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Growth of interest to research in the field of medical genetics according to the analysis of scientific publications

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Motivation and Aim: The number of publications in the areas of biology, medicine, and biotechnology grows dramatically, which makes important the computer-based analysis. To date, over 28 million of abstracts highly relevant to biology and medicine can obtained from the PubMed database, and this number keeps growing. A study of such data allows estimating the growth of interest to the researches in the field of medical genetics. The identification of genes in scientific studies for which there is a growing interest can be useful in finding promising candidates for genotyping and drug targets. Such identification can be performed using the text-mining tools.
Methods and Algorithms: The analysis of literature was performed using the ANDSystem package that incorporates utilities for automated extraction of knowledge from Pubmed published scientific texts and databases [1].
Results: On the example of analysis of publications related to apoptosis, a set of genes with a growing interest involved in apoptosis, was formed. Reconstruction of the gene network using this initial set of genes allowed to identify new genes that are functionally closely related to the initial list. The interest to these new genes may appear in the nearest future.
Conclusion: Thus, the identified gene-candidates can be promising for planning experiments on genotyping and search for drug targets.
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References

1. Ivanisenko V.A. et al. (2015) ANDSystem: an Associative Network Discovery System for automated literature mining in the field of biology. BMC Syst Biol. 9(Suppl 2):S2.