ambr\textsuperscript{®} 15 fermentation
New Microbial Single-Use
Advanced Micro Bioreactor System
A New Version of the Industry Standard ambr® 15 Micro Bioreactor, for Microbial Screening Applications

ambr 15 fermentation is an automated microscale bioreactor system that is based on the gold standard ambr 15 technology. It provides a consistent microscale model for early stage microbial screening experiments with fed-batch culture capability. This benchtop system comprises disposable micro bioreactor vessels, an automated workstation and user friendly software. It offers automated parallel processing and control of 24 bioreactor experiments by one operator.

Designed for installation in a standard laminar airflow biological safety cabinet for aseptic operation, ambr 15 fermentation provides efficient, consistent and predictive results compared to classical laboratory bioreactors.

ambr 15 fermentation transforms the way scientists undertake microbial strain selection and early process development in the 21st century

- Increases lab productivity through automation of experiment setup, sampling and reagent addition, for up to 24 experiments in parallel.
- Enhances scalability over shaken cultures with control of DO & pH in fed-batch culture, impeller stirring, gas sparging and pumped additions of pH reagent and feed.
- Provides predictive screening results early in development enabling the best early decisions and improving the overall efficiency and timeline of development process.
- Enables data rich culture profiles with automated sampling and enough culture volume for many samples during a run.
- Reduces the cost per experiment through savings on facility space, capital, labour, media and consumables.
- Provides highly consistent data as proven by the industry standard ‘ambr 15 cell culture’ micro bioreactor platform, now implemented at 90% of the top 20 biopharma.
Features

ambr 15 fermentation combines disposable micro bioreactor vessels, automated workstation and easy-to-use software

Culture stations
Each culture station can run up to 12 micro bioreactor vessels and controls temperature and impeller speed. Gas mixture is delivered independently to each vessel.

Pumped addition of feed and pH reagents
Pump and tubing provide controlled delivery of feed and pH reagents, enabling high density fed-batch cultures with precise pH control.

Image shows ambr 15 fermentation 24 vessel system
Disposable tips
Two sizes of high grade sterile disposable tips are available to transfer liquid volumes accurately and precisely.

Individual vessel temperature control
Sensors and heaters for each vessel provide a steady, uniform culture temperature, even with a range of growth rates and heat outputs in different vessels.

Liquid handling unit
For media, feed and reagent addition plus sampling from the bioreactor vessels. Unit includes dual pipette heads, automated vessel decapper and plate delidder.

Labware lid management
Lids are automatically removed prior to liquid transfer and replaced afterwards.

Chilled plate position
Chilled storage of media or culture samples provides flexibility in scheduling of user interactions. Chilled sample storage facilitates data rich culture profiles with multiple samples during a run.

Software
Software enables easy experiment construction and controls and monitors all experiments, with full audit trail.
Functions

ambr 15 fermentation automatically controls, feeds and samples 24 bioreactor vessels in parallel

ambr 15 fermentation – system
Fully automated parallel processing, control and evaluation of all bioreactor experiments with:

- Online monitoring and closed-loop control of pH (6-8) and DO.
- Cascade DO control system for gas flow, stirrer speed and gas mixture.
- Independent control of \( \text{N}_2 \), air and \( \text{O}_2 \) for each vessel.
- Full control of impeller speed, gas flow rates and bioreactor temperature.

ambr 15 fermentation – micro bioreactor vessel
Mimics the characteristics of a classical lab scale bioreactor to enable good early stage predictions of cell growth and productivity:

- pH and DO sensors for continuous monitoring and control (pH 6-8).
- Integral impeller for rapid, efficient mixing.
- Sparge tube delivers gas to the impeller mixing zone.
- 10 to 15 mL working volume (8 to 12 mL liquid plus gas bubbles) with sample port to allow addition of reagents & feeds or removal of samples.

Micro bioreactor vessel
The core disposable micro bioreactor technology includes sensors, stirring impeller, gas sparging, fluid additions and sample port.

1. Gas sparge tube
2. pH and feed tubes
3. Sample port
4. pH and DO sensor spots
5. Impeller
ambr 15 fermentation can be used as a microscale model to enhance results in a range of development applications such as:

- Vector screening
- Strain selection
- Media development