Animal studies and their relevance to pediatric HIV cure research

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What have we learned from infant macaque studies?

JOURNAL OF VIROLOGY, Aug. 2003, p. 8783–8792 Vol. 77, No. 16
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Simian Immunodeficiency Virus Infection in Neonatal Macaques

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JOURNAL OF VIROLOGY, July 2006, p. 6357–6367 Vol. 80, No. 13
0022-538X/06/$08.00+0 doi:10.1128/JVI.02240-05

Rapid Virus Dissemination in Infant Macaques after Oral Simian Immunodeficiency Virus Exposure in the Presence of Local Innate Immune Responses

Kristina Abel,[1,2,3]* Bapi Pahar,[6] Koen K. A. Van Rompay,[2] Linda Fritts,[1,2] Clarissa Sin,[2] Kimberli Schmidt,[2] Roxana Colón,[2] Mike McChesney,[2,4] and Marta L. Marthas[2,5]

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ANTIMICROBIAL AGENTS AND CHEMOTHERAPY, Nov. 1992, p. 2381–2386 Vol. 36, No. 11
0066-4804/92/112381-06$02.00/0

Simian Immunodeficiency Virus (SIV) Infection of Infant Rhesus Macaques as a Model To Test Antiretroviral Drug Prophylaxis and Therapy: Oral 3′-Azido-3′-Deoxythymidine Prevents SIV Infection

KOEN K. A. VAN ROMPAY,[1,2]* MARTA L. MARTHAS,[1] ROSS A. RAMOS,[1,2] CAROL P. MANDELL,[3] ELLEN K. McGOWAN,[4] STEVE M. JOYE,[1] AND NIELS C. PEDERSEN[2]

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Pathogenicity of Live, Attenuated SIV After Mucosal Infection of Neonatal Macaques

Timothy W. Baba, Yong Seok Jeong, Dominique Penninck, Rod Bronson, Michael F. Greene, Ruth M. Ruprecht*

SCIENCE • VOL. 267 • 24 MARCH 1995

Passive neutralizing antibody controls SHIV viremia and enhances B cell responses in infant macaques

Cherie T Ng[1,2,9], J Pablo Jaworski[3], Pushpa Jayaraman[1,2,9], William F Sutton[3], Patrick Delio[4], LaRene Kuller[4], David Anderson[4], Gary Landucci[5], Barbra A Richardson[6], Dennis R Burton[7,8], Donald N Forthal[5] & Nancy L Haigwood[1–3]

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Human neutralizing monoclonal antibodies of the IgG1 subtype protect against mucosal simian–human immunodeficiency virus infection

TIMOTHY W. BABA[1,2,3], VLADIMIR LISKA[1,2], REGINA HOFMANN-LEHMANN[1,2], JOSEF VLASAK[1,2], WEIDONG XU[1,2], SEYOUM AYEHUNIE[1,2], LISA A. CAVACINI[2,4], MARSHALL R. POSNER[2,4], HERMANN KATINGER[5], GABRIELA STIEGLER[5], BRUCE J. BERNACKY[6], TAHIR A. RIZVI[6], RUSSELL SCHMIDT[6], LORI R. HILL[6], MICHALE E. KEELING[6], YICHEN LU[7], JOEL E. WRIGHT[8,9], TING-CHAO CHOU[10] & RUTH M. RUPRECHT[1,2]

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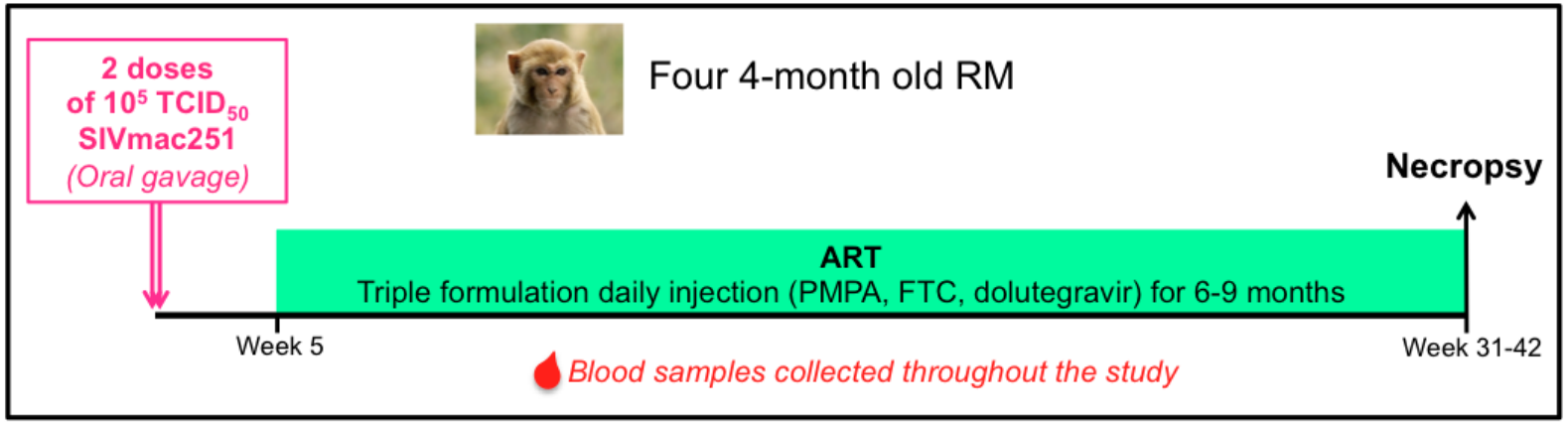
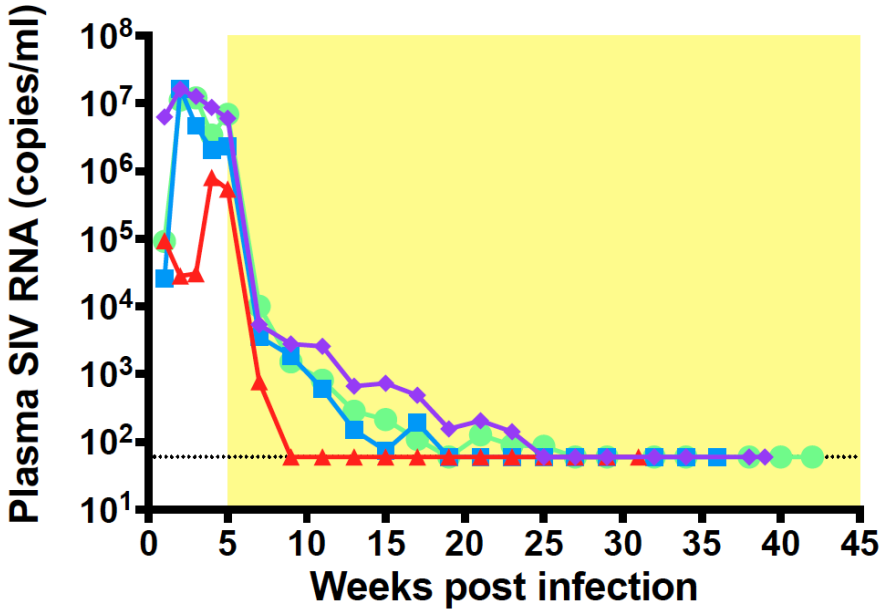
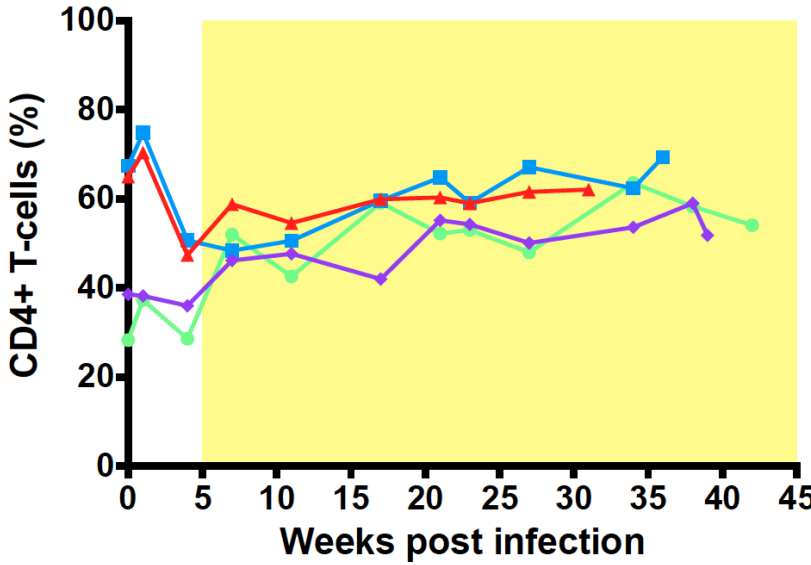
Infant macaque model

Study design:



Chahroudi, unpublished





How can we use animal studies to advance pediatric cure research?

- In-depth consideration for how the developing immune system impacts virus reservoirs and persistence
- Take advantage of access to brain, spleen, other tissue sites to fully characterize anatomic reservoirs in infants
- Treatment interruption does not present an ethical dilemma: readily determine how cure interventions influence viral rebound
- Manipulate the timing of infection and ART: test very early treatment vs. later treatment to elucidate potential mechanisms of remission in Mississippi child
- Test new strategies: use of ART plus bNAbs (Haigwood); CCR5 depletion / CD4 depletion (Hartigan-O'Connor); monocyte/macrophage depletion (Kuroda)

amfAR Think Tank, June 19-21, 2015

Hotel Mazarin
730 Bienville Street
New Orleans, Louisiana

Approaches to HIV reservoir identification and eradication: Lessons from neonatal and adult non-human primate models

Understanding HIV Persistence in Infants—FY 2016

For the published program announcement, see the June 5, 2015, *Guide* announcement, Understanding HIV Persistence in Infants (R01).

Understanding HIV Persistence in Infants—FY 2017

Request for Applications—proposed FY 2017 initiative

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Take home messages

- Infant macaque studies are feasible for cure research
- SIV infection of infant macaques shows a similar virologic course pre- and post-ART to HIV-infected infants
- Monkey models provide a unique opportunity to learn about tissue reservoirs that cannot be accessed in humans (e.g., brain)
- This model can and should be used to test novel cure interventions to guide future trials in patients

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