

SI Microbiology - Full Discipline Demo

Motility Testing

Final Report - Answer Guide

Institution	Science Interactive University
Session	SI Microbiology - Full Discipline Demo
Course	SI Microbiology - Full Discipline Demo
Instructor	Sales SI Demo

Test Your Knowledge

Categorize each statement as True or False.

⚡ Functional media are used to identify characteristics of microbes.	
⚡ Motility tests are conducted with soft gel media.	
⚡ Motility testing uses general purpose media.	
⚡ Clear motility media is a positive test result for motility.	
True	False
1	2

Correct answers:

- 1 Functional media are used to identify characteristics of microbes.
Motility tests are conducted with soft gel media.
- 2 Motility testing uses general purpose media.
Clear motility media is a positive test result for motility.

Match each term to the best description.

⚡ Lophotrichous	Self-propelled motion present in many bacteria	1
⚡ Amphitrichous	Bacteria with a single flagellum at each end	2
⚡ Peritrichous	Bacteria with numerous flagella at one end	3
⚡ Motility	Bacteria with flagella distributed all over the cell	4
⚡ Monotrichous	Bacteria with a single flagellum	5

Correct answers:

- 1 Motility 2 Amphitrichous 3 Lophotrichous 4 Peritrichous
5 Monotrichous

Exploration

_____ media allow many types of microbes to grow but contain dyes or structural components that enable differences between microbes to be visualized.

- ☐ General purpose
- ☒ Differential
- ☐ Enriched
- ☐ Selective



Bacteria move by ____.

- ☐ flagella
- ☐ axial filaments
- ☐ slime secretions
- ☒ All of the above



Motility media is a ____ used to detect bacterial movement.

- ☐ firm agar
- ☐ concentrated broth
- ☒ soft gel
- ☐ thin broth



Exercise 1

Which type of functional media is the motility media used in this exercise? Reference your results recorded in Data Table 1 and Photo 1 in your explanation.

Motility media is a type of differential media that permits the identification of two types of microbes: motile and non-motile. *E. coli* and *S. epidermidis* produced different growth patterns when cultured in motility media as recorded in Data Table 1 and Photo 1.

What can you conclude regarding the motility of *E. coli* and *S. epidermidis* based on your results? Reference Data Table 1 and Photo 1 in your explanation.

S. epidermidis produced negative results by only growing in the stab line of the motility agar as recorded in Data Table 1 and Photo 1, meaning that the microbe is non-motile. *E. coli* produced positive results by growing throughout the agar tube producing overall turbidity and lack of an observable stab line as recorded in Data Table 1 and Photo 1. *E. coli* is motile.

Data Table 1: Motility Test Results
(SAMPLE ANSWER BELOW)

Microbe	Observations
<i>Escherichia coli</i>	Poorly defined stab line, turbid media
<i>Staphylococcus epidermidis</i>	Clearly defined stab line, no turbidity in media

Photo 1: Incubated Motility Media Cultures
(SAMPLE ANSWER BELOW)

Note to instructors: S epi tube results should depict a faint outline of original stab line and/or gas bubbles within the stab line. Original stab line or associated gas bubbles should not be present in E coli tube.



Competency Review

_____ media contain agent(s) that prohibit the growth of some microbes.

- ☐ Differential
- ☐ Enriched
- ☒ Selective
- ☐ General purpose

✓

Motility media enables differences between microbes to be visualized.

- ☒ True
- ☐ False

✓

Motility is an important characteristic for classifying microbes.

- ☒ True
- ☐ False

✓

A _____ bacteria has a single flagellum.

- ☒ monotrichous
- ☐ amphitrichous
- ☐ lophotrichous
- ☐ peritrichous

✓

Motility media prevents the diffusion of non-motile microbes.

- ☒ True
- ☐ False

✓

Motility testing is performed by stabbing a needle containing a microbe sample into a tube of motility media.

☒ True



☐ False

A(n) ____ should be used to inoculate a motility media tube.

☐ drop of liquid culture

☐ lyophilized tablet

☒ single microbe colony



☐ environmental sample

***S. epidermidis* produces a defined stab line in motility gels after incubation indicating that it is ____.**

☐ motile

☒ non-motile



☐ lophotrichous

☐ peritrichous

Extension Questions

A microbiology student used TSA pour tubes instead of motility media tubes to perform motility testing on *E. coli* and *S. epidermidis* and received identical results for both bacteria species. Apply your knowledge of media types and motility testing to explain why the student failed to demonstrate motility using TSA pour tubes. (SAMPLE ANSWER BELOW)

TSA agar is a general purpose firm agar media designed to grow most microbes equally. Motility media is a soft gel differential media designed to visually differentiate motile from non-motile microorganisms. TSA agar is too firm to allow microbes to diffuse from a stab line resulting in neither *E. coli* nor *S. epidermidis* differing in growth patterns or exhibiting motility within the tube.