Professor Samuel Rahbar (May 12, 1929 – November 10, 2012) was an outstanding scholar who discovered the presence of an abnormally increased amount of glycated hemoglobin (HbA1c) in the blood of patients with diabetes mellitus. This monumental discovery led to a significant improvement in the diagnosis and management of millions of diabetics all over the world.

From a biochemical point of view, an irreversible non-enzymatic glycation of the beta chain of hemoglobin A results in HbA1c formation which is currently used as a major biological marker and indicator of long-term glycemic control in diabetic patients. From around 1977 to monitor the management of diabetes, although no assay test became available, and HbA1c manual immunoassay analyzer has been in use since 1992. Importantly, the test is now standardized and used world-over and, more recently, for the diagnosis of diabetes.

Samuel Rahbar was born in Hamadan, Iran in 1929. He enrolled in the Tehran University Medical School and graduated in 1953. In due course, Dr. Rahbar practiced medicine in Abadan and Tehran till 1959. Thereafter, he started his postdoctoral immunology fellowship at Tehran University and received his PhD in 1963. He was promoted to Assistant Professor at the Department of Immunology and then became an Associate Professor in 1965.

His influential paper and a genuine breakthrough entitled “Abnormal Hemoglobin in Red Cells of Diabetics” was published in an international journal of clinical chemistry and diagnostic laboratory medicine named Clinica Chimica Acta in October 1968. There he wrote: “In a survey carried out on 1200 patients from Tehran University Hospitals, in addition to three rare hemoglobins which are under investigation both in our department here and at the University of Cambridge, two patients showed an abnormal fast moving hemoglobin fraction: both were suffering from diabetes mellitus.” He also added that more studies were initiated to explore the occurrence of this abnormal fraction in other diabetics and HbA1c was detected in 47 cases surveyed within the next three months, including two children with severe diabetes mellitus. In most cases, routine hematological examination according to standard methods yielded normal results (Figure 1).

Tehran University Hospitals, in addition to three rare hemoglobins which are under investigation both in our department here and at the University of Cambridge, two patients showed an abnormal fast moving hemoglobin fraction: both were suffering from diabetes mellitus.” He also added that more studies were initiated to explore the occurrence of this abnormal fraction in other diabetics and HbA1c was detected in 47 cases surveyed within the next three months, including two children with severe diabetes mellitus. In most cases, routine hematological examination according to standard methods yielded normal results (Figure 1).

This paper has been cited 344 times.
Avicenna, Persepolis, Kurosh, Arya, Hamadan, Daneshgah-Tehran and Persian Gulf.

His published papers

Professor Rahbar authored 107 scientific papers. There are 75 scholarly papers written by Professor Rahbar and his Iranian and non-Iranian colleagues indexed on PubMed, of which 21 papers, from 1967 to 1995, are directly related to Iran. Two of these papers are published in the “Acta Medica Iranica” affiliated with Tehran School of Medicine and others in international journals. Those papers available on PubMed and directly related to Iran include:

- Two new hemoglobins: hemoglobin Perspolis [alpha 64 (E13) Asp leads to Tyr] and haemoglobin J-Kurosh [alpha 19 (AB) Ala leads to Asp]. *Biochim Biophys Acta*, 1976.

For more than 30 years, Professor Rahbar worked closely with the Persian American community to form the Persian Friends of City of Hope and the Iranian-American Committee for Support of Medical Research. Today, to ensure that Rahbar’s work continues in City of Hope laboratories, his family urges the Persian American community to embrace The Samuel Rahbar Professorship in Diabetes & Drug Discovery.
Acknowledgment

The authors would like to thank Professor Faramarz Ismail-Beigi, MD PhD, Case Western Reserve University, Cleveland, Ohio, Dr. Reza Bonabi, Diabetes Medical Center of California-Northridge, USA and Dr. Touraj Nayernouri, neurosurgeon for reviewing the manuscript and their valuable comments. We are also grateful to Ms. Roya Rahbar, the daughter of Professor Rahbar for providing the photos and information regarding the academic life of her father.

References