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**NEW INSIGHTS INTO THE ROLE OF HIV IN THE
AETIOLOGY AND PATHOGENESIS OF AIDS**

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In the first part of this thesis I analyze current hypotheses on AIDS aetiology and pathogenesis using the deconstructive analytical approach proposed by Jacques Derrida, *i.e.* I conducted thorough, careful, sensitive, and yet transformational readings of scientific texts on HIV and AIDS, to determine what aspects of those texts run counter to their apparent systematicity (structural unity) or intended sense (authorial genesis). In the second part of this thesis, I describe the experiments that I performed in order to demonstrate that some of the changes induced by HIV at the cellular and molecular level are identical to those induced by cadmium, a known environmental carcinogen and I elaborate on the relationship between HIV and human breast cancer. Finally, I describe some effects on angiogenesis attributed to HIV that could be due to endogenous factors. As far as the relationship between HIV and AIDS is concerned, I elaborate on the words of Professor Luc Montagnier, who, after having been awarded the Nobel Prize, stated: “We can be exposed to HIV many times without being chronically infected. Our immune system will get rid of the virus within a few weeks, if you have a good immune system” (quoted in: <http://liamscheff.com/daily/2009/04/01/house-of-numbers/>), thus reversing the long-assumed cause-and-effect relationship between HIV and AIDS whereby HIV inevitably brings on AIDS. Therefore, according to Professor Montagnier, HIV infection itself reflects an already deficient immune system; it is the immunodeficiency that causes chronic HIV infection and not vice versa. In the second part of this thesis, I elaborate on the relationship between HIV and Non-Aids Defining Cancers (NADCs), with particular reference to the role of cadmium. My results indicate that cadmium and HIV recognize as intracellular molecular targets two of the principal regulators of cell responses to stress, *i.e.* hsp90 and PARP. In human breast cancer cells, increased expression of hsp90 and PARP was associated with reduced cell proliferation and inhibition of angiogenesis. These results open the perspective of studying HIV-associated angiogenesis in NADCs with the goal of controlling the progression of NADCs *via* inhibition of angiogenesis. Thus, microorganisms, such as bacteria and viruses with selectivity for tumor cells or tumor micro-environments, have been investigated as potential anti-cancer arsenals for decades and it is conceivable that HIV infection could be associated with a reduced risk of developing breast cancer. These data might also explain the persistence of HIV in humans since at least the early 1900s. Finally, I studied the relationship between HIV infection and angiogenesis with particular reference to the strong affinity of HIV-Tat protein for heparin, a known regulator of angiogenesis. Plasma from healthy, HIV-negative, donors was digested and the supernatant was precipitated with 66% ethanol, dialyzed, and submitted to basic and acidic ion-exchange chromatography. ³⁵S-Labeled heparin as well as endogenous heparin bound to plasmatic peptides, forming acidic, basic, and neutral complexes. Endogenous neutral complexes (*i.e.*, those formed by human endogenous plasma heparin and peptides) were tested for angiogenic activity in CAM assay. Neutral complexes of human endogenous plasma heparin and basic plasma peptides induced a very strong angiogenic response. Treatment of neutral complexes with nitrous acid, which degrades heparin, abolished the angiogenic effect, thus demonstrating that it was due to the presence of heparin. These results demonstrate that some of the effects attributed to Tat protein are in reality due to endogenous heparin. Taken together, these results support the hypothesis that many of the effects attributed to HIV could in reality be due to cellular stress or to endogenous factors.

