

Fundamental and Applied Vaccine Research: ...and EPSCoR's Role in Facilitating the Studies

Heather Desaire, University of Kansas

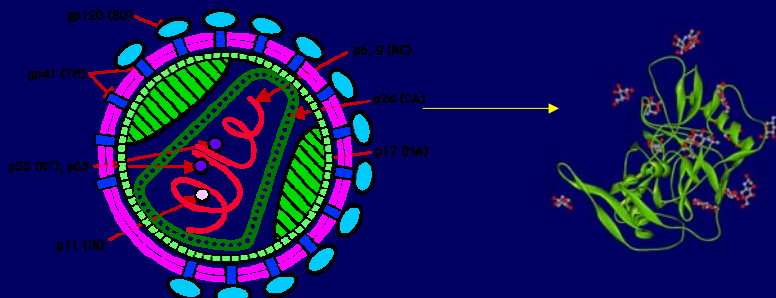
Dr. Eden Go

**Mary Bandu
Dilusha Dalpathado
Janet Irungu
Ying Zhang
Melinda Bretthauer
Kathryn Watkins**



**Nathan Macon
Qing Chang**

A little Virology: Env. glycoproteins are used as vaccines Ex. Hepatitis B, SARS.

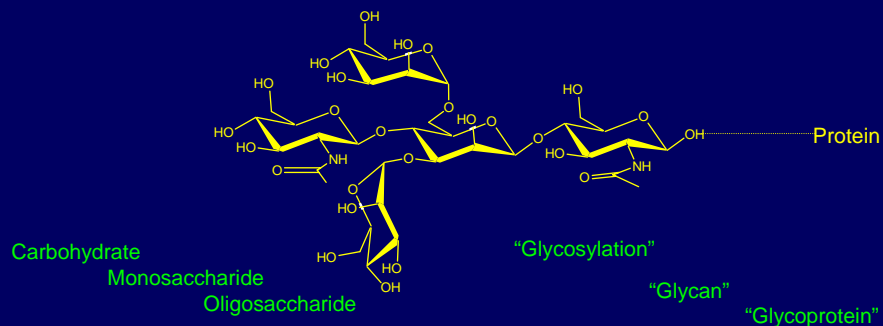


[http://www.tulane.edu/~dmsander/
WWW/335/335Structure.html](http://www.tulane.edu/~dmsander/WWW/335/335Structure.html)

**The first HIV vaccine to go to Phase III clinical trials
was the env. glycoprotein gp120. It didn't work.**

- 50% gp120 mass = carbohydrate
- Carbohydrates in viral form: unknown.

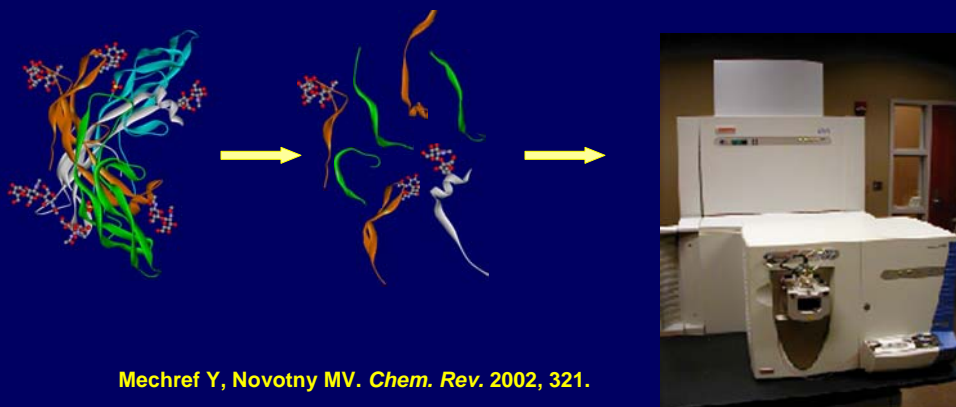
Difficulties in Developing an Analytical Method for Carbohydrate Analysis

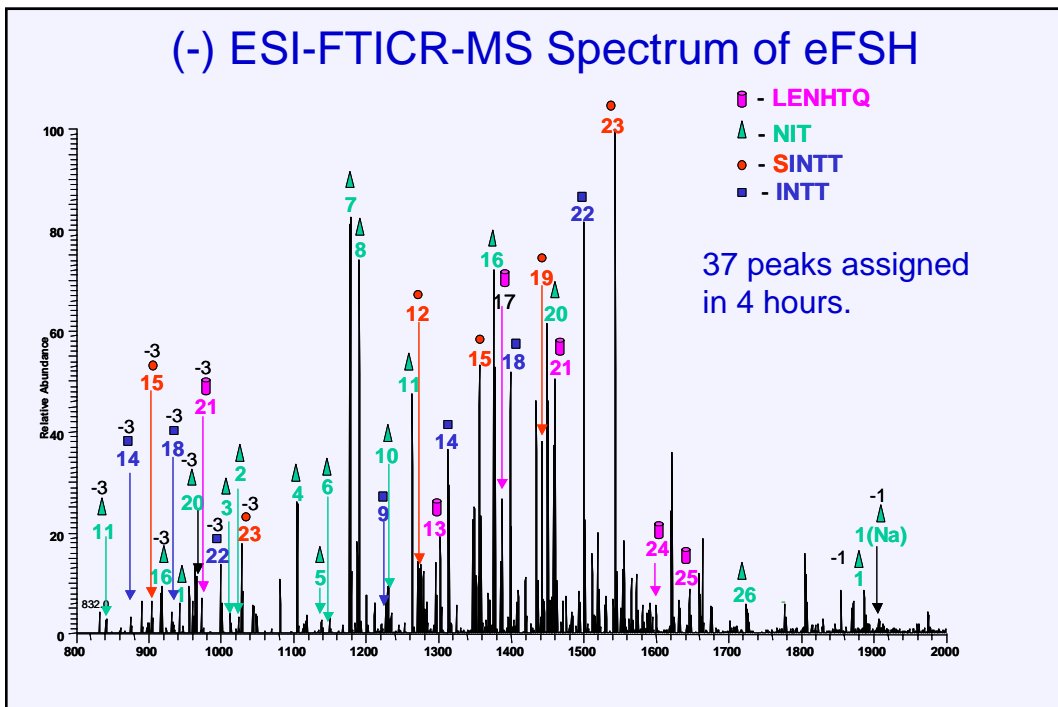
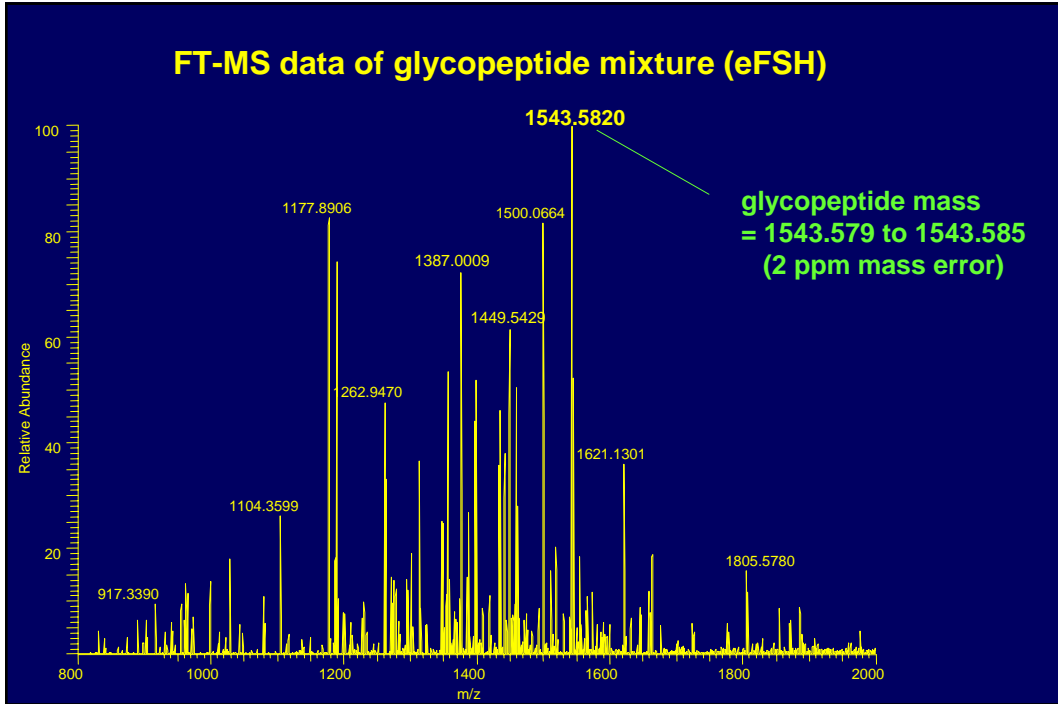


Challenges:

1. Structures are complicated (Imagine doing NMR)
2. You can't easily synthesize them, and they are in complex mixtures in nature.
3. Purification is very difficult.
4. Quantities are limited (Ex. 0.0001 mg for \$200)
5. We're interested in glycosylation on proteins

Strategy for Composition Analysis





OBJECTIVES

1. Develop *rapid* methods for profiling glycan composition at each glycosylation site.
2. Develop methods specifically for identifying sites of electrostatic interaction

APPROACH

Use gonadotropin hormones as model compounds
Apply methods to gp120.

We are beginning to use these tools to study the glycan structure of gp120. We hope these studies will assist in the development of an HIV vaccine.