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# microBYTES™

A Hardy Diagnostics eNewsletter

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

January, 2019

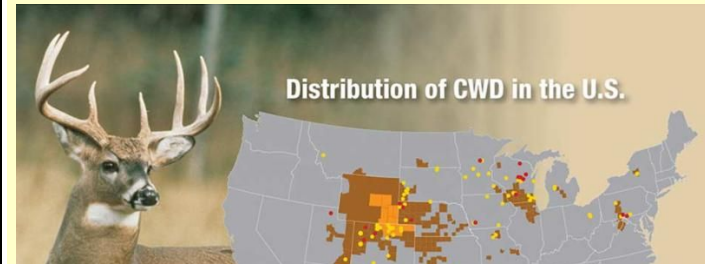
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## Micro Musings...



## Chronic Wasting Disease

Chronic Wasting Disease (CWD), is a fatal prion infection affecting free-ranging and captive cervid herds. Cervids are hooved ruminant mammals that include deer, caribou, elk, and moose.



Hardy **CHROM**™

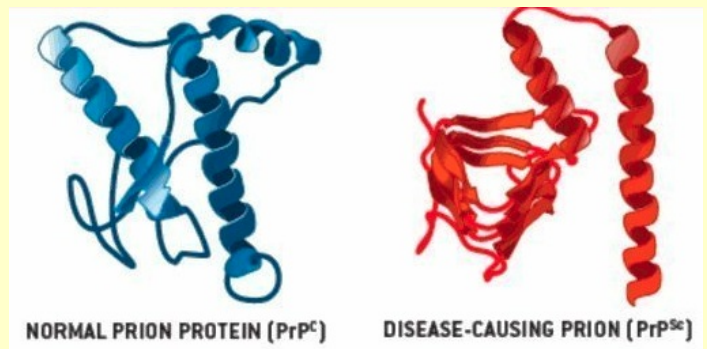




*Map showing the incidence of captive and free-ranging populations of cervids in the US.*

In North America, CWD has been found in at least 24 states, as well as in Canada, and has devastating effects on herd populations. Wyoming and Wisconsin have the highest concentration of infected herds, with numbers approaching 50% in some areas.

First identified as a clinical disease in captive mule deer in 1967, CWD is caused by an infectious agent called a prion. Not all prions are deadly. However, resistant prions are proteins found in the brain and nervous tissue that, for whatever reason, go rogue. Protein function is entirely dependent upon how they fold, and these rogue proteins fold abnormally.



Ordinarily, mis-folded proteins would be recognized and destroyed by the cell. Instead, these prions resist destruction (i.e. degradation) and, worse, resistant prions can cause healthy proteins to also become mis-folded over time. This recruitment of healthy proteins into prions occurs over many years, leaving tiny holes in brain tissue that can lead to neurodegenerative disease and ultimately death.

Symptoms of CWD include excessive salivation, loss of appetite, progressive weight loss, excessive thirst and urination, listlessness, teeth grinding, lowering of the head, and drooping ears. It is always fatal. Unfortunately, many of these signs can also appear as symptoms of other diseases, making it difficult to distinguish CWD in the field.



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\* \* \* \* \*

*Using poliovirus to treat glioblastoma...*

# Polio as a Treatment for Cancer?

Glioblastoma tumors are the most common form of malignant brain tumor and affect approximately two to three adults per





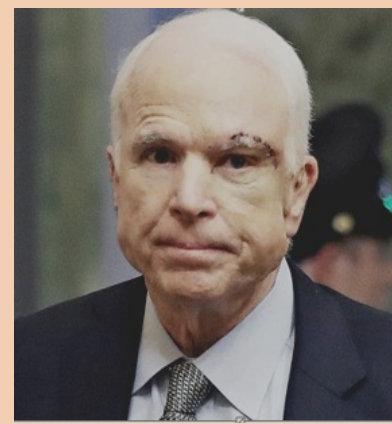
There is no cure for CWD and no reliable live animal test to detect its presence in order to stop it before it spreads; testing is normally performed on deceased specimens. Presently, the only effective measure to reduce the spread of CWD is complete depopulation of herds that test positive for the disease. Since resistant prions appear to be somewhat host-specific, it is unknown whether prions found in cervid populations can spread to non-cervid wildlife, other types of livestock, or even humans.

CWD is classified as a TSE (transmissible spongiform encephalopathy), like Scrapie in sheep and goats, Mad Cow disease in cattle, and Creutzfeldt-Jakob disease in humans. One theory suggests that the misfolded prions are triggered by a difficult to culture bacterium that has no cell wall known as Spiroplasma. One researcher found this bacteria in 100% of deer showing symptoms of CWD.

Due to the many unknown characteristics of this disease, public health and wildlife officials caution those who hunt or consume cervid meat to take proper precautions. Precautions include:

- Do not handle or consume any animal acting abnormally or that appears sick. If an animal is found under such conditions, it is recommended to contact state game and fish department personnel if a sick animal is harvested or observed.
- Wear latex or rubber gloves when field dressing game.
- Bone out meat and avoid cutting through brain or spinal tissue; minimize the handling of brain and spinal tissue.
- Wash hands and instruments thoroughly in hot soapy water.
- Avoid consuming brain, spinal cord, eyes, spleen, tonsils and lymph nodes. Cut away fatty tissue to remove remaining lymph nodes.
- Avoid consuming meat from any animal that tests positive for CWD.
- If game is commercially processed, request animals be processed individually, without meat combined from other animals.

100,000 each year. Due to the aggressive nature of glioblastoma, existing treatments are relatively ineffective and the prognosis for affected patients is quite poor. According to the National Brain Tumor Society, the five-year survival rate for those afflicted with glioblastoma is a mere 5.6%. In fact, the majority of glioblastoma patients only survive 12 to 15 months post-diagnosis. With the recent passing of U.S. Senator John McCain, as well as former Vice President Joe Biden's



*US Senator, John McCain, died in August of 2018, about one year after his diagnosis of glioblastoma.*

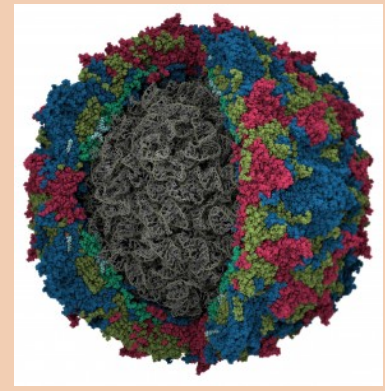
son, Beau, who both succumbed to this dreaded brain cancer, the search for an effective treatment has been brought back into the limelight.

Recently, researchers at the Duke Cancer Institute have seen promising experimental results using a genetically modified poliovirus (called PVS-RIPO) in patients diagnosed with a glioblastoma brain tumor. The poliovirus is administered directly into the

cancerous mass by inserting a catheter through the skull and into the tumor.

The virus subsequently infects only the cancerous cells, which ultimately induces the patient's immune response, engendering the use of the body's natural defenses against its own mutated cells. The genetically modified

virus affects only tumor cells while leaving normal cells unharmed. With this novel treatment, 21% of the 61 patients enrolled in the initial trial were still alive three years post-treatment. This represents a 7% increase in the survival rate after 18 months and a 17% increase in the survival rate after three years when compared to patients who did not receive the poliovirus therapy but were treated with standard chemotherapy instead (the control).



*Poliovirus is a single stranded RNA human enterovirus*

Based on these results, the poliovirus therapy has now been designated as a "breakthrough therapy" by the FDA. This means that the development of the treatment and its review process will be expedited by the FDA and a response will be provided within 60 days of receipt of the new drug submission

provided within 60 days of receipt of the new drug submission.

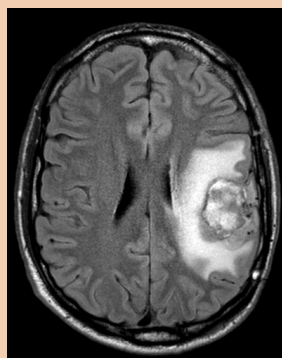
Even with these precautions, prions are not easily destroyed, and it is uncertain how long they may lay dormant in the environment. It's believed soil, water, and plants act as natural reservoirs to accumulate prions deposited from excreta and decaying carcasses. Mounting evidence also suggests that prions can mutate. Therefore, like many biological agents, prions may evolve and become better adapted at jumping hosts. Because of the potential for long-term dormancy and host-to-host transmission, the United States Department of Agriculture's Animal and Plant Health Inspection Service (USDA APHIS) provides assistance to states through its voluntary Herd Certification Program (HCP) to help minimize the risk of introduction, transmission, and spread.



By Kerry Davies Pierce  
Design & Development Microbiologist  
HARDY DIAGNOSTICS

Ref: [1](#), [2](#), [3](#), [4](#), [5](#), [6](#)

\* \* \*



*About 12,000 people will be diagnosed with glioblastoma every year. Only about 5% will live beyond 5 years after diagnosis.*

Unfortunately, this treatment does not come without potential complications; at higher doses of PVS-RIPO, the treatment has been shown to cause brain inflammation, leading to seizures. Additionally, some patients have been observed to exhibit no response to the poliovirus therapy, though the reasons why are unknown. At this time, there is no way to identify whether or not a patient will respond to the treatment.

While the results of this Phase I Clinical Trial are promising, many other cancer trials have also shown similar long-term survival statistics. Therefore, it is difficult to determine whether these long-term survivors are truly benefiting from the therapy. Phase II of this study is currently underway, which will compare the effectivity of a poliovirus/chemotherapy combination therapy with poliovirus therapy alone.

Scientists are currently working with other viruses in addition to polio; such as herpes, vaccinia, and respiratory viruses to battle cancer. With continued efforts towards an efficacious cure, glioblastoma patients may have hope of an improved treatment

in the future.



by Sara Hylton  
Technical Support Microbiologist  
HARDY DIAGNOSTICS

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\* \* \*

*Plazomicin now available!*

## New Antibiotics

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*Now there's an easy way to detect, identify, and enumerate  
Mycoplasma hominis  
and Ureaplasma urealyticum*

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- Delafloxacin, "Baxdela" (Z9301, Z9305)
- Meropenem/Vaborbactam, "Vabomere" (Z9321, Z9325)

## HardyDisks:

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- Include all traditional and newer antibiotics.

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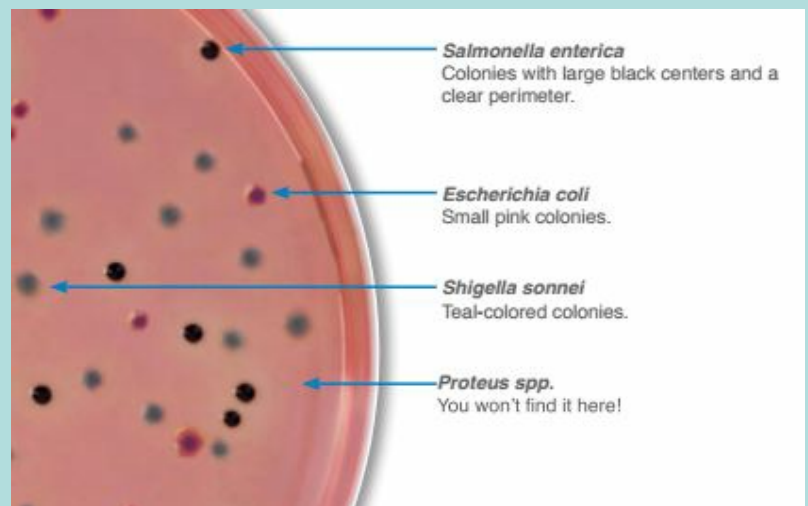


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\* \* \*

*Stool cultures with no interference from Proteus!*

## HardyCHROM SS NoPRO



NOTE: New study shows **50% less in colony work-ups**, for an overall **cost savings of 80%!**  
[Find out how you can save also...](#)

- Reduces costly false-positive work-ups, due to *Proteus* spp.!
- Less colony picking, subculturing, and identifications
- No need for TSI, LIA, or KIA tubes
- Reduces use of expensive ID cards
- Reduces the number of plates for primary stool setup
- Increased specificity
- Easy Identification by patented chromogenic reaction
- The only chromogenic media that will detect both

For the detection of Group B Strep...

## Carrot Broth One-Step



- Improved No tile addition needed!



*Salmonella and Shigella*

- Detects hemolytic Group B Strep from the initial broth culture
- Provides results in as little as sixteen hours
- Found to be 100% sensitive and up to 100% specific in a recent study

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\* \* \*

**Learn more about HardyCHROM SS NoPRO.**

**Place your order now.**

**Try out some free samples.**

\* \* \* \* \*

## Trio Bas Air Samplers



*Two heads are better than one!*

*Now with Bluetooth capability!*

Trio Bas from Orum International has a robust impact air sampler for every type of use. Single, double, or triple heads are available from Hardy Diagnostics.

- [Watch a short video](#) that will explain why the Trio Bas is the best choice for your clean room.
- [See the complete Trio Bas catalog.](#)
- [Please have a sales rep contact me](#) about air samplers.

**Testimonial from a Pharmaceutical Lab worker...**

*"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."*

*Strange ads from the past...*



\* \* \* \* \*

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Phraseology

*Do you perform colony counts?*

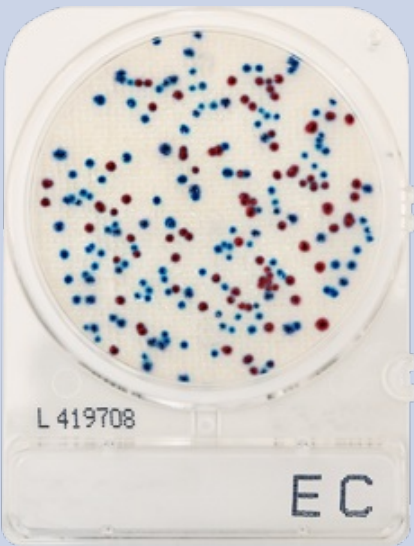


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## "Blue Bloods"

'Blue blood' is a literal translation of the Spanish 'sangre azul' and has been in common use since the middle 1800s. This was the designation of nobles and aristocrats which was attributed to some of the oldest and proudest families of Castile, who claimed never to have intermarried with Moors, Jews, or other races. The expression probably originated in the blueness of the veins of people of fair complexion as compared with those of dark skin, especially in the ruling class that did not have to work outside in the sun.

These days there are fewer people of noble birth who make a point of maintaining a fair complexion in order to display their rank. We are more likely to see apparent blue skin in the extremities of those suffering from the poor circulation condition known as Raynaud's Disease, which is triggered by cold temperatures or stress.

\* \* \* \* \*

## What is Hardy all about?

[View a short video to find out...](#)



*The CDC announces....*

## Salmonella found in Pet Hedgehogs



Although illegal in some states and cities, hedgehogs have become an increasing popular pet in the US. These cute and cuddly, but controversial, animals originally came from Africa and are noted for their stiff spines covering their backs, which are hollow hairs made up of keratin.

A CDC investigation reports of a multi-state outbreak of Salmonella infections linked to contact with pet hedgehogs. Key points:

- Eleven people infected with the outbreak strain of Salmonella have been reported from eight states (CO, ME, MN, MS, MO, NE, TX, WY).
- One person has been hospitalized. No deaths have been reported.
- Fifty-five percent of the ill people are children under 12.
- Ten of the 11 ill people reported contact with a pet hedgehog.
- The outbreak strain making people sick was found in samples collected from three hedgehogs in two ill patients' homes.
- A common supplier of hedgehogs in this outbreak has not been identified. Ill people reported buying hedgehogs from various sources, including pet stores, breeders, or online.
- Illnesses started from October 22, 2018 to December 25, 2018.
- CDC continues to monitor PulseNet to identify illnesses that may be part of this outbreak.
- This investigation is ongoing, and CDC will provide updates when more information becomes available.





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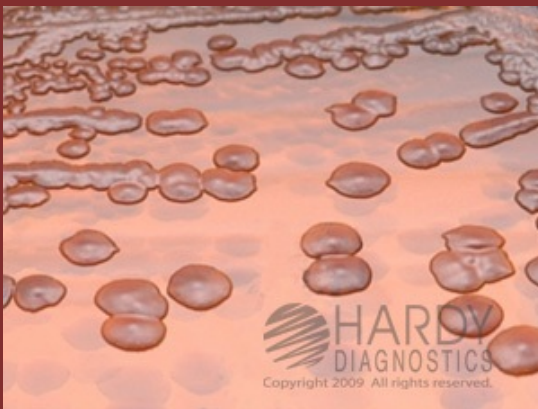
## Brain teasers



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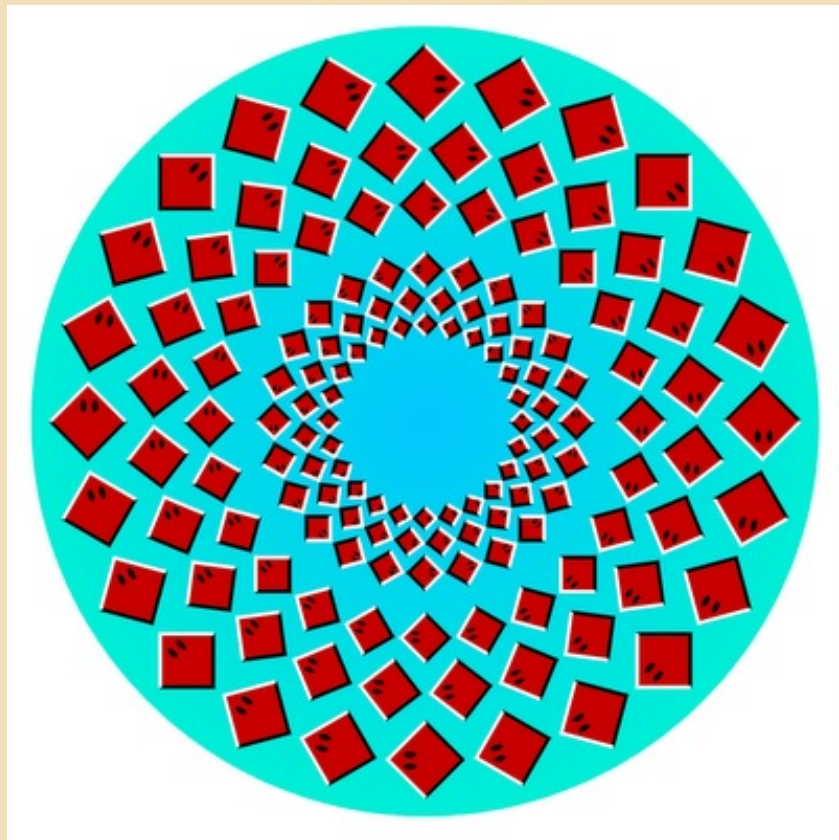
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## Optical oddities...

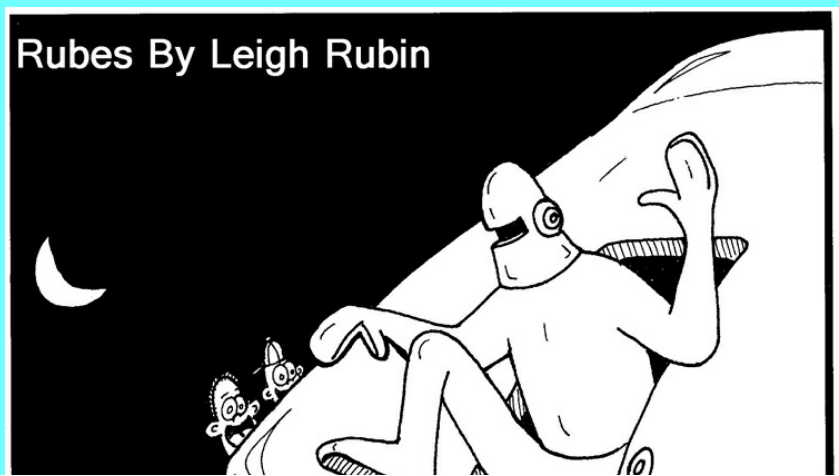


Stare at the center for a moving experience!

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

## RUBES

Rubes By Leigh Rubin

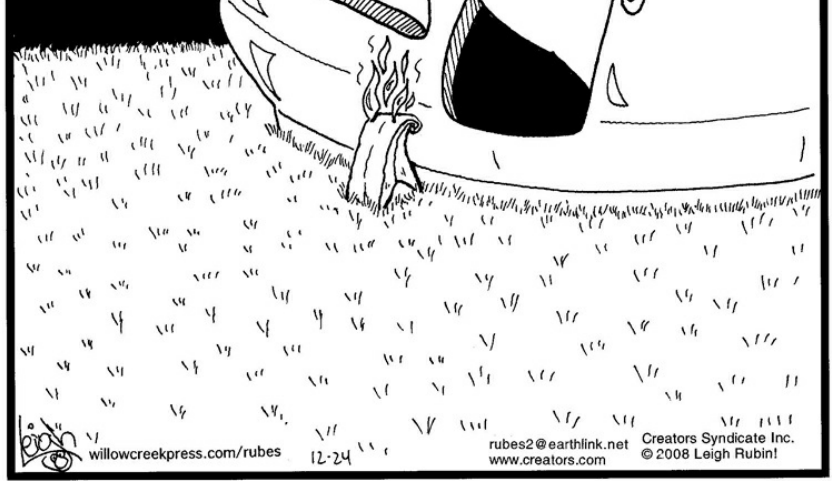


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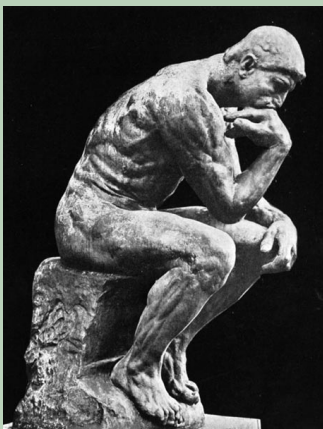


**The last prank ever played on planet Earth**

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*Think about it...*



- Why does a round pizza come in a square box?
- What disease did cured ham actually have?
- How is it that we put man on the moon before we figured out it would be a good idea to put wheels on luggage?



- Why is it that people say they 'slept like a baby' when babies wake up like every two hours?
- If a deaf person has to go to court, is it still called a hearing?

\* \* \*

**“This test is to see if we need to do more tests.”**

© 2010 Jonny Hawkins

*Wisdom to Ponder...*



John Wooden

1910 ~ 2010

Warning:  
**PUN ZONE  
AHEAD**



~ I'm really bad at darts; maybe I should take up freestyle acupuncture instead.

~ I tried eating a clock once, but had to give it up....it's too time consuming.

~ What's another name for hard water?...Ice

~ Free press is when your mother still irons your



*Head coach at the University of California, Los Angeles. Nicknamed the "Wizard of Westwood," he won ten NCAA national championships in a 12-year period as head coach at UCLA, including a record of seven in a row.*

"Success is never final, failure is never fatal. It's courage that counts."

"Talent is God given. Be humble. Fame is man-given. Be grateful. Conceit is self-given. Be careful."

"It's the little details that are vital. Little things make big things happen."

"Discipline yourself, and others won't need to."

"Whatever you do in life, surround yourself with smart people who'll argue with you."

"Be more concerned with your character than your reputation, because your character is what you really are, while your reputation is merely what others think you are."

"Things turn out best for the people who make the best of the way things turn out."

"If you don't have time to do it right, when will you have time to do it over?"

"Don't let making a living prevent you from making a life."

"If you're not making mistakes, then you're not doing anything."

"I had three rules for my players: No profanity. Don't criticize a teammate. Never be late."

"Consider the rights of others before your own feelings, and the feelings of others before your own rights."

"The most important thing in the world is family and love."



Free press is when your mother shrugs on your shirts.

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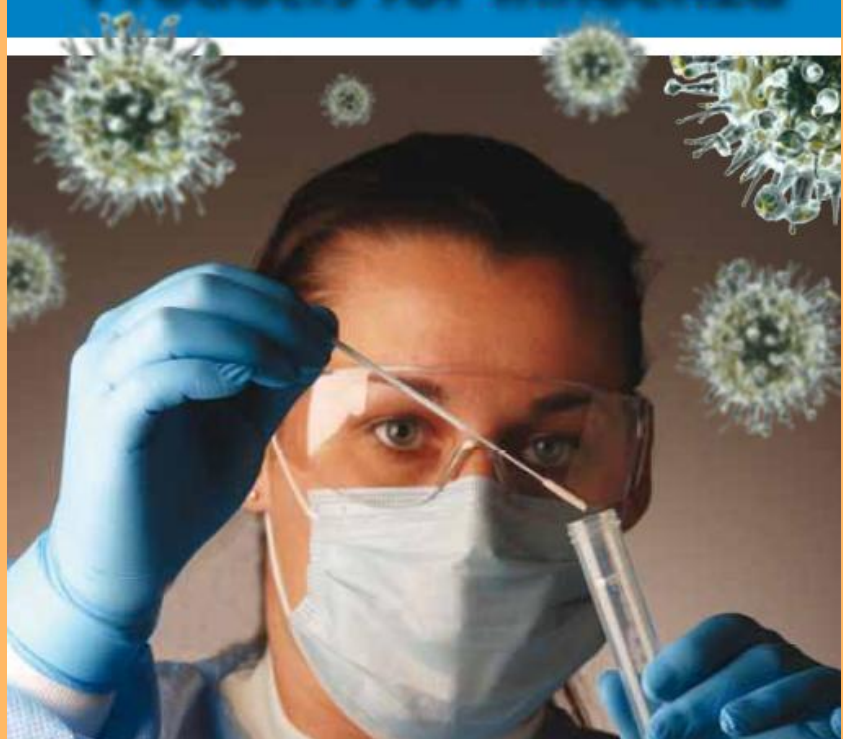


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\* \* \*



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to learn how easy it is  
to order from Hardy on-line!

*Pick... Click...  
And your order is on its way!*

\* \* \*

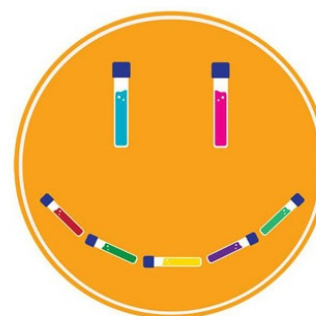


**Doctor:** I have good news and bad news for you. Which  
do you want first?

**Patient:** The good news, please.

**Doctor:** We're naming a disease after you.

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DIAGNOSTICS

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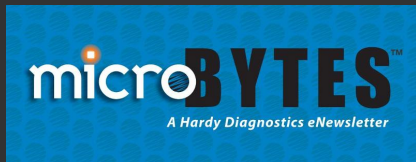
"I find television very educating.  
Every time somebody turns on the set,  
I just go, 'This is the best of the best!'"



I go into the other room and read a book."

~ Groucho Marx

# # #



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"Wise men talk because they have  
something to say,  
fools talk because they have to say  
something."

"As Hardy Diagnostics enters its 39th year of serving microbiologists in the laboratory, I would like to thank each of our customers for their support and loyalty. It truly has been a pleasure to serve you!

If there is any way we can improve or expand upon our service, would you please let me know?"

Jay Hardy, CLS, SM(NRCM)  
President  
HARDY DIAGNOSTICS

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