

# New technology helps producers take a Change the way yo

National Milk Laboratories, part of the NMR group, now uses technology to identify the DNA in mastitis pathogens. This means that these pathogens can be identified far more accurately and in only a fraction of the time than has ever been possible before. The technology could revolutionise the way we manage mastitis, both on farm and as an industry.

text **Karen Wright**

**M**astitis costs the dairy industry millions every year. And as many vets will admit, problems often rumble along for too long before they are treated correctly. But this could change with the arrival of new technology – Polymerase Chain Reaction (PCR) – that can identify DNA linked to specific pathogens found in milk. Testing can be carried out on a chilled milk sample or one with preservative added, both of which minimise bacterial growth. And PCR reliably detects 11 pathogens and the susceptibility of Staphylococci to penicillin in a matter of hours, compared with six pathogens and no penicillin susceptibility in a traditional NML culture.

The advantages of PCR outweigh traditional culture, more commonly used for bacteriology testing, many times over. Culture tests typically use fresh milk samples where bacteria may grow during transit to the lab, and take up to 72 hours to grow. And as many as 40% of samples tested resulted in no growth.

## Pathogen picture

“We are encouraging producers and their vets to make better use of bacteriology tests,” says Hannah Pearse, NML business development manager. “PCR offers the chance to build up a picture of pathogens affecting the herd.”

PCR is now used in NML’s suite of Microcheck services – the Mastitis ID service, where producers or vets use kits to send in samples from individual cows or quarters, and the BactoBreakdown service, where mastitis pathogens are identified in bulk milk samples. Identification of plant hygiene bugs, also offered through BactoBreakdown, will still be carried out using culture but this will not delay the delivery of results from PCR.

Results from samples arriving in the NML lab before 9am will be available through the Herd Companion website or by email or fax within 24 hours.

Specific to the NML PCR service is its ease of use. For many producers wanting to use the BactoBreakdown service on bulk samples no further sampling is required. The NML lab already holds five days worth of milk samples from 90% of British dairy farms as part of the milk payment testing service.

For individual cow samples, producers can get a kit from NMR and send a preserved milk sample to the lab.

The cost of carrying out a BactoBreakdown test on a bulk milk sample is £45.00 + VAT. Kits, with a sample pot for Mastitis ID using PCR on individual cow samples costs from £15.00 plus VAT per test.

## More bacteriology needed

As a practice, XL Vets Wright and Morten in Macclesfield, Cheshire, encourage dairy producers to use bacteriology tests to identify mastitis causing bugs in their herds but



more holistic approach to mastitis control

# u manage mastitis

## PCR tried and tested on farm

Rob Bell from Ullard Hall Farm, Kutsford in Cheshire, has been trying out the new PCR bacteriology test in his 200-cow Holstein herd. "I sent in samples from cows flagged up with above average cell counts on Herd Companion. The process was easy and in just a couple of days the results were back with my vet, Ed Hayes and he contacted me to talk about the results.

"It soon became clear that the PCR tests identified specific mastitis causing pathogens and we could take much more informed decisions," adds Mr Bell. "It's so easy to spend £50 or £60 treating a high cell count cow only to find it is a short-lived solution. I was thinking that the antibiotics weren't as good these days but it's probably more to do with the fact that we were guessing the bugs rather than having a far more accurate picture."

His trial PCR bacteriology tests showed there was only one case of Staph aureus and the main problem was

environmental pathogens. "We've got a flying herd and Ed suggested that we may have bought in the bug at some time. We're about to start calving our own heifers and rearing youngstock so once we reduce the impact of the nasty bugs and attempt to protect our new heifers from becoming infected it should be easier to control.

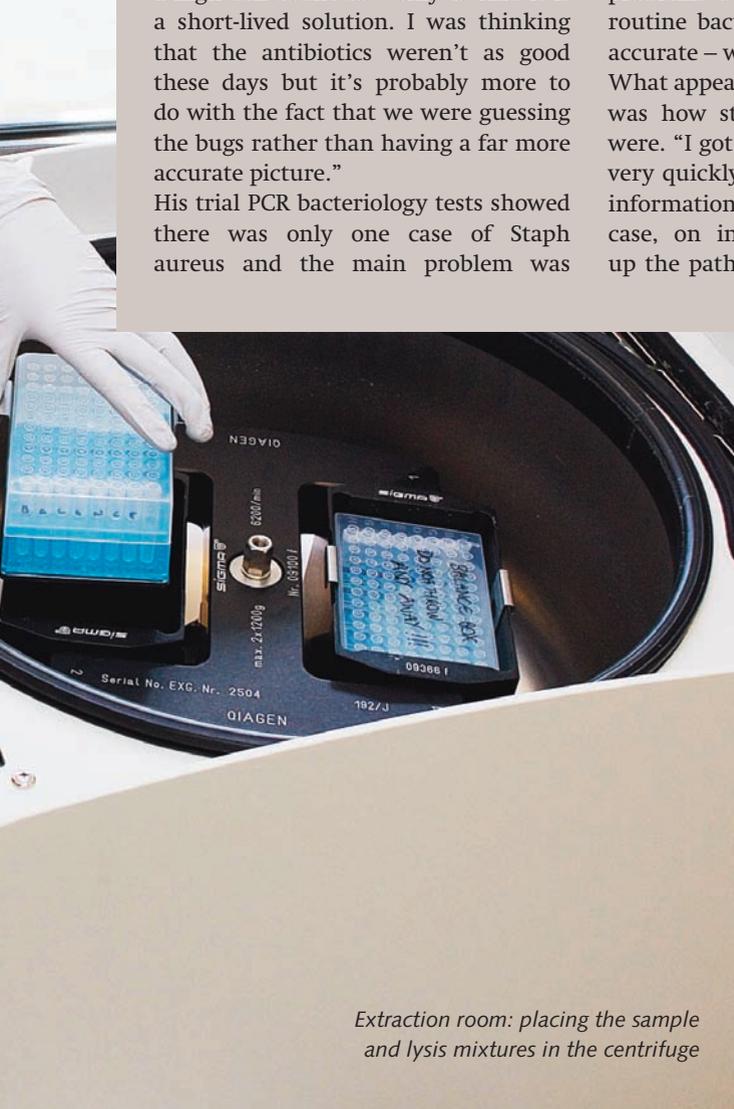
"And I'm keen to make sure we have a good picture of any pathogens in the herd. Our average cell count is around 190,000/ml and we've only once been out of the Wiseman bonus band. But as yields increase there's the potential for problems to increase too. I think more routine bacteriology – if it's easy and accurate – will be money well spent."

What appealed particularly to Ed Hayes was how straight-forward the results were. "I got a set of results on my desk very quickly and they gave me a lot of information on the herd and, in this case, on individual cows. It showed up the pathogens I was half expecting



Rob Bell (left) and vet Ed Hayes: PCR test results speed up treatment

so in terms of treatment, I could get to work quickly and make informed decisions regarding antibiotics but also areas of management that would help control the particular bugs and prevent further spread."



Extraction room: placing the sample and lysis mixtures in the centrifuge

Mr Hayes admits that the uptake is not as high as they would like.

"The whole process of taking samples, growing cultures and making sense of results that might have suffered from contamination or a high proportion of no growths is not always satisfactory and I can see why some producers question if it's worth it.

"We'd love more of our clients to carry out bacteriology tests and I hope this new PCR technique will encourage them. There's great benefit in knowing the bug situation on a unit so we can target problems that much quicker."

### Proactive approach to mastitis management

And longer term Mr Hayes hopes more regular PCR bacteriology tests will mean that a proactive approach is taken to mastitis management on more dairy units.

"Often we end up dealing with chronically infected high cell count cows – and the same cows. We might be better getting to the bottom of sub clinical cases and identifying the pathogens causing the problems then adapting management protocols to improve the situation."

But so far, results look promising. "Bacteriology using PCR looks to be high yielding, reliable and quick," he adds. |