

## And The Winner Is...



Thank you to all who stopped by our booths at IFT and IAFP to learn more about our **NEW** 3M™ Petrifilm™ Staph Express Count Plate and registered to win a Amtrak® Acela Express Train Set.

### Congratulations to our winners:

Bob Burns - ConAgra Poultry Company

Philip Block - FMC

Valerie Vanlandingham - IAMS Co/Procter & Gamble

Hank Wong - Cargill

## 3M Microbiology University Program

Complimentary 3M™ Petrifilm™ plates for food science programs in the United States.

University food science programs in the U.S. are eligible for free samples of 3M™ Petrifilm™ plates for non-commercial research and development purposes in classroom studies. Higher education programs may receive samples of Petrifilm Aerobic, *E. coli*/Coliform, *Enterobacteriaceae*, Yeast and Mold and Staph Express Count Plates as well as the 3M Quick Swabs. Food science programs may also request supporting technical literature and a video program to help demonstrate the use of Petrifilm plates. This program has been in place for over 10 years and has successfully provided support to microbiology curriculums throughout the United States. For more information on this program or to place your order, please logon to our website at [www.3m.com/microbiology](http://www.3m.com/microbiology). Click on "Services" and then onto "Educational Resources".

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#### ABSTRACT

Accurate and rapid detection of *Staphylococcus aureus* is of significant interest to the food industry. Enumeration of this bacterium is often used as an indication of food quality and safety. The 3M™ Petrifilm™ Staph Express Count plate and disk have been developed in order to provide a quantitative *S. aureus* result from food within 22-29 hours. The performance of the method was demonstrated by comparing the counts from foods using both the Petrifilm plate and the reference method of Baird-Parker agar followed by a tube-coagulase test of selected colonies. Analysis of variance showed that there was no statistical difference between the two methods (p-values > 0.05). These results indicate that the Petrifilm plate method gives similar, quantitative results in approximately one-third the time of the Baird-Parker agar method using rabbit plasma coagulase.

To order a copy of this poster, please visit our website at [www.3m.com/microbiology](http://www.3m.com/microbiology). Please click on the "3M Microbiology Train" and then onto "Poster" or contact your 3M sales representative.

## 3M Microbiology would like to wish you Happy Holidays!



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Thank You



**3M Microbiology**  
 3M Center, Bldg. 275-5W-05  
 St. Paul, MN 55144-1000 USA  
 1-800-228-3957  
[microbiology@mmm.com](mailto:microbiology@mmm.com)  
[www.3m.com/microbiology](http://www.3m.com/microbiology)

**3M Canada**  
 Post Office Box 5757  
 London, Ontario N6A4T1  
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**3M Europe**  
 Laboratoires 3M Santé  
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# Micro Messenger

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## Staph Testing Now Faster, Easier With 3M™ Petrifilm™ Staph Express Count Plate

The latest addition to the 3M Petrifilm plate family brings a new level of efficiency to food processing labs. Food laboratories around the world place high priority on routine *Staphylococcus aureus* testing as an indicator of potential contamination. According to the Centers for Disease Control, foodborne staphylococcal intoxication was the fifth leading cause of reported bacterial foodborne illness as cited in the report from 1993 to 1997.<sup>1</sup> While the actual incidence is unknown, it is estimated that 1.5 million cases of foodborne illness each year are due to *S. aureus*.<sup>2</sup> Economic losses due to *S. aureus* are also significant. In the United States, staphylococcal intoxication is regarded as one of the most economically important foodborne diseases with an annual cost of \$1.5 billion.<sup>3</sup>



The need in the food and beverage industry is to have a cost effective, easy to use, faster result test for *S. aureus*. Based on those needs, 3M Microbiology developed a new product for *S. aureus* testing. 3M innovation resulted in a test that provides a final result in as few as 22 hours versus up

to 78 hours with the three-plate Baird-Parker agar plus tube coagulase method. This new method also reduces labor requirements when testing for *S. aureus*.

The new Petrifilm Staph Express Count plate contains a sample-ready culture medium consisting of a cold-water-soluble gelling agent and modified Baird-Parker medium designed to work with a wide variety of diluents and foods containing high-background flora. After inoculation with 1 mL of sample and incubation at 35°C for at least 22 hours, the plate is ready for interpretation. If *S. aureus* is present, distinctive red-violet colonies appear in as few as 22 hours. When colony colors other than red-violet are present, the 3M Petrifilm Staph Express disk is used to distinguish *S. aureus* from other suspect colonies.

### Increased Profitability

Rapid reporting of *S. aureus* on food ingredients before they enter the production process saves time and money. "The Petrifilm Staph Express Count plate allows for early detection of *S. aureus* which leads to quicker product disposition and enhanced inventory management and process control," says Terri Paulson, 3M Microbiology market development. "This can result in higher-quality products and improved facility cost savings for food processors." Processors can cut the time finished products need to be inventoried by at least one day by receiving final *S. aureus* results in as few as 22 hours. Reduced inventory time results in increased profitability.

### Reduced Labor

To maximize processors' ever-present need to increase efficiency and productivity, Petrifilm Staph Express Count plate offers unparalleled ease of use. The Petrifilm plate method consists of just a few simple steps — inoculation, incubation and interpretation — resulting in minimal technician training time and increased efficiency. "The Petrifilm Staph Express Count plate provides final results with less manipulation than the

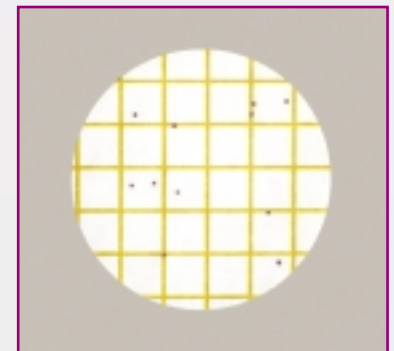
standard method," Paulson points out. "This eliminates the need to select colonies and perform coagulase tests for confirmation." Easy testing and interpretation mean less chance of human error. With the time saved in *S. aureus* testing, laboratory personnel are freed up for other responsibilities.

### Meeting Global Needs

3M Petrifilm Staph Express Count plates are available to food processors around the globe. Stringent verification tests were conducted in Japan and Europe as well as the United States to demonstrate the method's accuracy with a variety of food types. "When working with foods that have high-background flora, such as the raw-milk cheeses and fermented meats more common in Europe, the plate can be used in conjunction with the Petrifilm Staph Express disk to identify *S. aureus* from other suspect colonies," says Marie-Pierre Copin, 3M Microbiology European market development. Food manufacturers around the globe now have a cost effective, easy to use, rapid test method that provides a final *S. aureus* result in as few as 22 hours when they use Petrifilm Staph Express Count plates.

All Petrifilm plates are manufactured at an ISO 9002-certified site, where strict quality-control procedures help reduce media variations.

For more information about staph testing with Petrifilm plates, call the 3M Customer Service Hotline at 1-800-860-0022 ext. 2 or visit [www.3M.com/microbiology](http://www.3M.com/microbiology).



<sup>1</sup> CDC. Surveillance for Foodborne Disease Outbreaks—United States, 1993-1997. n.p. Online: Internet. 1993-1997. Available: <http://cdc.gov/epo/mmwrr/preview/mmwrrhtml/ss4901a1.htm>

<sup>2</sup> CAST. 1994. Foodborne Pathogens: Risks and Consequences. Council for Agricultural Science and Technology, Ames, IA.

<sup>3</sup> Todd, E.C.D. 1989. Preliminary estimates of costs of foodborne disease in the United States. J. Food Prot. 52:595-601.

## Is Your Staphylococcal Testing Program Good Enough?



By: Frank Yiannas

Manager,  
Food Safety and Health  
For Walt Disney World Co.

When it comes to Staphylococcal testing, which one is better: a) enumeration of viable Staphylococcal organisms, which might be able to produce enterotoxin; or, b) enterotoxin detection? The answer is quite simple – it depends.

There's a familiar quote that illustrates the point I'm trying to make quite well. It states, "the creative mind spots wrong questions, the uncreative mind wrong answers." In other words, my original question is the wrong question. The question should not be which Staphylococcal testing strategy is better – enumeration or enterotoxin detection? Instead, the question should be why do you perform such testing?

Advances made in Staphylococcal enumeration and enterotoxin detection have made performing such testing fairly easy in most reasonably equipped labs. Of course, the specific method you choose and how you execute it is critical. However, even more important is why do you perform such testing and what do you do with your test results? For example, testing for one of the known enterotoxins might be preferred if a laboratory wanted conclusive proof in a suspected Staphylococcal foodborne illness outbreak. In contrast, a viable

count might be preferred if one wanted to determine if a raw material could serve as a source of "staph" or if a finished product has the potential for post-process contamination due to poor handling or plant sanitation. The bottom line – the specific method you choose really depends on your situation and what you are trying to accomplish.

Let me share with you three important points to consider when selecting a Staphylococcal testing strategy.

**1. Beware of Staphylococcal testing traditions.** If your current Staphylococcal testing program (whether it's a viable count or enterotoxin detection) is based on the way it's always been done, then it may be wrong. Periodically conduct a critical review of the method and strategy used by your lab to see if it still makes sense. The best food safety labs are the ones that are constantly looking for better ways of doing things. There are scientifically valid Staphylococcal testing methods available today that could possibly help you better manage risk and save time. You might want to consider them.

**2. Prevention is always better than a corrective action.** Testing programs and risk management strategies that recognize this principle will be more effective than those simply focused on detecting hazards after they already exist. For example, a food producer that strictly focuses on testing finished product for Staphylococcal enterotoxin may also, depending on the food product and production process, want to consider other risk management strategies and testing options. Does screening raw material for viable Staphylococcal organisms make sense? Could viable counts serve as an early indicator of post-process contamination? Has the production process been validated with the likelihood of contamination and/or

growth of Staphylococcal organisms specifically in mind? If there's a concern over the potential for Staphylococcal growth, has the product been challenge-tested or could it be reformulated to prevent or minimize growth?

**3. Be willing to change.** Although many profess to accept change, studies in human behavior have repeatedly shown that change can sometimes be difficult. However, if science and risk data support that a change might be needed in your Staphylococcal testing program, as a scientist you have an obligation to seriously consider it. Sure, we all understand that there may be a combination of factors to consider before proposing a change, but you should at least take the time to think about it.

In closing, if someone were to ask you how has your Staphylococcal testing program made progress over the past few years, what would your answer be? Upon a critical and candid examination, would it really pass the test? Remember, in order to make your Staphylococcal testing program better than it is today, you have to change something – or else it remains the same.

## Getting To Know The 3M™ Petrifilm™ Staph Express Count Plate & Disk



### 1. How do the Petrifilm Staph Express Count plate and disk work?

The chromogenic, modified Baird-Parker medium contains both indicators that differentiate the *Staphylococcus aureus* as red-violet colonies and selective agents that inhibit the background flora. When colonies other than red-violet are present, a disk containing deoxyribonucleic acid (DNA) and toluidine blue-O is inserted into the plate and *S. aureus* colonies (as well as *Staphylococcus hyicus* and *Staphylococcus intermedius*) are identified by pink DNase zones.

### 2. How does the Petrifilm Staph Express Count plate result compare to the three-plate Baird-Parker agar plus tube coagulase result?

In studies conducted at 3M and in outside labs, the Petrifilm Staph Express method gave comparable results to the three-plate Baird-Parker agar plus tube coagulase method. The Petrifilm Staph Express Count plate method uses 1 plate to give 24 hour results without spending time preparing media. It is cost effective, easier to use, and faster than the three-plate Baird-Parker agar plus tube coagulase method.

### 3. What is the difference between the new Petrifilm Staph Express Count plate and disk and the Petrifilm Rapid *S. aureus* Count plate and disk?

The Petrifilm Staph Express Count plate gives a confirmed *S. aureus* result after the first incubation step for most samples. A Petrifilm Staph Express disk is used only when there are colonies other than red-violet (*S. aureus*) present. All incubation temperatures are the same throughout the method, with no elevated temperature incubation required. The Petrifilm Rapid *S. aureus* Count plate requires the use of a disk for all samples and requires an elevated incubation temperature. The Petrifilm Rapid *S. aureus* Count plate has AOAC OMA approval.

### 4. How long does it take to complete a test using the Petrifilm Staph Express Count plate and disk?

The test can be completed in 22 to 29 hours. At 22 hrs (24h ± 2h) if there are no colonies on the plate, the test is complete. At 22 hrs (24h ± 2h) if there are only red-violet colonies on the plate, count the colonies and report as *S. aureus*; the test is complete. If there are other color colonies on the plate besides red-violet, a disk is added and the plate and disk are incubated for an additional 1 to 3 hours.

### 5. There is a Petrifilm Staph Express Count plate and a Petrifilm Staph Express disk. When do I use the disk?

The disk is used when there are colonies other than red-violet present on the plate due to high background flora in the food. The disk differentiates *S. aureus*, *S. hyicus*, and *S. intermedius* from the background flora.

### 6. Why should I buy disks?

You will want to have disks on hand for occasions when you do have high background flora in your food samples.

### 7. Does the Petrifilm Staph Express Count plate have approval?

We are currently pursuing AOAC and AFNOR approvals.

### 8. Is the Petrifilm Staph Express Count plate suitable for environmental testing?

Yes, you can do most environmental testing including finger plating, contact surface plating, air testing and plating from swabs. The Staph Express Count plate must be rehydrated 3 days in advance of using them for finger and contact surface plating. Rehydrated plates can be stored refrigerated for up to 7 days.

### 9. Do I need any special equipment or supplies to run the test?

No, the Petrifilm Flat Spreader (cat# 6425) is provided with each initial order at no charge. Your current incubator and common food diluents may be used.