

A Cluster of Europe's AIDS Research Stars

European scientists have from the very beginning made major contributions to AIDS research. In addition to those whose work is described in more detail in this report, this survey highlights scientists who stand out in the opinions of their peers. It is based on several months of informal polls and discussions with AIDS researchers and is by no means exhaustive—just a sampling of the talent to be found on the continent.



Belgium **Marc Parmentier** at the Free University of Brussels helped spark a research revolution in 1996 when he cloned a molecule called CCR5, a cell surface receptor for immune signaling molecules called chemokines, which shortly afterward was identified as a key "coreceptor" used by HIV to enter its target cells.



France The Pasteur Institute in Paris harbors a number of AIDS stars. **Françoise Barré-Sinoussi**, who first isolated HIV in 1983, has spent recent years accumulating mountains of data on African strains of the virus. **Simon Wain-Hobson**, who made early contributions to the molecular biology of HIV, has recently been dissecting how the virus replicates in lymph nodes, and **Jean-Louis Virelizier** is working on ways to block HIV binding to CXCR4, another key coreceptor for HIV. Also noteworthy are Pasteurien **Olivier Schwartz's** groundbreaking studies into how the HIV protein Nef down-regulates immune responses to the virus. Nearby in Paris, **Marc Alizon** of the Cochin Institute is studying how HIV enters cells, while down in the south of France, **Quentin Sattentau** at the Center for Immunology in Marseilles is recognized as a leading expert on antibody neutralization of HIV.



Germany African green monkeys do not get sick when exposed to SIV, the simian version of HIV, and **Reinhard Kurth's** team at the Paul Ehrlich Institute in Langen has been studying why. Their work led them to IL-16, a cytokine that has anti-HIV activity in monkeys and humans and may have therapeutic potential. **Jan van Lunzen** and **Hans-Jürgen Stellbrink** at the Eppendorf University Hospital in Hamburg have carried out laborious studies on the in-

fluence of combination therapies on viral burden and T cell numbers in blood and lymph nodes, while **Andreas Meyerhans** at the University of the Saarland in Homburg has helped uncover the enormous genetic variability of HIV and the dynamics of viral evolution in lymph nodes.



Italy This nation's AIDS research received a big boost a few years ago when a flock of Italian researchers returned after doing postdocs at the National Institutes of Health (NIH) in the United States. Some set up shop at the San Raffaele Scientific Institute in Milan, including **Guido Poli** and **Elisa Vicenzi**, who continue to work on the role of cytokines in the immune system disruption caused by HIV. Also at San Raffaele is **Paolo Lusso**, who, with Robert Gallo's former group at the U.S. National Cancer Institute, identified chemokines that block HIV infection of cells—which led to the discovery that the chemokine receptors double as ports of entry for the virus. Other former U.S. postdocs include **Mario Clerici** at the University of Milan, a specialist on the immune system's response to HIV, and **Barbara Ensoli**, whose team at the ISS in Rome—Italy's national health institute—works on Kaposi's sarcoma, a skin cancer that often afflicts AIDS patients.



The Netherlands Dutch AIDS research is dominated by a star-studded collaboration in Amsterdam (see p. 1859), but researchers outside this orbit have also made noteworthy contributions. **Jonathan Heeney** at the Biomedical Primate Research Centre in Rijswijk is one of Europe's leading vaccine researchers, and **Rob de Boer**, at the University of Utrecht, has developed mathematical models for how HIV infection progresses.



Norway This country's leading AIDS researcher is a Swede: **Birgitta Asjö** at the University of Bergen. In the 1980s, Asjö carried out groundbreaking studies on HIV variability at the Karolinska Institute in Stockholm and has recently turned her attention to HIV infection of the tonsils, work that has helped researchers understand the dynamics of immune system reconstitution after treatment with combination therapies.



Sweden Sweden has long been a major power in AIDS research, thanks to early pioneers such as **Eva Maria Fenyo**, **Peter Biberfeld**, and **Gunnel Biberfeld**, all at the Karolinska Institute. Fenyo's studies of how HIV evolves during the progression to AIDS helped establish this critical line of research, and she is now studying how viruses of differing genetic makeup differ in their use of coreceptors. The Biberfelds, who were among the first to study the pathology of tissues infected by HIV, have in recent years helped develop primate models for viral infection and are leaders in European vaccine efforts. Another Karolinska star, **Britta Wahren**, is trying to create a vaccine using DNA engineered to express HIV proteins.



Switzerland Like Italy, this alpine nation has benefited from the recruitment of European researchers who have worked in the United States, such as **Giuseppe Pantaleo**, now at the Vaudois Hospital Center in Lausanne after a long stint at NIH, who has accumulated key data on how the immune system keeps HIV at bay during the early period of infection. In Geneva, **Luc Perrin** at the University Hospital has weighed in with detailed studies of how combination therapies influence viral load in the blood of HIV patients, while **Bernhard Moser** and **Marco Baggiolini** at the University of Bern have teamed up with Jean-Louis Virelizier's group in Paris and others to develop chemokine derivatives that can block HIV attachment to its coreceptors.



United Kingdom Since the AIDS epidemic began, **Paul Clapham** at the Institute of Cancer Research (ICR) in London has been one of Europe's most versatile AIDS researchers, with work ranging from his 1984 discovery with ICR's **Robin Weiss** that the CD4 protein was HIV's primary receptor to more recent research on drugs that block HIV binding to chemokine receptors. Studies of HIV's genetic variability by **Andrew Leigh Brown** and **Peter Simmonds** at the University of Edinburgh have helped keep the U.K. a player in this very competitive field. Finally, researchers tell *Science* that **Angela McLean** of the Institute for Animal Health in Compton—who has garnered an international reputation for developing equations that model HIV's interaction with the immune system—has saved a number of biologically trained AIDS researchers from making mathematical fools of themselves in print.

—Michael Balter