Speech of

ROFESSOR MARK M. DAVIS

Con winner of the 1995 King Faisal International Prize
for Medicine (Molecular Immunology)

Your Royal highness Prince Sultan Ibn Abd Aln Aziz,

Your Royal Highnesses,
Your Excellencies,
Distinguished Guests,

It is a great honour and privilege to be here in Riyadh before you today and to be able to see your wonderful country. I am also very grateful that this Prize in medicine which 'I share with my distinguished colleagues from Canada and the United Kingdom is not given in isolation but is instead one of several generous prizes The King Faisal Foundation has given including those for literature and religious service. This is unique in my experience, but it is also very fitting, as all of us are committed to the search for truth and to the advancement of human culture. What I mean by this is that the novelist seeks to discover and portray truths concerning human nature or cultural meaning, religious leaders seek true insight into how God's will should be translated into action and we in our laboratories struggle to learn the truths of nature. When these are done properly, humanity is enriched and later generations are able to build upon these works, even as we build on the works of those who went before. Even Sir Issac Newton, one of the greatest scientists of the millennium said that if he has seen farther than others, it was because he "stood on the shoulders of giants".

Reflecting on the life of King Faisal ibn Abd Al-Aziz, in whose honour we are gathered here today, I think that he also sought after truth in his stewardship of this nation. By this I mean that he did not fashion his policies to please popular opinion of the day but to meet the needs of tomorrow while still preserving the essential truths of culture and religion. His life was a model of energy and dedication and rigor. It is thus a great honour to be given an award in his name and I will treasure it always.

Thus I think that what connects us all here today and with King Faisal's memory is the search for truth; for this is what endures. If mankind is to advance, spiritually and materially, nothing else will do.

But how exactly does science contribute to human culture? The practical technological answer is quite obvious and that is in the many advances, large and small in medicine, science, and technology; just in medicine alone there have been countless lives saved, life spans increased and childhood deaths can become a thing of the past. This can have a negative effect on culture, as. the rapid pace of technological change can become relentless and actually cause social disorder and other unpleasant by-products such as pollution or the potential for nuclear warfare. But great ideas or philosophies have also caused negative as well as positive effects and it is always important that the leaders in a society be aware of scientific and technological changes and be prepared to mitigate any harmful effects. Far outweighing any negative effects however is the ability of science to contribute to

culture by increasing understanding of ourselves and the world we live in. In biomedical sciences, we have crossed an important threshold in the last 40 years to where we are no longer guessing about things, but actually catching a glimpse of how some of the vital processes of life work. In many respects the mechanisms involved are far more beautiful and intricate than any one had imagined previously. These are "living works of art or literature" that are not made from the hand of man but set out before us to discover. In my own field and that of my distinguished co-winners of this year's prize in medicine, the immune system, we study how the body defends itself against threats from the outside such as infections from viruses, bacterial or other germs, and how a vast army of special cells is created with almost every cell carrying a unique detection apparatus which is capable of 'seeing' foreign entities. Virtually all illnesses can ultimately be traced to either the failure of this elaborate network of immune cells to detect or deal effectively with an invading organisms or to some over-activity of this system which results in some of these cells damaging one's own tissue. As we learn more about the working of these cells in the immune system, we became increasingly certain that the day will soon come when medicines arc designed to specifically boost or reduce an immune response in ways far beyond the relatively crude array of vaccines and immune suppressants that we have now, and that takes full advantage of what we have learned in this area.

To have participated in this fast paced and exciting area of science has been a wonderful experience, although not without its struggles and seemingly insurmountable obstacles. It is particularly with regard to the difficult times that one needs the support and encouragement of one's family and I am particularly grateful to The King Faisal Foundation for its generosity in bringing my family to this ceremony as well as giving me the opportunity to publicly thank my wife, Professor Yueh-hsiu Chien, who has been indispensable to me ever since we met as both a partner and a colleague. I would also like to thank my colleagues at Stanford and the National Institutes of Health where this work was done and particularly to my wonderful teachers who instructed me in the mysteries of science, experimentation, and interpretation, Drs. P. Y. Johnson, Michael Beer, Eric Davidson, Leory Hood, and William Paul. Without all these people's help, I would not be before you tonight. Thank you for your patience in listening to this overly long speech.