

Prophylactic Medicine

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I should like to start my lecture on prophylactic medicine, by presenting a classic case that demonstrates the application of curative cell therapy in a haematologic disease.

The female patient, born on February 2nd, 1905, came to me for the first time in 1981 when she was 76 years old. At that time I was working as a specialist in serologic laboratory diagnostics at the Blood Centre in Salzburg (Austria). My job involved carrying out numerous blood transfusions, mainly in patients with carcinomas, but sometimes also in patients with unclear anaemias. This 76-year-old patient had been treated by her GP since mid-81 for months with iron preparations to combat a progressive anaemia. After months of therapy with little or no success the diagnosis made was: "a therapy-resistant anaemia and hypoglobulia".

As a matter of fact, anaemia as such cannot be accepted as a diagnosis. It is rather more its cause which is decisive for a rational treatment of the anaemia patient, and this is especially true in the application of cell therapy. Just think of the associated anaemias in tumour patients or patients with a nephropathy. Due to a lack of other possibilities anaemias are mostly still being treated with blood transfusions. This implies quite a few risks for anaemia patients in need of chronic blood transfusions. We all know that chronic blood transfusions may cause a haemosiderosis and, later on, a cirrhosis of the liver. Chronic anaemias of varying genesis are a rewarding field for the application of cell therapy.

In order to be able to make a more exact diagnosis the aforementioned patient was admitted to the II. Medical Department of the main hospital of Salzburg. It was only then that an osteomyelosclerosis was diagnosed. During her stay in hospital the patient, apart from roborants, also received steroid hormones. Additionally in 1981 the patient received a total of 18 units of stored blood. Between 1982 and 1984 the patient received a further 84 units of stored blood. The actual quantities per year were:

1982	38 units of stored blood
1983	26 units of stored blood
1984	20 units of stored blood

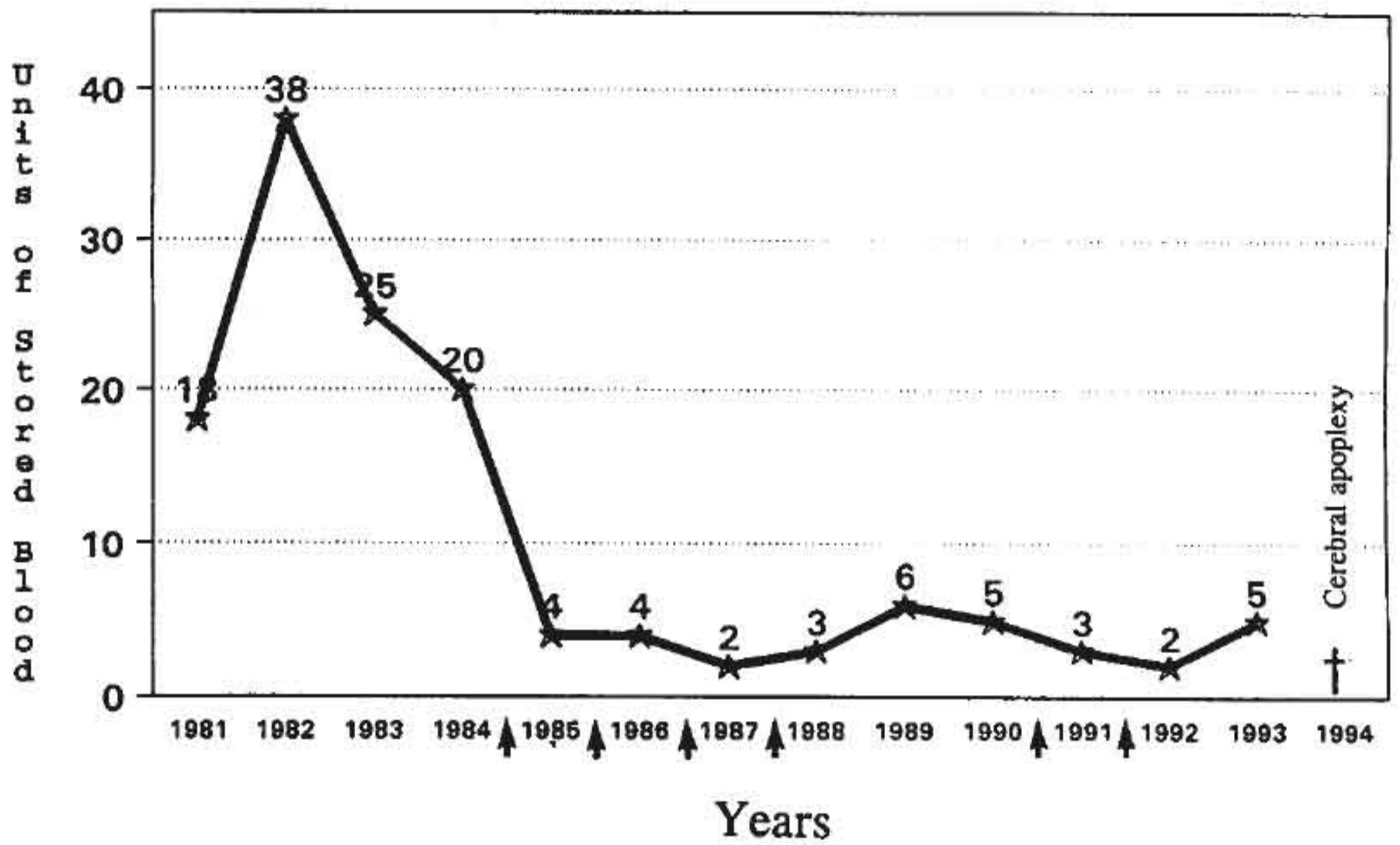
In December, 1985, in order to achieve a regeneration of the existing bone-marrow depression with the help of cell therapy, I took charge of the patient's treatment in my practice. As soon as cell therapy was initiated, there was a marked improvement of the blood picture and in the patient's general condition. This led to the fact that henceforth only sporadic administrations of washed erythrocyte concentrates were necessary. Between 1985 and 1994 the patient received a total of only 33 blood transfusions of washed erythrocyte concentrates as given below:

1985	4 units
1986	4 units
1987	2 units
1988	3 units
1989	6 units
1990	5 units
1991	3 units
1992	2 units
1993	5 units

As can be seen retrospectively, in the years 1985-86-87-88 when treatment with cell therapy was carried out the patient needed a maximum of 4 blood transfusions. Even in 1989 and 1990, when cell therapy was not carried out, the patient still never needed more than 6 units, which is surely due to the lasting effects of cell therapy. Again in 1991 and 1992 I administered the usual cell composition to the patient, and thus achieved that only minimal doses of erythrocyte concentrates were needed. Since in 1993 the patient suffered a few minor cerebral accidents she did not receive cell therapy any more. In January, 1994 the patient died from the effects of this massive apoplexy.

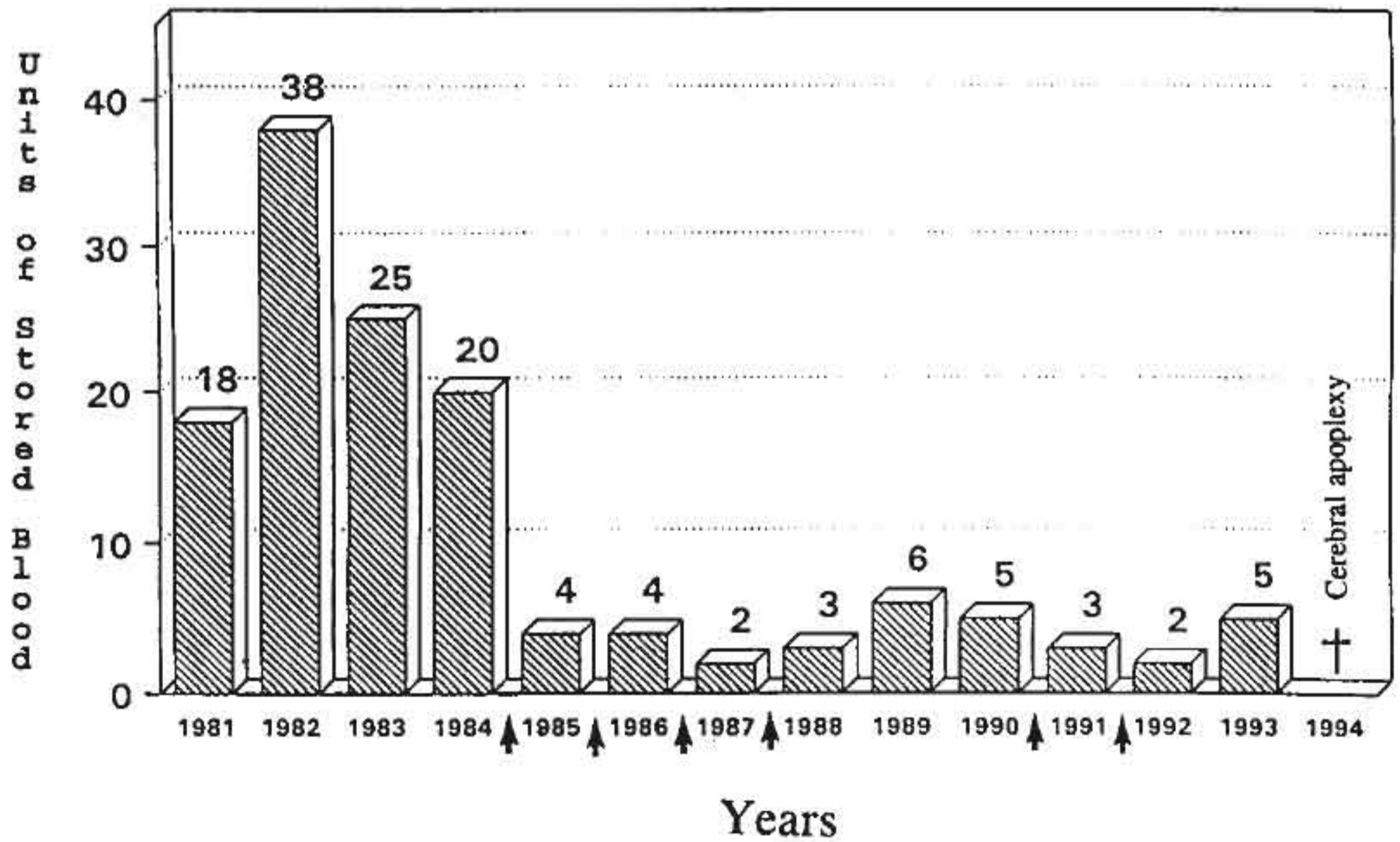
When looking at this case description, which makes the effectiveness of this therapy obvious to everybody, it should be possible to speak of a kind of prophylaxis, a prophylaxis against a relapse. After all it was possible to prevent the recurrence of a bone-marrow depression. Developments in the medical field in general, and the progress achieved in medical technical equipment in the past decade have provided a vast amount of new knowledge. Despite these rapid advances, we should still not disregard an old proverb that says: "prevention is better than cure".

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Prophylaxis is the word which is sure to inaugurate within the next decades a new era in medicine. Prof. Kment, years ago had already stated with regard to the future that the dramatic advances achieved during the past decades concerning molecular genetics, immunology and other fields of biomedical science indicate the possibility of an imminent second pharmaceutical revolution. This prediction, nevertheless will only become true if the pharmaceutical industry rather than opposing them is open-minded enough to actively contribute to maintaining the health of the human being by innovations in the field of organotherapy.

Right now we are in the middle of a radical change, which can be seen from the discussions between conventional medicine and the advocates of future oriented methods - and we may expect to be able to optimize the quality of life within the genetically determined limits by applying these biological possibilities of treatment. This futuristic aspect prophylaxis, has been there for a long time, but was disregarded due to the enormous boost in the chemical-pharmaceutical industry and has only been rediscovered a short while ago.

Numerous scientific works on immunology have provided us with important knowledge so that we now possess some parameters which enable us to make concrete statements about the immune status. Although we have to bear in mind that our knowledge about the immunological processes constitute only a very small fraction of the actual intra- and intercellular processes, we should nevertheless use the little we know for a maximum prophylaxis. I would now like to make a few comments on the so-called preventive medicine as we knew it. This kind of prevention, up to date, only consisted in carrying out a blood count, an erythrocyte blood sedimentation, an electrolyte study and, if necessary, a chest roentgenography, plus an auscultation of the patient in order to then discharge him as clinically NAD. We can not content ourselves with this kind of preventive medicine any more. As long as this kind of preventive medicine is not willing to use to the fullest the existing knowledge in immunology it is not going to be very helpful to the patient.

The lack of effectiveness of these preventive methods and also of curative medicine obliges us to do an about-turn and dedicate ourselves much more to prophylactic medicine. Of course, this does not mean that we should dissociate ourselves from conventional medicine, but rather to go one step further in the right direction. We all know, that there is a rising tendency, of carcinomatous processes, among others, which is not only due to improved modern detection techniques. There is also a recurrence of tuberculosis, a disease declared to be long dead, as also of syphilis and the resistance of many bacteria against antibiotics and much more.

For half a century cell therapy was an accepted method used prophylactically as well as curatively. This made it possible to carry out treatment without side effects. At the end of 1987 all of a sudden the Supreme Sanitary

Council thought this kind of therapy was too risky and its effectiveness not proven enough. However since then many things have changed in this field. The American magazine *Science and Technology* heads a very impressive article with the line *Miracle Cures may be in your cells*. This article talks about the Aztecs using umbilical cord blood in order to cure diseases. It was known that the umbilical cord contains a huge number of stem cells. A few minor biotechnological companies are using this rediscovery to open new avenues in curing a wide spectrum of diseases by using human and animal tissues and cells. From the immunological point of view stem cells of new-born babies, are not yet immunocompetent and therefore do not get rejected in transplantations. Stem cells constitute the basic substance for all cells of the immune system and are mainly to be found in the bone marrow. For many years bone-marrow transplants have been used for treating some kinds of cancer. First chemotherapy is carried out to destroy the cancer cells but this, typically, also has negative effects on the bone marrow. Later on bone marrow is transplanted in order to restore the patient's immune system.

Dr. Gail Naughton of Advanced Tissue Sciences INC, California expects huge successes with this cell treatment in organic defects, but also in severe burns, which up to now have been treated totally inadequately. Research on curative application of fetal cells made much progress which goes even far beyond the successes achieved in transplantations. The thought underlying cell therapy and similar techniques is, that maybe only cells are able to correct certain defects in the human body. Cells constitute after all the motor and the brain of many processes.

Many diseases appear when these mechanisms break down. Sometimes due to injuries, but very often through infections which produce harmful proteins, and arise as a consequence of exhaustion of the immune system or due to uncontrolled cellular growth, as can be seen in the case of carcinomas. Dr. Josef D. Vakkanti, a leading scientist, says that cells use a software we still have to learn. Confirmed by these new insights and statements, we may confidently hope, and justly so, that we shall soon be allowed to include cell therapy in our treatment and, above all, also as a means of prophylaxis.