

INNOVATION WORKS™

Technology from the European Molecular Biology Laboratory

High-throughput method for producing monoclonal antibodies

EMBLEM Ref. 123

Challenge

- important role of monoclonal antibodies in biomedical research and drug development
- increasing demand for fast, efficient and time/cost effective methods for their production

Commercial Opportunity

- licensing opportunities:
 - full transfer of the technology
 - on-site use of the technology

Technology

- high-throughput, cost effective production of monoclonal antibodies
- proprietary microarray technology
- generation of high-affinity antibodies in as little as 12 weeks
- comprehensive database
- technology transfer and license for in-house use available

Contact

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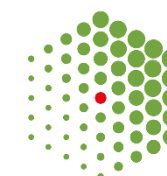
Key Inventors

Alan Sawyer, Federico de Masi, European Molecular Biology Laboratory (EMBL) Monterotondo, Italy, and Heidelberg, Germany

Intellectual Property

PCT filed on 17.04.2014

8 granted patents



EMBLEM
TECHNOLOGY TRANSFER

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In contrast to transcriptome analysis, monoclonal antibodies (mAb) and related affinity reagents detect the native protein itself, and are therefore powerful and desirable tools in systems biology research. Moreover, due to their high specificity mAbs are expected to become the molecules of choice for modern therapeutics such as in the field of immunoncology. However, production of new antibodies against novel targets remains restricted by high tissue culture load and low-throughput screening methods, which result in costly and inefficient processes. Other techniques more amenable to high-throughput production of high affinity detection reagents are still unable to yield high affinity antibodies without lengthy downstream manipulation. Our technology circumvents two obstacles to increase the mAb production throughput level, the number of tissue culture operations necessary for performing multiple fusions simultaneously using only one antigen per animal as well as screening the many thousands of culture supernatants generated by large-scale production.

Here we present a semi-automated, high-throughput method for hybridoma generation and identification. Monoclonal antibodies are raised to different targets in single batch runs of 6-10 weeks using multiplexed immunizations, automated fusion combined with cell-culture, and a novel antigen-coated microarray-based screening assay. This technology enables in a large-scale run, where mice are immunized with ten antigens each, the generation of monoclonal antibodies against all targets within 6 weeks after primary immunization.

The proven and robust technology is fully implemented and has been evaluated within EMBL and by industrial clients at several industrial sites. It is in daily use in EMBL's Monoclonal Antibody Core Facility. The EMBL technology enables you to increase your quality and quantity of monoclonal antibodies, improve your productivity, and will significantly reduce your production cost.

Reference

De Masi et al. 2005, Proteomics
doi: 10.1002/pmic.200401279

