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Here is a draft that is being reviewed now by Flossie, Mika and Sarung. There will be a paragraph added at the beginning giving a very brief history of animal retrovirus work. We'll be working on a revised version Friday and early next week. If you have any input please call. The appropriate references are being added. If you feel Mr. Robertson should see this in draft form, please give him a copy. Other. se I'll send him the next draft version

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Brief Historical Summary  
of the  
Discovery and Demonstration of Proof  
of the  
Cause of AIDS  
as a  
Retroviral Disease

Retroviruses

- 1970-71 - H. Temin<sup>1</sup> hypothesized that in cells infected with RNA tumor viruses the RNA is transcribed into DNA by reverse transcriptase (RT); this enzyme, present in all animal retroviruses, was discovered by H. Temin and D. Baltimore.<sup>2</sup>
- 1970-75 - R. Gallo, S. Spiegelman and others<sup>3-5</sup> independently developed useful sensitive specific assays for human retroviruses.
- 1976 - D. Morgan, F. Ruscetti and R. Gallo<sup>6</sup> discovered T-cell growth factor, or Interleukin-2 (Il-2), necessary for long term in vitro cultivation of human T-cells, in which human retroviral infection could be detected by assay for RT.
- 1978-82 - R. Gallo and coworkers<sup>7</sup> isolated and characterized human retroviruses designated HTLV-I and HTLV-II, advancing further the technology for human retrovirus cultivation.

AIDS

- 1981 - M. Gottlieb<sup>8</sup> diagnosed a newly recognized disease called AIDS.
- 1982 - Epidemiological evidence suggesting that AIDS is a new infectious disease was developed by the Center for Disease Control.<sup>9</sup>
- R. Gallo and M. Essex<sup>10,11</sup> proposed the hypothesis that AIDS was caused by a human T-cell tropic retrovirus.
- 1983 (May) - F. Barre-Sinoussi, J. C. Chermann and L. Montagnier<sup>12</sup> reported the isolation and identification of a new cytopathic retrovirus different from HTLV-I and HTLV-II in a patient with lymphadenopathy syndrome; the HTLV-I and II reagents and Il-2 used in these studies were provided by R. Gallo.
- M. Essex<sup>13</sup> detected antibodies that are weakly cross-reactive with HTLV-I protein in 35% of AIDS patients supporting the idea that a new retrovirus may be the cause of AIDS.

- (September) - At the Cold Spring Harbor Symposium on Human T-Cell Leukemia/Lymphoma Virus, L. Montagnier and coworkers<sup>14</sup> reported additional virus isolations from AIDS patients, and serum antibodies directed against this virus (named LAV) in 60% of patients with lymphadenopathy syndrome and in 20% of patients with AIDS. They also reported studies on virus morphology and protein composition, and demonstrated the selective affinity of the virus for T-4 helper lymphocytes.
- L. Montagnier provided to R. Gallo LAV virus in an extracellular form.
- 1984 (Spring) - M. Popovic, R. Gallo and coworkers<sup>15</sup> reported mass production in a cell line (named H9) of retrovirus (named HTLV-III) isolated from AIDS patients; they also reported 48 isolations and the detection of antibodies in more than 90% of several hundred sera of patients with AIDS.
- R. Gallo provided to L. Montagnier HTLV-III virus in a permanently virus-producing cell line.
- 1984 (July) - A study from the Center for Disease Control and the Pasteur Institute<sup>16</sup> revealed positive antibody tests in sera from 41% of AIDS patients.
- 1984-  
early 1985 - F. Wong-Staal, M. Popovic, B. Hahn, G. Shaw, R. Gallo and coworkers<sup>17</sup> performed molecular gene cloning of the AIDS virus; they discovered heterogeneity in the viral envelope and the presence of virus in the brain.
- 1985 - The nucleotide sequence of the AIDS virus genome was determined independently at the Pasteur Institute (S. Wayne-Hobson and coworkers<sup>18</sup>), at the NIH (L. Ratner, F. Wong-Staal, R. Gallo and coworkers<sup>19</sup>) and at Genentech, Inc.<sup>20</sup>

[References to be added.]