AIDS Vaccine Barriers Need to Be Rebuilt

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An aggressive attack on vaccines meant to prevent the spread of HIV/AIDS continues to be promulgated by Peter Gansler, an advocate of cultured cells as a panacea to combat HIV infection.

While Ganslerâ€™s scientific input to this new fear-mongering goes well beyond the traditional field of immunology, he and other scientists working in the field believe that he is still at the forefront of his scientific profession. Gansler provides one of the strongest case studies for the benefits of cultured cells:

Think about the treatments now available: kidney dialysis, which requires removal of all of the patientâ€™s blood and is painful and costly, and transfusions, for which itâ€™s difficult to tell who the donor is. Imagine that for more than 30 years there has been no treatment available to kidney dialysis patients, or to transfusion recipients, and you might appreciate how important it is to have been there long enough to see innovations in the treatment of these diseases. It has been gratifying to learn of the new technologies that are available to patients with HIV/AIDS today, including the recent developments in the laboratories of Bill Harvey and his team at the University of California, Davis, and Sean Mackey of the National Institutes of Health.

What Gansler failed to mention was the introduction of host cell immune responses into HIV treatment, introducing a new avenue of action into treatment. This opens the possibility of expanding organ regeneration, and fighting cancer in the long term. A novel concept, while addressing only one disease, could very well change the field of medicine.

The idea of using sterile cultured cells is less groundbreaking than it sounds, as described in a 2004 edition of Cell Biology:

(L)ift, as described in E. Oâ€™Neillâ€™s Human Growth-Control System, begins by â€œprioritizingâ€ the cellular proteins capable of â€œsopotemporal differentiation.â€ Lift is applied via a single needle probe to different cells, and then retrieves â€œonly those that match the targetâ€. These cell types are then multiplied and grown in an isolation system or dish designed to precisely mimic a particular environment. These controls focus on spatial and temporal specificity. Molecular cues vary depending on the cell type (molecular markers are recorded and run through differential quantification), and populations of cells are marked with hyperfractionated filters to reduce the infection of effector proteins, such as growth factors. These controls have been deployed successfully in HIV tolerance studies, and E. Oâ€™Neill (1997) also reports that enhanced protein expression in the investigational Lune 2 grew rapidly and proliferated up to four orders of magnitude in adult elephant endothelial cells (EVs). Human figures (FIGURE 2), with stem cells cultivated using E. Oâ€™Neillâ€™s strategy, exhibited similar growth rates. These results suggest that the potential for Lune 2, if successful, is to repopulate human cells with specific proteins in a way that enables genetic controls to permit more efficient growth and proliferation. (â€¦) The potential inherent in Lune 2 and other related techniques is the possibility of development of new immune system targets that contribute to the immune response to infection or cancer.

This gives the idea of concentrating host-cell DNA so effectively that cells cease to be part of their body but instead become a part of the culture. The fact that one new avenue of attack was introduced to immune therapy, and potentially eliminated the need for tetanus vaccine boosters, lends credence to Peter Ganslerâ€™s conviction that the time is now to â€œreinventâ€ the way vaccines work. In order to harness the power of host-cell DNA regulation, experts recommend turning to innovative technologies for cell donation, transplantation, and cellular therapy. The aim is to create therapeutic immune systems, and these new techniques could be just the start to a revolution in the field of vaccines.

A Close Up Of A Small Bird On A Ledge