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A Hardy Diagnostics eNewsletter

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DIAGNOSTICS
a culture of service...

November, 2018

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Micro Musings...



A persistent problem with Sea Lions



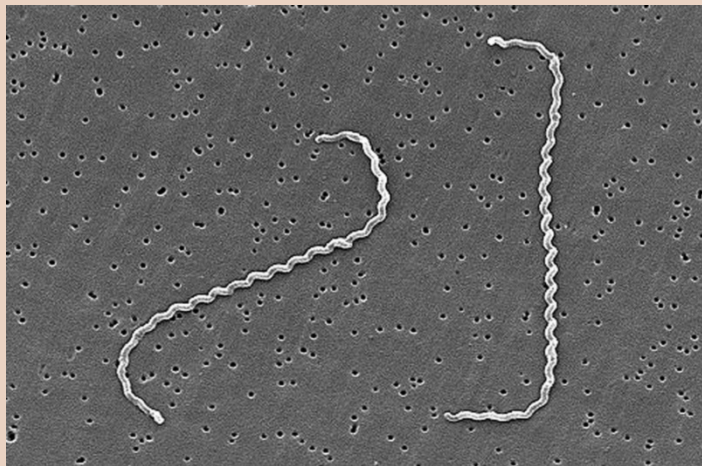
Leptospirosis

According to the Marine Mammal Center located in

Hardy**CHROM**™



Sausalito, California, there has been a recent major outbreak of leptospirosis in the California sea lion population. Leptospirosis is a bacterial disease caused by the small corkscrew shaped genus *Leptospira*. Leptospirosis infection in marine mammals primarily affects kidney function. The impairment of the kidneys limits the mammals' ability to filter out bodily toxins and stay hydrated. If symptoms are present and not promptly treated, this disease can cause permanent kidney damage and inevitable death.



Marine mammal veterinarians can effectively diagnose cases of leptospirosis in the field by observing abnormal sea lion behavior, such as drinking water (sea lions receive most of their dietary water from food sources) and folding their flippers over their stomachs. Leptospirosis may be treated with antibiotics (penicillin and/or doxycycline), fluid administration, and other supportive care.

Leptospira was first detected within the California sea lion populations in the 1970s. Since the first observation there have been yearly seasonal spikes and some major outbreaks. The recent outbreak of leptospirosis is currently categorized as the second largest to date, based on blood and urine sample

data trending back to 1983. Marine mammal researchers have not identified a single source of this pathogenic leptospire, but common reservoirs are small land mammals: rodents, pigs, and skunks. The disease is transmitted by urine or by contaminated water and soil sources. Humans are also susceptible to this disease and usually contract it through exposure to urine from infected rats or other rodents.

Given the severity of the untreated disease, transmission of *Leptospira* within the California sea lion populations is an increasing concern to marine

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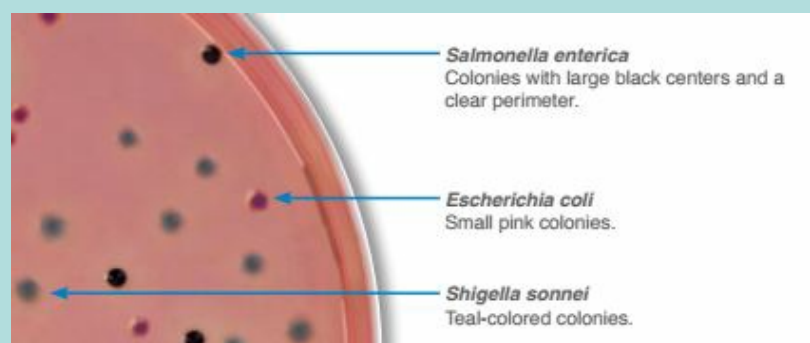
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* * * * *

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lion populations is an increasing concern to marine biologists and marine mammal veterinarians. However, when an outbreak occurs, researchers gain more insight into the nature of this disease which will help future generations prosper. There are multifaceted research teams working to identify disease sources, transmission rates, and other data that aid in treatment and prevention.

Public health officials in Oregon have cautioned dog owners to keep their pets away from sea lions on the beach. Leptospirosis has been known to be transferred from infected urine and body fluids to curious dogs that come in contact with dying or dead sea lions.



The Marine Mammal center advises the public to report any sick sea lions or other marine mammals directly to the Marine Mammal Center and to stay at a safe distance from sea lion populations.

Ref: [1](#), [2](#), [3](#)

Cameron Whipple
Regulatory Affairs Associate
HARDY DIAGNOSTICS



* * *



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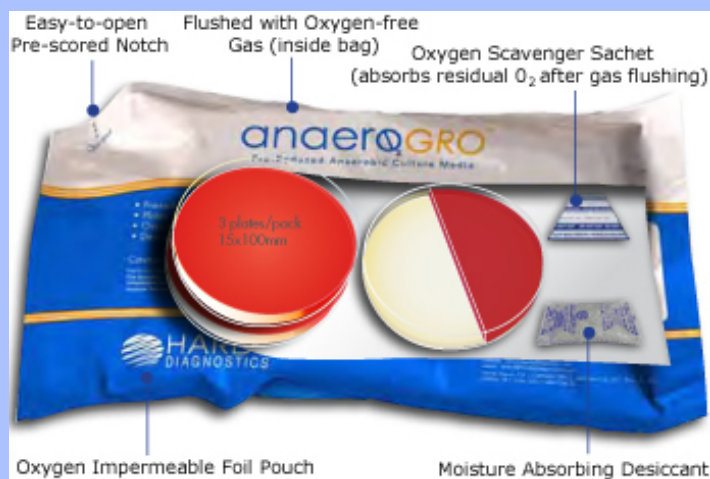
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- [See the complete Trio Bas catalog.](#)
- [Please have a sales rep contact me](#) about air samplers.

Testimonial from a Pharmaceutical Lab worker...

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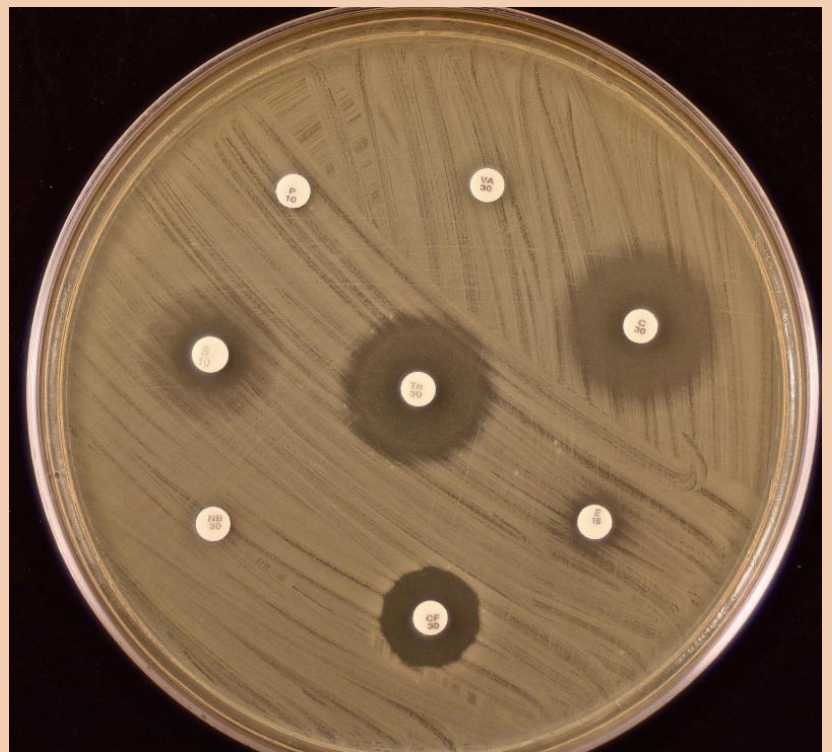
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* * * * *

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Disk Diffusion Testing

Antimicrobial susceptibility test (AST) methods have certainly moved into many directions from the standard disk diffusion method over the decades. One of the first disk publications about the methodology was by Howe in 1950 and later Borchardt and Andrew in 1959. However, the method was standardized by Bauer and Kirby and colleagues in 1966, followed by further refinements by Clyde Thornsberry at the CDC, and also L. Thrupp, from the 1970s. Besides broth

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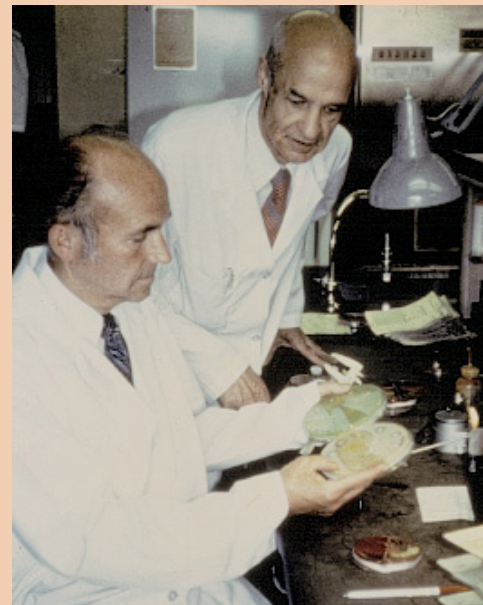
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* * *

ODC, and also Dr. Philipp, from the 1970s. Because Gram macro or micro-dilution, Kirby Bauer disk diffusion is also considered a reference method and is well accepted in clinical microbiology laboratories due to the ease of use.

Disk diffusion is especially preferred over minimum inhibitory concentration methods when applied to new antimicrobial agents being introduced to clinical laboratories, as the disk is normally the first FDA-cleared device.

Through coordinated development efforts since early 2016 between pharmaceutical companies, the FDA, and AST device manufacturers AST devices have been developed in parallel during the antimicrobial clinical trials to allow for the antimicrobial and AST devices to be FDA cleared as closely together as possible. This allows for labs to



Drs. Kirby and Bauer, 1966

quickly validate the AST devices and implement the antimicrobial in patient treatment soon after the antimicrobial receives drug clearance.



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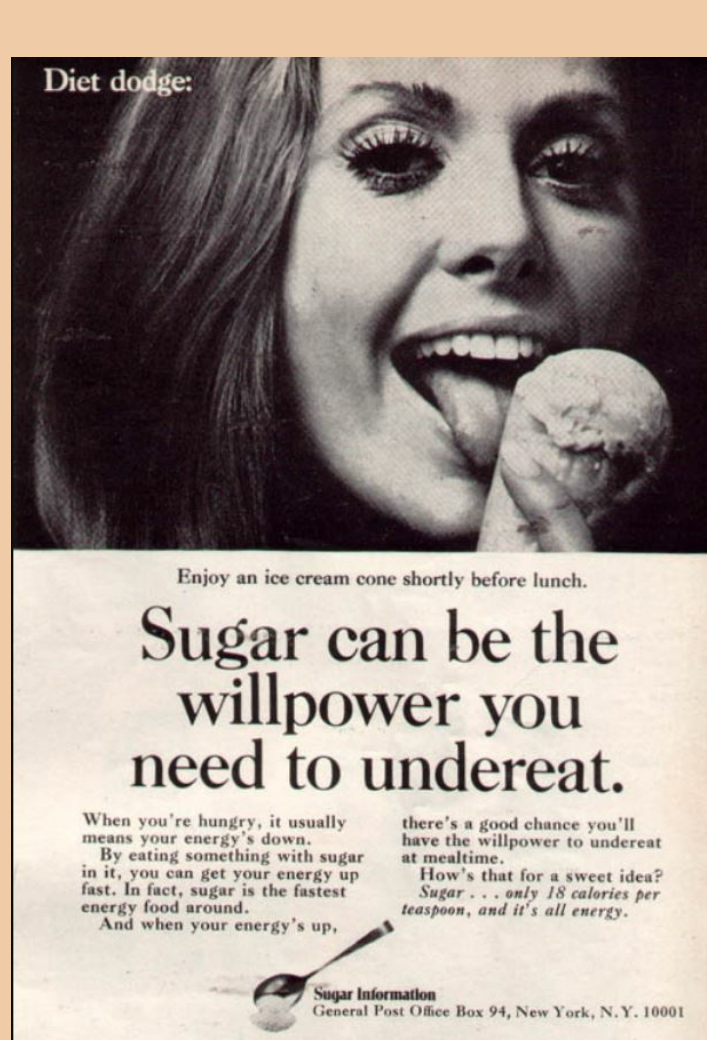
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Strange ads from the past...



Phraseology...



This quick turn-around time from drug approval to market clearance of the AST devices allows hospitals to adopt new antimicrobials more quickly by providing labs a simple way of testing the susceptibility of bacteria from patient specimens.



Additionally, the disk diffusion method is easy to use with little equipment required and is low in cost. In 2018, three new antimicrobials entered the market: [Plazomicin](#) (an aminoglycoside) by Achaogen, Eravacycline (a new tetracycline) by Tetraphase, and Omadacycline (another new tetracycline) by Paratek. Plazomicin and Eravacycline disks (HardyDisk™ AST) were FDA-cleared in record-breaking time after drug approval. This trend continued from the steady stream of new antimicrobials that became commercially available in 2017: [Meropenem/Vaborbactam](#) (beta-lactam combination drug) by The Medicines Company and [Delafloxacin](#) (a new fluoroquinolone) by Melinta. Once again, the [HardyDisks](#) for these two antimicrobials in 2017 were also cleared rapidly in comparison to prior years of drug development.

The steady release of [new antimicrobials](#) to the clinical market is encouraging for the continued growth and development of AST methods and technologies, as well as identifying treatments for particular antibiotic resistant organisms.

With the continuation of coordinated development between all groups involved in antimicrobial agents and AST methods, Kirby Bauer disk diffusion is here to stay. Although there are some compounds for which disk diffusion is not intended (e.g. colistin), the ability to test organisms in a cost-effective and simple method has allowed for the continuous introduction of new antimicrobial agents that can be implemented in clinical microbiology labs within the same year as drug approval.

"Shoot Yourself in the Foot"

This expression probably originated from the Old West when a gun slinger accidentally fires his six shooter before he can get it out of the holster. The expression took on a slightly different meaning in World War I, when many soldiers purposely shot themselves in the foot in order to be relieved of their battle-front duties.

The expression "shoot oneself in the foot" derives from such accidents, usually the result of incompetence, and has led to our current meaning of making an embarrassing error of judgment or inadvertently making one's own situation worse. That men did it deliberately as a way to avoid combat is only a side meaning.

* * * * *

What is Hardy all about?

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* * *

Brainteasers



Want to stimulate the ol' noggin?

Enter here

While other automated AST systems or the gradient systems are able to deliver MICs, the addition of newly approved

antibiotics into these systems may be more time-consuming.

Without a doubt, Kirby Bauer disk diffusion remains the gold standard and the best way to implement new antimicrobials quickly into the work-flow of microbiology laboratories, and thus, leads to better patient treatment outcomes.

Ref: [1](#), [2](#)

Submitted by Anna Klavins, Rianna Malherbe and Andre Hsiung

*Technical Services Department
HARDY DIAGNOSTICS*

With special gratitude to Dr. Stephen Jenkins from Cornell University Medical Center who helped with the historical perspective and references.

* * *

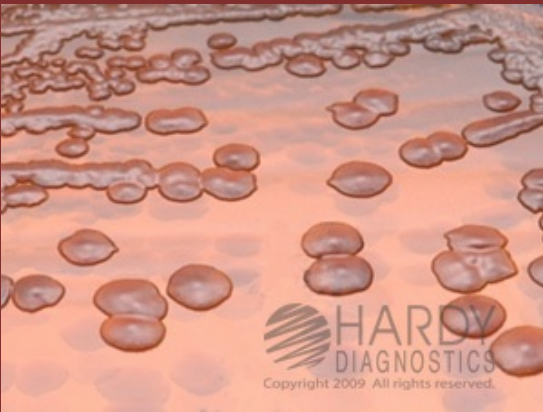
Toxigenic *E. coli* Outbreak in Romaine Lettuce

A Shiga toxin-producing [E. coli O157:H7](#) outbreak linked to romaine lettuce has sickened 43 people in 12 states, according to the US Food and Drug Administration



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The source of the contaminated lettuce appears to be from the Central Coast region of California and has affected people throughout the United States and Canada. Due to the recent outbreak which occurred during the Thanksgiving holiday, the FDA is encouraging growers and distributors to clearly label the harvest date and geographic origin of their lettuce.

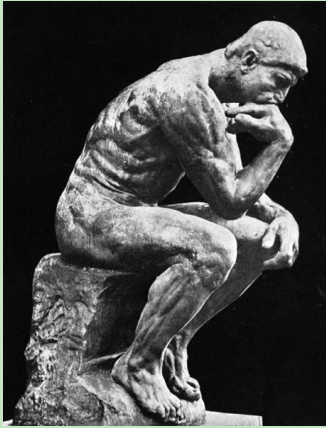


This outbreak follows another major incident in April of this year, in which 210 people were infected leading to five deaths. This time the lettuce originated from Yuma, Arizona, and was traced to *E. coli* O157:H7 contaminated canal water.



[Click here](#)

Think about it...



- I used to eat a lot of natural foods until I learned that most people die of natural causes.
- There are two kinds of pedestrians: the quick and the dead.
- Healthy is merely the slowest possible rate at which one can die.
- Health nuts are going to feel stupid someday, lying in hospitals dying of nothing.
- Whenever I feel blue, I start breathing again.
- All of us could take a lesson from the weather. It pays no attention to criticism.

* * *

Wisdom to Ponder...



Symptoms of toxigenic *E. coli* infection, which usually begin about three or four days after consuming the bacteria, can include watery or bloody diarrhea, fever, abdominal cramps, nausea and vomiting, according to the CDC. Most people infected by the bacteria get better within five to seven days, though this particular strain of *E. coli* tends to cause more severe illness.

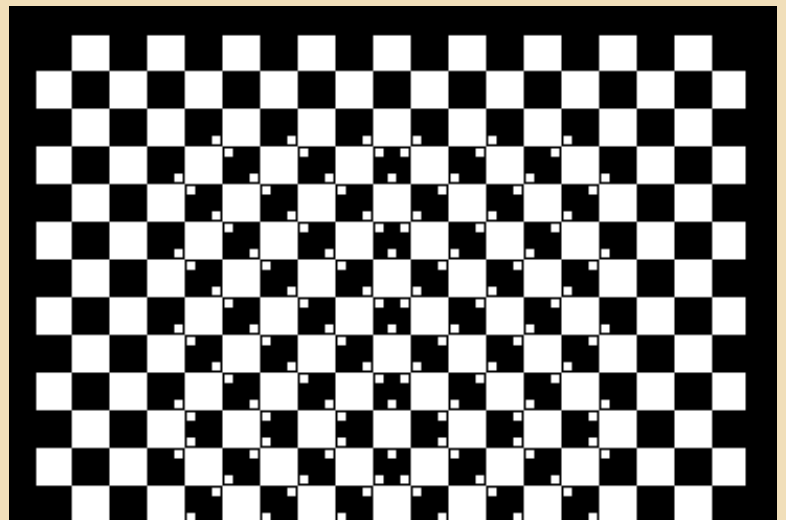
According to the FDA, people of all ages are at risk of becoming infected with Shiga toxin-producing *E. coli*. Children under 5, adults older than 65, and people with weakened immune systems, such as people with chronic diseases, are more likely to develop severe illness, but even healthy children and adults can become seriously ill.

The CDC does not recommend antibiotics for patients with *E. coli* O157 infections. Antibiotics are also not recommended for patients in whom *E. coli* O157 infection is suspected, until diagnostic testing rules out this infection.

Some studies have shown that administering antibiotics to patients with *E. coli* O157 infections might increase their risk of developing hemolytic uremic syndrome (a type of kidney failure), and the benefit of antibiotic treatment has not been clearly demonstrated.

Ref: 1

Optical oddities...





Dave Barry

Pulitzer prize winning American humorist, columnist, and novelist

"Once again, we come to the Holiday Season, a deeply religious time that each of us observes, in his own way, by going to the mall of his choice."

"Not all chemicals are bad. Without chemicals such as hydrogen and oxygen, for example, there would be no way to make water, a vital ingredient in beer."

"If you had to identify, in one word, the reason why the human race has not achieved, and never will achieve, its full potential, that word would be 'meetings.'"

"You can only be young once. But you can always be immature."

"Fishing is boring, unless you catch an actual fish, and then it is disgusting."

"The word user is the word used by the computer professional when they mean idiot."

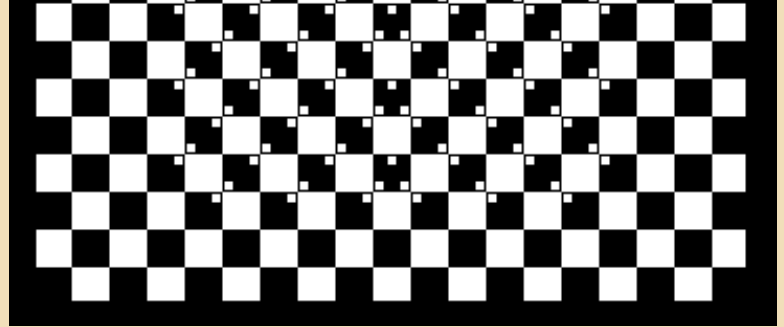
"Your modern teenager is not about to listen to advice from an old person, defined as a person who remembers when there was no Velcro."

"The world is full of strange phenomena that cannot be explained by the laws of logic or science. Dennis Rodman is only one example."

"Never be afraid to try something new. Remember that a lone amateur built the Ark. A large group of professionals built the Titanic."

"Proofread carefully to see if you any words out."

"Your hand and your mouth agreed many years ago that, as far as chocolate is concerned, there is no need to involve your brain "



*In spite of how it appears,
there are no curved lines in this diagram....*

*"Believe half of what you see
and none of what you hear."
~ Benjamin Franklin ~*

RUBES



**"This is pure heresy! Everybody knows
that the Earth revolves around us!"**

need to involve your brain.

"A perfect parent is a person with excellent child-rearing theories and no actual children."

"If it weren't for marriage, men and women would have to fight with total strangers."

"A person who is nice to you, but rude to the waiter, is not a nice person."

"There comes a time when you should stop expecting other people to make a big deal about your birthday. That time is age 11."

* * *

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* * *

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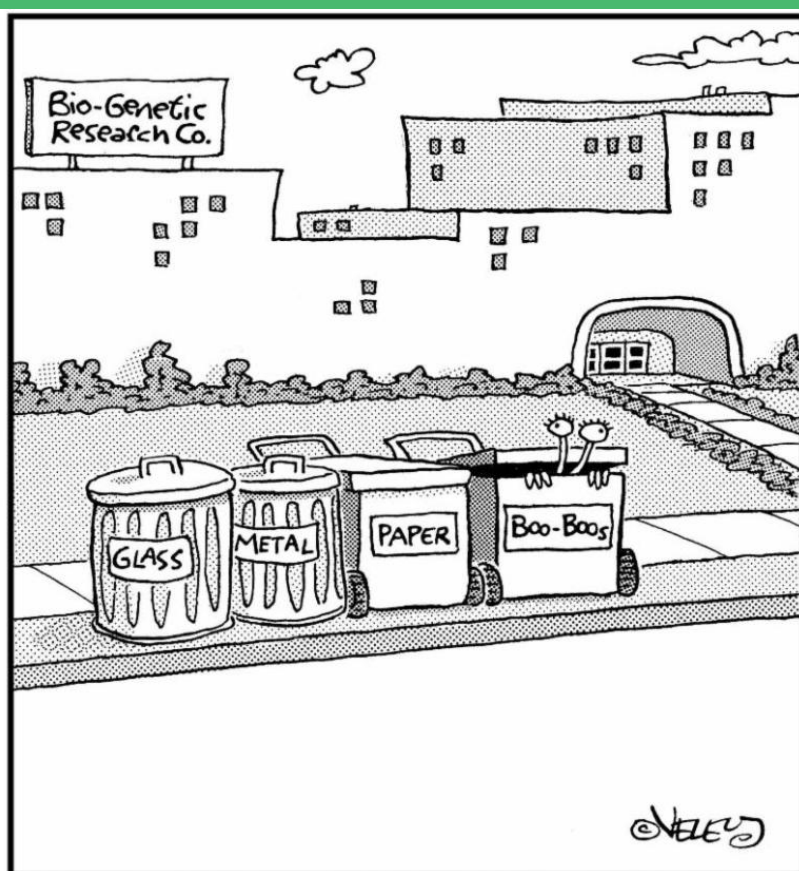
How to use "and" five times in a row and still be grammatically correct...



A man owned a store called "This and That." He hired another man to make a sign for it. When it was finished, he found an error in the spacing and wrote this to the sign maker:

"The space between This and And and And and That is different. Please fix it."

* * *





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Warning: PUN ZONE AHEAD



~ What do you call someone who throws money into a hole? *Generous to a fault.*

~ There's a new restaurant on the moon. The food is out of this world, but there is no atmosphere.

~ Notice in a farmer's field:
"I WILL ALLOW YOU TO CROSS THE FIELD FOR FREE, BUT THE BULL CHARGES."

~ Would the person who took the step ladder yesterday please bring it back, or further steps will be taken.

#

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President
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"I'm not afraid of death...



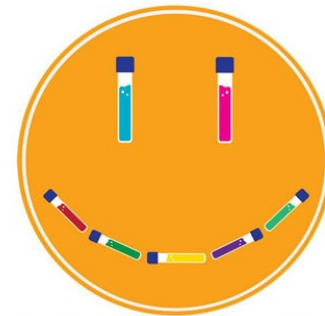
I just don't want to be there when it happens."

~Woody Allen



...in another city."

George Burns
#



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