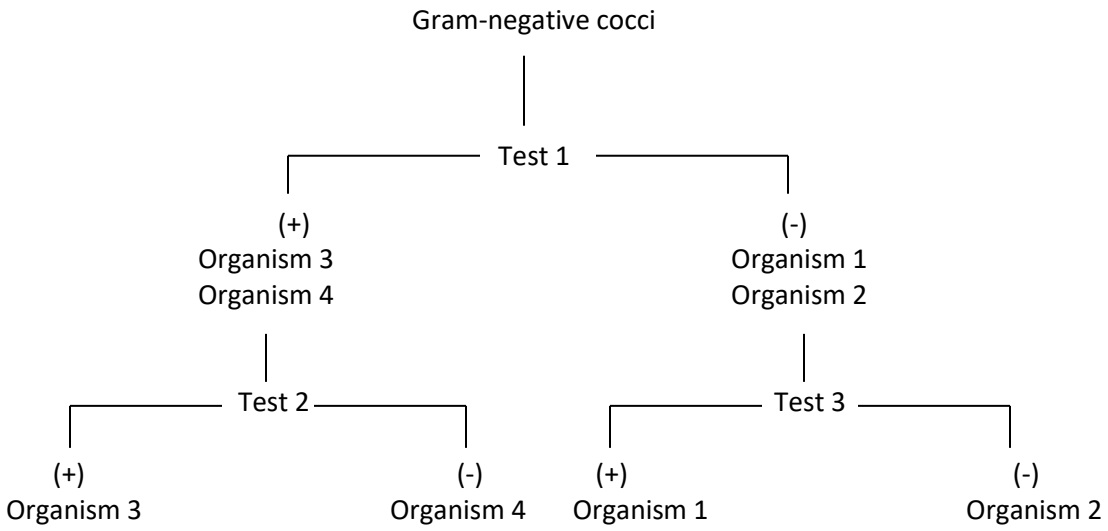
BIOL 210
Dichotomous Keys

Dichotomous means "dividing into two parts". A dichotomous key is a flowchart used to divide groups of organisms based on certain characteristics. Bacteria can be divided this way, using morphological and/or metabolic (biochemical) characteristics.

When using a dichotomous key to identify bacteria, we start by dividing a group of bacteria into two groups based on a certain characteristic, then, each of the two subgroups is subdivided into two groups based on a second characteristic, and so on.

A dichotomous key used to identify unknowns from a group of 4 Gram-negative, cocci -shaped bacteria might look like the following:



Assignment: You will need to develop <u>three</u> dichotomous keys (flowcharts), one for each of the following groups of bacteria, in order to identify unknown organisms from our list of twelve bacteria (see list below):

1) Gram-negative bacilli
2) Gram-positive cocci
3) Gram-positive bacilli

You may choose from any of the biochemical tests listed on our "**Biochemical Class Results Table**", which is posted on our BIOL 210 Bb site. (Do not use the individual and small group test results submitted in Lab Archives to develop your keys.) This is <u>not</u> a group assignment; it is an individual assignment. The keys will vary, depending on the tests each of you choose and feel most comfortable using (reading results).

Dichotomous keys will be submitted (uploaded) to our BIOL 210 Bb site and used during the biochemical unknown practical exam. See lab schedule for due date.

12 bacterial organisms:

Gram- negative rods

A. *Escherichia coli*
B. *Enterobacter aerogenes*
C. *Proteus hauseri* (formerly known as *Proteus vulgaris*)
D. *Alcaligenes faecalis*
E. *Klebsiella pneumoniae*

Gram-positive cocci

F. *Staphylococcus aureus*
G. *Staphylococcus epidermidis*
H. *Enterococcus faecalis* (formerly known as *Streptococcus faecalis*)
I. *Kocuria rhizophila* (formerly known as *Micrococccus luteus*)

Gram-positive rods

J. *Bacillus subtilis*
K. *Bacillus cereus*
L. *Corynebacterium xerosis*

An example of a Gram-negative, cocci-shaped bacteria dichotomous key: