By Nancy Sokoler Steiner '85

Leveling the PLAYING FIELD

A UCLA laboratory takes on the latest designer steroids

Don Catlin is in a race. Part marathon, part sprint, the contest pits the 65-year-old Catlin against world-class Olympians, champion cyclists and professional football players. The endeavor requires endurance, persistence and discipline.

Catlin isn't out to break records or earn medals. Rather, the Department of Molecular & Medical Pharmacology professor and his team at the UCLA Olympic Analytical Laboratory seek to thwart those who create or use illegal performance-enhancing drugs.

Catlin started the lab in 1982 at the request of the Los Angeles Olympic Organizing Committee. The only drug-testing facility in the United States accredited by the International Olympic Committee (IOC), the UCLA lab analyzed urine samples for the three Olympic Games that have been held in the United States since 1984 (Los Angeles in '84, Atlanta in '96 and Salt Lake City in '02). Although the lab will not be testing for this summer's Olympic Games in Athens, Greece, Catlin will provide consultation and support through his role on the IOC's Medical Commission. In addition to servicing the IOC, the lab also does testing for the United States Anti-Doping Agency (USADA), the National Football League (NFL), the National Collegiate Athletic Association (NCAA) and the Department of Defense. Altogether, it tests about 30,000 samples annually.

"The Olympic Analytical Laboratory is the only lab that we use for NCAA work — it's the best sports drug-testing laboratory in the United States," says Frank Uryasz, founder and president of the National Center for Drug Free Sport, Inc., which administers the NCAA's drug-testing program. "When it comes to deterring drug use in sports in the United States, the Olympic Analytical Laboratory is a national treasure. UCLA has committed its facilities and its good scientists to this cause for over 20 years, and sports organizations are forever grateful for that contribution."

The work goes on inside an unmarked, nondescript building in West Los Angeles where machines hum as they process samples from athletes around the country. A technician in a white lab coat and gloves assigns codes to each of the containers delivered nearly every day to the lab. Specimens are prepared and placed on a gas chromatograph-mass spectrometer. The machine separates and analyzes the samples and spits out graphs with spiky peaks and valleys that are the distinctive fingerprints of each compound that is found. The lab tests for more than 200 banned substances, including stimulants, diuretics and hormones. But perhaps the most notorious of the substances for which Catlin and his colleagues hunt are anabolic steroids.

Available legally by prescription for medical conditions that involve low levels of testosterone production, anabolic steroids have found favor among athletes who want a boost to build muscle mass and strength. However, they can cause serious physical and psychological problems, and are banned by the IOC, NCAA and NFL. Nevertheless, some athletes willingly risk sanctions and their health for the chance to break a world record or win a medal.

Shortly after the 2002 Winter Olympics in Salt Lake City, Catlin's lab encountered an unusual urine sample that contained a previously unknown steroid. They traced it to a powerful substance that had been under clinical trial by a drug company decades earlier. The company had halted development due to the drug's toxic side effects.

How did a 40-year-old drug show up in the urine of an Olympic contender in 2002?

"That confirmed our long-term suspicions," says Catlin. "There are people out there who are searching, finding and making such things." Following his discovery, Catlin applied for and received an unrestricted grant from the USADA to explore the existence of other rogue drugs.

The timing proved fortuitous. Shortly after the grant-funded equipment and personnel were in place, a mysterious overnight package arrived at USADA. It contained a used syringe sent by an anonymous high-profile track-and-field coach. The coach named athletes he believed were using an undetectable steroid. USADA sent a syringe rinse to the UCLA Olympic Lab, where Catlin and a team of seven chemists engaged in a complex process, working backwards to discern the compound's structure, then producing the compound from scratch to confirm their suspicions. The result was a new drug, related to known steroids but

ILLUSTRATION: CELIA JOHNSON

altered to avoid detection. Catlin named the drug tetrahydrogestrinone, or THG, and then created a test to detect it.

"THG is a new chemical entity never documented before, probably synthesized by clandestine chemists who didn't just comb old literature for abandoned pharmaceuticals but sat down to design a new molecule," Catlin and former associate director (and now consultant) Caroline K. Hatton Ph.D. '85 wrote in a December 2003 issue of *UCLA Today*. "The finding suggests levels of depth and organization always suspected but never uncovered before. THG shows that cheaters are willing to go to unprecedented extremes."

The discovery rocked the sports world. The Food and Drug Administration promptly declared THG an illegal substance. Using the UCLA-created test, international sports organizations re-examined hundreds of urine samples still in storage. Four NFL players, four U.S. track-and-field athletes and one British sprinter tested positive for the drug. In February, the top executives at the Bay Area nutritional-supplements lab suspected of distributing THG — along with a track coach and the personal trainer of San Francisco Giants slugger Barry Bonds — pleaded innocent to charges in a 42-count federal indictment that they illegally supplied performance-enhancing drugs to dozens of athletes. They could face prison terms as well as thousands of dollars in fines if convicted.

There is tremendous variation in how the governing bodies of each sport handle positive tests. The IOC imposes a two-year ban on anyone caught using steroids, so the track athletes who tested positive for THG will be excluded from participating in this summer's Olympic Games. Britain has gone further; UK Athletics, the British track-and-field federation, banned sprinter Dwain Chambers for life from participating in the Olympics after it was determined he had taken THG. And retesting of specimens means champions cannot consider themselves home free if they evade detection the first time around. Some athletes — and their lawyers — try to fight these penalties by contesting the results.

But the ramifications of Catlin's breakthrough extend beyond sanctions. They threaten the very credibility of athletic achievement. Now, sports feats are tainted by the specter of athletes using undiscovered substances to make themselves stronger and faster, simultaneously risking their health and cheating their competitors and fans. The seeming ubiquity of drug use may also entice millions of adolescent athletes, influenced by the behavior of their sports idols, to conclude that drugs are a necessary element of competition. President Bush, in his January State of the Union address, went so far as to call for a halt to the use of illegal performance-enhancing drugs.

To Catlin, desecration of the Olympics is especially tragic. "The notion of the Olympic Games to me is the cleanest, purest kind of event ever," he says. "People in every country in the world can compete and the best man or woman crosses the finish line first. What could be worse than to think they are tainted?"

So who is winning the race against performance-enhancing drugs? "We've been through many years where the testers have lost," says Catlin. "But for the last few years, the momentum is definitely swinging. We're still behind in many ways, but at least now we have the World Anti-Doping Agency and USADA trying to deal with the issue, and a lot of people around the world who have become sensitized to it. Someday all this momentum will pay off."

Catlin would like to see a culture shift that motivates and rewards athletes for staying clean rather than simply punishing them for cheating. At the same time, he believes that victory is possible if the sporting world truly gets serious about the issue by formulating a long-term plan and backing research and funding.

He's convinced that the goal is attainable. "With the right funds," Catlin says, "we can level the playing field."