

Class Semester Project

EWH Decal

Spring 2014

HIV/AIDS

2.5 million new cases

17 million deaths due to AIDS

15-45% transmission of HIV from mother to child

700,000 children under the age of 15 newly infected in 2003

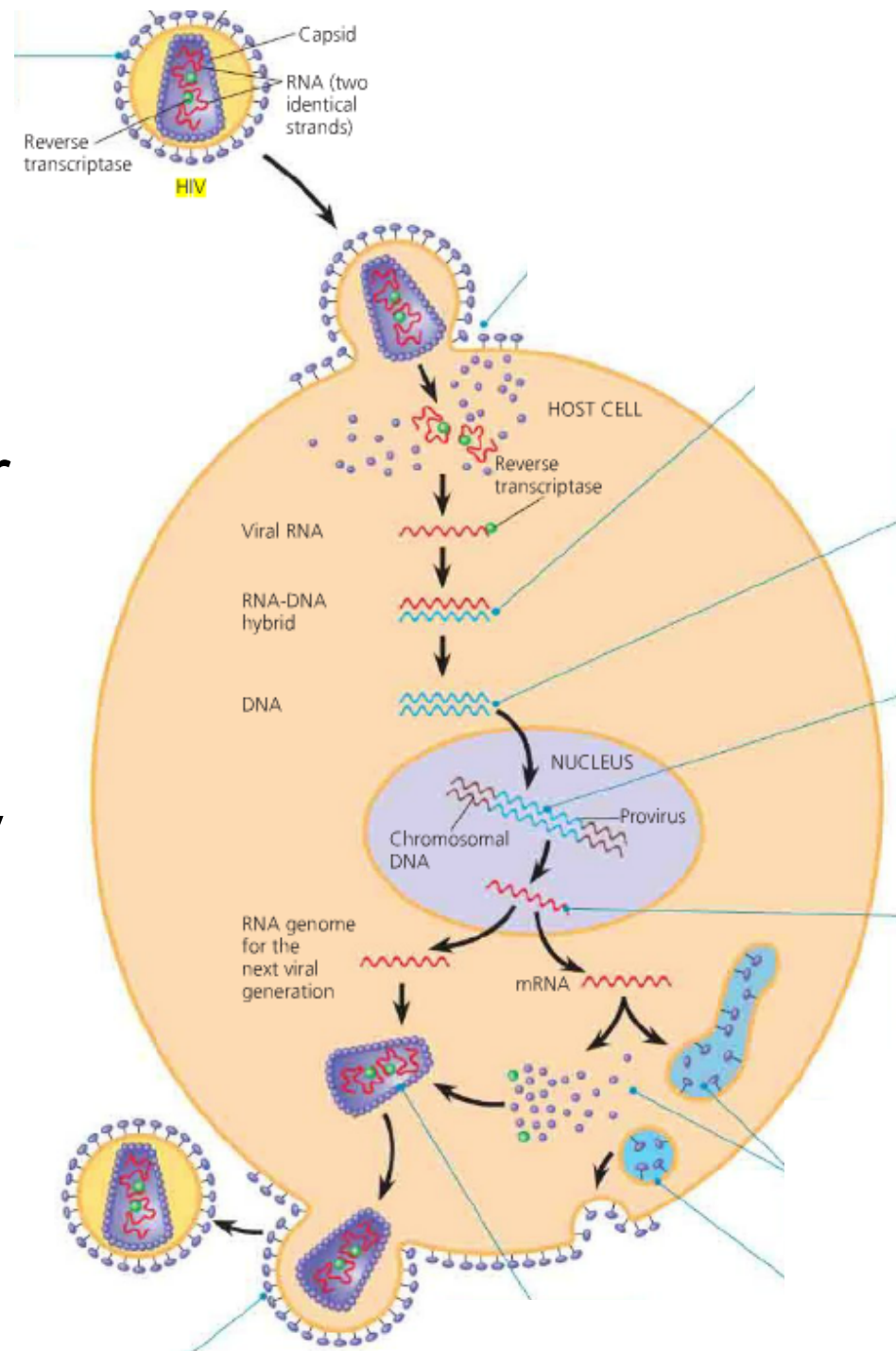
(CDC, WHO)



HIV/AIDS

Retrovirus that targets CD4+ helper T cells

Evades immune system response by rapidly mutating



Diagnosics and Treatment

Diagnostic tools

serum containing samples:

Alera Determine™

HIV-1/2 Ag/Ab

CD4 counts

PointCare Now

Antiretroviral therapy (ART) suppress HIV

Reverse transcriptase inhibitors

Azidothymidine (AZT)



Project Goals



Design a point of care HIV/AIDS diagnostic device for early infant detection

Consider ease of production and accessibility

Keeping in mind goal of implementation in developing countries and rural clinics

Thinking like an engineer

What are the needs of...

potentially infected individuals?

physicians?

minimally trained workers in rural clinics?

Avoid thinking about end products when thinking about needs!

Tasks

Literature review

Important biomarkers for HIV/AIDS

Point of care diagnostic devices

Use pubmed, google scholar

UCB library proxy set up instructions:

<http://www.lib.berkeley.edu/Help/proxy.html>

Next week!

Identify 5 needs for HIV diagnostics

Identify 3 successful diagnostic devices and why they were successful

Conduct a literature review of recent HIV research and identify 2 potential biomarkers for HIV

Lists will be due next week, and we will compile them in class!