SI Microbiology - Full Discipline Demo

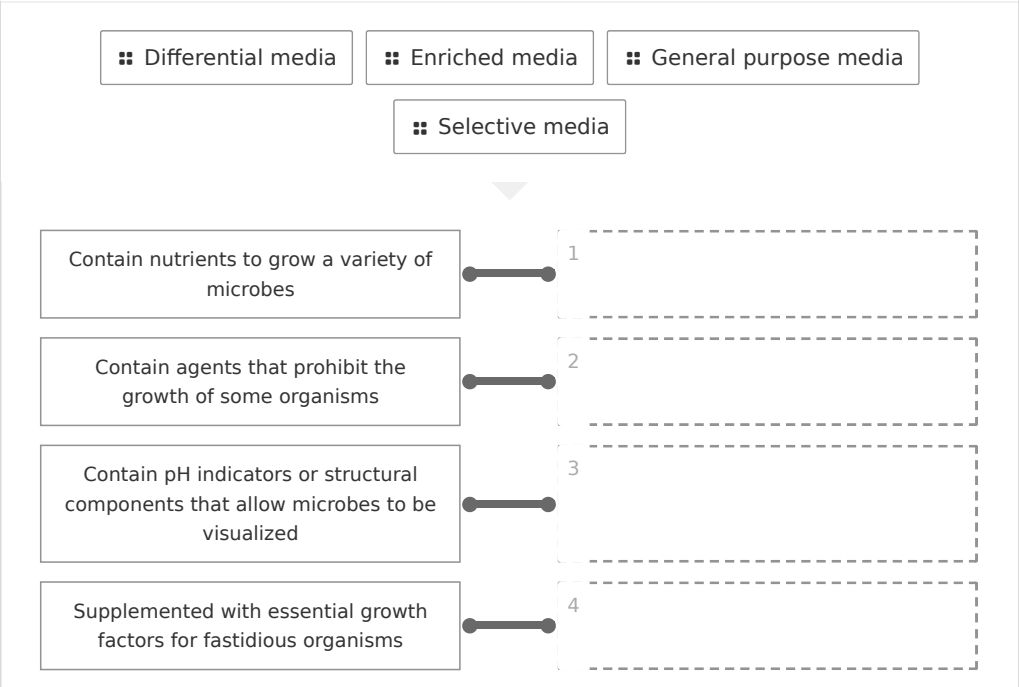
Selective and Differential Media Testing

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

Match each term to the best description.

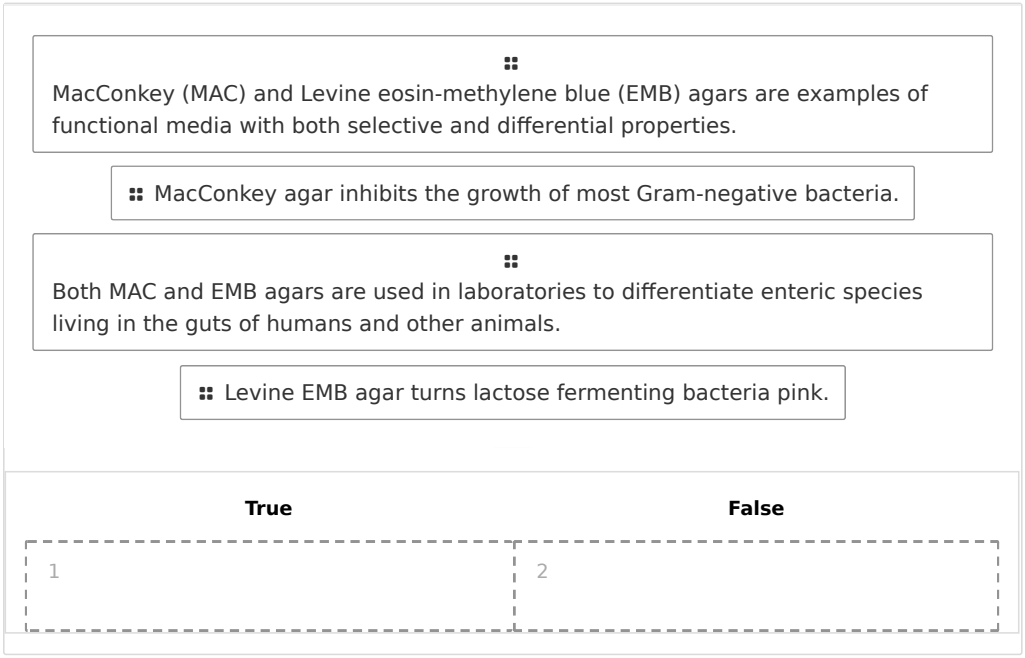


Correct answers:

1 General purpose media 2 Selective media 3 Differential media

4 Enriched media

Classify each statement as true or false.



Correct answers:

1

MacConkey (MAC) and Levine eosin-methylene blue (EMB) agars are examples of functional media with both selective and differential properties.

Both MAC and EMB agars are used in laboratories to differentiate enteric species living in the guts of humans and other animals.

2 MacConkey agar inhibits the growth of most Gram-negative bacteria.

Levine EMB agar turns lactose fermenting bacteria pink.

Exploration

Tryptic soy agar (TSA) is an example of a differential media.

- True
- False ✔

_____ agar is formulated with lactose, bile salts, crystal violet, neutral red, and general purpose nutrients.

- Levine eosin-methylene blue (EMB)
- MacConkey (MAC) ✔
- Tryptic soy (TSA)
- Motility

The _____ dye of EMB agar inhibits the growth of most Gram-positive bacteria.

- lactose
- eosin Y
- natural red
- methylene blue ✔

Exercise 1

How did the agars used in this exercise perform as either general purpose or functional media? Reference your results recorded in Data Table 1 and Photo 1 in your explanation.

0 Word(s)

Were the bile salts and methylene blue dyes present in the MAC and EMB agars, respectively, effective at selecting for either *E. coli* or *S. epidermidis*? Reference your results recorded in Data Table 1 and Photo 1 in your explanation.

0 Word(s)

What can you conclude about the cell wall structure and metabolic pathways of *E. coli* based on the results of this exercise?

0 Word(s)

Data Table 1: Colony Presence and Appearance
(SAMPLE ANSWER BELOW)

Plate	*E. coli* growth and appearance	*S. epidermidis* growth and appearance
TSA	Yes. Medium size, opaque, circular colonies	Yes. Small, white, circular colonies
MAC	Yes. Medium size, pink, circular colonies	No growth
EMB	Yes. Medium size, green sheen, circular colonies	Yes, Small, white, circular colonies

Photo 1: TSA Results
(SAMPLE ANSWER BELOW)

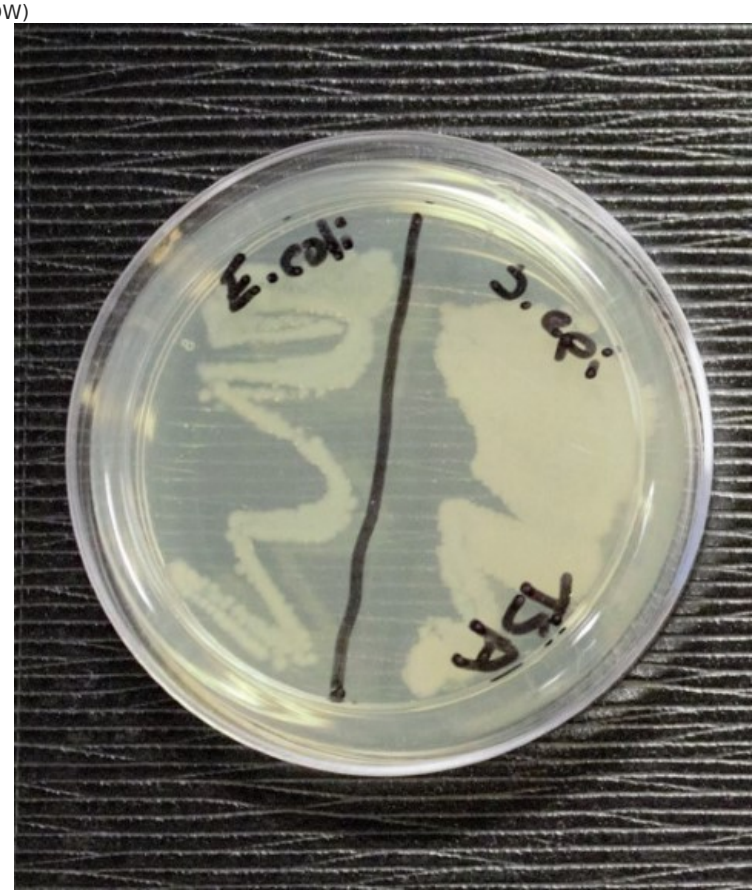


Photo 2: MAC Results
(SAMPLE ANSWER BELOW)

Photo 3: EMB Results
(SAMPLE ANSWER BELOW)

Competency Review

_____ is a category of functional media.

- Selective media
- Differential media
- Enriched media
- All of the above ✔

Examples of _____ media include salt agars and penicillin fortified agar.

- general purpose
- differential
- enriched
- selective ✔

_____ agar contains the pH indicator neutral red, which causes Gram-negative bacteria that vigorously ferment lactose to turn pink.

- Levine eosin-methylene blue (EMB)
- MacConkey (MAC) ✔
- Tryptic soy (TSA)
- Motility

Bacteria that do not ferment lactose may grow on both MAC and EMB agar, but these microbes will remain translucent because they are not stained by the pH indicators in each formulation.

- [x] True ✔
- [ ] False

Inoculated EMB and MAC plates should be incubated until all microbes show signs of growth.

- [ ] True
- [x] False ✔

***E. coli* produces colonies with a _____ sheen on EMB agar.**

- [x] green ✔
- [ ] yellow
- [ ] blue
- [ ] red

***E. coli* grows on _____ agar.**

- [ ] EMB
- [ ] MacConkey
- [ ] Tryptic Soy
- [x] All of the above ✔

Functional media testing results for *E. coli* using MAC and EMB agar suggest the microbe is a Gram-negative lactose fermenter.

- [x] True ✔
- [ ] False

Extension Questions

Mannitol salt agar (MSA) is a selective and differential agar that prohibits the growth of most Gram-negative bacteria while selecting for Gram-positive, mannitol fermenting pathogens which appear as yellow stained colonies. Apply your knowledge of selective and differential media testing of *E. coli* to predict how the microbe would grow on an MSA plate. (SAMPLE ANSWER BELOW)

E. coli is a Gram-negative microbe that is selected for on MAC and EMB plates. Therefore, *E. coli* would be predicted to be inhibited on a MSA plate and show no signs of growth.