

**A short critique of the more egregious errors committed by Dr. Rebecca Culshaw in her book
*Science Sold Out: Does HIV Really Cause AIDS, and associated with the name of
The University of Texas at Tyler***

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Dr. Culshaw's overarching points:

- HIV probably does not exist. “(T)here is no bug” (p.70). Elsewhere, “...no one really understands how HIV actually works—or even, for that matter, what HIV really is” (pp.3-4); and
- AIDS, as a medically-defined syndrome, does not exist; it “is not a disease so much as a sociopolitical construct that few people understand and even fewer question” (p.7).

These claims are bereft of support in the biomedical literature. Attempting to establish them, Dr. Culshaw commits numerous errors and employs questionable scholastic practices. Several hundred false, misleading, or contradictory statements can be found in Dr. Culshaw's book, and we detail a small selection below. For further details and references, please see this longer [review](#).

Scholarly practices. Dr. Culshaw:

- leaves many, perhaps most, of her claims uncited and otherwise unsupported.

When references are given, Dr. Culshaw selectively quotes from the literature, citing and even misrepresenting older studies that suit her arguments when newer publications have revised (or exposed errors in) the cited works. Dr. Culshaw erroneously cites “Luc Montagnier's group,” (p.52), e.g., as proof that an HIV protein is really a common cellular protein—a claim that Dr. Montagnier has never made and has in fact disputed.

- presents the work, ideas, and even words of others without proper citation.

-A graph (p.2) is taken from the “rethinking AIDS” website and derives from a *Journal of Biosciences* review (Duesberg, et al, *Journal of Biosciences*, 2003, Fig.1b), but is not explicitly cited. Other unreferenced Peter Duesberg contributions include:

- an appeal to “Farr's Law,” (p.3);
- that anti-HIV antibodies (p.35) prove HIV is a harmless passenger virus;
- that many AIDS-defining conditions are unrelated to immunodeficiency (p.34); and
- that RT inhibitors are “nonspecific cell killers” (p.28).

-Writing (inaccurately) about the molecular biology technique of PCR in 1998, HIV/AIDS denialist [Mark Craddock](#) says of the method, “**There are very good reasons to believe that it does not work at all.**” On p. 47 of her book, Dr. Culshaw writes of PCR, “**But there are very good reasons to believe it does not work at all.**” She does not quote Craddock here. (And neither Craddock nor Culshaw gives or cites any “good reasons.”)

Concerning **Mathematics, Statistics, and Epidemiology**, Dr. Culshaw:

- graphically misrepresents and willfully distorts data, reducing estimated ranges to single data points.

To support her assertion (pp.1-3) that HIV prevalence has remained constant in the United States since at least 1985 (although all epidemiological evidence actually shows a steady increase), Dr. Culshaw uses the graph mentioned above that contains only the upper bound of historical estimated ranges of HIV prevalence through 2000, acknowledging neither that the original data consisted of ranges nor that they were rough estimates. Since the entire estimated range rises above one million after 2000, Dr. Culshaw switches to mentioning only the lower bound of the estimate, and even “rounds it down” to one million to keep the prevalence plot flat.

- presents two discrete values as a range (the converse of the above), managing to misrepresent a *misrepresentation* (a Peter Duesberg HIV/AIDS denialist review) of the primary data (pp.28-29).

Dr. Culshaw claims an “annual mortality rate” range of 6.7-8.8% for North American HIV-positive patients, compared with 1-2% worldwide (according to her, *because* the North Americans take antiretroviral drugs). Dr. Culshaw's lone source is a mendacious review first-authored by fellow HIV/AIDS denier Peter Duesberg. Yet even Duesberg does not claim that the 6.7% and 8.8% figures bracket an estimated range, or that they represent all of North America: the two values are derived from two separate and not immediately comparable surveys. The 6.7%

rate is a 28-month percentage, not “annual” at all. Further, not all of the survey participants were treated with antiretrovirals, as Dr. Culshaw implicitly (and Duesberg explicitly) claims. Many of the study participants were very sick at the start of the surveys; in the study with an 8.8% mortality rate, only patients with T-cell counts below 100 cells/microliter (many of them below 50) were included.

- confuses the basic statistical concepts of “absolute numbers” and “proportion” (pp.26-27).

Defying logic, Dr. Culshaw states that the 1993 CDC AIDS definition, (including, for the first time, patients with low CD4+ T-cell counts), doubled the number of AIDS patients and thereby ensured that the *number* of AIDS deaths would decline. Dr. Culshaw presumably means “proportion” here, but uses the word “number” twice. In fact, both the number *and* the proportion of AIDS deaths declined in the 1990s due to effective antiretroviral therapy—what Dr. Culshaw elsewhere calls “poisonous drugs” (p.43).

- makes basic arithmetic errors.

According to Dr. Culshaw, human endogenous retroviruses (HERVs—inactive genomic remnants of ancient infections) comprise 3% of the genome. This estimate predates the Human Genome Project; since about 2000, the best estimate is over 8%. Dr. Culshaw calculates that this “amount of genetic material is several hundreds of times larger than the genome of HIV” (p.87). Since the human genome has about 3.3 billion bases, and HIV less than 10,000, endogenous retroviral sequences contain not several hundred, nor even several thousand, but over ten thousand times the genetic information of HIV...even if we use Dr. Culshaw’s outdated (3%) estimate of the whole-genome proportion of genomic retroviral sequences. In another example, Dr. Culshaw refers to “literally thousands of people, most of whom are credentialed doctors and scientists” (p.12), who have placed their names on an internet petition disputing that HIV causes AIDS. In fact, well under 25% of the ~2500 signatories even claim to be MDs or PhD-level biological scientists. (And, unfortunately, HIV/AIDS denialists sometimes try to affect authority by claiming false credentials.)

- makes sensationalist claims based upon contrived figures and math.

Dr. Culshaw places the Positive Predictive Value (PPV) of HIV tests at “less than 2 percent” (p.42), without explaining how she derived this figure. Dr. Culshaw calls potential mass testing for HIV “a medical disaster,” in which “...tens of thousands of people would be terrorized and put on poisonous drugs for no reason.” Using Dr. Culshaw’s own math (“testing ten thousand” would result in “one hundred false positives”), and her assertion (p.36) that half of all adults in the US have been tested at least once, over one million US Americans should have tested false positive for HIV already. This has not happened.

- misrepresents epidemiological methods and studies, particularly as regards HIV in Africa (pp.85-86).

Dr. Culshaw’s claim that African HIV prevalence estimates are based solely upon data from antenatal clinics is outdated (many countries now incorporate population-based approaches); her suggestion that antibody tests are hardly used in Africa is 20 years out of date (tests were used in Uganda, and the results published, in 1985); and the accusation that HIV rates in Africa are “statistical contrivances with no basis in reality” (p.1) was never accurate. To Dr. Culshaw, the African AIDS epidemic is a “pure fabrication” (p.4), “merely a tactic to keep people supportive of AIDS, and thus maintain the funding of scientists and activists who work on AIDS...” (p.3).

- makes sweeping statements about antiretroviral pharmacology (p.29), HIV-related risks (p.31), and HIV transmission methods (p.45)

Dr. Culshaw provides no quantitation, evidence, or supporting citation. When she cites the primary literature, the referenced articles clearly refute Dr. Culshaw’s points, raising the question of whether Dr. Culshaw has read them.

(See also this [review](#) of a mathematical modeling article by Dr. Culshaw.)

Concerning **Scientific and Clinical Aspects of HIV/AIDS**, according to Dr. Culshaw:

- antiretroviral drugs kill more people than AIDS itself; liver toxicity due to protease inhibitors is the leading cause of death among “HIV-positives” (p.29).

AIDS is the leading cause of death among HIV-positive people. According to a large study of HIV-positive patients in resource-rich countries, liver-related deaths are second at around 14 or 15%. Overwhelmingly (~80%), these deaths are due to viral hepatitis; alcohol and injection drug use are other contributing factors. The liver function of

patients taking protease inhibitors is monitored on a regular basis and therapeutic strategy is changed if necessary to optimize liver function. Dr. Culshaw's claim is false and dangerous for those who look to her as an authority.

- “antiretroviral drugs” is a misnomer (p.86). These are merely “nonspecific killers” of all growing cells (p.28).

Even the much-reviled drug AZT (zidovudine) has a higher affinity (by several orders of magnitude) for the HIV reverse transcriptase enzyme than for most cellular polymerases.

- HIV can mutate only by errors in reverse transcription and cannot recombine like the “influenza viruses” with their “segmented chromosome (sic)” (p.29); the assumed mutation rate of HIV is far too high (p.55); no virus could survive with such a mutation rate (p.29); and HIV cannot develop drug resistance (p.29).

Dr. Culshaw states specifically that recombination is impossible for HIV, but recombination is one of the most important and best-understood engines of HIV genetic diversity. Other RNA viruses have mutation rates comparable to (or higher than) that of HIV. Also, HIV drug resistance is common, well-documented and understood, and important in the clinical setting.

- HIV “is not highly active during final AIDS stages” (p.86).

The amount of HIV in the blood is in fact often at its highest levels during end-stage disease.

- HIV is found in only half of AIDS patients (p.19).

HIV is found in 100% of AIDS patients.

- HIV tests “were *never* originally intended as diagnostic tools” (p.35), and “are some of the worst tests ever manufactured in terms of standardization, specificity, and reproducibility” (p.36). Dr. Culshaw claims “very good reasons to believe [PCR amplification of HIV] does not work at all” (p.47), and that “*all laboratory tests used to assess the severity of HIV infection are virtually worthless*” (italics in original, p.48).

No references are given to support these wholly inaccurate claims. HIV tests are among the most specific and sensitive available for any disease.

- “endogenous retroviruses are primarily transmitted perinatally, from mother to child” (p.45).

Endogenous retroviruses, by definition, are transmitted through the germ line like all other genetic elements, half from the father, half from the mother. No known HERV is infectious or has infected a child perinatally (during the birthing process).

- “some human endogenous retroviruses...not only produce (sic—elicit?) antibodies that cross-react with the HIV test..., but they have RNA sequences that are similar to those of HIV, and these sequences are very likely to be mistaken by the viral load PCR as fragments belonging to HIV” (pp.44-45).

HERV proteins are made rarely, and antibodies to them are found even less frequently. HIV and HERVs belong to different classes of retroviruses. Furthermore, few if any endogenous sequences share sufficient sequence identity with HIV to be amplified by HIV RT-PCR even if they were transcribed and present in virus-like particles outside the cell. The validation process of all reliable RT-PCR assays must confirm by product sequencing that such nonspecific amplification does not occur.

- “proper electron micrographs” (p.46) of HIV have never been published, so HIV may not actually exist.

Electron micrographs of HIV were published in 1983, before anyone even knew exactly what the virus was and months before HIV was announced as the cause of AIDS. Since then, thousands of images have been produced, and hundreds published.

- six HIV proteins are not “specific to HIV”; leading HIV researchers consider one HIV protein, gp41, to be a well-known cellular protein; this cellular protein sticks to other copies of itself to form further mistaken “HIV” proteins; several additional “HIV” proteins are components other viruses (pp.40-41, 52).

The genetic sequence of HIV reveals that all of the HIV proteins Dr. Culshaw mentions are unique to HIV. Some have distant relatives in other retroviruses, but none of these proteins is derived from the human genome.

- “...other viruses (cytomegalovirus and herpes virus, to give just two examples) were far more prevalent in AIDS patients than HIV ever was...” (p.63).

These words underscore that Dr. Culshaw is out of her depth in the virology arena. Cytomegalovirus (CMV) is a herpes virus; there is no single “herpes virus.” CMV and Epstein-Barr virus (EBV) were considered as causes of AIDS in the early days of AIDS research. Epidemiological and mechanistic inquiries failed to support these hypotheses (for example, both CMV and EBV are prevalent in the HIV-negative population without associated immune deficiency), and they were abandoned.

Among the many examples we do not analyze here, Dr. Culshaw exaggerates the influence of conditions such as pregnancy on HIV tests (pp.85-86), provides a misleading description of Immune Reconstitution Syndrome (p.29), states that Kaposi’s Sarcoma is observed only in homosexuals (p.32), and disseminates falsehoods about juvenile and adult immune systems differences (pp.32, 63-65). Dr. Culshaw claims to have studied HIV for over ten years; we see little evidence of this in her book.

On the **History of HIV/AIDS:**

Dr. Culshaw makes inaccurate statements concerning the first AIDS patients (p.59); the circumstances under which the first described AIDS cases were discovered (pp.23-24); the role of Dr. Michael Gottlieb (her insinuation that he invented the syndrome as a ‘clever idea,’ then searched for patients who fit his criteria, is potentially libelous as well as being insulting to a senior physician); and the evidence for HIV sexual transmission, the epidemiological rigor of early investigators, and the first cases of AIDS in Africa (all, p.61).

Dr. Culshaw also states that the discovery of HIV as the cause of AIDS was announced by press conference in 1984 “before any supporting evidence had been published or critiqued in the scientific literature” (p.8, see also p.19). Actually, numerous peer-reviewed papers on a possible retroviral cause were published prior to the announcement, well before the virus was even called ‘HIV’.

On **Legal Issues:**

- “Every state in the U.S. and every province in Canada maintain (sic) a list of ‘HIV carriers’ in that region,” and this information is used to discriminate against HIV-positive individuals (p.49).

Confidential name-based reporting of positive HIV tests is not done by all states (some use codes, instead). Dr. Culshaw may be confusing HIV and AIDS (as she does elsewhere in her book, calling HIV tests “AIDS tests” and antiretroviral drugs “AIDS drugs”), since AIDS diagnoses are reportable by name in all states. In any case, the information is kept strictly confidential.

- HIV-positive “women are encouraged to abort their babies...they are forced to take antiretroviral drugs, and these drugs are forced on their babies as well. The babies themselves must be born by Cesarean section, and in many states the highly beneficial practice of breastfeeding is illegal” (p.49).

These unsupported, false claims amount to fear-mongering. US courts have consistently held parents’ rights and women’s reproductive rights above the interests of a fetus or of public health. We have found no case of court-ordered Cesarean section delivery for an HIV-positive mother. Breastfeeding (a risky practice when HIV is present) is manifestly legal in all states. To our knowledge, only in one case (in Oregon, 1999) has a state forced one mother, at the request of her doctor, to reduce HIV transmission risks and abandon breastfeeding in favor of formula. Administration of drugs to children over parental objection may occur in some rare cases, but in the highest-profile case to date (Emerson, 1998), a Massachusetts court ruled in favor of Valerie Emerson, who refused to give antiretroviral therapy to her youngest HIV-positive son even though his sister had already died of AIDS.