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# Genome Conference Offers Insights about the Future of Medicine

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# Genome Conference Offers Insights about the Future of Medicine

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This past fall in San Diego, California, national biomedical and healthcare experts gathered to tackle a tough question: Now that the Human Genome Project (HGP) has provided a blue-print of our genetic code, what is the future of healthcare? During the TJU-sponsored conference, Insights: The Human Genome Project and the Future of Healthcare, speakers and audience members theorized about the potential usefulness and impact of the human genetic code. Insights conference speakers said that despite the hype generated when the completion of the human genome sequence was announced in June 2000, we are only at the very edge of the new frontier of biomedical science. The purpose of the conference was to imagine what might come next.

## CONFERENCE HIGHLIGHTS: WHAT THE EXPERTS HAVE TO SAY

The diversity of the eight presenters at the Insights conference provided a broad view of the Human Genome Project and its implications. The group included a healthcare futurist, two HGP researchers, two clinical pharmacologists leading genomic research studies, a biotech investment expert, a former managed care director who made the jump to biotechnology, and a nationally known bioethicist. This section highlights the key messages each of the speakers offered.

### Predictions for the Future

*Russell C. Coile, Jr.: Senior Vice President/National Strategy Advisor, Superior Consultants, Plano, Texas.*

Future developments could include gene-based diagnostics, an accelerated FDA approval process, cell and tissue engineering for organ replacement, and microscopic surgery with nanotechnology robotics.

### The Science and History of the Human Genome Project

*George Weinstock, PhD: Co-Director, Human Genome Sequencing Center, Baylor College of Medicine; Department of Microbiology and Molecular Genetics, University of Texas-Houston Medical School.*

*Gwen Acton, PhD: Assistant Director, Functional Genomics Program, Whitehead Institute/MIT Center for Genome Research, Cambridge, Massachusetts.*

The ultimate objective of the human genome project was "to determine the precise sequence of each of the 3 billion letters that make up the DNA strand." A complete and accurate identification and sequence for the human genome could facilitate a better understanding of human life processes and offer the potential to cure many diseases.

### Applying The Human Genome Project in Clinical Pharmacology

*Scott A. Waldman, MD, PhD: Chief, Division of Clinical Pharmacology, Thomas Jefferson University.*

*David Flockhart, MD, PhD: Director, Pharmacogenetics Core Laboratory, Division of Clinical Pharmacology, Georgetown University Medical Center, Washington, DC.*

The HGP provides the basis for scientific development in three major areas: (1) developing gene replacement therapy; (2) predicting individual patient responses to drugs; and (3) applying functional genomics to find new drug targets. Dr. Waldman

has identified a gene that is highly associated with development of cancer: the guanylyl cyclase C (GCC) gene. His research has potential to lead to improved treatments for colorectal cancer. Dr. Flockhart has focused his research on using genes that relate to specific drug response, identifying who is most likely to have positive therapeutic outcomes and, conversely, who might develop potential side effects from particular medications.

**The Human Genome Project and Managed Care**

*Grant D. Lawless, MD, RPh: Thousand Oaks, California.*

Novel products created through pharmacogenomics will probably lead to novel pressures for payment, in large part shouldered by managed care organizations (MCOs). Even now, the percentage of the total healthcare dollar spent on drugs concerns most payers. As high-tech drugs become more available in clinical practice, direct drug costs and pharmacy budget costs will rise even further. Today, many managed care organizations are willing to pay for more expensive drugs if there is a guaranteed positive health outcome. In the future, pharmaceutical and biotech industries alike will be expected to demonstrate this same clear improvement in clinical medicine if high-tech genomic-based medications are to be covered.

**The Wall Street Perspective**

*Sushant Kumar, PhD: Mehta Partners LLC New York, New York.*

From Wall Street's perspective, biopharmaceuticals are a good business investment, particularly in response to today's favorable social and economic environment. Our aging population will increase market demand, as will the dynamic emerging economies around the world. The current healthcare environment, based predominantly on managed care, also enhances the economic value of pharmaceuticals: MCOs rely heavily on drugs as their most cost-effective care option.

**Ethical Issues**

*Paul R.Wolpe, PhD: Faculty Associate, Center for Bioethics, University of Pennsylvania; Chief Bioethicist, National Aeronautics and Space Administration (NASA).*

The public understands that genomics is going to be significantly beneficial, but they also fear that the thought leaders driving the genomic revolution do not recognize any downside of the science they are creating. The public is deeply ambivalent about genetic advancement. There are five primary fears the public harbors concerning genetic research:

1. Genomics has the potential to harm individuals and society.

2. Genomics will give rise to new forms of discrimination.

3. Genomics will jeopardize individual rights to privacy and confidentiality.

4. Genomics will result in detrimental environmental impacts.

5. Genomics will exceed the limits of acceptable human intervention.

Whether these fears are realized will be determined by how the ethics of genomics are handled by everyone involved. Dr. Wolpe believes that the time for prophylactic ethics is now.

Copies of the proceedings are available by request. Please contact The Office of Health Policy and Clinical Outcomes at (215) 955-6969.

**About the Author**

Jennifer B. Koenig is a Medical Writer for the Office of Health Policy and Clinical Outcomes at Thomas Jefferson University.