JEAN DAUSSET (1916-2009)

A visionary « Honnête Homme* »

Jean Dausset will forever be associated with, HLA the acronym which designates one of the most extraordinary discoveries of the XXth century in biology and medicine. Indeed The HLA system encodes molecules that bear the biological identity of cells and tissues of each individual (l’Homme Unique) and therefore, sets the rules for transplantation.

He has written the saga of the HLA system from its discovery to the peaks of scientific and medical research as well as to more outreaching domains in sociology and philosophy and public health impacted upon by the discovery of HLA.

Jean Dausset was born in Toulouse. His father was a physician, pioneer in physiotherapy and rheumatology in France. Jean Dausset spent his youth in Biarritz before the family moved to Paris. He attended the Lycée Michelet, a renowned Parisian high school. He completed his medical education in Paris and his medical training at the Faculty of Medicine. During world war II, he actively participated in the Tunisian campaign (1943) then the campaign in Normandy (1944). It is during his time in the Army blood transfusion service, where he was overseeing large numbers of blood transfusions, that his determination to understand the frequent adverse reactions and the role of antibodies against blood cells was born. Thanks to the Marshall Plan he went to Harvard for a year in 1948, where he worked at the Peter Ben Brigham Hospital. On his return to Paris, he specialized in immuno-hematology.
The premise
He made the seminal observation of massive white cell agglutination induced by serum antibodies in 1952.

The discovery
In 1958, using leukoagglutination as read out, he discovered and described the first leukocyte antigen that he named MAC in a single-author publication. He went on to propose a complex system, describing the basis of a system (HU-1) later named HLA for “human leukocyte antigen”. The story culminated in 1980 when Jean Dausset was awarded the Nobel Prize in Physiology and Medicine, together with Baruj Benacerraf and George Snell, for the discovery and characterization of genes making up the major histocompatibility complex.

Interestingly during his career, Jean Dausset never referred to a scientific or medical mentor. The discovery of the HLA system stems from his own mind, from his own vision. He assembled around him numerous students, fellows, colleagues, collaborators and friends for over 50 years in an extended world-wide community which designated him as the father of HLA. He enjoyed this parental status and liked to share it with Rose Payne, who he designated as the “mother” of HLA.

Jean Dausset had genuine scientific curiosity. Many then young investigators will remember when they were asked, in a very polite manner, to explain to him what major innovative research they had been working on. He would first listen, then in an exquisite tone, thank the junior scientist eager to get approval and end the discussion by a perplexing “I will think about” before inviting him for a second round of discussion.

Scientific & medical legacy
Jean Dausset often mentioned he would like to be remembered by the following 4 words (his own): transplantation, cellular immunology, predictive medicine and anthropology - the cardinal words of HLA.

1) Transplantation: We owe to the hundreds of skin grafts he was able to perform on volunteers, the most visible demonstration of the role of the HLA antigens in human transplantation. He considered these “donors” as the real heroes of the discovery of the HLA system and always, associated them with the honors he received. Interestingly, anti HLA antibodies that were at the origin of the discovery of HLA in 1958, have evolved 50 years later into major medical monitoring tools used in “donor selection” as well as in the medical follow-up of transplants.

2) Cellular immunology: Although his own major contributions were not in this field, he always insisted on the importance of HLA in the control of immune responses. He had a tremendous admiration for Hugh McDevitt and Rolf Zinkernagel for their insightful contributions in unraveling the Ir genes phenomenon. More recently, he was enthusiastic about the possible “immune suppressive” role of HLA-G.

3) Predictive Medicine: Even before the immune function of HLA was known, Jean Dausset anticipated that the HLA system could be the major genetic system to contribute to susceptibility / resistance in a large number of diseases, mainly autoimmune diseases. He extended this concept to other genetic systems and fastened onto the idea of a new form of medicine, he named “predictive medicine” and foresaw its potential in personalized prevention.

4) Anthropology: He realized that the diversity of the HLA system was a remarkable tool to analyze the genetics of populations and migration. His interest for anthropology included a voyage to Easter Island, where he collected sera from this isolate to organizing in Evian the 5th International HLA workshop devoted to link anthropological and genetic diversity of human populations. He also proposed a voice recorded informed consent “for populations that were illiterate.
He realized that the HLA model could be extended to the entire human genome and created in 1984 with Daniel Cohen the CEPH (Centre d’Etude du Polymorphisme Humain) a unique resource to facilitate genetic studies of human populations throughout the world. CEPH cell lines and CEPH families have since then been used to establish the first genetic map of the human genome and the genetic make up of numerous diseases.

A visionary, a scientist, a physician, a professor, Jean Dausset was also a modern “humanist”, deeply involved in social, public, philosophical ideas and action. First, and probably foremost for him, he worked from 1955 to 1958 as government advisor involved in shaping French law integrating research education and medicine, which lead 50 years ago, to the creation of the CHU (Centres Hospitaliers Universitaires) in France. He was extremely pleased to be honored in the jubilee celebration of this event that has successfully carried-out to this day French polices on medical research and education.

Jean Dausset played a decisive role in public health when he founded in 1969 “France Transplant” that organized the exchange of organs nation wide. He went on to establish in 1986 with Jean Bernard, his long-time and esteemed colleague at the Hopital St Louis, “France Greffe de Moelle” a registry of unrelated donors for bone marrow transplantation.

When these organizations were eventually taken over by national administration, Jean Dausset voiced the feeling that the momentum and high standards that he and the pioneers had initiated would not be maintained. He also feared that the humanistic nature of these endeavors would somehow be diluted in bureaucracy. Jean Dausset became President of the MURS (Mouvement Universel pour la Responsabilité Scientifique) and actively campaigned against being able to patent the human genome.

Jean Dausset’s impact on modern biology, medicine and public health is indeed universal and overwhelming. A passionate amateur of modern paintings, he owned for a few years an art galerie in Saint Germain des Prés, He poetically summarized his philosophy of life in the title of his autobiography “Un clin d’oeil à la vie”.

His wife Rosita, his daughter Irene and his son Henri were always supportive and their “gentillesse” should not overshadow the importance they had in Jean Dausset’s career. He died peacefully in Mallorca, surrounded by them, embedded in the Hispanic culture he was so found of.

All EFI members will remember him as a pioneer and a giant who set the foundations of the HLA community

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* In the French 17th Century meaning