“Viral vectors for prevention and therapy”

Research
Dr. Desrosiers serves as Director of Research Faculty Development and Professor in the Department of Pathology here at the Miller School of Medicine. Dr. Desrosiers was the leader of the team that discovered the simian immunodeficiency virus in 1984 and was senior author of its publication in Science in 1985. Since that time, he has made numerous seminal contributions using the SIV/macaque model to better understand the mechanisms by which HIV-1 and SIV cause disease and for vaccine development efforts. In 1990, he described the first-ever infectious, pathogenic molecular clone of this group of viruses and to this day it remains the clone of choice for controlled experiments in monkeys. Its 10,279 base-pair sequence can be manipulated in any way such that the effects on viral tropism, replicative capacity, immune avoidance, and disease propensity can be examined. Dr. Desrosiers has used this system to better understand the relative importance and functional contribution of the so-called nonessential genes and to better understand the evolution of antigenic escape variants. He has shown that live attenuated SIV deletion mutants can serve effectively as vaccines. To this day, live attenuated SIV remains the gold standard for vaccine protection against SIV in monkeys to which all other vaccine approaches are compared. This work provides hope that a vaccine against HIV will be possible. While he has previously tried a number of novel vaccine concepts using the SIV/macaque model, he is currently focused on two approaches: use of AAV vector to deliver antibodies with potent, broad neutralizing activity and the use of recombinant persistent herpesviruses as vaccine vectors. He is the discoverer of the KSHV-related gamma-2 herpesvirus of rhesus monkeys called rhesus monkey rhadinovirus that is being used for the latter efforts. He has been a strong advocate for basic and discovery research in the world’s AIDS vaccine efforts.

Publications