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Synbodies -- High Throughput Development of Synthetic Antibodies

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Inventors

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Invention Description

The development of new drugs and diagnostic assays requires the ability to identify and prepare high-affinity, high-specificity ligands. Monoclonal antibodies are useful reagents in this regard, but are difficult to humanize and express in large amounts. Monoclonal antibodies are also intrinsically limited by the immunological repertoire of the immunized host and the need to be produced in cell culture. Finally, the process of developing new Monoclonal Antibodies is laborious and expensive.

Researchers at the Biodesign Institute of Arizona State University have developed high-throughput techniques to screen vast libraries of synthetic peptides and identify groups of relatively low affinity binders to targets of interest. Using novel chemical linker technologies, these peptides can be combined in many different ways to produce high-affinity, high-specificity binding reagents.

The resulting molecules are called “Synbodies” to indicate that they incorporate the affinity and specificity advantages of antibodies, while being fundamentally synthetic in nature and derivation.

Specifically, Synbodies are created on an array platform without the use of any in vivo step, which is necessary for the development of traditional antibodies. Furthermore, fully synthesized Synbodies display an equal or greater affinity to the target molecule in solution once chemically modified by attaching a linker.

Potential Applications

- **Clinical diagnostics**
- **Drug Screening**
- **Research**
- **Immunology**

Benefits and Advantages

- **Innovative**: this technology could enable making affinity reagents to the whole proteome in a short time.
- **Inexpensive and renewable** : the reagents are affordable to make and renewable.
- **Diverse**: the system is compatible for making affinity reagents from peptides, peptoids, RNA, DNA and other small molecules.

Intellectual Property Status:

Patent pending

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