

# PEDIATRIC HIV/AIDS COHORT STUDY

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# Two Distinct Populations of HIV-Infected Adolescents



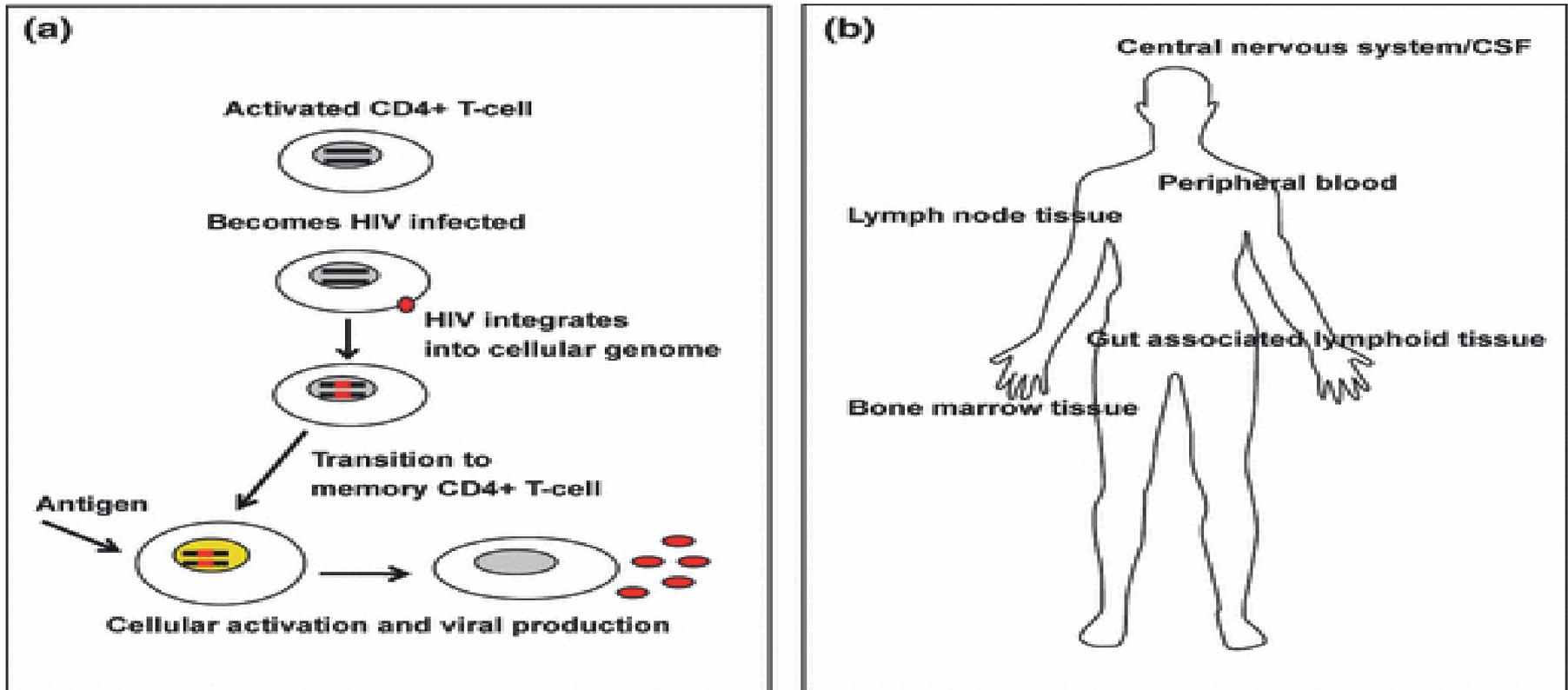
- Disease acquired via perinatal transmission and surviving until adolescence (“Aging-Up”)
- Disease acquired in adolescence via high-risk behaviors



# Why PHACS Did This Study

- Case Report: Mississippi Baby (Persaud et al, NEJM, 11/2013) :
  - Infant who was started on HIV treatment at 30 hours of life but then was lost to care and came off of treatment at 18 months of age
  - The child has been off medication for a year with no signs of infection, though tests have revealed traces of the virus's genetic material remaining.
- Scientists are interested in exploring how this case should impact approach to treatment of HIV-infected infants and infants at high risk of infection.

# HIV reservoirs and the possibility of a cure for HIV infection



Journal of Internal Medicine; Palmer S et al

Volume 270, Issue 6, pages 550-560, 27 OCT 2011 DOI: 10.1111/j.1365-2796.2011.02457.x

<http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2796.2011.02457.x/full#f2>; used with permission

# What PHACS Did

- 144 perinatally-infected youth enrolled in PHACS/AMP, median age 14.3 years were studied at one time point
- Comparisons were made between groups based on long-term HIV viral suppression <400 copies/ml (median 10.2 years) on ART
  - 14 children had viral suppression by age < 1 year
  - 53 children had viral suppression between age 1-5 years
  - 77 children had viral suppression by age > 5 years
- Markers of viral reservoir were compared based on timing of first viral suppression after 10 years on antiretroviral therapy (cART)

# What PHACS Found: Viral Control Before Age 1 Year Significantly Reduces HIV Reservoirs, *Persaud D, et al. CROI 2014, Oral Abstract 72*

	Age at 1 <sup>st</sup> viral suppression			P value
	< 1 year (N= 14)	1-5 years (N= 53)	>5 years (N= 77)	
Age (years)	12.6	12.7	15.8	<0.001
Age cART start	2.4 mos	22.6 mos	67.6 mos	<0.001
Duration viral suppression	11.8 yrs	9. 7 yrs	5.0 yr	<0.001
Viral Reservoir Measure {Proviral burden (c/10 <sup>6</sup> PBMC)}	4.2	19.4	70.7	<0.001
Viral Reservoir Measure {2-LTR circle detection}	0%	15%	27%	0.03
Immune System Finding {Western blot +}	14%	81%	97%	<0.001

# What Our Results Mean and Why this Matters

- Early identification and treatment of HIV- infected infants and children leads to reduced viral reservoirs.
- Children with reduced viral reservoirs might have better chances to respond to future therapies aimed at curing HIV-infection
- Knowledge about the pediatric immune response is influencing development of future trials to test the response to early treatment. IMPAACT 1115 is under development; TCH is an IMPAACT site that hopes to conduct this trial.
- More data is needed before the approach to treatment of the high risk infant is changed to include higher doses of combination antiretroviral medication very early in life.

# Acknowledgments



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- Patients and their families