• Current cancer immunotherapy vaccines (Antigen-based) are very limited
• Solution: Materials-based immunotherapy vaccines that uses a self-assembling nanogel
• Poly(hydroxyethyl methacrylate) (pHEMA) backbone with a pyridine side chain
Formation of the Self-assembly Nanogel via Nucleophilic Acyl Substitutions and Reaction with Chicken Ovalbumin and PBS

NanoSight Test Indicates Formation of Self-Assembling Nanogel and Success of Substitution Reactions
CDI and Maleimide Successfully Introduced using Amide Conjugation

- CDI as a catalyst and Maleimide group as hydroxyl side chain
- 1st step revised to include new functional group and catalyst
- Maleimide’s ability to have an antigen protein bonded to it improves its use and accuracy
CDI + Maleimide Reaction Produces Consistent Results

Results

Stats: Merged Data
Mean: 259.3 nm
Mode: 221.6 nm
SD: 70.3 nm
D10: 179.1 nm
D50: 239.6 nm
D90: 350.8 nm

Averaged FTLA Concentration / Size for Experiment:
phEMA_MAL 2019-07-18 23-27-08
Error bars indicate +/−1 standard error of the mean

Intensity / Size graph for Experiment:
phEMA_MAL 2019-07-18 23-27-08
Conjugation with OVAL-FITC Proves Consistent with Past Results
CONCLUSIONS

- Amide conjugation appears possible and likely forms viable nanogel
- OVAL-FITC depicts the tentative success of amide conjugation
- Further research will lead to an innovation in vaccines

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