Chai + PIKA
Brewing Quality Solutions
Making Better Quality Decisions in Real-Time

+ Simple, turn-key qPCR solution
+ Clear, definitive, quantitative Micro QC results
+ Precision targeting of individual spoilers ensures accuracy
+ Clear batches in two days with single cell/sample sensitivity

Detect spoilers of:

Diastaticus  Lactobacillus  Megasphaera
Brettanomyces  Pediococcus  Pectinatus
Beer: A Competitive Ecosystem
Despite being a remarkably hostile environment for microbes, several bacterial species are able to thrive in beer, generating unwanted off-flavors, turbidity, and acidity.

Wild yeasts such as Brettanomyces and S. diastaticus can cause secondary fermentations producing not only off-flavors, but also pressure build-up leading to exploding bottles and cans.

Delivering consistent, on-brand taste and preventing damaging recalls requires a robust quality program to screen for spoilers throughout the production process.

Efficient, timely, and actionable screening requires modern tools.

Limitations of Traditional Microbiological QC
- With week-long turnaround times, beer has often left the brewery before test results are in
- Cannot rapidly test yeast prior to pitching, or bright beer prior to packaging
- Results are subject to human interpretation and often inconclusive
- Spoiler species are nearly impossible to differentiate visually
- Unable to detect low levels of diastatic contamination

The Chai + PIKA Brewing Quality Solution
Rapid Spoiler Detection & Identification with qPCR

Clear
Definitive on-screen results eliminate human interpretation

Rapid
Detect 10 CFU/mL in 2 hours, or 1 cell/sample in 48 hours

Reliable
Precision spoiler targeting using gDNA overcomes the limitations of hop resistance gene testing methods

Easy
Process your first sample after only 2–3 hours of training

Informative
Determine spoilage risk and best management action by quantifying and identifying the spoiler species present

Flexible
Adapt the system to suit your microbiological risks, shelf life & time to result requirements, sample throughput, and QC budget

Simple Workflow

<table>
<thead>
<tr>
<th>Enrichment (Optional)</th>
<th>Sample Prep</th>
<th>PCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time: 18-48 hours</td>
<td>Time: 30 minutes</td>
<td>Time: 75 minutes</td>
</tr>
<tr>
<td>FastOrange</td>
<td>Pellet</td>
<td>PCR</td>
</tr>
<tr>
<td></td>
<td>Wash</td>
<td>Analysis</td>
</tr>
<tr>
<td></td>
<td>Lyse</td>
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</tr>
</tbody>
</table>

Enrichment with PCR-grade FastOrange increases sensitivity and degrades dead cells.
Media available for:
- Bacteria
- Brettanomyces
- Diastaticus and other wild yeasts
The Chai + PIKA solution detects spoilers with multiplex, probe-based Real-Time PCR, also known as qPCR. Spoiler DNA is detected using a thermal cycling reaction and fluorescence optics.

Advantages over conventional PCR
- Elimination of costly gels and cartridges
- Quantitative results
- Increased specificity with probes
- Internal control detects PCR inhibition

Open qPCR: Real-Time PCR for your Brewery

The compact, rugged Open qPCR is an ideal Real-Time PCR instrument for on-site production environments.

The instrument processes 16 samples at a time using long-lasting, solid-state optics. Results can be viewed on any computer in the brewery via web browser.

<table>
<thead>
<tr>
<th>Results</th>
<th>Cq</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Positive</td>
<td>28.1</td>
<td>Medium</td>
</tr>
<tr>
<td>Positive</td>
<td>20.4</td>
<td>High</td>
</tr>
<tr>
<td>Negative</td>
<td></td>
<td>Not Detectable</td>
</tr>
<tr>
<td>Inhibited</td>
<td></td>
<td>Invalid</td>
</tr>
</tbody>
</table>

Open qPCR automatically runs & analyzes PIKA 4e test kits, displaying clear results understandable by all laboratory personnel.

Positive, negative, and inhibition controls are compared, ensuring reliable results with zero human interpretation.

Open System

Open qPCR is a completely open system. Define your own experiments; perform amplification, standard, and melt curve analysis; or dig into the raw data behind the PIKA test results.

Real-Time PCR: The Gold Standard for Spoiler Detection

While there are hundreds of species of Lactobacillus & Pediococcus, only a tiny fraction have the ability to grow in beer.

Early approaches to differentiating the spoilers tested for hop resistance genes such as horA and horC. However, these genes reside on plasmids which are frequently exchanged between organisms. This makes hop resistance testing an unreliable method, as false positives occur when the genes are found in non-spoilers, while false negatives occur in low-hopped beers.

PIKA’s Precision Approach

PIKA’s 4e kits pinpoint the Real Beer Spoilers by individually targeting the genomic DNA of the 13 scientifically proven spoiler species of Lactobacillus & Pediococcus by PCR.

The Real Beer Spoiler Screening Kit combines all 13 tests into a single PCR reaction for easy, economical detection, while the Real Beer Spoiler Identification Kit identifies all spoiler species present.

The result: a precision test for the spoilage potential of your beer.

Technical Specifications

| Sensitivity                | 10 CFU/mL with direct PCR  
| 1 cell/sample with FastOrange enrichment |
|---------------------------|----------------------------|
| PCR Time                  | 75 minutes                 |
| Compatible Samples        | Beer (turbid & clear), yeast slurries, colonies, swabs |
| Controls                  | Positive, negative, and internal inhibition |
| Test Kit Shipping Temp.   | Ambient                    |
| Test Kit Storage Temp.    | 2 – 8 °C                   |
| Instrument Connectivity   | Wi-Fi, Ethernet, USB       |
| Device Support            | Windows, Mac, Linux        |

The Real Beer Spoilers of Lactobacillus & Pediococcus


Pediococcus

P. damnosus, P. inopinatus

PIKA monitors contamination events in breweries around the world through its consultancy, and continually evaluates new organisms for inclusion.

Chai + PIKA Weihenstephan

Brewing Quality Solutions
Chai and PIKA Weihenstephan partner to provide breweries with simple, effective tools that improve quality and reduce waste.

About Chai

Making lab-quality biotechnology affordable and applicable in the real-world.

Chai develops comprehensive molecular biology solutions for on-site testing.

We proudly serve customers spanning research, health, food & beverage, and environmental applications.

About PIKA Weihenstephan

Brewing PCR Specialists defining best practices for over 25 years.

PIKA Weihenstephan is a commercial spin-off of the leading brewing institution TUM Weihenstephan University.

As a professional beer quality lab and consultancy, they set the standard for beer-spoiler detection and quality control around the world.

Ordering Information

<table>
<thead>
<tr>
<th>Instruments</th>
<th>Part No.</th>
<th>Description</th>
<th>Quantity</th>
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</thead>
<tbody>
<tr>
<td>Real-Time PCR</td>
<td>ED13201</td>
<td>Open qPCR, Dual Channel</td>
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<tr>
<td>4е Test Kits</td>
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<tr>
<td>Bacteria</td>
<td>T3204S</td>
<td>Lactobacillus &amp; Pediococcus Real Beer Spoiler Screening Kit</td>
<td>48 tests</td>
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<td>T3240S</td>
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<td>T3251S</td>
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<td>T3201S</td>
<td>Lactobacillaceae Screening Kit</td>
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<td>T3205S</td>
<td>Megasphaera Screening Kit</td>
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<td>T3206S</td>
<td>Pectinatus Screening Kit</td>
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<td>T3200S</td>
<td>Acetics Screening Kit</td>
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<td>Yeast</td>
<td>T3209S</td>
<td>Superattenuator Yeasts Screening Kit</td>
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<td>T3207S</td>
<td>Brettanomyces Screening Kit</td>
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<td>T3267S</td>
<td>Diastaticus Test Kit</td>
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<td>T3202S</td>
<td>Yeast &amp; Mold Screening Kit</td>
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FastOrange Enrichment Media

<table>
<thead>
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<td>S1510M</td>
<td>FastOrange B Broth</td>
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<td>S1511M</td>
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<td>S1512M</td>
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<td>Brettanomyces</td>
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<td>FastOrange Brett Agar</td>
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<td>S1516M</td>
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Order online at www.chaibio.com or contact sales at (800) 642-4002 or sales@chaibio.com