

National **L**ibrary of **M**edicine

**Data driven cure:
How the NLM inspires
HIV discoveries through
basic science**

**Patricia Flatley Brennan, RN, PhD
Director, National Library of Medicine**



U.S. National Library of Medicine

Provided by: **Nicole Scott** (nicole.scott@nih.gov)



HIV/AIDS Literature

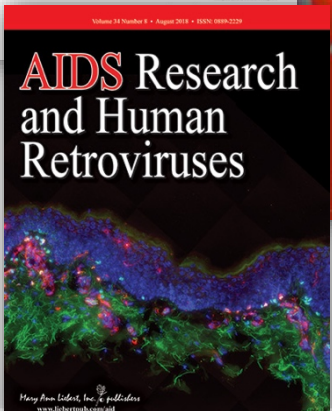
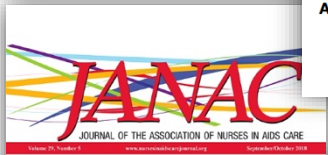


**JOINT COLLECTION DEVELOPMENT POLICY
STATEMENT
OF
THE NATIONAL LIBRARY OF MEDICINE
And
THE LIBRARY OF CONGRESS**



- Free full-text archive of biomedical and life sciences literature
- Includes full text of >300,000 HIV/AIDS articles cited in PubMed

**ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS)
and the
HUMAN IMMUNODEFICIENCY VIRUS (HIV)**



The screenshots show the NCBI Bookshelf interface. The top navigation bar includes 'NCBI Resources' and 'How To'. The main content area displays search results for 'Retroviruses' and 'Guidelines for Assessing the Utility of Data from Prevention of Mother-to-Child Transmission (PMTCT) Programmes for HIV Sentinel Surveillance Among Pregnant Women'. A detailed view of a book titled 'Guideline on the Use of Devices for Adult Male Circumcision for HIV Prevention' is shown, including its structured abstract and overview. The structured abstract states: 'Background: Global surveillance of HIV and sexually transmitted infections is a joint effort of the World Health Organization (WHO) and the Joint United Nations Programme on HIV/AIDS (UNAIDS). This guideline provides an evidence-based recommendation on the use of adult male circumcision devices for HIV prevention in public health programmes in high HIV prevalence, resource-limited settings. It also presents key programmatic considerations for the introduction and use of these devices in public health HIV prevention programmes. The primary audiences are policy- and decision-makers, programme managers, health-care providers, donors and implementing agencies. The guideline was developed according to the WHO standards and requirements for guideline development. The process involved internal and external consultations with technical experts, national programme managers, consumer advocates and an evidence review methodologist. Two complementary annexes are also available.'

ClinicalTrials.gov

Information on > 6,500 HIV/AIDS studies from >1,000 organizations

NIH U.S. National Library of Medicine
ClinicalTrials.gov

Find Studies ▾ About Studies ▾ Submit Studies ▾ Resources ▾ About Site ▾

ClinicalTrials.gov is a database of privately and publicly funded clinical studies conducted around the world.

Modify Search Start Over

6575 Studies found for: **HIV/AIDS**
 Also searched for **Acquired Immuno Deficiency Syndrome, HIV, and Human Immunodeficiency Virus.** [See Search Details](#)

List By Topic On Map Search Details

Show Filters Download Subscribe to RSS

Showing: 1-10 of 6,575 studies 10 studies per page Show/Hide Columns

Row	Saved	Status	Study Title	Conditions	Interventions	Locations
1	<input type="checkbox"/>	Not yet recruiting	REMUNE HIV/AIDS Vaccine Phase II Pediatric Safety & Efficacy Clinical Study	• HIV/AIDS	• Biological: REMUNE	• Clinical Site TBA San Diego, California, United States
2	<input type="checkbox"/>	Recruiting	People Living With HIV/AIDS, Nitrate, Endotelial Function, Exercise Performance and Muscle Oxygenation	• HIV/AIDS	• Dietary Supplement: Beetroot Juice • Dietary Supplement: Placebo	• DST / AIDS and Viral Hepatitis Program of Macaé Macaé, Rio De Janeiro, Brazil
3	<input type="checkbox"/>	Active, not recruiting	HIV/AIDS & Alcohol-Related Outcomes: Translational Evidence-Based Interventions	• HIV/AIDS	• Behavioral: WELL Program	• University Medical Center New Orleans Infectious Disease Services New Orleans, Louisiana, United States
4	<input type="checkbox"/>	Not yet recruiting	Prevalence, Knowledge and Attitude of HIV/AIDS in Luxor	• HIV/AIDS	• Diagnostic Test: ELIZA, Westron blot	• Faculty of Medicine Assiut, Egypt
5	<input type="checkbox"/>	Completed	Adapting and Evaluating an EBI to Prevent HIV/AIDS Risk Among Apache Youth	• HIV/AIDS	• Behavioral: Focus On Youth • Behavioral: Health Education Control Condition	• Johns Hopkins Center for American Indian Health Baltimore, Maryland, United States
6	<input type="checkbox"/>	Completed	Multi-vitamins, HAART and HIV/AIDS in Uganda	• HIV/AIDS	• Dietary Supplement: Multivitamin supplements B,C and E	• Makerere University School of Public Health / Infectious Disease Institute Kampala, Uganda
7	<input type="checkbox"/>	Completed	Assessment of Cognitive Functioning as it Relates to Risk for Suicide in Veterans With HIV/AIDS	• HIV/AIDS		• Eastern Colorado Health Care System Denver, Colorado, United States
8	<input type="checkbox"/>	Completed	Safety and Immunogenicity Study of a DNA Vaccine Combined With Protein Vaccine Against HIV/AIDS	• HIV/AIDS	• Biological: DNA • Biological: AIDS-VAX B/E	• Uganda Virus Research Institute - International AIDS Vaccine Initiative HIV Vaccine Program (UVRI-IAVI) Entebbe, Uganda • Medical Research Council (MRC) /Uganda Virus Research Institute (UVRI) Masaka, Uganda
9	<input type="checkbox"/>	Completed	Efficacy and Safety Study of Darunavir for the Treatment of HIV/AIDS	• HIV/AIDS	• Drug: Darunavir • Drug: ART with 2 NRTIs plus LPV/r (or ATV/r)	• Yaounde Central Hospital Yaounde, Centre, Cameroon
10	<input type="checkbox"/>	Recruiting	Development of a Couple-Based Mobile Health Intervention for Enhancing HIV Care Engagement Outcomes (N'Gage)	• HIV/AIDS	• Other: mHealth N'Gage mobile application	• University of California San Francisco San Francisco, California, United States

NCBI's Data & Computational Resources



HIV Protein Structures

NCBI's collection of HIV protein structures
numbers almost 1,600

Crystal structure of HIV Gp120 protein with bound antibody



NCBI HIV-1: human interaction database

2,500 manually-curated interactions

14,000+ links to PubMed records

Vpu	inhibits	NFKB1
Protein: NP_003989.2 , GeneRIF: Most HIV-1 and primate lentiviral Vpu proteins inhibit IKK-beta-induced NF-kappaB activation except HIV-1 group N Vpu proteins . Pubmed ID: 25620704		

See: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4383939/>



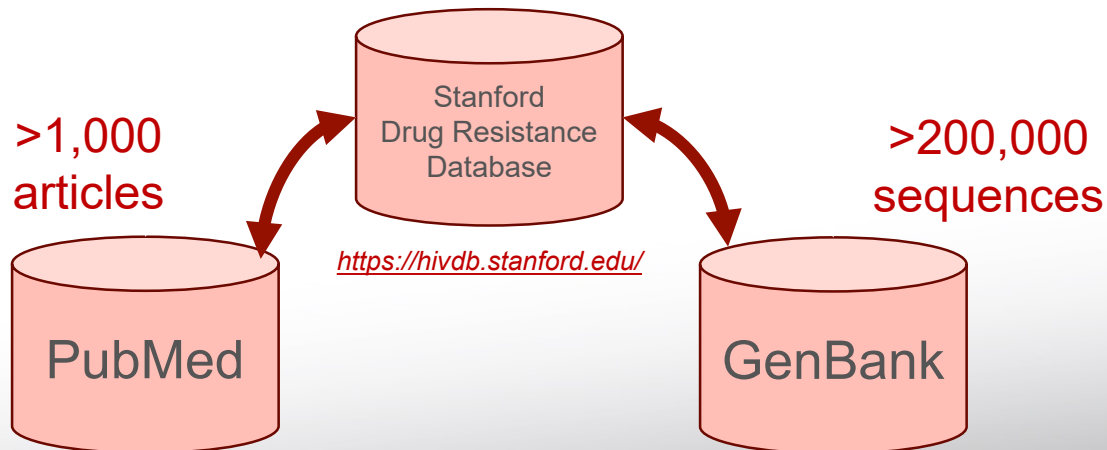
Surveillance of HIV mutations in individuals

HIV has a high mutation rate

Sequence is needed for evaluation & comparison

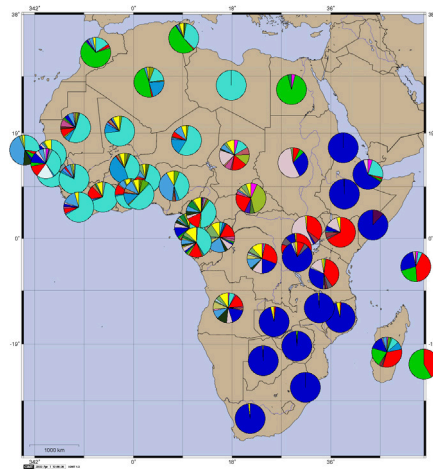
Combination antiretroviral therapies effective against resistance

Patient virus population informs treatment strategies



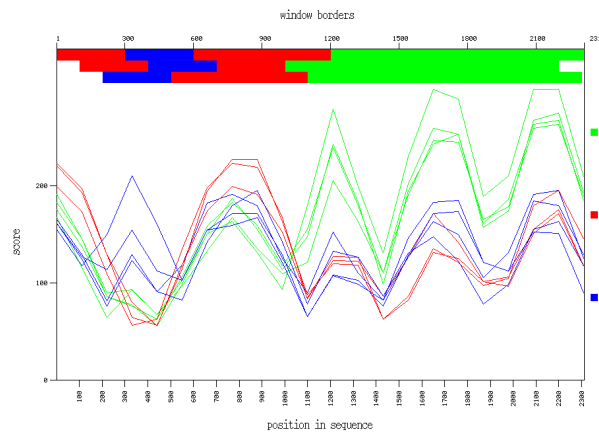
Population detection/surveillance

Los Alamos National Laboratory
HIV sequences based on geographical location



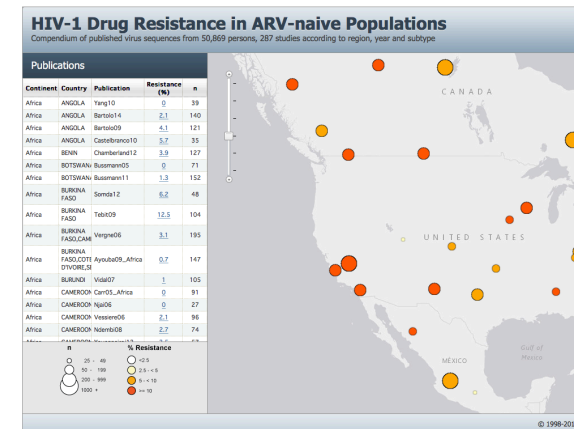
Derived in part from
>3,500 GenBank records

NCBI
Virus Genotyping Tool



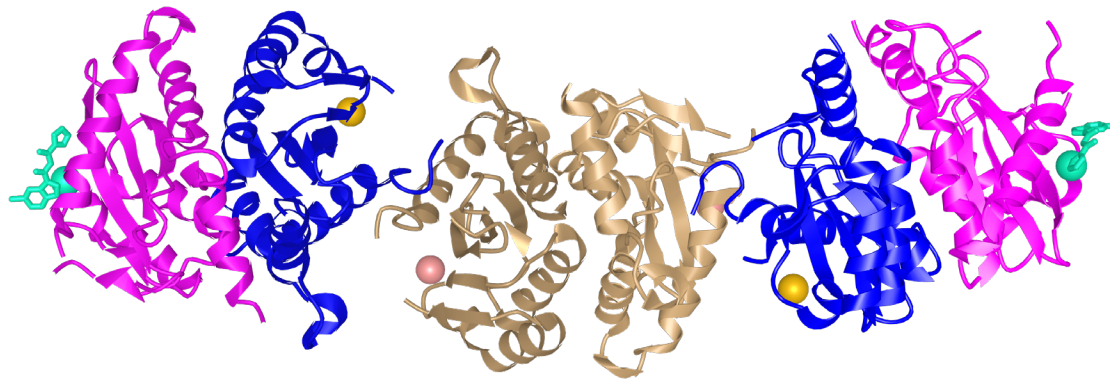
Uses BLAST to identify the
genotype (or subtype) of HIV-1
sequence

Stanford University
HIV drug resistance based on geographical location



Primary data
mostly found in GenBank

Vaccine and targeted drug discovery



PDB accession code: 1QS4. From: "In-Silico docking of HIV-1 integrase inhibitors reveals a novel drug type acting on an enzyme/DNA reaction intermediate" Retrovirology vol. 4 21. 20 Mar. 2007, doi:10.1186/1742-4690-4-21

Lister Hill Center Computational Clinical Support



Identification of Research Common Data Elements in HIV/AIDS Using Data Science Methods

ClinicalTrials.gov example of data sharing (HIV trial)

U.S. National Library of Medicine
ClinicalTrials.gov

Find Studies ▾ About Studies ▾ Submit Studies ▾ Resources ▾ About Site ▾

Home > Search Results > Study Record Detail Save this study

Pediatric Pulmonary and Cardiovascular Complications of Vertically Transmitted HIV Infection (P2C2)

The safety and scientific validity of this study is the responsibility of the study sponsor and investigators. Listing a study does not mean it has been evaluated by the U.S. Federal Government. Read our [disclaimer](#) for details.

ClinicalTrials.gov Identifier: NCT00005274

Recruitment Status: Completed
First Posted: May 26, 2000
Last Update Posted: April 14, 2016

Sponsor:
National Heart, Lung, and Blood Institute (NHLBI)

Information provided by:
National Heart, Lung, and Blood Institute (NHLBI)

Study Details | **Tabular View** | No Results Posted | Disclaimer | How to Read a Study Record

Study Description

Brief Summary:
To determine the prevalence and natural history of pulmonary and cardiac complications associated with HIV infection in utero, in infancy, and during early childhood.

More Information

Study Data/Documents: Individual Participant Data Set
Identifier: P2C2
NHLBI provides controlled access to IPD through BiOLINCC. Access requires registration, evidence of local IRB approval or certification of exemption from IRB review, and completion of a data use agreement.

Study Protocol
Study Forms
Manual of Procedures

Publications:
Shearer WT, Rosenblatt HM, Schlachter MD, Mofenson LM, Denny TN. Immunologic targets of HIV infection: T cells. *NICHD IVIG Clinical Trial Group, and the NHLBI P2C2 Pediatric Pulmonary and Cardiac Complications of HIV Infection Study Group.* *Ann N Y Acad Sci.* 1993 Oct 29;693:55-51. [Review](#).

Cohen HL, Davis L, Hunter J, Carp D, Geromanos K, Sunkle S. Coordinating a large multicentered HIV research project. *J Assoc Nurses AIDS Care.* 1997 Jan-Feb;8(1):41-50.

Study Data/Documents: Individual Participant Data Set **EXIT**

Identifier: P2C2
NHLBI provides controlled access to IPD through BiOLINCC. Access requires registration, evidence of local IRB approval or certification of exemption from IRB review, and completion of a data use agreement.

Study Protocol **EXIT**

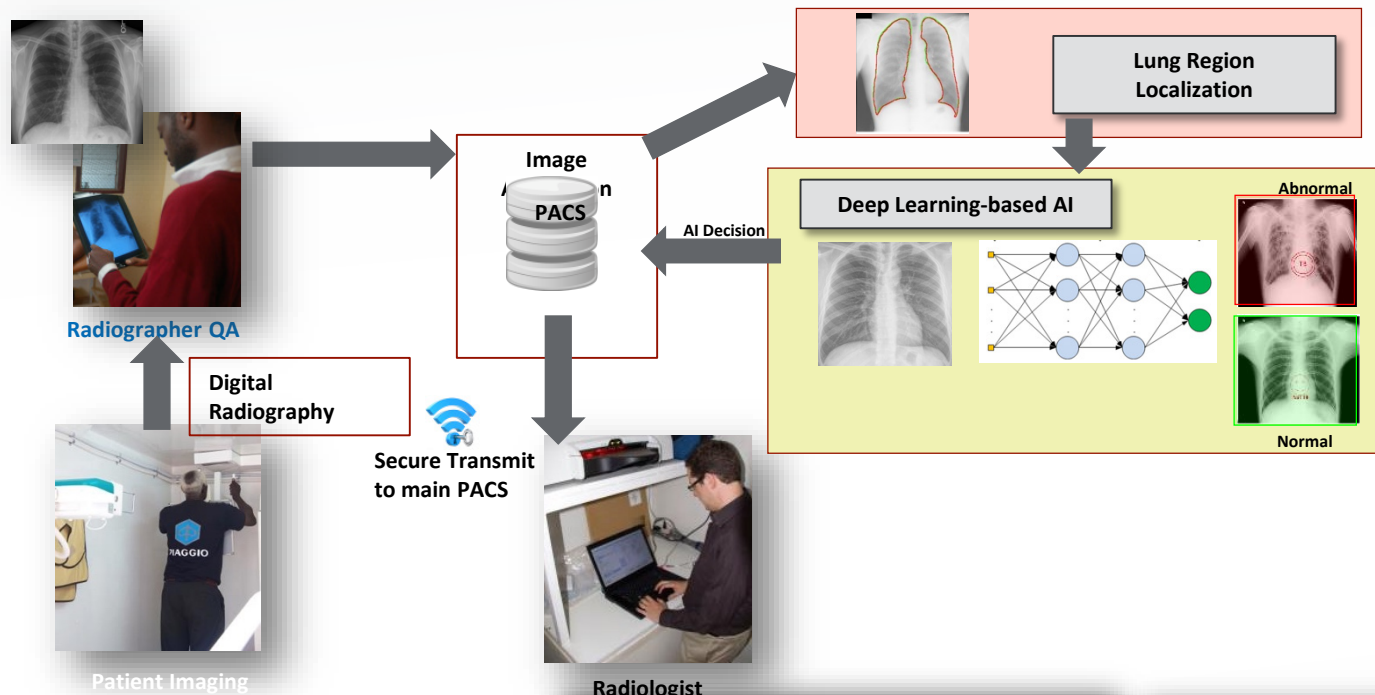
Study Forms **EXIT**

Manual of Procedures **EXIT**



Automatic Detection of Pulmonary Disease in Chest X-rays to Combat HIV/AIDS

Workflow Schematic



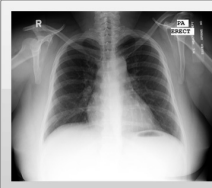
Radiologist

NLM TB Screening Tool (Beta) Logout

History All

Day	Time	Patient Name	Gender	Age	Status
03/09/2015	08:54:07	Wendy Jane	Female	63	Green
03/09/2015	08:53:46	Cindy Jane	Female	57	Red
01/21/2015	14:54:07	Max Joe	Male	42	Green
01/21/2015	14:53:46	Andrew Joe	Male	48	Green
01/21/2015	14:52:15	Alex Joe	Male	37	Green
01/21/2015	14:51:55	Lisa Jane	Female	60	Green
01/21/2015	14:49:49	David Joe	Male	50	Green
01/21/2015	14:49:25	Mary Jane	Female	45	Green
01/21/2015	12:33:08	Mary Joe	Male	45	Red
01/21/2015	12:33:08	Helen Jane	Female	40	Green

Export History



AI Output

Status: History

Listen Stop

Manual

Date: NA

Time: NA

Patient Name: I_01815c4ae.bmp.jpg

Gender: NA

Age: NA

Threshold: 0.500000

Status: abnormal

Confidence: 0.974855



Show Decision Map

