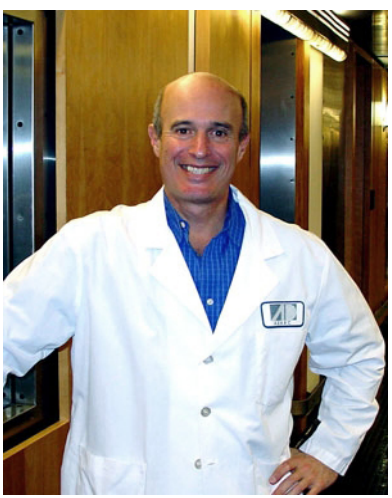
The Aaron Diamond AIDS Research Center

Affiliate of The Rockefeller University

Dear Friend,

Thank you for your support of ADARC's mission to find solutions to the HIV/AIDS epidemic through scientific research. We want to share some of the scientific progress taking place in our laboratories, and hope you will enjoy being a part of future breakthroughs.

The One Pill, Once Daily Challenge



Martin Markowitz, MD

Health care providers have numerous options to treat HIV-infected patients, with over 30 agents approved for treatment. In the U.S., over half of new patients will start their treatment with Atripla, a triple pill that combines efavirenz- a non-nucleoside reverse transcriptase inhibitor (NNRTI), emtricitabine - a nucleoside reverse transcriptase inhibitor (NRTI) and tenofovir, a reverse transcriptase inhibitor. Treatment with Atripla is simple: one pill, once daily. The FDA approval of this drug in 2006 marked an important breakthrough in the evolution of antiretroviral regimes, which strived to reduce the pill count to make patients' lives easier. In the early days of combination therapy, patients took dozens of pills each day, some on an empty stomach, some with food, a regimen that included many lifestyle restrictions.

The advantages of the simpler regime are easy to see. "However, Atripla is not for everyone," said Dr. Martin Markowitz, director of ADARC's

In This Issue

Join Us

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Clinical Program. Efavirenz, one of the drugs in Atripla, can cause significant central nervous system side effects such as dizziness, drowsiness, anxiety and mood changes. These side effects can be particularly pronounced in African-American patients due to genetic polymorphisms that are associated with slower drug metabolism. Efavirenz is also potentially teratogenic and its use in women of childbearing potential is not recommended. Clearly, there is room for additional one pill, once a day options.

ADARC's Clinical Program has been involved in several clinical trials to test the safety and effectiveness of drug combinations that can potentially be used in other triple pills. The goal of these studies is to compare the new combinations to Atripla. Some of the drugs that will be combined with others NRTIs in place of efavirenz are elvitegravir and dolutegravir, both integrase inhibitors and rilpivirine, a novel NNRTI. It is anticipated that the combination of tenofovir, emtricitabine, and rilpivirine will be available to patients later this year.

Within a relatively short time period, the prospect of one pill, once daily therapy for most HIV-infected patients will be a reality. This represents a real advance for patients who must take pills each and every day to maintain the desired effect over a lifetime of treatment.

You can support ADARC's Clinical Program

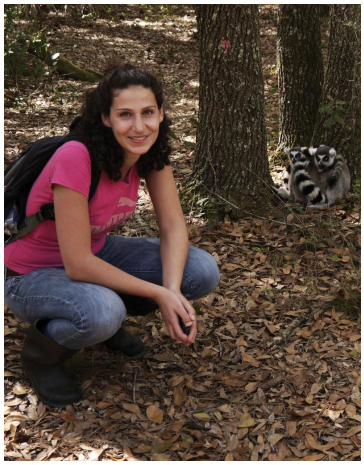
Meet our Scientists

Craig Pace, PhD

Craig Pace, PhD - post-doctoral Fellow, David Ho laboratory - focuses on the development of monoclonal antibodies and antibody-like molecules for the treatment and prevention of HIV infection. Recently, he and his colleagues created antibodies that are capable of blocking different points of entry by binding to two different targets simultaneously. Conventional antibodies bind to only one specific target. These two-headed antibodies have antiviral activity in vitro that is greater than the sum of the parts. They are currently the broadest and most potent antibodies or antibody-like molecules against HIV described, neutralizing all viruses tested at concentrations on average, 200-fold less than other anti-HIV antibodies. The next step will be their clinical development for prevention and treatment of HIV.

Born and raised in Perth, Western Australia, Dr. Pace grew up with a scientist's natural curiosity for how and why things work the way they do,

especially in biology. "I like that in biology, everything is so logical, at least in hindsight," he says. "My goal is to make significant contributions to the development of an effective therapy or vaccine capable of preventing and treating HIV infection."



Anna Maria Niewiadomska, PhD

Anna Maria Niewiadomska, PhD - Post-doctoral Fellow, Robert Gifford Laboratory - works on endogenous retroviruses (ERVs), retroviral sequences derived from ancient viral infections that are still found within animal genomes. These sequences are basically 'viral fossils', providing unique and valuable information about the distant evolutionary past. Recent work identified ERVs similar to HIV in the genomes of lemurs. This discovery came as a big surprise, because it was previously thought that natural infections with HIV-like viruses only occurred in African monkeys and apes. Lemurs branched off from other primates relatively early in their evolution, and have been isolated in Madagascar for at least 60 million years. It remains a mystery how these viruses came to be present in lemurs, and uncovering the evolutionary history behind this story will provide important insights into the biology of HIV. Dr. Niewiadomska and her colleagues are now investigating whether PSIVS still circulate in lemurs, and searching for more fossil PSIVs in lemur genomes.

Born in Lebanon, she developed a love of science through her family's home library with books on botany, anatomy, geology, natural history, etc. During the Lebanese civil war, often without electricity and not able to go outside, she spent much of her time reading.

Dr. Niewiadomska got her undergraduate degree at Stony Brook University, then worked for a year at MIT's Cancer Center before starting her PhD in microbiology and immunology at the Johns Hopkins School of Public Health.

Academic Seminars

Seminars geared toward the scientific community and held at ADARC on Mondays at 12pm. To attend, please email mbell@adarc.org.

May 16

David O'Connor, PhD - University of Wisconsin at Madison

"Of bluebeards and blackbeards: pirate monkey genetics and antiviral immunity"

May 23

Wesley Sundquist, PhD - University of Utah

"The ESCRT Pathway in HIV Budding and Cell Division"

June 20
Roger Kouyos, PhD - Princeton University
"Inferring epidemiological patterns from HIV-1 sequence data"

Thank you for your interest in ADARC's work. If you would like to receive a printed copy of our semi-annual newsletter, please contact (212) 448-5069.

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