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Molecularly Imprinted Polymers having Affinity for Natriuretic Peptides

Researchers at the University of South Florida have developed molecularly imprinted polymers (MIPs) having an affinity for natriuretic peptides, such as atrial natriuretic peptide (ANP). These polymers may be used to form nanoparticles useful in the modulation of cancer.

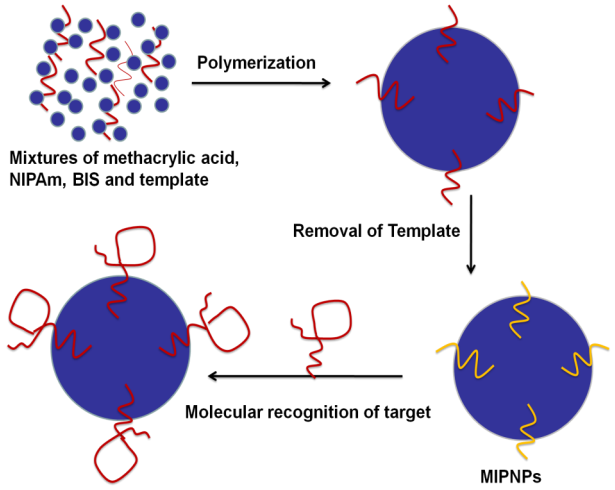
The expression and signaling of natriuretic peptide receptor A (NPRA) is important for tumor growth and could be the new target for cancer therapy. Research has shown that NPRA is expressed largely in restricted cell populations containing high levels of ANP. Additionally, NPRA receptor is related mainly to the autoregulation of ANP neurons and central control of cardiac ANP release. The disruption of ANP-NPRA signaling inhibits tumor burden and metastasis. Furthermore, NPRA expression in cancer cells can be down regulated with ANP concentration in the cell culture media. However, biological antibodies to NPRA do not provide reproducible results.

Our scientists have developed a synthetic neutralizing antibody to ANP which has high selectivity and affinity for ANP and can be used to regulate ANP levels and attenuate NPRA binding to ANP in cancer cells. These antibodies can be integrated into polymers that may also be used to form nanoparticles. This technology provides a novel route to treating various forms of cancer.

ADVANTAGES:

- **High affinity and selectivity to Atrial Natriuretic Peptide**
- **Disrupts ANP-NPRA signaling**
- **Inhibits tumor burden and metastasis**

Polymer Nanoparticles for Cancer Therapy



Schematic for the Preparation MIPNPs

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