

# Hair Testing 101:

## Combing through the Science

**Presented by:**

Randy Clouette, Director of Esoteric Testing

Jarod Rowland, Forensic Toxicology Laboratory Supervisor

May 22, 2013

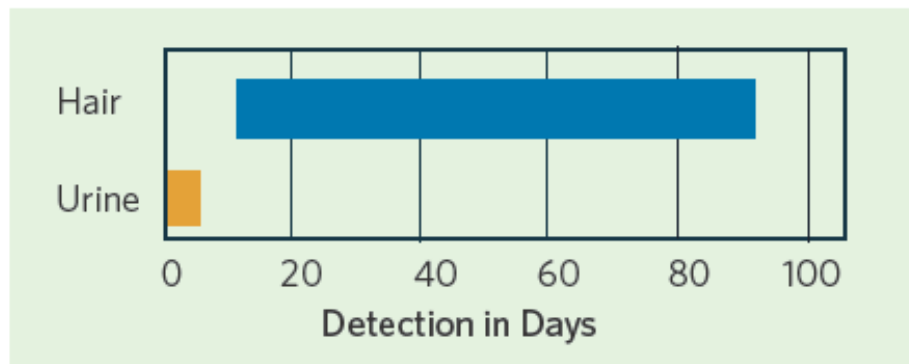
# Today's Agenda

- Why Hair Testing
- Reasons to Hair Drug Test
- Quest Diagnostics Drug Testing Index™ hair testing data
- Hair Testing Science
- Collection Process
- Lab Procedures
- Summary
- Questions



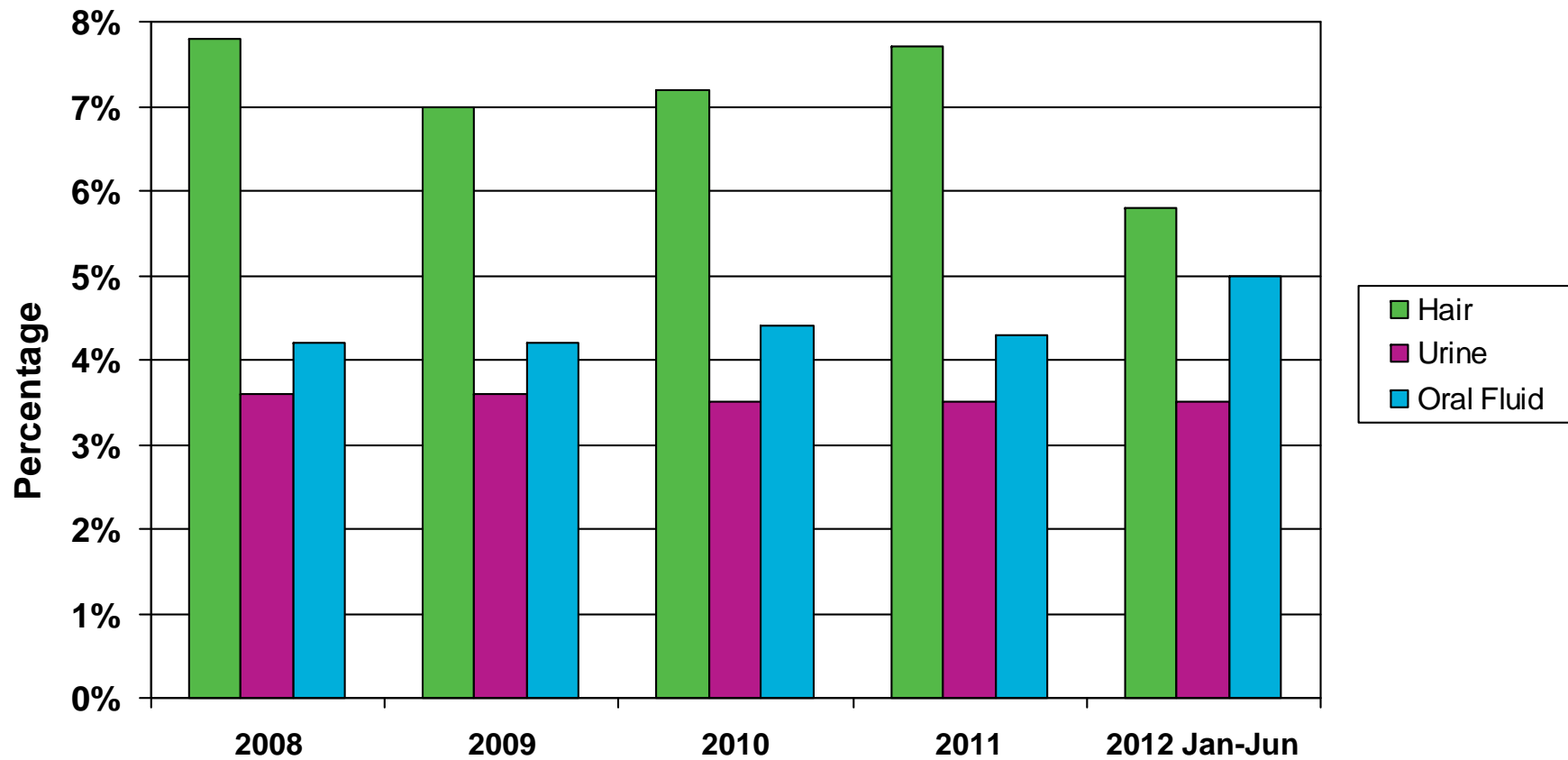
# Why Hair Testing

- Hair testing provides up to a 90-day detection of repetitive, long-term drug use patterns.
- Paired with urine testing, hair testing can provide a more complete historical record of drug abuse.



# Hair Testing Identifies More Positives

Positive Prevalence Rates Overall (by Matrix)



# Test for a Wide Range of Drugs

- Amphetamines (amphetamine, methamphetamine, MDMA, MDA)
- Cocaine
- Marijuana
- Phencyclidine (PCP)

## Opiates

- Codeine
- Morphine
- 6-AM

## Expanded Opiates

- Hydrocodone
- Hydromorphone
- Oxycodone
- Oxymorphone



# Legal Defensibility

- Widely accepted form of drug testing
- States where hair testing is not permitted:
  - Hawaii
  - Iowa
  - Oregon
  - Puerto Rico
  - Vermont
- Some voluntary worker's compensation programs only permit urine testing so **check your state!**



## Observed Collection

- Typically much less invasive than urine.
  - No “embarrassing moments” during observed, specimen collection
- Observed collection dramatically reduces the likelihood of adulteration or substitution.
- Very resistant to tampering and commonly advertised “cleansing products” have minimal effects on the outcome of a hair drug test.
- Our national collection site network of more than 6,000+ locations stock Quest Diagnostics Hair Collection Kits and scissors for added convenience for you and your donors.



# Reasons to Hair Drug Test

- Ideal solution for pre-employment and random drug testing
- Not recommended for reasonable suspicion or post-accident drug testing
  - Approximately 4-5 days for the growing hair shaft to emerge from the scalp.
  - A positive result does not indicate a specific usage event but rather a summation of historical use.

*Handbook of Analytical Therapeutic Drug Monitoring and Toxicology*  
CRC Press 1997





# Businesses that Benefit from Hair Testing

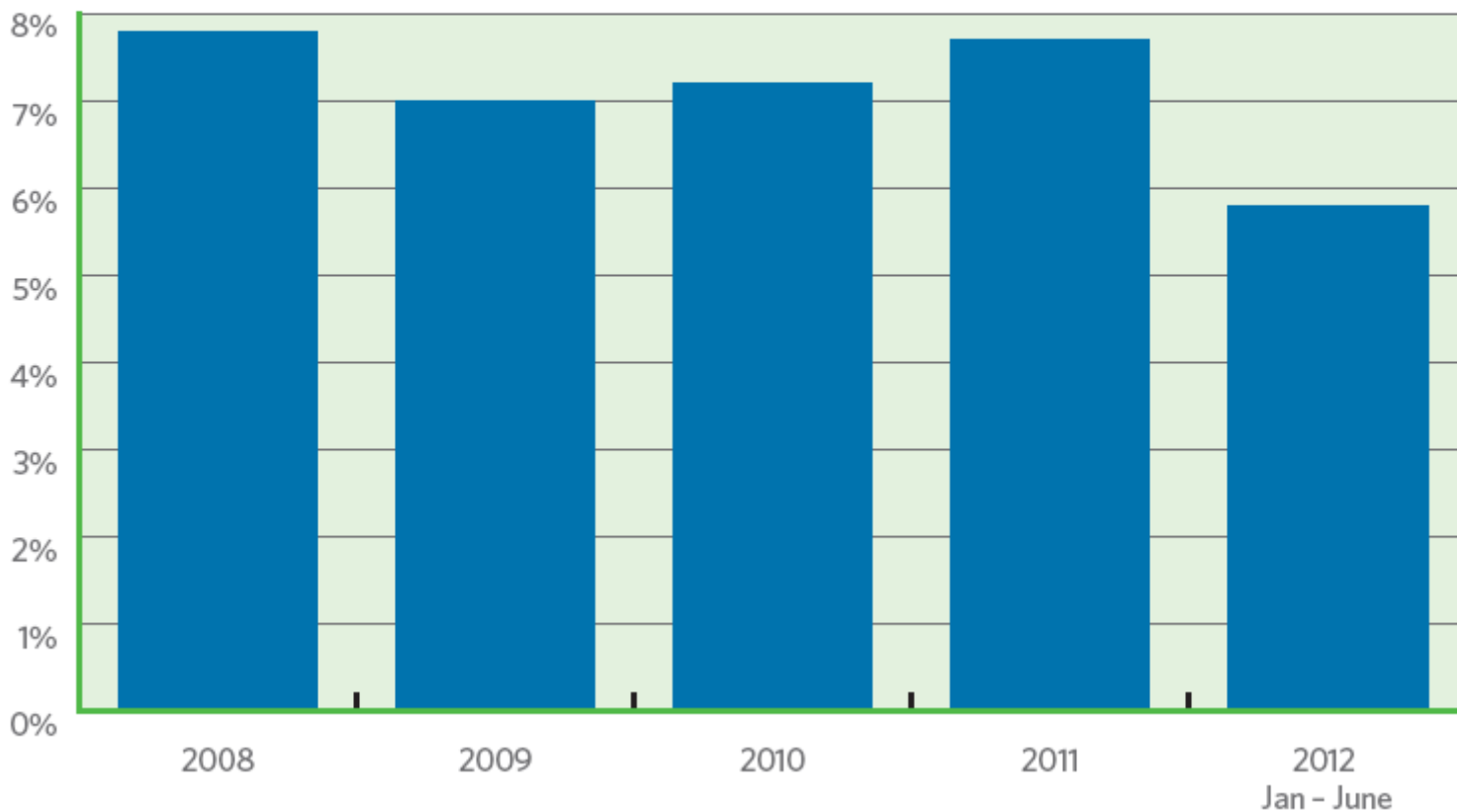
- National Companies
  - Trucking Companies
  - Airlines
  - Oil / Petrochemical Industries
- Industries with extensive public interaction
  - Gaming / Entertainment Industry
  - Automobile Dealerships
  - Apartment Complexes
- Companies whose employees handle high value commodities such as jewelry stores, banks



# Quest Diagnostics Drug Testing Index™ Data

## Positivity Rates by Testing Category

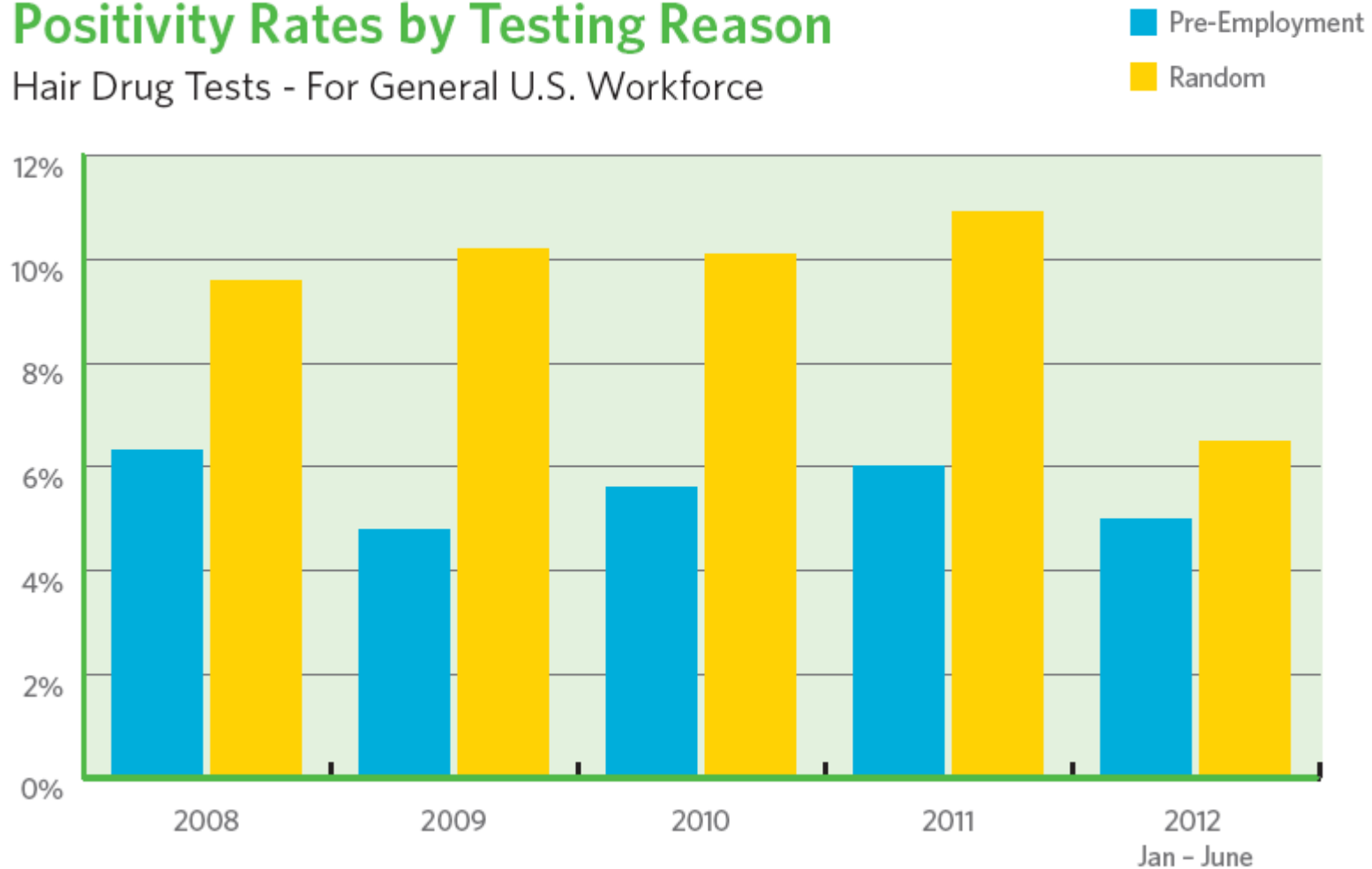
Hair Drug Tests - For General U.S. Workforce



# Quest Diagnostics Drug Testing Index™ Data

## Positivity Rates by Testing Reason

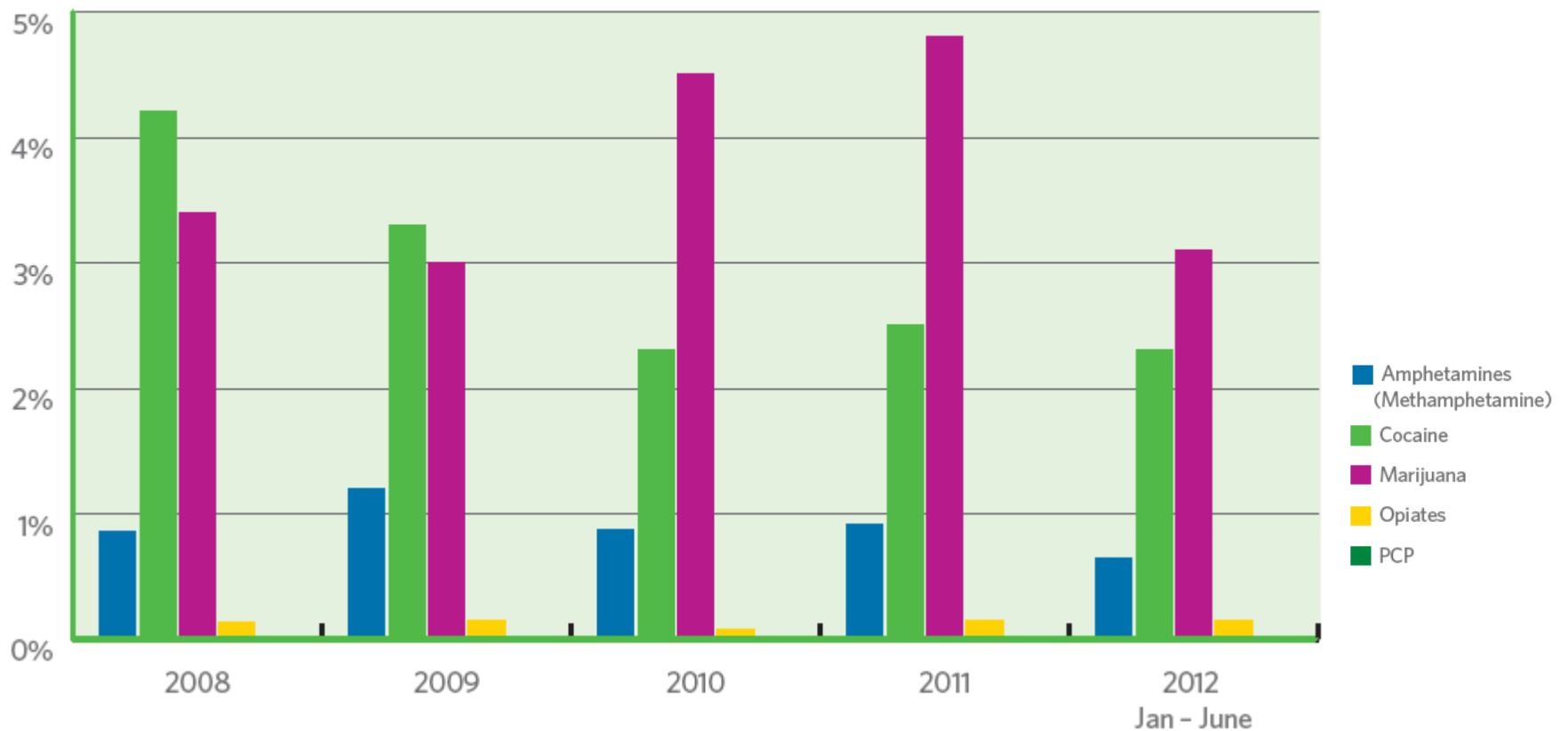
Hair Drug Tests - For General U.S. Workforce



# Quest Diagnostics Drug Testing Index™ Data

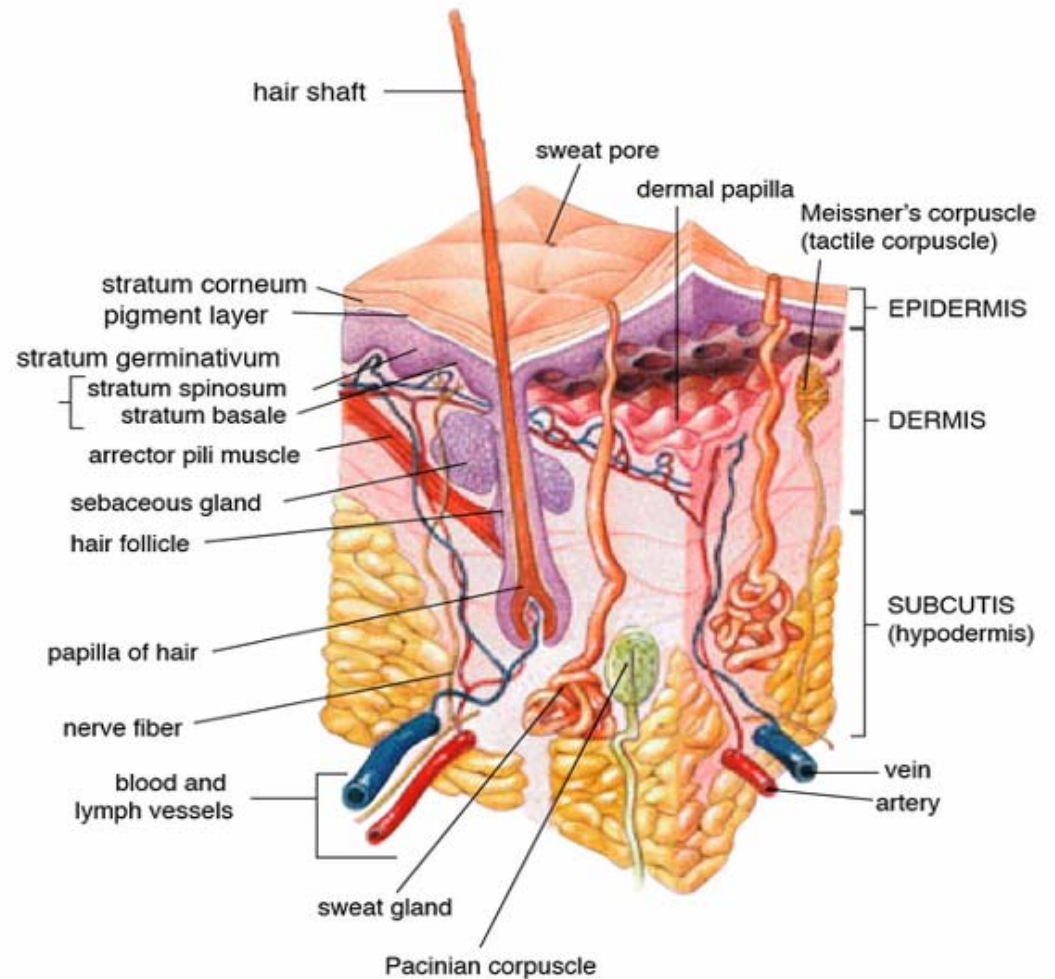
## Positivity Rates by Drug Category

Hair Drug Tests - For General U.S. Workforce, as a Percentage of All Such Tests



# Hair Testing Science

- Drugs are incorporated into the growing hair strand.
- Approximately 4-5 days for hair to grow from the base of the follicle to the surface of the skin.
- Hair testing precludes the detection of drug usage during that time frame until after the hair emerges from the skin.



## Simple Collection Process

1. The hair specimen is collected from the donor. The root end of the hair specimen is aligned with the tapered end of the foil wrapper. The foil is wrapped around hair to maintain orientation inside the kit.



2. Specimen is packaged into a collection kit and sent to laboratory.
3. Upon receipt at laboratory, package integrity is verified and the hair specimen is assigned a laboratory accession number.
4. Hair is cut from the root end of the hair as indicated by the collection foil tapered end.

### Online Specimen Training offered by Quest Diagnostics

<http://questdiagnostics.com/home/companies/employer/drug-screening/knowledge-center/online-training/specimen-collections.html>



## Hair Collection Do's & Don'ts

- **DO** completely fill out the requisition and the envelope.
- **DO** mark the appropriate drug test panel.
- **DO** send all specimen types together. If you are collecting a hair/urine combination, please put both specimens in the same transport bag and send to the laboratory together.
- **DO** collect according to the guidelines on the envelope with the root ends towards the slanted ends of the foil collection piece.
- **DO** seal the envelope properly with the label from the requisition.



## Hair Collection Do's & Don'ts

- **DON'T** collect hair brush specimens.
- **DON'T** mix hair collection sites from the donor. For example, if there isn't enough head hair, don't mix head and body hair. Proceed with a body hair collection instead.
- **DON'T** collect wigs, extensions, weaves or toupees.
- **DON'T** mistakenly call our process a hair follicle test. We don't take scalp biopsies, we cut the hair.





# Rigorous Lab Procedures for Hair Testing

1. Hair sample cut is weighed out for testing.
2. Weighed sample is washed twice.
3. Weighed sample is incubated in organic solvent using periods of heating and high frequency acoustic vibrations to chemically remove drugs from the hair matrix.  
*This is approximately a 4 hour process.*



## Rigorous Lab Procedures for Hair Testing

4. Organic solvent is removed and remaining drug residue is dissolved in buffer solution in preparation for the initial ELISA testing method.

### ELISA (Enzyme Linked ImmunoSorbent Assay)

- Antibody / Antigen Reaction similar to testing used for urine and oral fluids
- Antibody affixed to a 96 well plate instead of in solution
- Provides colorimetric test that is used to separate the presumptive positive specimens from the “negative” specimens



## Rigorous Lab Procedures for Hair Testing

5. Initial negative specimens are reviewed and reported.
6. Presumptively positive specimens are scheduled for confirmatory testing either by gas chromatography – mass spectrometry (GC/MS) or gas chromatography tandem mass spectrometry (GC/MS/MS).

Watch our  
**Hair Testing  
Lab Tour**

Our YouTube Channel  
**DrugTesting TV**

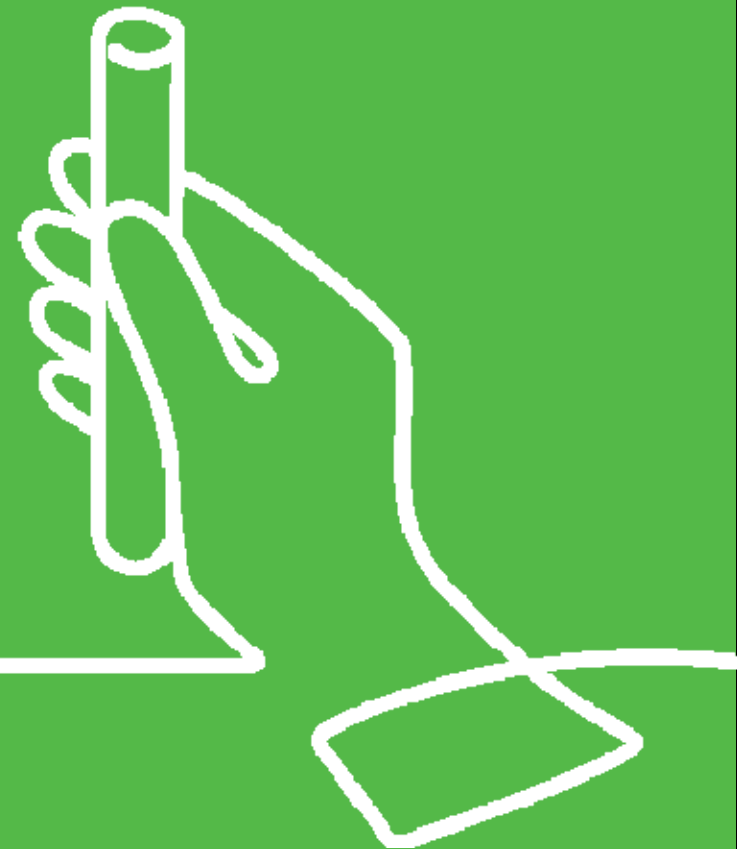


## Why Hair Test with Quest Diagnostics

- Full platform of drug testing solutions and the ability to bundle hair testing with urine and oral fluid drug screenings.
  - This saves time and money using a trusted provider offering 1 system, 1 account and 1 invoice.
- Unmatched access with collection sites around the country and additional locations around the globe.
- Laboratory expertise with certifications and accreditations that lead the drug testing industry.
- Reliable results with a dedicated hair testing laboratory, team of scientific experts and proven technology.



# Summary



# Hair Testing Summary

- Longer window of detection of up to 90 days, exposing habitual illicit drug abuse
- Data shows that hair testing identifies more positives than other drug test types.
- Observed collections reduce the likelihood of donor tampering or adulteration
- Ideal solution for pre-employment and random drug testing
- Best for safety-sensitive workforces and industries with extensive interaction with the public



# Questions

For more information, please visit [HairTesting.com](https://www.hairtesting.com).



**Randy Clouette**  
Director of Esoteric Testing  
[randy.e.clouette@QuestDiagnostics.com](mailto:randy.e.clouette@QuestDiagnostics.com)



**Jarod Rowland**  
Forensic Toxicology Laboratory Supervisor  
[jarod.p.rowland@QuestDiagnostics.com](mailto:jarod.p.rowland@QuestDiagnostics.com)

**Next Webinar**  
June 5, 1 p.m. CT

**Worth the Wait?**  
Instant vs. Lab-based  
Drug Testing

Presented by  
Industry Expert  
Bill Current

