Human biological samples including associated medical data and biomolecular research tools are key resources in unravelling the interplay of genetic and environmental factors causing diseases and its impact on their outcome. Furthermore, these resources are required for identification of new targets for therapy and may help to reduce attrition in drug discovery and development. To overcome the fragmentation of Europe’s biobanks, a Biobanking and BioMolecular Resources Infrastructure (BBMRI) has been initiated to further develop these resources and to provide access to academia and industry.

BBMRI builds on existing sample collections, technologies, and expertise, which will be specifically complemented with innovative components and will be properly embedded into European scientific, ethical, legal, and societal frameworks. The format of BBMRI is a distributed hub structure in which the hubs coordinate activities, including collection, exchange, and analysis of samples and data for the major domains (http://www.bbmri.eu/). Prospective, population-based biobanks allow for the analysis of the health status before the beginning of the disease, making it possible to differentiate the causative change from the response by the organism, taking into full account the influences of environment and lifestyle. In contrast, clinic-based (disease-oriented) biobanking embraces a wide range of collection activities supporting diverse research purposes.

Meanwhile, BBMRI has established an interactive catalog, managing metadata and aggregate data of biobanks, and it can be queried for all data. By the end of 2009, the catalog included data from 247 biobanks and 21 countries (http://www.bbmri.eu/index.php/catalog-of-european-biobanks). The 247 biobanks in the catalog provide 1.8 m samples of DNA, 80,000 cDNA/RNA samples, 330,000 cell lines, 1.8 m serum and plasma samples, 500,000 cryopreserved tissues, and nearly 8 m samples of paraffin-embedded tissues, in total >16 million samples. The disease focus of the biobanks is spread over all ICD groups. The main representation is not only for neoplasms, diseases of the nervous system and circulatory system, and endocrine, nutritional, and metabolic diseases, but also for rare diseases.

Due to the fact that existing biobanks collaborate in BBMRI, each biobank is working according to their own standards, SOPs, and internal guidelines. Several official guidelines (NCI, OECD, ISBER, IARC, etc.) with quality criteria for storage, retrieval, and transfer of biological samples are available. However, the establishment of common detailed SOPs is essential for the future.

Molecular Medicine Ireland has made an important step in developing SOPs that will be instrumental in standardizing biobanking in Europe and in BBMRI. They are presented in this volume, and BBMRI is happy to accept them as a first version of the BBMRI Laboratory Manual.
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