Rapid Screening and Identification of Antigenic Components in Tissues and Organs

Tech ID: 27622 / UC Case 2016-374-0

ABSTRACT

Researchers at the University of California, Davis have developed an approach to rapidly screen and identify antigenic components in tissues and organs.

FULL DESCRIPTION

Identification of antigenic components of allograft and xenograft tissues is important in identifying proteins that potentially play a role in host rejection. Until now, researchers have relied exclusively on two-dimensional gel electrophoreses methods. Although effective, these methods have significant limitations due to the time required to run 2D gels and the subsequent need to extract and separate the proteins from duplicate gels prior to mass spectrometry analysis. These methods take at least 3 days time, are difficult to reproduce, require extensive optimization for each tissue, are inapplicable to certain protein classes, and are at best semi-quantitative.

Researchers at the University of California, Davis have developed a unique approach to rapidly screen and identify large numbers of antigenic components in tissues and organs. This method is capable of simultaneously identifying a multitude of antigenic components in allografts or xenografts and can be completed within 8 hours. It is easily reproducible, applicable to a wide range of antigens (including integral membrane proteins), provides quantitative results, and requires minimal optimization between tissue types. This method has already been tested and successfully able to identify antigenic components from native bovine pericardium xenografts.

APPLICATIONS

- Identifying antigens to which patients are reacting in oncology (tumor antigens), immunology (autoimmunity), transplant immunology (allograft tissue transplantation), infectious disease (pathogen antigens)
- Diagnostic tests (has the patient developed antibodies to a specific antigen)
- Therapeutics (antibody targeted drug therapy, to target the drug specifically to the antigen site)
- Immunotherapy (tolerance induction protocols)
- Development of non-antigenic tissues/organs (gene knockout animals, antigen removal approaches)

FEATURES/BENEFITS

- Ability to rapidly and quantitatively screen protein fractions that were previously un-examinable (e.g., integral membrane proteins).
- Approximately 8 hours to perform
- Highly reproducibility
- Applicable to a wide range of antigens including non-protein antigens
- Quantitative results
- Requires minimal optimization between tissues

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,899,020	02/13/2024	2016-374

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OTHER INFORMATION

CATEGORIZED AS

- **Agriculture & Animal Science**
  - Transgenics
- **Biotechnology**
  - Proteomics
- **Medical**
  - Diagnostics
  - Disease: Autoimmune and Inflammation
  - Disease: Cancer
  - Disease: Musculoskeletal Disorders
  - Research Tools
  - Therapeutics

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