Nivolumab is an anti-PD-1 (programmed death 1 protein) IgG monoclonal antibody that is FDA approved for the use in cancer therapies. Despite the promising results, there are consequences to whole body immune activation and many patients experience negative side effects. In our study, a targeting ligand, LXY30, that can be reliably linked to Nivolumab was used to target SKOV3 cells. After conjugation, site-specific ligation was confirmed by papain fragmentation followed by western blot analysis. The conjugated antibody was then analyzed for binding to T cells and SKOV3 cells using flow cytometry. Nude mice bearing SKOV3 ovarian cancer xenograft with conjugated Nivolumab assessed in vivo binding and antibody localization to cancer cells. These initial results indicate that LXY30 conjugated to Nivolumab is able to bind both cancer and T cells in vitro, however, in vivo modeling suggests that much of the conjugated ligand is found and excreted via the kidneys.

**CONCLUSIONS**

- LXY30 was successfully ligated to Nivolumab confirmed by antibody fragmentation and western blotting
- Covalent ligation of LXY30 to Nivolumab does not affect binding to T cells
- Nivolumab alone will not bind SKOV3 cells, however Nivolumab decorated with LXY30 will bind SKOV3 cells
- Tumor and liver uptake of Nivolumab-Cy5 and Nivolumab-LXY30Cy5 are high in both cases, but without any significant difference between the two conjugates.
- It is not clear why kidney uptake was high, as intact immunoglobulin should not be filtered by the glomerulus. Need to repeat the experiment and fully characterize the immunonconjugates.
- Future experiments will be to evaluate if LXY30 conjugated Nivolumab is more efficacious than undervatized Nivolumab, as hypothesized.

**ACKNOWLEDGMENTS**

Thanks to Dr. Lam for allowing me to work in his lab, as well as Dr. Chandrasekaran for his support and mentorship during these summer projects. Funding for this project was provided by the STAR (Students Training in Advanced Research) Program.

**CITATIONS**