



**Longer Life Foundation:
A RGA/Washington University Partnership**

Genomics and Medical Advances Symposium

October 31, 2002 - Orlando, Florida, USA

The Longer Life Foundation: A RGA/Washington University Partnership (LLF), Reinsurance Group of America, Incorporated (RGA), and Metropolitan Life Insurance Company (MetLife) sponsored a thought provoking half-day “Genomics and Medical Advances Symposium” in Orlando, Florida on October 23, 2002. The conference was well attended by academics, physicians, medical underwriters and actuaries from North America and abroad, who listened to four excellent lectures from world-renowned Washington University researchers.

Dr. Philip Smalley, Managing Director of the not-for-profit Longer Life Foundation, began with a brief overview of the Foundation. In 1998, the School of Medicine at Washington University in St. Louis, a world leader in academic medicine and medical research, joined with RGA to co-sponsor The Longer Life Foundation: RGA/Washington University Research Partnership. The Foundation's Board of Advisors consists of a diverse group of physicians and researchers from the University, as well as medical directors and underwriting experts from RGA and other life insurance organizations. The Foundation's mission is to fund research that evaluates scientific and social factors that help predict longevity and promote quality and quantity of life. Dr. Smalley shared with the audience some of the completed studies that have practical applications for health promotion as well as aiding in the assessment of disease prognosis. Foundation findings are published for the benefit of both the medical and insurance communities. More can be learned about the Foundation's activities, research results, and ongoing funded projects at <http://www.longerlife.org>.

Dr. Bruce Margolis, Vice President and Chief Medical Officer of Metropolitan Life (MetLife), a co-sponsor of the event, presented next. MetLife is an industry leader in the area of Genomics, and sponsored the Genetic Testing Symposium three years ago. Dr. Margolis discussed the importance that genetics and pharmacogenomics will play in the insurance industry in the near future. Events such as this help the insurance industry keep current on this important and rapidly evolving topic. It also will assist in future mortality and morbidity actuarial projections.

Next, Washington University's Dr. Ed Fisher, Director of the Longer Life Center in St. Louis, spoke about the Medical School's expertise and formidable reputation as a leader in academic and clinical research. He discussed the important role of the Longer Life Center in cultivating longevity research initiatives at Washington University. The Longer Life Center also serves as a conduit between Washington University researchers and members of the insurance industry. To further support that goal, the Center hosts research seminars, guest speakers, and other activities throughout the year. A directory of university researchers developed by the Center facilitates access to appropriate staff who could be called upon by the insurance industry for future presentations or to assist in other insurance related projects.

Dr. John McPherson, Co-Director of the Genome Sequencing Center at Washington University set the stage for the afternoon's lectures with an excellent lecture entitled "Genetics, Genomics, Proteomics and the Future". Dr. McPherson gave a brief overview of the basics of genetics and discussed the important role that proteomics will play in the future. According to Dr. McPherson, analyzing DNA is useful, but it is also important to study the proteins formed from the DNA/RNA to more fully understand disease pathophysiology, screening, prognostication and help in the design of future medications – i.e. proteomics. John showed how one gene can code for multiple proteins and how these proteins are then modified so they perform their cellular function by causing either good health or disease. This complexity allows us to survive and evolve even though our 35,000 genes are only a few thousand more than that found in the mustard weed plant. Dr. McPherson also discussed the history of the human genome project and the plan to complete this sequencing by the spring of 2003. He showed the similarity of the genomes between human beings and how minor variances give both individuality but also disease. Prognosis or disease development is dependent on the interplay of genetics and environmental factors, said Dr. McPherson. Decoding the human genome will assist in the development of new individually tailored treatments and will help promote quality and quantity of life.

Dr. John Morris, Professor of Neurology and Director of the Center for Aging at Washington University gave a fascinating presentation on "Understanding the Aging Process and its Impact on Longevity". Dr. Morris demonstrated how life expectancy continues to increase, projecting an average life span into the 90's by the year 2040. In the United States and many other countries, longevity is increasing. Dr. Morris suggested that aging is not a disease and showed the cellular factors that lead to senescence and some of the genes associated with 'slowing down' the aging process. He stressed that improvement in life style can still add another 10 years to the American life expectancy, independent of medical advances and genetics. The rodent model has shown that caloric restriction can slow the aging process and add ten-to-forty percent to life span. John discussed the components of successful aging and turned to an in-depth discussion of Alzheimer's and dementia. Is there a way to predict and prevent mental deterioration in the older

population? Research studies were presented that will help clinicians now and in the future answer this question.

Next, Dr. John Dipersio, Chief of the Division of Oncology at Washington University and Deputy Director of the Siteman Cancer Center in St. Louis, presented “Genomics and New Advances in Oncology”. After discussing the epidemiology and trends of cancer in the United States, Dr. Dipersio presented the various stages of carcinogenesis. He discussed the important role that genetics and oncogenes play in each stage of this disease process, from transformation to primary neoplasm to metastatic potential. The risk of cancer if one is carrying a particular genetic defect varies significantly, and genetic testing in this area has ethical implications. In patients who have been diagnosed with cancer, cytogenetics can accurately predict prognosis. Increased understanding of the genetic defects that lead to cancer has allowed the pharmaceutical industry to develop ‘magic bullet’ drugs to inhibit the growth of various forms of cancer. STI571 is an example of a drug that has already proved effective in treating many forms of cancer, and other drugs and targets are actively being researched. Dr. Dipersio concluded with a discussion of proteomics and how finding minute amounts of these cancer specific peptides or proteins can help detect cancer at a very early stage. Despite all these genetic and medical advances, Dr. Dipersio feels that it is unlikely that we will see a total ‘cure’ of cancer in the near future and even a ten percent reduction in cancer mortality over the next five years may be a bit optimistic.

Finally, Dr. Anthony Muslin, Professor of Medicine and Director of the Cardiology Research Fellowship Program at Washington University, presented “Genomics and New Advances in Cardiology”. Dr. Muslin gave an overview of the epidemiology of coronary artery disease and the classical risk factors. He talked about new tests such as Electron Beam CT which he feels predict cardiac end-points if there is significant coronary artery calcification present. He also presented data showing that C-reactive protein is a risk factor for coronary artery disease and discussed coated stents and some of the other new clinical therapies being used to treat atherosclerosis. Dr. Muslin reviewed some of the genetic defects associated with an increased risk of coronary artery disease and discussed the genetic determinants of cardiac hypertrophy, showing that these abnormalities prognosticate and predict which patients respond to a particular class of medications. He showed the role of global gene expression (microarrays) in cardiovascular disease and how these may help to identify novel targets for drug discovery. Dr. Muslin said that while these medical advances and genomics will help doctors better prognosticate and treat cardiac patients, he is concerned that the obesity and diabetes epidemic in the United States might diminish the benefits of these advances.

Handouts from the Genetics Symposium can be requested through the Longer Life Foundation web site at <http://www.longerlife.org>. Arrangements can be made to receive audiotapes of the presentations also through the Longer Life Foundation: A RGA/Washington University Partnership.