HIV Cure in 2025 and Beyond

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D&RE

UCSF-BAY AREA CFAR CENTER FOR AIDS RESEARCH

Thanks to Steve Deeks and Rachel Rutishauser for sharing slides

Where we are

Antiretroviral therapy for treatment and prevention works great, and long-acting ART in some ways approximates a cure

THE LANCET
Infectious Diseases

Switch to long-acting cabotegravir and rilpivirine in virologically suppressed adults with HIV in Africa (CARES): week 48 results from a randomised, multicentre, open-label, non-inferiority trial

*Cissy Kityo, Ivan K Mambule, Joseph Musaazi, Simiso Sokhela, Henry Mugerwa, Gilbert Ategeka, Fiona Cresswell, Abraham Siika, Josphat Kosgei, Reena Shah, Logashvari Naidoo, Kimton Opiyo, Caroline Otike, Karlien Möller, Arvind Kaimal, Charity Wambui, Veerle Van Eygen, Perry Mohammed, Fafa Addo Boateng, Nicholas I Paton, for the CARES trial team**

Cabotegravir/rilpivirine maintenance therapy:
~100% effective

The NEW ENGLAND JOURNAL of MEDICINE

Twice-Yearly Lenacapavir or Daily F/TAF for HIV Prevention in Cisgender Women

L.-G. Bekker, M. Das, Q. Abdool Karim, K. Ahmed, J. Batting, W. Brumskine, K. Gill, I. Harkoo, M. Jaggernath, G. Kigozi, N. Kiwanuka, P. Kotze, L. Lebina, C.E. Louw, M. Malahleha, M. Manentsa, L.E. Mansoor, D. Moodley, V. Naicker, L. Naidoo, M. Naidoo, G. Nair, N. Ndlovu, T. Palanee-Phillips, R. Panchia, S. Pillay, D. Potloane, P. Selepe, N. Singh, Y. Singh, E. Spooner, A.M. Ward, Z. Zwane, R. Ebrahimi, Y. Zhao, A. Kintu, C. Deaton, C.C. Carter, J.M. Baeten, and F. Matovu Kiweewa, for the PURPOSE 1 Study Team*

Lenacapavir PrEP:
100% effective

Why do we need a cure in an era of effective ART?

- Human costs
  - Stigma/discrimination
  - Long-term health: Co-morbidities, polypharmacy
  - Multi-drug resistance
  - Life-long adherence is challenging
  - Despite massive investments, many not on effective ART (~30% adults, ~50% children)

- Public health concerns: <u>have shifted theoretical → real</u>
  - Disruptions affect access (COVID, PEPFAR, USAID)

We have a deep understanding of the challenges that need to be overcome

- Reservoir cells: Heterogenous; increasingly clonal and resilient over time; location matters (genic/non-genic); low protein production
- Reservoir size: Goes down in some studies, up in others; likely heterogenous
- Source of rebound: Gut, mesenteric lymph nodes, deep tissues
- Reservoir clearance (ART): Innate immunity
- Virus control (set-point): CD8+ T cells (cytotoxic or not, proliferative potential)

At least 7 people have been cured with allogenic stem cell transplants… inspiring proof-of-concept but not scalable

Timothy Brown
Berlin
2009

Adam Castallejo
London
2019

New York
2021

Mark Franke
Dusseldorf
Germany
2021

Paul Edmonds
City of Hope
California
2022

2023

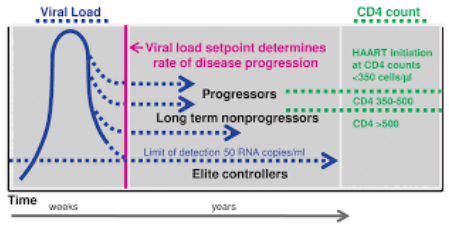
Geneva
Patient

Next Berlin
Patient

2024

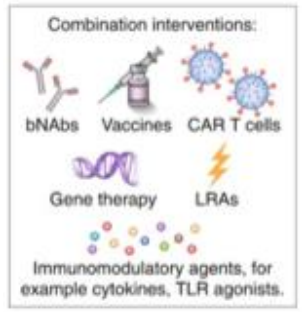
Sustained HIV control in absence of HIV medications ("remission") is becoming more common

Elite controllers
LTNPs



Post treatment control
(VISCONTI, CHAMP)

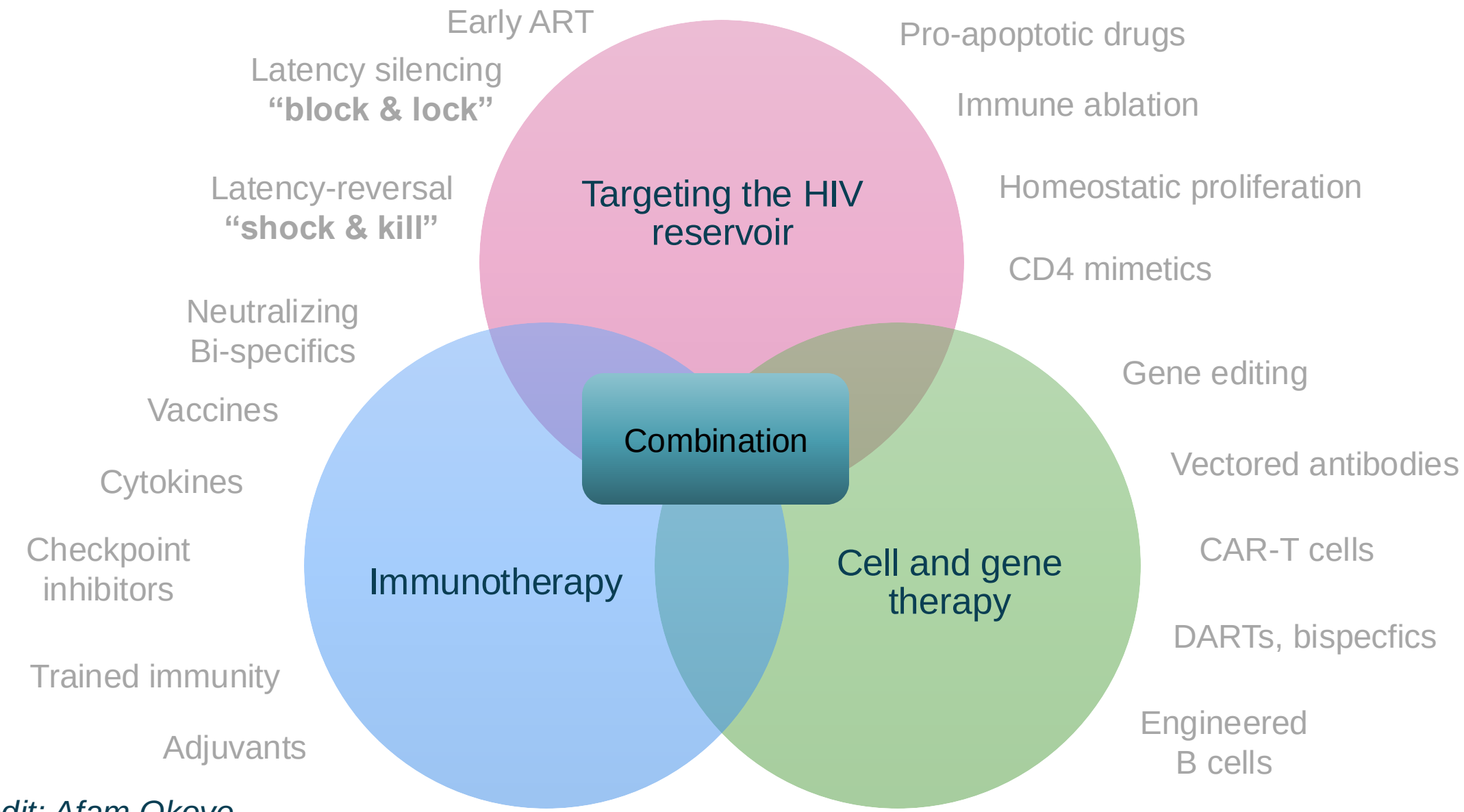
Exceptional control
Spontaneous cures



Post-intervention
control

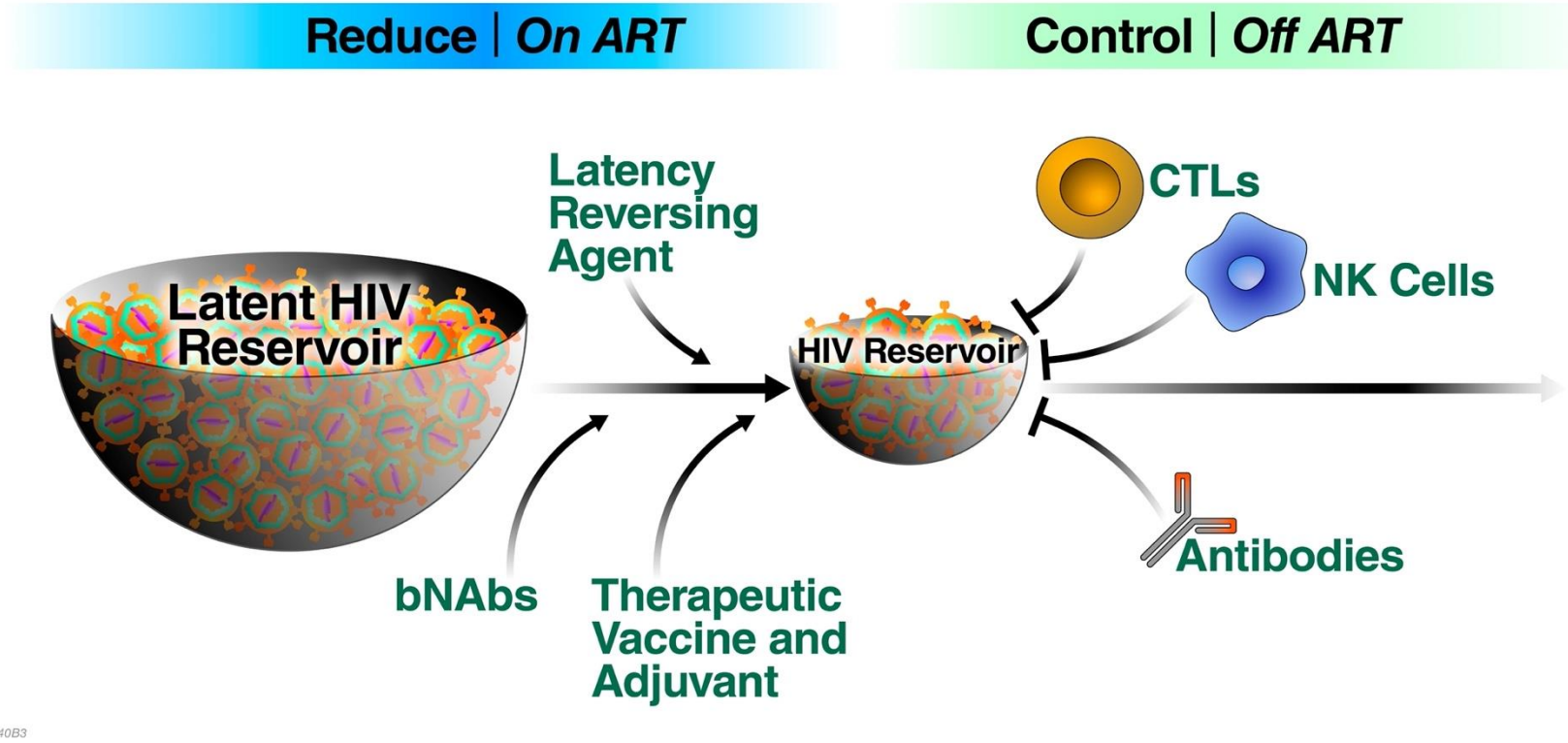
Sustained HIV-specific T cell responses are likely required for post-ART control at set-point

Multiple viable strategies have been identified



Slide credit: Afam Okoye

Reduce and Control:
low reservoir and a sustained host response



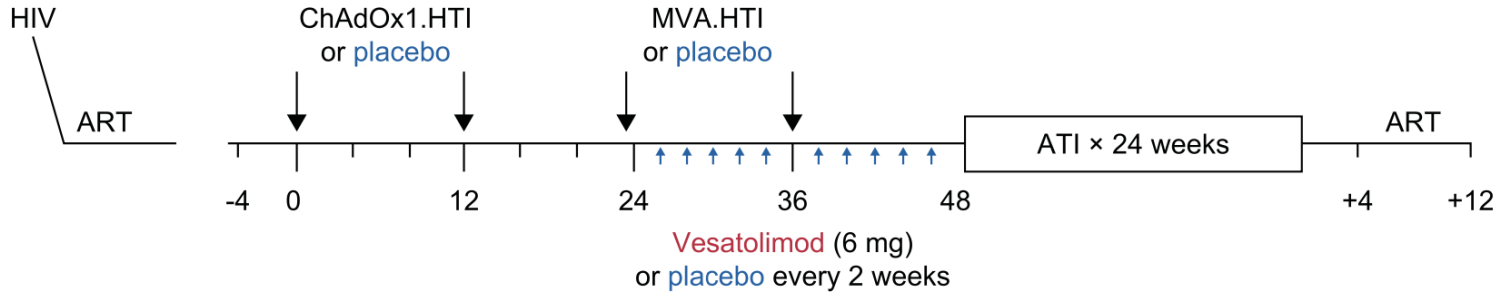
Recent progress with immune therapy

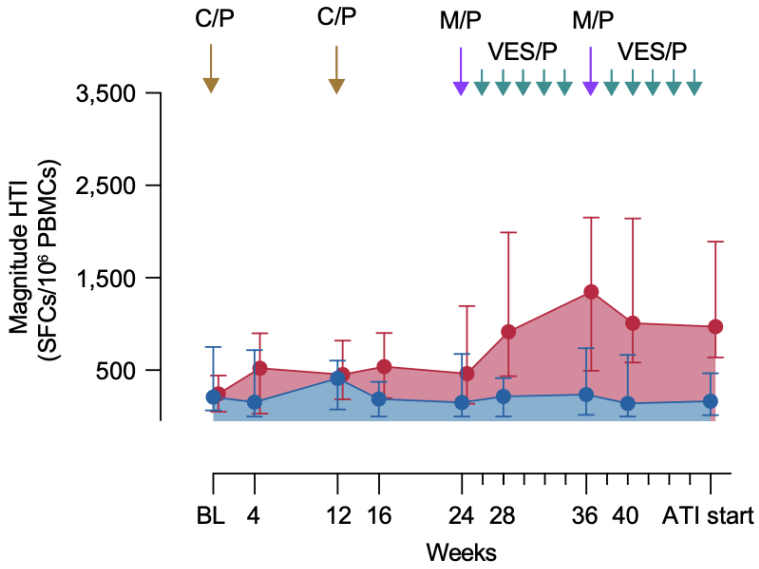
AELIX 003: Highly immunogenic vaccine (ChAd/MVA) + TLR7 agonist had no effect on post-ART rebound

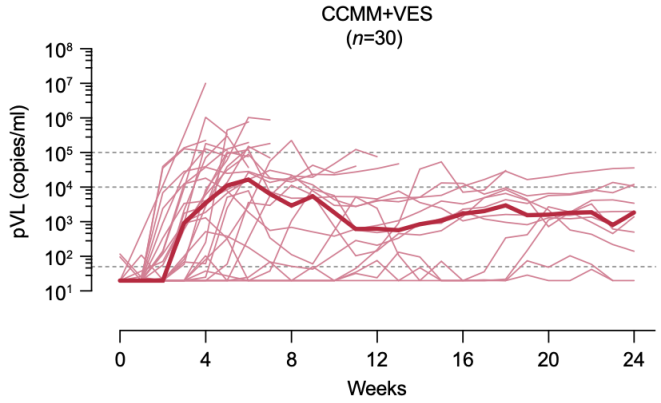
A higher magnitude response was associated with a lower VL

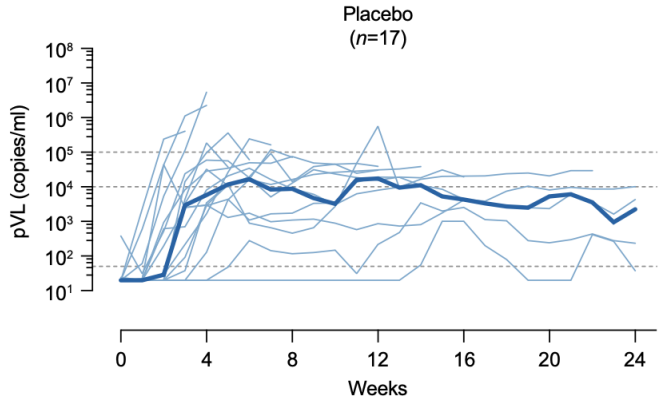
nature COMMUNICATIONS

Safety, immunogenicity and effect on viral rebound of HTI vaccines combined with a TLR7 agonist in early-treated HIV-1 infection: a randomized, placebo-controlled phase 2a trial

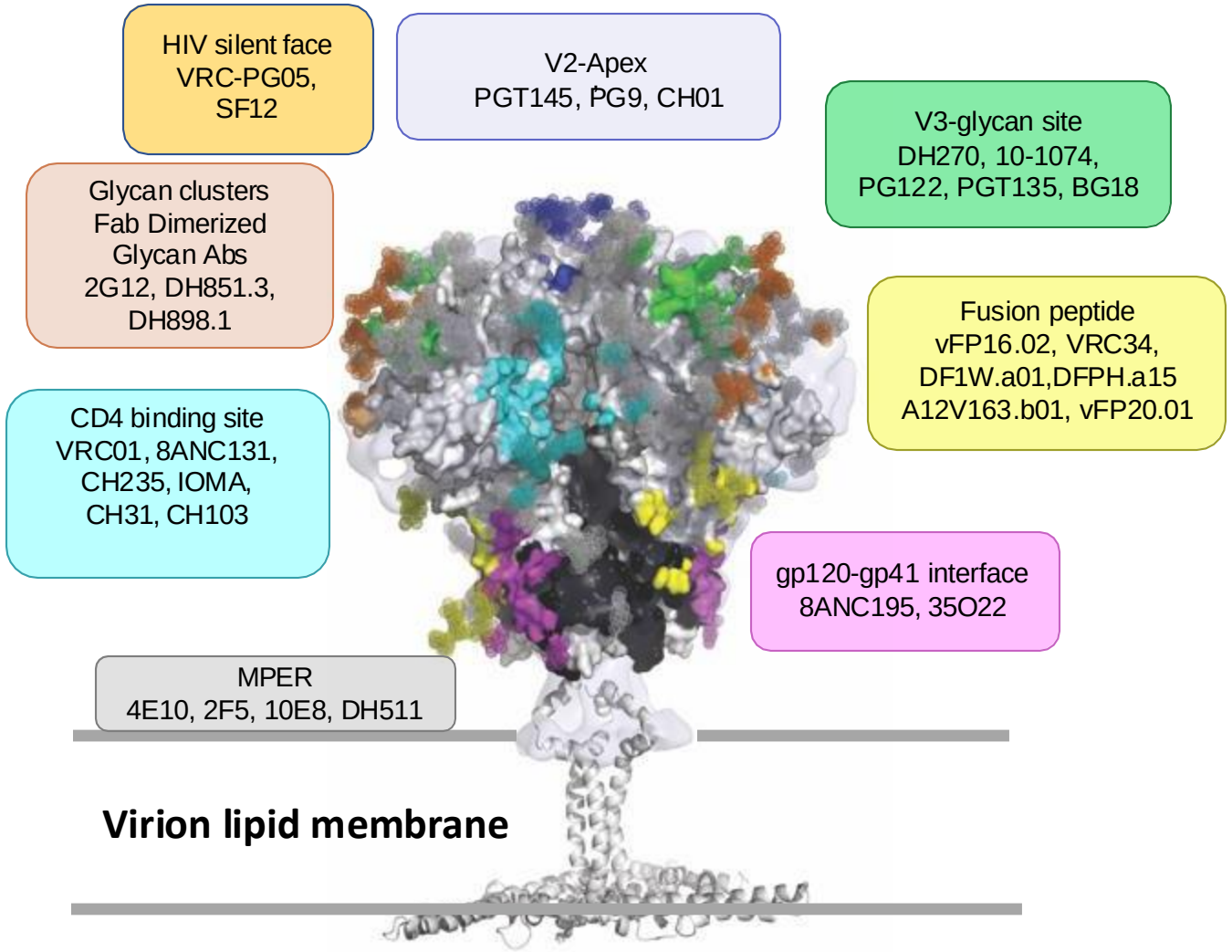






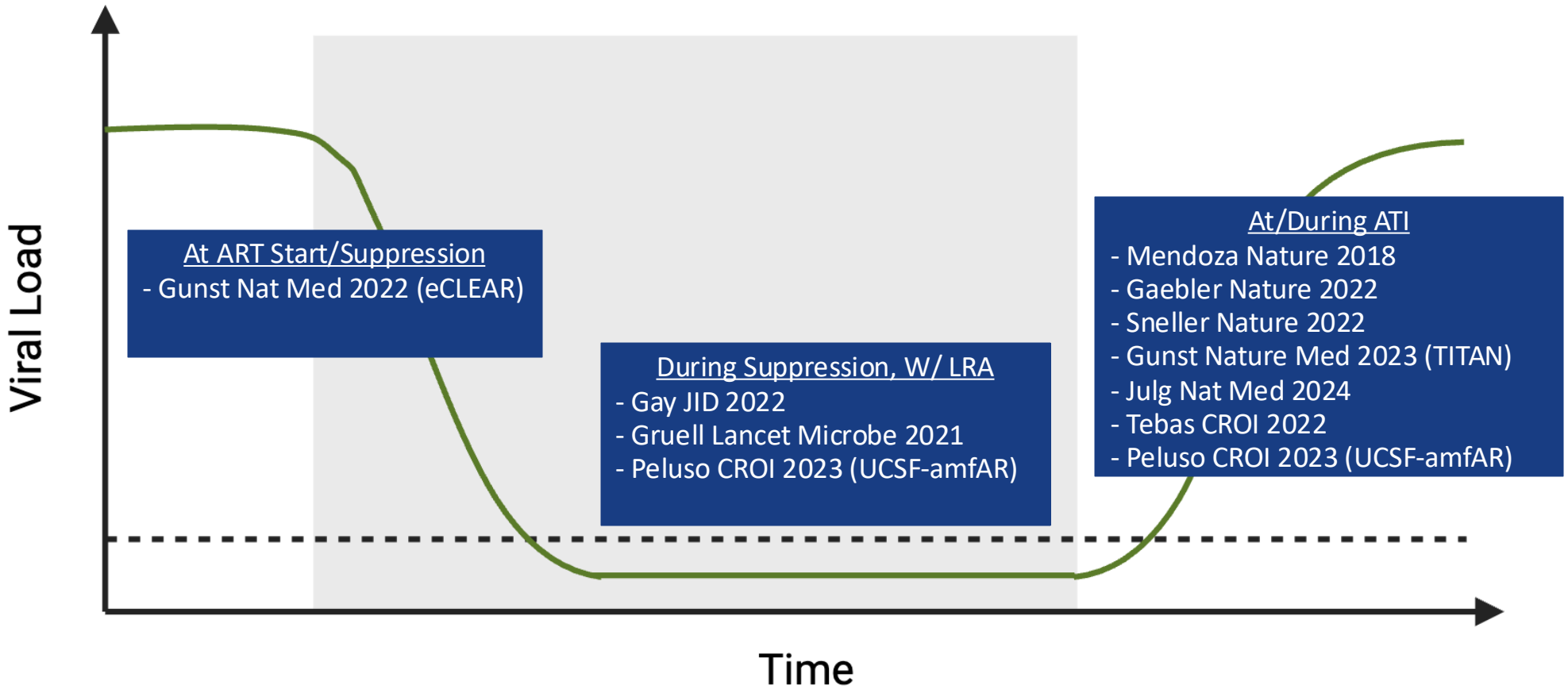


Broad Neutralizing Antibody Binding Sites on HIV-1 Env



Promising data are emerging when bNAbs are used during early ART and post-ART

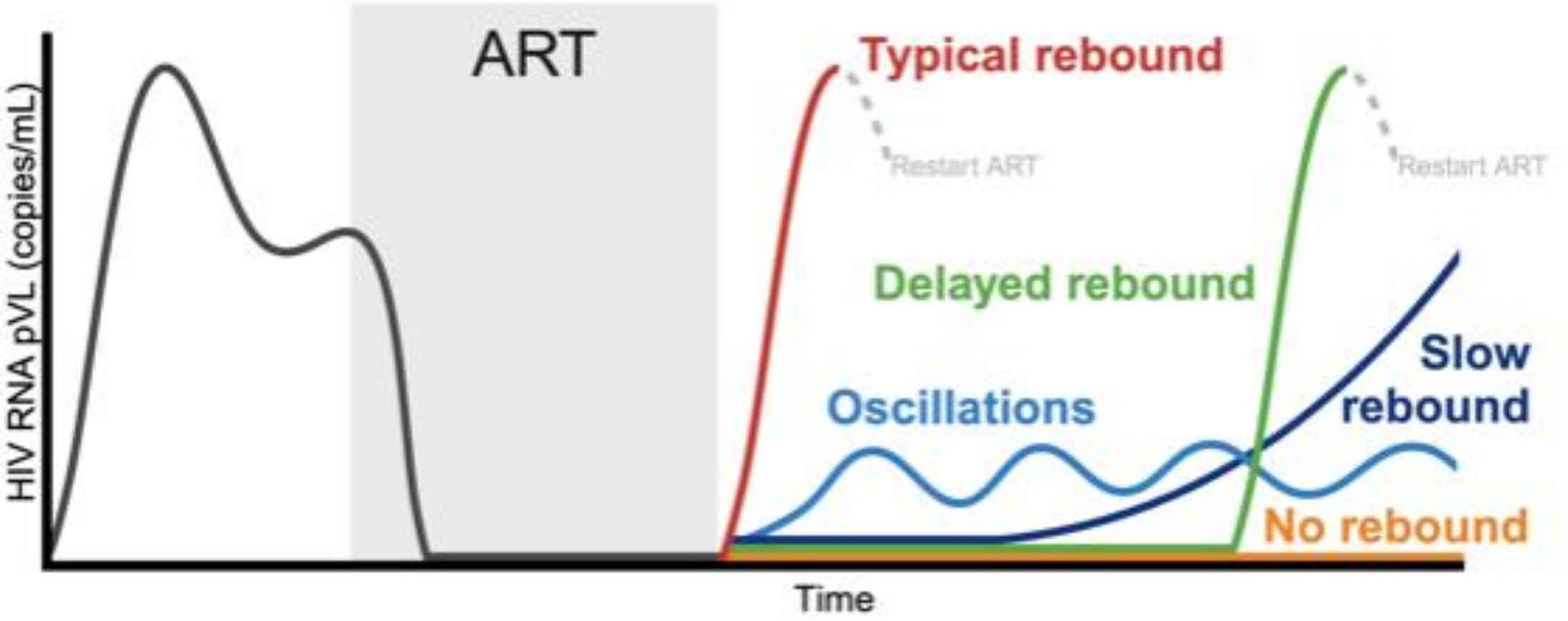
Antibody binds to HIV protein forming immune-stimulating complexes that induce an immune response ("vaccinal effect")



Adapted from a slide by Martin Tolstrup

Post-bNAb/Post-Intervention Control:

Some people exhibit delay in rebound (not surprising), slower rates of increase (lower doubling times), lower peak viral loads and lower set-points; some people do not rebound at all



Sandel, Rutishauser, & Peluso Curr Opin HIV/AIDS 2024

Historical rates of post-ART control without interventions are low

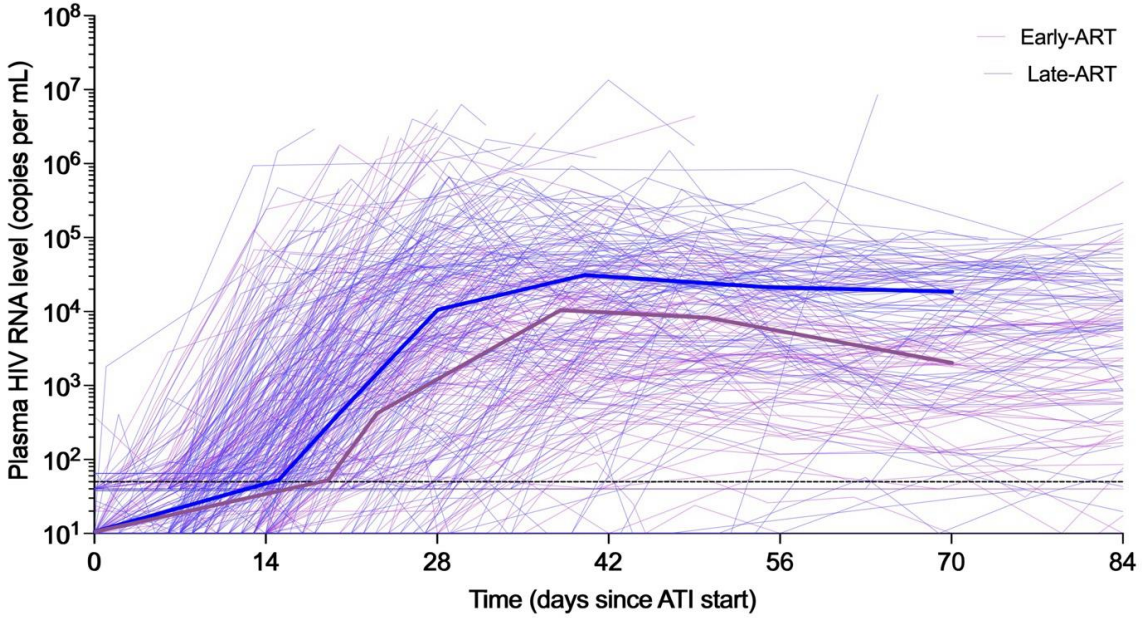
nature communications

Article

https://doi.org/10.1038/s41467-025-56116-1

Time to HIV viral rebound and frequency of post-treatment control after analytical interruption of antiretroviral therapy: an individual data-based meta-analysis of 24 prospective studies

Jesper D. Gunst[1,2,29] ✉, Jesal Gohil[3,29], Johanthan Z. Li[4], Ronald J. Bosch[5], Andrea White, Catherine Seamon[6], Tae-Wook Chun[7], Beatriz Mothe[8,9,10,11], Kathleen Gittens[12], Lauren Praiss[7], Marie-Angélique De Scheerder[13], Linos Vandekerckhove[14], Kevin Escandón[15,16], Ann Thorkelson[16], Timothy Schacker[15,16], Devi SenGupta[17], Christian Brander[8,10,11,18,19], Emmanouil Papasavvas[20], Luis J. Montaner[20], Javier Martinez-Picado[8,10,11,19], Ruxandra Calin[21], Antonella Castagna[22,23], Camilla Muccini[22], Wesley de Jong[24], Lorna Leal[25,26,27], Felipe Garcia[25,26,27], Rob A. Gruters[24], Timothy Tipoe[28], John Frater[28], Ole S. Søgaard[1,2,29] & Sarah Fidler[3,29]



- Placebo groups from multiple studies
- 176 early-treated, 195 late-treated
- Overall 8% had viral load <1000 at day 84
- 24/176 early treated (**13.6%**) and n=5/195 (**2.6%**) of late treated meet the 1,000 c/mL threshold

J. Gunst personal communication

Administration of bNAbs during antigenemia (ART initiation or at ART pause) induces sustained virus control in some

nature medicine 4/11

Early intervention with 3BNC117 and romidepsin at antiretroviral treatment initiation in people with HIV-1: a phase 1b/2a, randomized trial

nature medicine 4/11

Impact of a TLR9 agonist and broadly neutralizing antibodies on HIV-1 persistence: the randomized phase 2a TITAN trial

nature medicine 5/12

Safety and antiviral effect of a triple combination of HIV-1 broadly neutralizing antibodies: a phase 1/2a trial

nature 2/9

Combination therapy with anti–HIV–1 antibodies maintains viral suppression

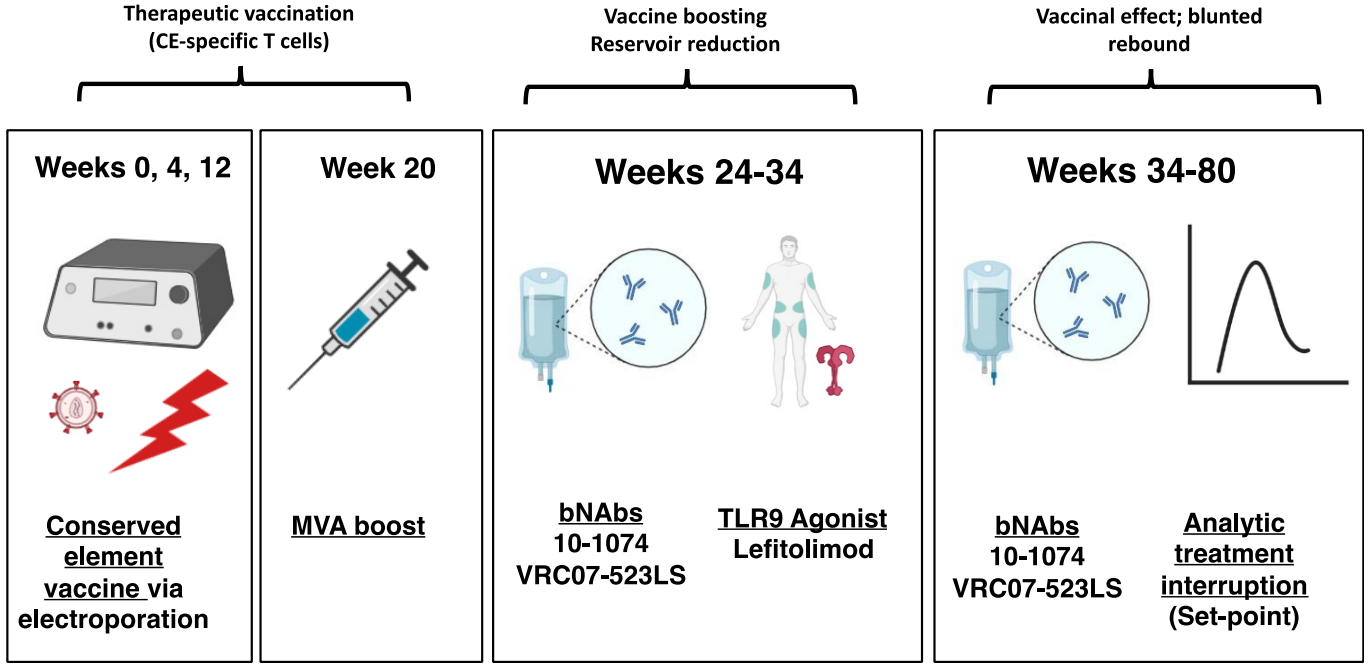
RIO ROCKEFELLER | IMPERIAL | OXFORD — ??/68, To be presented at CROI 2025

FRESH-Gilead — ??/20, To be presented at CROI 2025

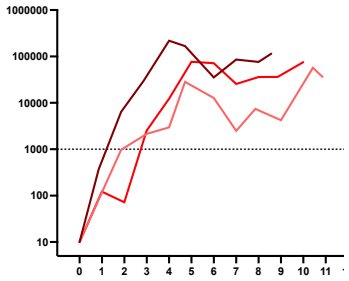
See also: Sandel, Rutishauser, Peluso, "Post-intervention control in HIV immunotherapy studies," Curr Opin HIV/AIDS, Oct 2024.

UCSF-amfAR Combination Study

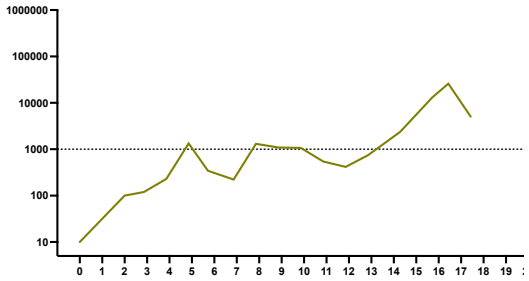
- *3 stage combination regimen*
- *Goal: feasibility and safety, proof-of-concept to justify larger RCTs*
- *Resulted in sustained control(~1000 copies/mL or less) in 7/10 participants*



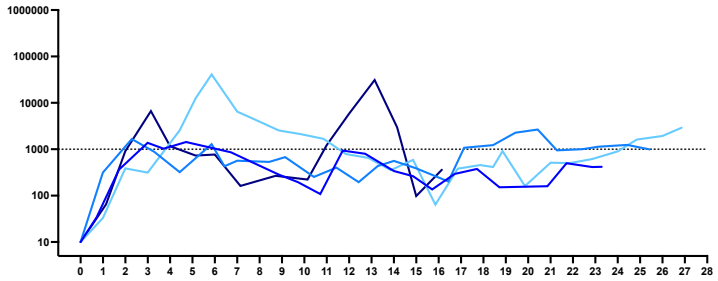
Set points around 1000 copies or less



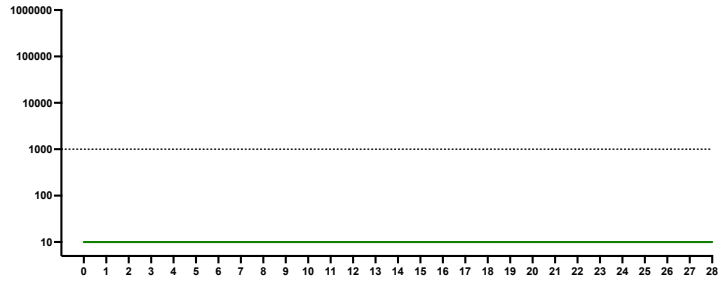
Typical rebound (n=3)



VL ~ 1000; slow rebound (n=2)



VL ~ 1000; stable (n=4)



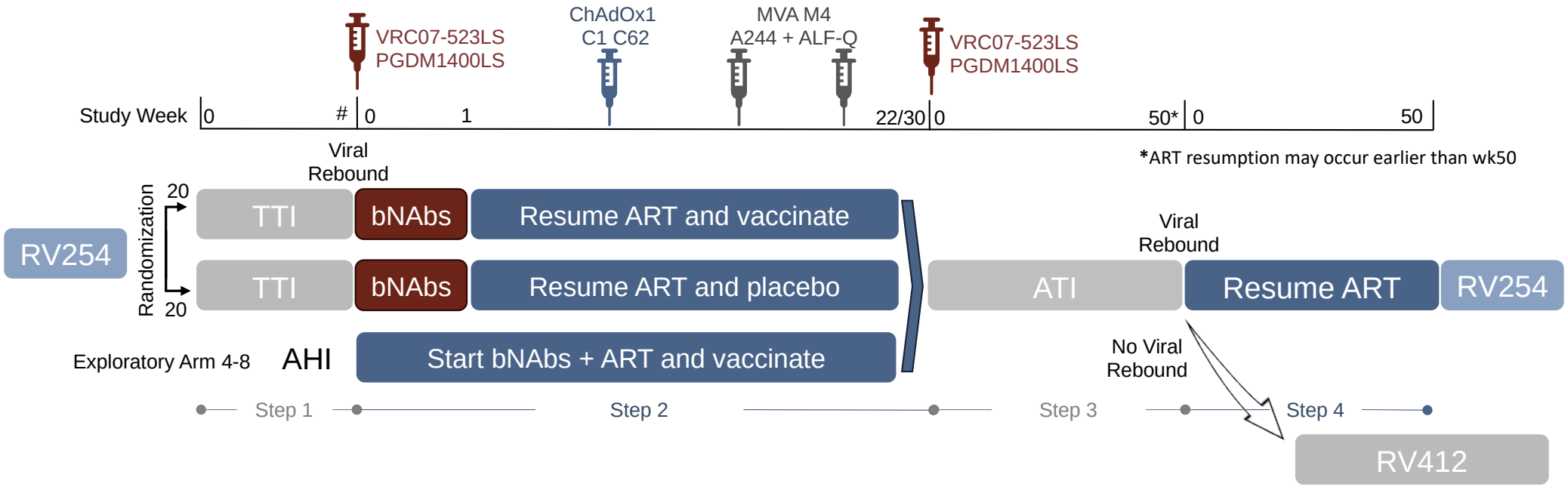
No rebound (n=1)

Peluso,* Sandel,* Deitchman* et al, under review

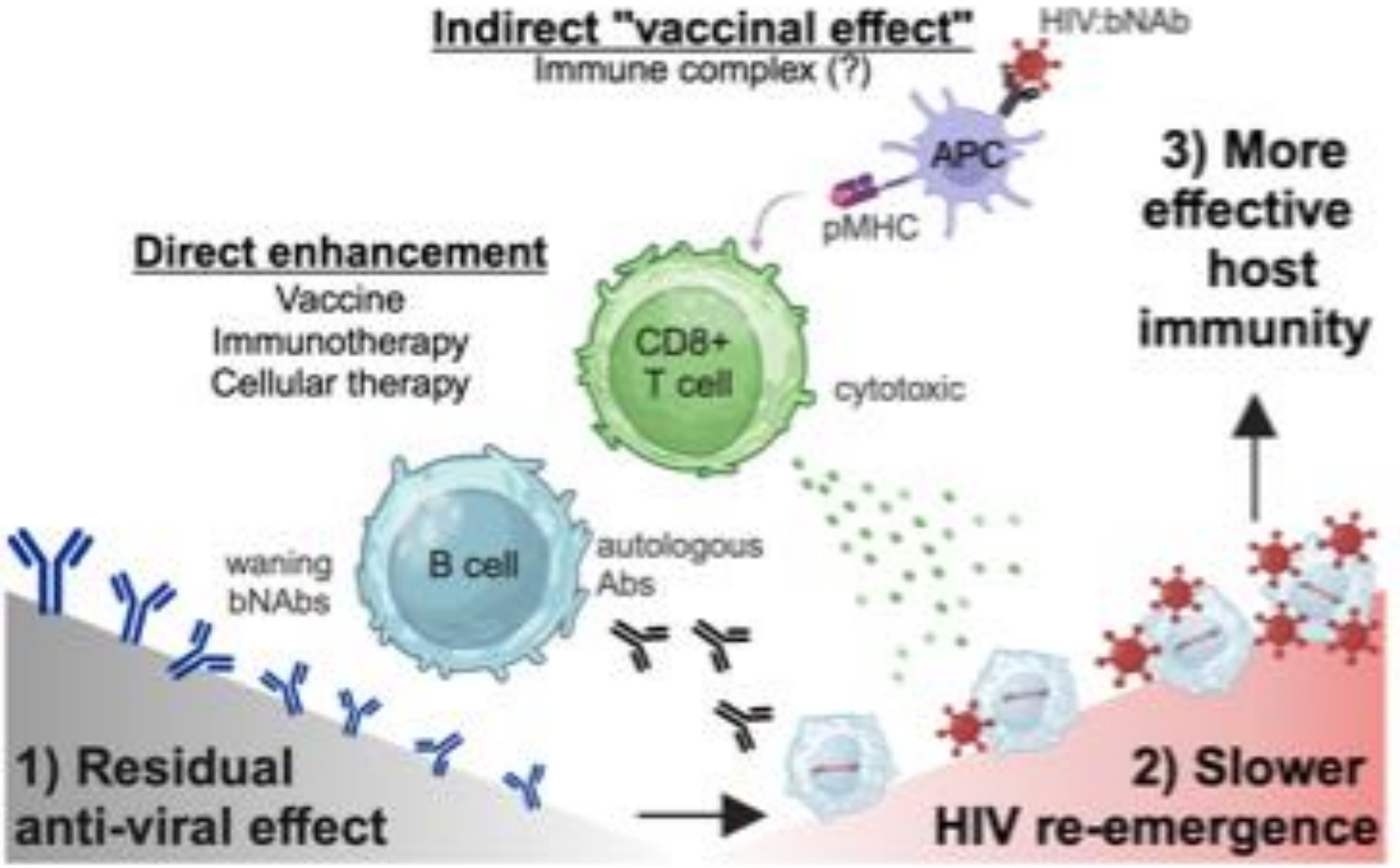
Multiple combination studies approaches now in the clinic, or in development, all including bNAbs and a vaccine

MHRP, ACTG, Gilead, others

Lydie Trautmann



Potential mechanisms of post-intervention control

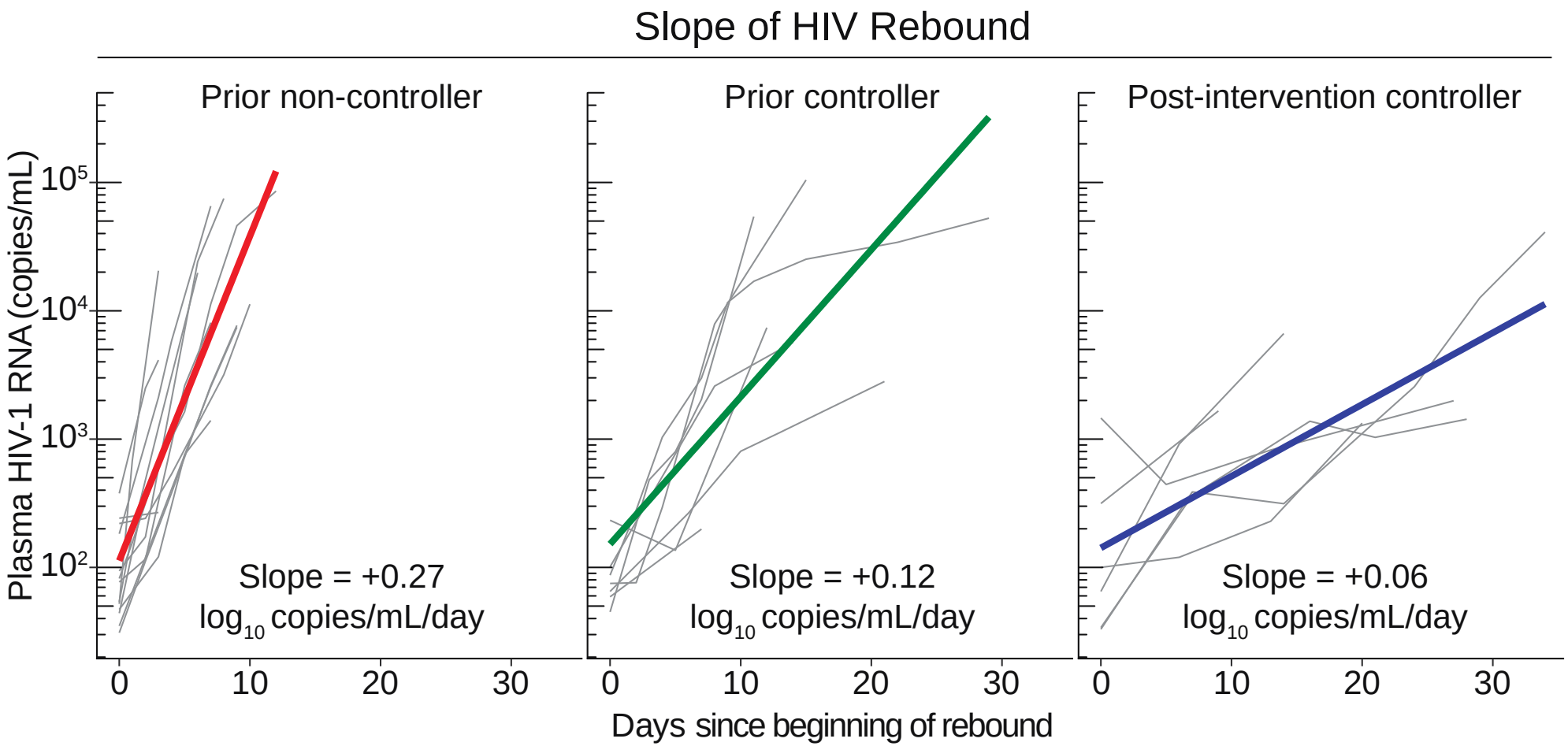


We still don't know:

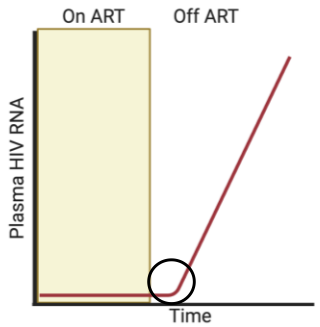
- Which are most important?
- At which time point?
- Where (in tissue)?
- In whom?

See : Sandel, Rutishauser, Peluso, "Post-intervention control in HIV immunotherapy studies," Curr Opin HIV/AIDS, Oct 2024.

It is likely that the biology at the earliest timepoints matters



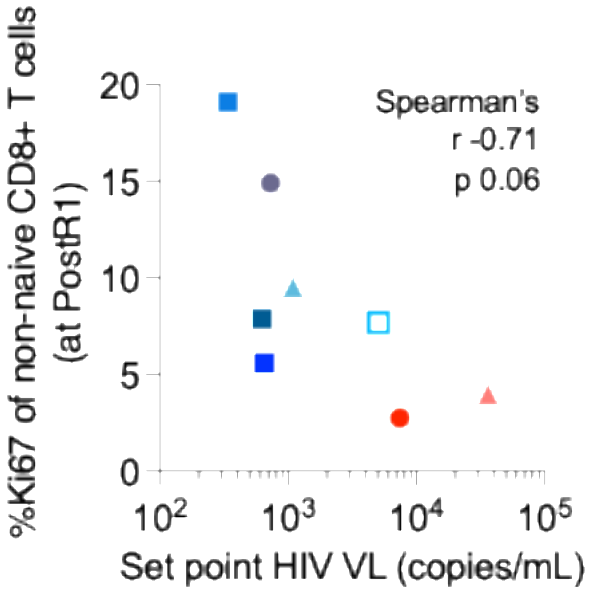
Amelia Deitchman



Peluso,* Sandel,* Deitchman* et al, under review

Post-bNAb HIV control linked to early *in vivo* CD8+ T cell proliferative and effector responses

Efforts underway to gene engineer such responses



Demi Sandel

Rachel Rutishauser

nature medicine

Combination anti-HIV-1 antibody therapy is associated with increased virus-specific T cell immunity

Julia Niessl[1,2,3], Amy E. Baxter[1,2,3,9], Pilar Mendoza[4], Mila Jankovic[4], Yehuda Z. Cohen[4], Allison L. Butler[4], Ching-Lan Lu[4,10], Mathieu Dubé[1], Irina Shimeliovich[4], Henning Gruell[5,6,7], Florian Klein[5,7,8], Marina Caskey[4], Michel C. Nussenzweig[4,11]* and Daniel E. Kaufmann[1,2,3,11]*

nature

Early antibody therapy can induce long-lasting immunity to SHIV

Yoshiaki Nishimura[1], Rajeev Gautam[1], Tae-Wook Chun[2], Reza Sadjadpour[1], Kathryn E. Foulds[3], Masashi Shingai[1], Florian Klein[4,5], Anna Gazumyan[6], Jovana Golijanin[6], Mitzi Donaldson[3], Olivia K. Donau[1], Ronald J. Plishka[1], Alicia Buckler-White[1], Michael S. Seaman[7], Jeffrey D. Lifson[8], Richard A. Koup[3], Anthony S. Fauci[2], Michel C. Nussenzweig[6,9] & Malcolm A. Martin[1]

nature COMMUNICATIONS

Administration of broadly neutralizing anti-HIV-1 antibodies at ART initiation maintains long-term CD8+ T cell immunity

Published online: 29 October 2022

Check for updates

Miriam Rosás-Umbert[1], Jesper D. Gunst[1,2], Marie H. Pahus[1], Rikke Olesen[1], Mariane Schleimann[2], Paul W. Denton[3], Victor Ramos[4], Adam Ward[5,6], Natalie N. Kinloch[7,8], Dennis C. Copertino[5,6], Tuixent Escribà[9], Anuska Llano[9], Zabrina L. Brumme[7,8], R. Brad Jones[5,6], Beatriz Mothe[9,10,11], Christian Brander[9,11,12], Julie Fox[13,14], Michel C. Nussenzweig[4,15], Sarah Fidler[16,17], Marina Caskey[4], Martin Tolstrup[1,2] & Ole S. Søgaard[1,2]

Where we need to go

Post-intervention control: What we need to do now

- Define the mechanism
  - CD8+ T cells: Specificity (target epitopes), function (tissue homing)
  - Autologous antibodies: Neutralizing vs non-neutralizing function (vaccinal effect)
  - Innate immune responses
  - Intervention-mediated reservoir reduction
  - Blunting of the explosive rebound
- Combination therapy
  - Better bNAbs → ongoing development and access to bNAbs
  - Better vaccines (mostly T cell based): immunogens, vectors, dosing, adjuvants
  - Safe and effective means to reduce the reservoir
- Conduct more definitive RCTs with optimal biospecimen collection

nature

Review

Why and where an HIV cure is needed and how it might be achieved

https://doi.org/10.1038/s41586-019-1841-8

Thumbi Ndung'u[1,2,3], Joseph M. McCune[4] & Steven G. Deeks[5*]

Thumbi Ndung'u, Mike McCune, Steve Deeks

To address the unmet needs in prevention and treatment, a curative intervention will need to be safe, affordable, scalable, effective in those populations that are not currently doing well on ART (for any reason) and protective against re-infection

A one-shot cure strategy built on existing models that meets these criteria is becoming increasingly feasible

THE LANCET
HIV

Multi-stakeholder consensus on a target product profile for an HIV cure

Sharon R Lewin, Timothy Attoye, Cathy Bansbach, Brian Doehle, Karine Dubé, Mark Dybul, Devi SenGupta, Adam Jiang, Rowena Johnston, Rosanne Lamplough, Joseph M McCune, Gary J Nabel, Thumbi Ndung'u, John Pottage, David Ripin, James F Rooney, Izukanji Sikazwe, Moses Nsubuga, Mitchell Warren, Steven G Deeks*, on behalf of the Sunnylands 2019 Working Group*

THE LANCET

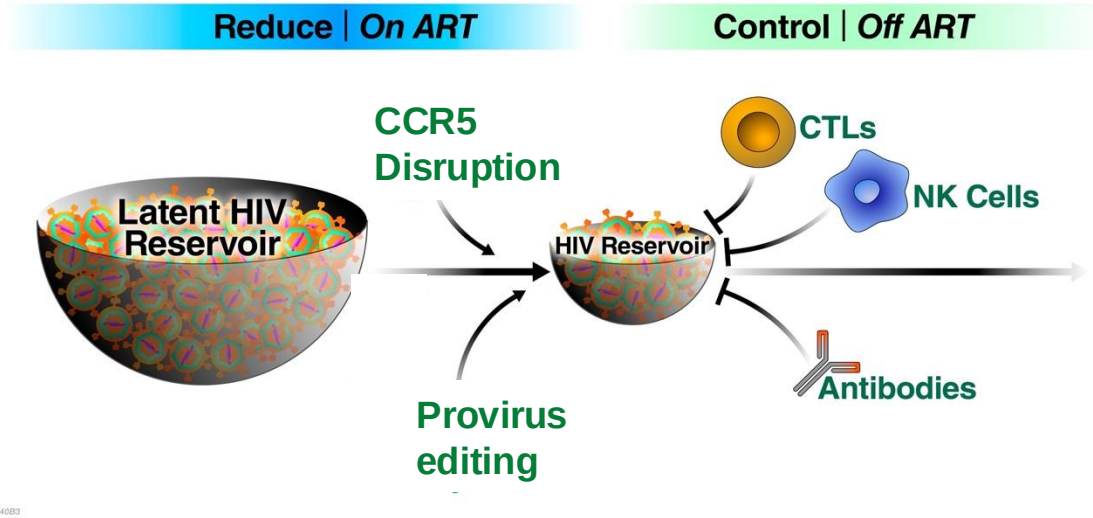
The risk of sexual transmission of HIV in individuals with low-level HIV viraemia: a systematic review

Laura N Broyles, Robert Luo, Debi Boeras, Lara Vojnov

- A combination therapy must <u>at a minimum</u> afford individuals a plasma HIV RNA below the level at which transmission occurs
  - Such a strategy would be useful only for those not able to access and respond to ART
- < 200 cpm was chosen to be conservative, recent data suggest that the threshold maybe < 1000 cpm for transmission (may still not be good enough for individual health)
- The <u>optimal goal</u> is straightforward: Complete suppression similar to that with ART. It may take lots of iteration to get there.

How we will get there

Gene therapy provides the most likely strategy for developing an effective one-shot cure that will address current and future limitations of ART/PrEP



Reduce: Provirus editing, CCR5 disruption

Control: CAR-T cells, vectored antibodies

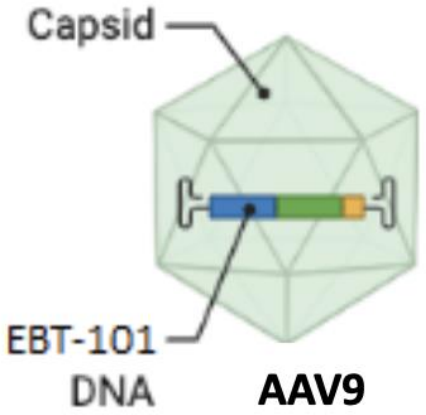
Combination Approaches: Reduce and control

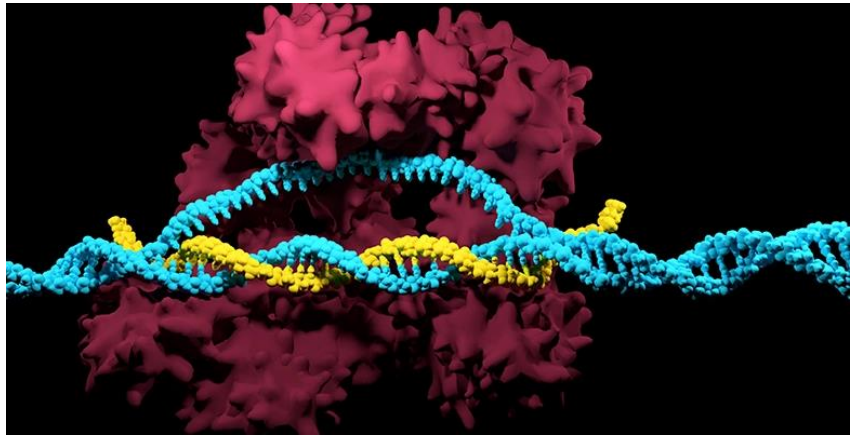
One-shot therapies that could achieve these outcomes are feasible with *in vivo* gene editing/delivery

Reduce

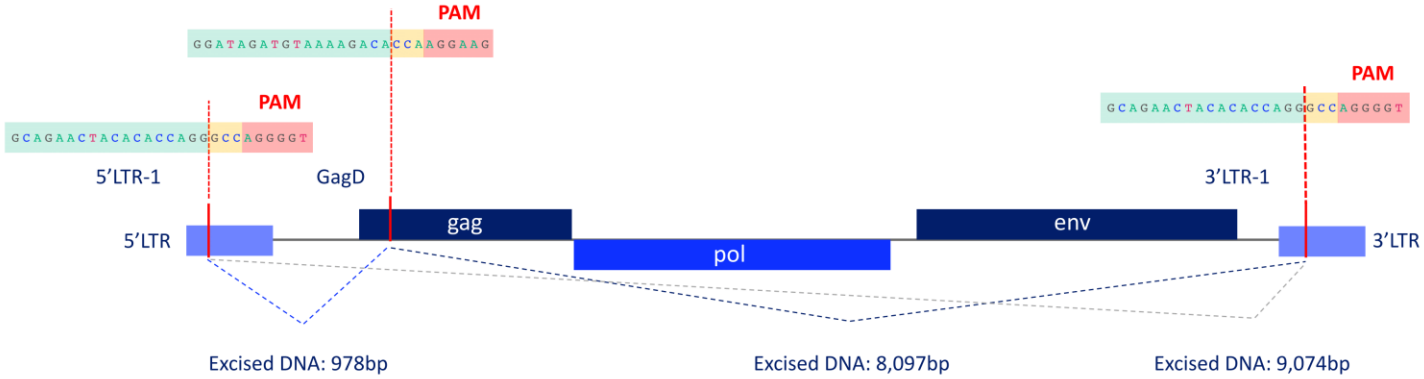
Immune control of HIV will be easier to achieve if the reservoir is low, or if virus spread is blunted

EBT-101: First-in-human phase I/2 study of an in vivo reservoir-targeting gene editing approach (ExcisionBio)





- AAV9-delivery of CRISPR nuclease with two guide RNAs to excise the HIV genome
- Safety: Mild complement activation
- Efficacy: One person had delayed rebound





Rafick Sekaly, Carl Fichtenbaum, Jeff Jacobson

T-CELL REINFUSION AFTER INTERFERING WITH LYMPHOCYTE BINDING LOCATION OF AIDS VIRUS THROUGH ZINC-FINGER-NUCLEASE ELIMINATION OF CCR5 RECEPTORS: THE TRAILBLAZER STUDY

Protocol Number: DAIDS-ES ID 38552

National Clinical Trial (NCT) Identified Number: 03666871

Principal Investigator: Carl Fichtenbaum, MD
IND Sponsor: Carl Fichtenbaum, MD

Funded by: National Institute of Allergy and Infectious Diseases; National Institute of Mental Health

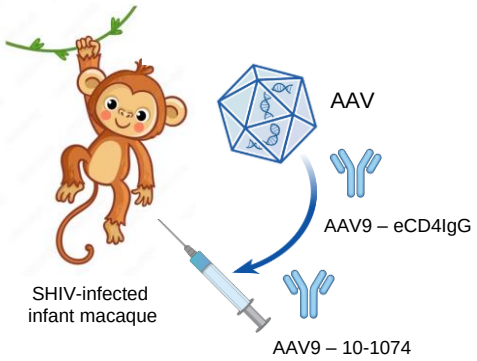
Control

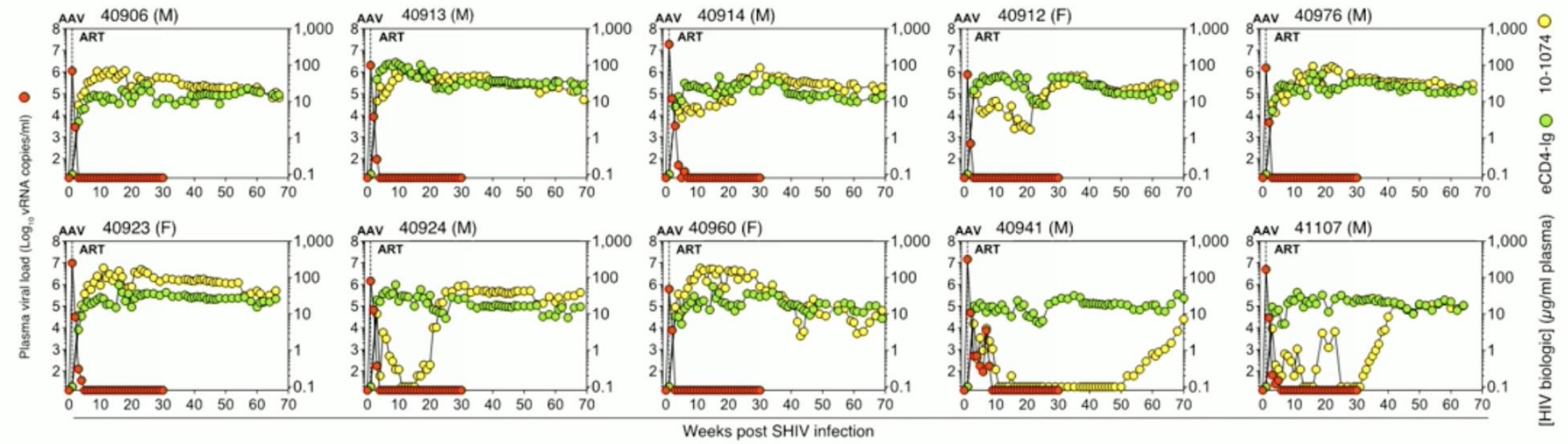
Vectored antibodies
CAR-T cells

CROI 2024
Conference on Retroviruses and Opportunistic Infections
March 3-6 | Denver, Colorado

AAV-Expressed HIV IgG Biologics Enable Durable ART-Free Viral Control in Infant Macaques

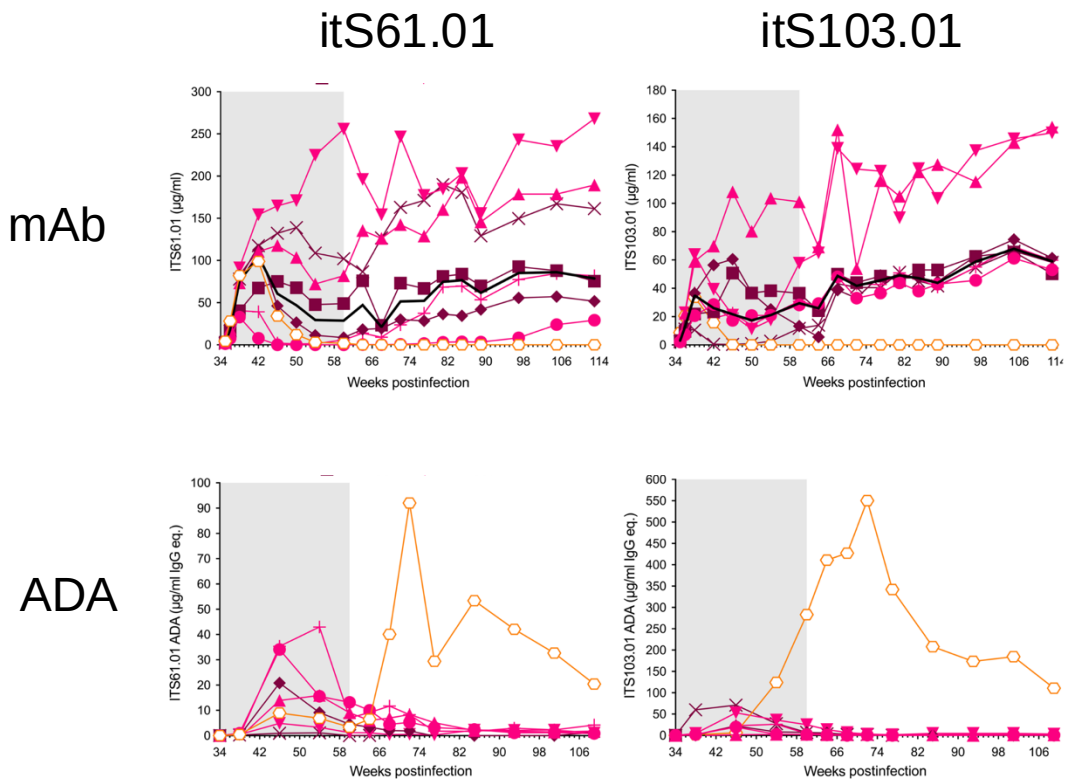
Daniel O'Hagan[1], Tracy Ordonez[2], Lucas Costa[1], Shilpi Pandey[2], Siddhartha Shandilya[1], Jeremy Smedley[2], Diogo M. Magnani[3], Deborah Persaud[4], Ann Chahroudi[5], Matthew R. Gardner[5], Michael D. Alpert[6], Ann J. Hessell[2], Michael Farzan[7], Nancy L. Haigwood[2], Mauricio A. Martins[1]





A single shot of a vector (AAV) that delivered to muscle cells the genes for two antibodies (eCD4, 10-1074) resulted in sustained production of antibodies (years/decades?) and post-ART control

AAV9 delivery of SIV bNAbs effective in adult macaques



Science Immunology

Adeno-associated viral delivery of Env-specific antibodies prevents SIV rebound after discontinuing antiretroviral therapy

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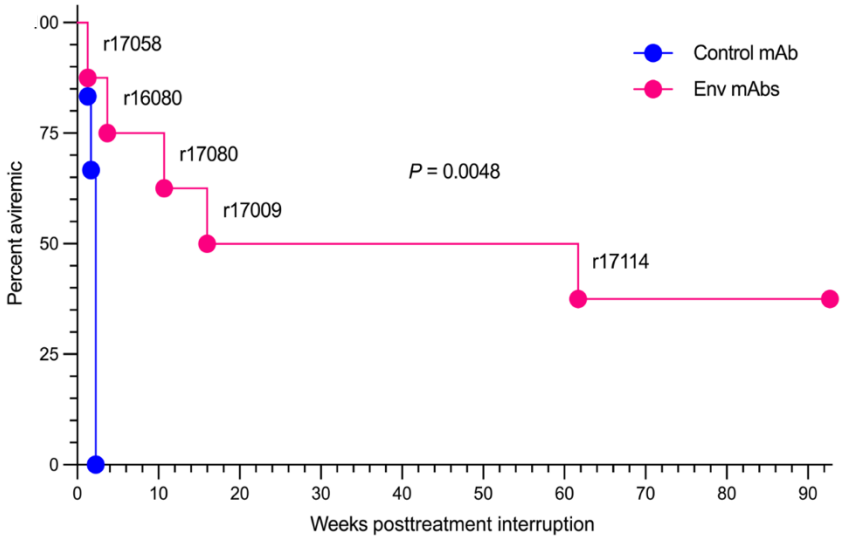
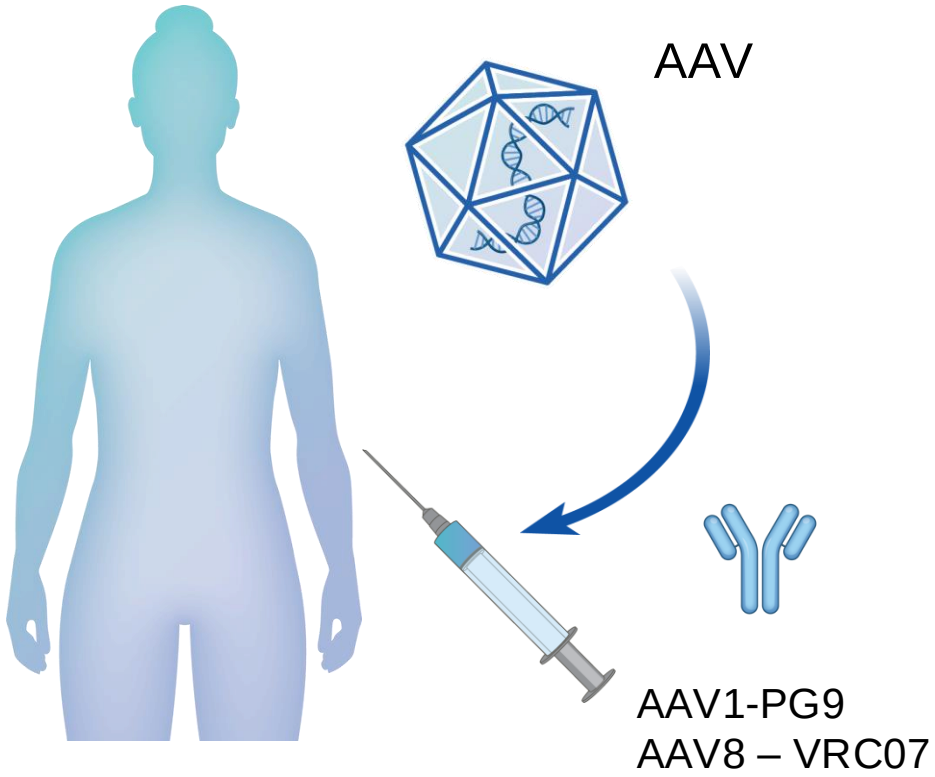
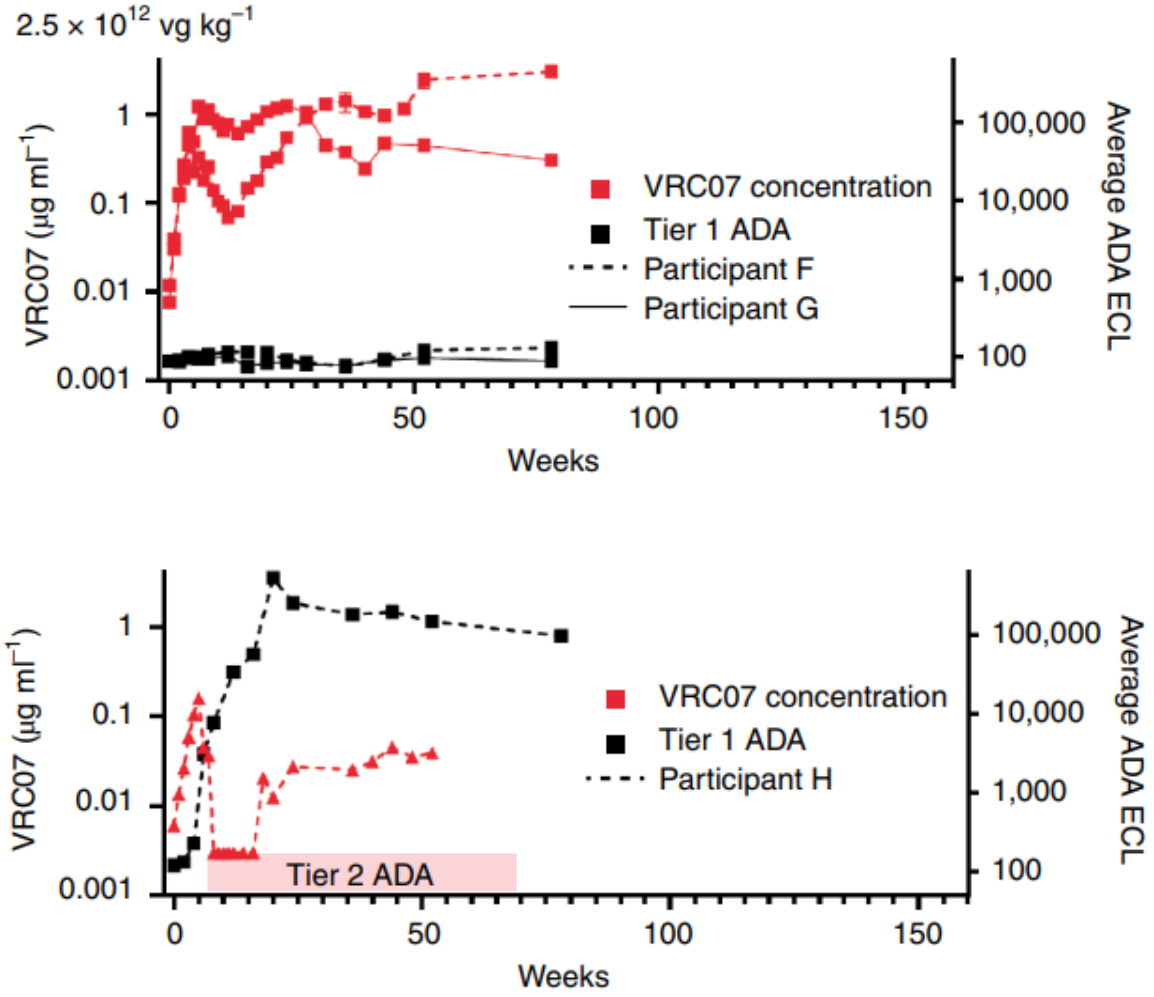


Vector: AAV9 carrying transgenes for 2 SIV env-specific antibodies (TS61.01 and ITS103.01)
Animals: SIV infection of adult macaques; treatment started at day 9 (n=14)
PK: ADA with limited mAb production in 1/8 animals, sustained mAb production in others for > 1.5 yrs
Efficacy: Rapid rebound in animal with ADA; delayed rebound with resistance in 3; no rebound in 4

Gene therapy delivery of bNAbs in people is safe but limited in its ability to achieve adequate levels



People with HIV on ART



ADA=anti-drug antibodies

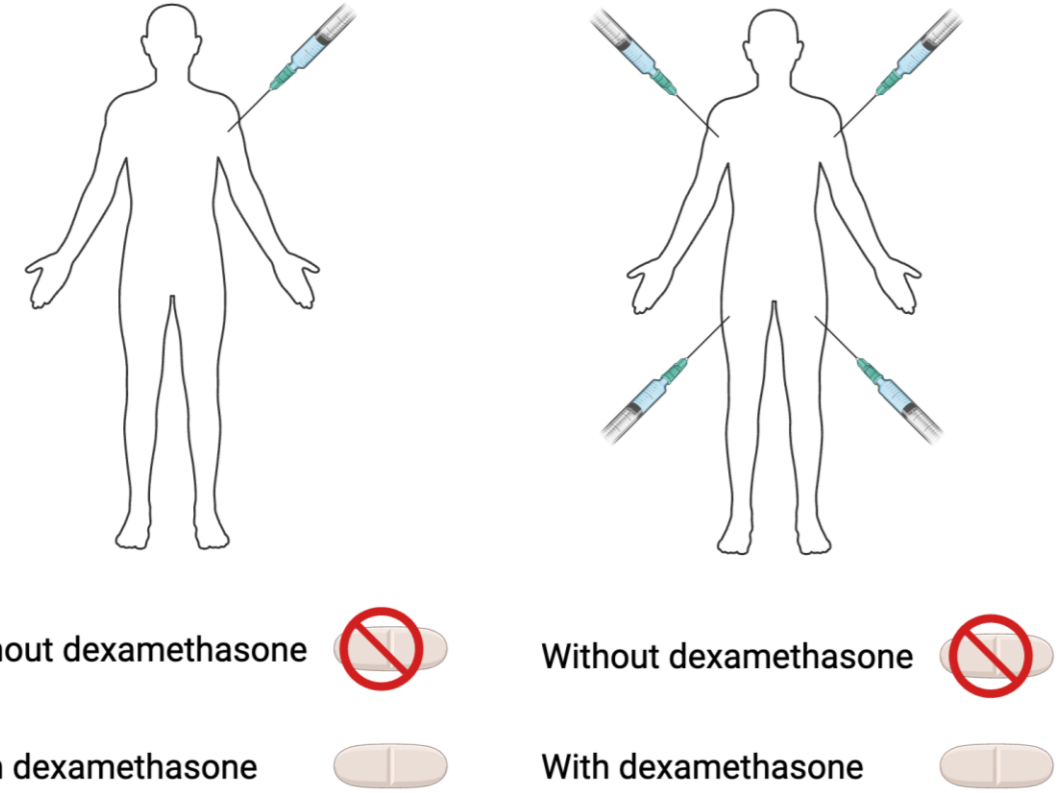
Priddy et al., Lancet HIV 2019; Casazza Nat Med 2022

A5430: “Administration of AAV8-VRC07 as Vectored ImmunoTherapy against HIV"

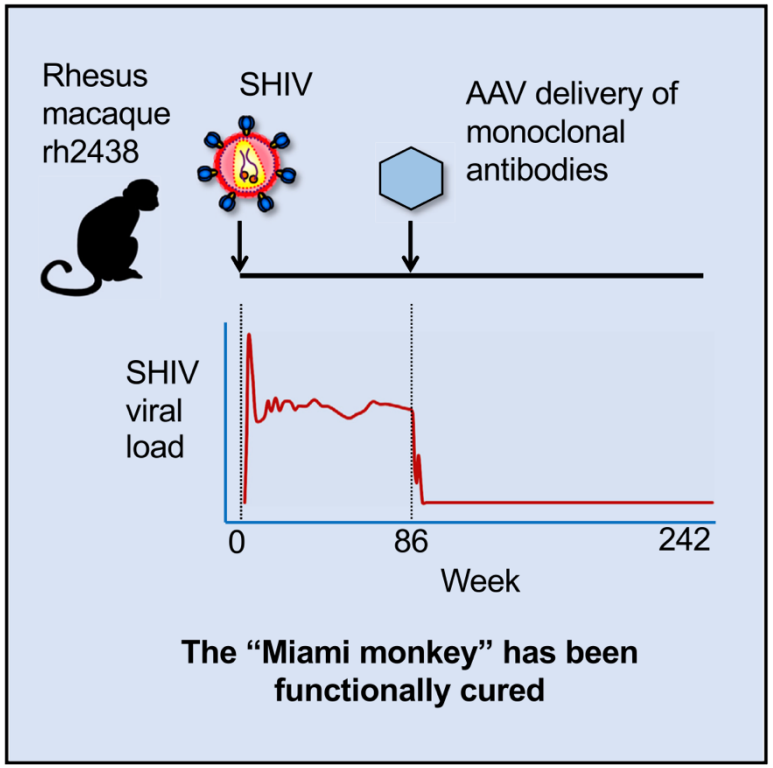


Michael Peluso, Kara Chew, Alex Balazs

- ACTG Small Trials RFA (n=30)
- Identify strategies to
  - Enhance expression (single vs. split dose)
  - Prevent ADA (w/wo brief immune suppression)
- Explore impact of bNAbs on size and distribution of intact reservoir
- Planned launch Fall 2025



MARGURON INC.



The "Miami monkey" has been functionally cured

Immunity

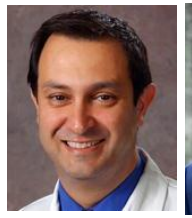
Adeno-Associated Virus Delivery of Anti-HIV Monoclonal Antibodies Can Drive Long-Term Virologic Suppression

José M. Martinez-Navio,[1,5] Sebastian P. Fuchs,[1,5] Shara N. Pantry,[1] William A. Lauer,[1] Natasha N. Duggan,[1] Brandon F. Keele,[2] Eva G. Rakasz,[3] Guangping Gao,[4] Jeffrey D. Lifson,[2] and Ronald C. Desrosiers[1,6,7,*]

CAR-T cells recognizing vulnerable epitopes are now being studied, 20 years after initial studies

Revolution in autoimmunity (lupus, etc) provides rationale that this approach can be safe and perhaps even scalable

Steven Deeks



Mehrdad Abedi

Boro Dropulic

The NEW ENGLAND JOURNAL of MEDICINE

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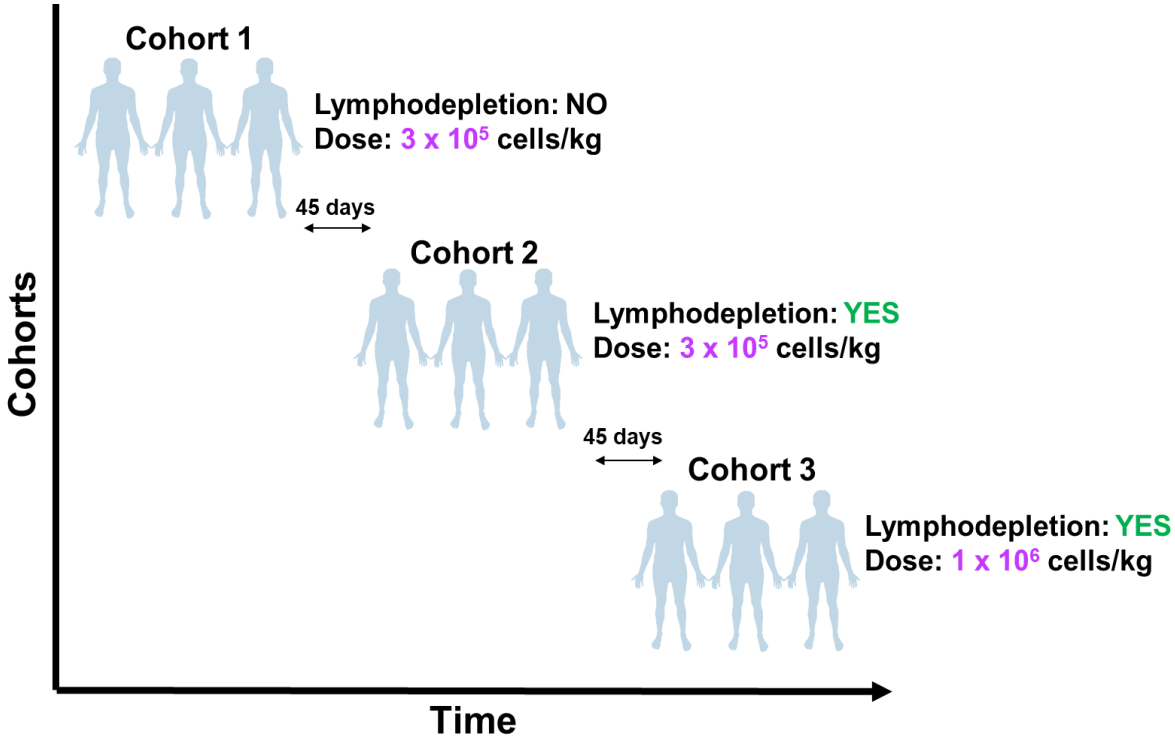
CD19 CAR T-Cell Therapy in Autoimmune Disease — A Case Series with Follow-up

Fabian Müller, M.D., Jule Taubmann, M.D., Laura Bucci, M.D., Artur Wilhelm, Ph.D., Christina Bergmann, M.D., Simon Völkl, Ph.D., Michael Aigner, Ph.D., Tobias Rothe, Ph.D., Ioanna Minopoulou, M.D., Carlo Tur, M.D., Johannes Knitza, M.D., Soraya Kharboutli, M.D., Sascha Kretschmann, Ph.D., Ingrid Vasova, M.D., Silvia Spoerl, M.D., Hannah Reimann, Ph.D., Luis Munoz, M.D., Roman G. Gerlach, Ph.D., Simon Schäfer, Ph.D., Ricardo Grieshaber-Bouyer, M.D., Anne-Sophie Korganow, M.D., Dominique Farge-Bancel, M.D., Dimitrios Mougiakakos, M.D., Aline Bozec, Ph.D., Thomas Winkler, Ph.D., Gerhard Krönke, M.D., Andreas Mackensen, M.D., and Georg Schett, M.D.



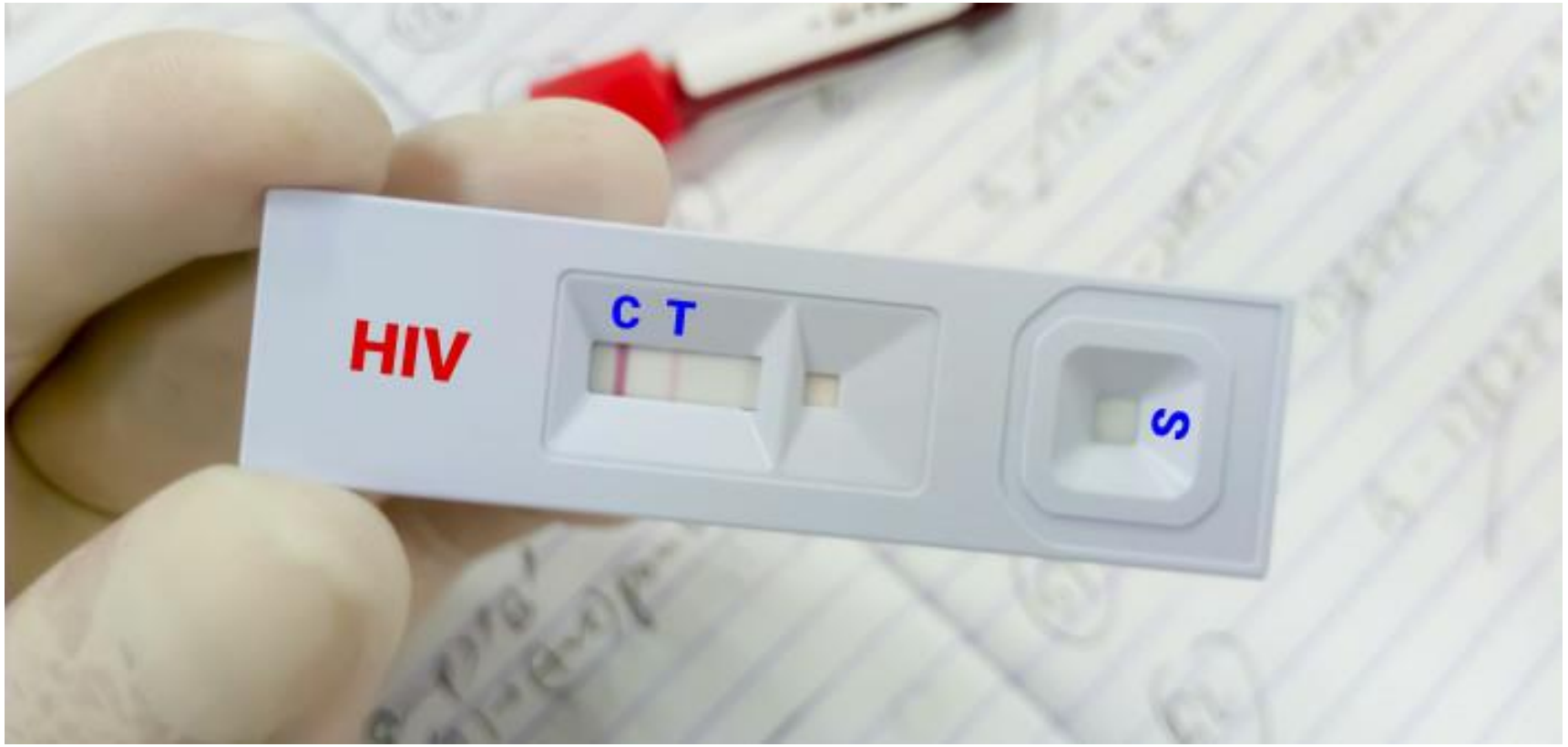
CaringCross

CIRM CALIFORNIA'S STEM CELL AGENCY

Diagnostics

A qualitative, scalable at-home viral load diagnostic will likely be required for any cure strategy

An affordable, rapid, at-home qualitative diagnostic for VIRUS (not antibody) with reasonable sensitivity (~ 1000 copies RNA/mL) could transform treatment and PrEP. It may also be essential for implementation of a cure strategy



Is It Time for Free HIV Self-Tests From the Government?

POZ

Socio-behavioral Research

We need to know what people with HIV want a cure to look like, what risks are acceptable to get there, and what challenges they face from participating in these studies

VIEWPOINT
Journal of Virus Eradication 2018; **4**: 248–249

'Fear overcome by love': why I participated in HIV cure research

Clark Hawley*
University of California San Francisco, CA, USA

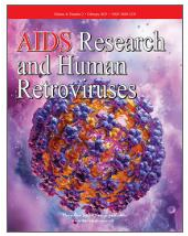
- PrEP initiation labs with plasma HIV RNA 220 copies/mL → started ART, reservoir studies negative
- ATI with weekly testing for 6 months
- Went to extremes to monitor

D&RE

amfAR Institute
FOR HIV CURE RESEARCH

Karine Dube

John Sauceda



Lessons Learned in Eliciting Systematic Participant Perspectives in a Combination HIV Cure Research Trial

Karine Dubé [1], Hursch Patel [1], Steven Meanley[2], Lynda Dee[3,4], Anastasia Korolkova[1], Fang Wan[1], Shadi Eskaf[5], Meghann Williams[6], Rebecca Hoh[6], Steven G. Deeks[6], Michael J. Peluso[6], Jeremy Sugarman[7], and John A. Sauceda[8]

Recall and Appraisal of the Risks, Benefits, and Objectives of Interrupting HIV Treatment in an HIV Cure-Related Study

Anastasia Korolkova[1] · Samuel O. Ndukwe[1] · Lynda Dee[2,3] · Steven G. Deeks[4] · Michael J. Peluso[4] · Rebecca Hoh[4] · Antonio Rodriguez[4] · Jeremy Sugarman[5] · Lidia Rodriguez Garcia[7] · Karine Dubé[1,6] · John A. Sauceda[7,8]

'It is scary to pause treatment': perspectives on HIV cure-related research and analytical treatment interruptions from women diagnosed during acute HIV in Durban, South Africa

Socio-Behavioral research

Deli Mthimkhulu[a#], Krista L. Dong[b,c,d#], Mzwakhe Wiseman Ngcobo[a], Deborah Mindry[e], Ayanda Zulu[a], Ntombifuthi Langa[a], Luyanda Maphalala[f], Vanessa Pillay[f], Maud Mthembu[g], Annie Miall[b,f], Whitney Tran[h], Ana Dillen[i], Fang Wan[h], Ali Ahmed[h], Jamila K. Stockman[h], Maryam Hussain[h], Thumbi Ndung'u[b,j,k,l] and Karine Dubé[h]

Threats to Progress

Industry engagement is too weak and may be waning.

Academia lacks the capacity to move ideas from the laboratory to the clinic without this engagement.

Tremendous uncertainty regarding key programs (PEPFAR, USAID)

Gates Foundation and HIV Cure

Moving candidate interventions to the clinic

2021 — 2023 — 2026 — 2032

Target identification	Vector/editor selection	Pre-clinical PoC *(safety & efficacy)*	IND-enabling *(CMC & toxicity)*	FIH/Phase I/II trials	Phase II/III trials	Launch, scale-up, delivery

NIH

BILL & MELINDA GATES foundation

Ongoing collaboration to identify targets for curative interventions against HIV and sickle cell disease

6-8 programs

Exploring two potential approaches for HIV cure, using sickle cell disease as a pathfinder for Platform 1 (gene therapy) while also pursuing Platform 2 (therapeutic vaccination)

Launch readiness, biomarker discovery, and other efforts

3-4 programs

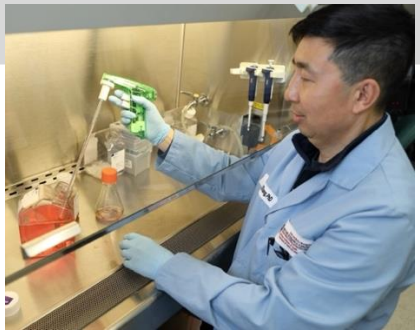
Selected based on results

Pivotal trial, scale-up funded by developer/market authorization holder

Stage 1 — **Stage 2** — **Stages 3 & 4**

NIAID Vaccine Research Center: Multidisciplinary structure supports path from discovery to product development

<u>Bethesda</u>
Building
40



Basic and translational scientific discovery

<u>Gaithersburg</u>
Vaccine
Production
Program

Process development

<u>Frederick</u>
Clinical
Materials Pilot
Plant

Clinical product manufacturing

<u>Bethesda</u>
Clinical Trials
Clinic
Building 10

First in human clinical trials

<u>Gaithersburg</u>
Vaccine
Immunology
Program

High throughput immune assays

HIV Vaccine Development: Highly efficient translations from the lab to the clinic, and back

Thomas Denny
COO

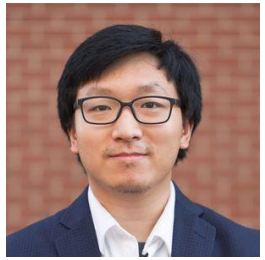
Althaf Hussain
Sr. Director, Product Development

Maureen Maughan
Dir. RNA and Product Integration

Dan Ozaki
Dir. Quality

Diana Martik
Dir. Analytics

Myles Lindsay
Dir. DS PD



Tom Jacobson
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CLD, USPD

Chris Todd
Dir. Program

REVIEW ARTICLE

Development of mRNA manufacturing for vaccines and therapeutics: mRNA platform requirements and development of a scalable production process to support early phase clinical trials

JILL WHITLEY, CHRISTOPHER ZWOLINSKI, CHRISTIAN DENIS, MAUREEN MAUGHAN, LEONIE HAYLES, DAVID CLARKE, MEGHAN SNARE, HONG LIAO, SEAN CHIOU, TINA MARMURA, HOLLY ZOELLER, BEN HUDSON, JOHN PEART, MONICA JOHNSON, AMELIA KARLSSON, YUNFEI WANG, CYNTHIA NAGLE, CHERELL HARRIS, DANIEL TONKIN, STEPHANIE FRASER, LIEZA CAPIZ, CHRISTINA L. ZENO, YVONNE MELI, DIANA MARTIK, DANIEL A. OZAKI, AMY CAPARONI, JASON E. DICKENS, DREW WEISSMAN, KEVIN O. SAUNDERS, BARTON F. HAYNES, GREGORY D. SEMPOWSKI, THOMAS N. DENNY, and MATTHEW R. JOHNSON

DURHAM, NORTH CAROLINA; AND PHILADELPHIA, PENNSYLVANIA

NIH National Institute of Allergy and Infectious Diseases

Scripps Consortium For HIV/AIDS CHAVD Vaccine Development

CHAVD
Duke Consortium for HIV/AIDS Vaccine Discovery

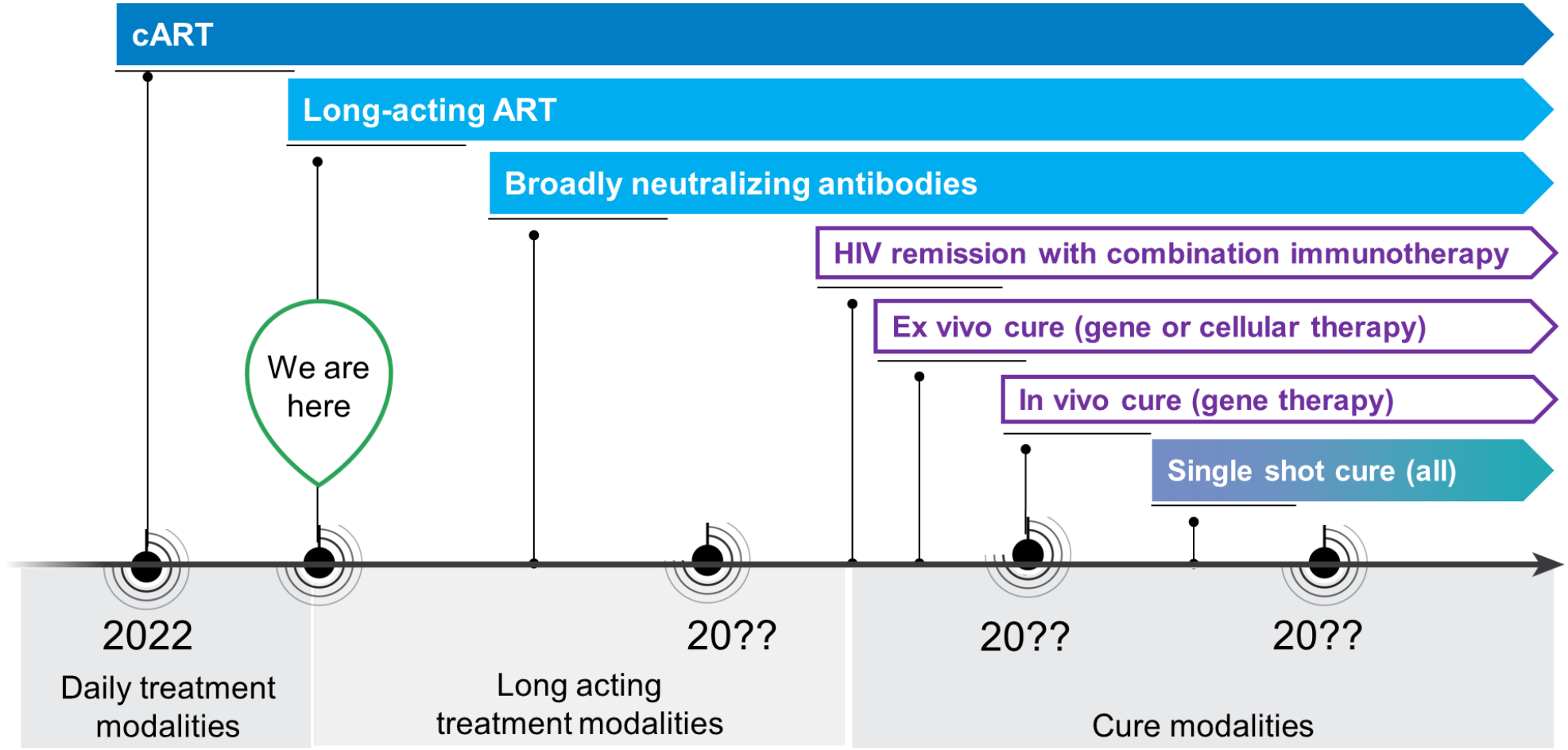
Cure: Iterative and incremental progress expected

The first generation of cures are expected to complex and difficult-to-scale, as were the initial antiretroviral regimens

THE LANCET
HIV

Multi-stakeholder consensus on a target product profile for an HIV cure

Sharon R Lewin, Timothy Attoye, Cathy Bansbach, Brian Doehle, Karine Dubé, Mark Dybul, Devi SenGupta, Adam Jiang, Rowena Johnston, Rosanne Lamplough, Joseph M McCune, Gary J Nabel, Thumbi Ndung'u, John Pottage, David Ripin, James F Rooney, Izukanji Sikazwe, Moses Nsubuga, Mitchell Warren, Steven G Deeks*, on behalf of the Sunnylands 2019 Working Group*



HIV Cure in 2025: Summary

- Long-acting ART may be approximating “cure”, but the challenges with ART access are becoming more obvious now than ever before
- We are making progress in inducing post-intervention control to establish the proof of concept
- Lots more work will be need to move from a proof of concept stage to something that is clinically useful and acceptable
- We need to keep our eyes on the target of a one-shot cure and advocate for the resources we need to get there

Acknowledgements

UCSF SCOPE Team

UCSF University of California San Francisco

D&RE

ZUCKERBERG SAN FRANCISCO GENERAL Hospital and Trauma Center

UCSF-BAY AREA CFAR CENTER FOR AIDS RESEARCH

NIH National Institutes of Health

amfAR MAKING AIDS HISTORY

Gates Foundation