

Comments of Experts

GENES, ENVIRONMENT AND COMMON DISEASES, THE FUTURE OF MEDICINE

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Medicine is undergoing a genetic revolution. Doctors have always known the importance of family history. Since the completion of the human genome project, it has become possible to understand how genes contribute to health and disease for common disorders such as cancer and heart disease. This allows governments to target health resources effectively, and individuals to focus on lifestyle issues that really matter.

We now know that genetics and environment, acting together, determine disease susceptibility. Why does one child in India come down with TB, and another does not? Why does one old person in Denmark develop Alzheimer disease, and another does not? Why does one Chinese smoker die of a heart attack, and another does not? Why does one elderly American develop cataract, while another does not? These are classic examples of a combination of genetic predisposition and environmental triggers that lead to disease.

The human genome project has given us the DNA sequence of humankind on the web, for all to see and use. Although the function of over half the human genes is still unknown, surely many of these will be medically important. Where two individuals are both exposed to a risk, or both have equal chances of illness, and only one remains healthy, you can bet genetic differences is involved!

The challenge is, of course, to understand, and this is the role of research. However, an even bigger challenge is how to use these data. What of gene modification, what of cloning, what of genetic treatments available to the wealthy but denied to the poor? We will only be able to harvest the riches of the genome revolution in medicine if we also are able to solve the ethical problems that accompany it.

That is the reason why the involvement of the WHO is so important. WHO is the only international organization that takes a world perspective on health. It is not just for rich countries, or just for poor countries. It is for all people and all nations. The value of the human genome will only be realized if we solve the associated ethical and organizational problems. This is important and appropriate, because the issues are international, to all of us. Those who read these essays should also undertake a related commitment to engage in this process, and ensure that the knowledge of the human genome is used to help and empower people who are ill or at risk of disease.