Building Immunity with Biomaterials

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Dysfunction of the immune system underlies many diseases. However, strategies to effectively program an immune response, and reprogram undesired responses, by manipulating a patient's immune cells are at an early stage. We are creating biomaterials capable of concentrating, interrogating, and manipulating immune cells ex vivo and in the body by controlling, in space and time, the interaction of the immune cells with immunomodulatory agents. The utility of this concept in the development of therapeutic cancer vaccines will be highlighted.