



FOILING THE SPOILING

With billions of bad guys (bacteria) trying to win the battle against the good (yeast) **Chris Canty** meets someone arming our brewers with the right weapons for good beer...

In brewing circles, PHD candidate and scientist Monique Haakensen is a superhero. The research she has undertaken at the University of Saskatchewan (in the heart of Canada), has not only grabbed the attention of major breweries around the world, but has also given hope to millions of home brewers.

In her own words, the research has one goal: “To save the world’s beer from bacterial contamination!”

So far her results, which were published in *The Canadian Journal of Microbiology* last year to much excitement within the industry, have revealed three ways of detecting beer-spoilage bacteria using a method of DNA amplification.

“Beer spoiling bacteria,” she continues, “can cause large financial losses to breweries around the world, but very little is known about how these bacteria grow in beer.”

But she credits her beer-loving brothers for helping her find new groups of bacteria that ruin the brewing process.

“Back in 2006, my three brothers made homemade beer,” she says. “But the beer turned out so disgusting and contaminated that I decided to bring some to the lab. I grew the contaminating bacteria from the beer, and sequenced some of their DNA. I found three types of bacteria that have never been found

in beer before, and identified a specific beer-spoilage or antimicrobial resistance gene in each type.”

Her research has enabled several major breweries (that can’t be named) ways to identify harmful bacteria within days of making the batch. Before her research, breweries would often take weeks to determine if a batch has been affected by bad bacteria.

Her findings have created quite a buzz, which has resulted in her speaking in Hawaii at the World Brewing Congress, and winning scholarships with Cargill Malt, Coors Brewing Company and Miller Brewing.

The question must be asked, what was her initial attraction to devoting her life to beer?

“It was actually my medical virology professor who first introduced me to beer research,” Monique says. “Although he taught a medical-related class, his research was focused on identification of beer-spoilage bacteria. I was offered a summer student position in his lab and found that I really enjoyed the application-oriented work.”

Monique is humble when asked about the predicted effect her findings will have on the beer industry, despite knowing that it could change the way beer is made and monitored forever.

“I hope that my research will be able to reduce the costs required for brewery

HOW TO TELL...

There’s no point making the best beer in the world if it’s not brewed in a clean brewery, looked after and packaged into a clean bottle.

David Ong from 2brothers brewery in Melbourne insists the best way to identify if beer is spoiled is by “sensory evaluation – visual, aroma and flavour”. He suggests that you should firstly use your eyes to see if the beer has unintentional turbidity (cloudiness). Then check if it has a strange aroma such as off eggs, which is a sign of bacteria. Thirdly simply tasting the beer can identify a range of flavours such as vinegar, butterscotch, and freshly cut apples that are also signs of spoilage.

quality control and monitoring of cleaning of equipment. Several methods that we have developed have already been put to use in several major breweries.” she says.

And is someone who works around the smell of spoiled beer all day actually deterred from having a few when off the clock?

“I am definitely a beer drinker,” she says. “I usually like to try out different beer that I haven’t tried before. Every style of beer has its place. In the summer I like a nice light beer, but in the winter I tend to go for a darker, nicely hopped ale. We have many microbreweries here in Saskatoon, so there is never a shortage of varieties to choose from.”

If you’re reading this Monique, from all the readers of *Beer & Brewer* magazine, keep up the good work and most of all...thank you. ☑