STANDARD DEVIATIONS: Fools Rush In

Greetings,

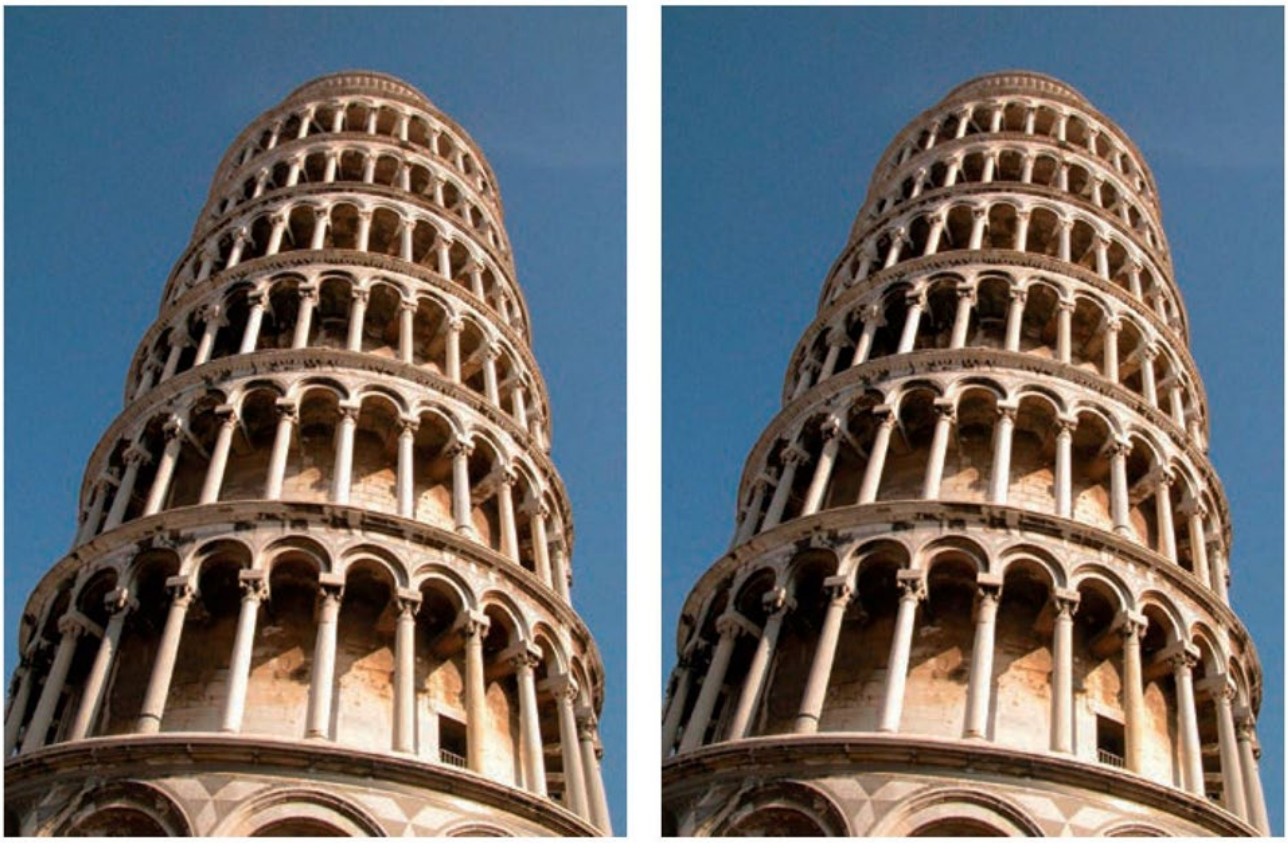
Sometimes we can't believe what we see. Take these images, for example:

{These are the same photos side-by-side.}

Even though both show images that are exactly the same, we perceive a difference where none exists. These kinds of illusions occur when our perceptions override our logic. Our brains make a choice that we are unable to see as false.

Not sure?

Then take a look at this one:



{Leaning Tower of Pisa.}

Hard to believe that you can't believe your eyes, but we apply a reality to our understanding that just isn't …. , well, ….real.

And then, sometimes we see a similarity that simply isn't there.

{Leaning Towers of Pizza.}

Sometimes we fool ourselves by believing two things are different when they are not. We see a difference when we shouldn't.

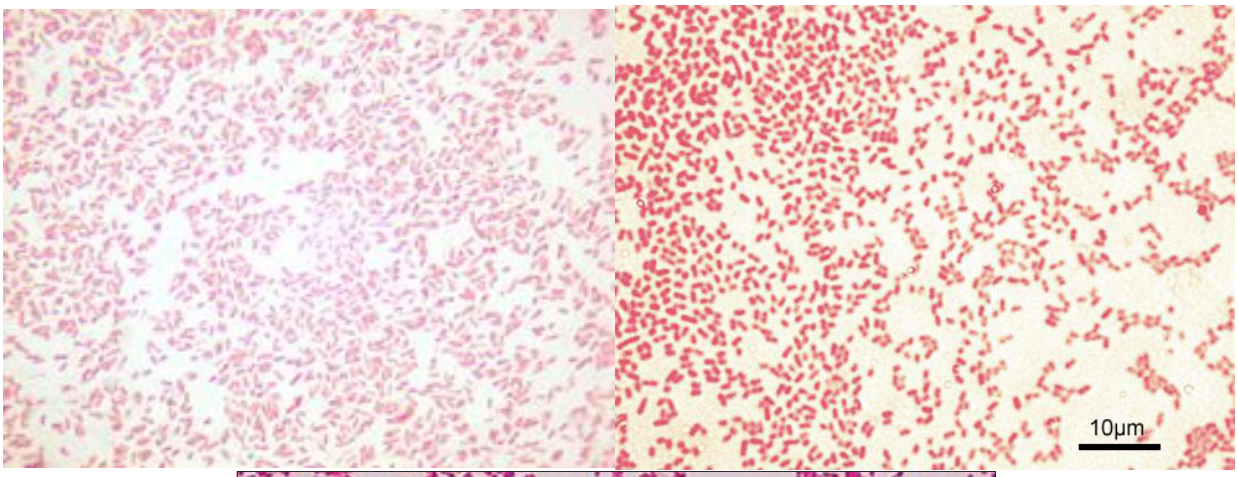
Sometimes we fool ourselves by believing two things are the same when they are not. We don't see a difference when we should.

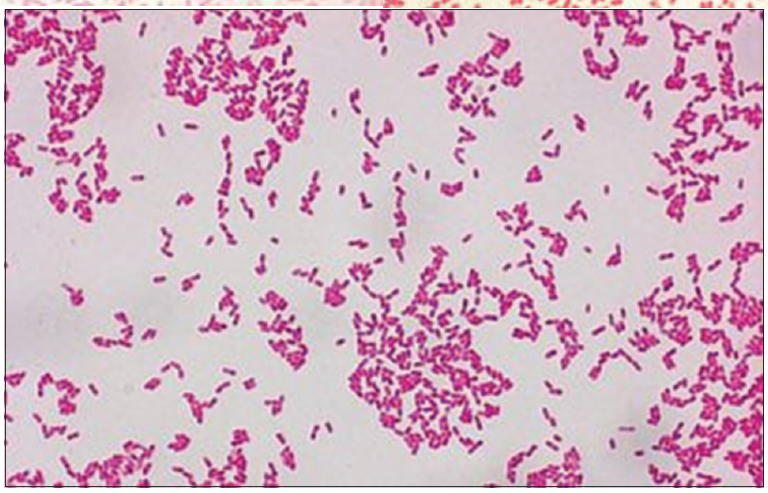
The same phenomenon can happen to us on the bench.

Where we run into trouble is when we perceive things the same that are actually different and then fool ourselves by allowing that perception to guide our actions.

Most notoriously, this occurs on the Microbiology bench. Small gram negative bacteria can look identical under a microscope or in culture and yet have different pathologies and/or severe consequences when mishandled.

Which is *E coli*? Which is *Pseudomonas aeruginosa*? Which is *Burkholderia pseudomallei*?





Or,

Which is *Haemophilus influenzae*? Which is *Neisseria gonorrhea*? Which is *Francisella tularensis*?

The issue is that one of the organisms in each example is a Tier 1 Select Agent. When a technologist fails to see the difference, or is fooled into thinking that risk is absent, an exposure can occur that jeopardizes the health of the tech and others on the bench. An exposure *to F tularensis* or *B pseudomallei* can result in infection, sepsis and even death, if not recognized. And, when it **is** caught, it still means a long antibiotic prophylaxis and a bunch of messy CDC forms to fill out.

Gram negative bacteria and other look-alike findings require us to look carefully at the picture. This is where the risk assessments and the biosafety in our SOPs must kick in. We should escalate our safety strategies to accommodate risk rather than assume the routine bench procedures (like MALDI-TOF) are the same for any bug.

And we can make the same argument around the lab. We fool ourselves in different ways all the time. This is where the value of a Standard Operating Procedure (SOP) or universal precautions

becomes apparent. When we treat every situation identically, then we remove the bias of our perception.

We mitigate risk of error by removing perception and standardizing our actions. Always wearing PPE (lab coat, gloves, and eyewear), good hand hygiene, and precautions like rotor cups, biosafety cabinets, and disinfection are some of the ways we keep from being fooled.

We introduce risk by allowing perception to fool us.

And, on the bench, that foolery can be foolish.

Have a great week and be safe,

Bryan