Materials of Conferences

AUTOMATIC STORAGE BIOLOGICAL SAMPLES

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Current research in the field of medicine, particularly in oncology, requires comprehensive analysis of clinical and molecular genetic data. This data characterizes the individual characteristics of the patient. Improved methods of analysis make the study of the etiology of diseases, clinical trials possible. Such studies help to assess the effectiveness of therapy, as well as identification of various mutations. It is proved that during the storage of biological samples is extremely important for scientists to have constant access to the samples. In this case, the standardization of storage, easy retrieval of samples and the creation of a database of donors, history storage become urgent. To study the genetic processes associated with the appearance of cancer and to determine the effectiveness of the therapy it is especially important to maintain a constant temperature during the storage of the sample, to have the history of each sample documented, to have an easy access to the samples.

Automated storage systems are becoming increasingly popular in the diagnosis of diseases, the study of drugs, as well as in the research.

Automated storage systems must provide reliable automatic storage and management of samples. These systems exclude risk of human errors, reduce the laboratory staff to create optimal conditions for storage of the collection of biological samples. The ability to store different types of biological samples is an important part of such a system. Storage system must be able to store an RNA samples, DNA sample, tissues, microorganisms, and other plasma samples.

Some of the advantages of the automated storage systems are:

- automatic loading / unloading of samples;
- fast automatic search and sample delivery to the user;
- precise identification of the tubes by the barcode;
- built-in PC for managing the storage, reporting, and facilitate workflow;
- automatic history storage temperature reports, statistical data on freeze-thaw cycles for each sample;
- removing the possibility of unauthorized access to the samples.

Automated storage of biological samples are successfully used around the world, including the European Union, the USA, China and others.

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THE DESCRIPTION OF THE METHOD TO IDENTIFY A PLACE OF TIMBER ORIGIN ON THE BASIS OF THE DENDROCHRONOLOGICAL INFORMATION

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At present time, prevention of illegal timber trade is possible if there is any method of identification of place of wood origin. Currently, by order of the Federal Forestry Agency of Russian Federation the scientists from the MSFU dendrochronology laboratory have developed a technology to identify a place of origin of the cut timber which makes it possible to monitor international timber traffic. The technology involves creating dendrochronological data banks which help to identify a place of timber origin as well as woodland where the tree grew. The procedure of creating such data banks is as follows. A plot is assigned within each stratum (logging site). Then evaluation and geobotanical description of forest phytocenosis is done according to the standard form. Wood samples (cores) are taken from 20 sample trees of the Kraft's class I–III. It is worth noting that samples are taken at the height of 1,3 m with a Pressler increment borer. Then the cores are packed, labeled and transported to the dendrochronological laboratory. Width of annual rings is measured to the accuracy of 0,01 mm at the cores. The measurement results are saved in the corresponding format and downloaded to the software package developed by the MSFU dendrochronology laboratory. A descriptor is made for each individual chronology. It includes a description of the plot where the wood sample was taken and tree stratum characteristics. The information is stored in a hierarchical way. Each individual chronology is included into a cluster on the basis of such features as a species, a forest district, an administrative district and a region. Software units ensure that more than 1 million possible identification algorithms are applied. The frequency of correct identification exceeded 90% in the tests carried out in the Babayevo district of the Vologda region. A variety of ways to perform analyses makes the technology flexible and appropriate for different types of woody plants as well as for diverse forest types and various geographical conditions of European countries. Search patterns (functions to realize several consecutive algorithms) can be configured to facilitate the process of algorithm testing involving several looks. More full information are at the Internet resource www.ledendro.ru.

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