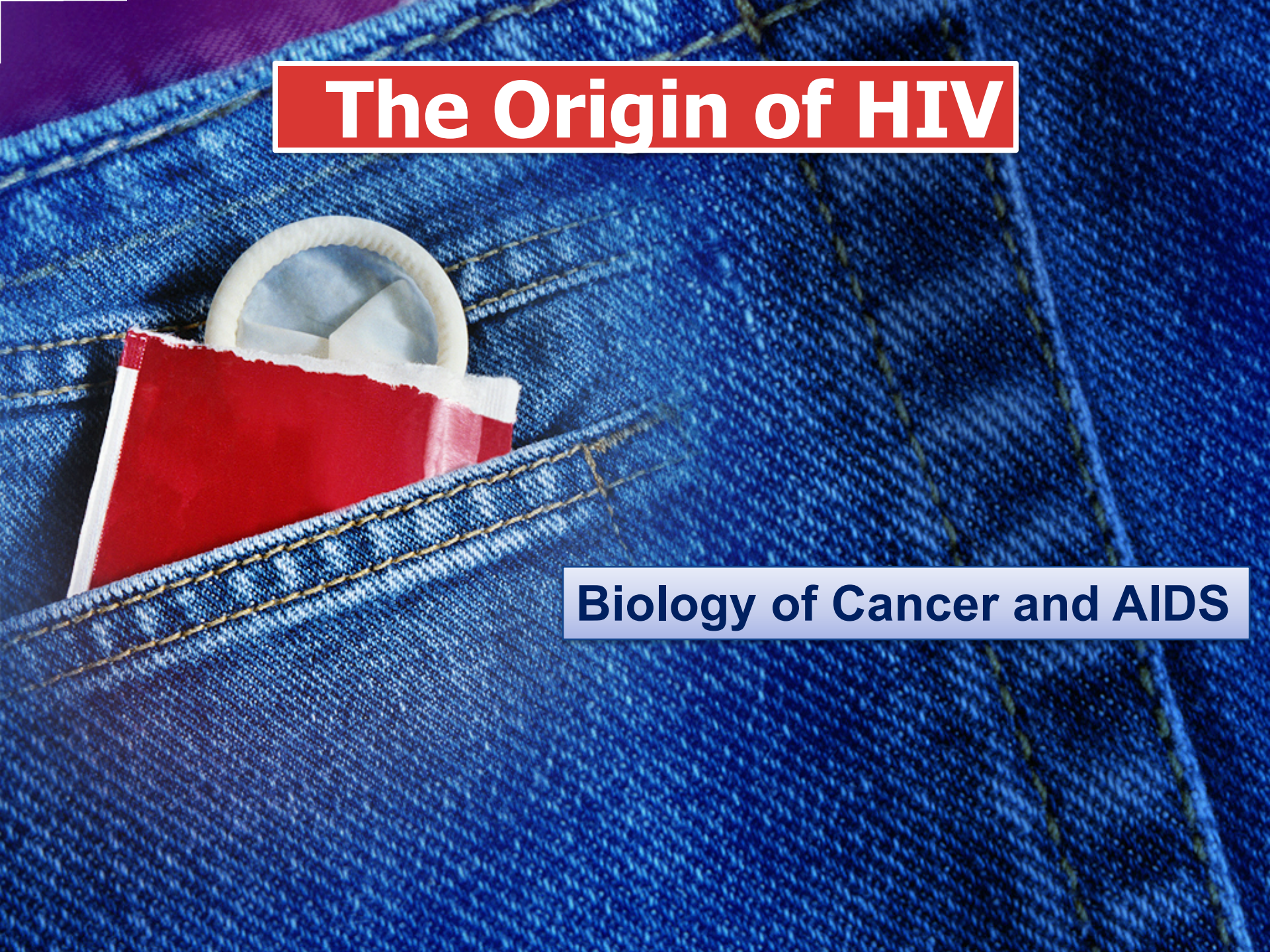


The Origin of HIV

A close-up photograph of a blue denim jeans pocket. A red condom is partially inserted into the pocket, with its white, ribbed tip visible. The background is the textured blue fabric of the jeans.

Biology of Cancer and AIDS

Oliver JE, Wood T. [Medical Conspiracy Theories and Health Behaviors in the United States](#). *JAMA Intern Med*. Published online March 17, 2014. doi:10.1001/jamainternmed.2014.190

According to the survey, the following six medical conspiracy theories were polled:

Conspiracy Narrative	Heard Before	Agree	Neither Agree nor Disagree	Disagree
FDA deliberately preventing public from getting natural cancer cures because of pressure from drug companies	63%	37%	31%	32%
Health officials know cell phones cause cancer but do nothing to stop it because large corporations won't let them	57%	20%	40%	40%
CIA deliberately infected large numbers of African Americans with HIV under the guise of hepatitis immunization	32%	12%	37%	51%
Global dissemination of genetically modified foods by Monsanto Inc is part of secret program, "Agenda 21," by Rockefeller and Ford foundations to reduce world population	19%	12%	46%	42%
Doctors and government still want to vaccinate children, knowing these vaccines cause autism and other psychological disorders	69%	20%	36%	44%
Public water fluoridation is secret way for chemical companies dispose of dangerous byproducts of operating phosphate mines	25%	12%	41%	46%

5 states make up almost **half** of new diagnoses in the U.S in **2011**.



23,923 of **49,273**
new infections

Globally, **33.4 million** people are living with HIV/AIDS.

25 million have died since **1981**.



97% of people with HIV live in developing and moderate-income nations.



28.6 million people in poor and moderate-income countries should be on antiretroviral medication.

Only **1/3** of these people are getting this treatment.



180,000 Americans aged 13 and older don't know they have HIV.

636,000 Americans diagnosed with AIDS have died.

49,273 Americans were newly diagnosed with HIV in 2011.

32,052 developed AIDS

1992
250,000 reported cases of AIDS

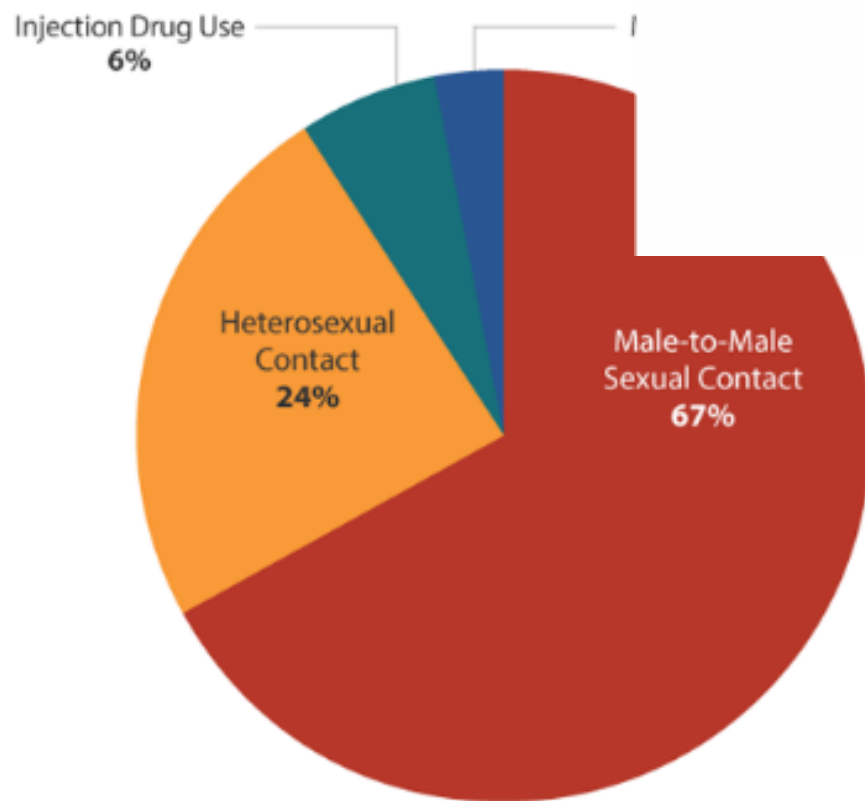


2004
1,000,000 reported cases of AIDS

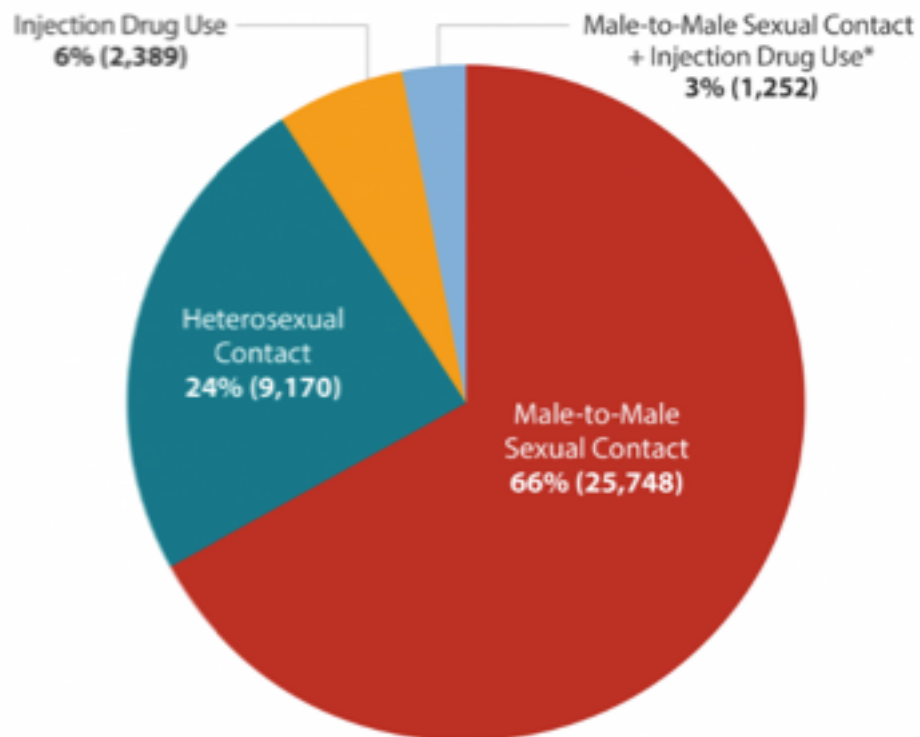




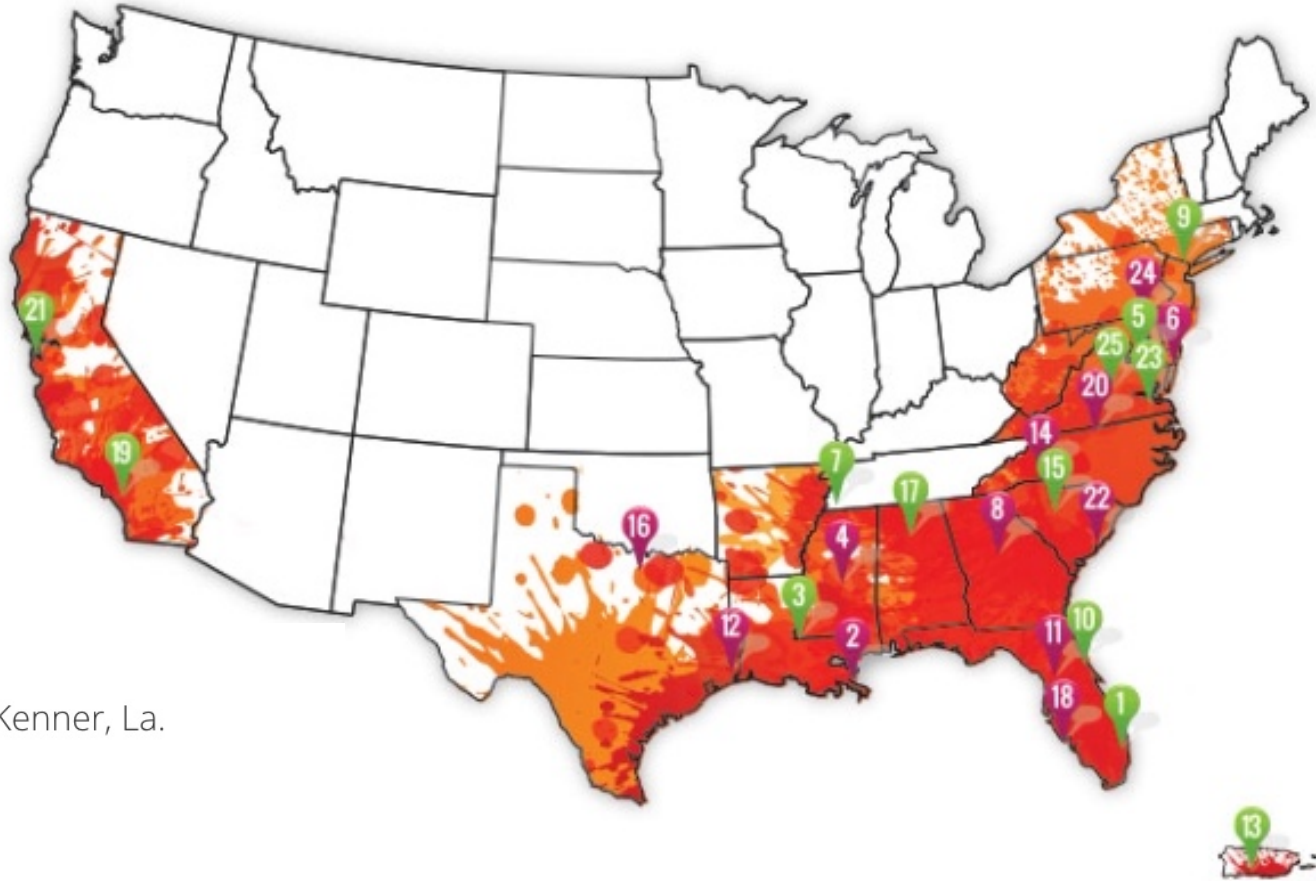
New HIV Diagnoses by Transmission Category (2014, n=44,000)



New HIV Diagnoses in the United States and 6 Dependent Areas by Transmission Category, 2017



A Concentrated Epidemic 2011



1. Miami
2. New Orleans–Metairie–Kenner, La.
3. Baton Rouge, La.
4. Jackson, Miss.
5. Washington, D.C. (includes Va., Md., and W.Va. suburbs)
6. Baltimore–Towson, Md.
7. Memphis, Tenn. (includes Miss. and Ark. suburbs)

Basic Facts about HIV/AIDS

Modes of HIV/AIDS transmission:



Sexual intercourse



Blood and blood products



Sharing of needles/syringes



From infected mother to her child

Ways to prevent getting infected with HIV/AIDS:



Abstinence



Be faithful



Condoms



Don't share needles

HIV/AIDS cannot be transmitted through:



Toilet



Sharing utensils



Mosquito



Kansas Quarantine Bill Has HIV/AIDS Advocates Up in Arms

by David Freedlander | Apr 2, 2013 4:45 AM EDT

Would a measure passed by the state legislature lead to the quarantine of people with HIV and AIDS? Kansas officials say no—but in a state with anti-sodomy laws still on the books, activists are worried.

Could Self-Testing Help Overcome HIV/AIDS Epidemic?

Worldwide research shows testing done in privacy of

Almost 1,000 of Okla. dentist's patients get tested for HIV, hepatitis

ing people test themselves for HIV is effective and could help bring the , a new study

WHO welcomes news that a child born with HIV now appears functionally cured



5 March 2013 -- WHO welcomes a new case report, which found an HIV-infected infant treated with triple antiretroviral drugs in the first 30 hours of life appeared to be functionally cured after taking treatment for 18 months, but notes the need for more studies to confirm and replicate the findings.

[Read the statement](#)

, combined with tection and f HIV, the virus that

lecting samples from n-invasive, s within 20 minutes, ed April 2 in the

The Year 1981...



Important note: Information in this article was accurate in June 1981. The state of the art may have changed since the publication date.

MMWR Morbidity and Mortality
Weekly Report

Pneumocystis Pneumonia - Los Angeles

MMWR Weekly, June 5, 1981 / 30(21):250-2

Centers for Disease Control and Prevention

In the period October 1980-May 1981, 5 young men, all active homosexuals, were treated for biopsy-confirmed *Pneumocystis carinii* pneumonia at 3 different hospitals in Los Angeles, California. Two of the patients died. All 5 patients had laboratory-confirmed previous or current cytomegalovirus (CMV) infection and candidal mucosal infection. Case reports of these patients follow.

Patient 1: A previously healthy 33-year-old man developed *P. carinii* pneumonia and oral mucosal candidiasis in March 1981 after a 2-month history of fever associated with elevated liver enzymes, leukopenia, and CMV viremia. The serum complement-fixation CMV titer in October 1980 was 256; in May 1981 it was 32.* The patient's condition deteriorated despite courses of treatment with trimethoprim-sulfamethoxazole (TMP/SMX), pentamidine, and acyclovir. He died May 3, and postmortem examination showed residual *P. carinii* and CMV pneumonia, but no evidence of neoplasia.

Reported by **MS Gottlieb, MD**, HM Schanker, MD, PT Fan, MD, A Saxon, MD, JD Weisman, DO, Div of Clinical Immunology-Allergy; Dept of Medicine, UCLA School of Medicine; I Pozalski, MD, Cedars-Mt. Siani Hospital, Los Angeles; Field services Div, Epidemiology Program Office, CDC.

Editorial Note: *Pneumocystis pneumonia* in the United States is almost exclusively limited to severely immunosuppressed patients (1). The occurrence of pneumocystosis in these 5 previously healthy individuals without a clinically apparent underlying immunodeficiency is unusual. The fact that these patients were all homosexuals suggests an association between some aspect of a homosexual lifestyle or disease acquired through sexual contact and *Pneumocystis pneumonia* in this population. All 5 patients described in this report had laboratory-confirmed CMV disease or virus shedding within 5 months of the diagnosis of *Pneumocystis pneumonia*. CMV infection has been shown to induce transient abnormalities of in vitro cellular-immune function in otherwise healthy human hosts (2,3)...

Strange Diseases

- ❑ Kaposi's Sarcoma (KS): rare form of relatively benign cancer that tends to occur in older people
- ❑ July 1981: 41 cases of aggressive KS occurred amongst young gay men in New York and LA (**NYT Article**)



[RARE CANCER SEEN IN 41 HOMOSEXUALS

By LAWRENCE K. ALTMAN
Published: July 3, 1981

Doctors in New York and California have diagnosed among homosexual men 41 cases of a rare and often rapidly fatal form of cancer. Eight of the victims died less than 24 months after the diagnosis was made.

The cause of the outbreak is unknown, and there is as yet no evidence of contagion. But the doctors who have made the diagnoses, mostly in New York City and the San Francisco Bay area, are alerting other physicians who treat large numbers of homosexual men to the problem in an effort to help identify more cases and to reduce the delay in offering chemotherapy treatment.

The sudden appearance of the cancer, called Kaposi's Sarcoma, has prompted a medical investigation that experts say could have as much scientific as public health importance because of what it may teach about determining the causes of more common types of cancer. First Appears in Spots

 SIGN IN TO
E-MAIL

 PRINT

127 Defining Moments:

[Click here to submit](#)

127 HOURS



AIDS: The Early Years

Memorandum

DATE JUL 30 1981

FROM Director
Centers for Disease Control

SUBJECT Kaposi's Sarcoma and Opportunistic Infections

TO Vincent T. DeVita, Jr., M.D.
Director, National Cancer Institute
Through: Director, National Institutes of Health

Bruce - why don't you know someone for Mr. Highsmith, John Ziegler was one first experienced in homo penis. Chude Vogel to meet. Please say hi. Wm

A recently discovered outbreak of serious illnesses presents an opportunity for the National Cancer Institute and the CDC to collaborate to address a problem of significant public health concern and scientific importance. The attached copies of the MMWR contain reports of 15 cases of *Pneumocystis carinii* pneumonia and 26 cases of Kaposi's sarcoma (KS) among homosexual men in New York City and California. All patients tested had evidence of previous or current cytomegalovirus infection, while some were reported to be severely immunosuppressed. To date, we have received case reports from 105 patients with KS and/or serious opportunistic infections without known underlying disorders. Forty-eight of 51 men with histopathologically diagnosed KS were less than 50 years of age and 50 were homosexual. Ten of those 51 men have died. Due to the unusual presentation and distribution of these KS cases, it is not surprising that misdiagnoses, delays in diagnosis, and uncertainties about therapy have been frequently reported.

Currently, surveillance and epidemiologic studies are needed to define the scope of the KS problem. Studies designed to define possible microbiologic, immunologic, and/or toxic roles in oncogenesis are also needed. These investigations could be coordinated with therapy trials.

The CDC has formed a multidisciplinary task force and has begun active surveillance and case investigation. Dr. James Curran, coordinator of the task force, and others at CDC, have already been in communication with investigators in several NCI units. They have quickly learned of the depth of experience and expertise NCI has to offer—specific to KS as well as all areas of cancer investigation.

In order to encourage collaboration in current investigative efforts, we would appreciate it if you would name an NCI contact person to coordinate interagency communication with Dr. Curran (PTS 236-3935).

William C. Wainwright
William H. Foege, M.D.
Assistant Surgeon General

Attachments

- A 1981 memo from the CDC director requests the NCI to collaborate with the CDC on studies of Kaposi's sarcoma.



The Story Unfolds

- ❑ **April 22, 1984:** Dr. Mason, CDC -"*I believe we have the cause of AIDS.*"
- ❑ Researchers at Pasteur Institute discovered virus the previous year – LAV
- ❑ **April 23, 1984:** US Health and Human Services Secretary Margaret Heckler announced that Dr. Robert Gallo of the NCI had isolated AIDS virus

What is AIDS?

❑ Acquired Immune Deficiency Syndrome

- Acquired means you can get infected with it (not inherited)
- Immune Deficiency means a weakness in the body's system that fights diseases.
- Syndrome means a group of health problems that make up a disease.

❑ The term **AIDS** refers to an advanced stage of HIV infection, when the immune system has sustained substantial damage.

❑ *Not everyone who has HIV infection develops AIDS*

FRONTLINE.

Opportunistic infections such as pneumocystosis or malignancies such as Kaposi's sarcoma can signal the final stage of HIV infection, AIDS

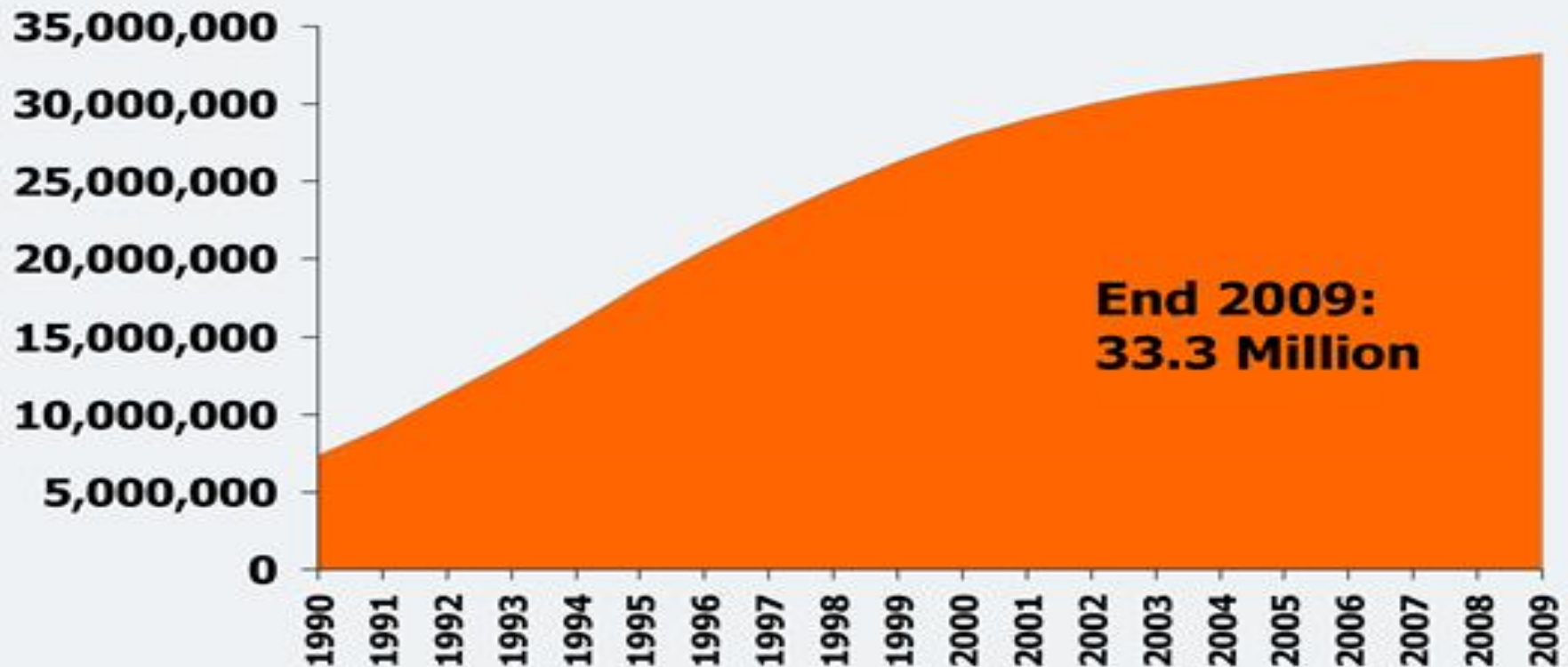


ADAM.

<http://www.pbs.org/wgbh/pages/frontline/aids/view/>

Global HIV Trends

Global Estimates of People Living with HIV/AIDS, 1990-2009



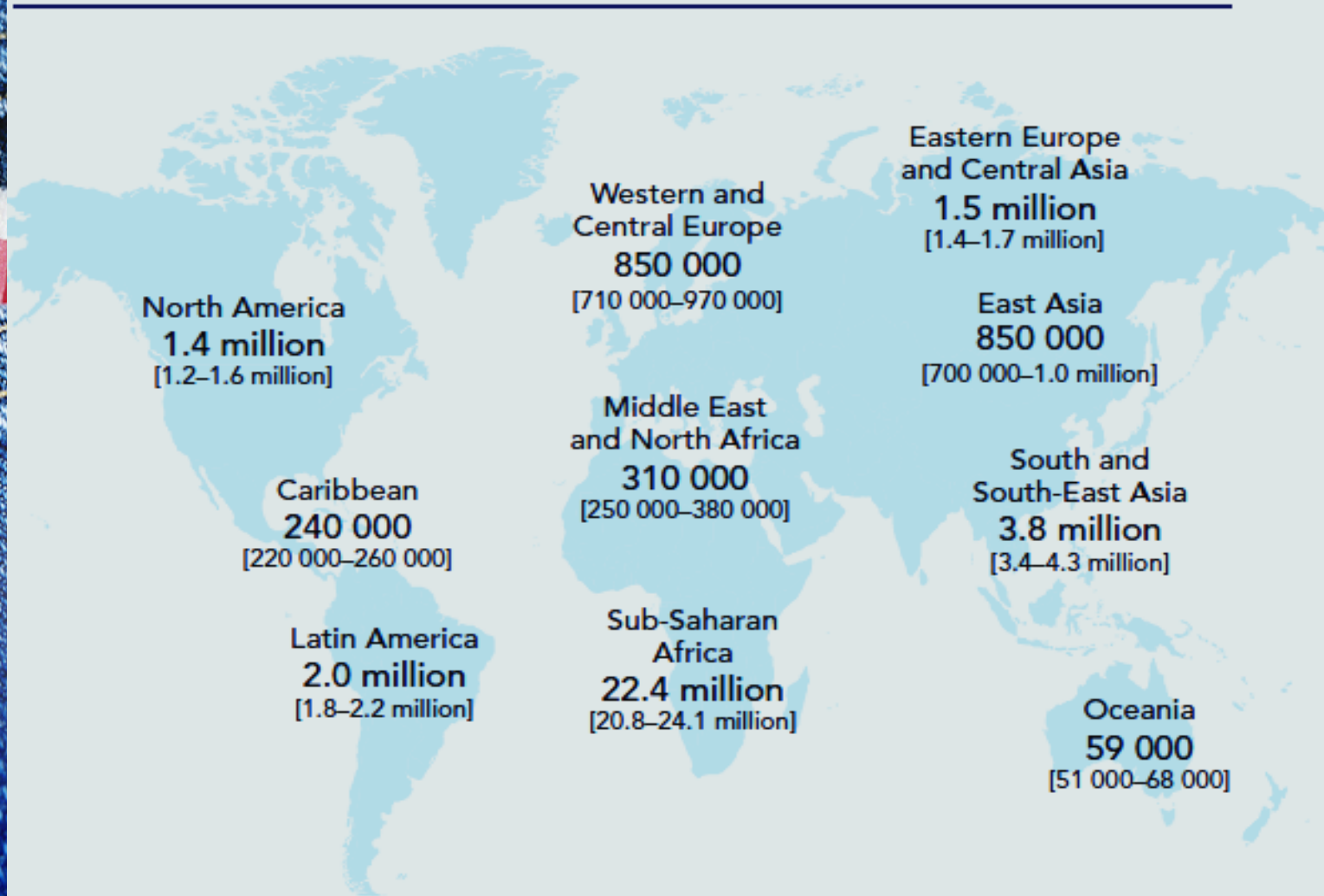
SOURCE: Kaiser Family Foundation, based on UNAIDS, *Report on the Global AIDS Epidemic*, 2010 and Special Data Request.



■ Around 67% of people living with HIV are in sub-Saharan Africa.

HIV Prevalence Worldwide

Adults and children estimated to be living
with HIV, 2008



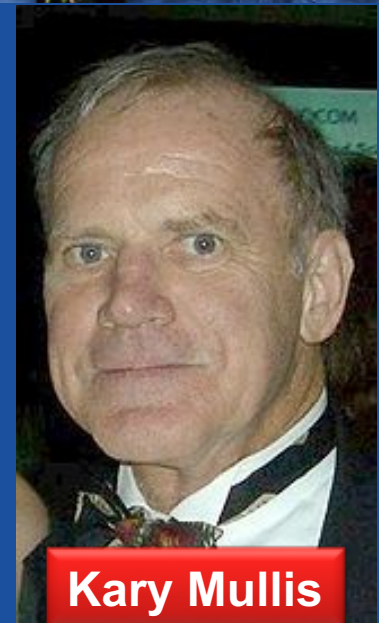
Majority of HIV Positive Individuals Live in Developing World



The AIDS epidemic has left behind 15 million AIDS orphans

Does HIV Cause AIDS?

- ❑ HIV is the virus which causes the fatal disease of the immune system, AIDS
- ❑ There are several critics who say AIDS is not caused by HIV infection
- ❑ HOW MUCH LONGER CAN WE AFFORD THE AIDS VIRUS MONOPOLY? Peter H. Duesberg. *Department of Molecular and Cell Biology, Stanley Hall, UC Berkeley, Berkeley, CA 94720, USA*
- ❑ Kary Mullis Ph.D. is a Biochemist who got the 1993 Nobel prize for his invention of the Polymerase Chain Reaction (PCR)



Peter Duesberg & AIDS Dissidents

- ❑ Proposed hypothesis that the various American and European diseases identified as AIDS are brought on by the long-term consumption of recreational drugs and/or AZT
- ❑ Immune system breakdown in Africa can be explained by malnutrition, poor drinking water and infection overload
- ❑ Retroviruses like HIV must be harmless to survive, because after reverse transcription from RNA to DNA, they depend on cell division to replicate
- ❑ South African President Thabo Mbeki voiced support for the Duesberg hypothesis and suffered substantial political fallout as a result

Mbeki and AIDS

BBC NEWS

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Last Updated: Friday, 26 September, 2003, 19:50 GMT 20:50 UK

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Mbeki stirs up Aids controversy

By Verity Murphy
BBC News Online

Despite the fact that South Africa is home to more people living with HIV than any other country in the world its President Thabo Mbeki denies knowing anyone affected by the disease.

On Friday Mr Mbeki's spokesperson Bheki Khumalo reportedly confirmed that the president had made the controversial remark in an interview with the Washington Post in New York this week.

"Personally, I don't know anybody who has died of Aids," Mr Mbeki said, adding when asked whether he knew anyone with HIV, "I really, honestly don't".



Mbeki's stance on Aids has long been controversial

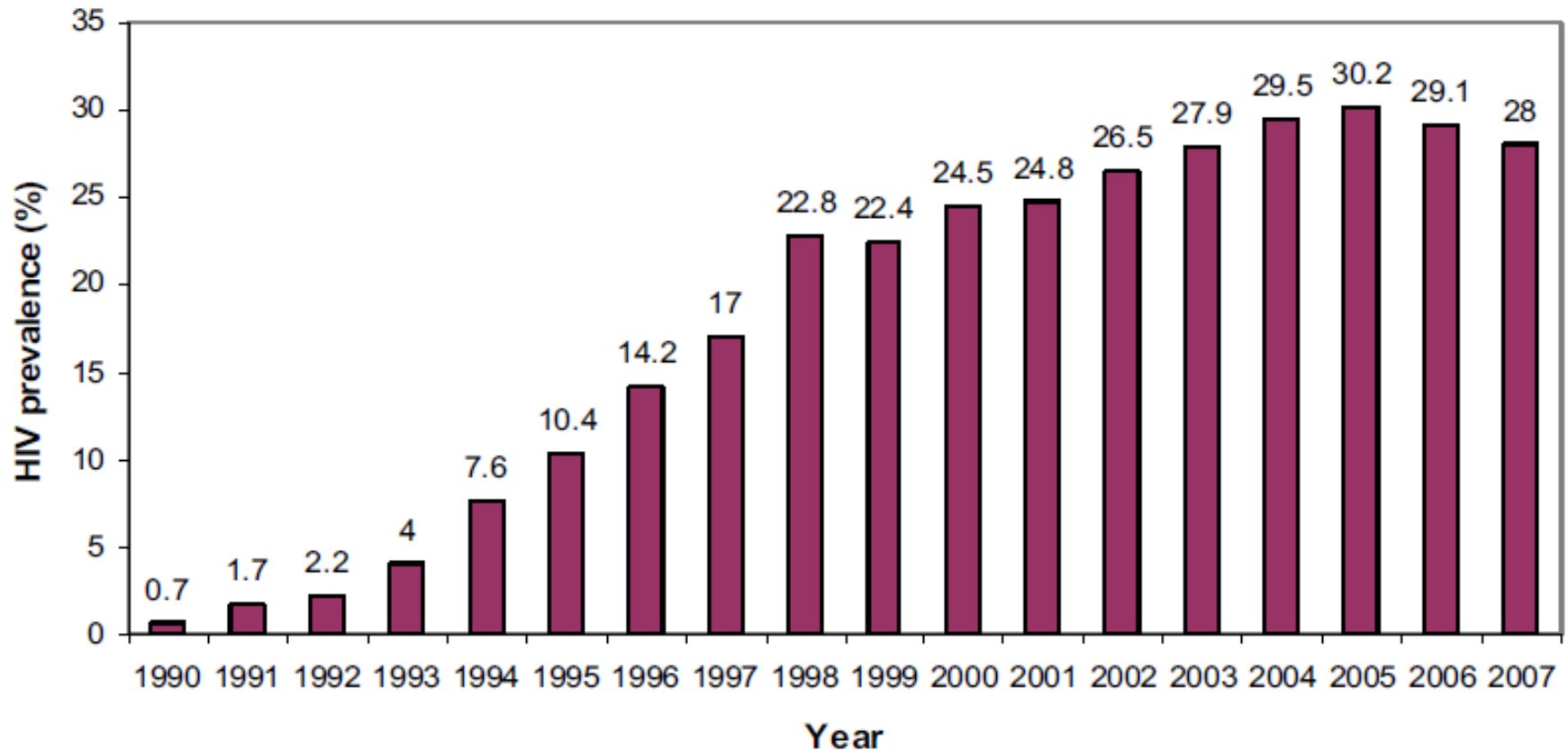
XIII International AIDS Conference

Durban, South Africa



South African President Thabo Mbeki has provoked controversy by delaying access to medications that can prevent mother-to-infant transmission of HIV, as well as soliciting the advice of so-called "dissident" or "denialist" scientists who deny that AIDS is caused by HIV.

National HIV Trends in South Africa 1990 - 2007



- An estimated 5.7 million people were living with [HIV](#) and [AIDS](#) in South Africa in 2009, more than in any other country. It is believed that in 2008, over 250,000 South Africans died of AIDS
- Prevalence is more than 15 percent among those aged 15-49
- Almost 1 in 3 women aged 25-29, and over ¼ of men aged 30-34, are living with HIV

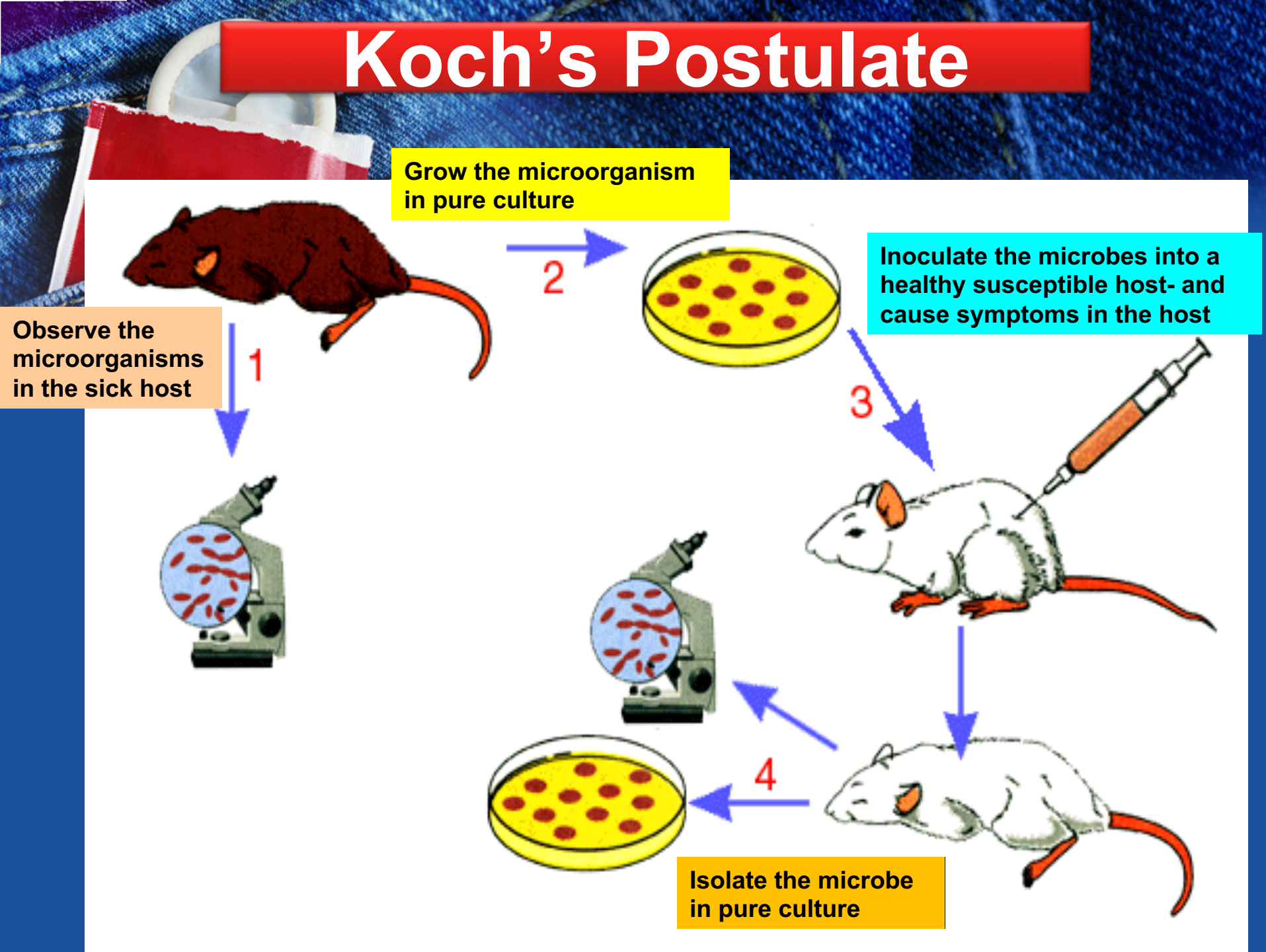
Koch's Postulate

Grow the microorganism
in pure culture

Inoculate the microbes into a
healthy susceptible host- and
cause symptoms in the host

Observe the
microorganisms
in the sick host

Isolate the microbe
in pure culture



Does HIV Really Cause AIDS?

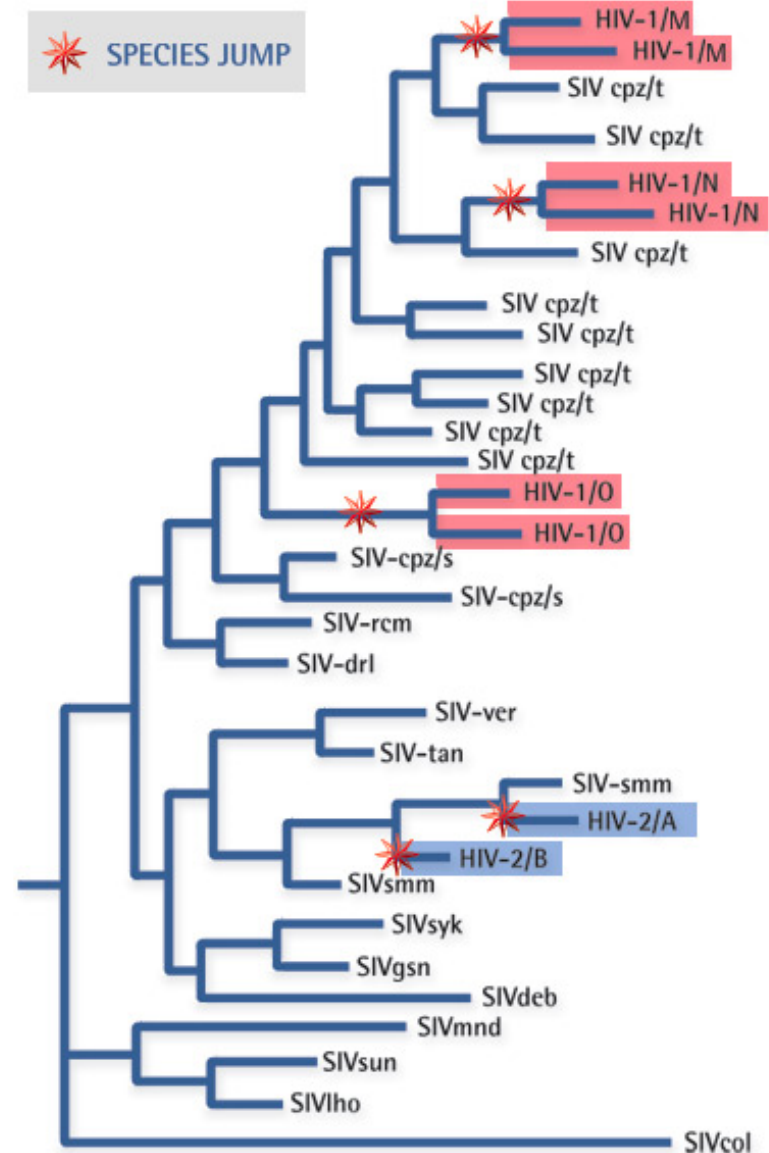
Plasma RNA concentration (copies/mL of blood)	Proportion of patients who developed AIDS within 6 years
<500	5.4%
501–3,000	16.6%
3,001–10,000	31.7%
10,001–30,000	55.2%
>30,000	80.0%

(Source: [Mellors](#) et al. *Ann Intern Med* 1997;126:946)

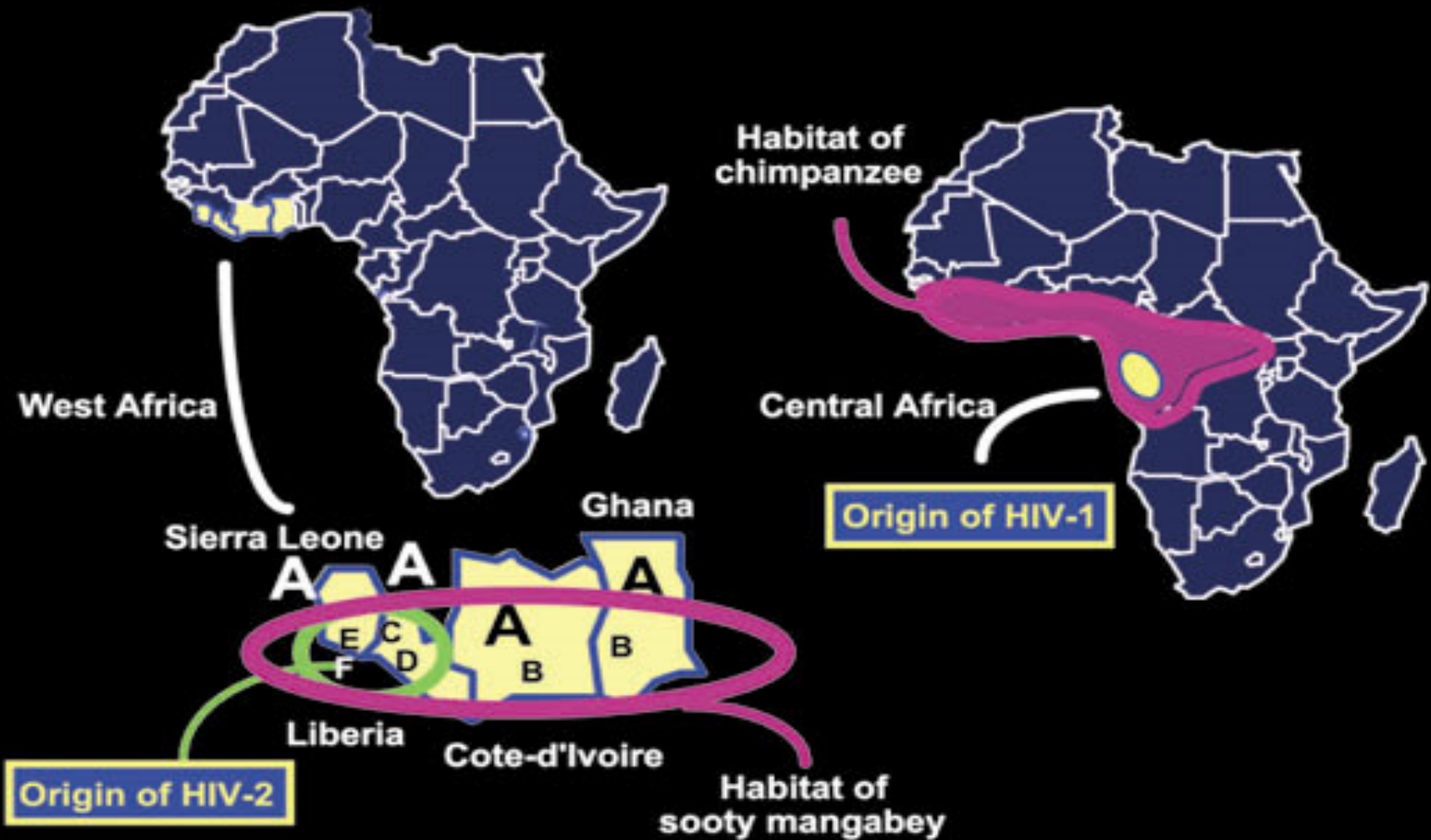
- ☐ HIV isolated from virtually every patient with AIDS; has been cultured or confirmed by molecular techniques (PCR)
- ☐ Accidental exposure to HIV in lab workers resulted in development of AIDS (no other risk factors present)
- ☐ Animal models of human AIDS
- ☐ HIV is the only factor that predicts whether a person will develop AIDS (disease found in Individuals from diverse backgrounds)

HIV-1 and HIV-2

- ❑ 1984, researchers discovered the primary causative viral agent, the human immunodeficiency virus type 1 (HIV-1)
- ❑ In 1986, a second type of HIV, called HIV-2, was isolated from AIDS patients in West Africa
- ❑ Both HIV-1 and HIV-2 have the same modes of transmission and are associated with similar opportunistic infections and AIDS
- ❑ **In persons infected with HIV-2, immunodeficiency seems to develop more slowly and tend to be milder**
- ❑ **HIV-2 infected individuals are less infectious early in the course of infection**
- ❑ HIV-1 and HIV-2 also differ in geographic patterns of infection; the US has few reported HIV-2 cases



Origin of HIV-1 and HIV-2



The Origin of HIV

Last Updated: Thursday, 12 June, 2003, 18:02 GMT 19:02 UK

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Monkey viruses 'created HIV'

Two different strains of a virus affecting monkeys probably combined to create the form of HIV which has spread around the world, say scientists.

They believe the two strains of Simian Immunodeficiency Viruses (SIVs) first came together in chimpanzees who had eaten monkeys carrying the different strains.

The viruses' DNA then merged, creating a new form - the forerunner of HIV-1.

This was then passed to humans - possibly through the handling of contaminated chimpanzee flesh.



Last Updated: Thursday, 25 May 2006, 18:01 GMT 19:01 UK

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HIV origin 'found in wild chimps'

The origin of HIV has been found in wild chimpanzees living in southern Cameroon, researchers report.

A virus called SIVcpz (Simian Immunodeficiency Virus from chimps) was thought to be the source, but had only been found in a few captive animals.



This mother chimp is SIV positive

Now, an international team of scientists has identified a natural reservoir of SIVcpz in animals living in the wild.

The findings are to be published in Science magazine.



These two different viruses were traced back to a SIV that infected red-capped mangabeys and one found in greater spot-nosed monkeys. They believe that the hybridization took place inside chimps that had become infected with both strains of SIV after they hunted and killed the two smaller species of monkey.

Chimpanzees Were Original Source of HIV-1

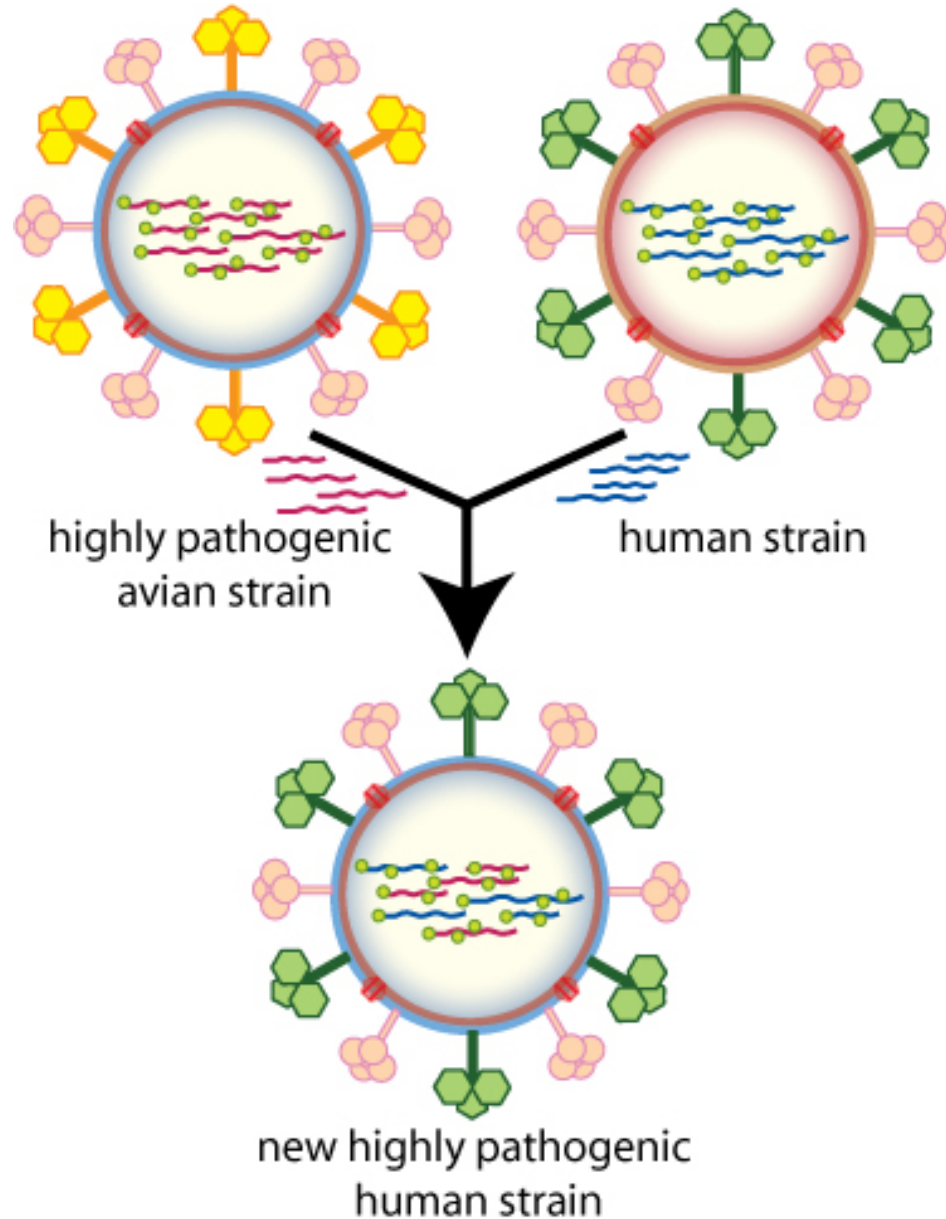
- ❑ February 1999 a University of Alabama group found a type of SIVcpz that was almost identical to HIV-1. <http://www.sciencenews.org/articles/20010210/fob6.asp>
- ❑ The strain was identified in a frozen sample taken from a sub-group of chimpanzees once common in west-central Africa.
- ❑ Researchers claimed this sample proved that chimpanzees were the source of HIV-1
- ❑ The virus at some point crossed species from chimps to humans
- ❑ **Theory:** wild chimps simultaneously infected with 2 different SIV which had "viral sex" forming a third virus that could be passed on to other chimps and, was capable of infecting humans and causing AIDS.



© Chad Littlejohn
It is now thought that HIV came from a similar virus found in chimpanzees.



Example of Viral Sex in Influenza



How Did HIV Cross Species?

- ❑ **The 'Hunter' Theory** – SIVcpz was transferred to humans as a result of chimps being killed and eaten or their blood getting into cuts or wounds on the hunter.
- ❑ **The Oral Polio Vaccine (OPV) theory** – virus was transferred through polio vaccine
 - ❖ kidney cells taken from local chimps infected with SIVcmz
 - ❖ February 2000 the Wistar Institute tested old vial of polio vaccine; no HIV or chimpanzee SIV
 - ❖ Macaque monkey kidney cells were used for vaccine not chimps

How did HIV Spread in Humans?

- ❑ **The Contaminated Needle Theory** -African healthcare professionals reused needles; could have transferred HIV from hunters to population
- ❑ **The Colonialism Theory** – harsh labor camps, lack of food, poor sanitation, weakened immune system could lead to HIV if SIV infected chimp was eaten
- ❑ **The Conspiracy Theory** – HIV is man-made as bioweapon, mainly to wipe out minorities and homosexuals
- ❖ Ignores the clear link between SIV and HIV, or the fact that the virus has been identified in people as far back as 1959
- ❖ Lack of genetic-engineering technology available to 'create' the virus at the time that AIDS first appeared

Earliest Known Instances of HIV Infection

- I. A plasma sample taken in 1959 from an adult male living in what is now the Democratic Republic of Congo.
- II. HIV found in tissue samples from an American teenager who died in St. Louis in 1969.
- III. HIV found in tissue samples from a Norwegian sailor who died around 1976

- ❑ **HIV-1 might have been introduced into humans around the 1930s** : Dr Bette Korber, Los Alamos National Laboratory
-7th Conference on Retroviruses and Opportunistic Infections
- ❑ HIV-2 is thought to come from the SIV in Sooty Mangabeys rather than chimpanzees
- ❑ In May 2003, a group of Belgian researchers lead by Dr. Anne-Mieke Vandamme concluded that HIV-2 first appeared in ~1940 to 45

What Lead to the Current HIV Epidemic?

- ☐ Travel
- ☐ The Blood Industry
- ☐ Injection Drug Use
- ☐ Unprotected Sex



International travel has undoubtedly played a major role in the spread of HIV.

