MT. SAN ANTONIO COLLEGE

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Board of Trustees
Mount San Antonio College

Gentlemen:

In accordance with the policy of the Board of Trustees regarding a written report from instructors returning from a sabbatical leave, I am submitting the following summary and statement about my sabbatical leave during the 1966-1967 school year.

Summary of Travel

Arrived at Bremerhaven, Germany, July 9, 1966. Drove north in Germany via Autobahns through major cities such as Bremen and Hamburg to the Danish border.

In Denmark we drove north to the city of Kolding. We then headed for Copenhagen via highways and ferry. After visiting such landmarks as the National Art Museum and the Tivoli Gardens in Copenhagen, we ferried to Sweden.

In Sweden we drove north from the city of Halsingbord to the city of Goteborg; then proceeded to the Norwegian border.

Once in Norway we drove to the city of Oslo, where we visited the University of Oslo and other places of interest such as the famous Frogner Park with its works of art, and the Viking ships as well as the Kon Tiki raft, on which Thor Heyerdahl crossed the Pacific Ocean. From Oslo we drove west through mountainous country to a little ski resort town called Geilo.

Continuing west, we finally boarded a ferry for a scenic journey through the Fjords and then on to Bergen. After visiting places of interest such as the Museum, the composer Edward Griegs' house, and the castle, we left Bergen on a large Norwegian ferry for New Castle, England.

In England, we drove north from New Castle to Edinburgh, Scotland, where we visited such places as Edinburgh University and Castle. We proceeded north to Pitlochry where we stayed overnight in a typical country-side thatched roof farmhouse. Then north to Inverness, the capitol of the highlands, and Lochness, famous for the Lochness monster. Then proceeded southwest to Loch Lomand, and to Moffet, a bordertown famous for its Moffet candy.

We crossed the border into England and visited the lake district staying in country farmhouses for our overnight rests. Then proceeded southeast on the Great Northroad to the heavily populated industrial district through cities such as Leeds and Downcaster. Continued straight east to Kings Lynn, an old port on the river Ouse, which oozes out onto the Wash-Thor. Then on to Norwich, the home of my wife, where we visited relatives and made trips to the University of Cambridge, Oxford University, and Stratford-On-Avon, the home and birthplace of William Shakespear. From Norwich we went south to Devon and Cornwall, where we stayed on a farm for a couple of weeks. During our stay there we visited dairies, mushroom factories, castles, creameries, and other places of interest.

From Devon we drove to London for a week of short trip excursions to such places as the Zoological Gardens, London Castle, Westminster Abby, Madam Tussards Wax Works, London Tower, St. Pauls Cathedral, London Planetarium, Hyde Park, Speakers Corner, Buchingham Palace, the British Museum, Kew Gardens (Royal Botanic Gardens), and the Science Museum.

Left London, England, August 14, 1966, via jet to New York, and then motored home to Glendora to start research at Caltech in September, 1966.

Studies at Caltech

At the Institute in Pasadena I did research in the division of biology. I worked as an individual investigator in the field of tissue transplantation. My work centered around a theoretical concept--that of using fragments of macromolecules to bring about specific paralysis of the immunological mechanism in laboratory animals. Briefly, I did many tissue transplantation experiments, in which I transplanted skin tissue from albino mice to black pigmented mice, and vice versa.

In addition to my research, I attended classes in genetics, biology and immunogenetics; also, seminars at the Institute, U.C.L.A., and the City of Hope.

My studies were interupted in August for a couple of weeks of relaxation at Fort Bragg, California, and then returned to the classroom in September.

Effect on Service to Mount San Antonio College

Traveling abroad enabled me to improve my educational background concerning the manner in which other countries handle problems covered by the field of microbiology. Such things as water purification, disease prevention, and the like were observed.

My research and association with the Institute in Pasadena, enabled me to bring my factual knowledge more up to date, as well as broaden my laboratory experience with sophisticated laboratory equipment.

I feel that the sabbatical experience enhanced my position as an instructor in microbiology, and enabled me to better meet the educational needs of my students in biology, nursing, and microbiology.

Enclosed, you will find one copy of my research report.

Sincerely, Edward M. Sournheim

ANTIGEN FRAGMENTS IN TISSUE TRANSPLANTATION

Investigator: E. M. Sounhein

Support: A.E.C.

To aid in the retention of foreign grafts of tissue on animals, antigens in macromolecular form have been injected with some success by investigators in the field of tissue transplantation. (Medawar 63, Simonsen 60, Meeker 66) Though little is known about the precise manner in which the whole antigens interfere with the rejection of the foreign graft, Simonsen feels that when immunologically competent cells are suddenly exposed to a persistent overload of homologous antigen they eventually become exhausted in their antibody response which may lead to eventual damage of the cells.

Homologous antigenic material partially degraded by enzymatic cleavage to fragments may work in a similar manner by combining with circulating antibody molecules and interfering with their presumably cytotoxic activity and necessitating further antibody production. Care must be used in the preparation of the fragments to make certain that the antigen is not cleaved to fragments which lack combining ability.

Antigen fragments were prepared from skin and bacterial cells. Skin from C57Bl/10 mice was frozen immediately after removal and then cut using a cryostat set at 10 microns to break the cells and attachments for more direct exposure to enzymatic cleavage in solution. The resulting cell-free brei was exposed to pepsin and trypsin digestion at appropriate pH and temperature. Enzymes, pepsin, and trypsin, are known to react at specific residues on protein molecules. The bacterial cells were cultured from a pure

culture and were exposed to enzymatic cleavage employing lyszyme to fracture the cell wall, and trypsin for proteolysis after appropriate preparatory treatment.

Inbred male mice of strain C57Bl/10 (H2b) were used as donors of ear full thickness grafts, whereas albino male mice of strain Balb/c (H2d) were recipients. Controls consisted of non-injected Balb/c mice which received grafts under the same conditions as the experimental animals. Ear full thickness graft tissue was obtained by splitting an ear of the C57Bl/10 mouse in half and placing one half onto the right flank of the Balb/c mouse using the surgical technique of Billingham and Silvers 61. Contiguous to the C57Bl/10 graft was placed a full thickness graft from the host's own ear for comparison. Following the surgery, injections commencing 48 hours were made intraperitonealy using 0.5 ml solutions of the antigen fragments.

Data indicates that animals receiving injections of the antigen fragments retain the grafts several days longer and in a few cases, for as many as eighteen days longer than control animals which reject the allografts at a ten day period.

Because experiments using the Streptococcus organism are still in progress data is fragmentary. However, grafts are retained three to five days (at this writing) longer than control animals. This suggests that the microorganisms may share some of the histocompatability antigens and represent a highly potent source of transplantation antigens easily obtainable in large quantities. Organisms, such as the Streptococcus and Staphylococcus and others which are ubiquitous to man have been shown to presensitize animals to homografts.

Results of the exploratory experiments also confirm the fact that foreign cartilage, as well as pigmentation, is retained for

indefinite periods when grafted onto recipients because the ear of the mouse contains small amounts of cartilage.

References:

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