BIO 201 Lab 6
Experiments 7 & 8 Results

Professor Diane Hilker

Overview

I. Exp. 7: Temperature and Growth

II. Exp. 8: Lethal Effect of Heating on Microbes

I. Exp. 7: Temp. & Growth

- **Purpose:** To determine the effects of temperature on microbial growth.
  - **Minimum Temp.:** lowest temperature a microbe will grow
  - **Maximum Temp.:** highest temp. a microbe will grow
  - **Optimum Temp.:** temperature a microbe will grow BEST

I. Exp. 7: Temp. & Growth

- Psychrophile: cold-loving microbes

I. Exp. 7: Temp. & Growth

- Mesophile: microbes that prefer moderate temperatures

I. Exp. 7: Temp. & Growth

- Thermophile: heat-loving microbes

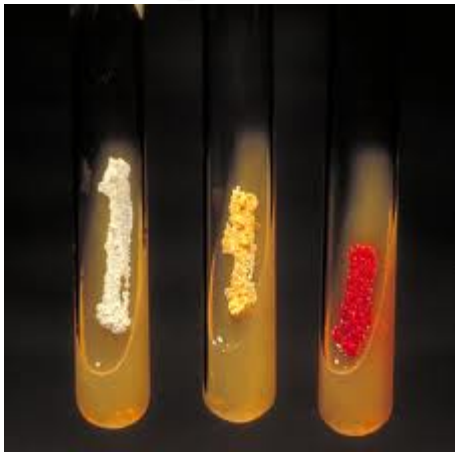
Upper Geyser Basin of Yellowstone National Park in Wyoming
"Morning Glory Pool"
(176°F)

I. Exp. 7: Temp. & Growth

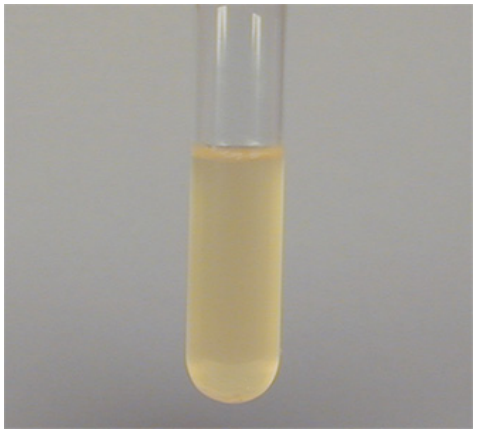
	Optimum Temp
Thermophile	45-60°C
Mesophile	25-37°C
Psychrophile	20-25°C

I. Exp. 7: Temp. & Growth

Growth: +



Growth throughout slant



Cloudy or turbid

No Growth: –

- No growth in slant
- Clear broth

I. Exp. 7: Temp. & Growth

- Fill in Table 1 with either +'s or -'s
- Which microbes are psychrophiles, mesophiles, thermophiles?
- Anything unique about *Serratia marcescens*?
- Anything unique about *B. stearothermophilus*?

Overview

I. Exp. 7: Temperature and Growth

II. Exp. 8: Lethal Effect of Heating on Microbes

II. Exp. 8: Lethal Effects of Heat

- **Purpose:** To determine the time & temperature it takes to kill certain microbes.
  - **Important in the Canning Industry**

II. Exp. 8: Lethal Effects of Heat

- **Thermal Death Time (TDT)**: **time** it takes to **kill all** microbes at a **given temperature**

60 ℃		70 ℃		80 ℃
10’ 20’ 30’		10’ 20’ 30’		10’ 20’ 30’
+ + +		+ + –		– – –

What is the TDT at 70°C?

*30 min. or greater than 20 min.

II. Exp. 8: Lethal Effects of Heat

- **Thermal Death Point (TDP)**: **temperature** it takes to **kill all microbes at the 1st ten minutes** of testing

60 ℃		70 ℃		80 ℃
10' 20' 30'		10' 20' 30'		10' 20' 30'
+ + +		+ + −		− − −

What is the TDP?

*80°C or great than 70°C

II. Exp. 8: Lethal Effects of Heat

- Fill in Table 2 with +'s and -'s
- What is the TDP's of the bacteria being tested?
- Which microbes can withstand higher heat?
- Anything different between *B. subtilis* and *B. stearothermophilus*?
- How do you kill a microbe that still lives under boiling conditions?

BIO 201 Lab 6
Experiments 9, 10, 11 & 12

Professor Diane Hilker

Overview

I. Exp. 9: The Effect of pH on Growth of Microbes

II. Exp. 10: The Effect of Osmotic Pressure on Microbes

III. Exp. 11: The Effect of Ultraviolet Light on Bacteria

IV. Exp. 12: Oxygen Requirements for Growth of Microbes

I. Exp. 9: pH & Growth

- **Purpose:** To determine the effects of pH on certain microorganisms.

- You will be working with a partner
- Theory to be discussed in the next lab
- Refer to Table 3 in the Lab Manual
- Instructor will demonstrate and explain the experiment

Overview

I. Exp. 9: The Effect of pH on Growth of Microbes

II. Exp. 10: The Effect of Osmotic Pressure on Microbes

III. Exp. 11: The Effect of Ultraviolet Light on Bacteria

IV. Exp. 12: Oxygen Requirements for Growth of Microbes

II. Exp. 10: Osmotic Pressure & Growth

- **Purpose:** To determine the salt tolerance of different microorganisms.

- You will be working with a partner
- Theory to be discussed in the next lab
- Refer to Table 4 in the Lab Manual
- Instructor will demonstrate and explain the experiment

Overview

I. Exp. 9: The Effect of pH on Growth of Microbes

II. Exp. 10: The Effect of Osmotic Pressure on Microbes

III. Exp. 11: The Effect of Ultraviolet Light on Bacteria

IV. Exp. 12: Oxygen Requirements for Growth of Microbes

III. Exp. 11: UV Light

- **Purpose:** To determine the effects of UV light on certain microorganisms.

- You will be working with a partner
- Theory to be discussed in the next lab
- Refer to Table 5 in the Lab Manual
- Instructor will demonstrate and explain the experiment

Overview

I. Exp. 9: The Effect of pH on Growth of Microbes

II. Exp. 10: The Effect of Osmotic Pressure on Microbes

III. Exp. 11: The Effect of Ultraviolet Light on Bacteria

IV. Exp. 12: Oxygen Requirements for Growth of Microbes

IV. Exp. 12: O_2 Requirements for Growth

- **Purpose:** To determine the effects of oxygen on the growth of certain microorganisms.

- You will be working with a partner
- Theory to be discussed in the next lab
- Refer to Table 6 in the Lab Manual
- Instructor will demonstrate and explain the experiment