One glaring problem with the HIV/AIDS hypothesis is that researchers have been unable to find enough HIV (actual virus) in people who test positive to explain compromised health. Even among patients suffering from the most severe AIDS-defining illnesses, HIV is never detected in quantities that could cause depletion of immune cells.[135]

In order to cause harm, a virus needs to infect at least one-third of all target cells, which in the case of AIDS are the T cells of the immune system, and kill these cells faster than they can be replaced. For example, with hepatitis or a common cold or flu, the responsible virus is readily found in quantities measuring millions or billions per milliliter (mL) of blood, and nothing can stop the virus from infecting all susceptible cells in the body except antiviral immunity. With AIDS, an average of only ten HIVs are found per mL of blood, and the normal sign of antiviral immunity, antibodies, are said to indicate illness.[136]

Another inconsistency with the idea that HIV causes AIDS is that HIV is non-cytotoxic. This means that when HIV replicates, it does not kill the host cell. Other viruses that cause disease are cytotoxic; they destroy the cell they infect when they reproduce, and rapidly claim 30% to 60% of target cells. Since the acceptance of HIV as the cause of AIDS in 1984, AIDS researchers have proposed a multitude of hypotheses about HIV's ability to provoke cell destruction through elaborate and as yet unproven indirect mechanisms while searching in vain for ways to explain how a non-cytotoxic virus can eliminate T cells and cause AIDS.

For almost a decade, the latency notion was used to justify some of the paradoxical qualities attributed to HIV. Experts claimed that HIV was a slow virus that remained inactive or latent for a period of time before becoming active and destroying immune cells. This idea gained universal acceptance despite the fact that significant quantities of HIV were not found when HIV should have been at its most active—when AIDS patients are acutely ill.[137]

The loose ends of the HIV hypothesis were finally thought to have been tied in 1995 with two papers by a team of AIDS researchers led by Dr. David Ho of the Aaron Diamond Research Center and Dr. George Shaw of the University of Alabama. Ho and Shaw offered what they characterized as indisputable evidence that HIV is active from the moment of infection, and present in quantities sufficient to cause massive T cell destruction.[138] They claimed to find an average of over 100,000 HIVs per mL of blood in AIDS patients by using a virus counting method based on the new technology of polymerase chain reaction (PCR).

Their papers asserted that HIV has always been present and active in enormous quantities, but that its presence and activity could not be measured by standard means, and that scientists were looking for the wrong thing to measure. Until 1995, the method for finding and quantifying a virus was by isolation of the virus. This simple, direct method has been successfully applied to every virus except HIV. Instead, proponents of viral load assert that scientists must look for fragments of genetic materials rather than isolating the virus.

PCR is an innovative technique that enables scientists to take a sample of blood containing an otherwise undetectable number of DNA or RNA molecules and produce detectable quantities of fragments from these few original molecules. *Forbes* magazine described PCR as "biotechnology's version of the Xerox machine." Dr. Kary Mullis, who won a Nobel Prize for this revolutionary creation, explains that "PCR makes it possible to identify a needle in a haystack by turning the needle into a haystack."[139] While PCR has provided many realms of science and industry with an effective new tool, its application to AIDS research has been far more misleading than useful.

Ho and other researchers employed PCR to find, not HIV, but fragments of RNA, the genetic material in the viral core. Using the logic that each HIV virus particle contains two HIV RNAs, they assumed that every two RNA pieces indicated by PCR must correspond to one HIV viral particle, and they called the sum of what is copied, multiplied, counted, and divided, "viral load."

Viral load has been celebrated in the press as an astounding breakthrough in AIDS research, and has won Dr. David Ho numerous awards including *Time* magazine's 1996 Man of the Year. Viral load is also the measure by which new AIDS drugs are deemed effective. Protease inhibitors were approved for use based solely on their alleged ability to reduce "viral load." The media, AIDS organizations and most AIDS doctors have uncritically accepted the viral load hypothesis as fact.

According to the viral load hypothesis, billions of HIV are busy infecting CD4 T cells every day from the moment a person is exposed, and killer immune cells (CD8 T cells) continuously destroy billions of CD4 cells that host active HIV infection, while new, uninfected CD4s quickly replace the billions destroyed by the killer cells.[140] Eventually, after one to 15 years of this microscopic battle, the virus wears out the immune system allowing AIDS-defining illnesses to develop. Proponents of viral load claim that the reason this incredible activity was never noticed before is that the CD4s replicate so quickly, few HIV infected T cells ever make it into the blood where they can be measured.[140]

However, the viral load hypothesis fails to answer two important and unsettling questions: If billions of HIV are present, why is PCR necessary to find them? And if PCR is the only way HIV can be detected, how is it possible for scientists to verify the results of PCR?

Another problem with viral load is that PCR detects and multiplies single genes, not virus, and most often only fragments of genes. When it detects two or three genetic fragments out of a possible dozen complete genes, this is not proof that all the genes or the complete **genome** are present, or that a complete HIV viral particle is present.[141] Further, a person can carry a whole retroviral genome in their cells for an entire lifetime without ever producing a single virus.

The FDA has not approved PCR viral load for HIV screening or for diagnostic purposes. The CDC acknowledges that the specificity and sensitivity of PCR are "unknown" and that "PCR is not recommended and is not licensed for routine diagnostic purposes."[142] The viral load test manufacturers' literature

Genome: A biochemical map or blueprint, the complete set of hereditary factors as contained in a single set of chromosomes.

warn "the test is not intended to be used as a screening test for HIV or as a diagnostic test to confirm the presence of HIV..."[143]

Although no research has specifically studied PCR tests on HIV negative subjects, the medical literature records many incidents of detectable levels of viral load found in persons who are HIV negative.[144]

A group of AIDS researchers from the Johns Hopkins School of Public Health recently lamented the inaccuracies of PCR viral load, describing the test as unreliable and expensive when several attempts to verify PCR produced conflicting results.[145] A recent paper by AIDS reappraiser Dr. David Rasnick published in the *Journal of Biological Chemistry* demonstrates that at least 99.8% of what viral load tests measure are noninfectious virus particles, and notes that PCR should be replaced by a test that measures actual HIV in blood plasma.[146]

Can You Count on Viral Load?

- Viral load tests detect and multiply only fragments of genes, not HIV.
- Test manufacturers warn that viral load cannot confirm the presence of HIV.
- The FDA has not approved viral load tests for diagnostic use.
- Viral loads are found in healthy people who test HIV negative.
- High viral loads do not correlate with low T cells or illness.
- Low viral loads do not correlate with high T cells or wellness.

Although PCR viral load tests are unable to distinguish infectious virus from bits of noninfectious genetic fragments, are incapable of measuring actual virus, and are not approved for diagnostic use, the tests are being used by AIDS doctors every day to diagnose infection with HIV and as a basis for prescribing long-term treatment with protease inhibitors, chemotherapy compounds like AZT, powerful antibiotics and other drugs. PCR is routinely used to diagnose HIV infection in newborns, and as justification to treat infants with AZT, Bactrim and other potent chemicals.

PCR measurements do not correlate with amounts of T cells, with clinical symptoms of AIDS, or with levels of co-culturable HIV.[147] In the only published study that compares viral load results with the detection of HIV by **co-culture**,

Co-culture: Detection of a virus in an artificial laboratory environment that contains replicating macroorganisms or cells mixed with plasma or immune cell

a process that can artificially induce production of virus even when the patient's blood contains no virus, 53% of HIV positive AIDS patients with detectable levels of viral load—many with loads topping 200,000 and 300,000—had zero co-culturable HIV.[147]

A number of mainstream AIDS experts refute Ho's portrait of wildly multiplying and abundant HIV. Their objections have been published in *Nature, Lancet* and other science journals. Some, like former government AIDS researcher Dr. Cecil Fox dismiss Ho's ideas as "unconfirmed mathematical speculation."[148] According to orthodox AIDS expert Dr. Michael Asher, "the numbers [of the viral load theory] just don't add up."[148] Another prominent AIDS specialist, Dr. Mario Roderer, considers the viral load model of HIV **pathogenesis** a dead issue since "several well-designed and informative studies provide the final nails in the coffin for...the two *Nature* papers," while noted AIDS researcher Dr. Jay Levy warns that "medicine suffers when one is misled by numbers that are not relevant to the clinical problem involved..."[149] Other critics have been more blunt, characterizing this new hypothesis of HIV as "a viral load of crap."[150]

Pathogenesis: The process by which a disease or disorder originates and develops. Pathogenesis applies particularly to the cellular and physiological events involved in these processes.

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