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TECHNOLOGIES OF BRAIN IMAGES PROCESSING

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The purpose of present research was to analyze modern methods of processing biological images implemented before storage in databases for biotechnological purposes. The databases further were incorporated into web-based digital systems. Examples of such information systems were described in the work for two levels of biological material organization; databases for storing data of histological analysis and of whole brain were described. Methods of neuroimaging processing for electronic brain atlas were considered. It was shown that certain pathological features can be revealed in histological image processing. Several medical diagnostic techniques (for certain brain pathologies, etc.) as well as a few biotechnological methods are based on such effects. Algorithms of image processing were suggested. Electronic brain atlas was conveniently for professionals in different fields described in details. Approaches of brain atlas elaboration, “composite” scheme for large deformations as well as several methods of mathematic images processing were described as well.

**Key words:** mathematical methods, biotechnology, image processing methods information and computer technologies, software, databases.

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{spoiler title=References}


https://doi.org/10.15407/biotech10.05.005.


10. Chaplot S., Patnaik L. M., Jagannathan N. R. Classification of magnetic resonance brain
images using wavelets as input to support vector machine and neural network. 


2017, 12 (6), e0177544. doi: https://dx.doi.org/10.1371/journal.pone.0177544.


17. Dikshit A., Wu D., Wu C., Zhao W. An online interactive simulation system for medical


24. Klyuchko O. M. Brain images in information systems for neurosurgery and
neurophysiology.  


26. Klyuchko O. M. Elements of different level organization of the brain as material for electronic databases with images.  


Bulletin of the Engineering Academy.  


*J. Biomed. Sci.*

*Springer Plus.*

*Visnyk NAU.*


41. Zaslavsky L., Ciufo S., Fedorov B., Tatusova T. Clustering analysis of proteins from microbial genomes at multiple levels of resolution. 
*BMC Bioinform.*

42. Zhou J., Richardson A. J., Rudd K. E. EcoGene- RefSeq: EcoGene tools applied to the RefSeq prokaryotic genomes. 

*J. Comput.*


57. Chau M., Huang Z., Qin J., Zhou Y., Chen H. Building a scientific knowledge web portal: The
https://doi.org/10.1016/j.dss.2006.01.004.


64. Dong Y., Zhuang Y., Chen K., Tai X. A hierarchical clustering algorithm based on fuzzy graph connectedness. Fuzzy Sets. Syst. 2006, V. 157,


and candidate genes for behavioural ecology.

*Trend Ecol. Evol.*


*Ecol. Modell.*
2006, 197 (34), 361372.

https://doi.org/10.1016/j.ecolmodel.2006.03.032

76. *Glenisson P., Glänzel W., Janssens F., Moor B. D.* Combining full text and bibliometric information in mapping scientific disciplines.


23 (11), 535536. https://dx.doi.org/10.1016/S0165-6147(02)02113-2.