Lauren D Bailey, J AIDS Clin Res 2014, 5:11
http://dx.doi.org/10.4172/2155-6113.S1.006

OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference on
HIV/AIDS, STDs, & STIs
October 27-29, 2014 Embassy Suites Las Vegas, USA

Mode of action of the sulfhydryl group in virolytic peptide triazole thiol inhibitors of HIV-1 Env

Lauren D Bailey
Drexel University College of Medicine, USA

HIV-1 entry is mediated by the interaction of the trimeric envelope glycoprotein (Env) on the virus membrane surface with host cell receptors. However, Env is the only virus-specific protein on the virion surface and is essential for cell receptor interactions and subsequent virus-cell fusion. Therefore, HIV-1 Env is an important target to directly inhibit and thus block the initial steps leading to host cell infection. Our lab has synthesized peptide triazoles, a class of novel entry inhibitors. These peptides contain a substituted triazole derivative formed from a synthetically introduced azido-proline amino acid and bind to gp120 with close to nanomolar affinity. Site-directed mutagenesis and molecular dynamics simulation have shown that peptide triazole binding overlaps the CD4 binding pocket. Peptide triazoles cause cell-independent gp120 shedding, and variants containing C-terminal cysteines cause cell-free virolysis as evidenced by internal p24 capsid release. We are investigating the mode of action by which the sulfhydryl group causes irreversible inactivation. We hypothesize that the thiol interferes with conserved disulfides clustered proximal to the CD4 binding site in gp120 through "disulfide exchange", which could deform the Env protein spike, and subsequently the viral membrane, leading to p24 release. The process of disulfide exchange has been found to be necessary for HIV viral infection.

Biography

Lauren D Bailey completed her Bachelors of Science at the age of 22 years from Saint Joseph's University and then began working as a quality control chemist for a pharmaceutical company for 1 year before pursuing her graduate studies. She is a 5th year Biochemistry PhD Candidate from Drexel University College of Medicine and has co-authored 4 publications during her time as a PhD student. Lauren hopes to return to the pharmaceutical industry to advance drug development.

laurendbailey@gmail.com