

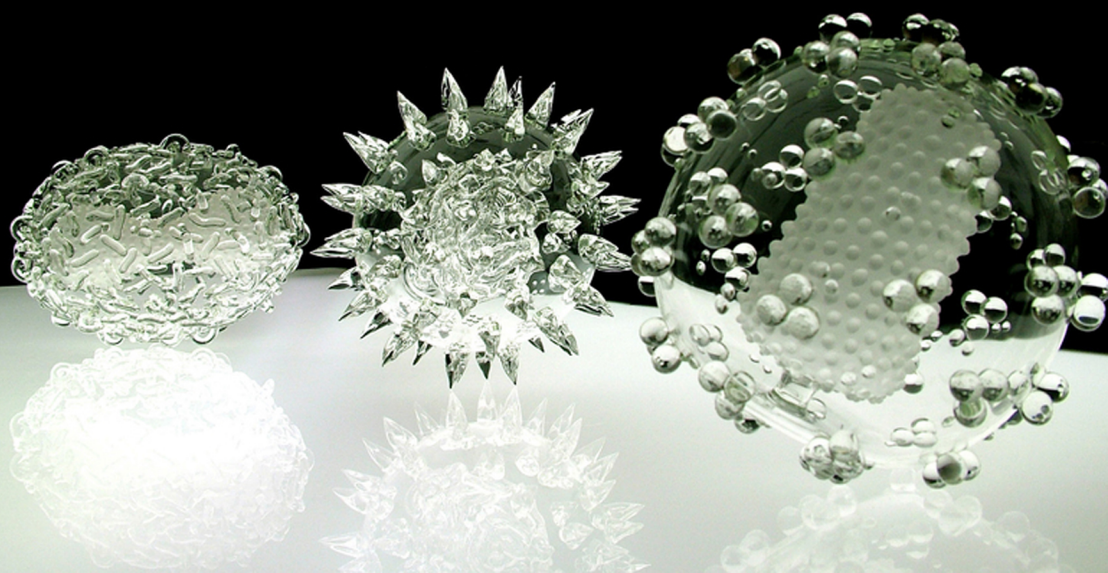
THE

THEORIZING  
EPIDEMIC  
MEDIA

VIRUS

TOUCH

BISHNUPRIYA GHOSH



THE  
VIRUS  
TOUCH

EXPERIMENTAL FUTURES: Technological Lives, Scientific Arts,  
Anthropological Voices

A series edited by Michael M. J. Fischer and Joseph Dumit

# THE VIRUS TOUCH

Theorizing Epidemic Media

BISHNUPRIYA GHOSH



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Courtesy of the artist.

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## Abbreviations

ACTG	AIDS Clinical Trials Group
ART	antiretroviral therapy
ARV	antiretroviral
BCI	Barro Colorado Island
CDC	Centers for Disease Control and Prevention
cDNA	complementary DNA
CFAR	Centers for AIDS Research
CHEETAH	Center for the Structural Biology of Cellular Host Elements in Egress, Trafficking, and Assembly of HIV
CNICS	the CFAR Network of Integrated Clinical Systems
DRC	Democratic Republic of the Congo
DSN	disease surveillance network
EID	emerging infectious disease
Env-DATA	Environmental-Data Automated Track Annotation
EVL	Electronic Visualization Laboratory
FDA	US Food and Drug Administration
GIS	geographic information system
GVFI	Global Viral Forecasting Initiative
HIVE	HIV Interactions in Viral Evolution
HMP	Human Microbiome Project



HST	Humsafar Trust
HVTN	HIV Vaccine Trials Network
IAC	International AIDS Conference
IUCN	International Union for the Conservation of Nature
<i>JAMA</i>	<i>Journal of the American Medical Association</i>
LDMS	Laboratory Data Management System
MSF	Médecins Sans Frontières
MSM	men who have sex with men
NACO	National AIDS Control Organization (India)
NCSA	National Center for Supercomputing Applications
NEA	National Endowment for the Arts
NIH	National Institutes of Health
NHP	nonhuman primate
PBMC	peripheral blood mononuclear cell
PCBs	polychlorinated biphenyls
PCR	polymerase chain reaction
PEP	postexposure prophylaxis
PEPFAR	US President's Emergency Plan for AIDS Relief
PLHIV	people living with HIV
PPE	personal protective equipment
PrEP	pre-exposure prophylaxis
RT-PCR	reverse transcription polymerase chain reaction
SAIC	School of the Art Institute of Chicago
SIGGRAPH	Special Interest Group on Computer Graphics and Interactive Techniques
SIV	simian immunodeficiency viruses
TG	transgender
TMV	tobacco mosaic virus
WHO	World Health Organization

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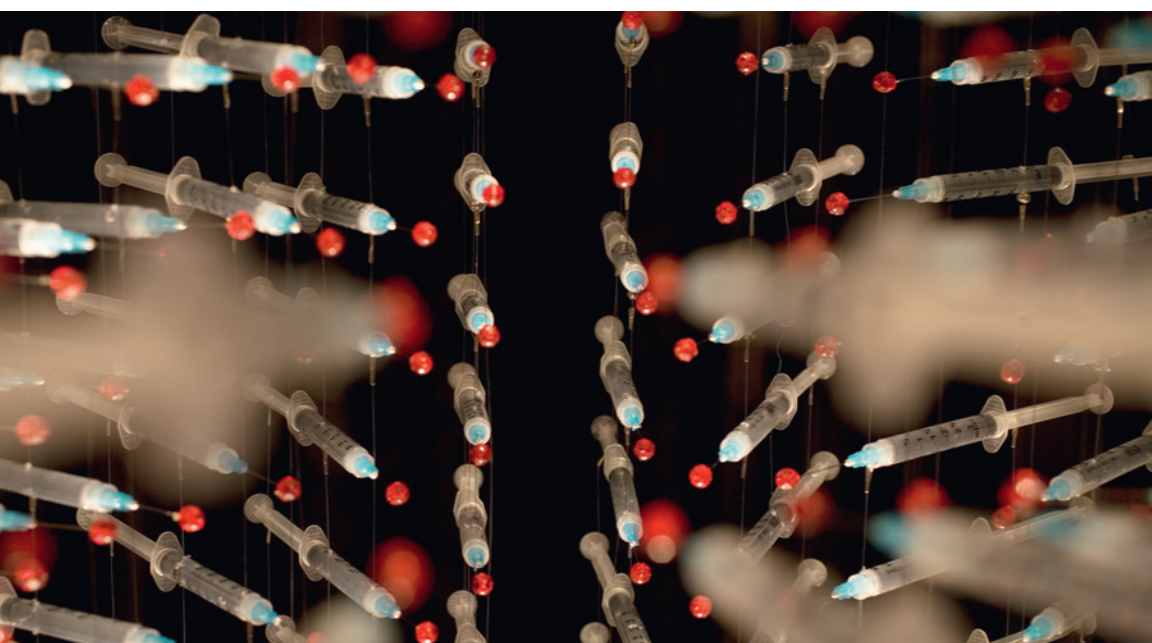
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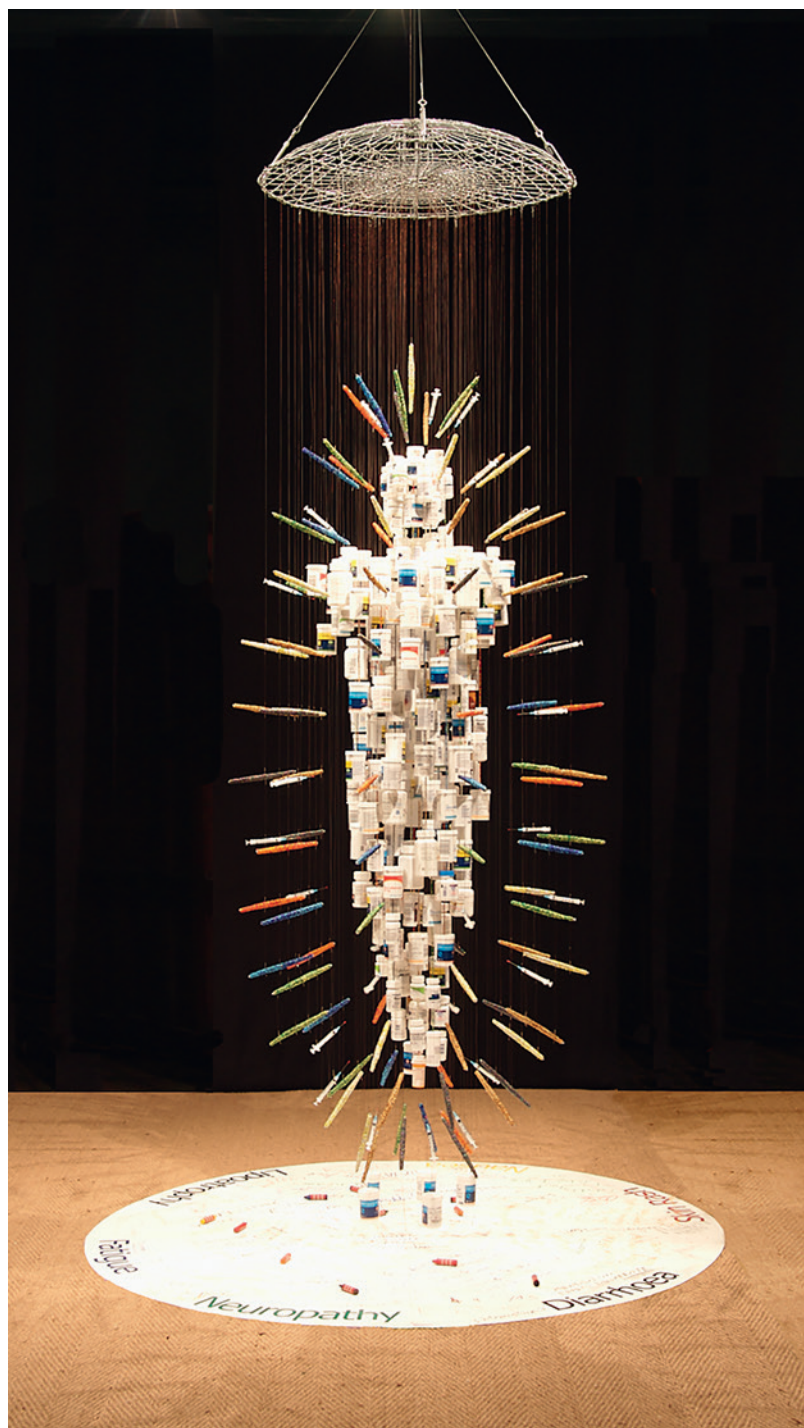
Plate 1. Viruses in Mexico's Cave of Crystals, screenshot from "Alien Worlds beneath Our Feet: Dr. Penelope Boston on Caves," 2014. Source: Boston, Lecture to Perimeter Institute of Theoretical Physics.

Plate 2 (*below*). Daniel Goldstein and John Kapellas, *Medicine Man* (detail), 2006. Life-size mixed-media sculpture. Credit: Daniel Goldstein and John Kapellas.

Plate 3 (*opposite*). Daniel Goldstein, *Medicine Man for South Africa*, 2009. Life-size mixed-media sculpture. Credit: Daniel Goldstein.





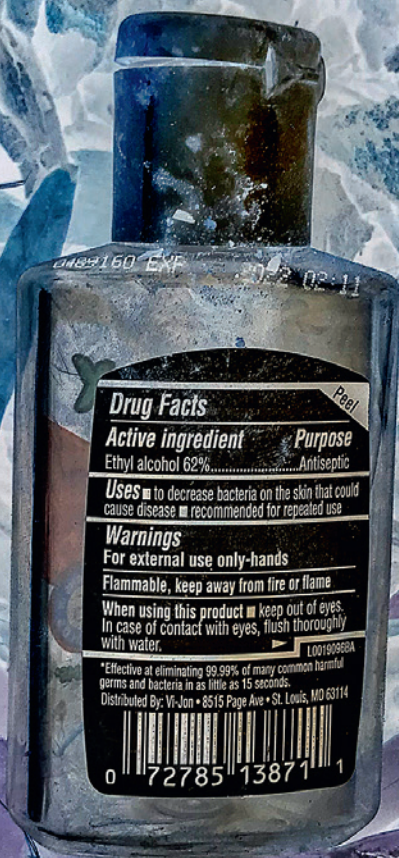






Plates 4 (*above, top*), 5 (*above, bottom*), and 6 (*opposite*). Pato Hebert, all untitled, from the series *Lingering*, 2020–21. Archival pigment prints, 10 × 7.5 in. Credit: Pato Hebert.





#### Drug Facts

**Active ingredient** Purpose  
Ethyl alcohol 62% Antiseptic

**Uses** to decrease bacteria on the skin that could cause disease recommended for repeated use

#### Warnings

For external use only-hands

Flammable, keep away from fire or flame

When using this product keep out of eyes.  
In case of contact with eyes, flush thoroughly with water.

\*Effective at eliminating 99.99% of many common harmful germs and bacteria in as little as 15 seconds.  
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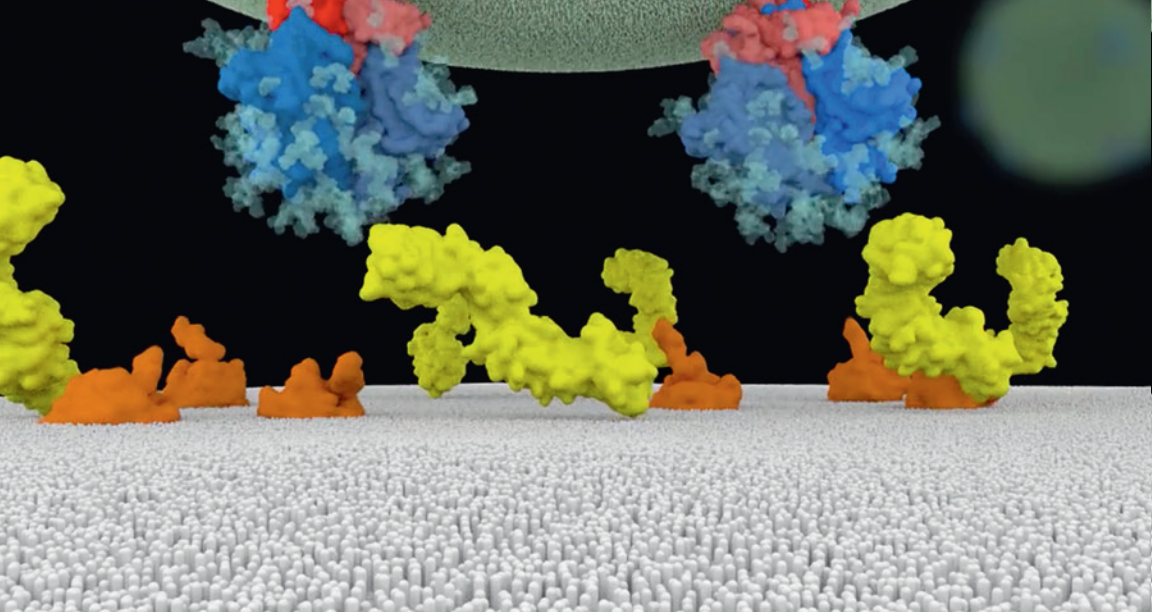
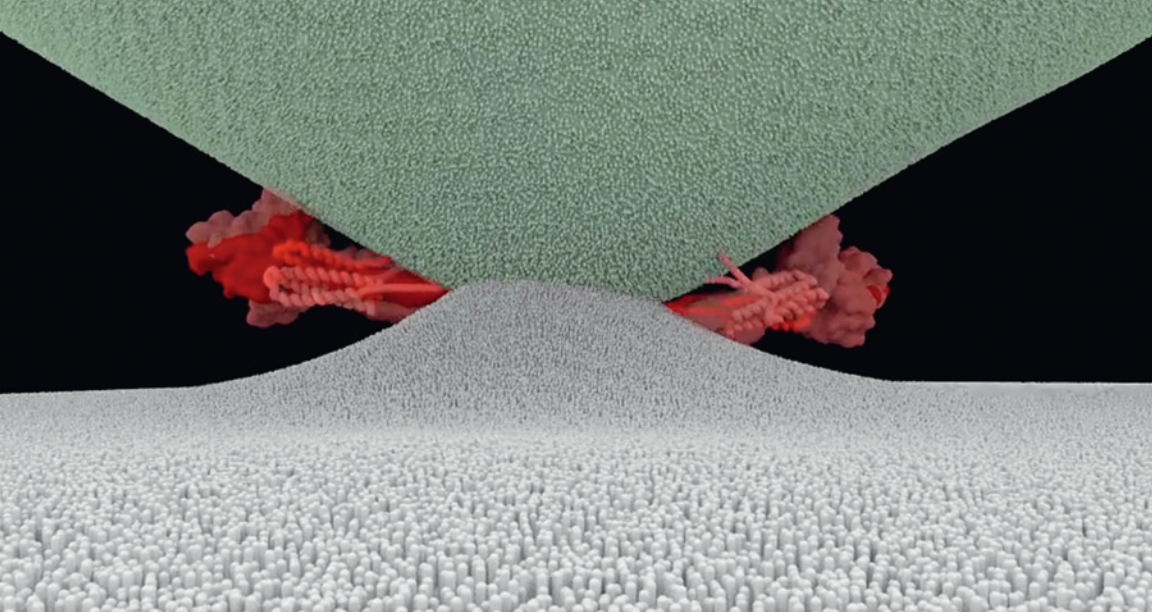


Plate 7 (*above*). Still from Janet Iwasa's protein-folding animation, 2018. Source: Iwasa, *HIV Life Cycle*.

Plate 8 (*opposite, top*). Still from Janet Iwasa's protein-folding animation, 2018. Source: Iwasa, *HIV Life Cycle*.

Plate 9 (*opposite, bottom*). *Messiah*, 1987/1990. Vintage PHSCologram, darkroom and computer interleaved Crosfield Cibachrome and Kodalith films, mounted on plexiglass, 96×60 in. Credit: Ellen Sandor and (art)n.



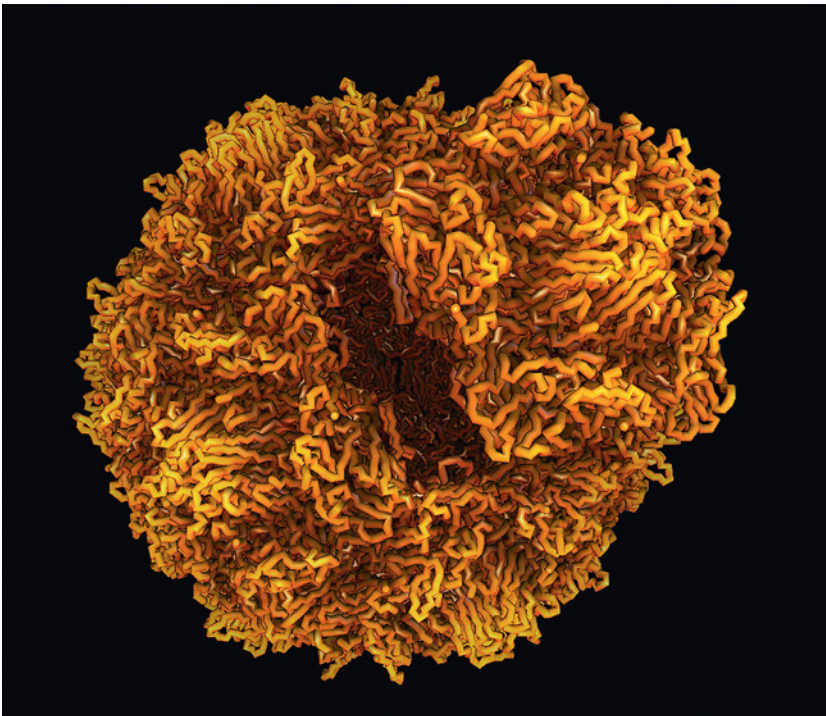
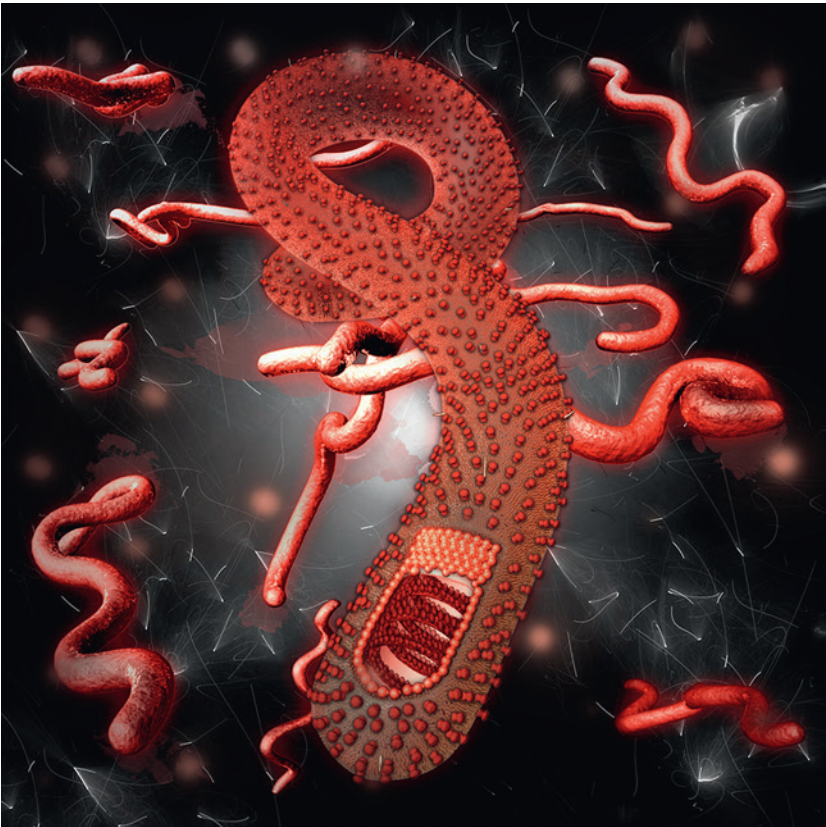






Plate 10 (*opposite, top*). *The Ebola Virus*, 2014. Virtual photo/PHSCologram. Duatrans, Kodolith, plexiglass, 30×30 in. Credit: Ellen Sandor and (art)n.

Plate 11 (*opposite, bottom*). *Nanoscape II, Viral Assembly*, 1999. Virtual photo/PHSCologram. Duatrans, Kodolith, plexiglass, 30×30 in. Credit: Ellen Sandor and (art)n.

Plate 12 (*above*). David Goodsell, *HIV in Blood Plasma*, 1999. Watercolor, 1,000,000× magnification. Source: Goodsell, <https://ccsb.scripps.edu/goodsell/cellspace/>.

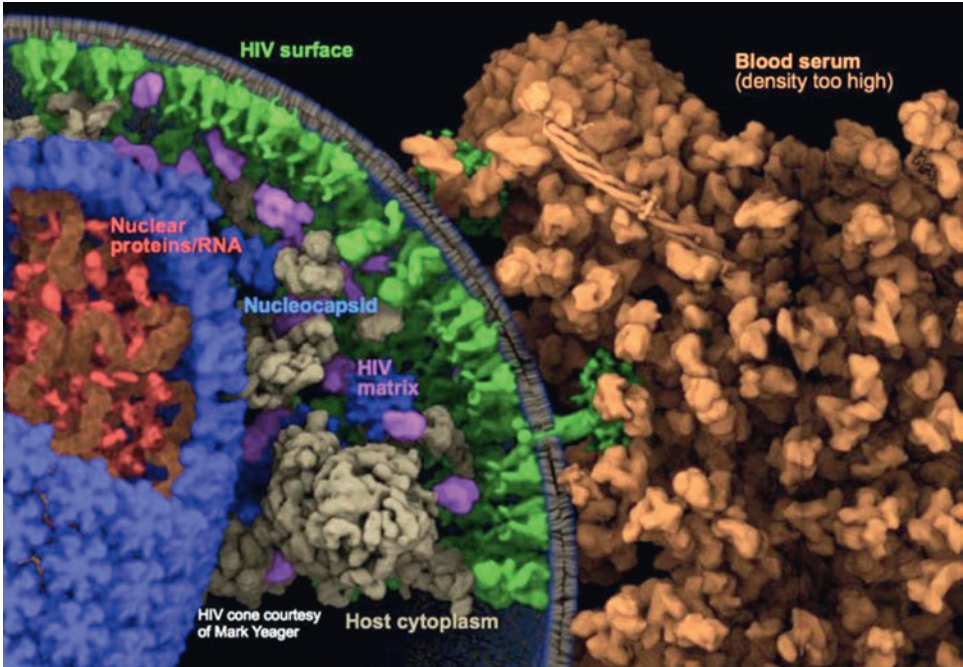
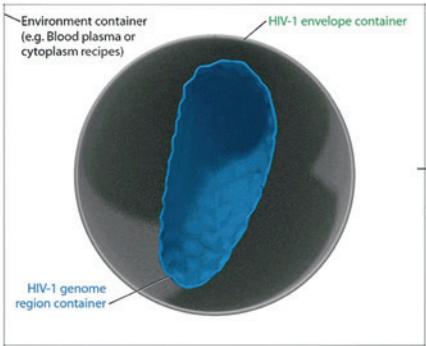


Plate 13 (*opposite*). An HIV-in-blood-plasma model, 2015. Source: Johnson et al., "CellPACK," figure 6a.

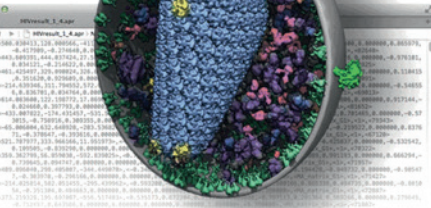
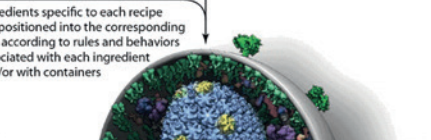
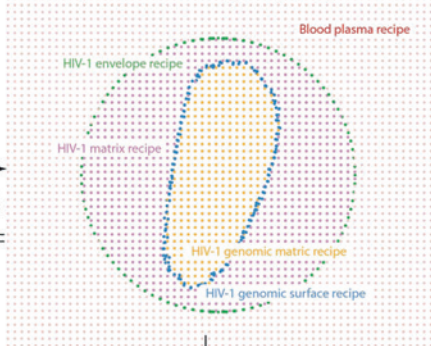
Plate 14 (*below*). CellPACK recipe illustrations, packing the HIV-1 mesh, 2014. Source: Johnson et al., "3D Molecular Models," figure 2.

**A** The containers of cellPACK recipe *HIV-1\_0.1.5* define surfaces and create volume boundaries



**C** *HIV-1\_0.1.5* is a recipe of subrecipes that associate with the environment volume, container surfaces and container interiors

**B** Grid constructed to discretize the nested regions and bind distinct recipes for efficient tracking while packing



**D** cellPACK positions the ingredients to create a result file (.apr) that can be visualized with a variety of software (Chimera shown)





Plate 15 (*above*). Robert Sherer, *Sweet William*, 2004. HIV+ and HIV- blood on paper, 24×18 in. framed. Credit: Robert Sherer.

Plate 16 (*opposite, top*). Robert Sherer, *Love Nest*, 2005. HIV+ and HIV- blood on paper, 13×16 in. Credit: Robert Sherer.

Plate 17 (*opposite, bottom*). Blood resting after the first spin in a high-speed centrifuge. Source: Author photograph, 2017.





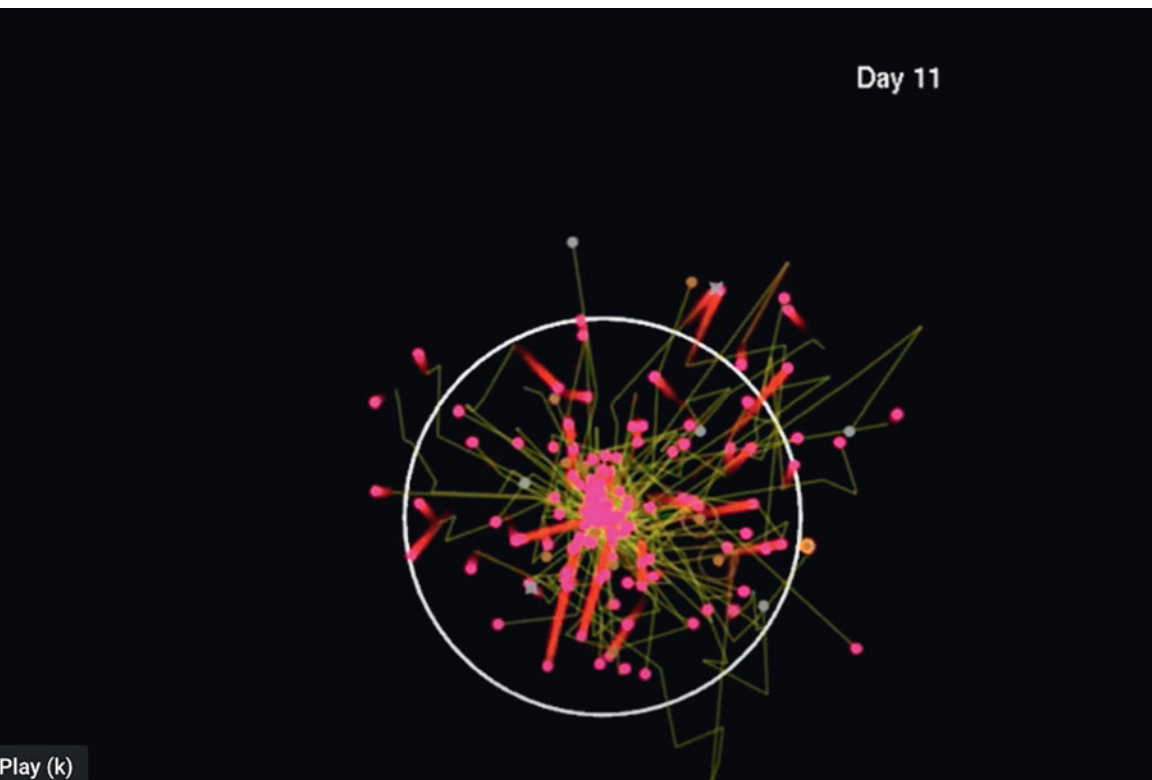


Plate 18 (*opposite, top*). Radio-telemetry map, Barro Colorado Island, Panama, video still, 2010. Source: Smithsonian Tropical Research Institute, *Barro Colorado Island: BCI-Official Video*.

Plate 19 (*opposite, bottom*). *Seed Movement Fireworks* video still, 2012 (discussed by Jansen et al. in "Thieving Rodents as Substitute Dispersers of Megafaunal Seeds"). Source: *Seed Movement Fireworks*, <https://www.youtube.com/watch?v=JebSa7d1e1M>.

Plate 20 (*below*). Aerial canopy on Barro Colorado Island, Panama, video still, 2018. Source: North Carolina Museum of Natural Sciences, *Can Drones Help Count Rainforest Animals?*

Plate 21 (*bottom*). Filtering moving animals, screenshot, 2019. Source: Yousif et al., "Animal Scanner," figure 6.



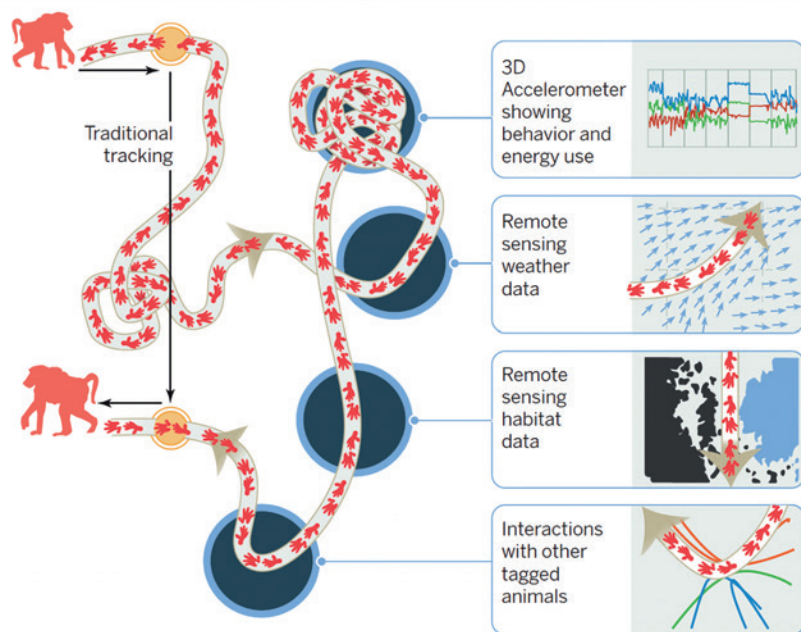


Plate 22. Big-data animal tracking, 2015. Source: Kays et al., "Terrestrial Animal Tracking," 1222.