

LABORATORY SERVICES AND BIOBANK GROUP (LSB)

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The Laboratory Services and Biobank Group (LSB) liaises closely with the Administrative Services Office (ASO) and research Groups to provide core laboratory and biobanking services to support research activities across the Agency.

During the biennium, LSB expanded its role in supporting and advising biobanks in low- and middle-income countries (LMICs) and, in close collaboration with the Education and Training Group (ETR), conducted training courses and workshops on biobanking best practice principles for LMICs.

LABORATORY SERVICES

COMMON LABORATORY PLATFORMS

The focus of LSB is to ensure that the laboratory environment is conducive to

work and that optimal laboratory services are provided for research. In conjunction with the Laboratory Steering Committee, Laboratory Services oversees the common laboratory platforms and ensures that the equipment is well maintained. Interactions between laboratory-based and epidemiological research are enhanced through the upgrading, updating, and acquisition of state-of-the-art scientific instruments and the provision of sufficient sample storage capacity. During the biennium, the shared platforms acquired new equipment.

HEALTH AND SAFETY

Health and safety issues are managed in collaboration with the Occupational Health and Safety Committee (OHSC). Actions include (i) making available online the Safety Data Sheets of all re-

agents used or stored in IARC laboratories, (ii) installing “man-down” detectors for use in specific isolated rooms, (iii) presenting updates on chemical and biological risks to laboratory personnel, and (iv) organizing a pedometer challenge over a month, encouraging all personnel to be more physically active.

IARC BIOBANK

The IARC Biobank maintains biological sample collections from international collaborative studies and operates a service platform for sample retrieval, DNA extraction, and shipment of biological material worldwide. IARC's facilities also serve as a custodian for collections from consortia and networks and for biological specimens from LMICs.

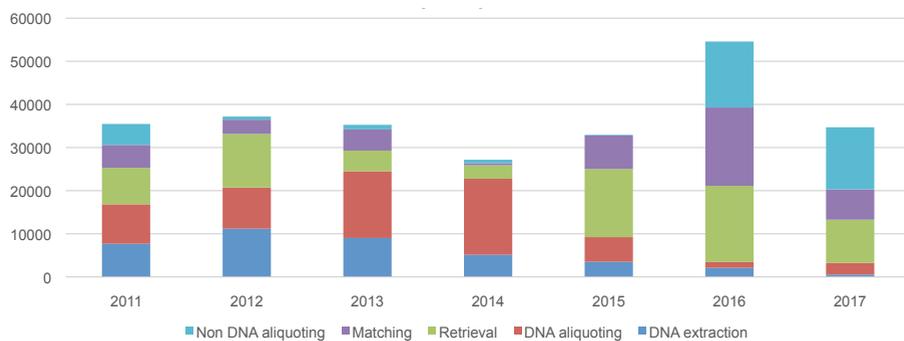
The IARC sample management system (SAMI) database stores information for

more than 5 million biological specimens, including more than 4 million from the European Prospective Investigation into Cancer and Nutrition (EPIC) study's collection. During the biennium, almost 200 000 new samples were imported into SAMI and more than 76 000 samples were accessed for internal or external collaborators. SAMI is continuously upgraded according to users' needs.

Standard practices and procedures are implemented across the Agency to govern sample transfer from and to the Agency and for the management of biological sample storage under optimal conditions. During the biennium, the Biobank secured additional funding from the Governing Council to replace obsolete equipment and purchase new units to increase cold storage capacity to cater for future needs and provide adequate backup facilities.

With regard to international biobanking, LSB led the revision of *Common Minimum Technical Standards and Protocols for Biological Resource Centres Dedicated to Cancer Research*, known as the "Green Book" (published by IARC in 2007). The new publication is known as the "Purple Book": *Common Minimum Technical*

Figure 1. Overview of the services provided by the IARC Biobank in a 7-year period. © IARC.



Standards and Protocols for Biobanks Dedicated to Cancer Research. The book provides best practice guidelines and recommendations for biobanks to facilitate collection, storage, and sharing of biological resources, including information on ethical, legal, and social issues (ELSI), with standard templates such as an informed consent form and Material Transfer Agreement.

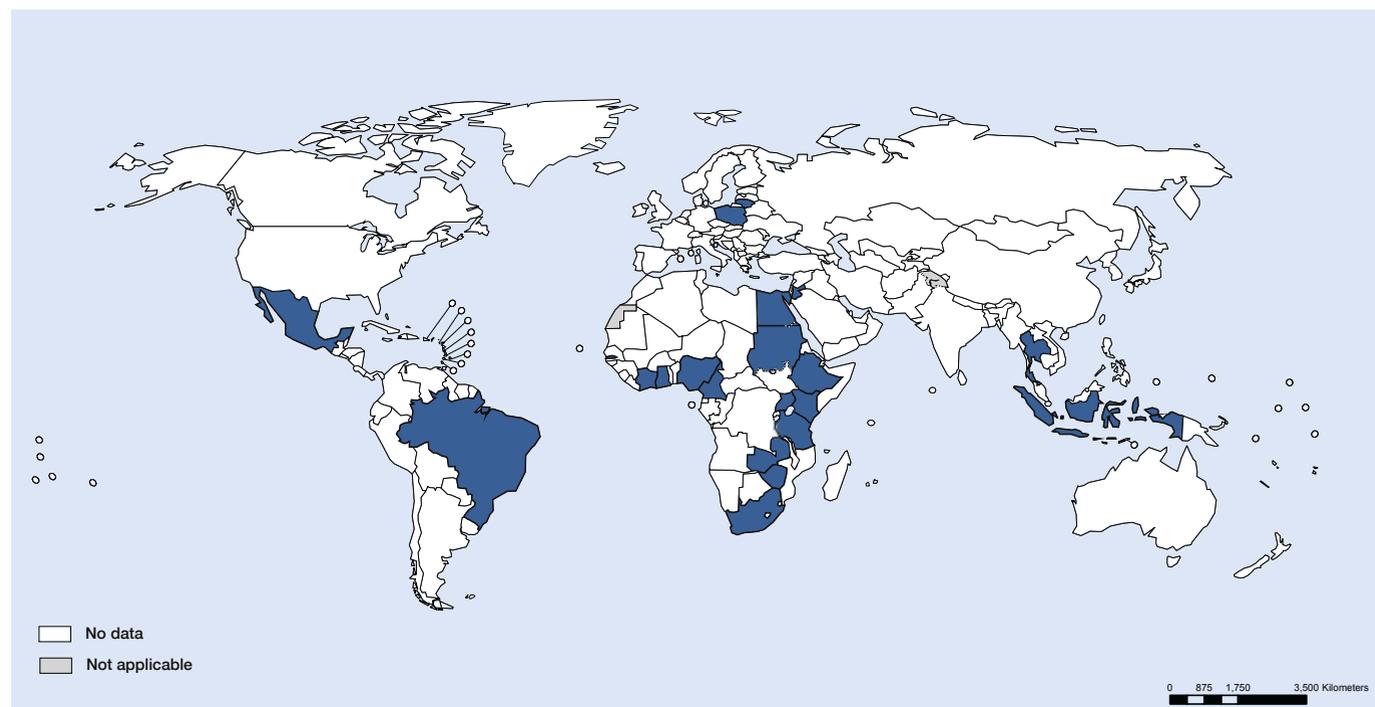
BIOBANK SERVICES

The Biobank provides pre-analytical services and operates on a cost-recovery basis, with a major contribution from the central IARC regular budget

for infrastructure and salaries. During the biennium, a total of 21 projects were conducted relating to 26 requests from international institutions. This resulted in more than 32 000 sample retrievals from liquid nitrogen, 3400 DNA extractions, 6000 DNA aliquots, 39 000 non-DNA aliquots, and shipment of 165 parcels to 25 countries worldwide. Funds have been available for participation in research grants involving the use of biological samples.

An overview of the services provided in a 7-year period is presented in Figure 1.

Figure 2. BCNet members. © IARC.



World Health Organization

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Data Source: IARC
Map Production: IARC
World Health Organization (WHO)

Figure 3. Participants in the Second National Biobank Workshop, held in Yogyakarta, Indonesia, in November 2016. Courtesy of Faculty of Medicine, Gadjah Mada University, Yogyakarta, Indonesia.



The acquisition of equipment to extract nucleic acid from biological material other than blood has expanded the scope of the service platform to include extraction from tissue, saliva, and dried blood spots. Stringent quality control measures are in place to ensure high quality of samples, and the Biobank continues to participate in international proficiency schemes and scored very highly in the programmes of DNA extraction and DNA quantification from blood and tissue.

BCNet

Biobanking has evolved at a rapid pace to provide reliable infrastructure for high-quality research, but this is not the case in LMICs. In this regard, the LMICs Biobank and Cohort Building Network (BCNet) was created in 2013 to support the establishment of biobanks (<http://bcnet.iarc.fr/>). Activities have continued, and the network has developed into a focal point for LMIC biobanking. Currently, 34 institutions from 21 countries are members of BCNet (Figure 2). The network has established a catalogue programme (http://bcnet.iarc.fr/projects/biobank_catalogue.php) to register the biological resources of BCNet members. Information on available resources will be searchable via the BCNet website.

TRAINING

International training workshops on Biobanking for Pathologists and Pathology/Histology Technicians were conducted in Côte d'Ivoire and in Cairo,

Egypt, in partnership with the West African Division of the International Academy of Pathology and co-funded by the United States National Cancer Institute Center for Global Health (NCI-CGH) and the ADOPT-BBMRI project, within the framework of the European Union's Horizon 2020 (EU-H2020) programme. The workshops covered ELSI, quality, and information technology (IT). In-country workshops and training courses on biobanking were conducted by BCNet members in Indonesia (at Gadjah Mada University, in Yogyakarta) (Figure 3) and in Egypt (at the National Cancer Institute, in Cairo).

LSB is leading the Dissemination work package within the Bridging Biobanking

and Biomedical Research across Europe and Africa (B3Africa) project. Project information is disseminated to biobank staff, researchers, ethics committee members, policy-makers, and the wider community through a website, newsletters, booths, presentations and posters at international events, open forums on ELSI, training sessions, and other meetings (Figure 4).

COLLABORATIONS

LSB represents IARC in the pan-European Biobanking and BioMolecular resources Research Infrastructure–European Research Infrastructure Consortium (BBMRI-ERIC) as an observer. IARC collaborates with BBMRI-ERIC

Figure 4. Participants in the B3Africa workshop on Ethics and Regulation in Biobanking, held in The Gambia in April 2016. Courtesy of Abdoulie Cham, Medical Research Council Unit, The Gambia.



members for international networking and interoperability issues to ensure that the structures and common services (CS) developed within Europe will be accessible to wider international communities. As a member of BBMRI-ERIC, IARC participates in various working groups – for CS-IT, CS-ELSI, and Quality Management – and participates in international projects.

LSB continues to support the African Organisation for Research and Training in Cancer (AORTIC), linking

the organization with BBMRI-ERIC and BCNet and other biobanking organizations in Europe.

GRANTS

Three grant awards were received: (i) ADOPT BBMRI-ERIC (EU-H2020 no. 676550), which aims to expand BBMRI beyond Europe (October 2015–September 2018), (ii) B3Africa (EU-H2020 no. 654404), for which IARC is leading the Training and Dissemination work packages (July 2015–June 2018),

and (iii) a grant for BCNet projects from NCI-CGH (NCI-CRDF-2016).

In addition, there are three research projects with budget allocation for biobank services: (i) HPV genomics, from Institut national du Cancer (INCa), France, (ii) Fat–ovarian, from INCa, and (iii) Impact of HBV genetic variability on liver disease in West Africa, from Agence nationale de recherches sur le sida et les hépatites virales (ANRS), France.