

Introduction to biobanks

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Biobanks were in Time Magazine in 2009 mentioned as one of top 10 ideas changing the world in the 21st century. Biobanks collect, store and distribute biological samples (e.g., tissues, body fluids, DNA), and associated data and information. Biobanks are among the most important enablers of medical research and pharmaceutical development. Be it academic research in hospitals, diagnostic test development in biotechnological institutes or R&D of vaccines or drugs in pharmaceutical companies, they all depend on the crucial data encapsulated in biological samples. And all of those scientists are dedicated to one common vision: improving quality of life and health care.

Biobanks use biological samples and associated data; the dual nature of biobanks requires special approaches both to samples and data. To study various types of biological samples modern and specific biomedical methods are necessary. Data are processed by the use of mathematical and statistical methods, modelling, artificial intelligence and machine learning. Samples and data processed in biobanks are of big volume, velocity, and variety - big data, so the challenge of biobanks is in their openness to new innovative approaches and biobanking as a science is one of the most dynamically developing branches of sciences.