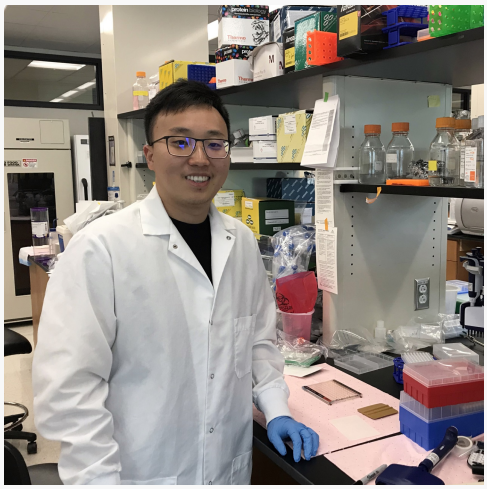
UNIVERSITY OF MARYLAND | NIST
INSTITUTE FOR BIOSCIENCE
& BIOTECHNOLOGY RESEARCH

9600 Gudelsky Dr.
Rockville, MD 20850
Tel: (240) 314-6000
Fax: (240) 314-6225

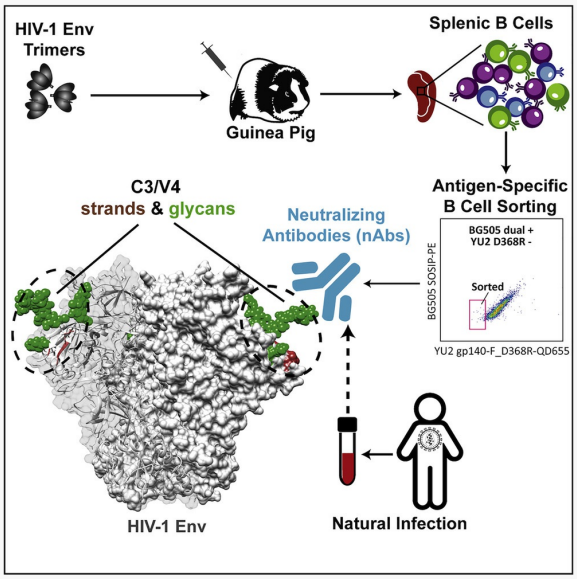
Published on *Institute for Bioscience and Biotechnology Research* (https://www.ibbr.umd.edu)

IBBR HIV Research Published in Cell Reports



Lin Lei

April 29, 2019 -- Congratulations to Lin Lei, lead author of a recent study from the laboratory of IBBR Fellow Dr. Yuxing Li (Associate Professor, UMB Department of Microbiology and Immunology) that provides new insight into how the immune system responds to HIV. Lei is a graduate student in the UMCP Biological Sciences Graduate Program. The study was published in *Cell Reports* on April 9, 2019.



Graphical abstract for Lei et al., 2019

A successful HIV vaccine will need to elicit antibodies that recognize and protect against the wide array of circulating HIV strains. Production of such “broadly neutralizing antibodies” – bNAbs – has been a major challenge of HIV vaccine design.

All HIV viruses are covered with an important protein called Env (HIV envelope glycoprotein). Researchers know that the best bNAbs bind to features common to Env proteins from nearly all HIV strains. However, when Env is used as a vaccine, and in the early stages of natural infection, antibodies that recognize only a specific Env tend to predominate, leading to a narrow range of protection.

In order to gain more insight into the strain-specific response, Lei identified a small number of strain-specific antibodies, which first required that he devise a new “single B cell” sorting method to clone monoclonal antibodies from guinea pigs. Lei then used structural biology and immunology techniques to determine that the strain-specific

antibodies bind to an area (epitope) with surface properties different from known bNAb epitopes. The research team plans to apply this insight to design new vaccine candidates.

“New vaccine designs that “replace” this newly identified, strain-specific, neutralizing epitope with a surface area shared by various HIV virus strains may lead to better immune recognition, and thus a broader protective response,” says Li, senior author of the article.

Co-authors of this study include Yimeng Wang and Chi-I Chiang from IBBR; Yuhe Yang, Karen Tran, Gabriel Ozorowski, Andrew Ward, and Richard Wyatt from Scripps Research; and Yongli Xiao from the National Institute of Allergy and Infectious Diseases at NIH.

A related article detailing Lei’s guinea pig antibody cloning methodology was published in *Frontiers in Microbiology* on April 23, 2019.

Inquiries: communications@ibbr.umd.edu