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microBYTES™

A Hardy Diagnostics eNewsletter

 **HARDY**
DIAGNOSTICS
a culture of service...

September, 2017

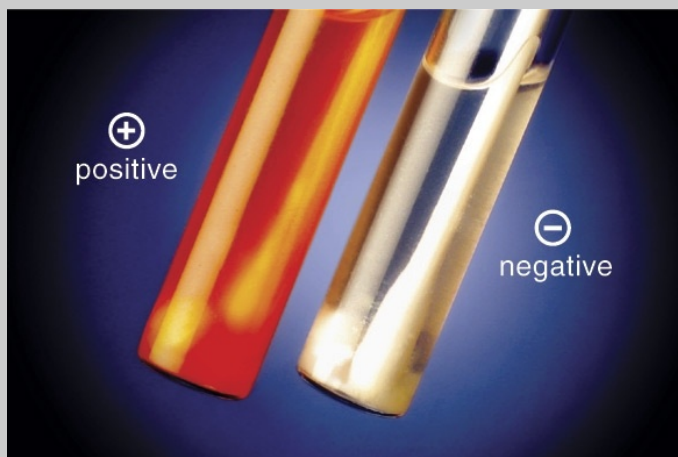
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Micro Musings...



*For the detection
of Group B Strep...*

Carrot Broth



- Detects hemolytic Group B Strep from the initial broth culture

C diff Banana Broth

*With nearly 500,000
infections annually...*

**Are you doing enough to
control *C. diff*?**

- Provides results in as little as six hours
- Found to be 100% sensitive and 100% specific in a recent study

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* * *

For the detection
of *Gardnerella vaginalis*

G. Vag Select



Hardy announces a new broth medium for the detection of *Clostridium difficile* bacteria and spores. This new medium is capable of saving hospitals many thousands of dollars. It is useful in monitoring the efficacy of cleaning procedures used in patient rooms. Positives turn yellow!

This is the first and only culture medium designed for the detection of *C. difficile* and its spores on surfaces in a hospital setting. The specificity was found to be 100% in a recent study (see reference below). No special equipment or anaerobic supplies are needed! Obtain results in as little as 24 hours!



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See the catalog listing.

See the brochure.

Request a sample for your evaluation.

[View the Study](#) showing 100% specificity (no false positives).

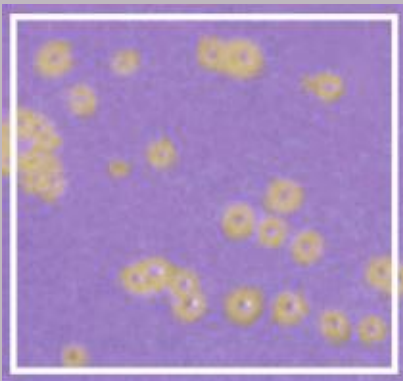
* * * * *

- Detects *Gardnerella vaginalis* colonies due to a yellow color change.
- Inhibits other vaginal flora.
- Poses no risk from the dangers of using human blood.
- Allows quick screening for bacterial vaginosis.

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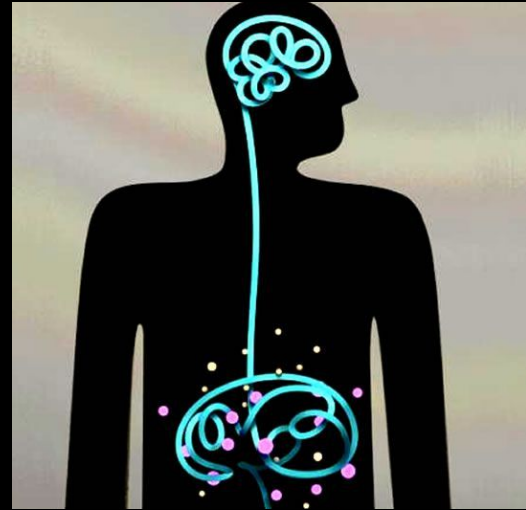


* * *

Automate your Wright's-Giesma stain!



Can Mother's Microbiome Affect Her Child's Behavior?



Amidst the myriad of effects we've found our gut microbiome can have on our daily lives, a recent study finds that it may also affect behaviors in our offspring, even long after they've exited the womb.

Two newer studies using rats published by MIT and the University of Massachusetts Medical School explored the idea that the microbial population of the mother's gut can result in higher rates of offspring demonstrating atypical social behaviors in rats, such as ignoring new cage mates or engaging in repetitive behaviors. Viral infections have been associated with increased rates of

several neuro-developmental disorders, such as autism and schizophrenia, for many years. These recent studies also find that the bacterial population in mother rats correlates with offspring displaying behaviors similar to humans with autism spectrum disorders, as well as atypical brain development.

Having offspring on the autistic spectrum is not necessarily something to be feared. The list of people on the autism spectrum who have contributed to human knowledge in a significant way is too long to list here

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knowledge in a significant way is too long to list here. However, an analysis of the life and habits of Sir Isaac Newton and Albert Einstein performed at Cambridge University suggests they both exhibited many behaviors associated with autism. More recently the Autism Research Centre at Cambridge also found that those in STEM-related jobs scored an average of 3 points higher on the Autism Spectrum Quotient, a 50 question test for determining where an individual likely falls on the autistic spectrum, with a higher score testing as exhibiting more autistic behaviors and a lower score exhibiting fewer.

The current theory behind why the viral infections may result in more behaviors associated with autism is that when the mother's immune system is triggered, it produces TH17 cells. These cells are stimulated to release molecules that appear to be the cause of the atypical brain development in the fetus. The area of the brain that displays the atypical development is the somato-sensory cortex, which, according to Gloria Choi of MIT, "tells an animal where its body parts are and how their positions change as a result of movement." This area of the brain experiences increased neuronal activity, which when decreased also causes a decrease in the observed atypical behaviors.

This change in brain development also correlates in pregnant women with a lower concentration of *Bifidobacterium* spp. in the gut; although it is unclear if a similar mechanism to the viral infections is occurring. However, the California Institute of Technology found that mice infected with a "virus-like" molecule during pregnancy to initiate the reaction described above had offspring with a different gut microflora than those who did not. Mice born from mothers treated with the virus-like molecule and later treated with *Bacteroides fragilis*

introduced into their microbiome after birth displayed more typical behaviors similar to the mice from untreated mothers.

Of course, the idea of "normal" behavior is completely relative, and the link between atypical behavior in mice and autism in humans is a rather large leap. However, these studies demonstrate that the maternal microbiome can affect fetal brain development, which can then be further affected by changes in the newborn's microbiome. These studies strengthen what we already suspect; the link between who we are and what is in our gut is very powerful.

By Kate Morgan



By Kate Massey
Technical Support Specialist II
HARDY DIAGNOSTICS

* * *

Hardy is proud to announce its 2017 catalog of all culture media offerings.

This 85 page booklet contains descriptions of the 2,700 products that Hardy manufactures for the microbiologist.

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* * *

Origins...

Why are wedding rings placed on the fourth finger of the left hand?



Thousand of years ago, there was a Greek and Roman belief that a vein from the fourth finger on the left hand ran directly to the heart. This vein was known as the 'vena amoris' also known as the vein of love. This belief, although false, led to the tradition of wearing the wedding ring on that particular

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"The two heads of TRIO BAS DUO air sampler was one of the best investments during the last two years. The laboratory staff responsible of the bacteriological sampling is able to double the number of environmental microbial cycles per day. This means more efficiency and lower cost, together with the possibility to increase in the future the number of sampling in other areas of the premises."

* * *

Increase your recovery rate for anaerobes!

the tradition of wearing the wedding ring on that particular finger.

The Chinese developed a theory, which is actually really interesting and a bit fun to try. If you look at your left hand, each finger is a representation of the past, present and future generations within your family. For example, the thumb represents your parents, your index finger represents your siblings, the middle finger represents yourself, your fourth finger represents your life-partner and the fifth finger, your pinkie, represents your future children.

Now it's time for a little experiment. Place your hands together and bend your middle fingers together, allowing for your middle finger knuckles to touch. When doing this, allow for your other remaining finger tips to touch.



Begin to pull each finger apart, individually. You will see that your thumbs will pull apart because you are not destined to be with your parents forever. Now do the same action with your index finger and pinkie; you will see the same results. According to the Chinese theory, you are not meant to be together forever with your siblings, as well as your future children, as they will leave the home and start a family of their own.

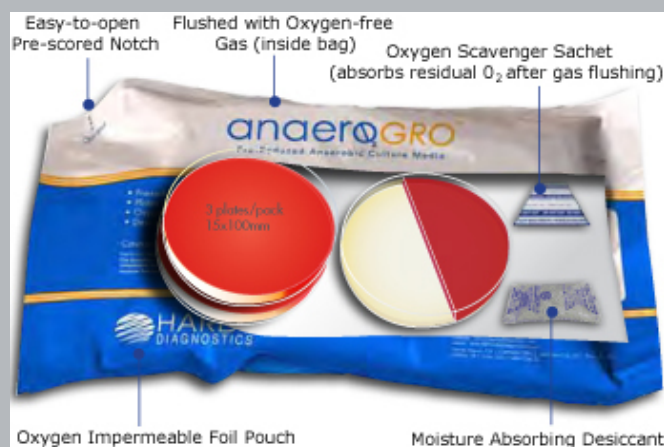
Now try to do the same action with your ring fingers, which represents your life partner. When you try to separate the fourth fingers apart, it's very difficult, if not impossible, to pull them apart. This is because you and your life partner are meant to be together forever.

The more 'practical myth' behind wearing the wedding ring on the fourth finger of the left hand is that since most individuals are right handed, this means that the left hand is not used as much; therefore the ring will not be as damaged than if it were used on the right hand; also, the ring finger is one of the least used fingers after the pinkie.

Fun Fact: Did you know that not every country uses the wedding ring on the left hand? Countries such as Spain, Venezuela, Peru, India, Norway, and Denmark wear their wedding bands on the right hand, however still on the fourth finger. It is said that the wedding ring is worn on the right hand because it is the more dominant of the two, symbolizing the strength of the marriage between a husband and a wife.

* * * * *

AnaeroGRO



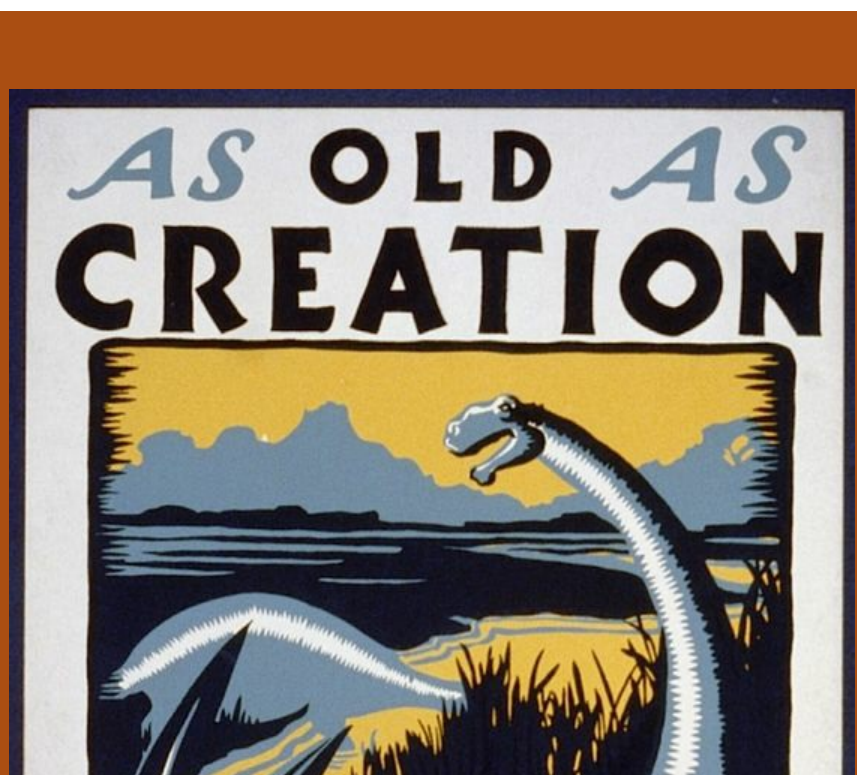
Hardy's AnaeroGRO is packaged with an oxygen scavenger and flushed with nitrogen gas to ensure anaerobic conditions, leading to better recovery of anaerobic bacteria.

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* * * * *



NOTICE.

PREVENTIVES OF CHOLERA!


Published by order of the Sanatory Committee, under the sanction of the Medical Council.

BE TEMPERATE IN EATING & DRINKING!

Avoid Raw Vegetables and Unripe Fruit !.

Abstain from **COLD WATER**, when heated, and above all from *Ardent Spirits*, and if habit have rendered them indispensable, take much less than usual.

SLEEP AND CLOTHE WARM !

 **DO NOT SLEEP OR SIT IN A DRAUGHT OF AIR,**

Avoid getting Wet !

Attend immediately to all disorders of the Bowels.

TAKE NO MEDICINE WITHOUT ADVICE.

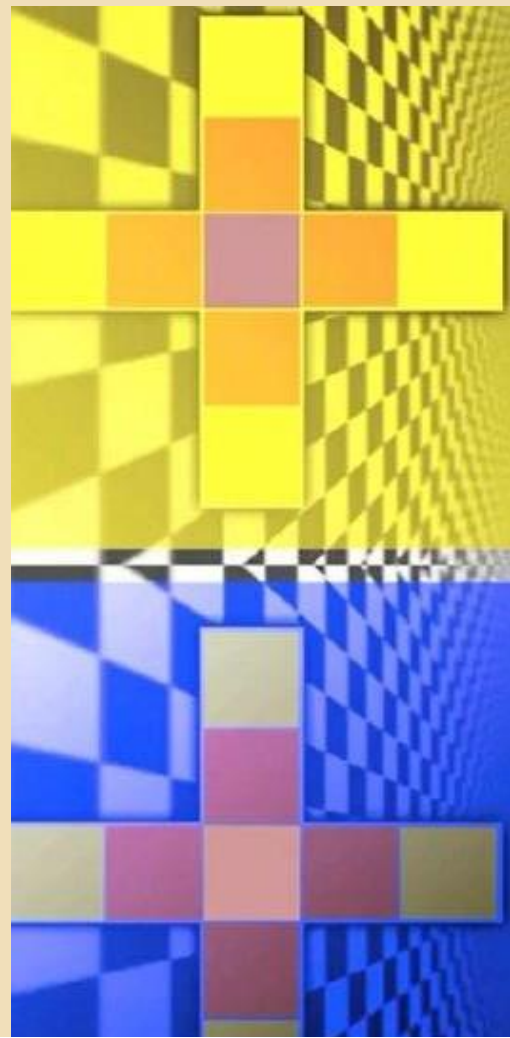
Some good advice on staying healthy from the Sanitary Committee on this vintage poster.



Vintage Public Health Poster from the 1940s.

* * * * *

Optical oddities...



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* * *

Brainteasers



Tease your brain unmercifully

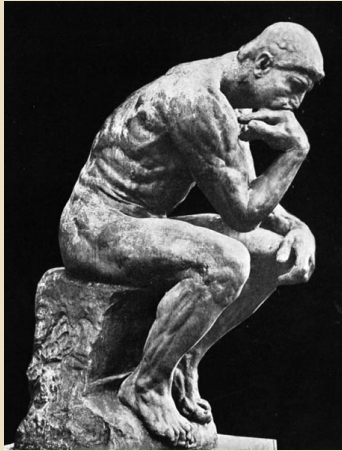
[here...](#)



Oddly enough, the central squares of both images are exactly the same!

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

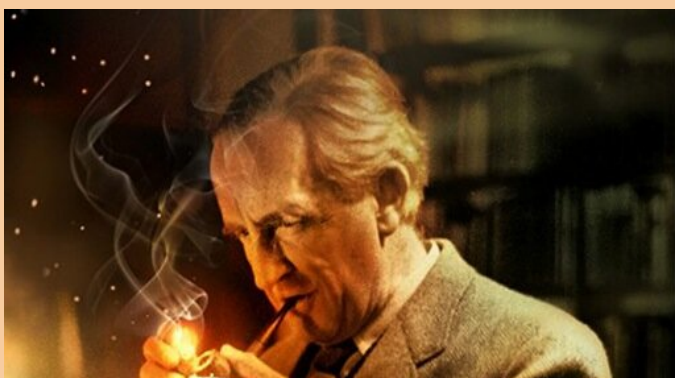
Think about it...



- * Why do they call it a TV set when you only get one?
- * How come wrong numbers are never busy?
- * What was the best thing before sliced bread?
- * If you throw a cat out a car window, does it become kitty litter?
- * When a cow laughs, does milk come up its nose?

* * *

Wisdom to Ponder...



RUBES

Rubes By Leigh Rubin



Apparently, Mrs. Isaac Newton also discovered gravity.

[Find more](#)



J.R.R. Tolkien

1892 ~ 1973

*English poet, novelist, and university professor;
best known for writing "The Hobbit"
and "Lord of the Rings."*

"If more of us valued food and cheer and song
above hoarded gold, it would be a merrier
world."

"All we have to decide is what to do with the
time that is given us."

"It's the job that's never started as takes longest
to finish."

"Not all those who wander are lost."

"Faithless is he that says farewell when the road
darkens."

"A pen is to me as a beak is to a hen."

"No half-heartedness and no worldly fear must
turn us aside from following the light
unflinchingly."

"Darkness must pass
A new day will come
And when the sun shines
It will shine out the clearer"

"May the wind under your wings bear you where
the sun sails and the moon walks."

"It is useless to meet revenge with revenge; it will
heal nothing."

"Still round the corner there may wait, A new
road or a secret gate."

It's not just ticks...

Transmission of Lyme Disease by Mosquitos and Flies

The classic bulls-eye rash is one that most people are warned to watch out for and are told to seek medical assistance if it appears on the skin. This rash is called erythema migrans and may occur from infection with a bacterium of the genus *Borrelia*. These bacteria are spirochetes and have a flagellum that aids in mobility. *Borrelia burgdorferi* is the most common species associated with Lyme disease. Although there are many subspecies that are closely related, only three definitively cause Lyme disease: *B. burgdorferi sensu stricto*, *B. afzelii*, and *B. garinii*.

Lyme disease is commonly known to be transmitted from tick bites in North America, Europe, and Eurasia. However, research has shown that insects other than ticks can harbor the bacterium. Based on a study in Germany, it has been shown that *Borrelia* can survive in mosquitos from larval stages to adult stages without dying(1). Normally, *Borrelia* produces a protein that allows for its survival in a tick until the tick begins to feed and the bacteria can exit the tick into a new host. The bacteria are less likely to be able to survive in a mosquito's gut due to chemical differences and gut composition. However, mosquitoes feed more often than ticks, therefore reducing the amount of time needed for the *Borrelia* to survive before transmission to a new host.





* * *

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Additionally, *Borrelia* was isolated from mosquitoes and horse flies in a study conducted in 1988 by Magnarelli and Anderson from the Department of Entomology in New Haven, Connecticut. The sources of infection for these insects were not identified in the study. However it was inferred that the prevalence of *Borrelia* in these two other winged groups may be due to high concentrations of cattle, horses, and deer that were exposed to Lyme disease through tick bites. The local cattle and large mammals tested had antibodies to Lyme disease, but no spirochetes were isolated.

Although the study did not find a reservoir of infection, it did provide interesting data that showed *Borrelia* could survive in organisms besides ticks. In addition to larger mammals, mice in the area where the study was conducted were known to be infected with *Borrelia* and lends evidence that the area the research group sampled from had *Borrelia* in its sylvatic cycle. Mosquitoes and horse flies that suck blood regularly may have a higher chance of picking up and transmitting *Borrelia* from one or more infected hosts(2). The paper also cites that although anecdotal, there have been records of deer fly bites and the subsequent development of the erythema migrans rash.

Although there has not been conclusive evidence that mosquitoes and flies can transmit Lyme disease to humans, there have been particular anecdotal cases of transmission in addition to the evidence that *Borrelia* can survive within these organisms. It may be worthwhile for research organizations to conduct further studies that investigate this non-tick vector mode of transmission, because Lyme Disease could be far more prevalent than once thought.

By Anna Klavins
R&D Microbiologist
HARDY DIAGNOSTICS

Sources:

- (1) Sponaugle, R. Lyme Study: How *Borrelia* Bacteria is Transmitted from Mosquitoes to Humans. Sponaugle Wellness Institute. 2016. <https://sponauglewellness.com/lyme-study-how-borrelia-bacteria-is-transmitted-from-mosquitoes-to-humans/>
- (2) Magnarelli, L.; Anderson, J. Ticks and Biting Insects Infected with the Etiologic Agent of Lyme Disease, *Borrelia burgdorferi*. Department of Entomology, The Connecticut Agricultural Experiment Station. New Haven, Connecticut. Journal of Clinical Microbiology; p 1482-1486. 1988.

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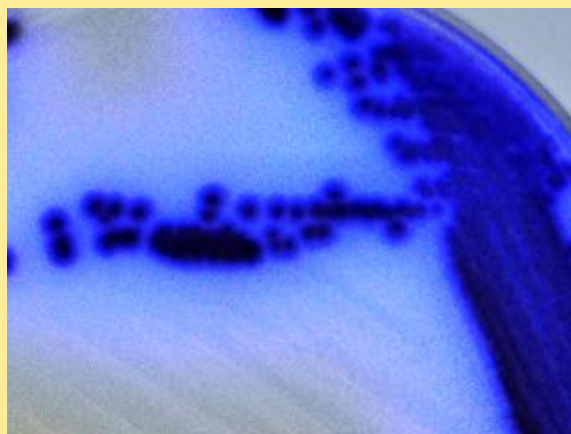
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Vibrio vulnificus colonies shown fluorescing under a UV light on HardyCHROM Vibrio Agar

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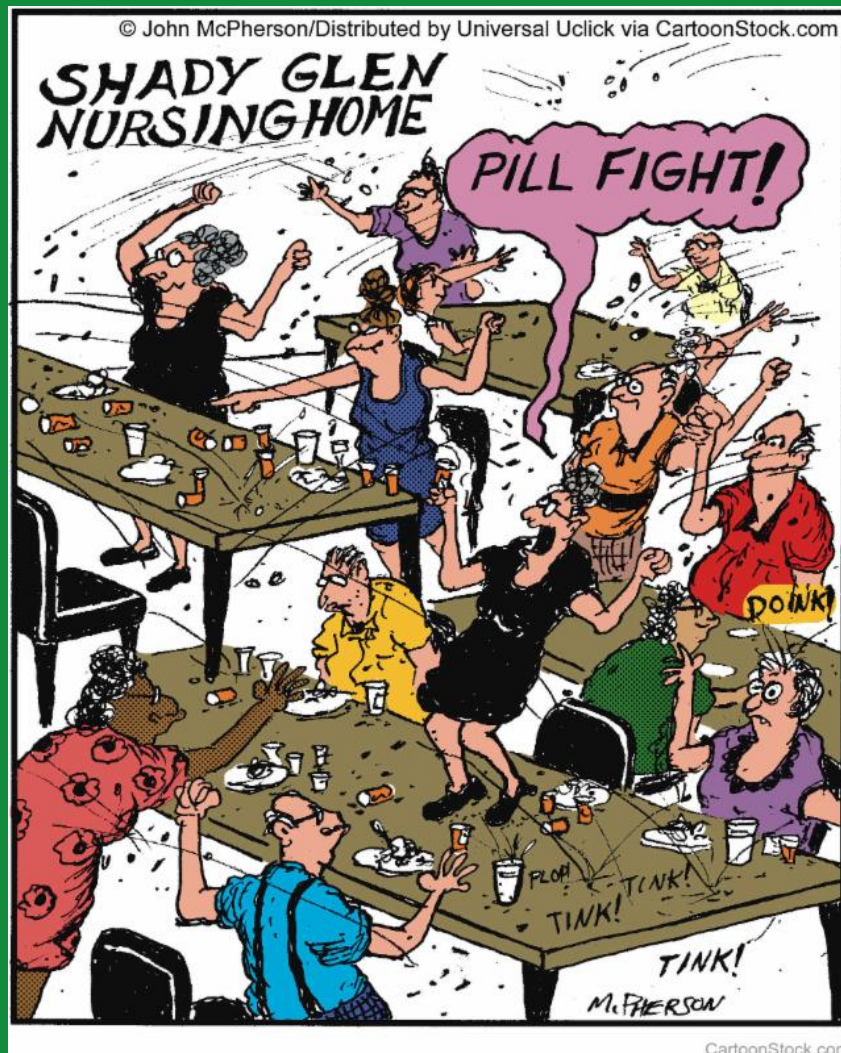
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Jay Hardy, CLS, SM(NRCM)
President
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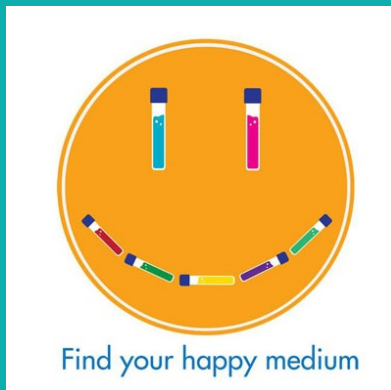
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* Q: Why do cows wear bells?

A: Their horns don't work.

* Farmer milks cow as a fly goes into cow's ear - "In one ear and out the udder"

* Q: Why do ghosts love elevators?

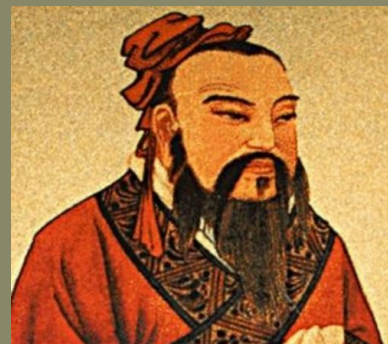
A: Because they lift their spirits

* When I heard Oxygen and Magnesium were dating, I was like "OMg."

* I'm reading a great book about anti-gravity. It's really hard to put down!

#

Confucius say...



* Man who runs in front of car gets tired, but man who runs behind car gets exhausted.

* War does not determine who is right; it determines who is left.

* Man who lives in glass house should change clothes in basement.

* Man who jumps off cliff, jumps to conclusion.



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