

Periodic graphics

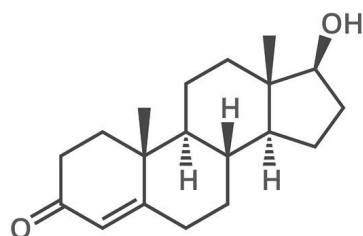
A collaboration between C&EN and
Andy Brunning, author of the popular
graphics blog **Compound Interest**

More
online

To see more of
Bunning's work, go to
compoundchem.com.
To see all of C&EN's
Periodic Graphics,
visit **cenm.ag/
periodicgraphics**.

THE RUSSIAN DOPING SCANDAL

Months before the Rio Olympics, Russia's former antidoping lab director told the *New York Times* he covered up doping at the 2014 Sochi Games. Here, we look at the drugs allegedly used.



TESTOSTERONE

ANABOLIC STEROIDS

Anabolic (or anabolic-androgenic) steroids are drugs that have similar structures to testosterone and mimic its effects in the body. They help athletes increase muscle mass. And although they are banned by all major sports bodies, they are the most frequently detected doping substances in sports.

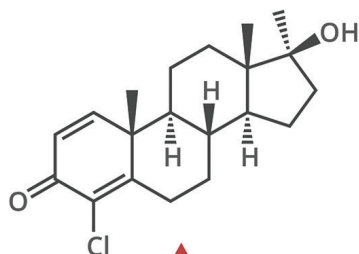
FAILED TESTS IN 2014



148 REPORTED
BY THE WORLD ANTI-DOPING AGENCY

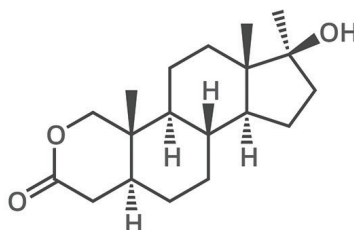
If a Russian sample-swapping operation had not replaced tainted urine samples with clean ones, then this figure would likely be higher.

"THE DUCHESS": A COCKTAIL OF THREE ANABOLIC STEROIDS

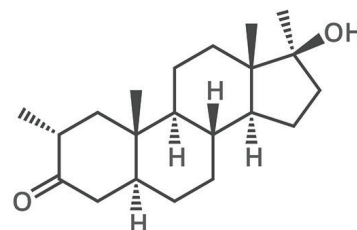


ORAL TURINABOL

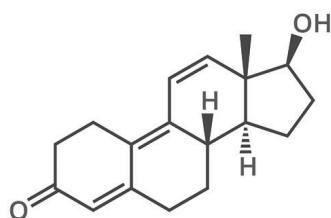
Switched to trenbolone (below) after
the 2012 London Games



OXANDROLONE



METHASTERONE



Russia's former antidoping lab director says he mixed the steroids with alcohol so they'd dissolve more readily. Athletes swished the mixture in their mouths then spit it out. Absorption through the cheek lining shortened the window during which the steroids could be detected.



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