Informatics and Genetic Epidemiology

A. Ziegler1,2*; A. F. Wilson3**; F. Gagnon4***

1Institute of Medical Biometry and Statistics, University of Lübeck, University Medical Center Schleswig-Holstein, Campus Lübeck, Lübeck, Germany;
2Center for Clinical Trials, University of Lübeck, Lübeck, Germany;
3Genomics Section, Inherited Disease Research Branch, National Human Genome Research Institute, Baltimore, Maryland, USA;
4Dalla Lana School of Public Health, University of Toronto, Toronto, Ontario, Canada

For more than 50 years Methods of Information in Medicine has published original articles, reviews, reports, opinion papers, editorials, and letters to the editor in the fields of biomedical and health informatics, medical biometry, and epidemiology [1]. The journal is the official journal of the International Medical Informatics Association (IMIA) and of the European Federation for Medical Informatics (EFMI) since 2003 and 1978, respectively. About one year ago, it became the international journal of the German Society of Medical Informatics, Biometry, and Epidemiology [2], emphasizing the diversity of areas in medical research and clinical routine which require electronic information processing.

As such, Methods of Information in Medicine provides a forum for interdisciplinary research – research that combines components of several disciplines to create new knowledge [3]. Despite the clear advantages of interdisciplinary research [3], there are also intrinsic drawbacks and practical barriers. For example, an interdisciplinarian will become a jack of all trades, but a master of none. As a result, interdisciplinarians may be criticized and asked to explain the depth of their research [3]. However, it is exactly this interdisciplinarity that overcomes the drawbacks of specialization. The ability to integrate information across disciplines may lead to insights and advancements that increase the depth of knowledge within specific disciplines.

Methods of Information in Medicine plays a critical role in promoting interdisciplinarity, because it is one of the most important fora for interdisciplinary research dissemination. It is a platform for various types of integrative research that uses approaches such as data mining and machine learning, as well as tools that aim at delivering personalized medicine.

One such integrative research field is genetic epidemiology, which not only represents important interactions between genetics and epidemiology [4], but also with biology, statistics, and computational sciences. With the availability of modern “omics” technologies, allowing the fast sequencing of whole genomes, or the use of microarrays for genome-wide analysis of genetic and epigenetic variation, specific issues have arisen. These relate, for example, to the safe and efficient storage of molecular data, the transfer of large molecular datasets through the internet, and the need for powerful and fast statistical methods to make sense of the enormous amount of complex data. These challenges can be resolved by utilizing research findings from the fields of medical informatics, bioinformatics and biostatistics, bringing these disciplines closer together. Research...
problems in genetic epidemiology help to spur advances in these individual disciplines, and advances in the individual disciplines are subsequently integrated into genetic epidemiology.

The International Genetic Epidemiology Society (IGES; geneticepi.org) was formed in September 1991, as the only international society promoting the study of genetic epidemiology and statistical genetics. Every year, IGES awards the James V. Neel Young Investigator Award, named after the founding president of the society, and the Roger Williams Award, a pioneer in genetic epidemiology, for the best IGES presentation by a young scientist and by a student, respectively. *Methods of Information in Medicine* promotes the interdisciplinary information science approach of IGES and supports the awardees by a free personal one-year subscription to the journal. At the 22nd IGES held in Chicago from September 13 to 15, 2013, the award winners were Andrew Jaffe (Neel-Award), Lieber Institute of Brain Development, Baltimore (MD), U.S.A., and Jessica Dennis (Williams Award), Dalla Lana School of Public Health, University of Toronto, Canada, with a subscription until the end of 2014.

References