

BRISTOL-MYERS SQUIBB AND HIV/AIDS:

Basic Science, Clinical Development, Partnerships



Worldwide, more than 36 million people are estimated to be living with HIV/AIDS.¹ Through 2000, cumulative HIV/AIDS-associated deaths worldwide numbered approximately 21.8 million – 17.5 million adults and 4.3 million children under the age of 15.² These numbers and the massive human tragedy that they signify underscore the urgent need to discover and develop more effective antiretroviral therapies and make them available to patients as quickly and as broadly as possible.

Nearly twenty years have passed since acquired immunodeficiency syndrome was recognized and the human immunodeficiency virus was identified as the causative agent. Still, there is neither a cure nor a vaccine for HIV/AIDS. Important advances, however, have been made towards suppressing the virus, bolstering the immune system and extending and enhancing the lives of patients through combination antiretroviral therapy. Since the 1980s, researchers at Bristol-Myers Squibb have been a driving force in the development of antiretroviral treatments, having successfully ushered *Zerit*[®] (stavudine) and *Videx*[®] (didanosine), two nucleoside analogues, through clinical development and registration. Today, our research pipeline spans traditional and novel classes of antiretroviral drugs. While our clinical team focuses on the late stage development of the protease inhibitor BMS-232632, our discovery team is singularly charged with identifying novel classes of antiretrovirals.

Current antiviral drug combinations successfully suppress HIV in the majority of patients.³ In the rest, the drugs fail to provide a sustained response. Researchers have long attributed drug failures to HIV's ability to develop drug resistance. Recent studies, however, have unearthed non-adherence to therapy regimens as the primary cause of treatment failure.⁴ As our researchers continue to closely study resistance patterns, they also continue to seek to make our therapies more convenient and tolerable for patients. For example, just this past year, an improved formulation of *Videx* called *Videx EC*[®] was approved in Europe and the



United States. It is the first single capsule, once-a-day antiretroviral. Similarly, we are developing an extended release formulation of *Zerit*, which we hope will further optimize the conditions for adherence. And there is clear evidence that our protease inhibitor in development is effective when given once-a-day – a first for the protease inhibitor class.

Despite the difficult challenges faced by HIV/AIDS researchers today, we have reason to be confident that we can continue to improve the state of antiretroviral therapy. The articles in this *Nature Insight* capture important advances in our understanding of T-cell memory, molecular mechanisms of viral entry, and HIV immune evasion, among other topics. At Bristol-Myers Squibb we are already putting these and other learnings to good use as we pursue our mission of extending and enhancing the lives of people living with HIV/AIDS.

Outside the laboratory and clinic, Bristol-Myers Squibb has been active for several years in seeking out partnerships for finding innovative and workable approaches to dealing with the HIV/AIDS crisis, particularly in sub-Saharan Africa, the region of the world most affected by the epidemic. In May 1999, the company launched its \$100 million, *SECURE THE FUTURE*[™] five-year initiative to fund research, training and community outreach in southern Africa. In May 2000, as part of the ACCESS initiative, the company lowered its prices of AIDS medicines in poor countries by 90 percent of what they cost in the developed world. And in March 2001, the company again did its part to support broad and speedy access to care and therapy by increasing its commitment to *SECURE THE FUTURE* by \$15 million, making the patent to *Zerit* available in South Africa at no cost and lowering the prices of *Zerit* and *Videx* to below cost. Within the framework of the ACCESS initiative, combination therapy of *Zerit* and *Videx* now costs \$1 a day in every country in Africa that wishes to participate in this initiative.

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