INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

Název: Historie vzniku HIV infekce, teorie

Školitel: Vojtěch Adam

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Reg.č.projektu: CZ.1.07/2.4.00/31.0023

Název projektu: Partnerská síť centra excelentního bionanotechnologického výzkumu

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Human History of AIDS

- AIDS was first clinically observed in 1981 in the United States.
- The initial cases were a cluster of injection drug users and gay men with no known cause of impaired immunity who showed symptoms of *Pneumocystis carinii pneumonia* (PCP), a rare opportunistic infection that was known to occur in people with very compromised immune systems.
- Soon thereafter, additional gay men developed a previously rare skin cancer called Kaposi's sarcoma (KS).
- Many more cases of PCP and KS emerged, alerting U.S. Centers for Disease Control and Prevention (CDC) and a CDC task force was formed to monitor the outbreak.

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Human History of AIDS

- In the beginning, the CDC did not have an official name for the disease, often referring to it by way of the diseases that were associated with it, for example, lymphadenopathy, the disease after which the discoverers of HIV originally named the virus. They also used Kaposi's Sarcoma and Opportunistic Infections, the name by which a task force had been set up in 1981.
- In the general press, the term GRID, which stood for gay-related immune deficiency, had been coined.
- However, the earliest well documented case of HIV in a human dates back to 1959 in the Congo. The virus may have been present in the United States as early as 1966.

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Human History of AIDS

- The CDC, in search of a name, and looking at the infected communities coined “the 4H disease, ” as it seemed to single out Haitians, homosexuals, hemophiliacs, and heroin users.
- However, after determining that AIDS was not isolated to the gay community, it was realized that the term GRID was misleading and AIDS was introduced at a meeting in July 1982. By September 1982 the CDC started using the name AIDS.

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Human History of AIDS

- In 1983, two separate research groups led by Robert Gallo and Luc Montagnier independently declared that a novel retrovirus may have been infecting AIDS patients, and published their findings in the same issue of the journal Science.
- Gallo claimed that a virus his group had isolated from an AIDS patient was strikingly similar in shape to other human T-lymphotropic viruses (HTLVs) his group had been the first to isolate. Gallo's group called their newly isolated virus HTLV-III.

Robert Gallo

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Human History of AIDS

- At the same time, Montagnier's group isolated a virus from a patient presenting with swelling of the lymph nodes of the neck and physical weakness, two classic symptoms of AIDS. Contradicting the report from Gallo's group, Montagnier and his colleagues showed that core proteins of this virus were immunologically different from those of HTLV-I.
- Montagnier's group named their isolated virus lymphadenopathy-associated virus (LAV).
- As these two viruses turned out to be the same, in 1986, LAV and HTLV-III were renamed HIV.

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Origin of HIV

- Both HIV-1 and HIV-2 are believed to have originated in non-human primates in West-central Africa and to have transferred to humans (a process known as zoonosis) in the early 20th century.
- HIV-1 appears to have originated in southern Cameroon through the evolution of SIV(cpz), a simian immunodeficiency virus (SIV) that infects wild chimpanzees (HIV-1 descends from the SIVcpz endemic in the chimpanzee subspecies *Pan troglodytes troglodytes*).
- The closest relative of HIV-2 is SIV (smm), a virus of the sooty mangabey (*Cercocebus atys atys*), an old world monkey living in litoral West Africa (from southern Senegal to western Côte d'Ivoire).

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Origin of HIV

Left to right: the African green monkey source of SIV, the sooty mangabey source of HIV-2 and the chimpanzee source of HIV-1

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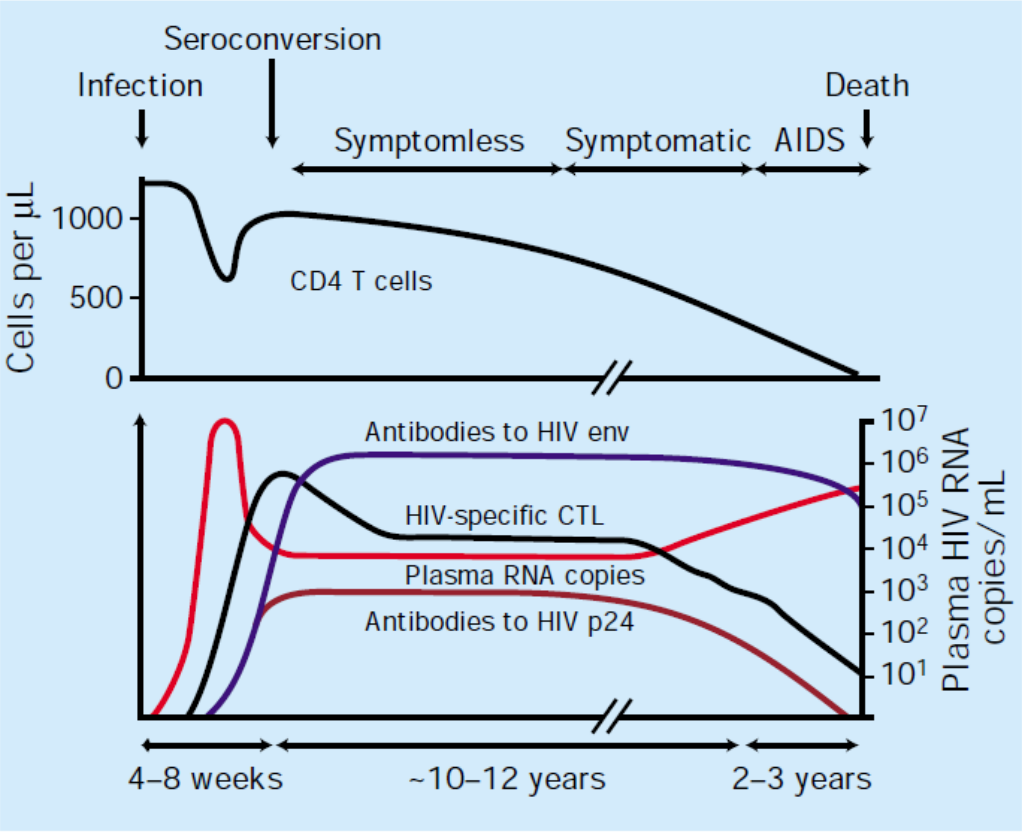

Figure 1: **Schematic view of the course of HIV-1 infection and disease**

M.B. Feinberg, Changing the natural history of HIV disease, Lancet, 348 (1996), pp. 239–246

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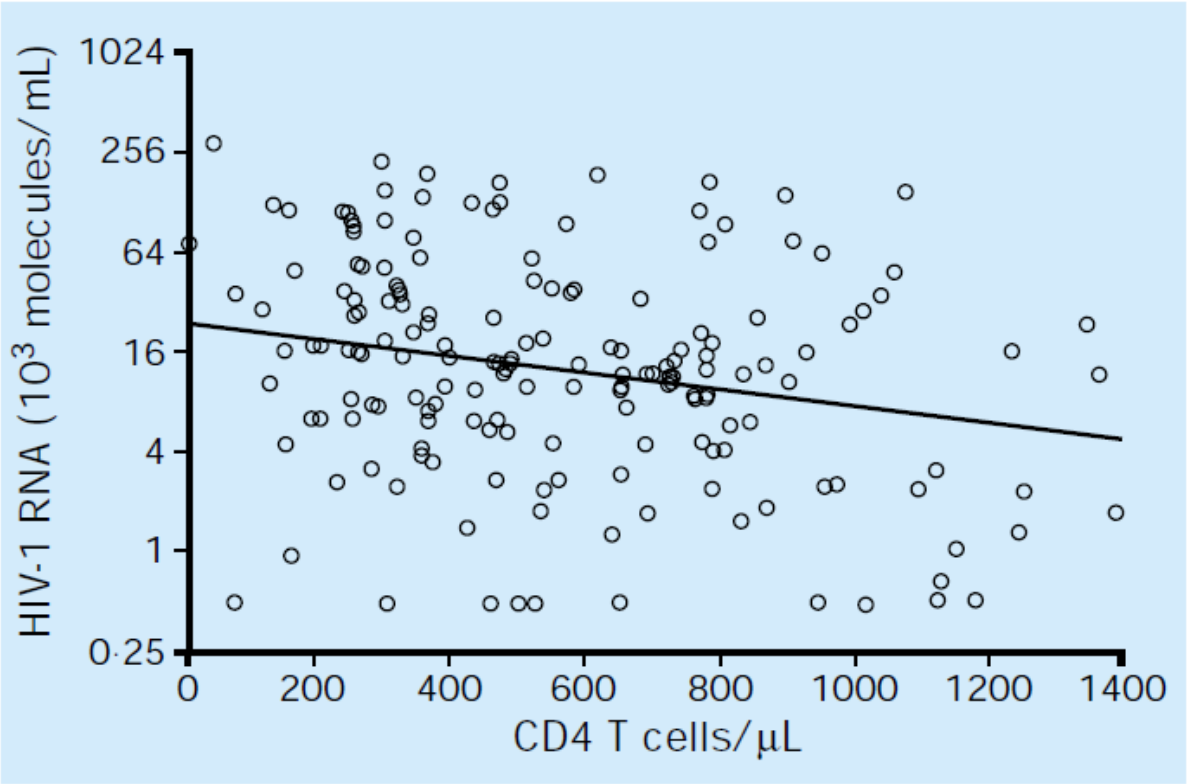

Figure 2: **Relation between CD4 T-cell counts and HIV-1 RNA concentrations**

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Thank you very much

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