

# What Can Kesler Science Do for You?

4th - 8th grade science teachers love our Life, Earth, and Physical Science materials! With these easy and engaging materials, teachers can save planning time and put their focus back on the teaching that really matters.



## 5E LESSONS

Two-week lessons with over 100 topics



## ESCAPE ROOMS

Engaging activities for review



## INQUIRY LABS

Three different levels to fit every student



## AMAZING ANCHORS

Anchoring phenomenon to book-end your lessons



## SUB PLANS

Never worry about planning for a sub again.



## WARM-UPS

Bellringers for the entire year



## STATION LABS

Student-led exploration



## INTERACTIVE NOTEBOOKS

Bring science journals to life.



## WIKI TICKETS

Quick formative assessments



## STEM CHALLENGES

Real-world STEM problem-solving



## GRAPHING

Table and charts and graphs ... OH MY!



## SCIENCE READING COMPREHENSION

Leveled reading passages with mini-activities



## SPANGLER COLLABORATION

Exclusive Steve Spangler lessons and videos



## WRITING PROMPTS

Writing activities covering 100+ topics

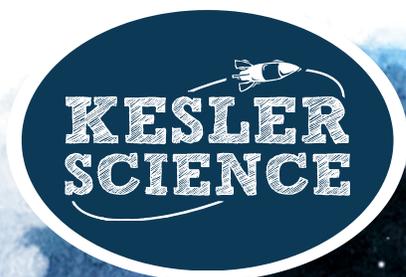


## EXPLORIES

Story-driven units with integrated activities



The Kesler Science Professional Learning Network (PLN) group on Facebook has a huge community of engaged and supportive science teachers - come join us!



## External Taste Buds?!

Plant and animal adaptations can be pretty remarkable. It seems wherever you look, you'll find creatures with amazing solutions to outsmarting predators, locating food, or simply staying alive. A prime example that my students always loved is the giant swallowtail caterpillar. Before it matures, the butterfly looks exactly like bird poop. Like I said...ingenious. 😏

One pattern to notice is that extreme environments often create extreme adaptations. Take the yeti crab, for example. This bizarre, "hairy" crustacean lives at the bottom of the deep ocean near hydrothermal vents. The silky "hairs" help specialized bacteria grow that may serve as a food source.

Another pattern in nature is that life can survive nearly anywhere on Earth. Case in point, if we went to the pitch-black caves of Eastern Mexico, we'd find a healthy and diverse ecosystem. In the dark, you could literally run into bats, boa constrictors, albino centipedes, and a curious little cave fish called the blind tetra.

The blind tetra doesn't grow eyes, but that's not the strangest thing about this fish. That has to do with *how* the fish locates its food. Remember, there's no photosynthesis happening in a cave. There aren't any green producers like algae or plants to be the start of a food chain. Blind tetra have to munch on something other than plant life.

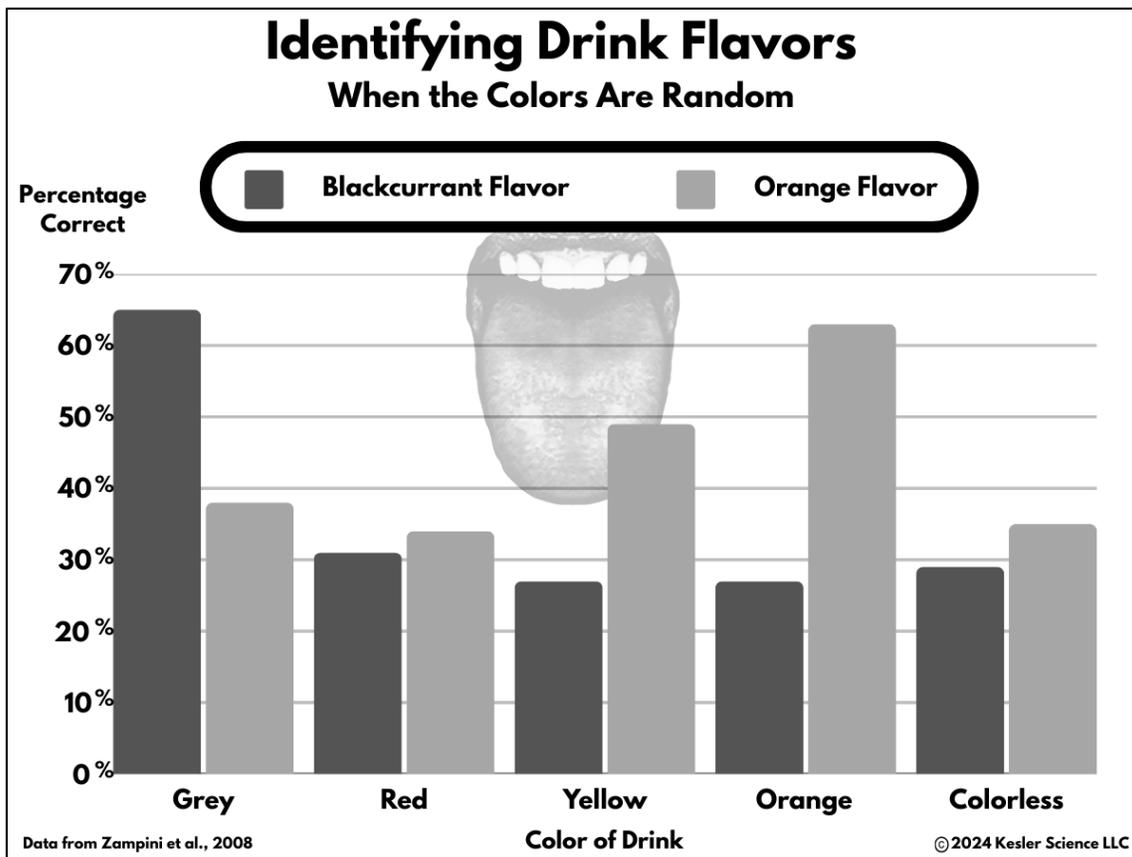
The substitute? Bat poop (or bat *guano* if you

want to sound more official). Bats enter the cave during the daylight hours and make guano deposits as they rest and wait for nightfall again. The guano falls into pools of water below them, where the hungry blind tetras are swimming around.

Now here's the weird part: the tetra can tell where the bat poop is using taste buds **outside** of its body! As the tetra fish transition into mature adults, the taste buds start to grow on the head, chin, and along the top of the back. In the dark cave pools, these external taste buds guide the fish to food much better than eyes could.

This got me thinking - how are taste and vision connect in humans? Scientists have been working to understand how sight affects the taste of foods and drinks. If I see a red-colored drink, for example, I might expect a cherry or strawberry flavor. If you showed that same red drink to a person from Taiwan, they would probably expect to taste cranberry. 😏

In another interesting study, scientists made different flavors of drinks with random colors. For example, sometimes they would make the strawberry flavor have a red color, but sometimes it would have a blue color. Then they measured how the color affected a person's ability to correctly identify the taste. The experiment showed that tasters are much more likely to correctly identify an orange-flavored drink if the color of the beverage is orange! This is probably why ice pops and juice drinks come in such bright colors.



Here is a graph showing one of the tests conducted in this study:

1. Blackcurrant has a grape-like flavor. For which colored drinks were people least likely to identify blackcurrant flavor?

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2. If a drink had no color, what percent of people were able to correctly identify blackcurrant flavor? What percent of people correctly identified orange flavor?

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3. Which drink color were tasters better able to identify blackcurrant flavor? How much more likely were people to identify blackcurrant over orange?

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I hope these "tasty" facts get your class thinking about adaptations!

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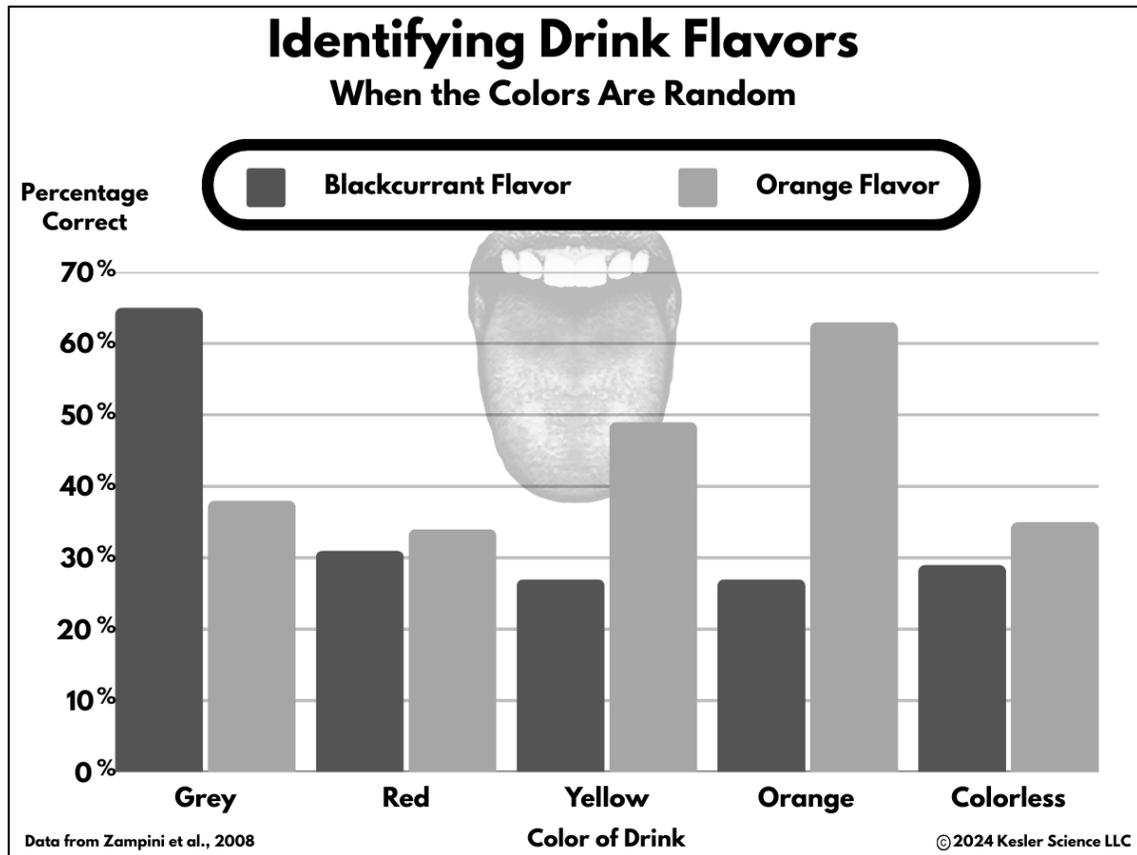
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*If I brought this graph to my students, here are some questions I would ask them:*

1. Blackcurrant has a grape-like flavor. For which colored drinks were people least likely to identify blackcurrant flavor?

*People were least likely to identify black currant when it was dyed yellow or orange.*

2. If a drink had no color, what percent of people were able to correctly identify blackcurrant flavor? What percent of people correctly identified orange flavor?

*About 30% could identify blackcurrant and about 35% could identify orange flavor.*

3. Which drink color were tasters better able to identify blackcurrant flavor? How much more likely were people to identify blackcurrant over orange?

*Tasters could identify blackcurrant more accurately if the drink was grey. The difference in accuracy is about 25%.*

*I hope these "tasty" facts get your class thinking about adaptations!*