

**Technology**

Method for diagnosing  
*Pseudomonas aeruginosa* in a  
biosample

**Inventor**

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**Key Features**

- Reduces turnaround time
- Single, easily performed assay
- Highly sensitive and highly specific assay
- Cost competitive

**Stage of Development**

Reduced to practice with  
successful demonstration

**Keywords**

- Diagnostic
- *Pseudomonas aeruginosa*
  - Bacterial assay
  - Gram-positive bacteria
  - Lipoprotein antibody

**Patent Status**

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## **Pseudostat II**

(VA Reference No. 02-033)

*Novel antibody-based test that is able to identify the bacterium  
Pseudomonas aeruginosa in clinical specimens*

**Technology**

The Department of Veterans Affairs has developed an antibody-based test that is able to identify the bacterium *Pseudomonas aeruginosa* in clinical specimens. The technology consists of a test kit with necessary reagents and tools, a reagent mixture formula, and a method of preparing reagents and performing the test.

**Description**

*P. aeruginosa* is a gram-negative bacterium that is versatile in its habitat and can grow in soil, water, and on plant and animal tissue. An opportunistic organism and one of the most problematic nosocomial pathogens, it is capable of causing disease in immuno-compromised individuals. Case fatality can be as high as 50 percent due to a combination of weakened host defenses, bacterial resistance to antibiotics, and the production of extra cellular-bacterial enzymes and toxins. *P. aeruginosa* often colonizes hospital infrastructure and can be spread easily.

*P. aeruginosa* is clinically indistinguishable from other less serious gram-negative bacteria. Therefore early and accurate diagnosis is important due to the inherent antibiotic-resistant ability of the organism. The assay developed by the VA is based on an antibody that is specific for a lipoprotein (LP1) on the surface of *P. aeruginosa*. The antibody is incubated with a sample taken from the patient (sputum, urine, blood or from the wound) that has been grown in culture for 18 to 24 hours. An agglutination reaction occurs and is used to indicate a positive result.

**Competitive Advantage**

The current test for *P. aeruginosa* is based on biochemical analysis and takes 46 to 48 hours to perform. The nature of the test means that the diagnosis is never definitive but provides a profile that can be said to be most similar to *P. aeruginosa*. The number of biochemical analyses necessary for identification of a particular isolate is also variable.

This invention:

- Could reduce the test turnaround time to 18 to 20 hours.
- A single assay as opposed to a battery of tests with the reagent test occurring with 10 to 15 minutes.
- Has a sensitivity of 96 percent and a specificity of 92 percent based on a collection of 300 gram-positive isolates.
- Is cost-competitive.

**Status**

The Department of Veterans Affairs is looking for a partner for further development and commercialization of this technology through a license, and the VA inventors are available to collaborate with interested companies through a Cooperative Research and Development Agreement (CRADA).