

Zidovudine: AZT Antiviral

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Who discovered the drug?

Jerome Horwitz of the Barbara Ann Karmanos Cancer Institute and Wayne State University School of Medicine first synthesized AZT in 1964



When was the drug first introduced?

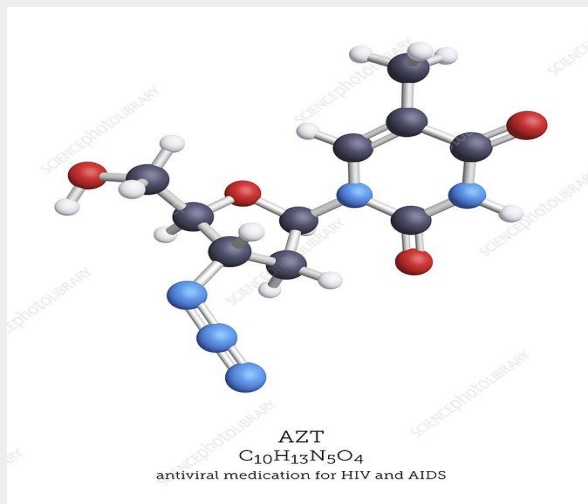
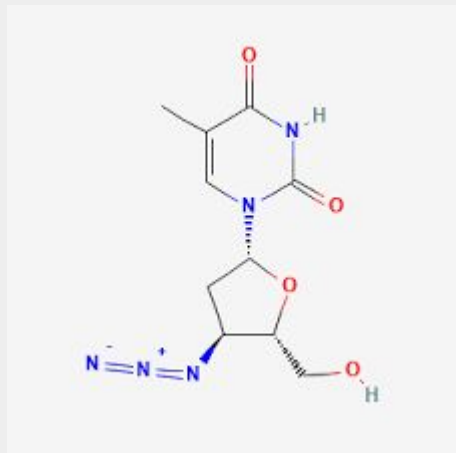
In March 1987, became the first to gain approval from the U.S. food and drug administration for treating AIDS



1-[(2R,4S,5S)-4-azido-5-(hydroxymethyl)oxolan-2-yl]-5-methylpyrimidine-2,4-dione[1]

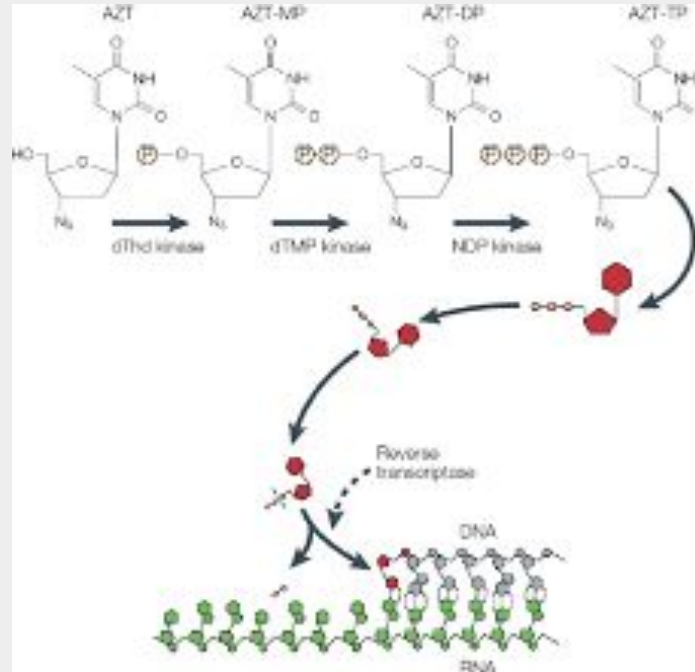
Chemical formula: $C_{10}H_{13}N_5O_4$

Molecular mass: 267.24



mechanism of action of azt

AZT works by selectively inhibiting HIV's reverse transcriptase, the enzyme that the virus uses to make a DNA copy of its RNA.

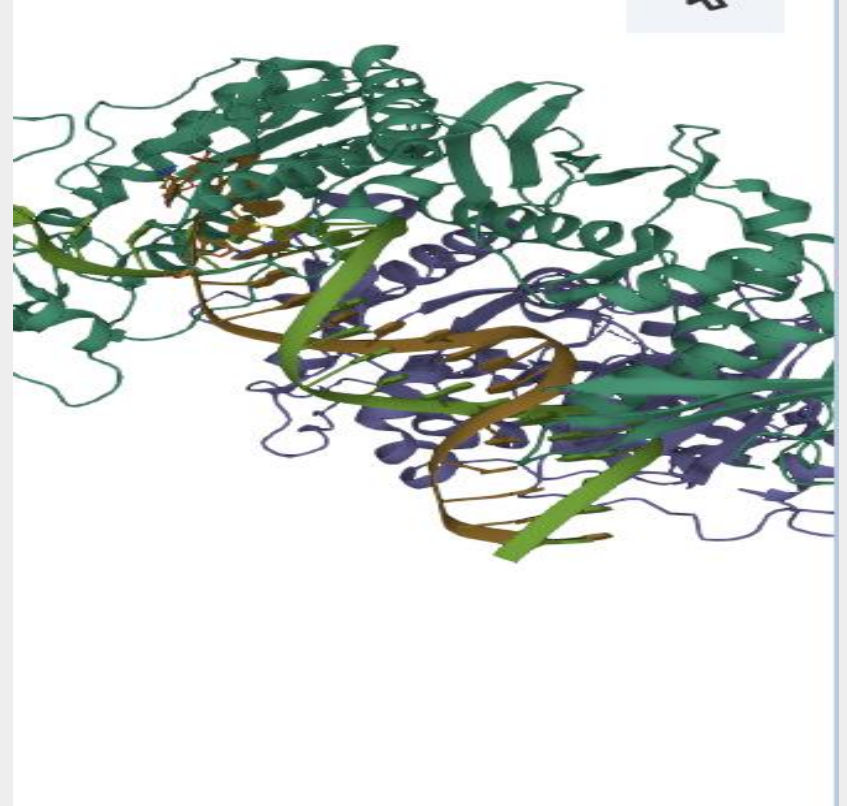
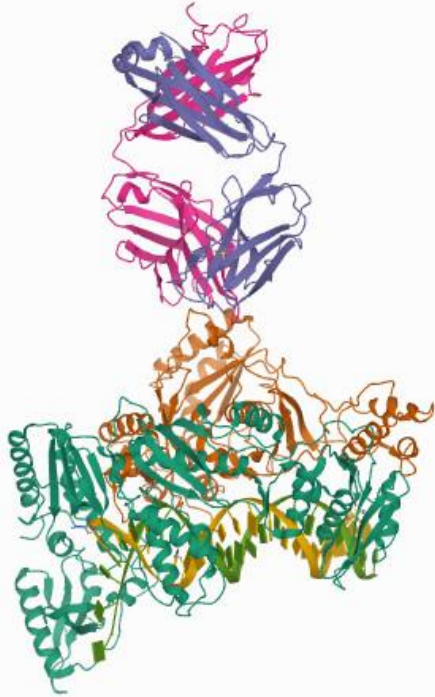


When it became
therapeutic medicine



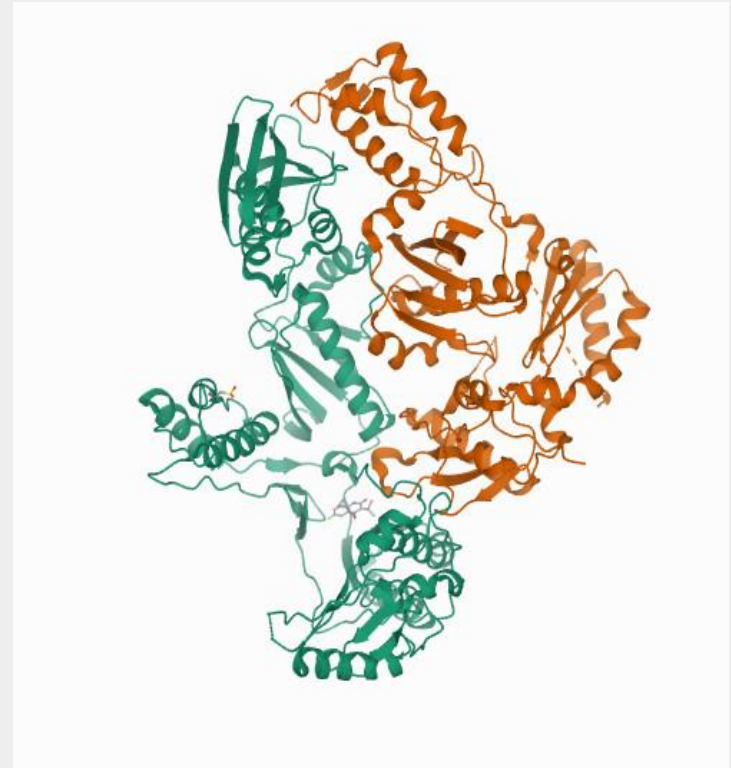
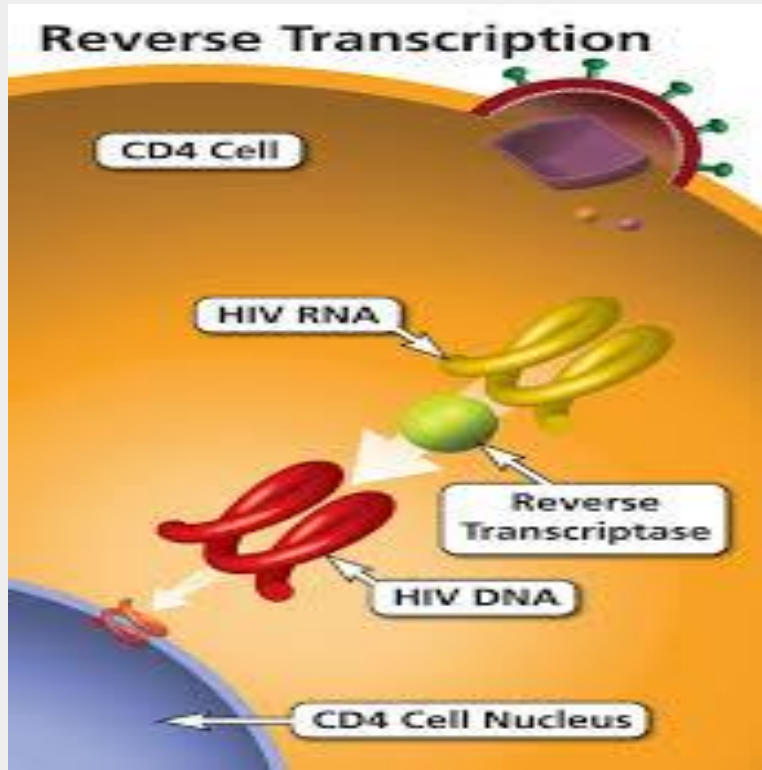
In 1987, sold under the brand name retrovir, AZT works by blocking proteins called enzymes that the virus needs to replicate itself.

Crystal structure of HIV-1 reverse transcriptase (RT) cross-linked with AZT-terminated DNA



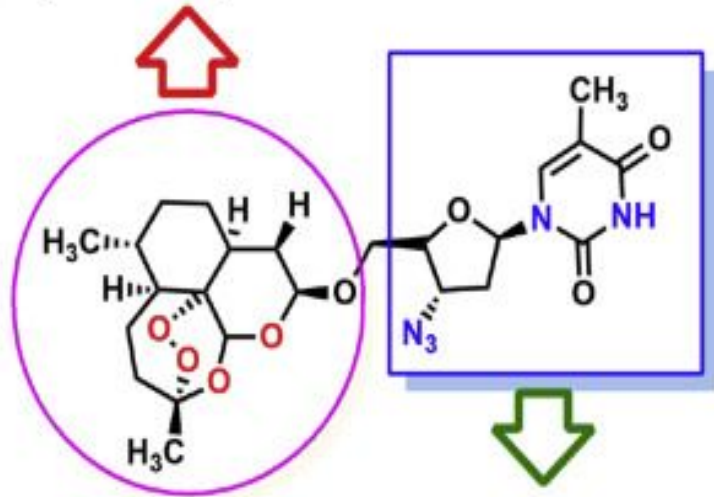
What is reverse transcriptase

an enzyme that catalyzes the formation of DNA from an RNA template in reverse transcription.



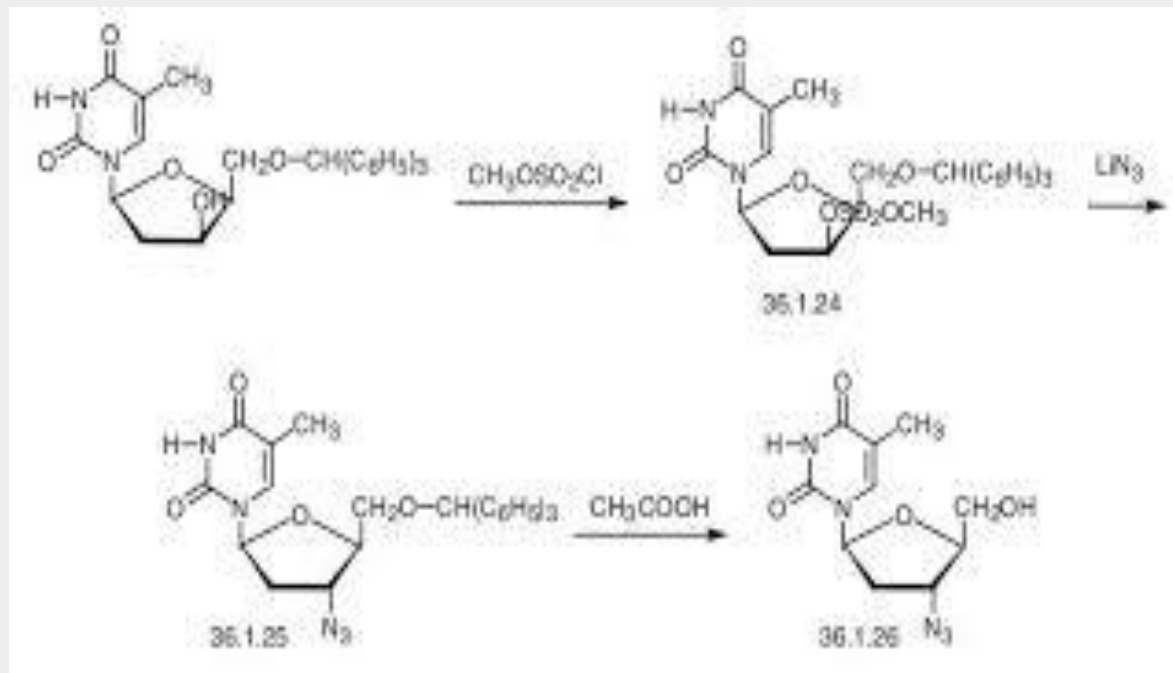
Pharmacophore of AZT

Artemisini having
1,2,4- pharmacophore unit



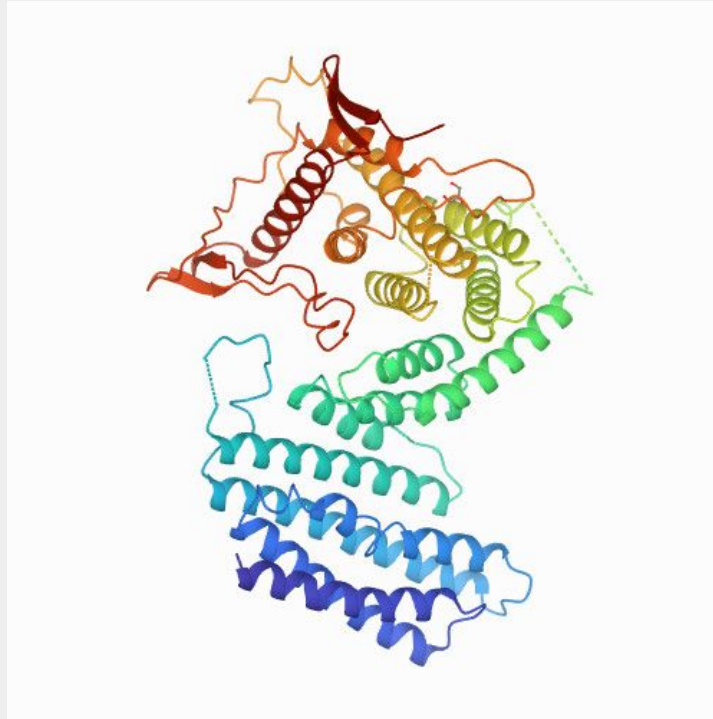
AZT unit, increases *in vivo* half-life
time of parent drug.

Synthesis of azt

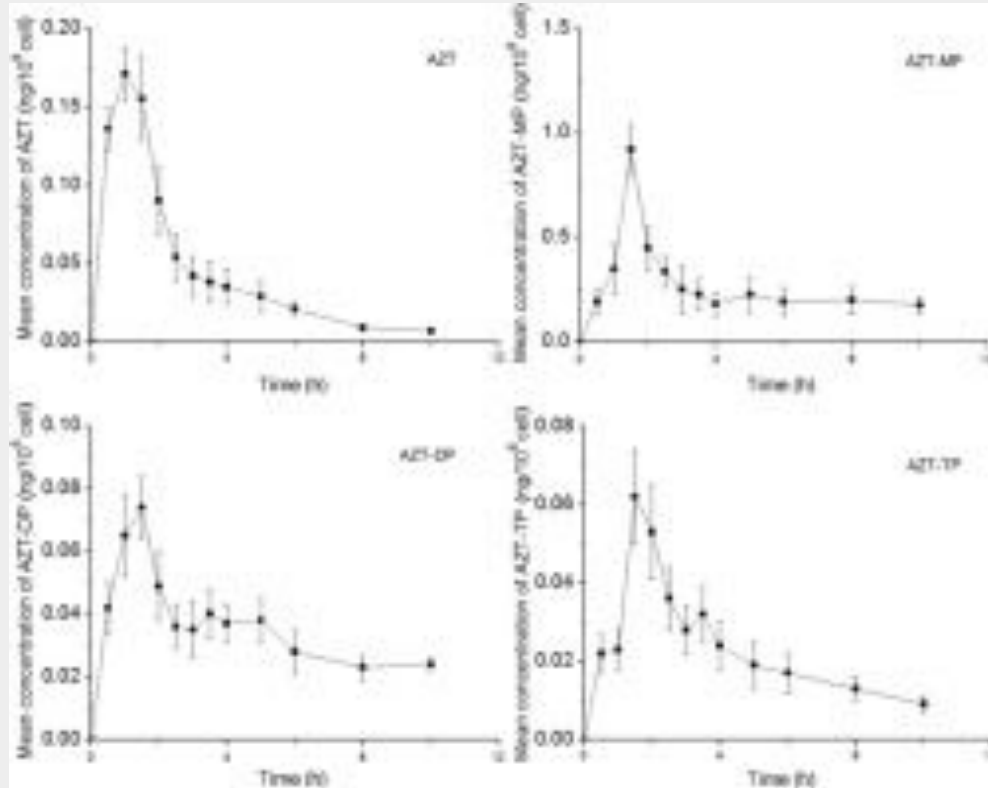


AZT can treat cancer

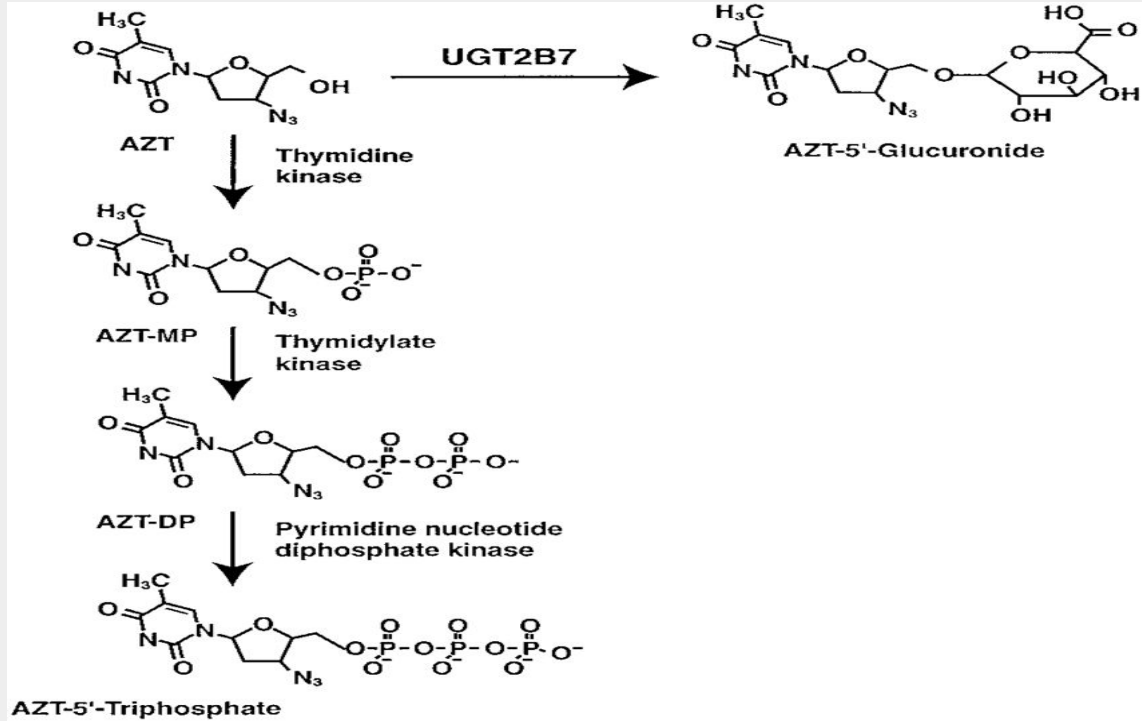
AZT for telomerase inhibition and have led to potential clinical straggles for anti cancer therapy



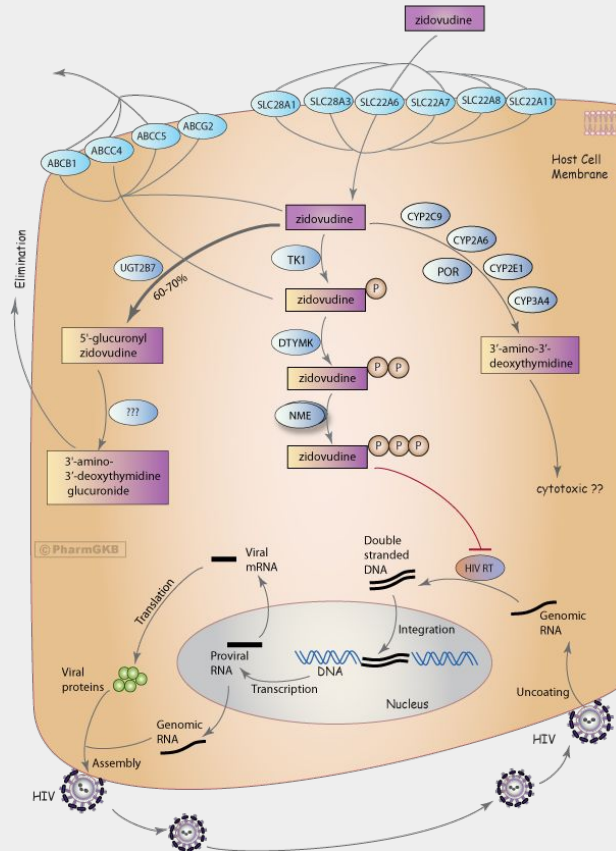
Pharmacokinetics of AZT



AZT Metabolism



AZT Pharmacokinetics/ Pharmacodynamics



Resources

[Zidovudine - Wikipedia](#)

[https://en.wikipedia.org › wiki › Zidovudine](https://en.wikipedia.org/wiki/Zidovudine)

[AZT \(zidovudine, Retrovir\) - CATIE.ca](#)

[https://www.catie.ca › azt-zidovudine-retrovir](https://www.catie.ca/azt-zidovudine-retrovir)

[The Story Behind the First AIDS Drug - TIME](#)

[https://time.com › History › Drugs](https://time.com/History/Drugs)