

HIV/AIDS

Dr. Feiszt Zsófia



HIV/AIDS

The **human immunodeficiency virus (HIV)** is a lentivirus (a subgroup of retrovirus) that causes HIV infection and over time acquired immunodeficiency syndrome (AIDS). AIDS is a condition in humans in which progressive failure of the immune system allows life-threatening opportunistic infections and cancers to thrive.

How did it begin?



The
New England
Journal of Medicine

ESTABLISHED IN 1812 AS THE NEW ENGLAND JOURNAL OF MEDICINE AND SURGERY

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NUMBER 24

***Pneumocystis carinii* Pneumonia and Mucosal
Candidiasis in Previously Healthy Homosexual
Men: Evidence of a New Acquired Cellular
Immunodeficiency**

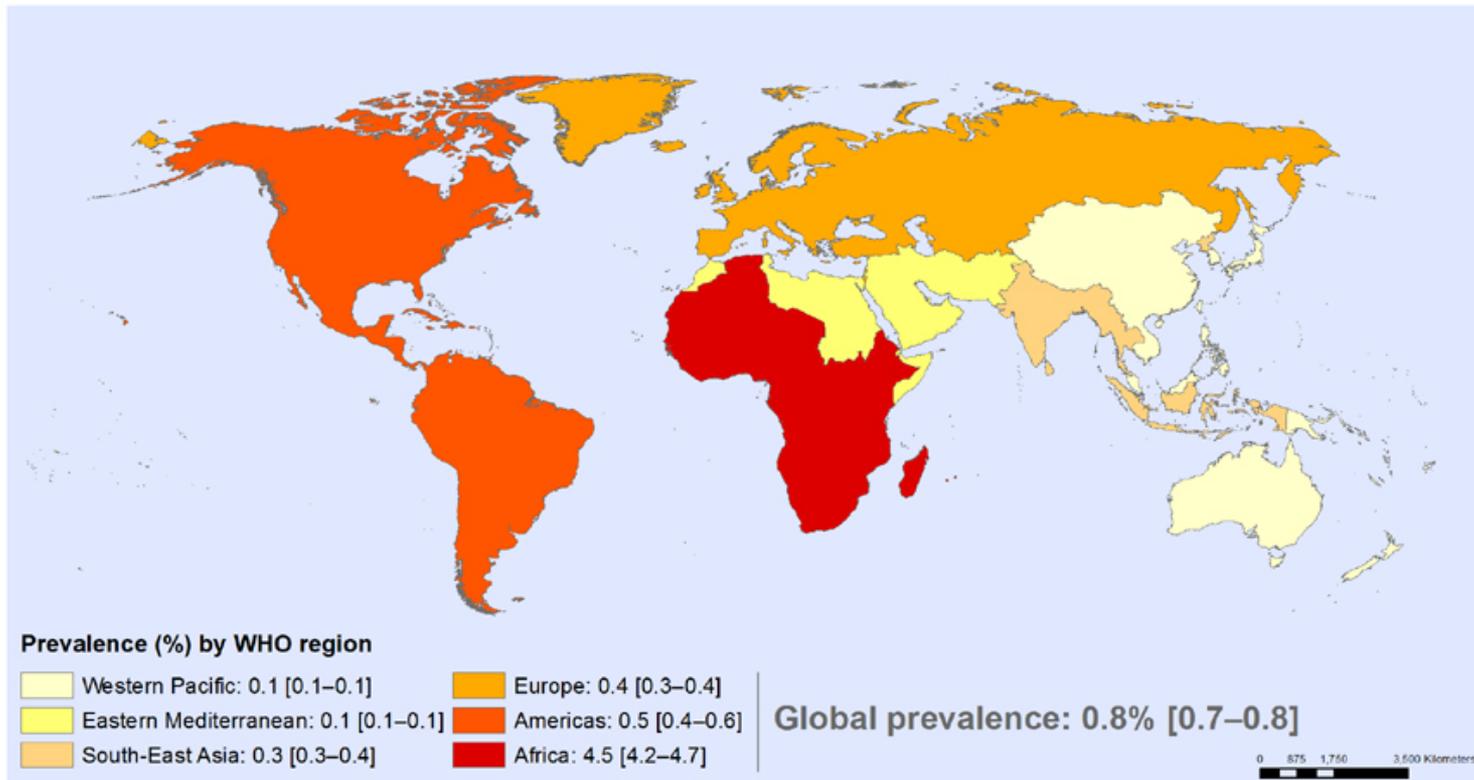
Michael S. Gottlieb, et al.

**An Outbreak of Community-Acquired
Pneumocystis carinii Pneumonia: Initial
Manifestation of Cellular Immune Dysfunction**

Henry Masur, et al.

Pandemy

Adult HIV prevalence (15–49 years), 2013 By WHO region

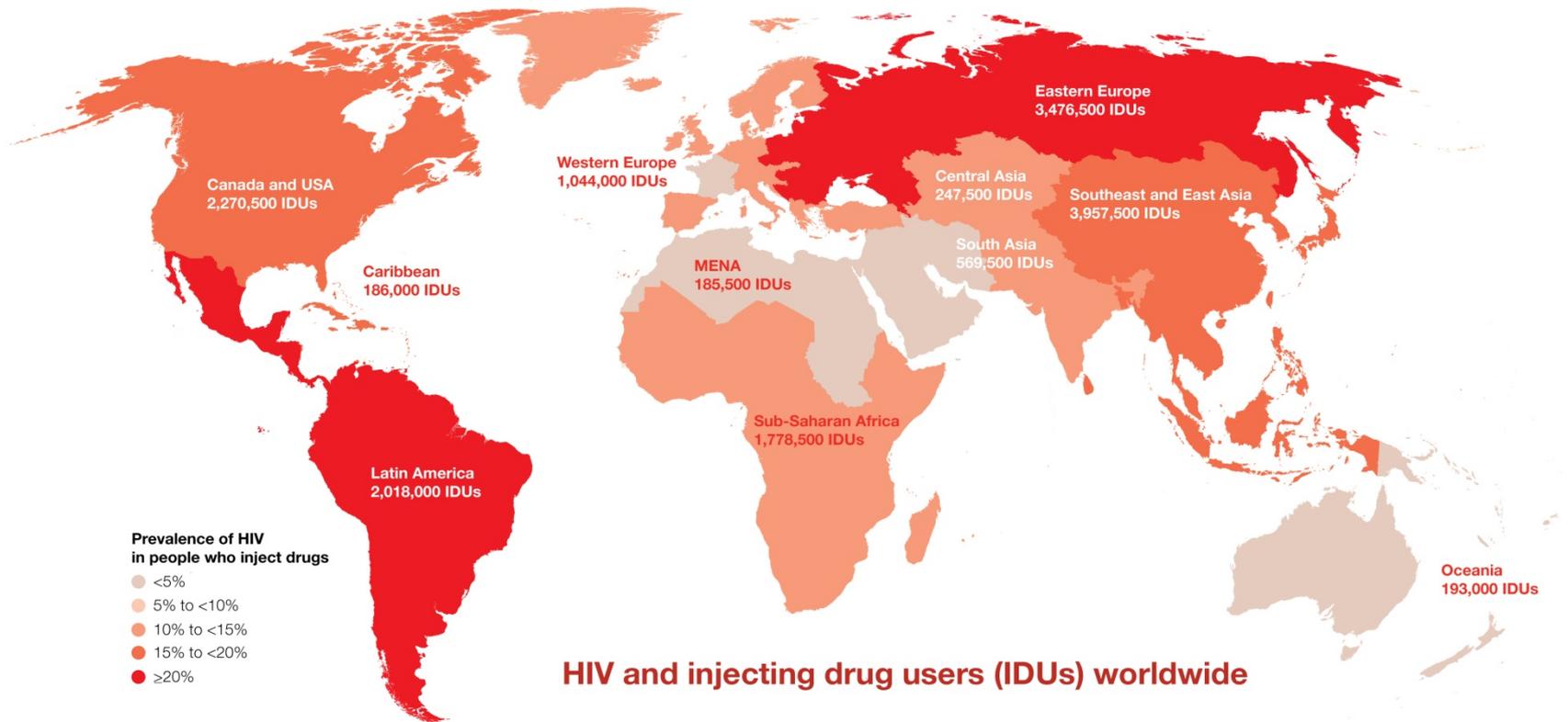


The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Health Organization
Map Production: Health Statistics and
Information Systems (HSI)
World Health Organization



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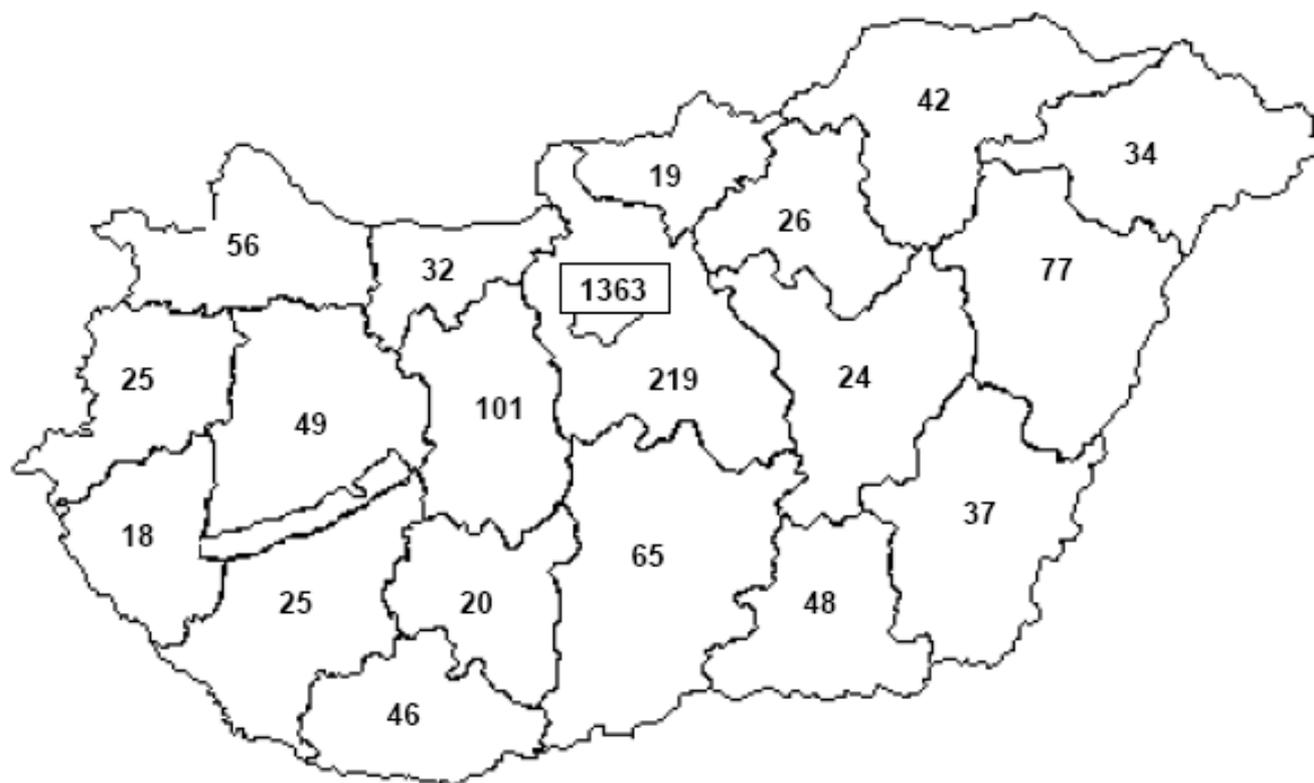


Registered HIV positive persons in Hungary

Year	Male	Female	Unknown	Total
1985-2009	1343	224	204	1771
2010	142	9	31	182
2011	122	12	28	162
2012	186	14	19	219
2013	191	17	32	240
2014	213	20	38	271
2015. I-II. q.y.	97	16	20	133
Total	2294	312	372	2978

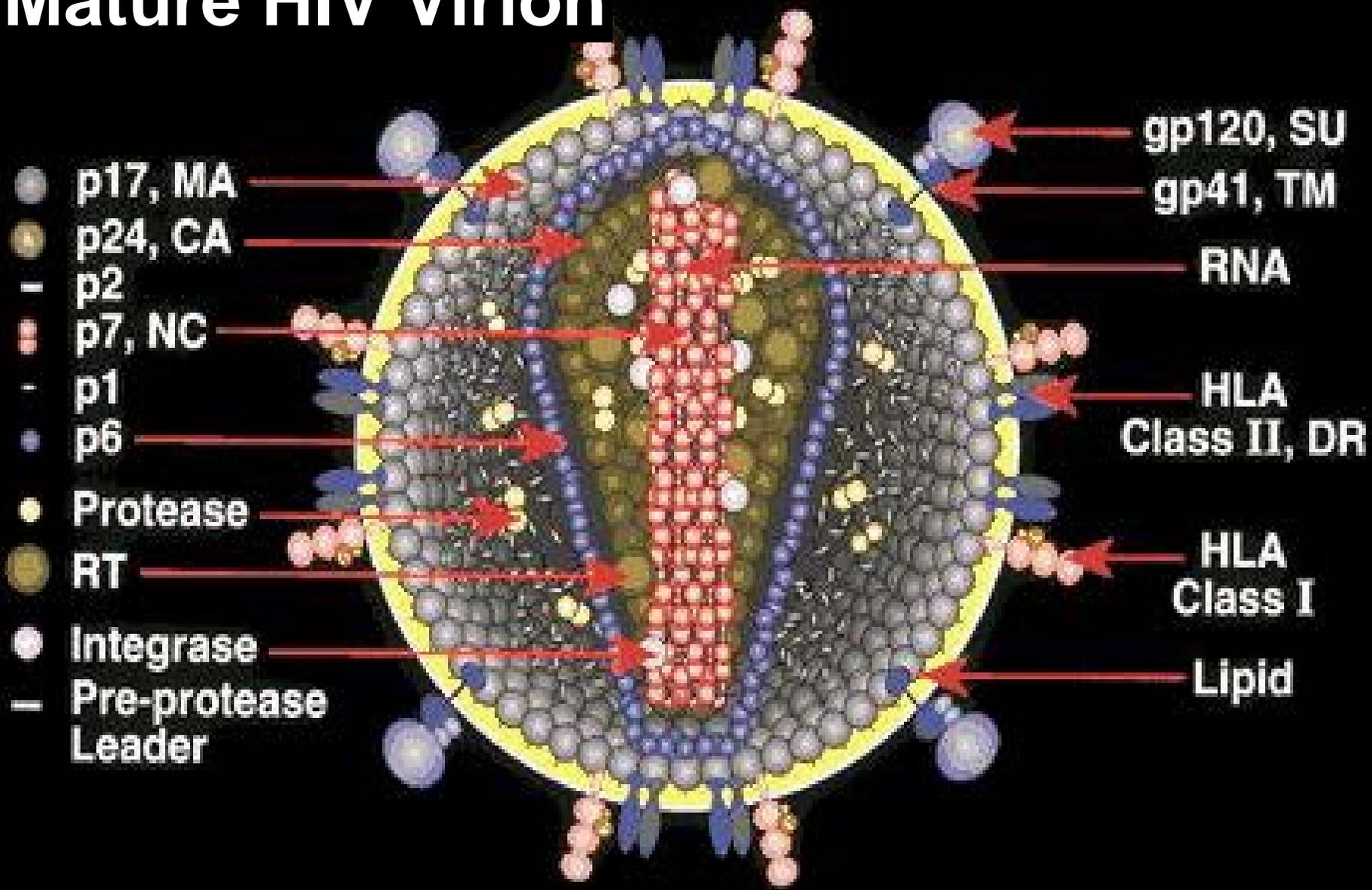
A nyilvántartott HIV-pozitív magyar és külföldi személyek* területenkénti megoszlása

(n=2326)

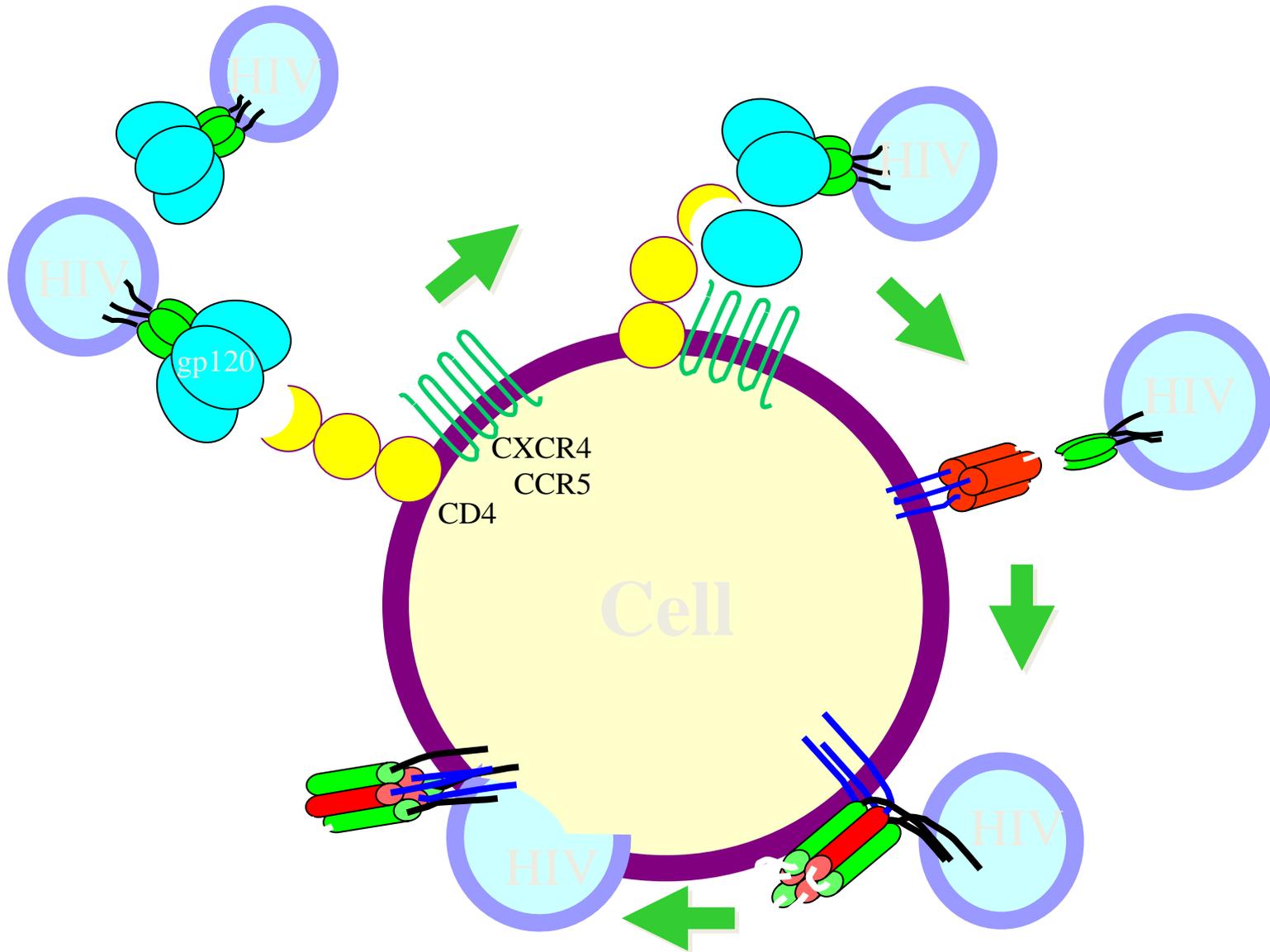


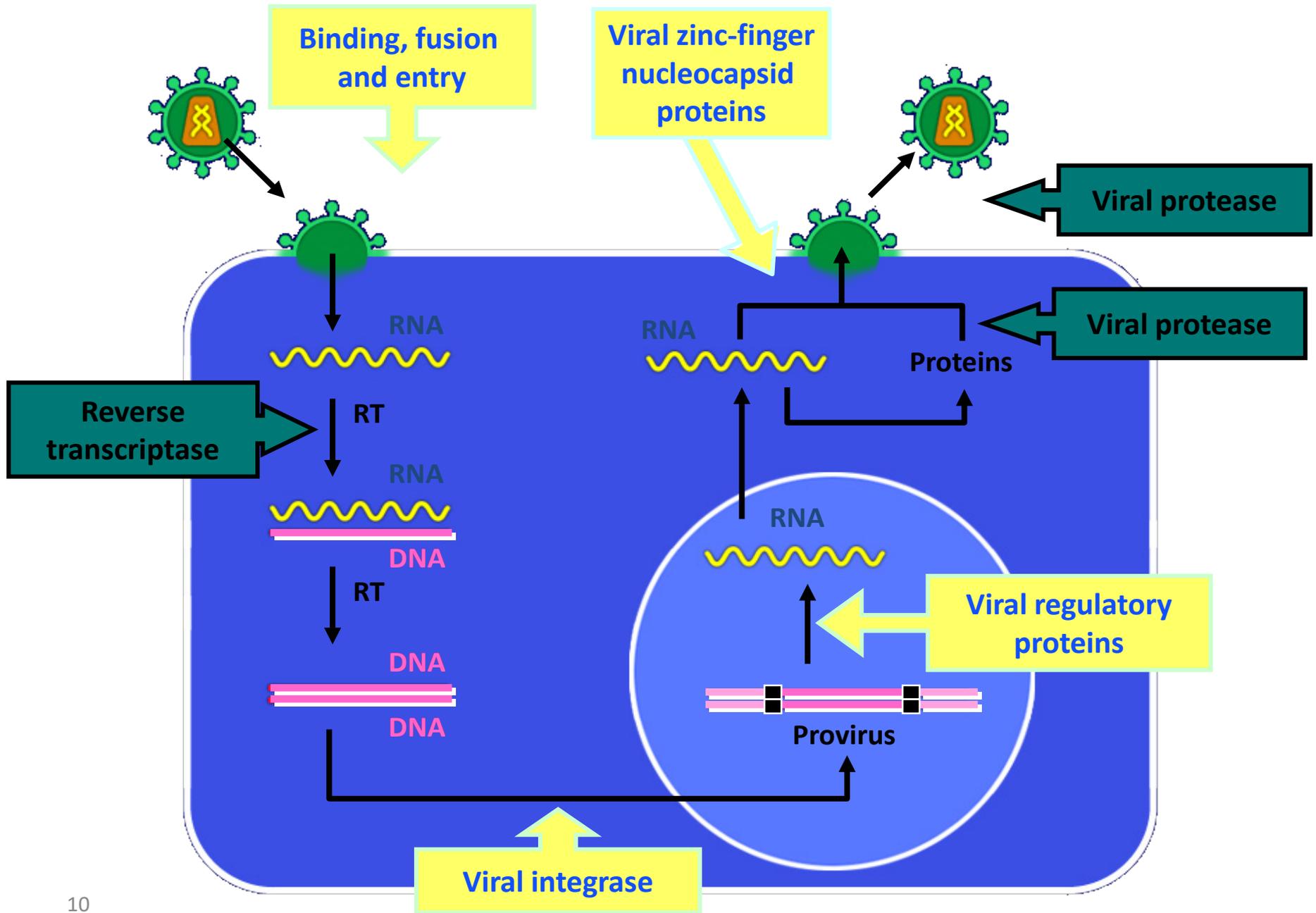
*A térkép nem tartalmazza az anonim és az ismeretlen lakóhelyű HIV-pozitív személyeket.

Mature HIV Virion



HIV Entry Mechanism

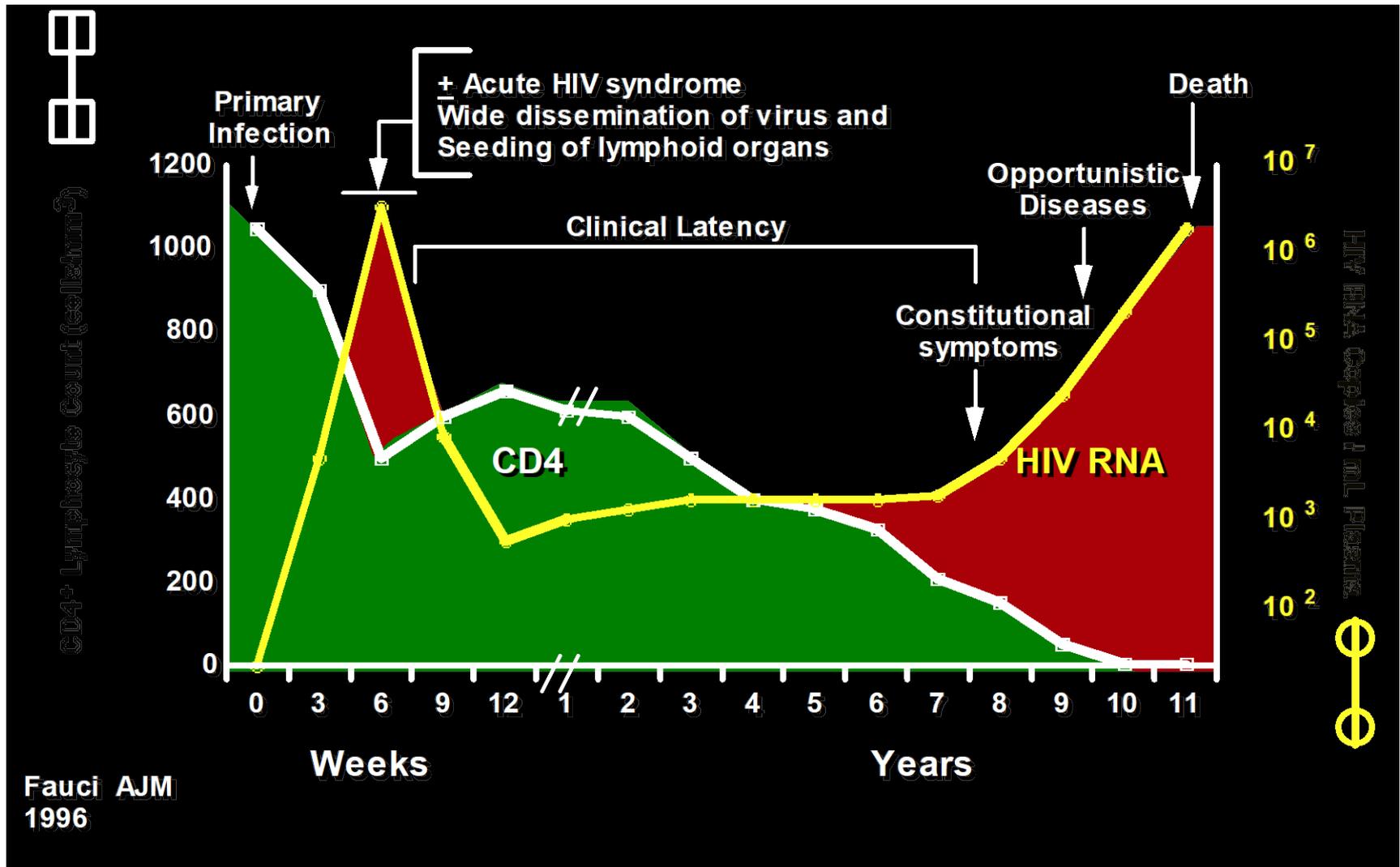




HIV transmission

- Blood – transfusion, injuries, needle sharing
- Sexual transmission- pre-ejaculate, semes, vaginal fluid
 - Women have a higher risk
 - Depends on plasma viremie
- Vertical transmission (from mother to child)
 - Perinatal > intrauterin > breast feeding
 - Without treatment 20-33%
 - Depends on the stadium of the maternal infection

Natural history of HIV infection



Acute HIV syndrome

- Fever
- Fatigue
- Rash
- Headache
- Lymphadenopathy
- Pharyngitis
- Arthralgia, myalgia
- Night sweats
- Gastrointestinal syndroms
- Oral or genital ulcer

Serological diagnosis

- Quick tests nowadays are 4th generational tests (Combo test)- HIV Ab and p24 Ag
- **But** a confirmation is needed: Western blott

Advantage:

- Quick (15-20 min.), easy, can be performed without any difficult equipment
- We can use plasma, full blood, sometimes urin or oral transsudate
- Infections older than 2 weeks can be detected

Serological diagnosis



Determine™ HIV-1/2 Ag/Ab Combo

EN

Alere Determine™ HIV-1/2 Ag/Ab Combo is a visual read, qualitative immunoassay for the simultaneous detection of free non-immunocomplexed HIV-1 p24 antigen and antibodies to HIV-1 and HIV-2. 7D2243 Chase buffer is required for whole blood testing.

Kit contains:

- 2 test cards coated with HIV-1/2 recombinant antigen and synthetic peptides, antibodies to p24 antigen and avidin.

DE

Alere Determine™ HIV-1/2 Ag/Ab Combo ist ein *in-vitro* visueller Auswertvorrichtung, qualitativer Immunoassay für den gleichzeitigen Nachweis von freiem HIV-1 p24 Antigen ohne Immunkomplex und von HIV-1 und HIV-2 Antikörpern. Chasiebuffer 7D2243 ist für den Test von Vollblutproben erforderlich.

Inhalt des Kits:

2 Testkarten, beschichtet mit HIV-1/2 rekombinanten Antigen und synthetischen Peptiden sowie Antikörpern gegen p24-Antigen und Avidin.

ES

Alere Determine™ HIV-1/2 Ag/Ab Combo es un inmunoensayo *in vitro*, con lectura visual y cualitativo para la detección simultánea del antígeno no inmunocomplejo HIV-1 p24 en forma libre y anticuerpos de HIV-1 y HIV-2. 7D2243 Se requiere buffer de detección para todas las pruebas por sangre.

Contenido del kit:

2 tarjetas de prueba recubiertas con antígeno HIV-1/2 recombinante y péptidos sintéticos, anticuerpos al antígeno p24 e avidina.

FR

Alere Determine™ HIV-1/2 Ag/Ab Combo est un test immunologique qualitatif *in vitro* à lecture visuelle pour la détection simultanée de l'antigène p24 du VIH-1 et des anticorps anti-VIH-1 et anti-VIH-2 libres non-immunocomplexés. La solution tampon de migration 7D2243 est nécessaire pour tester les échantillons de sang total.

Le kit contient:

2 plaquettes de tests recouvertes d'un antigène recombinant et de peptides de synthèse correspondant aux VIH-1/2, d'anticorps dirigés contre l'antigène p24 du VIH-1 et d'avidine.

IT

Alere Determine™ HIV-1/2 Ag/Ab Combo è un test per il dosaggio immunologico qualitativo *In Vitro* a lettura visiva per la rilevazione simultanea di antigeni liberi non immunocomplessi p24 di HIV-1 e anticorpi anti-HIV-1 e HIV-2. Il tampone Chase 7D2243 è necessario per i test di sangue intero.

Contenuto del kit:

2 cartucce per test rivestite con antigene ricombinante di HIV-1/2 e peptidi sintetici, anticorpi all'antigene p24 e avidina.

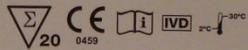
PT

Alere Determine™ HIV-1/2 Ag/Ab Combo é um ensaio imunológico qualitativo de leitura visual *in vitro* para a detecção simultânea do antígeno p24 do VIH-1 não imunocomplexado livre e de anticorpos ao VIH-1 e VIH-2. 7D2243 É necessário o tampão de detecção para realizar análises em sangue total.

O Conteúdo do kit:

2 cartões de testes revestidos com antígeno recombinante de VIH-1/2 e peptídeos sintéticos, anticorpos anti-p24 e avidina.

REF 7D2646



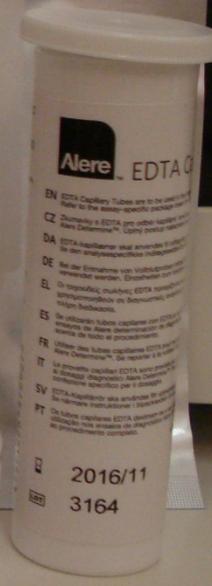
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CE/REP Alere Ltd.
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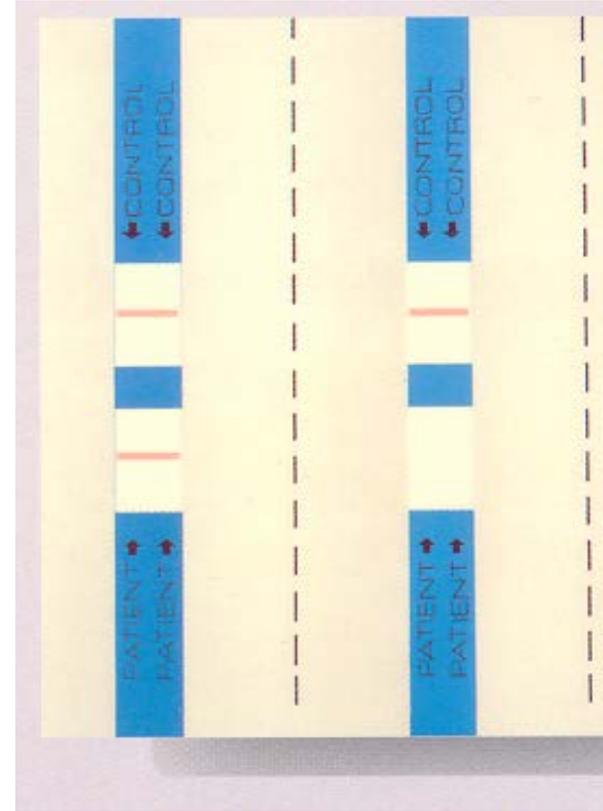
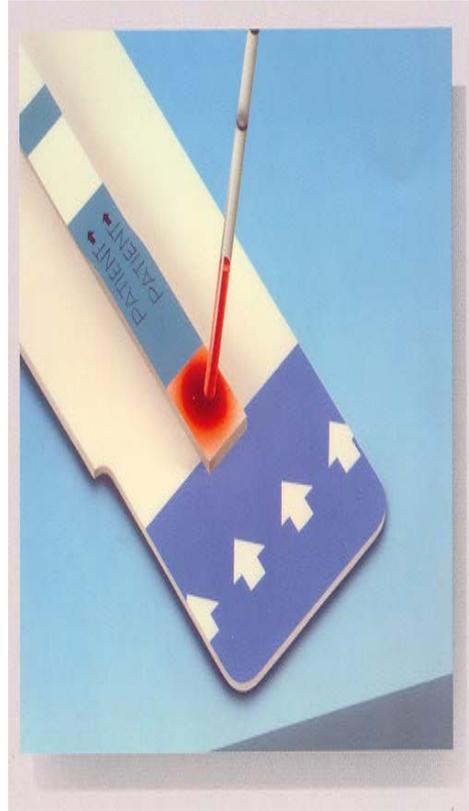
New version 241138/R9 of IFU included.



HIV test



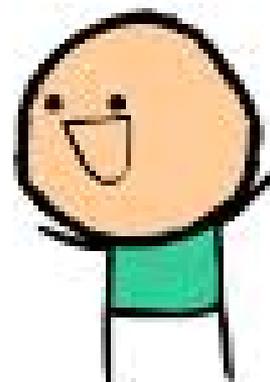
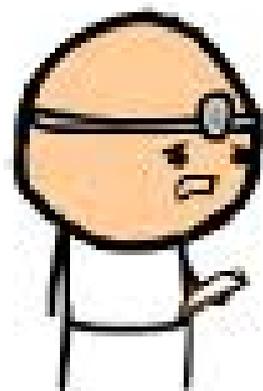
OraQuick HIV test



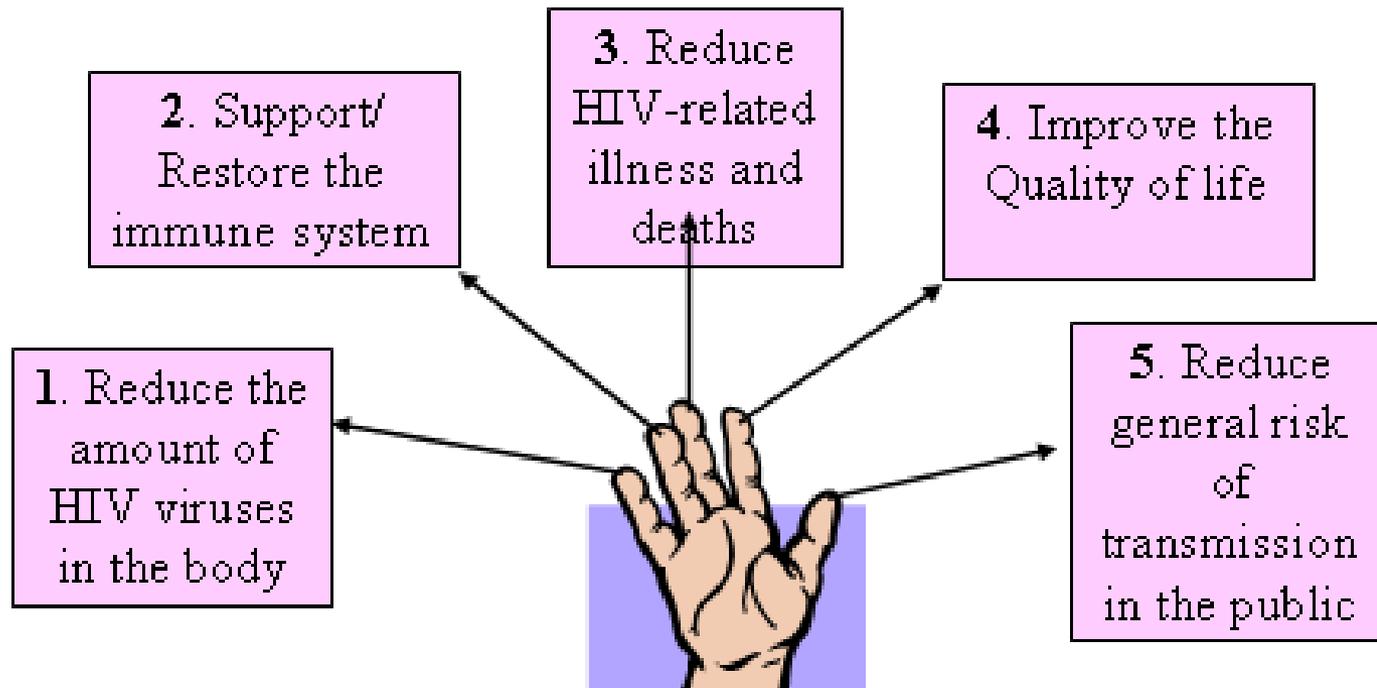
HIV quick test from capillary blood

I'M SORRY, BUT YOUR TEST RESULTS SHOW YOU REACT POSITIVE TO H.I.V.

HOORAY!



Five Goals of ART



ART

UNAIDS: 90-90-90%

- 1. aim: 90% of HIV+ should be diagnosed
- 2. aim: 90% of diagnosed cases should get ART
- 3. aim: 90% on ART should have HIV RNS undetectable

Classes of Antiretroviral

- **Reverse transcriptase (RT) inhibitors**
 - **Nucleoside RT inhibitors (NRTI)**
 - **Non-nucleoside RT inhibitors (NNRTI)**
 - **Nucleotide RT inhibitors**
- **Protease inhibitors (PI)**
- **Fusion inhibitors**
- **Integrase inhibitors**

Antiretroviral Agents

- **NRTI**

**Nucleoside Reverse
Transcriptase Inhibitor**

- **Zidovudine (AZT,ZDV)**
- **Didanosine (ddI)**
- **Zalcitabine (ddC)**
- **Stavudine (D4t)**
- **Lamivudine (3TC)**
- **Abacavir (ABC)**
- **Emtricitabine (FTC)**

- **NNRTI**

**Non-Nucleoside Reverse
Transcriptase Inhibitor**

- **Nevirapine (NVP)**
- **Delavirdine (DLV)**
- **Efavirenz (EFV)**
- **Etravirine**

Nucleotide analogues

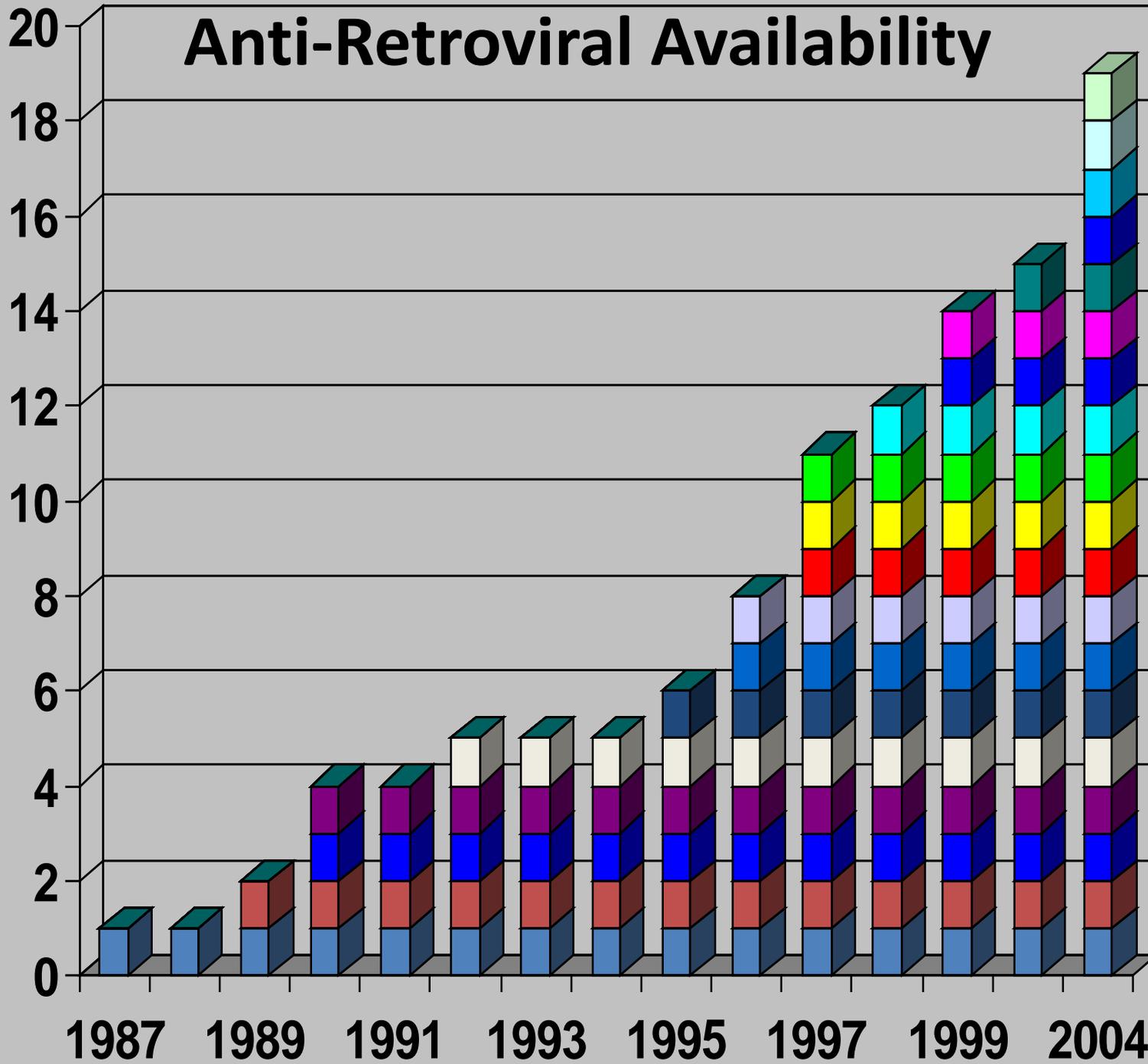
- **Tenofovir (Viread)**

Antiretroviral Agents

- **PI** Protease Inhibitors
 - Saquinavir (SQV)
 - Ritonavir (RIT)
 - **Indinavir (IDV)**
 - **Nelfinavir (NFV)**
 - Amprenavir (APV)
 - **Lopinavir/Ritonavir (LPV/r)**
 - Atazanavir (ATZ)
 - Fosamprenavir
 - Tipranavir
 - Durunavir
- **Fusion inhibitors**
 - Enfuvirtide (T-20)
 - Maraviroc
- **Integrase inhibitors**
 - Raltegravir

Anti-Retroviral Availability

Number of Available Agents

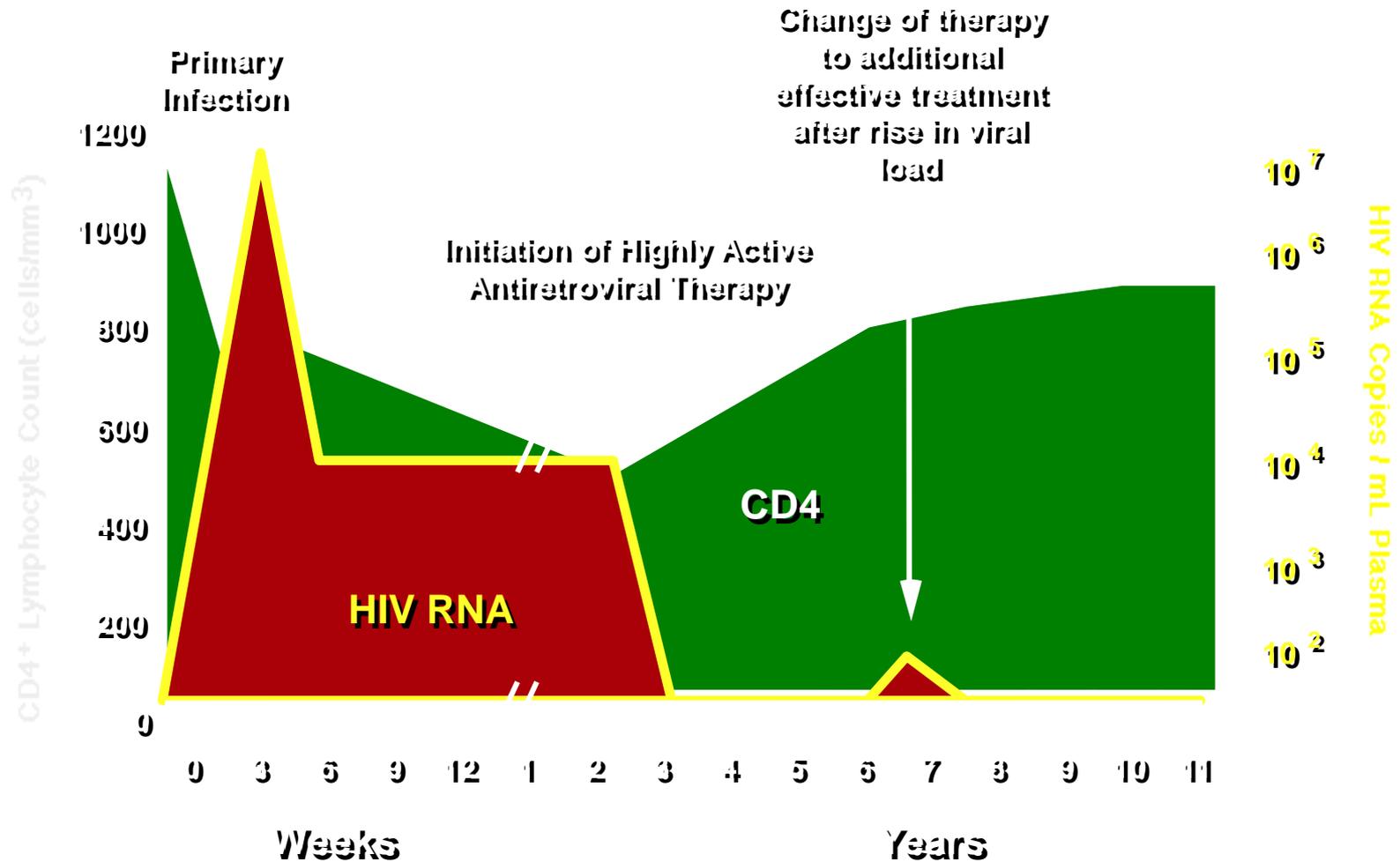


- Atazanavir
- Tenofovir
- Enfuvirtide
- Emtricitabin
- Lopinivir
- Amprenavir
- Abacavir
- Efavirenz
- Delavridine
- Neviripine
- Nelfinivir
- Indinivir
- Ritonivir
- Saquinivir
- DDC
- D4T
- 3TC
- DDI
- AZT²³

Highly Active Anit-Retroviral Therapy (HAART)

- 2 NRTI + 1 NNRTI = 3 Drugs
- 2 NRTI + 1 PI = 3 Drugs
- 1 NRTI + 1 NNRTI + 1 PI = 3 Drugs
- 3 NRTI (including Abacavir) = 3 Drugs
 - inferior to other combinations

Course of HIV on Treatment



Potential Outcome of Successful Treatment of HIV-Infection



Opportunistic infections and neoplasms

CD4+ sejtszám

>300 Kaposi sarcoma

300 TBC, soor, oral hairy leukoplacia, zoster

200 PCP, cryptococcus pneumonia,
candida oesophagitis

Toxoplasma brainabscess, **100**
CMV retinitis, NHL

bacteraemias, MAC, cryptosporidiosis **50**
anything

0

Oralis candidiasis



Kaposi sarcoma



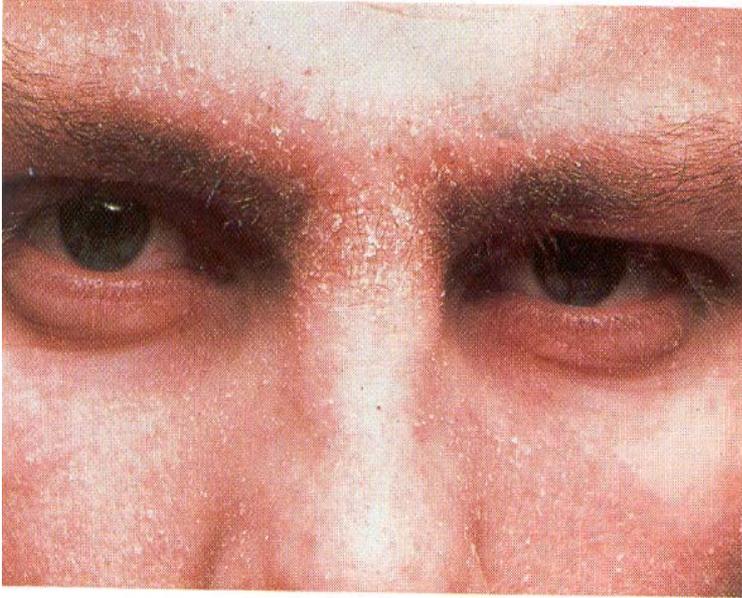
Lymphadenopathy



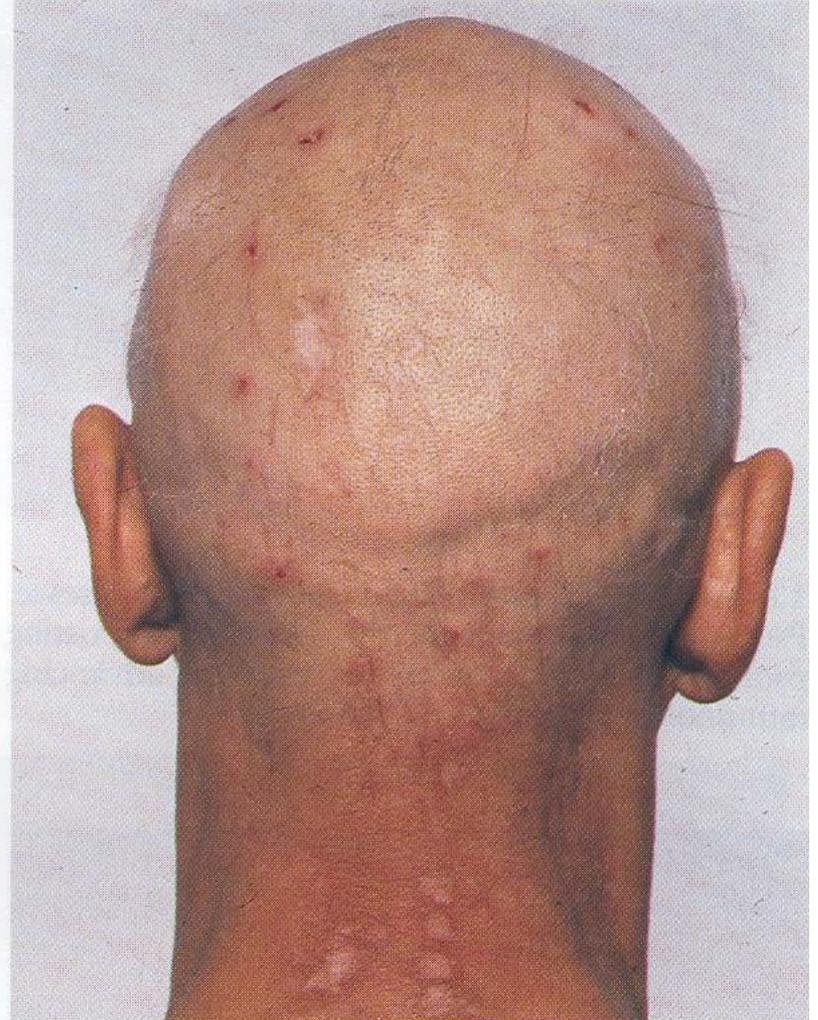
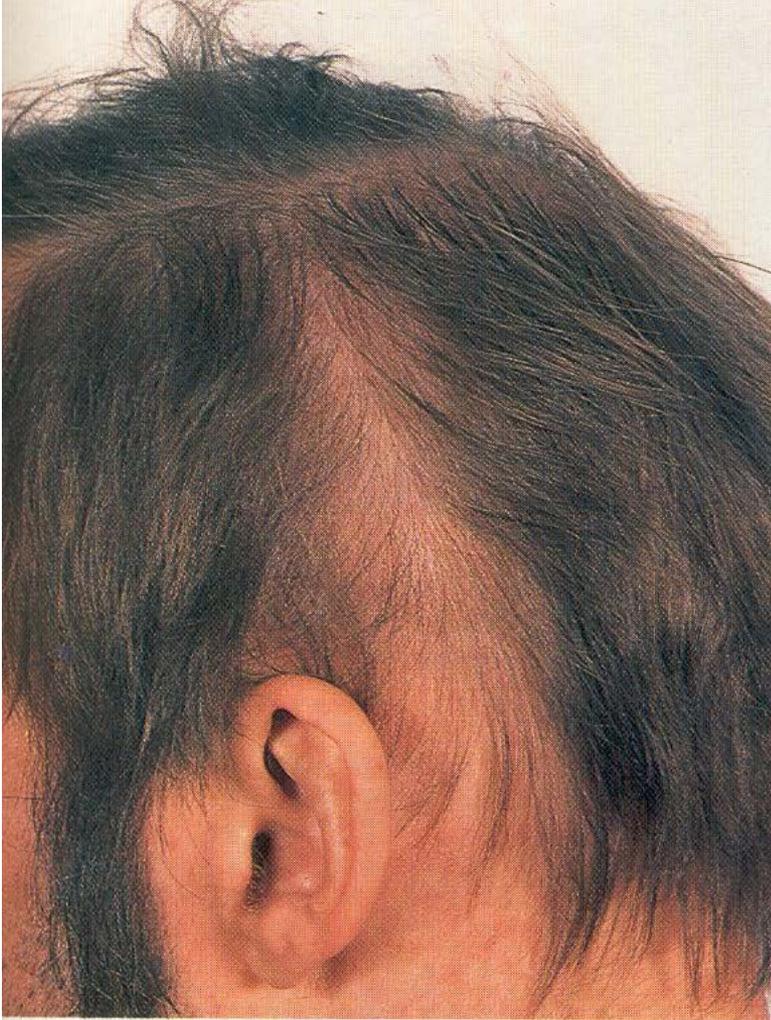
Wasting syndrome



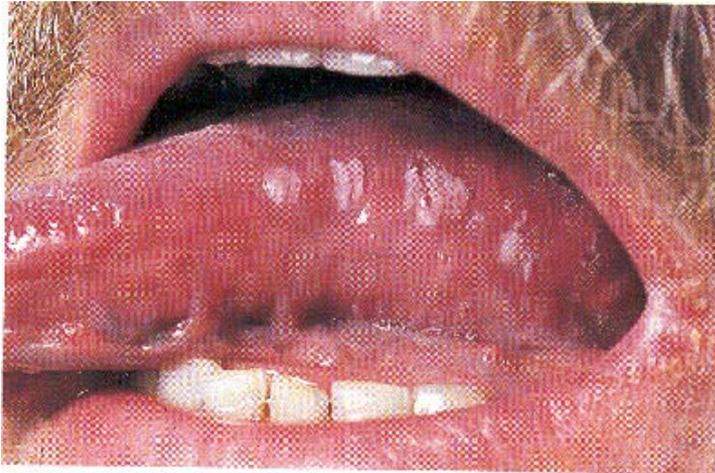
Seborrheic skinlesion



Alopecia



Oral hairy leucoplachy





Thank you for your attention!