SCIENCE FOR THE BENEFIT OF HUMANITY

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Rapid And Low Cost Approach For The Production Of Large Repertoires Of Highly Specific Nanobodies

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Technology Summary

Nanobodies are single domain antibodies derived from the variable regions of camelid atypical immunoglobulins. Due to their small size, nanobodies can be easily genetically manipulated and produced in large quantities with simple bacterial expression systems. Nanobodies are also extremely stable and bind antigens with very high affinity. Therefore, nanobodies represent promising reagents for research, diagnostic and therapeutic purposes. However, until recently no rapid and robust techniques have been discovered for the production of large amounts of nanobodies.

Our researchers have developed a rapid and low cost approach for the production of large repertoires of high affinity and specific nanobodies against a given antigen. To prove the efficacy of their approach, they were able to produce a number of nanobodies raised specifically against GFP, YFP, mCherry, etc. Their method allows the production and the generation of a large antibody repertoire against multiple epitopes in a chosen antigen. Additionally, through the use of mass spectrometry, this approach is able to identify nanobody sequences directly the animal serum. The versatility and potential of nanobodies is very high in several application fields, including drug development and cancer diagnostics.

Application

Development of research reagents, diagnostics and therapeutics.

Advantages

Rapid and cost effective method to develop large repertoires of high affinity nanobodies.

Stage of Development

Several nanobody clones were developed and validated.

Lead Inventors

Drs. Brian Chait and Michael Rout

Patent Information

Patent pending

Reference

- Fridy et al., 2014, Nat. Meth., *Online publication* (http://www.nature.com/nmeth/journal/vaop/ncurrent/abs/nmeth.3170.html)
- http://newswire.rockefeller.edu/2014/11/02/new-technique-efficiently-turns-antibodies-into-highly-tuned-nanobodies/