Editorial

Genome Medicine: the future of medicine

Melissa L Norton, Editor, *Genome Medicine*

Email: editorial@genomemedicine.com

Published: 20 January 2009

Genome Medicine 2009, **1**:1 (doi:10.1186/gm1)

The electronic version of this article is the complete one and can be found online at http://genomemedicine.com/content/1/1/1

In the past decade, scientific discovery in medicine has progressed at an increasingly rapid rate, and genomic, post-genomic and bioinformatic approaches have played key roles in this progression. Our growing understanding of the human genome and proteome promises to revolutionize the practice of medicine in the 21st century. The last year has seen the publication of an acute myeloid leukemia genome [1], the initiation of the 1000 Genomes Project [2] and the International Human Microbiome Consortium, and the progression of a number of other important collaborations, such as the Copy Number Variation Project [3] and the Cancer Genome Atlas [4]. Furthermore, a plethora of genome-wide association studies have been undertaken, associating specific loci to a variety of diseases. These discoveries, as well as continuing advances in genome sequencing technologies, bring us several steps closer to individualized medicine, a concept that has captured the imaginations of practitioners of medicine, politicians, and the public alike.

In these exciting and fast-moving times, there is a clear need for the scientific community to keep abreast of the latest groundbreaking genomic and post-genomic research across medical disciplines. To this end, we are proud to launch *Genome Medicine*. *Genome Medicine* publishes important results in genomic and post-genomic medicine, discusses the importance of these results for clinical practice, highlights the major issues surrounding genomic medicine, and comments on the progress of scientific discovery.

The journal, led by six renowned Section Editors and supported by an impressive international Editorial Board, publishes open access research articles of outstanding quality in all areas of medicine studied from a genomic or post-genomic perspective. *Genome Medicine* is committed to the open access publication of research – the concept has been embraced by the research community and by major funding bodies, including the NIH and the Wellcome Trust, because it maximizes research visibility and facilitates the most rapid dissemination of scientific knowledge. In short, open access publication of research findings is fundamental to the progress of scientific discovery as well as clinical practice.

The scope of the journal is broad and includes articles aimed at understanding the genetics, genomics and epigenetics of disease, genomic epidemiology, and public health genomics, as well as articles that utilize computational and systems approaches to advance our understanding of the pathogenesis, diagnosis and management of disease. The journal has a particular emphasis on the application of genomic and post-genomic technologies to clinical practice, especially to diagnostics and therapeutics.

Medicine's move towards the post-genomic era is accompanied by a wide range of ethical, social, and legal implications that deserve careful attention. *Genome Medicine* features an entire section devoted to the challenges relating to genomic medicine and personalized medicine. Given our limited knowledge of gene-gene and epigenetic interactions, the translation of the results of genome-wide association studies into an individual risk assessment is controversial at best, and yet there are already a number of commercial ventures purporting to provide this service to those who pay for it. There are further issues surrounding the routine use of genomic data in medical research and practice including concerns about privacy, discrimination, consent, equity of access, and the divide between developed and developing countries. *Genome Medicine* provides a forum for the analysis and discussion of these and other issues associated with post-genomic medicine.

In addition to peer-reviewed research articles, the journal also features additional content, including regular commentary from key experts in various fields. For insightful analysis and opinion about post-genomic medicine, see the monthly 'Musings on genome medicine' column by Stuart Orkin and David G Nathan. Their inaugural column [5] highlights some of the promises and problems surrounding genome-wide association studies. For more comprehensive coverage of emerging and established areas of research, our reviews and minireviews will be of interest: in the current

issue, Charles Auffray, Zhu Chen and Leroy Hood discuss the importance of systems medicine to the future of healthcare [6], while Que Van and Timothy Veenstra discuss the challenges and opportunities in regards to metabolic profiling in cancer research [7]. The journal will also feature correspondence pieces, such as the article by Timothy Caulfield *et al*. discussing the challenges inherent in the use of race and ancestry in biomedical research [8].

Looking to the future, medical researchers in all disciplines will need to embrace genomic and post-genomic approaches and technologies, and all those who diagnose and treat patients will need to understand the science of medical genomics in order to practice medicine effectively. *Genome Medicine* will assist scientists and clinicians in better understanding the evolving medical landscape and in translating the most recent advances to their patients.

Of course, as the field of medical genomics changes, *Genome Medicine* will also evolve to provide you, the reader, the information you need. We can only do this with your support and input, so tell us your opinions of the journal, as well as your suggestions for the future. We are committed to making *Genome Medicine* a success, and we look forward to working with you to shape medicine in the post-genomic era.

References

1. Ley TJ, Mardis ER, Ding L, Fulton B, McLellan MD, Chen K, Dooling D, Dunford-Shore BH, McGrath S, Hickenbotham M, Cook L, Abbott R, Larson DE, Koboldt DC, Pohl C, Smith S, Hawkins A, Abbott S, Locke D, Hillier LW, Miner T, Fulton L, Magrini V, Wylie T, Glasscock J, Conyers J, Sander N, Shi X, Osborne JR, Minx P *et al.*: **DNA sequencing of a cytogenetically normal acute myeloid leukaemia genome.** *Nature* 2008, **456**:66-72.
2. **The 1000 Genomes Project.** [http://www.1000genomes.org/page.php]
3. **The Copy Number Variation Project.** [http://www.sanger.ac.uk/humgen/cnv/]
4. The Cancer Genome Atlas [http://cancergenome.nih.gov/]
5. Nathan DG, Orkin SH: **Musings on genome medicine: genome wide association studies.** *Genome Med* 2009, **1**:3.
6. Auffray C, Chen Z, Hood L: Systems medicine: the future of medical genomics and healthcare. *Genome Med* 2009, **1**:2.
7. Van QN, Veenstra TD: **How close is the bench to the bedside? Metabolic profiling in cancer research.** *Genome Med* 2009, **1**:5.
8. Caulfield T, Fullerton SM, Ali-Khan SE, Arbour L, Burchard EG, Cooper RS, Hardy B-J, Harry S, Hyde-Lay R, Kahn J, Kittles R, Koenig BA, Lee SS-J, Malinowski M, Ravitsky V, Sankar P, Scherer SW, Séguin B, Shickle D, Suarez-Kurtz G, Daar AS: **Race and ancestry in biomedical research: exploring the challenges.** *Genome Med* 2009, **1**:8.