

CITATION OF THE KILLIAN AWARD COMMITTEE

May 20, 1980

The committee nominates Professor Alexander Rich, William Thompson Sedgwick Professor of Biophysics in the Biology Department, for the Killian Faculty Achievement Award. A profile of Professor Rich would simply be an extended version of the criteria for the award. Since his arrival at the Institute in 1958 he has been one of its foremost citizens: a scientist of international stature who has also participated extensively in issues of social importance.

Professor Rich is preeminent in the field of structural molecular biology, which aims at understanding the machinery of living organisms in terms of their molecular architecture. No area of modern life sciences is so much in the news or has so much feverish activity, yet Professor Rich's work in this field is extraordinary in scope and fundamental in importance. In the early 1960's his seminal studies of the geometry of nucleic acid components established the basic parameters for the structures of DNA and RNA. The discovery of the poly-ribosome in 1963 was a landmark in understanding the details of the translation of genetic information into working proteins. In 1972 his research group elucidated the first three-dimensional structure of a nucleic acid, that of yeast phenylalanine transfer RNA. Besides showing that this molecule had a well-defined and novel structure, the work led to new theories of how proteins are synthesized and also provided the structural framework on which all previous biochemical studies were interpreted and all subsequent ones were designed. Several months ago his laboratory announced the most startling and potentially-important result in structural biology since the double helix: a new double helical form of the genetic material which is left-handed and contains unusual base-stacking quite different from the conventional Watson-Crick form of DNA. This new structure may form in local regions of the gene and could be the site for many important events, including possibly those associated with cancer formation. This brief summary of a few of the achievements of his research at M.I.T. reveals a record of scientific work remarkable for its vision and quality.

Science does not proceed in a vacuum, and Professor Rich has demonstrated his sense of duty to the community in a variety of productive ways. He is a member of the National Science Board, The U.S.-U.S.S.R. Joint Commission on Science and Technology of the Department of State, the Scientific Advisory Board of the Massachusetts General Hospital, and

has for many years played a leading role in the Pugwash Committee on Disarmament and World Affairs. The latter represents an attempt by scientists throughout the world to influence mankind to resolve its conflicts by peaceful means. Professor Rich's involvement with humanitarian ideals is a reflection of his commitment to reason and discussion as the proper means of dealing with political differences. As a scientist with a voice in world affairs, he represents the scholar who is concerned with the uses of knowledge as well as its discovery. He has given much of his time and effort to make the world a safer one.

Honors are not new to Alex Rich. He has been elected to the National Academy of Sciences(1970), to the American Philosophical Society(1980), and is a Fellow of the American Association for the Advancement of Sciences(1965). The catholicity of his interests is nicely pointed out by his election to the Pontifical Academy of Sciences of the Vatican (1978). Distinctions both for excellence in research and service to the nation have come to him from many quarters. It seems particularly apt that one now come from the Institute at which he has spent the better part of his adult life and whose reputation he has so enhanced.