

## **Brewing Microbiology and Laboratory Methods Workshop**

Friday, October 14 (9:00 AM – 12:00 Noon) and Saturday, October 15 (1:00-4:00 PM)

Double Tree Hotel, 1000 NE Multnomah Street, Portland, OR 97232

*Registration is limited to 50 participants*

**Instructor:** *Dr. Gudrun Vogeser, coordinator of the European Brewery Convention microbiology working group and founder of PIKA Weihenstephan.*

This six-hour workshop will cover both theoretical and practical microbiological methods in the brewery environment, including a number of hands-on exercises.

### **Participants will learn the following:**

- *How to equip a laboratory, beginning with the most basic equipment right up through advanced tests like PCR (polymerase chain reaction)*
- *How to devise a sampling plan for routine process control, including examples of how various breweries handle contamination events*
- *Use of different enrichment methods for the detection of beer contaminants*
- *How to process samples and correctly interpret the results*
- *Staining methods, including viability testing for brewer's yeast*

Emphasis will be placed upon detecting contaminants and what to consider when establishing a risk management system for your brewery, especially for those managing sour beer production in addition to conventional beers.

### **Tentative Program Outline:**

1. Microorganisms in the Brewery Environment
  - a. Useful Ones
  - b. Spoilers
  - c. Hygiene Indicators
2. Lab Work (including hands-on part)
  - a. Sample preparation
    - i. Enrichment
    - ii. Differentiation
  - b. Evaluation of results
    - i. Microscopy
    - ii. Viability / Stains
    - iii. PCR
3. Laboratory Equipment
  - a. Instruments
  - b. Consumables
4. Quality Control Management
  - a. Sampling points
  - b. Sampling methods
5. Conventional Beers and Sour Beers
  - a. Microorganisms
  - b. Risk Assessment