIBIOTA) [38], and pathogen discovery in infectious diseases (Pathodisc/PATHO-HTS [20, 28]). Another project aimed at characterizing Opiorphin, an anti-nociceptive molecule [2, 12, 26, 31].

Classification

Human

Biological samples and associated data

Context

Temporal coverage
Since 2003 (except 1994 for the Cameroonian Mother-to-Child HIV transmission cohort) to present, on-going with a regularly reviewed expiry date.

(2) Methods

Steps

Investigation methods

The main asset of our platform is represented by two large volunteers’ cohorts. The healthy individuals are recruited during ambulatory clinical consultations organized at the ICAReB platform by our staff. Those volunteers actively participate in research protocols on human beings (including pathophysiology, immunology, genetics, epidemiology...), and their samples and associated data presently compose the biorepository available for research purposes. The Diagmicoll cohort includes approximately 250 volunteers in the active file whereas the CoSImmGen cohort is comprised of around 180 volunteers regularly followed up, from which genetic and environmental data are available.

Besides the recurrent work with pasteurian teams, ICAReB also builds partnerships with numerous external public and private institutions (research teams, hospital-based staffs and clinical investigation centres, other biore sources centres, and companies) and is also developing a collaborative framework with European and international organizations. ICAReB is an active member of the French (membership number BB-0033-00062, see specific website: http://www.biobanques.eu/en/professional) and European (BBMRI under reference AO 203, website www.bbmri.eu) biobank networks.

Sample management

All the laboratory methods are based on standard operating procedures (SOP) and guidelines established within a quality management policy organized at the scale of the Centre de Ressources Biologiques de l’Institut Pasteur (CRBIP) structure, with a full access to the latest up-to-date documents. The individual data records are pseudonymized according to the European (GDPR directive) and French (CNIL) laws in order to protect the participants’ privacy. Sample quality controls are regularly performed following a biospecimen research schedule [8, 18, 23].

Data management

The ICAReB platform uses a BRC-dedicated LIMS for the bioresources management (MBioLIMS, ModulBio, Marseille France). In addition, in-house bioclinical databases have been constructed within a pre-formatted, web-based framework (Voozano, Epiconcept company, Paris). More recently we have introduced an alternative web-based framework (RedCap, Vanderbilt university, Nashville, USA) hosted by the informatic center, IP. Only authorized staff members can manage the bioresources, samples and data.

Stabilization/preservation

The following methods and containers are used for the collection and conservation of biological samples:
– Tubes with Z serum clot activator for the collection of serum
– DTA (ethylene diamine tetra acetic acid), hirudin, lithium- or sodium-heparin and sodium citrate tubes
– DMSO (dimethyl sulfoxide) or PBS tubes for storage of plasma or peripheral blood mononuclear cells (PBMC), after Ficoll purification
– Whole blood, in DMSO medium before freezing
– Red blood cells packs, after Ficoll centrifugation
– Paxgen blood DNA tubes and RNA tubes for storage of DNA and RNA
– Empty tubes for the collection of urines
– Swabs (with and without glycerol or physiologic serum-based conservatives possibly on nitrocellulose tips) for the collection of nasopharyngeal samples, tears (Whatman 41 strips, Schirmer Plus, GECIS, France) and saliva.
– Glycerol- or physiologic serum based liquids, in addition to empty tubes, for the storage of stools. Ethanol-fixed stool smears.

All the samples are stored in barcoded tubes. The storage systems are equipped with alarm systems and monitored 24/7 throughout the year.

Type of long-term preservation
Freezing of aliquots is made in manual freezers (−80°C) or liquid nitrogen cryo tanks.

A new room-temperature storage method (Imagene, Genopole campus, Evry, France) using laser-seal capsules (DNA shells® and RNA shells®, for DNA and RNA, respectively) is currently used for long-term preservation, after being tested in the context of a pilot study.

Storage temperature
The storage temperature (−196°C liquid nitrogen, −80°C, and room temperature) depends on material type and research project criteria.

Shipping temperature from patient/source to preservation
For the Diagmicoll and the CoSImmGen cohorts, the sampling is directly managed at the ICAReB platform. For other cohorts, the storage temperature depends on material type and research criteria.

Shipping temperature from storage to research use
The shipping temperature (−80°C (on dry ice), −20°C (on ice), +4°C or room temperature) depends on material type and research criteria.

Quality assurance measures
Being a doubly affiliated entity (to CTS for clinical investigation activity and to CRBIP for biobanking), the platform is doubly certified: following the ISO 9001:2015 and the NF S96-900 (French norm) standard, respectively.

Source of associated data
For healthy volunteers on hand, the associated data are obtained at the first inclusion visit and include: complete medical history, vaccination certificates and possible medical or laboratory records. In addition, some questionnaires may be used to meet the specific research projects criteria (for example: lifestyle, depression scale, cognitive status ...).

Associated data may also originate from care entities, when patients are recruited outside the Institut Pasteur.

Ethics statement
All research projects have previously received both institutional and external – so-called Comité de Protection des Personnes – ethical committee approval, some of them going in addition through an institutional review board (IRB) agreement.

ICAReB works in conformity with the ethical guidelines of the OECD (CIOMS 2017) and the French law. The Diagmicoll and CoSImmGen healthy volunteers collections have been declared to the French Ministry of Research (DC-2008-68, DC-2009-1067 and DC-2012-1698 statements).

Following the present European guidelines for Responsible Research and Innovation, the ICAReB platform is organizing an on-going, two-way communication process at all steps, i.e. during and after the research studies themselves [9, 16]. Recent colloquia in 2016, 2018 and 2020, in the IP historical amphitheater, allowed the meeting of healthy volunteers, patients, physicians and researchers (see at the bottom of our homepage). This initiative is interpreted as an observational investigation on volunteers/patients-centered health interaction project [32], which is unique in this academic context.

(3) Bioresource description

Bioresource name
Clinical investigation and Access to Research Bioresources platform, Institut Pasteur.

Bioresource acronym
ICAReB

Bioresource location
The bioresources are located in dedicated rooms on the site the Institut Pasteur, Paris, France (see https://www.pasteur.fr/en). This research institute is a non-profit private institution, managing an interface with 32 institutes (the so-called International Network of Pasteur Institutes).

Contact/URL/identifier
ICAReB platform
Institut Pasteur
25-28 rue du Docteur Roux
F-75724 Paris Cedex 15. France
Phone: (33-0)140613885
Fax: (33-0)145688537
E-mail: secretariat-ICAReB@pasteur.fr
Website: https://research.pasteur.fr/en/team/biobanking-icareb (link to CTS),

https://www.pasteur.fr/en/public-health/biobanks-and-collections/clinical-investigation-and-access-bioresources-icareb (link to CRBIP).
Bioresource type
ICAReB is an Infectiology, Immunology and Genetic biobank, located within an international research campus (Institut Pasteur, Paris, France).

Type of sampling
As a central research infrastructure, ICAReB is implicated in many research projects requiring high quality samples for their experiments. Most of the samples (134,211 on 2018, December report) are collected within the platform during a succession of follow-up visits as long as accepted by the healthy volunteers. 28,742 aliquots are available (end of 2018) from the Diagmicoll or CoSimmGEN cohorts, the later comprising in addition genetic and environmental criteria.

In parallel, disease-based cohorts are recruited and bioresources collected in accordance with various research projects (for example, one on *Hidradenitis suppurativa* [6], one on *Listeria* infection-associated pathologies [30] and the WHO Human African Trypanosomiasis specimen biobank [7].

Anatomical site
Blood (whole, plasma, serum) and circulating (PBMC, neutrophils) cells
Digestive tract (feces)
Urinary tract (urine)
Skin, oral mucosa and genital mucosa (swabs, saliva, secretions and biopsies)
Eye (lacrimal secretion)
Central Nervous system (cerebro-spinal fluid)

Disease status of patients/source
*Hidradenitis suppurativa* (the patients from the Verneuil’s disease cohort, followed at the neighboring medical center of the IP, come France but also from all over the world).

*Listeria* -associated pathologies (foeto-maternal infection, neurologic form, septicemia): the patients from this multicenter observational national study on listeriosis and *Listeria* (MONALISA and ListeriaGEN cohorts) come from a national hospital recruitment.

For *Trypanosoma gambiense* or *T. rhodesiense* African trypanosomiasis (WHO HAT specimen bank), the patients have been recruited from 13 centers and 6 affected African countries (Chad, Democratic republic of Congo, Guinea, Malawi, Tanzania and Uganda).

*Borrelia burgdorferi* and other as yet undefined tick-borne pathogens (OHTICKS): the patients are recruited in 3 main regions in France: *Auvergne, Franche-Comté* and *Ile-de-France*.

Patients with infectious diseases of unknown etiology come from all over France and occasionally from abroad (Pathodisc/PATHO-HTS).

Clinical characteristics of patients
Inclusion criteria, stage of the disease, evolution and treatment informations are collected depending on the project specifications

Control samples
Blood samples from healthy volunteers are collected within the Diagmicoll and CoSimmGEN cohorts.

Biospecimen type (December 2018 report)
Serum (0.25, 0.5, 1 or 3.5 mL) 6296 aliquots
Plasma (EDTA, 0.5, 1 or 3.5 mL; Lithium-Heparin, 0.4 mL, Sodium-Citrate, 0.4 mL): 10,250 aliquots
whole blood (1 mL) about 1027 aliquots
PBMC (0.4 mL) about 4404 aliquots, isolated polymorphonuclear neutrophils: 32 aliquots,
RBC: 10 aliquots
DNA and RNA extracts (1 to 2 μg): 3256 and 258 aliquots
respectively
fecal samples (1–3 g), ca. 1760 aliquots
Urines (1, 1.8 and 3.5 mL), 654 aliquots
Naso-pharyngeal swabs, 139 samples
Saliva (0.25 mL), 67 samples
Tears, 67 test trips
Cerebrospinal fluid: 21 aliquots
Cutaneous biopsies: 3 from healthy volunteers.
New samples may be available on demand after submission of the research project to the following adress: demandeRBH@pasteur.fr

Size of the bioresource
ICAReB is an Institut Pasteur-associated infrastructure with no expiry date. The number of full time employees presently working is 11.

Access criteria
ICAReB can provide bioresources from healthy volunteers (DIAGMICOLL and CoSimmGEN cohorts) to researchers worldwide, both from academic or private organisms. Inquiry forms can be obtained from its website or directly (demandeRBH@pasteur.fr), leading to an interactive process the approval after evaluation by the scientific committee of the biobank (CoSciB) if no previous scientific evaluation has been performed. In this case, a reply can take about 3 weeks.

(4) Reuse potential
As multiple aliquots are obtained from a single sample, the re-use is possible providing that the respective donors have given their informed consent to the re-use. Moreover, if necessary, consent for new specific research projects may be sought for from still active or connected healthy volunteers.

Acknowledgements
We would like to thank the previous members of the ICAReB biobank (C. Ottone and V. Monceaux, laboratory technicians, V. Mellon, clinical research assistant, B. Rimbault and I. Najjar, PhD and project managers) for their contribution to the platform development since its beginning.

Competing Interests
The authors have no competing interests to declare.
Author Roles
S. Chaouche, L. Sangari: laboratory technicians
C. Fanaud: administrative assistant
L. Arowas: clinical research assistant.
H. Laude, MD PhD; G. Morizot, MD; P. Esterre, DVM PhD;
B.L. Perlaza, PhD; A. Ait-Saadi; N. Corre-Catelin; project managers
M.N. Ungeheuer, MD PhD; biobank manager.

Note added in proof
The ICAReB platform has been appointed as a WHO Collaborating Center for HAT on 2020, February, 10th (under ref. FRA-138). A new member, Charlotte Renaudat, MD, joined the team.

References
1. Pajot A, Michel ML, Mancini-Bourgine M, Ungeheuer MN, Ojcius DM, Deng Q, Lemonnier FA, Lone YC. Identification of novel HLA-DR1-restricted epitopes from the hepatitis B virus envelope protein in mice expressing HLA-DR1 and vaccinated human subjects. *Microbes and Infection*. 2006; (8):12–2790. DOI: https://doi.org/10.1016/j.micinf.2006.08.009
2. Wisner A, Dufour E, Messaoudi M, Nedly J, Ungeheuer MN, Rougeot, C. Human Opiorphin, a natural antinociceptive modulator of opioid-dependent pathways. *Proc. Natl. Acad. Sci. USA*. 2006; 103(47): 17979–17984. Publication followed by an international patent deposit (ref. PCT/EP2009/066002, 2009 november 27) on the use of opiorphin as a biomarker. DOI: https://doi.org/10.1073/pnas.0605865
3. Buffet PA, Milon G, Brousse V, Correas JM, Dousset B, Couvelard A, Kianmanesh R, Farges O, Sauvanet A, Paye F, Ungeheuer MN, Ottone C, Khun H, Fiette L, Guigon G, Huerre M, Mercereau-Puijalon O, David PH. *Ex vivo* perfusion of human spleens maintains clearing and processing functions. *Blood*. 2006; 107(9): 3745–3752. DOI: https://doi.org/10.1182/blood-2005-10-4094
4. Launay O, Toneatti C, Bernède C, Njamkepo E, Petitprez K, Leblond A, Larnaudie S, Goujon C, Ungeheuer MN, Ajana F, Raccourt C, Beytout J, Chidiac C, Bouhour D, Guillemot, D, Guiso N. Antibodies to tetanus, diphtheria and pertussis among healthy adults vaccinated according to the French vaccination recommendations. *Human Vaccines*. 2009; 5(5): 341–346. DOI: https://doi.org/10.4161/hv.5.5.7575
5. Taneja N, Faridabano N, Dartevelle S, Sire JM, Garin B, Thi Puong LN, Diep TT, Shako JC, Bimet F, Filliol I, Muyembe JJ, Ungeheuer MN, Ottone C, Sansonneti P, Germani Y. Dipstick test for rapid diagnosis of shigellosis in stool samples. *PLoS One*. 2013; 8(11): e80267. DOI: https://doi.org/10.1371/journal.pone.0080267
6. Miskinte S, Nassif A, Merathene F, Ungeheuer MN, Join-Lambert O, Jais JP, Hovnanian, A. Nicastrin mutations in French families with Hidradenitis Suppurativa. *J. Inv. Dermatol*. 2012; 132(6): 1728–1730. DOI: https://doi.org/10.1038/jid.2012.23
7. Franco JR, Simarro PP, Diarra A, Ruiz-Powitz DA, Jannin JG. The Human African Trypanosomiasis Biobank: a necessary tool to support research of new diagnosis. *PLoS Negl. Trop. Dis*. 2012; e1571. DOI: https://doi.org/10.1371/journal.pntd.0001016
8. Nezhad MA, Lambert C, Ottone C, Perrin C, Chapel C, Gaillard G, Pfister M, Masson C, Tabone E, Betsou F, Meyronnet D, Ungeheuer MN, Visvikis-Siest S. Influence of pre-analytical variables on VEGF gene expression and circulating protein concentrations. *Biopres. Biobanking*. 2012; 10(5): 454–461. DOI: https://doi.org/10.1089/bio.2012.0016
9. Esterre P, Monceaux V, Mellon V, Ungeheuer, MN. Communication with research participants. *Joint Conference of the European, Middle Eastern & African Society for Biopreservation & Biobanking (ESBB) and the Spanish National Biobank Network*, Granada, Spain, November 7–9, 2012. Poster BM-20, abstract published in: *Biopres. Biobanking*. 2012; 10(5): A1–A66. DOI: https://doi.org/10.1089/bio.2012.1053
10. Berthet N, Paulous S, Coffey LL, Frenkeli MP, Moltini I, Trand C, Matheus S, Ottone C, Ungeheuer MN, Renaudat C, Caro V, Dussart P, Gessain A, Després, P. Resequencing microarray method for molecular diagnosis of human arboviral diseases. *J. Clin. Virol*. 2013; 56: 238–243. DOI: https://doi.org/10.1016/j.jcv.2012.10.022
11. Iglesias MC, Briceno O, Gostick E, Moris A, Meaudre C, Price DA, Ungeheuer MN, Saez-Cirion A, Allamone R, Appay V. Immunodominance of HLA-B27-restricted HIV KK10-specific CD8+ T cells is not related to naïve precursor frequency. *Immunol. Letters*. 2013; 149: 119–122. DOI: https://doi.org/10.1016/j.imlet.2012.10.002
12. Dufour E, Villard-Saussine S, Mellon V, Leandri R, Jouannet P, Ungeheuer MN, Rougeot C. Opiorphin secretion pattern in healthy volunteers: gender difference and organ specificity. *Biochem. Analyt. Biochem*. 2013; 2: 136. DOI: https://doi.org/10.4172/2161-1009.1000136
13. Duran C, Nato F, Dartevelle S, Thi Phuong LN, Taneja N, Ungeheuer MN, Soza G, Anderson L, Benadof D, Zamorano A, Diep TT, Nguyen TQ, Nguyen VH, Ottone C, Bégaud E, Pahil S, Prado V, Sansonneti P, Germani Y. Rapid diagnosis of diarrhea caused by *Shigella sonnei* using dipsticks; comparison of rectal swabs, direct stool and stool culture. *PLoS One*. 2013; 8(11): e80267. DOI: https://doi.org/10.1371/journal.pone.0080267
14. Duffy D, Rouilly V, Libri V, Hasan M, Beitz B, David M, Urrutia A, Bisiaux A, Labrie ST, Dubois A, Boneca IG, Delval C, Thomas S, Rogge L, Schmolz M, Quintana-Murci L, Albert M for the *Milieu Intérieur* consortium. Functional analysis
via standardized whole-blood stimulation systems defines the boundaries of a healthy immune response to complex stimuli. *Immunity*. 2014; 40: 436–450. DOI: https://doi.org/10.1016/j.immuni.2014.03.002

15. Rimbaud B, Perlaza BL, Franco-Minguell JR, Monceaux V, Ottone C, Corre-Catelin N, Esterre P, Najjar I, Simarro PP, Le Fouler L, Vray M, Ungeheuer MN. Setting up the conditions for the WHO Human African Trypanosomiasis specimen bank: Analysis and perspectives for the improvement of sleeping sickness. *Trypanosomatids 2014: from the field to the laboratory*. Muséum National d’Histoire Naturelle, Paris, 2014 Oct 15–17th (poster).

16. Esterre P, Ait-Saadi A, Ungeheuer MN. The place of research participants: a key issue for biobanks. Esterre P, Ait-Saadi A, Ungeheuer MN. *ESBB meeting*. Leipzig, Germany, 2014 Oct. 21–24th (poster).

17. Rimbaud B, Perlaza BL, Ottone C, Monceaux V, Corre-Catelin N, Najjar I, Esterre P, Vray M, Priotto G, Franco-Minguell JR, Ungeheuer MN. Setting up the conditions for the WHO Human African Trypanosomiasis Specimen Bank. *ESBB meeting*, London, UK, 2015 Sept. 26th–Oct. 2 (poster).

18. Monceaux V, Moualeu-Kameni D, Najjar A, Roth C, Sakuntabhai A, Perlaza BL, Ungeheuer MN. Assessing and optimising PBMC cryopreservation. *ESBB meeting*, London, UK, 2015 Sept. 26th–Oct. 2 (poster).

19. Duchatelet S, Miskynyte S, Join-Lambert O, Ungeheuer MN, Fréanc C, Nassif A, Hovnanian A. First nicastrin mutation in PASH (pyoderma gangrenosum, acne an suppurative hidradenitis) syndrome. *Br. J. Dermatol.* 2015; 173: 610–613. DOI: https://doi.org/10.1111/bjd.13668

20. Frémont ML, Perot P, Muth E, Cros G, Dumarest M, Mahlaoui N, Seilhean D, Desguerre I, Hébert C, Corre-Catelin N, Neven B, Lecuit M, Blanche S, Picard C, Eloit M. Next-generation sequencing for diagnosis and tailored therapy: a case report of Astrovirus-associated progressive encephalitis. *J. Pediatr. Inf. Dis. Soc.* 2015; 4(3): 1–5. DOI: https://doi.org/10.1093/jpids/piv040

21. Vayssier-Taussat M, Cosson JF, Degeilh B, Eloit M, Fontanet A, Moutailler S, Raoult D, Sellal E, Ungeheuer MN, Zylbermann P. How a multidisciplinary, One health approach can combat the tick-borne pathogen threat in Europe. *Future Microbiol.* 2015; 10: 809–819. DOI: https://doi.org/10.2217/fmb.15.15

22. Thomas S, Rouilly V, Patin E, Alanio C, Dubois A, Delval C, Marquier LG, Fauchoux N, Sayegrih S, Vray M, Duffy D, Quintana-Murci L, Albert ML. *The Milieu Intérieur consortium*. The Milieu Intérieur study – an integrative approach for study of human immunological variance. *Clinical Immunol.* 2015; 157: 277–293. DOI: https://doi.org/10.1016/j.clinim.2014.12.004

23. Monceaux V, Chiche-Lapierre C, Chaput C, Witkos-Sarsat V, Prevost MC, Taylor CT, Ungeheuer MN, Sansonetti P, Marteyn BS. Anoxia and glucose supplementation preserve neutrophil viability and function. *Blood*. 2016; 128: 993–1102. DOI: https://doi.org/10.1182/blood-2015-11-680918

24. Rimbaud B, Perlaza BL, Ottone C, Corre-Catelin N, Monceaux V, Esterre P, Najjar I, Vray M, Priotto G, Franco-Minguell JR, Ungeheuer MN. WHO Human African Trypanosomiasis specimen bank: Analysis and perspective for the improvement of sleeping sickness diagnosis. *ESBB meeting*. Vienna, Austria, 2016 Sept. 13–16.

25. Urrutia A, Duffy D, Rouilly V, Possemie C, Djebali R, Illanes G, Libri V, Albaud B, Gentien D, Piasecka B, Hasan M, Fontes M, Quinatana-Murci L, Albert ML for *The Milieu Intérieur Consortium*. Standardized whole-blood transcriptional profiling enables the deconvolution of complex induced immune responses. *Cell Reports*. 2016; 16: 2777–2791. DOI: https://doi.org/10.1016/j.celrep.2016.08.011

26. Boucher Y, Braud A, Dufour E, Agbo-Godeau S, Baaroun V, Descroix V, Guipinnaeum PT, Ungeheuer MN, Ottone C, Rougoet C. Opiorphin levels in fluids of burning mouth syndrome patients: a cas-control study. *Clin. Oral Invest*. 2017; 21: 2155–2164. DOI: https://doi.org/10.1007/s00784-016-1991-0

27. Hamimi C, David A, Versmisse P, Weiss L, Bruel T, Zucman D, Appay V, Moris A, Ungeheuer MN, Las-coux-Combe C, Barré-Sinoussi F, Muller-Trutwin M, Boufassa F, Lambotte O, Pancino G, Sáez-Cirió A, the ANRS CO21 CODEX cohort. Dendritic Cells from HIV Controllers Have Low Susceptibility to HIV-1 Infection *In Vitro* but High Capacity to Capture HIV-1 Particles. *PloS One*. 2016; 11: e0160251. DOI: https://doi.org/10.1371/journal.pone.0160251

28. Neven B, Perot P, Bruneau J, Pasquet M, Ramirez M, Corre-Catelin N, Lecuit M, Bodemer C, Molina T, Blanche S and Eloit M. Cutaneous and visceral chronic granulomatous diseases triggered by the Rubella vaccine strain in a child with primary immunodeficiencies. *Clin. Inf. Dis.* 2017; 64: 83–86. DOI: https://doi.org/10.1093/cid/ciw675

29. Guet-Reville H, Jais JP, Ungeheuer MN, Coignard-Biehler H, Duchatelet S, Delage M, La T, Hovnanian A, Lortholary O, Nassif X, Nassif A, Join-Lambert O. Microbiological landscape of anaerobic infections in Hidradenitis suppurativa: a prospective metagenomic study. *Clin. Inf. Dis.* 2017; 65: 282–291. DOI: https://doi.org/10.1093/cid/cix285

30. Charlier C, Perrodeau E, Leclercq A, Cazenave B, Pilims B, Henry B, Lopes A, Maury MM, Moura A, Coffinet F, Brauc Dieye H, Thouvenot P, Ungeheuer MN, Tourdjman M, Goulet V, de Valk H, Lortholary O, Ravaud P, Lecuit M on behalf of the MONALISA study group. Clinical features and prognostic factors of listeriosis: the MONALISA national prospective cohort study. *Lancet Inf. Dis.* 2017; 17: 510–519. DOI: https://doi.org/10.1016/S1473-3099(16)30521-7

31. Braud A, Descroix V, Ungeheuer MN, Rougoet C, Boucher Y. Taste function assessed by electro-gustometry in burning mouth syndrome: a case-control study. *Oral Diseases*. 2017; 23: 395–402. DOI: https://doi.org/10.1111/odi.12630
32. Wicks P, Richards T, Denegri S, Godlee F. Patients’ roles and rights in research. BMJ. 2018; 362: k3193. DOI: https://doi.org/10.1136/bmj.k3193

33. Duffy D, Rouilly V, Braudeau C, Corbière V, Djebari R, Ungeheuer MN, Josien R, LaBrie ST, Lanz O, Luis D, Martinez-Caceres E, Mascart F, Ruiz de Morales JG, Ottone C, Redjah L, Salabert-LeGuen N, Savénay A, Schmolz M, Toubert A, Albert MA for the Multinational FOCIS Centers of Excellence. Standardized whole blood stimulation improves immunomonitoring of induced immune responses in multicenter study. Clin. Immunol. 2017; 183: 325–335. DOI: https://doi.org/10.1016/j.clim.2017.09.019

34. Piasecka B, Duffy D, Urrutia A, Quach H, Patin E, Possemee C, Bergstedt J, Charbit B, Rouilly V, PacPherson CR, Hasan M, Albaud B, Gentien D, Fellay J, Alebrt ML, Quintana-Murci L for the Milieu Intérieur consortium. Distinctive roles of age, sex and genetics in shaping transcriptional variation of human immune responses to microbial challenges. Proc. Natl. Acad. Sci. USA. 2018; 115(3): E488-497. DOI: https://doi.org/10.1073/pnas.1714765115

35. Patin E, Hasan M, Bergstedt J, Rouilly V, Libri V, Urrutia A, Alanio C, Scepanovic P, Hammer C, Jönsson F, Beitz B, Quach H, Lim YW, Hunpakiller J, Zepeida M, Green C, Piasecka B, Lantz O, Fonsee M, Santo JP, Thomas S, Fellay J, Duffy D, Quintana-Murci L, Albert MA for the Milieu Intérieur consortium. Natural variation in the parameters of innate immune cells is preferentially driven by genetic factors. Nat. Immunol. 2018; 19(3): 302–314. DOI: https://doi.org/10.1038/s41590-018-0049-7

36. Scepanovic P, Aliano C, Hammer C, Hodel F, Bergstedt J, Patin E, Thorball CW, Chaturvedi N, Charbit B, Abel L, Quintana-Murci L, Duffy D, Albert ML, Fellay J for The Milieu Intérieur consortium. Human genetic variants and age are the strongest predictors of humoral immune responses to common pathogens and vaccines. Genome Medicine. 2018; 10: 59. DOI: https://doi.org/10.1186/s13073-018-0568-8

37. Kilens S, Mesitermann D, Moreno D, Chariu C, Gaignerie A, Reignier A, Lelièvre Y, Casanova M, Vallot C, Nedellec S, Fibbe L, Firmin J, Song J, Charpentier E, Lammers J, Donnart A, Marc N, Deb W, Bihouée A The Milieu Intérieur consortium, Le Caignec C, Pecqueur C, Redon R, Barrière P, Bourdon J, Pasque V, Soumillon M, Mikkelsen TS, Rougeulle C, Fréour T, David L. Parallel derivation of isogenic human primed and naive induced pluripotent stem cells. Nat. Commun. 2018; 9: 360. DOI: https://doi.org/10.1038/s41467-017-02107-w

38. Vonaesch P, Morien E, Andrianonimiamerinaida L, Sanke H, Mbecko JR, Husus K, Naharimananirina T, Gondje BP, Nitagoloum SN, Vondo SS, Kandou JEH, Randremanana R, Rakotondrainipiana M, Mazel F, Djorie SG, Gody JC, Finlay SB, Rubbo PA, Parfrey LW, Collard JM, Sansonetti P, the Afribiota investigators. Stunted childhood growth is associated with decompartmentalization of the gastrointestinal tract and overgrowth of oropharyngeal taxa. Proc. Natl. Acad. Sci. USA. 2018; 115: E8489–E8498. DOI: https://doi.org/10.1073/pnas.1806573115

How to cite this article: Esterre P, Ait-Saadi A, Arowas L, Chacouche S, Corre-Catelin N, Fanaud C, Laude H, Mellon V, Monceaux V, Morizot G, Najar I, Ottone C, Perlaza BL, Rimbault B, Sangari L, Ungeheuer, M-N. The ICAReB Platform: A Human Biobank for the Institut Pasteur and Beyond. Open Journal of Bioresources. 2020; 7: 1. DOI: https://doi.org/10.5334/ojb.66

Published: 24 March 2020

Copyright: © 2020 The Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC-BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. See http://creativecommons.org/licenses/by/4.0/.

Open Journal of Bioresources is a peer-reviewed open access journal published by Ubiquity Press.