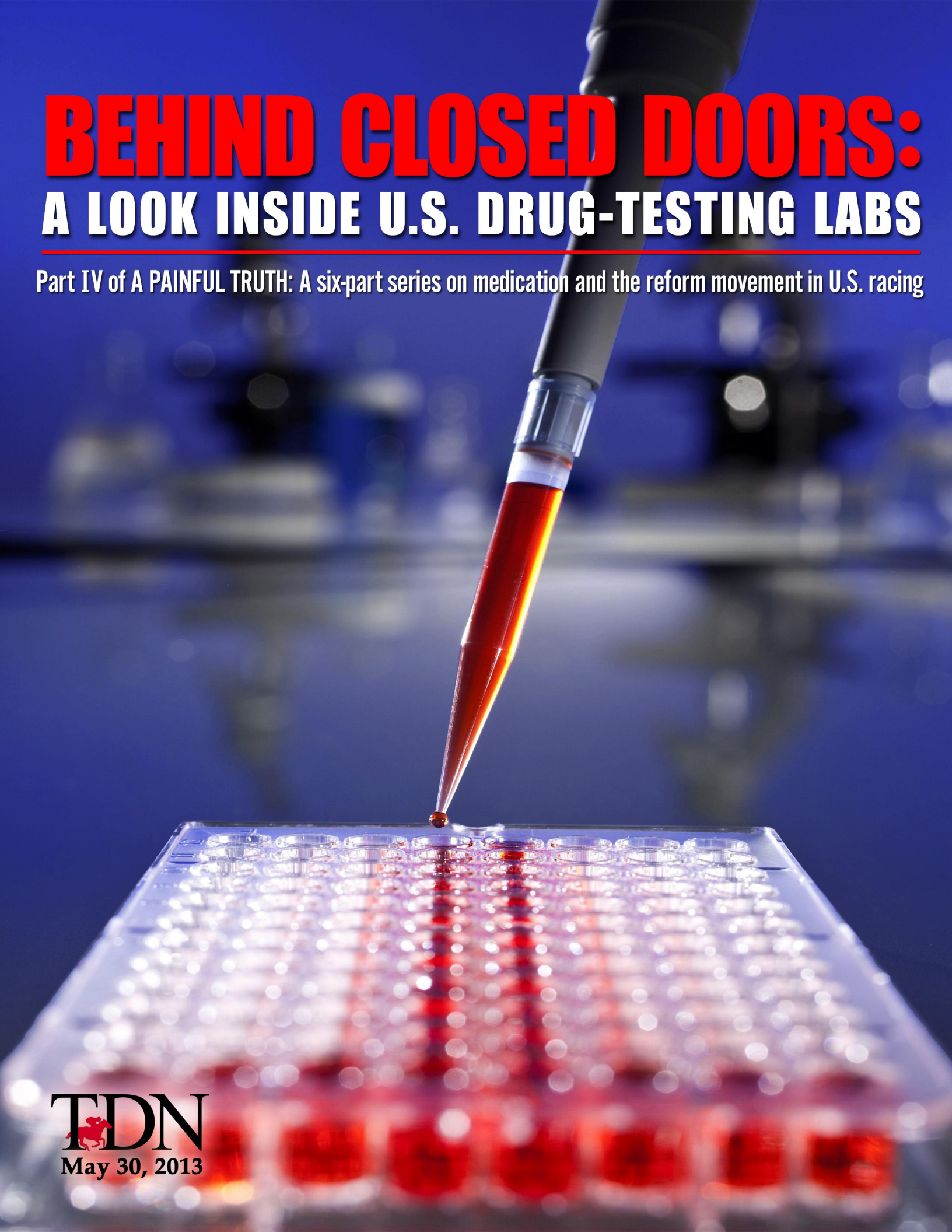


BEHIND CLOSED DOORS:

A LOOK INSIDE U.S. DRUG-TESTING LABS

Part IV of A PAINFUL TRUTH: A six-part series on medication and the reform movement in U.S. racing

TDN
May 30, 2013

By Lucas Marquardt

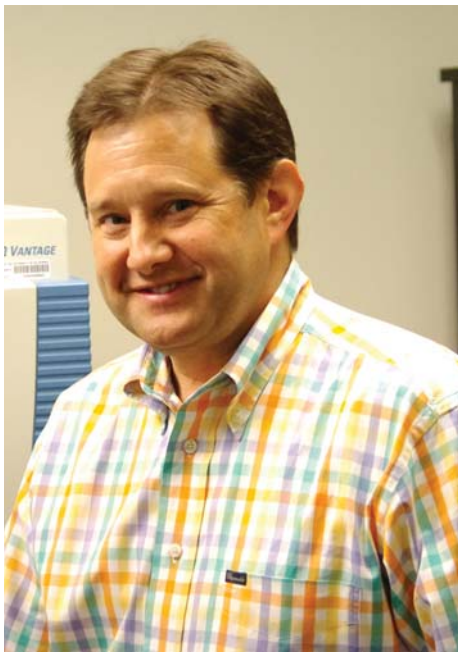
"When the legislature gets down to it, do you pay for drug testing for horse racing, or for a school-lunch program for children? It can be difficult."

--Rick Arthur

"Give a horse air and take away pain, and he'll run forever," Karen Headley said on a recent pleasant Southern California morning. The daughter of, and assistant to, successful trainer Bruce Headley was just asked about drugs in racing--legal and illegal--and is among those who think the problem is bigger than most would like to believe. Said Karen, "There seem to be a lot of armchair trainers these days that don't have a lot of knowledge, and when you don't have a lot of knowledge, you have a lot of needles."

The people we pay to monitor that problem are becoming as important to the future of the racing--a betting sport whose foundations must be integrity and fair play--as any track executive or marketing team. They are a group of chemists, scientists, veterinarians and technicians that collectively can be called the nation's drug and medication regulators. They can be found in test barns and laboratories across the country, and if the job description is simple--make sure people aren't using illegal drugs to gain an advantage, or abusing legal ones for the same reason--the actual task is anything but.

It's true drug regulation in the U.S. has made big strides in recent years...and even in recent months and weeks. In March, eight states agreed to participate in the Mid Atlantic Uniform Medication Program, which creates a two-category drug classification system of 24 controlled therapeutic medications and of prohibited substances, similar in scope to The Jockey Club Reformed Racing Medication Rules. Last week, California indicated it would also join. Last week also saw the Horseracing Integrity and Safety Act of 2013, a bill that calls for a new "independent anti-doping agency," introduced by four members of the House of Representatives and U.S. Senator Tom Udall. Meanwhile, the Racing Medication & Testing Consortium (RMTC) continues to be an effective proponent of uniform regulations and testing procedures among jurisdictions.


Dr. Scott Stanley

But there's a lot of work to be done, particularly in the area of parity between labs. It shouldn't surprise anyone that, when it comes to equine drug testing in the U.S., not all programs are equal. Nor should it be a surprise that the issue often comes down to money. From collection to staffing to mass spectrometers that cost upwards of $350,000 each, costs can rise rapidly, and in times when states are battling budget woes, testing race horses for drugs can be at the bottom of the list of priorities.

"Many laboratories are on state budgets," said Dr. Rick Arthur, the California Horse Racing Board's equine medical director and secretary for the RMTC. "And when the legislature gets down to it, do you pay for drug testing for horse racing, or for a school-lunch program for children? It can be difficult."

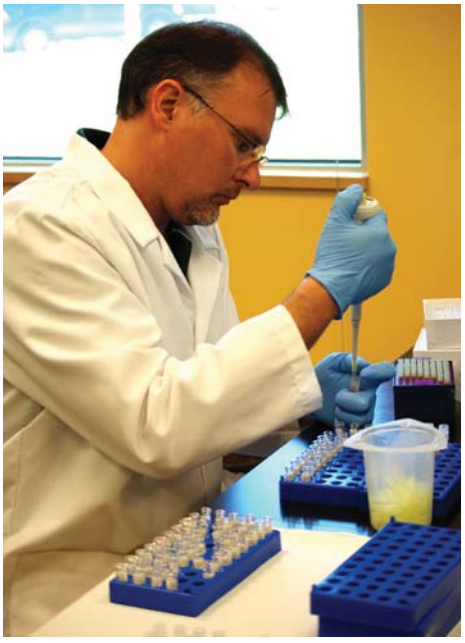
Underfunding of the nation's racing laboratories creates some long-term consequences. Without adequate funding, labs cannot afford to install the latest equipment, implement the latest techniques or spend the resources necessary to attract and cultivate the next generation of chemists. With

state appropriation procedures mandating that the lowest bidder secures the contract, many of racing's testing laboratories are relegated to the status quo and at risk of being outspent by the cheaters they are attempting to catch.

Dr. Scott Stanley, who runs the laboratory that handles California's program, the Kenneth L. Maddy Equine Analytical Chemistry Laboratory on the UC Davis campus near Sacramento, agreed it's a big challenge. "You need to have the newest equipment, you need to have technically trained staff, and you need to have the time and resources to develop methods," Stanley said. "And that's a deficiency for many of the laboratories in the United States."

The Cost of Doing Business...

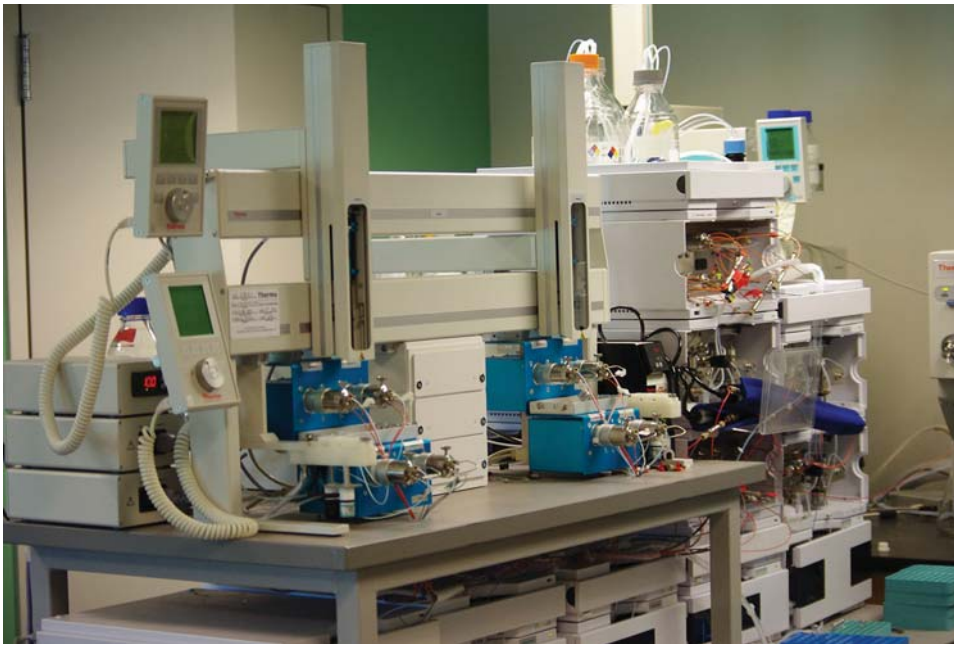
California has been a focal point in the conversation about drugs for much of the past decade. It was just about 10 years ago that racing regulators in the state, hearing rumors of the rampant practice of bicarbonate loading--"milkshaking"--decided to investigate. What they found shocked them. Nearly 25% of the samples they tested came back positive. Regulators later said the actual number of offenders was small. Trainers were confronted and the overages dropped instantly. But the message was clear: without proper oversight and testing protocols, cheating will happen.



Chemist at Maddy lab

There was a second takeaway, too. If you think it's expensive to test now, what will the damage to your reputation cost you down the line?

If the milkshaking scandal was a wake-up call, California got the message. Today, it boasts one of the most respected drug-testing facilities in the country, the Maddy lab at UC Davis, and is arguably more vigilant than any other state when it comes to both testing and deterrence. It spends, on average, 25% more on testing than some other states whose testing programs are considered very good, and up to 400% more than those states that bring up the rear.



Automated Turbo Flow Liquid chromatographic system at Maddy lab

Stanley, a smart, good-natured man with a somewhat impish gleam in his eye, oversees a staff of 18, and to see the Maddy lab in person is to understand why all labs are not created equal.

The Maddy lab boasts some $5 million worth of equipment, including a handful of Orbitrap mass spectrometers that can separate and identify specific compounds down to levels of a few parts per trillion. One of the lab's newest machines can identify compounds at a single part per trillion. Orbitrabs are on the hunt for up to 1,500 known compounds that comprise a "spectral library." They include anabolic steroids, narcotics, tranquilizers, depressants and stimulants.

In California, it's not just the machines that drive up the cost of testing. It's also the methods

utilized. To get the most accurate findings, "paired" samples--blood and urine--are collected and tested roughly 95% of the time.

Paired samples cost more to test, and some states choose to reduce costs by not collecting both blood and urine on a regular basis. In Kentucky, 97% of the samples are paired. In New York, about 75% of samples are paired.

California spends about $200 per paired testing, while in Kentucky, it costs about $150. New York spends about $100, but as mentioned, does fewer paired tests. Other jurisdictions are paying as little as $50 per test.

It's important to keep in mind that it's not neglect or a dereliction of duty that keeps some jurisdictions from spending more on testing. Those decisions are often made at the state level. "State service contracts are normally awarded to the lowest qualified bidder," said Stanley.

And, as in most things in life, you generally get what you pay for you, he said.

"A [contract] awarded in this manner doesn't typically endorse the best-qualified lab," said Stanley. "The low-bid procurement system often results in bidders lowering their standards or reducing the test coverage in order to be the winning bidder. I've heard people who represent a jurisdiction brag about how cheap they're doing their drug testing. That's great--you're saving some money--but I guarantee you're not getting the best product. In Europe, they probably spend twice as much as we do here."

Horses racing at Sha Tin in Hong Kong are subjected to rigorous testing. Here, California Memories wins the 2011 Cathay Pacific Hong Kong Cup. Horsephotos

Indeed, the U.S. has lagged behind its international counterparts when it comes to spending on testing. In Hong Kong, for instance, they might spend upwards of $700 per test, said Arthur, who added, "It just shows the different focus. We could be doing more, particularly in research. The Hong Kong laboratory has several chemists who specialize in developing new tests, for instance. It's very hard to get states to spend money on those types of things here."

A quick review of the Hong Kong lab underscores the point. Bill Nader, executive director of the Hong Kong Jockey Club (HKJC) and formerly a senior vice president at the New York Racing Association (NYRA), said the racing laboratory in

"Hong Kong's racing lab has a staff of 49, including seven PhDs and seven employees with Master's degrees for a local horse population of about 1,200. We spend on average more than $5,000 per horse each year in drug testing."

--Bill Nader

Hong Kong has a massive staff of 49, including seven PhDs and seven employees with Master's degrees. This, for a local horse population of about 1,200. “We spend on average more than $5,000 per horse each year in drug testing,” said Nader.

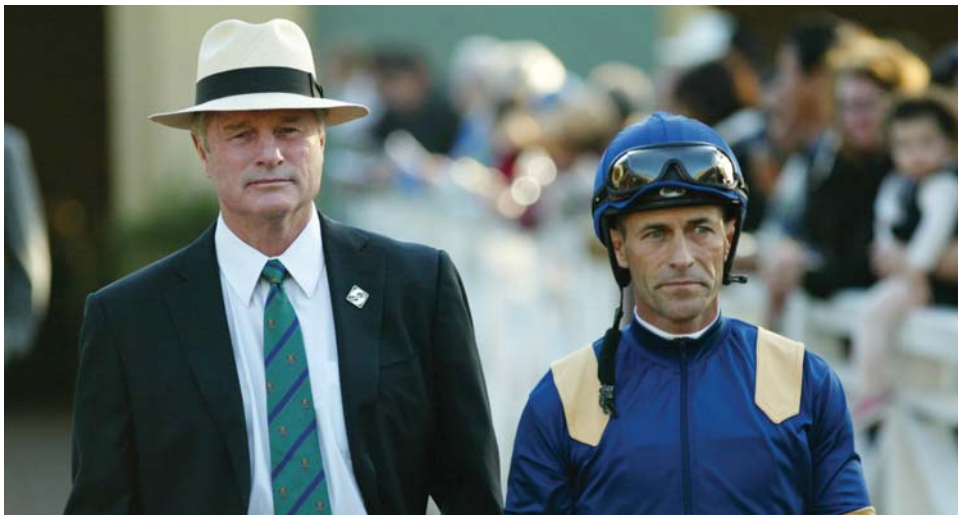
For a horse in the U.S. who wins once or twice during a season, that number might be $500. Sure, the economy-of-scale principle comes into effect--the fact we test so many more horses than Hong Kong drives down our prices--but that’s still a big difference.

On the Hunt...

So what are labs, even the very best ones, finding these days? The answer might surprise you. “The evidence we have, based on the methods we use, is that there is very little use of substances other than therapeutic substances, or maybe more broadly, substances trainers and veterinarians think to be therapeutic,” said Dr. Rick Sams, a research consultant for the RMTC and director of HFL Sports Science, the Lexington-based lab that handles Kentucky’s testing. “We just don't see much evidence for frank, performance-altering substances.”

That may not be the most salacious response one could hope for--particularly if you’re a conspiratorial sort who spends a lot of time on chatboards--but the majority of regulators interviewed for this article agreed with Sams. If there is widespread use of illicit drugs in racing, even the best labs aren’t finding them.

It’s fair to ask, then, if regulators are rarely coming up with positives for performance-enhancing drugs, why spend so much time and money testing for them?



Richard Mandella and Gary Stevens, *Horsephotos*

“I don't think there's any great amount of cheating going on, now or ever.”

--Richard Mandella

For Hall of Fame trainer Richard Mandella, it’s about protecting the game. "I don't think there's any great amount of cheating going on, now or ever,” he said. “But saying that, you have to realize that, when you're running for the money and glory we run for, there's always the temptation. There are always a few bad apples in the box. I have a collection of books dating back hundred of years, and there have been the same suspicions since the beginning of horse racing. And there always will be, as long as we bet on racing and race for big purses. You have to be diligent to protect the industry.”

The Ins and Outs of EPO...

Probably the most talked-about illegal substance in racing, or maybe the most whispered about, is erythropoietin, more commonly known as EPO. For more than a decade, there have been rumors that this trainer or that trainer used it, including at least one Hall of Famer. Claiming trainers who routinely perform remarkable form reversals with new horses in their barns are often thought to be using EPO, or perhaps its synthetic, darbepoetin (DPO).

EPO is a hormone produced in the liver and kidneys of mammals that triggers red blood cell production. The more red blood cells, the more oxygen that can be carried in the bloodstream. In humans, EPO is used to treat anemia. But it is has also been used, illegally, in professional sports to allow competitors to perform at optimum levels longer. EPO was at the center of the blood-doping scandal that brought down seven-time Tour de France winner Lance Armstrong, who admitted to

taking EPO on a regular basis during his historic run.

How prevalent is EPO use in racing? It's hard to say. But the fact is that EPO positives are rarely triggered. California, which probably has the country's most vigilant system in place to detect EPO use, hasn't had an EPO positive in years. "It's something we frequently look for and rarely see," said Stanley. "It's certainly a lot rarer than other drugs we've seen."

Arthur agreed. "We have not seen any evidence of EPO use in California," he said flatly. "Last year, we tested 737 samples for EPO. Over the last six years, we've done well over 5,000 samples. And we've seen virtually no use of EPO use out here."

"I doubt they're using EPO much, if they're using it at all."

--Dr. George Maylin

Dr. George Maylin, the director of the New York State Racing and Wagering Board's drug-testing and research program at Morrisville State College, said, "I doubt they're using EPO much, if they're using it at all."

So why does EPO continue to be the Keyser Söze of equine pharmaceuticals?

Partly it's because detecting EPO can be notoriously tricky. To be most effective, it is thought by some, EPO needs to be given well before a race--say, 8 to 10 days out, or even longer. But the detection period for EPO can be very short, as little as two days after its been administered. So a horse could be given EPO on a Monday, and by Wednesday or Thursday, it will test clean. That drives suspicion that EPO is still being used. But regulators simply aren't finding it.

What's On the Horizon...

If there's dispute on the scale of EPO use, everyone pretty much agrees on what the next wave of performance-enhancing drugs will look like. They will look very much like EPO itself. That is, they will be biopharmaceuticals--drugs that are identical to, or very similar to, endogenous (naturally occurring) substances.

Endogenous drugs hold great appeal to would-be cheaters, and pose a particular challenge for those who conduct testing. These drugs can be the most effective--after all, they've been refined by millions of years of evolution--and since they're

EPO: All It's Cracked Up to Be?

There's one more thing about EPO. Really, just how effective is it in racehorses? There are a significant number of scientists who question whether it can make a major impact on a horse's performance. The reason is physiological.

Horses, as opposed to humans, have contractile spleens. A horse's spleen, when the horse is excited and its flight response triggered, contracts and floods the bloodstream with millions of extra red blood cells. These red blood cells carry more oxygen and allow a horse, it is the evolutionary hope, to outrun a predator. Essentially, the horse has an in-built blood-doping device.

When a horse's spleen contracts, the horse's hematocrit--the amount of red blood cells in its blood, as a percentage--might skyrocket from 40-45% to 60-70%.

So while there's no doubt EPO helps a horse produce more red blood cells, the spleen and the blood can't necessarily hold more red blood cells. At a certain level, in fact, blood-flow properties will be affected. If the hematocrit gets much past 70%, the blood gets thicker, and it becomes harder for the heart to pump it. You soon get diminishing returns.

Put another way, that flood that pumps the hematocrit to 70% would happen with or without EPO, some argue, and simply introducing more red blood cells doesn't necessarily mean improved performance.

"I think it's unlikely to have the huge beneficial outcome that some people think it has," said Dr. Scott Stanley from California's Ken Maddy lab.

Still, if EPO increases performance by even just a length or two, that might be enough to add a few more W's in the win column.

naturally occurring, testing shifts from looking for their mere presence to looking at threshold levels.

Examples of endogenous drugs that worry regulators include gamma-Aminobutyric acid (GABA), a neurotransmitter that in mammals regulates excitability and, in some cases, muscle tone. There's AICA ribonucleotide (AICAR), which can affect cardiac function and has been tied to doping in cycling. And there's adrenocorticotropic (ACTH), a hormone mammals produce that increases the secretion of hydrocortisone, which can increase utilization of glycogen.

"Right now, a lot of these things are prohibitively expensive, but the prices will come down substantially in the next few years, and at that point they could be used in horses," said Stanley.

A different form of EPO might even be in the cards. At present, the EPO given to horses is human EPO, because that's what's readily available. Pharmaceutical companies have spent millions on developing human EPO drugs, and have made millions from their widespread use. The cost to develop equine EPO would be significant, but if someone had the means and desire--much of the heavy lifting has already been done in human EPO research--they likely could, said Sams.

Testing, Out of Competition and Otherwise...

Whether we're talking EPO, one of its cousins, or some other potential performance-enhancer, regulators agree there are two primary strategies in fighting their illicit use. The first, testing at world-class laboratories, we've talked about. The second, out-of-competition testing (OOCT), we haven't.

Just what is OOCT? It's testing not on raceday, but in the days, weeks, and even months leading up to a race. The goal is to be able to determine the presence of a substance whose detectability, if not its affect, is fleeting. If you wonder if it works, ask Armstrong, who readily admitted that OOCT was one of two things that spelled his downfall (the other being the 'biological passport'--more on this later in the series).

The best OOCT programs make unannounced visits, and they make more than one. As mentioned, the detection period for something like EPO can be short-lived, and multiple unannounced visits can prevent someone from simply waiting

Cheaters That Aren't

Remember that scene in "A Few Good Men," when Lt. Kaffee (Tom Cruise), early in the film, is plea-bargaining on behalf of a seaman caught buying what he thought was pot, but was later found to be oregano? "My client's a moron," Kaffee says to an opposing lawyer. "That's not against the law."

Unfortunately, there are some parallels in racing. Regulators in several states have come across vials of mysterious substances with names like "Lightning" and "Blast Off Ice," products that claim, on various websites, to increase boost performance in any number of ways. The names, and packaging, look like something you'd might find at a 7-11 register, next to the male virility pills.

At the Maddy lab, Stanley stood with a small, brown bottle with a purple label. The latest in cutting-edge biopharmaceuticals, guaranteed to shave a few ticks off a horse's final quarter?

"No," said Stanley. "It's amino acid and food coloring. It doesn't actually do anything."

The liquid inside, initially bright purple when it arrived at the lab, had turned to a muddled green that looked like pond scum.

Stanley noted a drug called TB-500 (short for Thymosin Beta, a peptide that increases muscle growth) that actually would be effective in horses. Regulators have found vials on the backstretch labeled TB-500, too, "But we haven't found one yet that's actually Thymosin Beta," said Stanley. "The vials contain little more than water. It's actually quite expensive--it just happens to not be that product."

Buying these products isn't hard. Search 'TB-500' on the internet, and one of the first result you'll get is the website www.tb500.com, the main page of which features photos of Thoroughbreds. A 10mg vial costs $275.

There are several other websites out there selling similar products. "The claims on the different products are phenomenal,"

until after a first visit to use it. Prior to this year's Kentucky Derby, for instance, nearly all the horses were sampled three weeks' out, and again 10 days' out. (All samples, incidentally, came back negative.)

"The window is narrow, and it's why traditional post-race testing doesn't work," said Rick Arthur. "In California, we try to develop sampling strategies based on information we've received that we think would be the most likely time to catch horses in that window."

Once again, not all things are like the other when it comes to OOCT. Some programs lack the funding, others the logistical capabilities, and still others the will, to implement a comprehensive OOCT program.

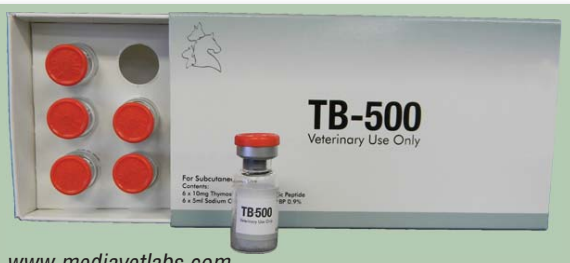
Kentucky, for instance, has successfully run strong OOCT for two Breeders' Cups (2010-11) and for several Kentucky Derbys. But asked how often "everyday" horses are subjected to OOCT, Rick Sams admits, "Very rarely, if at all. There's a logistical problem, in that we don't know what horses are going to be in what race."

Put another way, it's easy three weeks' out to guess the probable Derby field. It's a lot harder trying to guess which horses are going to show up in a $5,000 claimer at Turfway on a Saturday afternoon.

"It needs to happen," Sams said of increased OOCT in Kentucky, adding that, in his ideal world, there would be a system of randomized samples taken from horses at the track.

Maryland, which hosted the Preakness two weeks ago, conducts virtually no out-of-competition testing. In New York, there is zero OOCT at the state's Standardbred tracks, while at the NYRA tracks (Aqueduct, Belmont and Saratoga), NYRA itself administrates the OOCT program. That, some argue, could lead to a conflict of interest. If a trainer with 75 horses is suspected of cheating, does it behoove an organization trying to fill races to bust him or her? Maybe or maybe not, but the mere appearance of conflict might be enough to rethink the system. NYRA also gives ammunition to detractors when it announces, like it did last week in a press release, on what day it will be conducting OOCT--in this case, on June 5, for the June 8 Belmont. (Granted, it's possible NYRA is conducting further OOCT that isn't being announced.)

But isn't OOCT a nuisance for trainers and their staff? No, said Richard Mandella. "If we're going to accept the privilege to train these horses--and that's the way I look at it, it's a privilege--we also have to accept the responsibilities, and make ourselves available to show that the game is on the up and up," he said.



www.mediavetlabs.com

said Stanley. "It'll make them faster, stronger and smarter. People want to believe there's magic in a bottle. But they're just wasting their money. The fact is that they're all good race horses in Southern California, or they wouldn't be down there. And on any given day, any number of them could win. If they happen to win on a day when they've used something, then trainer XYZ thinks it's fabulous."

HFL's Rick Sams, when asked how often he finds that potential cheaters really aren't cheating at all, said, "Most of the time. I think there are some unscrupulous people who are selling garbage, and oftentimes at a very high price."

Back to the Labs...

Robust drug-testing programs require money, and once again, some racing jurisdictions simply don't have the resources to implement them. Two years ago, the NYRWB's George Maylin wrote a letter to harness track owner Jeff Gural that stated, "Everyone wants the best drug testing, but nobody wants to pay for it. [T]he funding for drug testing in New York is the same it was 10 years ago. It is ridiculous the [NYRWB] cannot get funding for drug testing to keep up with the drug problem. Division of Budget is just not concerned with horse racing."

In an interview for this article, Maylin added, "We have a fixed budget in New York of about $3.1 million, and it's been fixed for many years. You simply can't do expanded drug testing on a fixed budget--it's impossible.

Generally speaking, drug testing for horse racing across the country is underfunded."

The solution to underfunded programs, and to the disparities between labs on a national level, might come in the form of consolidation. Already, some states have augmented their programs by hiring better-equipped labs in other jurisdictions to handle the actual testing, a process made possible by express shipping. HFL Sports Science in Kentucky, for instance, does the testing for the Virginia Racing Commission, the Puerto Rico Thoroughbred Racing Authority, and the Maine Harness Racing Commission. HFL's Rick Sams said his lab would happily take on additional jurisdictions. The Maddy lab in California is now testing for the New Mexico Racing Commission on an interim basis after the NMRC's contract with another lab expired. Maddy's Scott Stanley said they, too, would consider expanding their client base.

The industry is also making progress in making sure labs are doing what they're supposed to. The RMTC's Laboratory Accreditation Program sets operating standards for labs, and requires them to participate in an External Quality Assurance Program (EQAP) that "determines if laboratories have the capabilities required to detect substances of concern at the concentrations that are mandated by the RMTC model rule recommendations." Essentially, the program tests the testers. As yet, no labs are fully accredited, though eight have completed applications and two, Maddy and HFL, are expected to be accredited by mid-summer.

Both consolidation and accreditation programs could be a components in what many in the industry are already calling for--a centralized national racing authority with the power to set drug regulations and to levy strict penalties. "What you need to have is one governing body," said Karen Headley. "If the NFL can do it, if the NHL can do it, we can do it. And if you get caught using something, it can't be a slap on the wrist."

Richard Mandella concluded, "Racing in America needs to be exactly that--not California racing, or New York racing, not Florida racing," he said. "We need to keep pushing for unification."

Who's Doing the Testing?

Below is a listing of the 16 labs that handle the nation's drug testing, and what jurisdictions they serve

Center for Toxicology Services, Inc., Tempe, AZ: SD

***Dalare Associates, Philadelphia, PA**: DE, WV

***^HFL Sport Science, Lexington, KY:** KY, VA, ME, Puerto Rico

***Industrial Laboratories, Wheat Ridge, CO:** OK, MN, CO, AZ, WY, ND

Iowa Racing Chemistry Veterinary Diagnostic Laboratory at Iowa State University, Ames, IA: IA, Trinidad & Tobago

***^+Kenneth L. Maddy Equine Analytical Laboratory at UC Davis School of Veterinary Medicine, Davis, CA:** CA, NM

LSU Equine Medication Surveillance Laboratory at Louisiana State University, Baton Rouge, LA: LA

Maryland Racing Commission Laboratory, Towson, MD: MD

Michigan Department of Agriculture Geagley Laboratory, East Lansing, MI: MI

***New York Drug Testing & Research Program, Morrisville, NY:** NY

***^Ohio Department of Agriculture Laboratory, Reynoldsburg, OH:** OH

***Pennsylvania Equine Toxicology & Research Laboratory at West Chester University, West Goshen, PA:** PA

Texas Veterinary Medical Diagnostic Laboratory at Texas A&M, College Station, TX: TX

***Truesdail Laboratories, Inc., Tustin, CA:** WA, OR, NV, ID, NE, AR, IN, MA, NJ

The Florida Racing Laboratory at the University of Florida, Gainesville, FL: FL

University of Illinois Animal Forensic Toxicology Laboratory, Chicago, IL: IL

*Completed an application for RMTC accreditation
^Completed one round of External Quality Assurance Program (EQAP)
+Interim accreditation awarded

Coming Next:

Catching those now beating the system. Experts discuss the new technology that will make it harder to get away with illegally drugging horses in

PART V, THE CUTTING EDGE: NEW TECHNOLOGIES MAKE THE UNDETECTABLE DETECTABLE