## ○ MICROBIAL GROWTH CURVE ANALYZER



MGC Series Microbial Growth Curve Analyzer covers the differentiated cultivation needs of different microorganisms, whether they are oxygen-dependent aerobic bacteria, micro aerobic bacteria that prefer low oxygen environment, or even oxygen-sensitive strict anaerobic bacteria, all of them can realize their growth and proliferation under the appropriate cultivation environment.

It is a fully automated instrument, which can realize real-time detection of microbial growth under different culture temperatures, different gas environments, different shaking conditions and different light combinations, and automatically draw growth curves, providing a powerful aid for microbial research such as fine-tuning of cultivation conditions, exploring the performance of different strains, and evaluating the sensitivity of antibiotics. Moreover, the whole process of testing does not need to be guarded, no need to take samples frequently, completely eliminating the risk of contamination, saving time and labor.

## Typical Application Cases

#### Facultative Anaerobic Organism

#### Shaker culture (biology):

Fission yeast is a typical biological model of cell division and is widely used in cell biology research. It is  $4~5X8~15\mu$ m in size, easy to settle, and requires a high speed to mix.



Fission yeast growth curve

(48-well plate, 30°C, continuous shaking culture, detection interval 30min, culture time 24hr)

## ○ Parameters

Model	MGC-20	0	MGC-500	Model	MGC-200	MGC-500
Dimensions		530×680×360	mm	Longest Incubati	on Time	1600hours
Detection wavele	ngth	300-850nm		Authority Manag	ement	Sub-user and administrator permission
Microbial culture container		Cell culture pla	ate/ELISA plate	Sterilization Mod	ule	UV sterilization
Number of channels		2 board position	ons, up to 192 channels	Full Spectrum Sc	an	YES
Volume limit of culture medium		2.5ml		Thermal Lid Anti-condensatio	on	YES
Light source		Xenon lamp		Humidity Monito	ring	YES
Temperature control range	15-60°C (at room	temp. 25°C)	15-60°C( at room temp. 25°C) 15-45°C(Gas concentration control)	Reference Channel Selectio	n	YES
Mid-way temp. change function		YES		Inlet	NO	4 pcs
Shaking speed		200-1250 rpm	/leave to incubate	CO2 Concentration Monitoring	NO	1-20%
Detection metho	d	Single hole m	ulti-point detection	O2 Concentration Monitoring	NO	0.5-20%
Absorbance rang	le	Highest value	8.0 OD	Anaerobic Digestion	NO	YES
Detection interva		5-360 minutes	s can be set	Gas Control	NO	YES
				Illumination Function	optiona	l optional

#### Static Incubation:

Lactobacillus rhamnosus is one of the most studied probiotic strains at present. It is a Gram-positive bacterium with a size of  $0.8 \sim 1.0 \times 2 \sim 4 \mu m$ . It is usually cultured statically and is a facultative anaerobic bacterium.



Growth curve of Lactobacillus rhamnosus

(96-well plate, 37°C, static culture, detection interval 30min, culture time 48hr)

Aerobic Organism

Bacillus subtilis is a Gram-positive bacterium with a single cell size of 0.7-0.8  $\times$  2-3  $\mu m.$  It grows and reproduces quickly and is an aerobic bacterium.



Bacillus subtilis growth curve

(96-well plate, 36°C, continuous shaking culture, detection interval 20min, culture time 24hr)

#### Strictly Anaerobic Organism

Bifidobacterium bifidum is a Gram-positive bacillus with a single cell size of  $0.5-1.3 \times 1.5-8 \mu m$ , an important beneficial intestinal microorganism and an anaerobic microorganism.



Bifidobacterium growth curve

(96-well plate, 37°C, static culture, detection interval 60min, culture time 72hr)

## <sup>O</sup> Featured Functions



#### **Air Control System**

The air control system of MGC-500 supports dual or single control of O2 and CO2, O2 concentration control range: 0.5-20%, CO2 concentration control range: 1-20%. In anaerobic mode, with palladium particles, it can effectively remove the oxygen in the environment and maintain a strict anaerobic state, which really realizes the fine management of the gas environment during the long time cultivation of microorganisms. Adopting precise gas control design, the gas consumption of culture is much smaller than other incubators.



#### **High Speed Vibration**

Based on your experimental needs, you can select either static or continuous shaking incubation. Static incubation suits microorganisms like lactobacilli that don't require shaking, such as some lactobacilli, while continuous shaking enhances gas exchange crucial for aerobic and micro-anaerobic cultures(e.g., O2, CO2). You can adjust the shaking speed from 200-1250rpm to match specific culture requirements, with a higher limit to prevent settling in small volumes.



### **Full Spectrum Scanning Function**

MGC series can realize full spectral scanning in the wavelength range of 300-850nm to analyze the best wavelength suitable for the sample to be tested. By utilizing advanced full-spectrum detection technology, MGC series can also achieve simultaneous and continuous absorbance detection of up to 6 wavelengths on the same device, which effectively enhances detection efficiency and flexibility.



#### Long-life Xenon Lamps

The use of xenon lamps as a light source has the advantages of high energy density, no need for preheating and high stability, which lays the foundation for high resolution, high sensitivity and rapid detection. In addition, the xenon lamp light source has a long service life and does not need to be replaced frequently under normal use, which reduces maintenance costs and the possibility of experimental interruptions.



#### **Lighting Function**

Optional RGBW four-color light system can cover a wide range of visible spectrum by combining different ratios of light sources to meet the needs of different types of photosynthetic microorganisms or algae for specific spectral absorption; by setting up the light cycle, it can simulate the changes of the light environment in nature and explore the influence of light factors on the growth condition. € 37.7°C € 50.5%

#### **High Precision Temperature Control**

A wide range of temperature control is possible: 15°C to 60°C with precise regulation (room temperature 25°C). Supporting timed variable temperature incubation, the incubation temperature can be dynamically adjusted according to the pre-set time sequence program, which can be used for specific metabolite accumulation and other studies.MGC series also has Thermal Lid Anti-condensation design effectively prevents water vapor condensation during incubation to avoid affecting the accuracy of experimental results.



#### **High Throughput**

MGC series are compatible with a wide range of plate sizes: 12-well, 24-well, 48-well and 96-well microplates to meet the diversified experimental throughput/culture volume requirements of users. With two culture plate positions, the MGC series can process up to 192 samples simultaneously, effectively shortening the experimental cycle and improving research efficiency.



#### Simple and Easy-to-use Operation System

The interface design is simple and clear, easy to operate, convenient data processing, one key can easily obtain the microbial growth curve or standard curve, to realize real-time viewing and efficient analysis of data, to enhance the efficiency of experimental data processing.

# Versatile

## Wide range of applications

It can realize the online monitoring and cultivation of various microorganisms, including bacteria, fungi, yeast, phage, amoeba, cells and algae, etc.

## Fast

## Effectively liberate manpower

1. Automatic measurement to avoid staying up late;

2. Automatically draw curves to reduce complicated calculation and drawing;



# Effective

## Safe Process, Accurate Results

 Closed cultivation and detection can ensure that the samples are not polluted and the experimental environment is safe;
There is no need for compliant increastion.

 There is no need for sampling inspection, compared with sampling inspection, no loss of samples. The experiment result is more accurate;



## Economic

### Saving reagent consumables

- Save more than 50% reagents;
- Save 90% of the tips;
- Save 100% of Petri dishes;

## **Multiple Functions, Saving Space**

