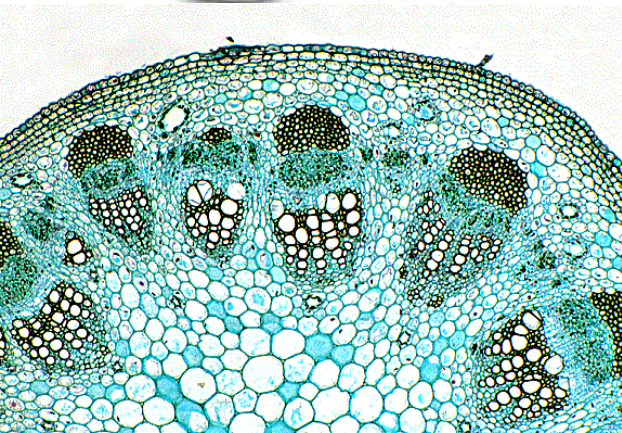
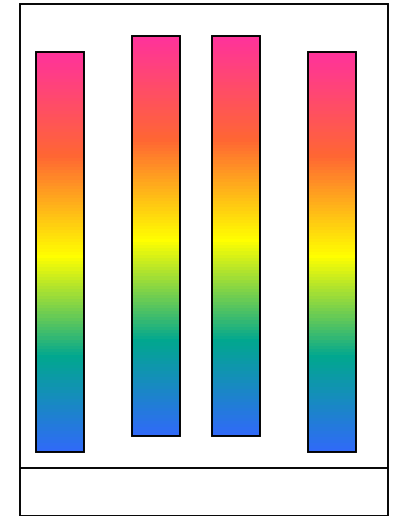




Relationships and Biodiversity NYSED Lab Review



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Please note:

- “Curol” is a fictitious plant extract mentioned in the NYSED lab that has the ability to effectively treat cancer. IT DOES NOT EXIST. Likewise, any “Curol” images included in this presentation are simply images taken from an internet search and are not a cancer cure. It is simply a product found with a similar name. I do not know what it is used for as the website was not translated into the English language.

What does this lab entail?

- Seven tests that look at the physical, chemical, and microscopic characteristics of three plants that may be able to create Curol, even though they are not *Botana curus* (the plants that does produce it).
- Comparison of data to determine relationships.
- Define the crucial need for biodiversity.

Test 1 - Structural Characteristics of Plants



Botana curus



Species Z

QUESTION:

Which leaves most closely resemble the leaves produced by *Botana curus*?

Record your observations in the data table.



Species X



Species Y

Test 2 – Structural Characteristics of Seeds



Botana curus seeds



Species Z seeds

QUESTION:

Which seeds most closely resemble the seeds produced by *Botana curus*?

Record your observations in the data table.

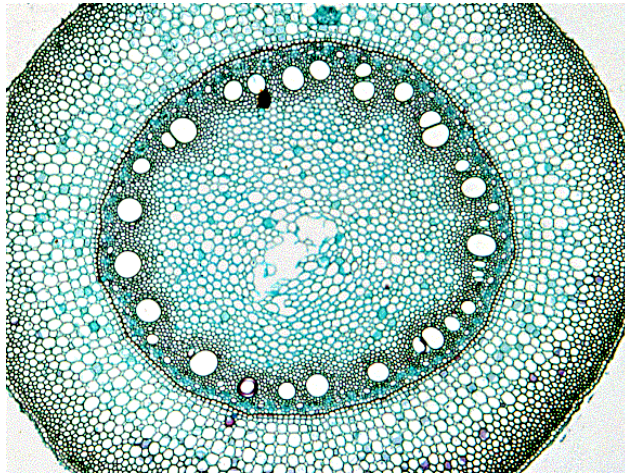


Species X seeds



Species Y seeds

Test 3 – Microscopic Internal Structures of Stems

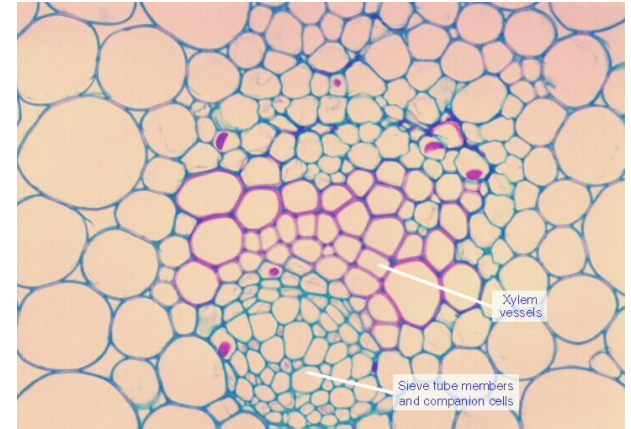


Botana curus

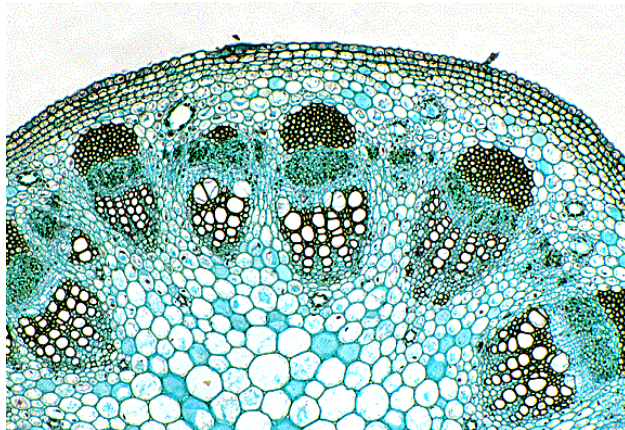
QUESTION:

Which stem structures most closely resemble the stem structures of *Botana curus*?

Record your observations in the data table.



Species X

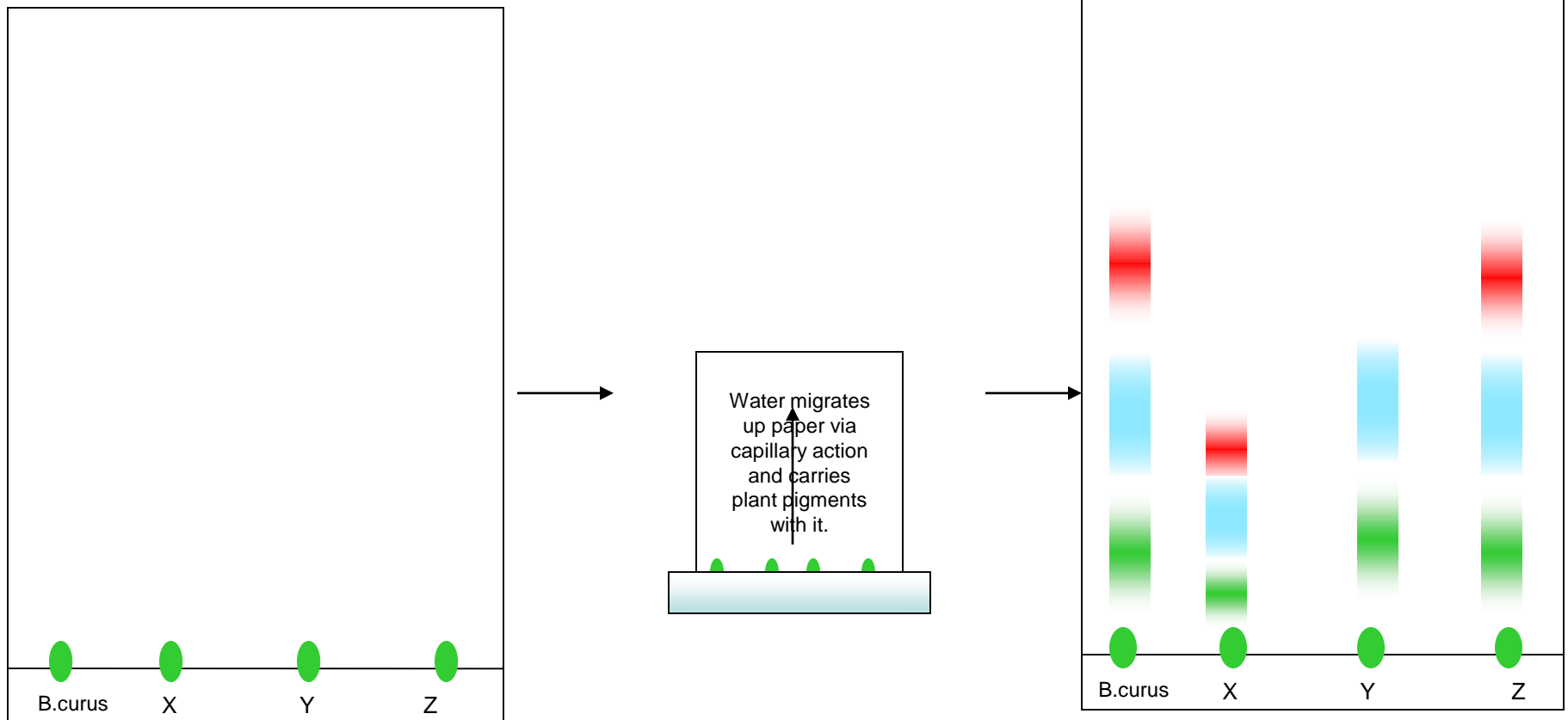


Species Y



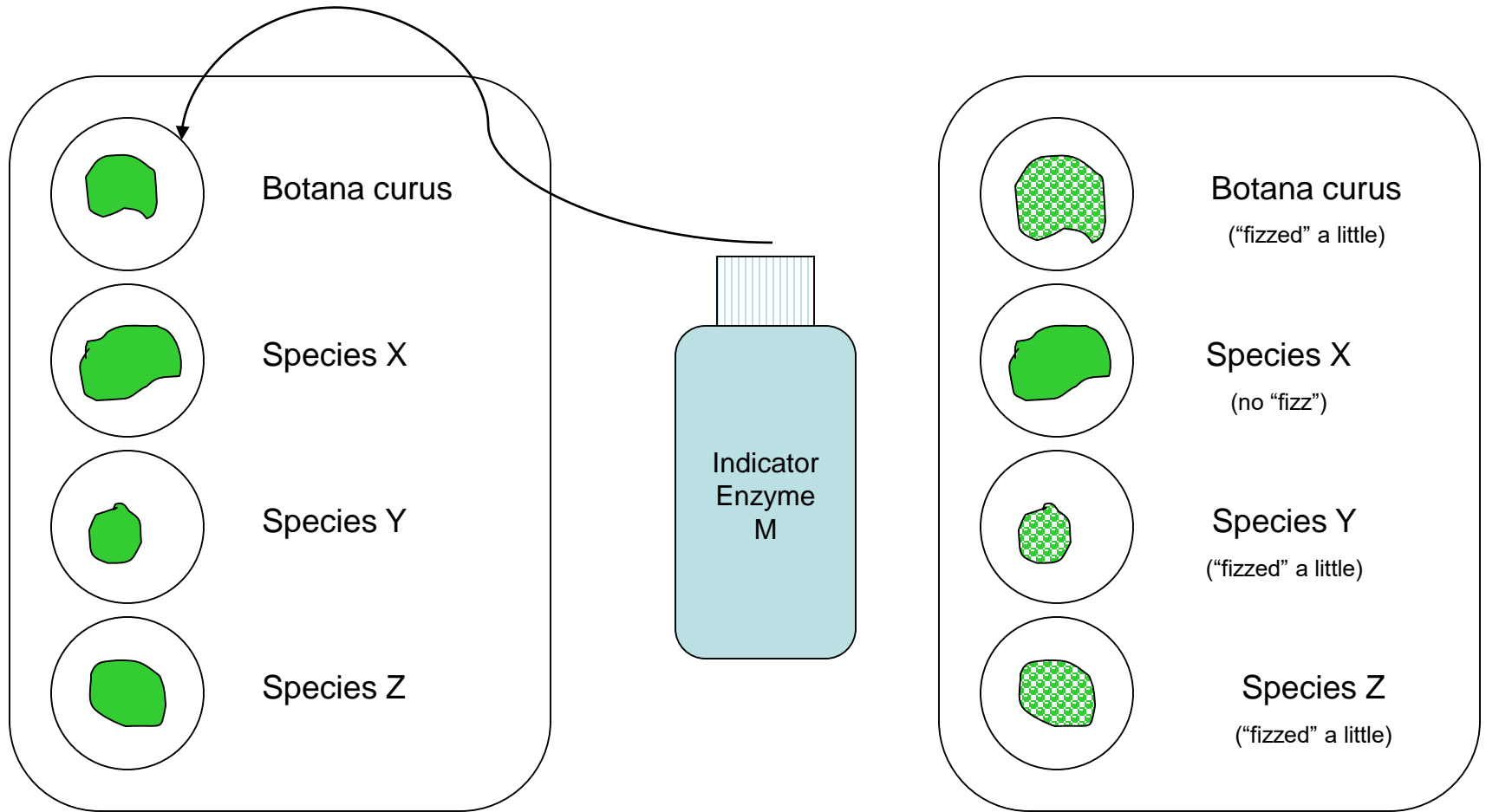
Species Z

Test 4 – Paper Chromatography to Separate Plant Pigments



“Spot” your chromatography paper and label it with a pencil.

Test 5 – Indicator Tests for Enzyme M



Put two drops of each plant Extract in separate wells of the well tray.

Add a small sprinkle of "Indicator Enzyme M"

Record your results.

Test 6 – Using Simulated Gel Electrophoresis to Compare DNA

The strips below represent the DNA strands extracted from each plant (*B. curus*, X, Y, and Z). Each strand will be “cut” between a double C/double G. Therefore, lines are drawn below where each strip should be cut. Then, count up the number of bases and paste appropriately in the simulated Gel Electrophoresis table on the next slide.

Botana curus ATTCC/GGATCGATCGCC/GGATATACTCCG/GTAATATC

Species X ATTGTACCGGGATCCGGACGTCGCGACTAATATAGCA

Species Y ACC/GGTCC/GGGATCGCACCC/GGTACTCCTGTAATATC

Species Z ATTCC/GGATCGATCGCC/GGATATTCTCCG/GTAATAT

Simulated Gel Electrophoresis

# of Bases	<i>Botana curus</i>	Species X	Species Y	Species Z
24				
23				
22		GGACGTCGCGACTAATATAGCA		
21				
20				
19				
18				
17			GGTACTCCTGTAATATC	
16				
15				
14				
13				
12	GGATCGATCGCC		GGGATCGCACCC	GGATCGATCGCC
11	GGATATACTCC			GGATATACTCC
10				
9	GGTAATATC			GGTAATATC
8		ATTGTACC		
7		GGGATCC		
6				
5	ATTCC		GGTCC	ATTCC
4				
3			ACC	
2				
1				

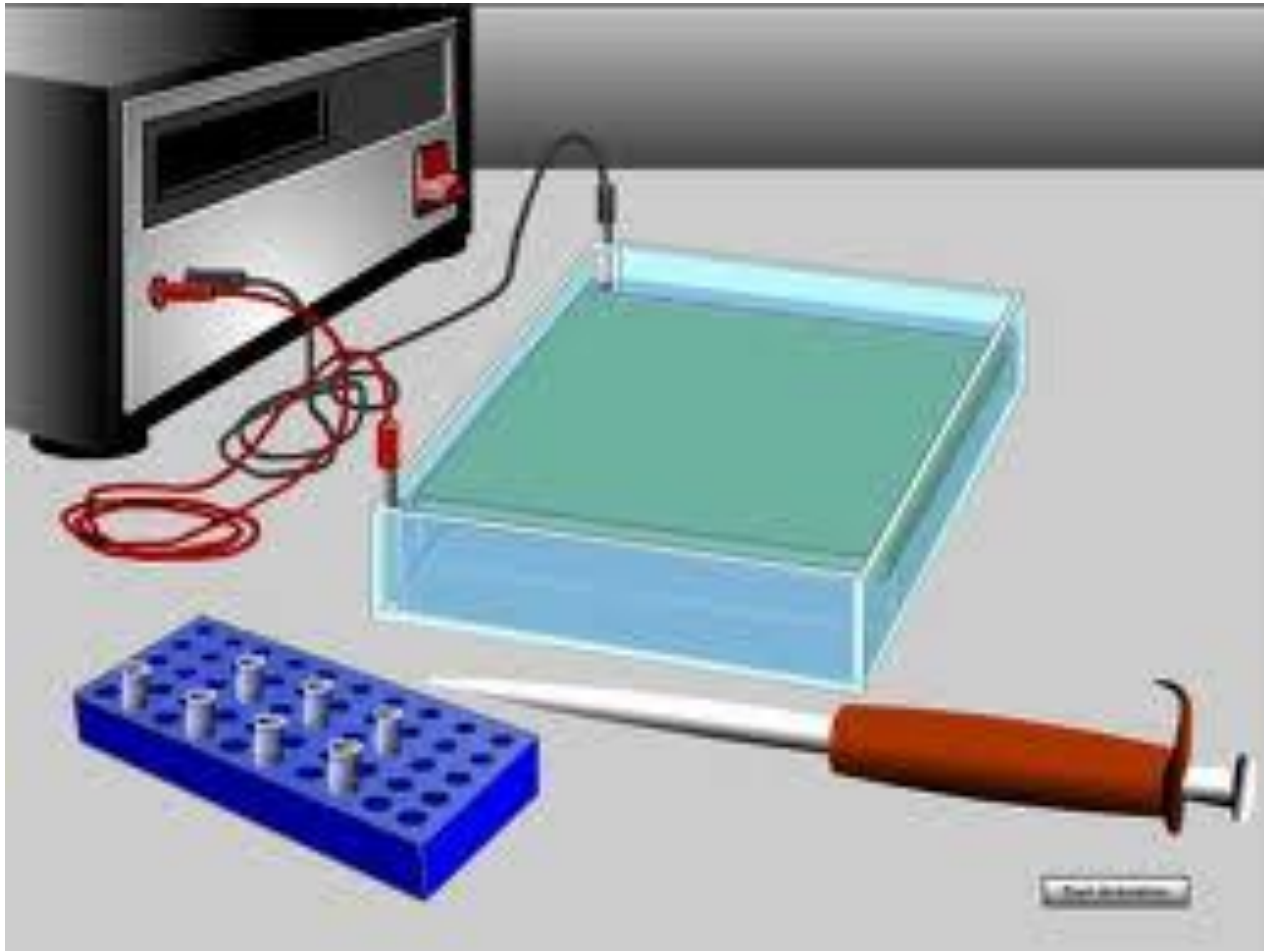
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+

Actual Gel Bands



Starting Electrophoresis



Electrophoresis Notes

1. Separates chem by size and charge
2. DNA – so moves to + end of gel
3. Use enzymes to cut DNA
4. Put DNA in agar, in buffer, turn on electricity
5. Small DNA bands move the furthest
6. The more similar the banding pattern, the more related

And where did you get those Amino Acids from???

		Second letter				
		U	C	A	G	
U	UUU } Phe	UCU } Ser	UAU } Tyr	UGU } Cys	U C A G	
	UUC } Leu	UCC } Ser	UAC } Tyr	UGC } Cys		
	UUA } Leu	UCA } Ser	UAA Stop	UGA Stop		
	UUG } Leu	UCG } Ser	UAG Stop	UGG Trp		
C	CUU } Leu	CCU } Pro	CAU } His	CGU } Arg	U C A G	
	CUC } Leu	CCC } Pro	CAC } His	CGC } Arg		
	CUA } Leu	CCA } Pro	CAA } Gln	CGA } Arg		
	CUG } Leu	CCG } Pro	CAG } Gln	CGG } Arg		
A	AUU } Ile	ACU } Thr	AAU } Asn	AGU } Ser	U C A G	
	AUC } Ile	ACC } Thr	AAC } Asn	AGC } Ser		
	AUA } Ile	ACA } Thr	AAA } Lys	AGA } Arg		
	AUG Met	ACG } Thr	AAG } Lys	AGG } Arg		
G	GUU } Val	GCU } Ala	GAU } Asp	GGU } Gly	U C A G	
	GUC } Val	GCC } Ala	GAC } Asp	GGC } Gly		
	GUA } Val	GCA } Ala	GAA } Glu	GGA } Gly		
	GUG } Val	GCG } Ala	GAG } Glu	GGG } Gly		

Your friend and mine... The Universal Genetic Code Chart

So, what is the closest and most probable alternative source for Curol???

<u>Test</u>	<u>Most similar to <i>Botana curus</i>?</u>
Test 1 – Structural Characteristics of Plants	Species Z as it has the same kind of parallel venation in the leaves.
Test 2 - Structural Characteristics of Seeds	Species Z seeds are flat and striped, much the same as <i>Botana curus</i> seeds are.
Test 3 – Microscopic Internal Structure of Stems	Species Z vascular bundles closely resemble those of <i>Botana curus</i> .
Test 4 – Paper Chromatography of Pigments	Species Z and <i>Botana curus</i> share a similar pattern of pigmentation in paper chromatography.
Test 5 – Indicator Tests for Enzyme M	While many “fizzed”, once again Species Z and <i>Botana curus</i> reacted the same.
Test 6 – Simulated Gel Electrophoresis	Identical banding pattern in both <i>Botana curus</i> and Species Z.
Test 7 – Amino Acid Comparison	Species Z and <i>Botana curus</i> have the most similarities.

And the winner is.....

(insert drum roll here...)

Species Z