

## Mohamed Shata, MD, PhD

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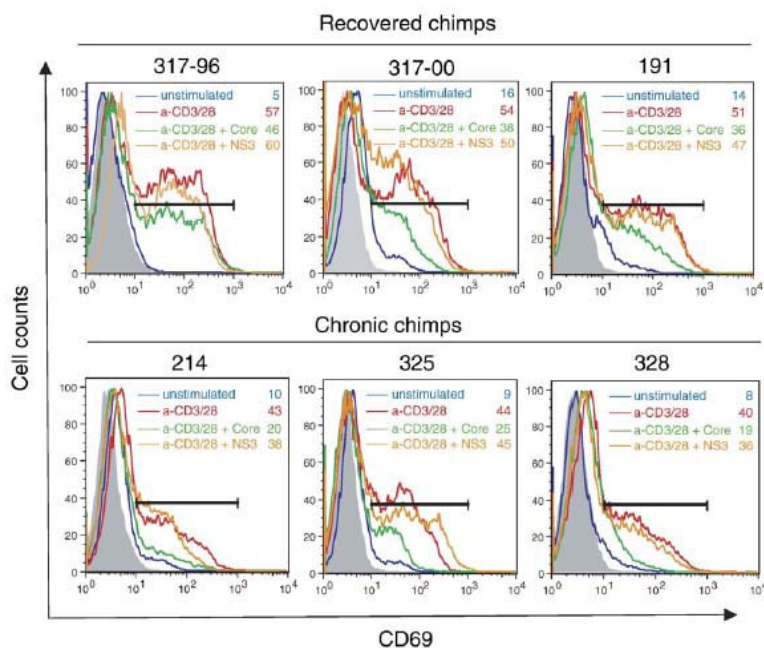
### Description of Research:

Dr. Shata's studies the immune regulation in viral hepatitis C (HCV). Since HCV is one of the leading causes of death in HIV (human immunodeficiency virus) -infected patients, the effect of HIV on the outcome of HCV infection has been one of the focuses of Dr. Shata's in collaboration with Dr. Kenneth Sherman. Dr. Shata has been able to demonstrate that the HCV core protein is able to inhibit T cell activation and proliferation in chimpanzees with chronic infection. However this inhibition is decreased in chimpanzees with resolved infection. Additionally, the level of gC1qR, as well as the binding of core protein, on the surface of T cells was lower in recovered chimpanzees when compared to chimpanzees with chronic HCV infection. These findings suggest that gC1qR expression on the surface of T cells is crucial for HCV core-mediated T cell suppression and viral clearance. Dr. Shata also examines Hepatitis E (HEV) which is an enterically transmitted RNA virus that causes acute viral hepatitis (AVH) in many lesser developed countries, with frequent reports of fulminant hepatitis in pregnant women. Although HEV- caused AVH is not endemic in the US, the prevalence of antibodies to HEV (anti-HEV) is as high as 20% among blood donors in certain areas of the US. HEV is a zoonotic disease with several animal species being reservoir hosts. The four genotypes of HEV are cross-reactive serologically but have different geographical distributions, species specificity, and virulence. However, cross-species infections have been reported. In the Indian subcontinent, and recently in outbreaks in Baghdad and in refugees in Darfur Sudan, the virulent genotype-1 strain of HEV was isolated from AVH cases. Dr. Shata has reported that HEV is endemic in rural villages in Egypt. However, HEV genotype-1 has been isolated from the stool of two hospitalized AVH patients in Cairo; and HEV has accounted for 10-to-30% of AVH in hospitalized Egyptians. He has recently isolated avirulent genotype-3 HEV (the same strain found in the US) from domestic animals in Egypt. He is currently examining why HEV-caused AVH may be rare in some areas, like Egypt and the US, despite the presence of high anti-HEV prevalence. A third project that Dr. Shata is involved with is a clinical trial of the Ty800 vaccine.

### Collaborations:

Drs. Shata and Cohen collaborate on an inpatient Phase I/II study to determine the safety and immunogenicity of Ty800 vaccine in healthy adult subjects. Additionally, Dr. Shata works with Dr. Sherman to evaluate the Hepatitis C Virus (HCV) specific immune responses in HIV/HCV coinfecting patients during therapy and identify the mechanisms of HCV rebound during antiretroviral therapy.

### Representative Figure:



Inhibition of T cell activation by HCV core. CD69 expression on activated T cells in the presence of HCV proteins. PBMC from HCV chronically infected (214, 325 and 328) or recovered (317-96 before infection, 317-00 after infection, and 191) chimpanzees were stimulated with or without anti-CD3/CD28 in the presence or absence of HCV core/NS3 for 24 h. CD69 expression on the T cells was determined by Flow Cytometry analysis using PE-conjugated anti-CD69 antibody. The percentage of cells positive for CD69, gated based on the isotype control (filled grey area) is shown on the upper right corner of the histogram. CD69 expression on T cells without stimulation (blue line); CD69 expression on T cells stimulated with anti-CD3/28 (red line); CD69 expression on T cells stimulated with anti-CD3/28 in the presence of HCV core (green line); CD69 expression on T cells stimulated with anti-CD3/28 in the presence of HCV NS3. Figure 2A from *Virology*, 2006; 346: 324-337.