

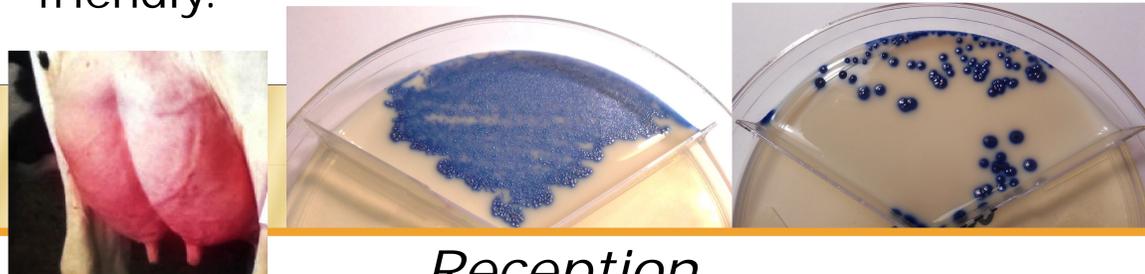
# Development of an On Farm Mastitis Culture System for Dairy Farms



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## Opportunity

- Mastitis culturing facilitates more targeted antibiotic use and improves treatment efficacy.
- Targeted antibiotic use often leads to reduced antibiotic use without negative effects on milk quality and cure rates.
- Other culture systems (milk lab and other on farm systems) have significant lag time between sampling and results (24 - 48 hours), which delays treatment and deters some farms from mastitis culturing despite the economic benefits.
- In addition, current on farm systems are not as accurate as milk lab culture and are not user friendly.



## Reception

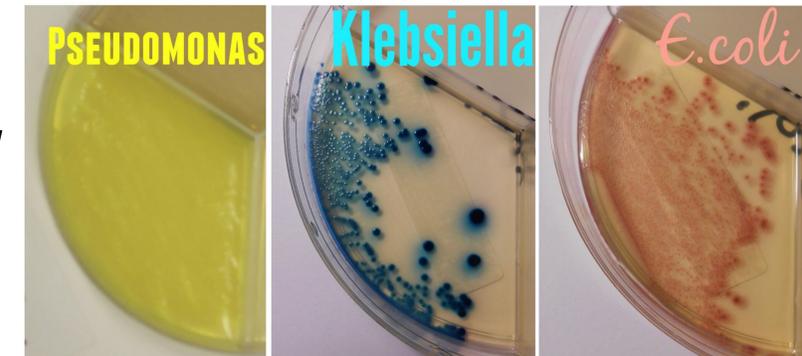
Several area farms are using these plates to culture both clinical and subclinical mastitis cases with great results. Improved cure rates and significant decreases in antibiotic usage have been reported.

**Invention Goals and Challenges:**  
 Create a **SIMPLE** on farm culture system that can **ACCURATELY** differentiate treatable from untreatable mastitis pathogens with a turn around time < 24 hours.

## Results

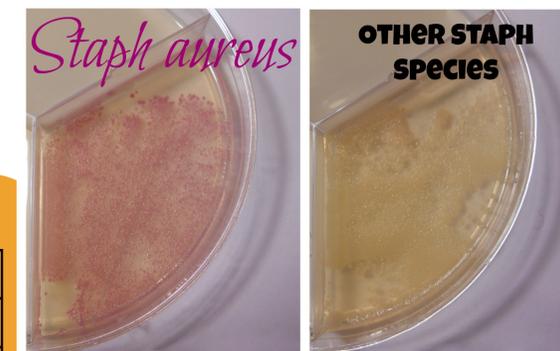
The final design consisted of three chromogenic medias assembled in a standard tri-plate petri dish. A milk sample from each mastitis case is swabbed onto each section of the plate and the plate is incubated at 37° C for 16 hours.

The first section selectively grows gram negative organisms, differentiating three mastitis pathogens: Klebsiella, E. coli, and Pseudomonas.



The second section grows only Streptococcus species and can differentiate environmental strep species from treatment resistant Streptococcus uberis and enterococcus species.

The third section differentiates Staph aureus from less pathogenic staph species.



## Sensitivity & Specificity Data:

Bacteria group	Sensitivity	Specificity
<i>Escherichia coli</i>	84.3%	87.8%
<i>Klebsiella spp.</i>	95.6%	98.9%
<i>Pseudomonas spp.</i>	100.0%	98.0%
<i>Streptococcus &amp; Enterococcus</i>	94.3%	90.0%
<i>Staphylococcus spp.</i>	79.0%	93.0%
<i>Staphylococcus aureus</i>	90.0%	99.1%

Based on a study of 915 milk samples from a 3,000 cow dairy located in Cayuga County, NY. AccuMast samples were compared with results from the QMPS laboratory and a metagenomic analyzer.