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## **Interview by Ute Deichmann with Prof. Michael Sela** **Weizmann Institute, Rehovot, Israel - 18 March 2009**

Michael Sela was born as Mieczyslaw Salomonowicz in Poland in 1924. In 1935 he moved with his family to Roumania and in 1941 came to Palestine/Israel. He is an Institute Professor of Immunology at the Weizmann Institute of Science, of which he was President from 1975 to 1985 and served as a Deputy Chairman of the Board of Governors from 1985 to 2004. Scientifically, Michael Sela became known for his research on synthetic antigens, where he was among the first who introduced the use of linear and branched synthetic polypeptides as antigens. His work has led to the discovery of the genetic control of the immune response, as well as to the design of vaccines based on synthetic molecules. He is the recipient of nine honorary doctoral degrees from institutions in the U.S., France, Mexico and Israel. He is a member of 15 Academies of Science in various countries, including the U.S. National Academy of Sciences. Details of his life and work can be found in his autobiographical article "My World Through Science", in *Comprehensive Biochemistry* Vol. 43 (2004), pp. 1-100.

**UD:** I would like to start with your studies. I learned that you did your Ph.D. with Ephraim Katchalski. Why and how did you as a chemist become a biologist?

**MS:** I studied chemistry and physics but early on was interested in biology. After finishing my study of chemistry at the Hebrew University of Jerusalem, I started to work with Ephraim Katchalski in the Department of Biophysics at the Weizmann Institute. I have spent

all my academic life at this Institute, to which I have been affiliated now for 59 years, joining it officially in 1950.

**UD:** Why did you turn to immunology?

**MS:** In my doctoral studies with Ephraim Katchalski I was dealing with synthetic polymers of amino acids as models for azo-proteins. I came across Landsteiner's book "The specificity of serological reactions" in which he provided an example of the attachment of haptens, e.g. peptides, to proteins via an azo-bond. Other questions concerning immunology followed, for example investigations of the fact that gelatin is not antigenic (there was a claim that this was due to not containing aromatic amino acids such as tyrosine). I introduced e.g. the concept of immunogen or immunogenicity for the ability of an antigen to cause an immune response which is independent of the specificity of the antibodies formed (in contrast to antigenic specificity, which is reflected in the nature of the antibody combining site). Thus step by step I moved into immunology.

I would like to add here that I am a proponent of basic research. It is often said that in applied science the answer comes after two questions and in basic science the answer comes after five questions. I think that basic research will provide most of the products that will be fruitful for applications thereafter. I do not think highly of creating institutes for applied or translational research something that is currently happening all over the United States.

**UD:** My next questions are related to the early Israeli German science cooperation, of which you have been one of the main architects.

**MS:** The main figure was Wolfgang Gentner. He was a fantastic person and influenced me very much. The cooperation had two origins. The first was the meetings between Amos de Shalit and Gentner at CERN, where Gentner was director, the second was Dr Josef Cohn who through Dannie Heineman succeeded to contact Adenauer and provide his backing to the enterprise. Later, when Butenandt was

president of the Max Planck Society. Gentner always told me: Butenandt will certainly go after you, never invite him!

**UD:** Did Gentner tell you why he should not be invited? Did Butenandt try to contact you?

**MS:** Gentner in his typical way did not tell anything more. But it was clear that he had strong reasons. Yes, Butenandt tried to come to Israel - I met him several times at the Minerva meetings - but I never invited him.

I became also a member and later Chairman of EMBO, the European Molecular Biology Organisation (founded in 1964). John Kendrew, the director of the EMBO laboratory, was a close friend of mine, and I became the head of the scientific advisory board of the EMBO lab. At the time it was already decided that its first laboratory should be in Germany because it had no international laboratories, and I contributed to the decision that it should be established in Heidelberg because I thought that in Munich, the other place that was discussed, the lab would have been only one outstanding lab among many MPIs, and because I knew that Gentner and his Institute could be of great help.

**UD:** From the material provided by the archive of the Weizmann Institute I learned that the early Israeli-German science cooperation rested on two pillars: The cooperation with Eigen and his MPI in Göttingen and the collaboration between your Department of Immunology and Otto Westphal and his MPI in Freiburg, which is surprising given his Nazi affiliations. You met Westphal already in 1962. How did this meeting come about?

**MS:** Westphal came to Israel through Prof. Olitzki, a bacteriologist at the Hebrew University. I think it was Westphal's initiative to write to Olitzki and Olitzki invited Westphal to Israel. Olitzki contacted me and that is why Westphal came to the Weizmann Institute. During his first visit I had a very long meeting with Westphal, where he spoke sincerely about his Nazi past. We started to cooperate and later Westphal

became a personal friend of mine. But I never involved him in any of the official German-Israeli discussions; this was kept separate from my collaboration with Westphal. He became a friend of Israel and was very supportive of our work.”

**UD:** What was your scientific interest in the collaboration with Westphal and the Freiburg Institute?

**MS:** After all it was the only MPI dealing with research in immunology. And there were good relations between Feldman and myself on the one side, and Westphal and Herbie Fischer on the other. I tried bona fide to help German science. Eigen is a close friend of mine, Weidenmüller was also close.

**UD:** Why did you want to help the Germans? Many of your colleagues thought it was too early.

**MS:** I think that we should never forget about the past, but that we also have to plan the future. I myself, and my successor, Haim Harari, received the Harnack medal of the Max Planck Gesellschaft for our contributions in strengthening German-Israeli scientific collaboration. Many members of my family perished in the camps in Poland. My contact to Germans had nothing to do with forgetting. I am not sorry for these contacts and I am not sorry for the contact to Otto Westphal.

Another person that was very important for the connection to Germany was Gerhard Schmidt. His non-Jewish father had sent him and his mother to England in the 1930s. In the beginning – I am talking about a period of about 10 years after the war – he refused to see his father. Then he visited him and made friends in Germany, in particular with Heinz Staab in Heidelberg. Schmidt contributed crucially to crystallography in Germany as we did in immunology.

At the end of my visit Prof. Sela showed me his “guestbook”, which contains the names of almost all the major 20th century figures in science and politics. Among them were

- Scientists from immunology and molecular genetics, for example Elvin Kabat (“a friend”. I told him about Kabat's courageous response to Pauling: In the early 1940s, Kabat as a young researcher strongly criticised Pauling’s work on allegedly synthetic antibodies during a visit of Pauling at Michael Heidelberger’s lab where Kabat was working. Prof. Sela replied: “Kabat was known for it. There was a saying to kabbatise, meaning to take apart”). Among the other visitors were Sol Spiegelman, Schachman, Monod, Jacob, Lwoff, Michael Heidelberger (“a friend”), Gentner, Lynen.

- Politicians, for example: Helmut Kohl (1984), Richard von Weizsäcker (Prof. Sela gave him an honorary doctorate when he was president of the Weizmann Institute), French politicians, Egyptian politicians, participants of a Pugwash conference (Prof. Sela was active, but is no longer, in Pugwash; but he is still engaged in local peace organizations).