

# MICROBIOLOGY RETREAT 2012

at Thompson Island





























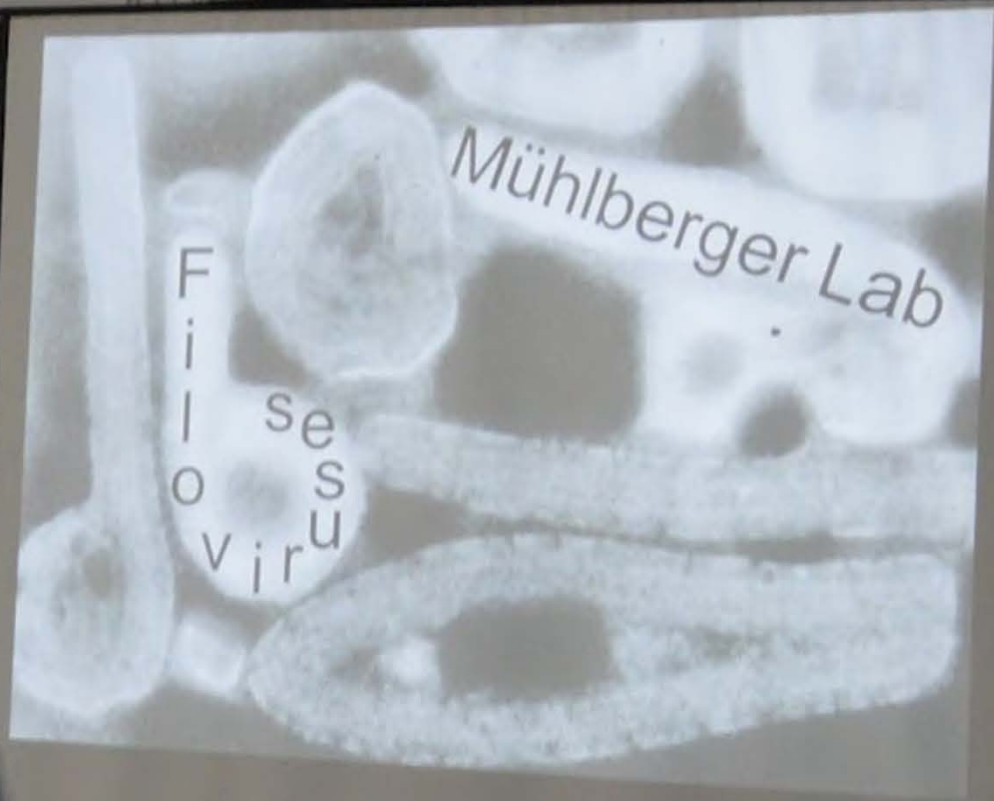












A woman with short dark hair, wearing a blue patterned top, is standing in front of the projection screen, gesturing towards the image.

The back of the heads of several audience members is visible in the foreground, looking towards the presentation.



## Filovirus HF – Symptoms

- systemic infections
- fatality rates between 23-89% depending on virus species



prominent cutaneous maculopapular rash  
(Martin et al., *DMW* 93, 1968)

- headache, malaise
- vomiting
- macular rash
- severe hemorrhages
- shock, multiorgan failure



preagonal stage: hemorrhages  
(Stille and Böttcher, *in: Marburg virus disease*, 1971)





# Bacterial Innate Immune Evasion Strategies

*N. gonorrhoeae*



Epithelial Cells



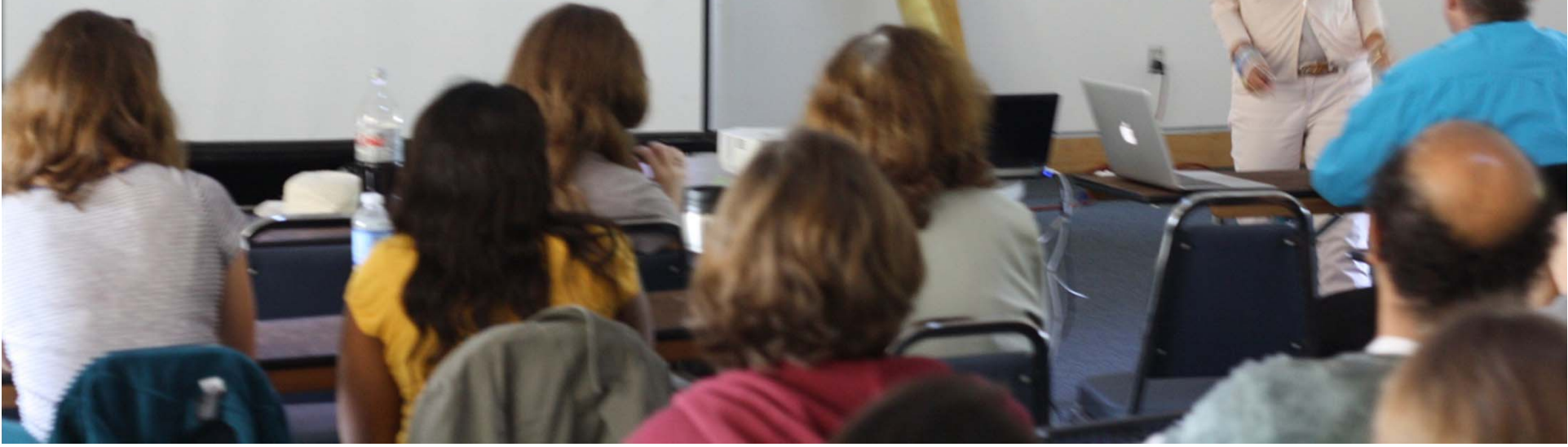
Macrophages  
Dendritic Cells



*P. gingivalis*



Endothelial Cells



## Origins of Drugs: Example Multiple Sclerosis

1993	Interferon-Beta	Anecdotal clinical observation
2000	Mitoxantrone	Chemotherapeutic
2004	Anti-VLA4 ( <i>Natalizumab</i> )	Driven by EAE model data
2009	Copaxone	Skewing T cell differentiation?
2011	FTY720 ( <i>Gelenya</i> )	Natural products survey, model data
2012	Teriflunomide	Leflunomide metabolite, pyrimidine inhibitor

2013	Anti-CD52 ( <i>Alemtizumab</i> )	Transplant efficacy
2013	BG12	Activity in psoriasis, pilot study in MS
2013	Anti-CD20 ( <i>Rituximab</i> )	Indication expansion from RA indication
2013	Anti-CD25 ( <i>Daclizumab</i> )	Transplant efficacy, Pilot NIH study

Future While not frequently admitted, MS may be done except for progressive disease and repair efforts e.g. triggering remyelination

Re-purposing of an existing drug  
Basic science driven application



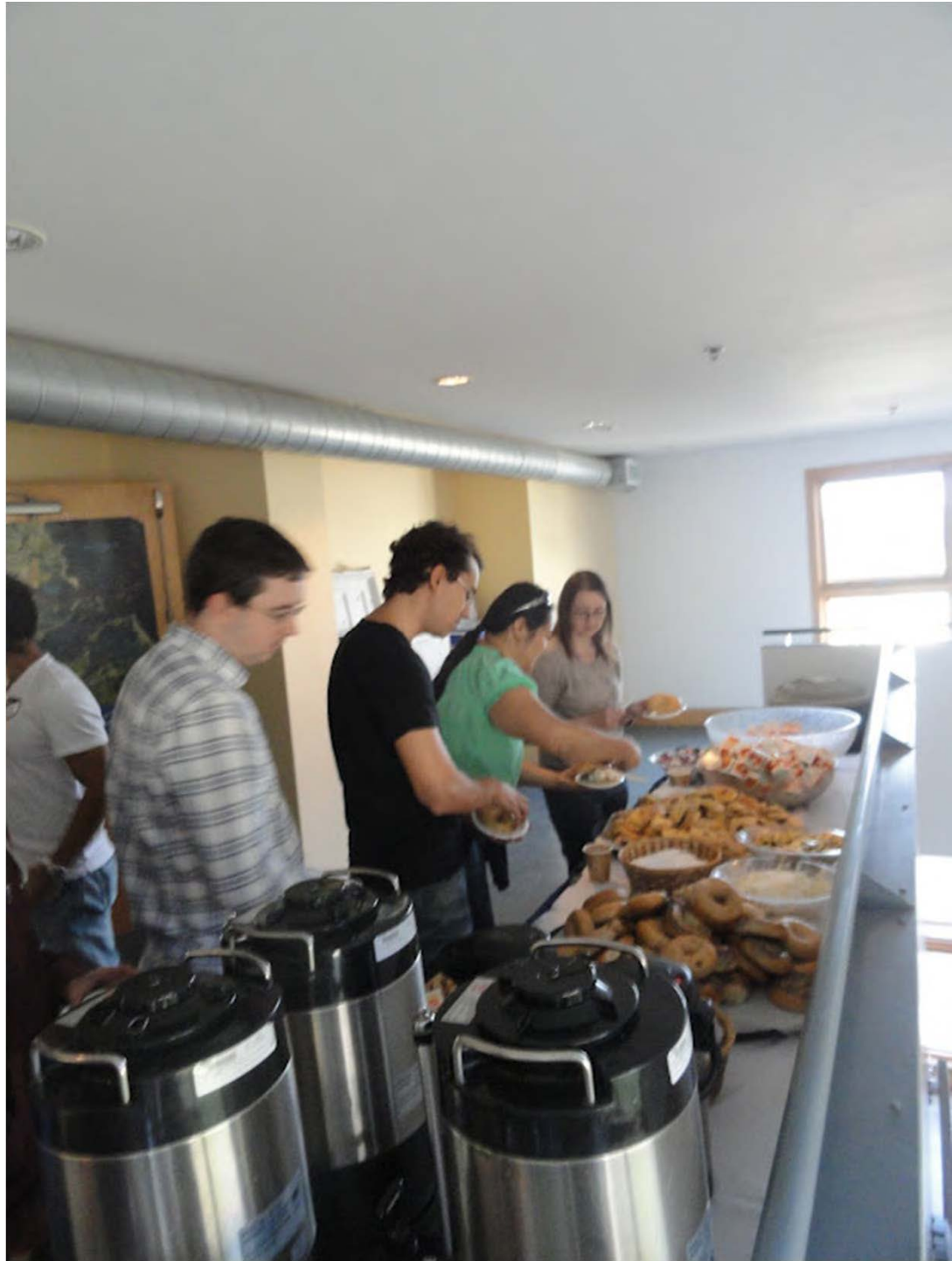






*Emerging viruses: from basic science to vaccines and therapeutics*









































































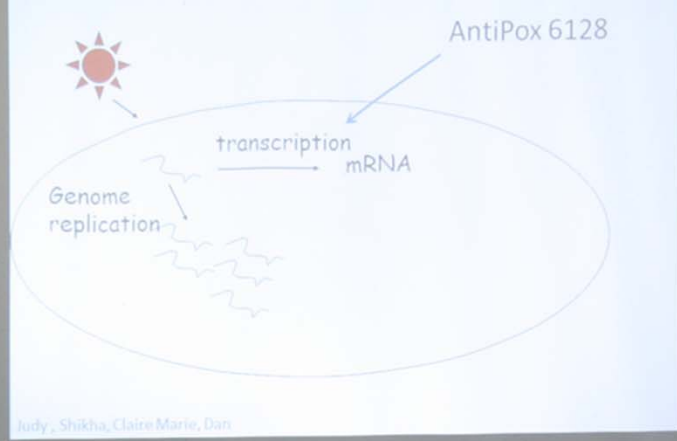






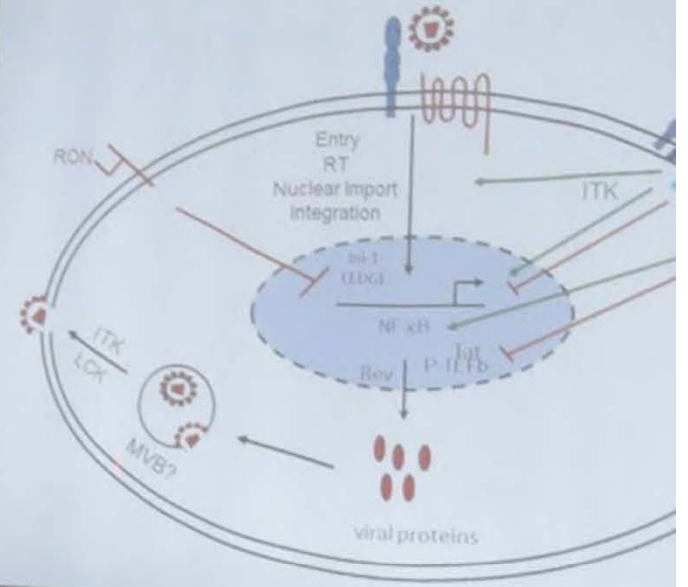


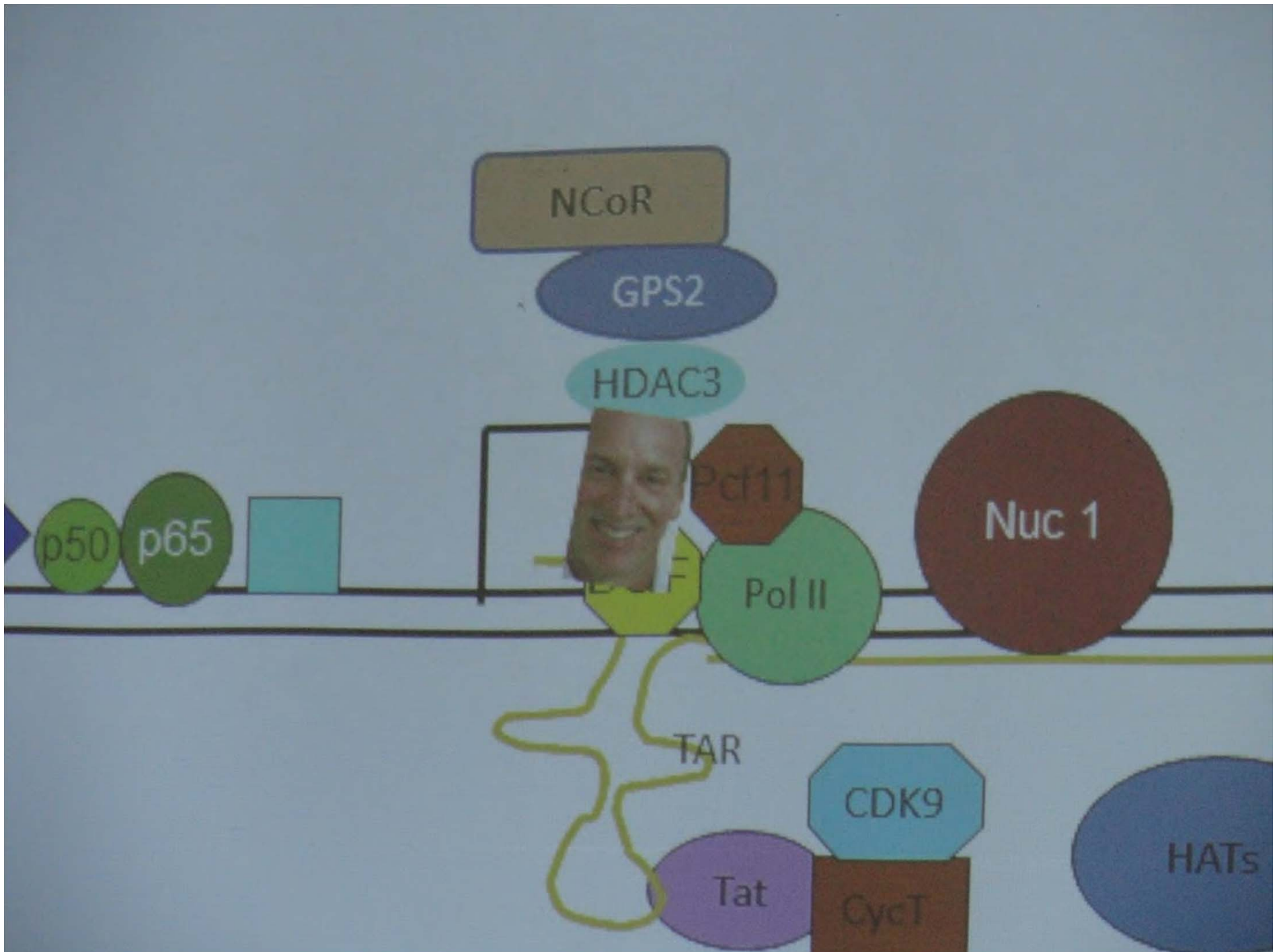
# Probes Targeting Poxviruses





# CELLULAR SIGNALS AND THEIR IMPACT ON HIV REPLICATION







making

novel

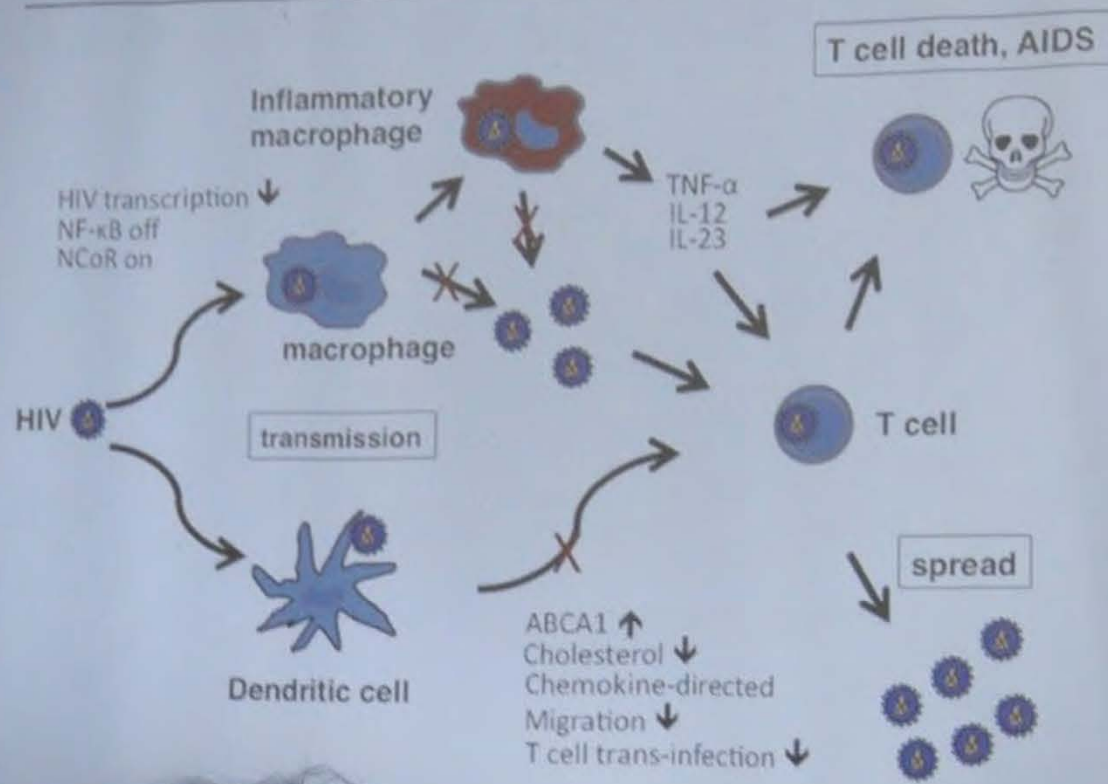
links



TAR

P-

# Ligand activation of PPAR $\gamma$ or LXR disrupts the immune cell/HIV network





Contemporary Art



Dr. Lakra (Retrato de mujer con calaca),<sup>o</sup> 2007.





### Age-adjusted Percentage of U.S. Adults Who Were Obese or Who Had Diagnosed Diabetes

Obesity (BMI  $\geq 30$  kg/m<sup>2</sup>)



Legend for Obesity: No Data, <14.0%, 14.0-17.9%, 18.0-21.9%, 22.0-25.9%, 26.0-29.9%

Diabetes



Legend for Diabetes: No Data, <4.5%, 4.5-5.9%, 6.0-7.4%, 7.5-8.9%, 9.0-10.9%



### Age-adjusted Percentage of U.S. Adults Who Were Obese or Who Had Diagnosed Diabetes

Obesity (BMI  $\geq 30$  kg/m<sup>2</sup>)

1994

2000

2008



Diabetes

1994

2008







































































































































































