

# Catching the Olympic drug cheats

One in two athletes and all medal winners will give urine samples to be tested for 240 prohibited substances. More than 5,000 urine and 1,000 blood samples will be analysed over the 16 days of the London Olympics

Urine samples provided in tamper-proof bottles

**Sample A:** Part of sample screened for prohibited substances. Remainder of sample stored

**Sample B:** Stored for later use to confirm Sample A findings

Each anonymous sample identified by unique number and bar code

**Analysis:** Gas chromatographs and mass spectrometers identify each component in sample

**Results:** Each "spike" in graph represents particular chemical present in sample. Some indicate chemicals produced naturally, others reveal presence of banned substances

**Autologous blood transfusion:** Athlete's blood is stored and later injected to boost red blood cell count and ability to carry oxygen to muscles

**Growth Hormone:** Stimulates growth of muscle, cartilage and bone. **Test identifies proteins that significantly decrease or increase in blood after exposure to synthetic hormone**

**Nandrolone:** Anabolic steroid increases muscle bulk. **Test measures ratio of carbon-12 and carbon-13 isotopes. Synthetic steroid has low carbon-13 ratio**  
Nucleus of C-12 atom has six protons and six neutrons, C-13 has one extra neutron

**Test detects changes in blood cell ribonucleic acid (RNA) when blood is stored outside body**

