Killing 2 birds with one stone:
Exploring use of anti-sperm antibody to prevent
Cell-associated HIV transmission in addition to pregnancy

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Anti-sperm antibody (ASA)

- Discovered in 1980’s
- Isolated from blood of an infertile woman
- Agglutinating Antibody directed against CD52g antigen
- CD52g is secreted in male genital tract (Mainly in epididymis, vas deferens and seminal vesicles)
- Inserted into the cell-membrane of spermatozoa in the lumen of male genital tract
Is CD52g inserted into the cell membrane of seminal leukocytes?
CD$_{45}+$ ASA$+$ seminal leukocyte

Anti-CD$_{52}$g (MHS8)  Anti-CD$_{45}$  DAPI  Merge
Flow Cytometric Analysis of ASA staining of seminal live CD45+ cells
Seminal mononuclear cells were isolated on ficoll gradient within 4 hours of collection.
Seminal mononuclear cells isolated on Ficoll gradient stained with CD45 and ASA for flow cytometric analysis.

PBMCs incubated for 2 hours with normal or vasectomized seminal plasma stained with CD45 and ASA.
Are seminal leukocytes capable of being agglutinated with sperm when treated with ASA

Normal motile sperm
Sperm and live seminal mononuclear cells treated with ASA
Vaginal epithelial model by MatTek

EpiVaginal VEC-100 tissue

Native human explant vaginal tissue
3D Reconstruction: 10um beads on EpiVaginal surface

Courtesy Dr. Blaskewicz
Infiltration studies: Preliminary data

A MDM infiltration in presence of SP

B Seminal leukocyte infiltration in presence of SP

- EpiVaginal tissues were TNF treated for 24 hours prior to infiltration
- Images show cells stained with Live Cell tracker CMFDA

MDM = monocyte derived macrophages
Conclusions

- CD52 g antigen is detected on cell membrane of seminal leukocytes
- >95% Seminal mononuclear cells were associated with agglutinated spermatozoa on treatment with anti-sperm antibody
- Future studies will determine whether ASA can block mononuclear cell infiltration of tissue
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