



Dräger
DrugTest 5000
Drug Screening Device

DrugTest 5000: What's Your Tolerance?

2019 Mining Health and Safety Conference

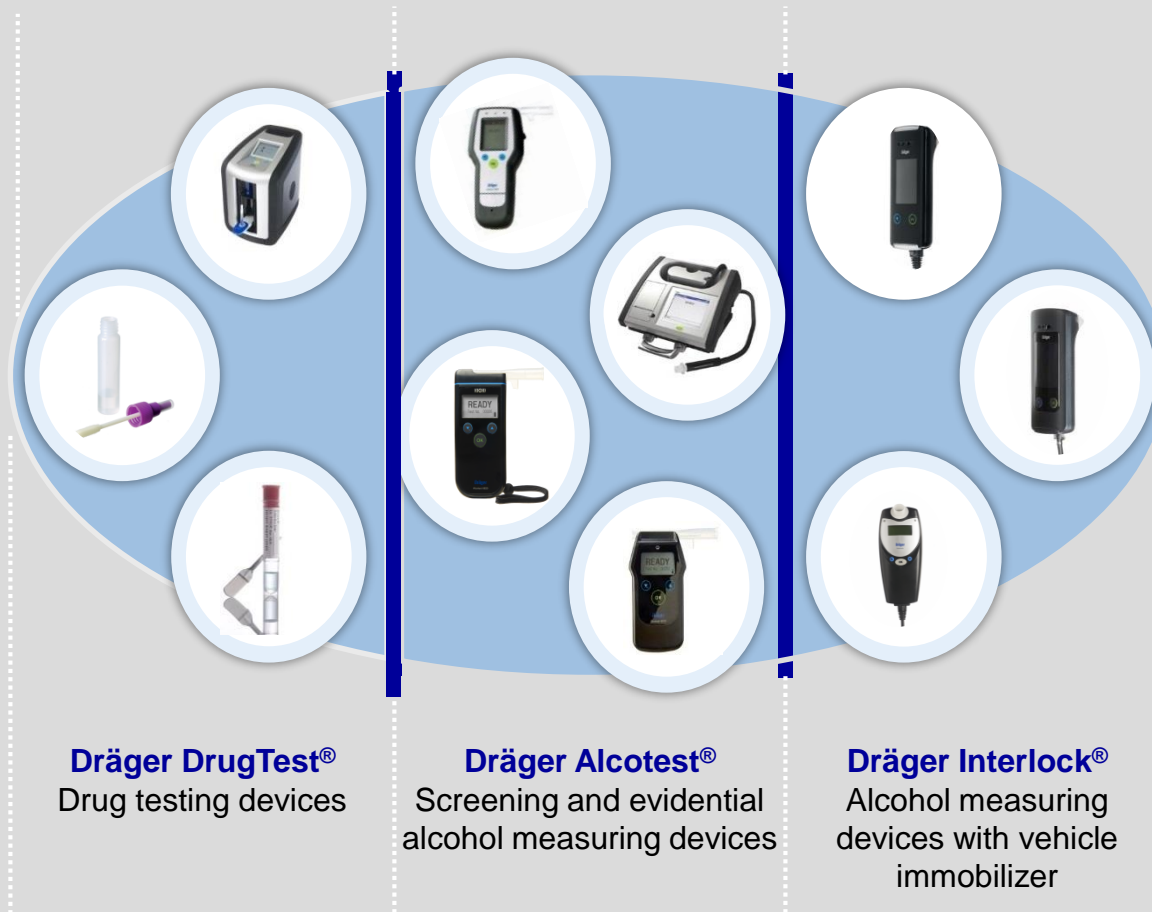
Dräger, April 11th 2019

Dräger Mining Solutions An extensive portfolio



Dräger Mining Solutions

An extensive portfolio



Extended portfolio

Alcohol and drug detection

From providing top of the line evidential breath alcohol testing to roadside alcohol and drug screening, Draeger is dedicated to improving safety.

With our alcohol and drug detection devices you benefit from the results of our **extensive experience.**

How to detect for drugs in the workplace DrugTest 5000: What's Your Tolerance?

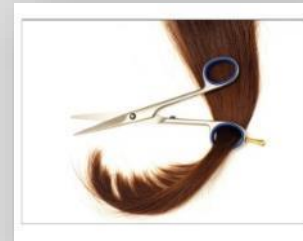
Oral Fluid



Urine



Hair



Hours

Days

Months

Recent drug use

recent/mid-term consumption

drug history

“...because marijuana metabolites are **detectable for many days to weeks** after cessation of use, a positive **urinary** drug screen does not imply impairment.”

Dr. Brendan Adams, Marijuana and the Safety-Sensitive Worker, COAA website, 2018

Dräger DrugTest® 5000 – How it Works

DrugTest 5000: What's Your Tolerance?

Our Drug Detection Instrument for Oral Fluid screening consists of 2 main parts:

DrugTest Cassette



DrugTest 5000 Analyzer



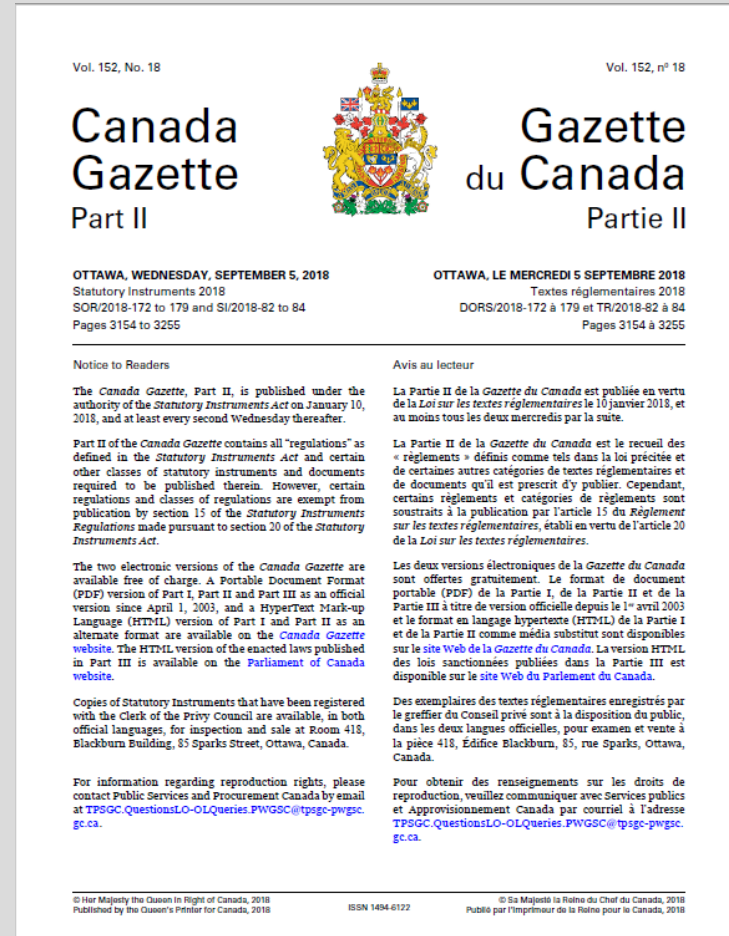
Current Affairs

DrugTest 5000: What's Your Tolerance?

Approved by Minister of Justice
for Law Enforcement Use

“A positive result [on the Draeger
DrugTest 5000 oral fluid screener] would
be a strong **indication of recent use.**”

How has workplace prepared for the
decriminalization of marijuana?



Current Affairs

DrugTest 5000: What's Your Tolerance?

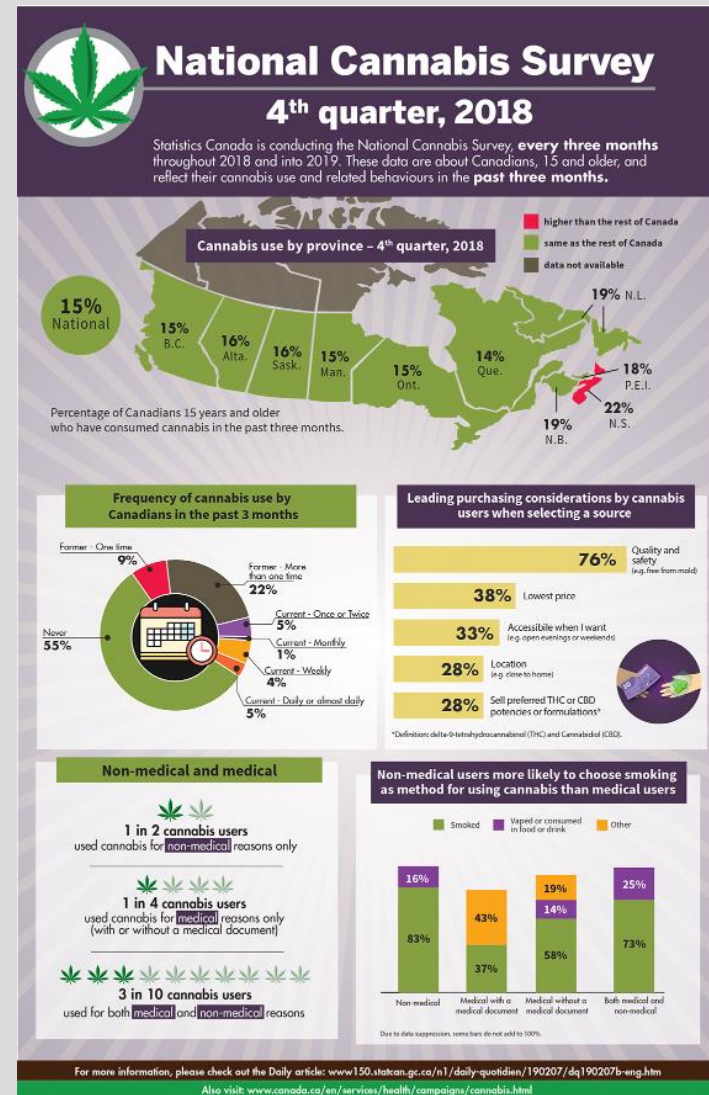
Cannabis use amongst youth aged 15-24 is 3X more than adults*

Rate of daily use among general population is steadily increasing*

Canadians already spend \$6B a year on cannabis**

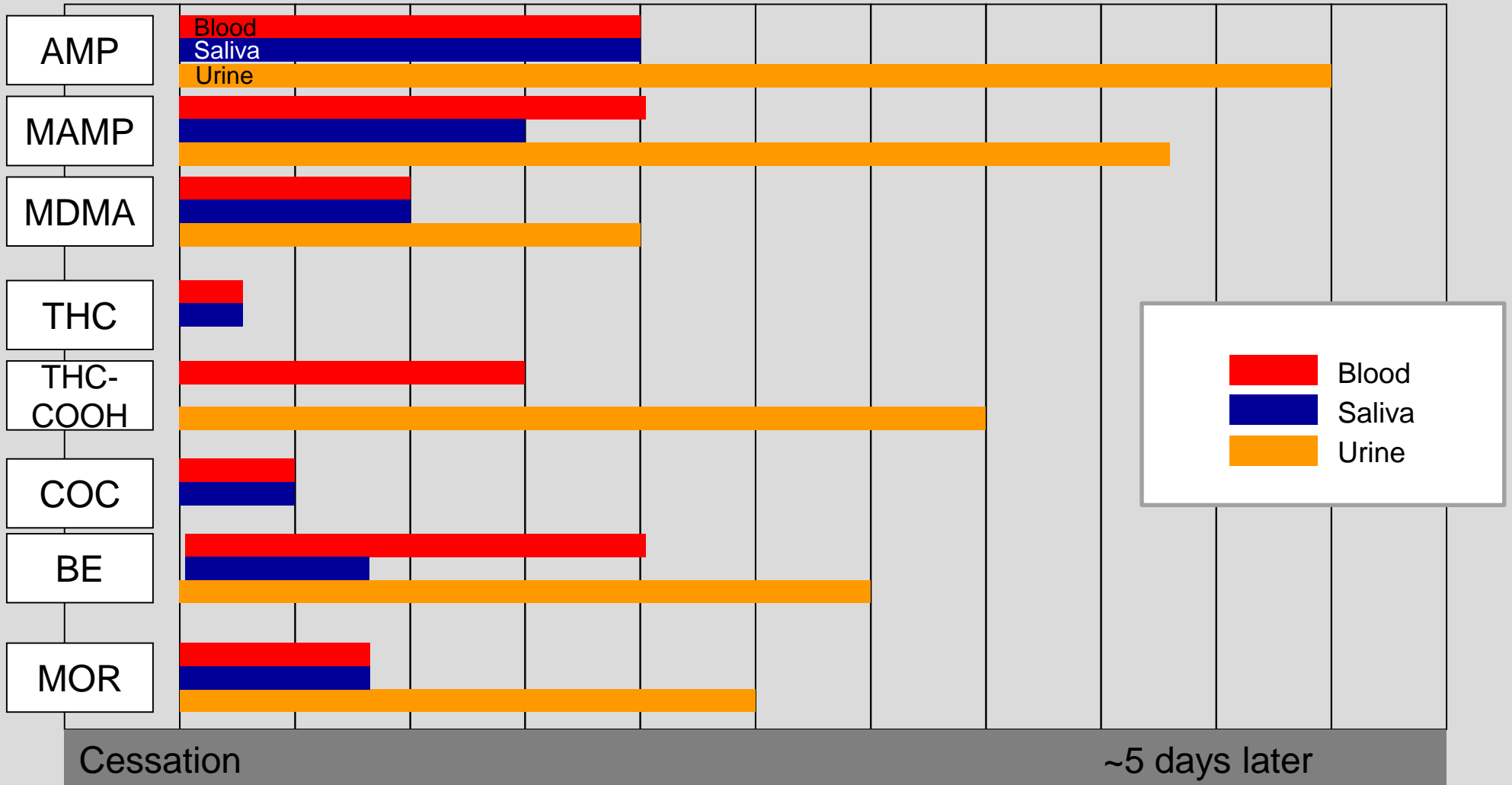
*Canadian Center on Substance Use and Addiction, Canadian Drug Summary, June 2018

**Statistics Canada, Cannabis Economic Account, 1961 to 2017



Detection Times after consumption

Blood, Saliva & Urine



Recent Use

DrugTest 5000: What's Your Tolerance

“Well established that cannabis is an impairing drug. Blood concentrations do not correlate well with impairment - blood concentration can decline rapidly after smoking well before the impairing effects have dissipated

From a toxicologist point of view, **recency of use** can give useful information about whether an individual is impaired by cannabis use”

Karen Woodall, Forensic Toxicologist, “Oral Fluid Screening Devices and Toxicology”, presented at Arrive Alive Conference 2018

Which test methods to choose

DrugTest 5000: What's Your Tolerance?

Oral Fluid



Urine



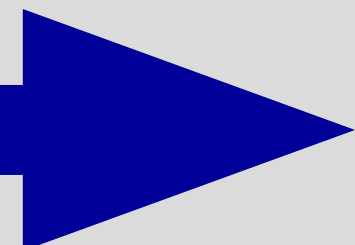
Hair



Hours

Days

Months



Recent drug use

recent/mid-term consumption

drug history

reasonable cause

pre-employment

pre-employment

post-incident,
post accident

random

pre-entry

random

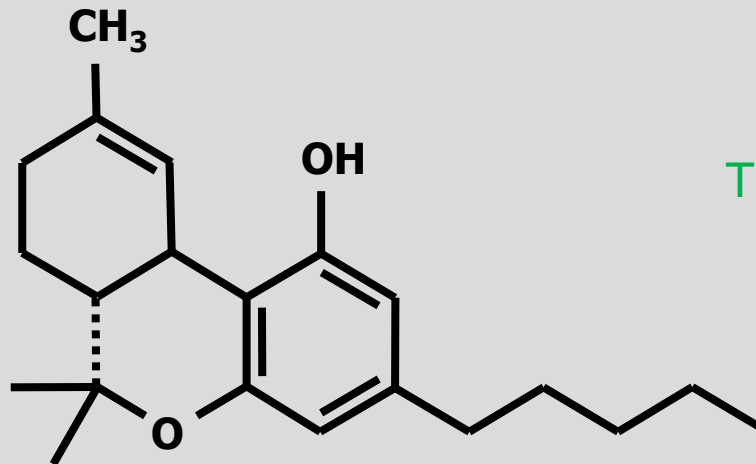
Cannabis - Pharmacology
Cannabinoids

> 500 chemicals &
109 Cannabinoids, like:

Cannabigerol, CBG

THC-cannabivarin, THCV

Cannabidiol, CBD

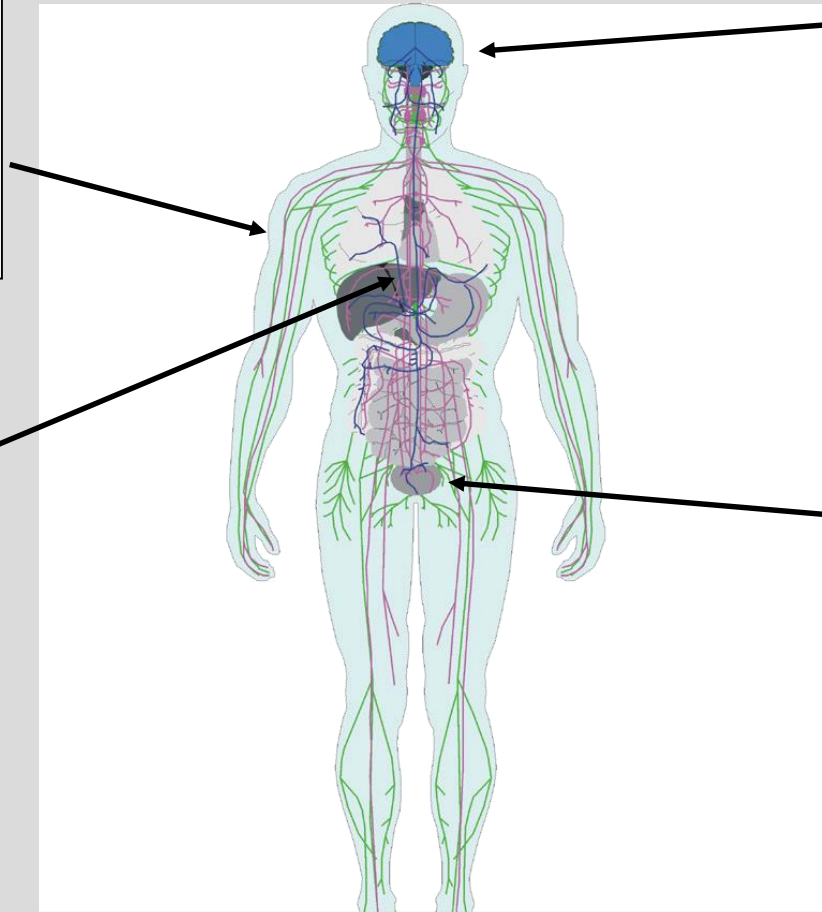


TetrahydroCannabinol, Δ9-THC

Cannabinol, CBN

The Path of Drugs in the Human Body

1. Absorbtion
(Consumption),
i.e. via lung or
veins into blood
stream



2. Distribution
through the blood
system in the
body; effects

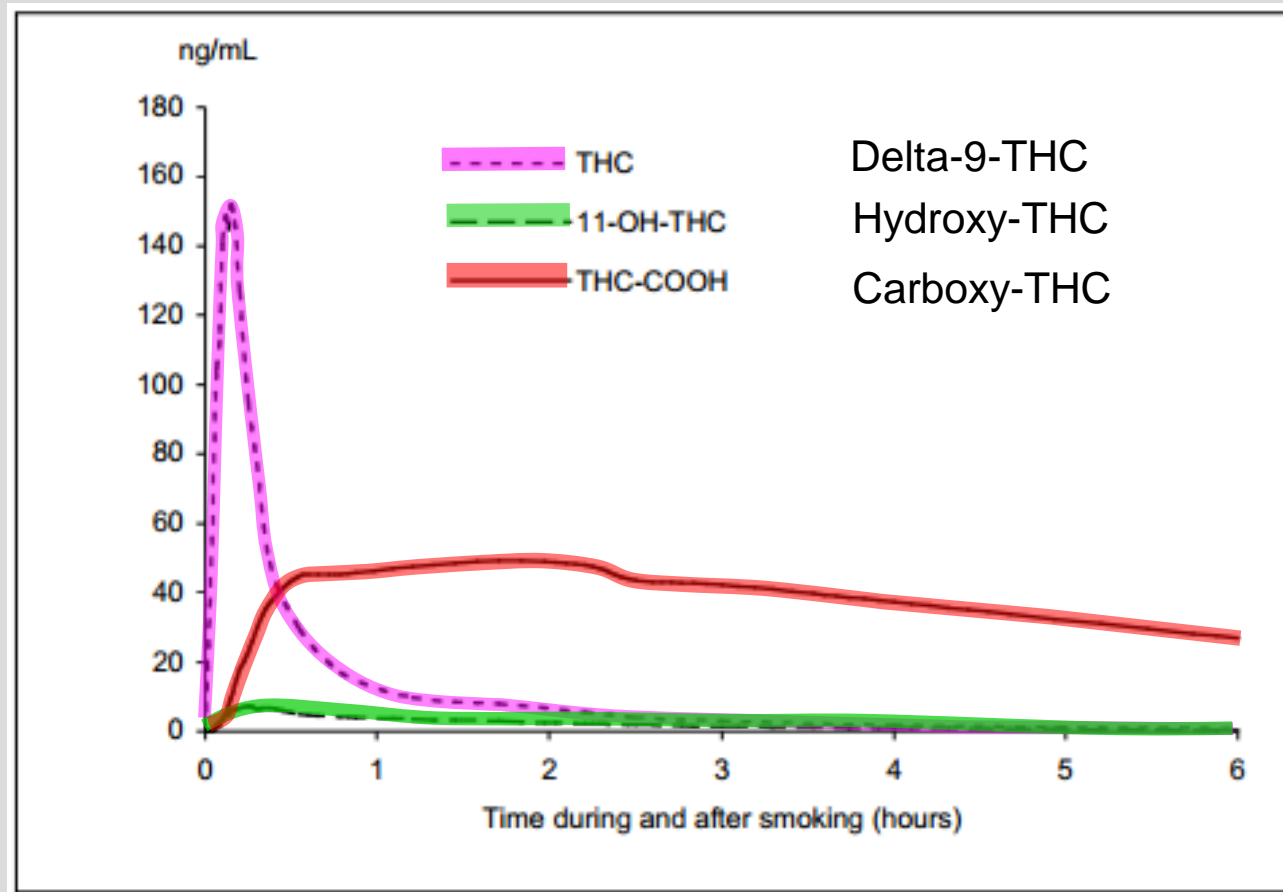
3. Metabolism,
(Degradation)
mainly in the liver

4. Elimination
(Excretion);
from the body i.e.
by the urine,
which is produced
in the kidney

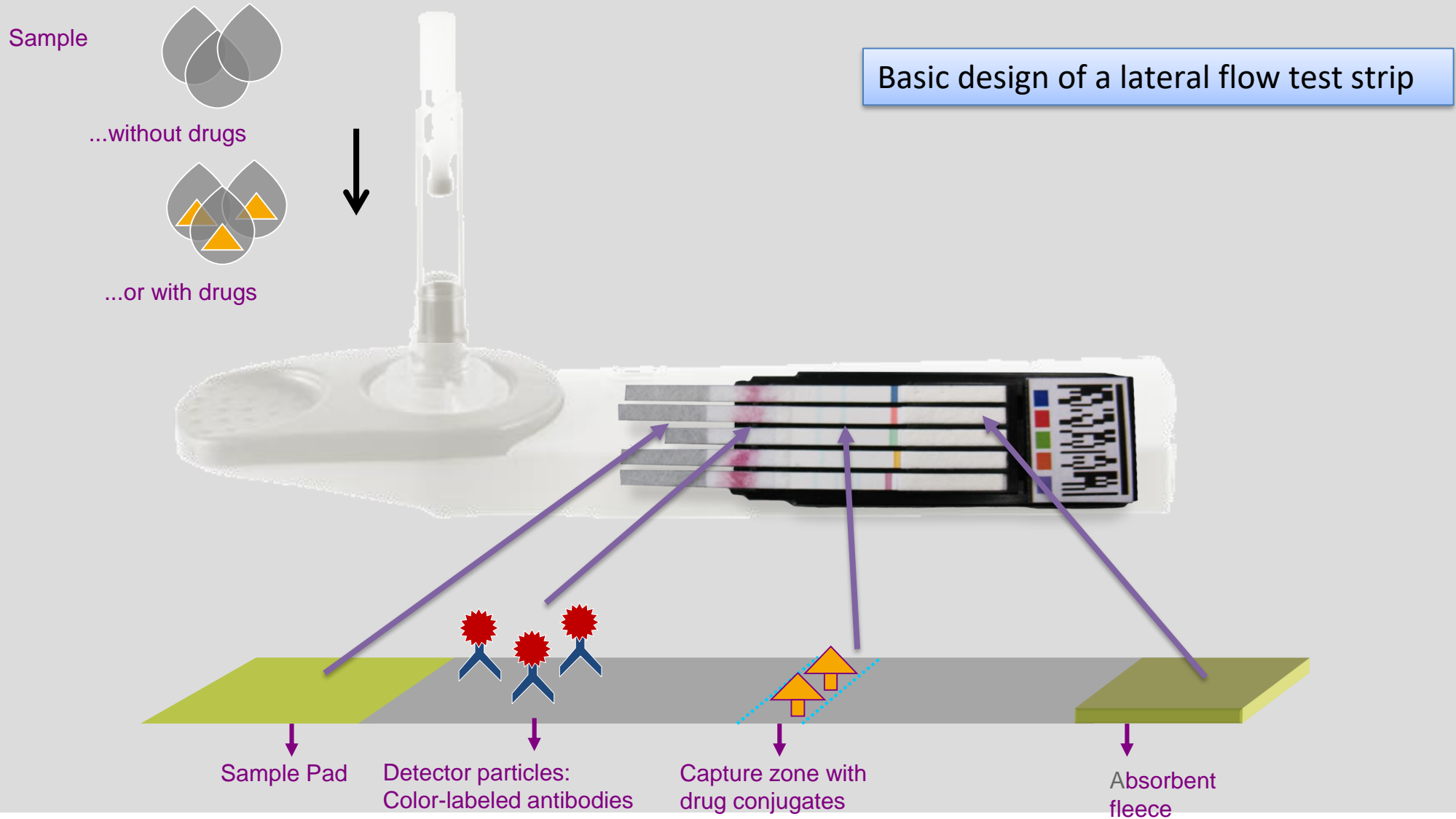


Cannabis - Pharmacology

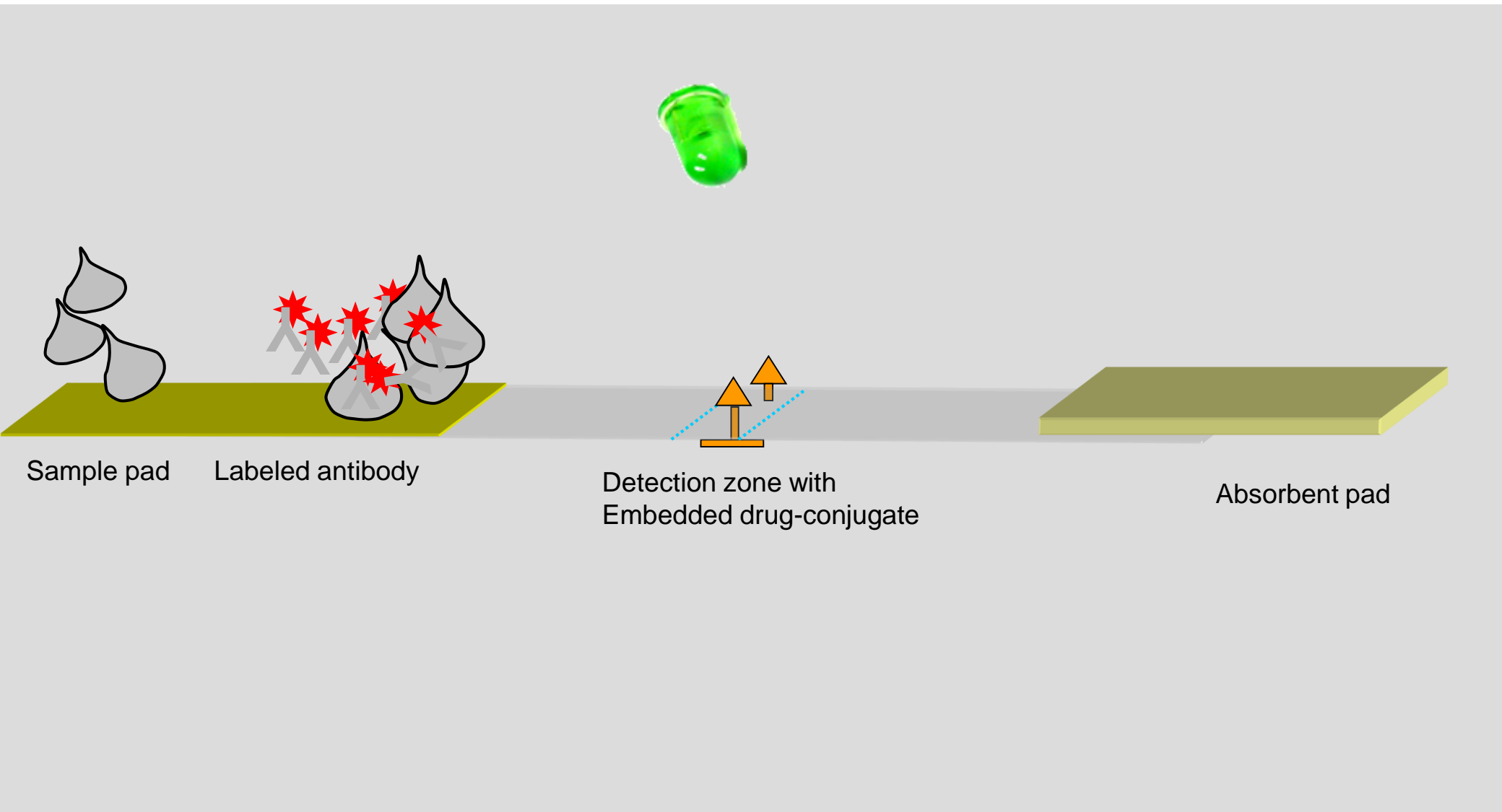
Main Metabolism Route – Plasma Concentrations after smoking



Inside the Test Cassette



Oral Fluid when NO Drug is present



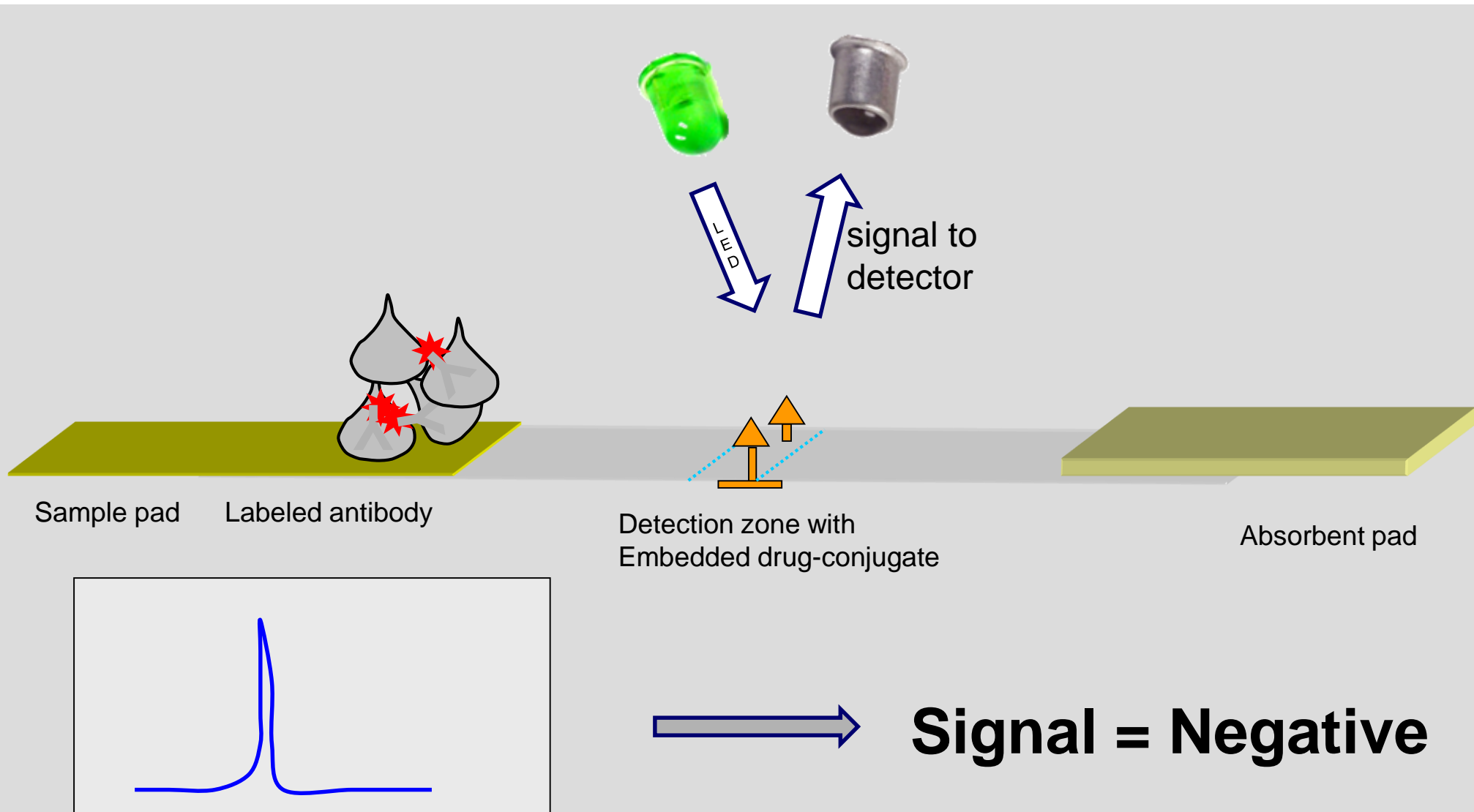
Sample pad

Labeled antibody

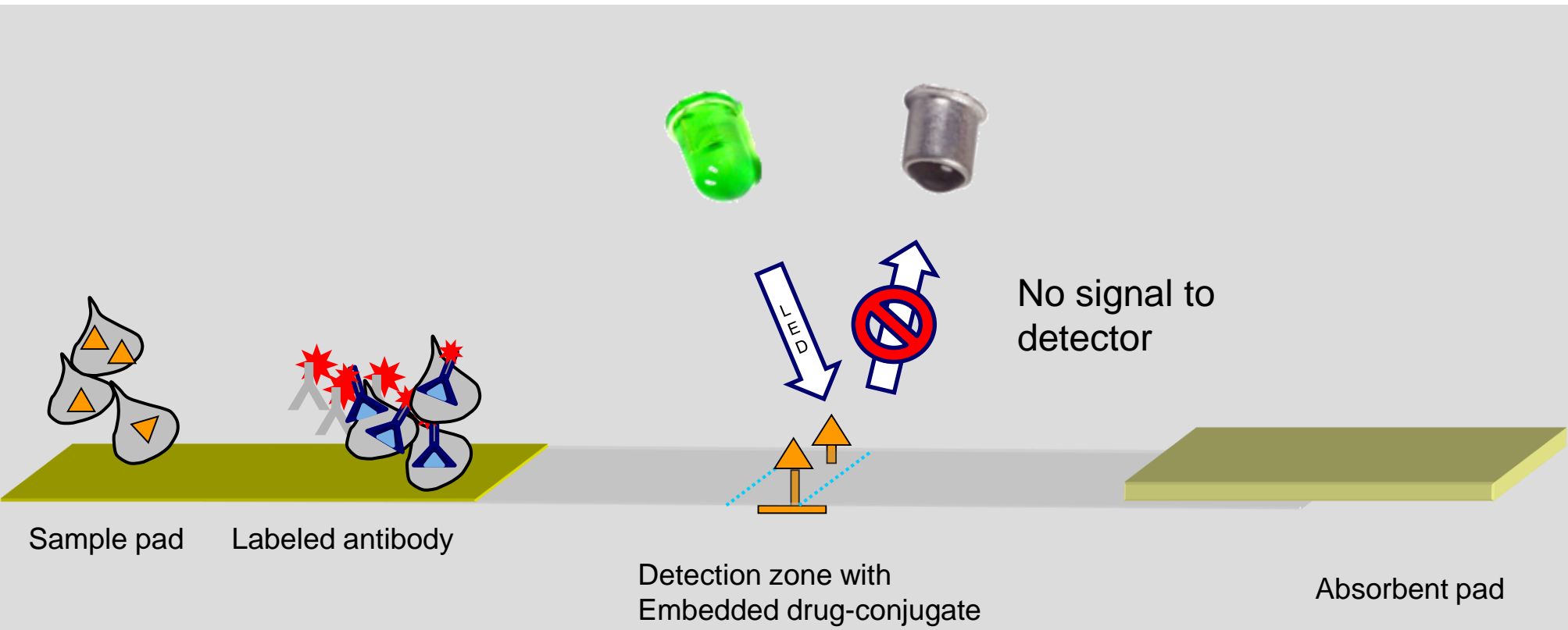
Detection zone with
Embedded drug-conjugate

Absorbent pad

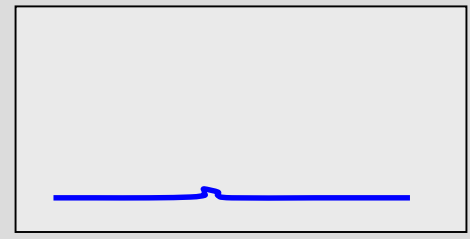
Oral Fluid when NO Drug is present



Oral Fluid when a DRUG is present

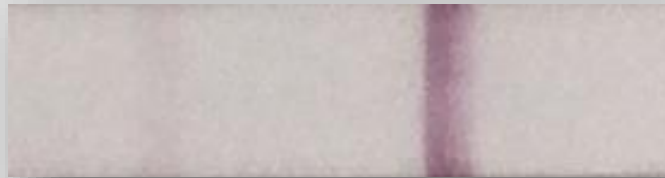


Low or No Signal = Positive →



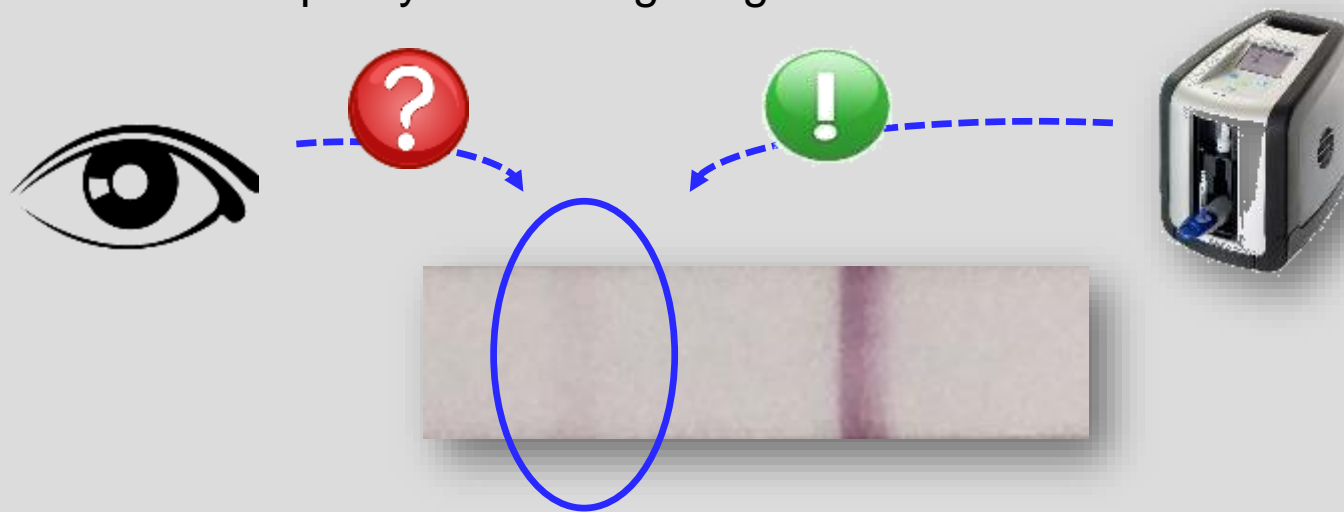
As the analyser determines a positive or negative sample based on the intensity of the line, **line intensity is the key.**

Its precise and reproducible occurrence is based on many factors, like the quality of the antibody, but also on the quality of marking reagents.



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A faint signal may be negative or positive depending on intensity compared to calibration values stored in the barcode.

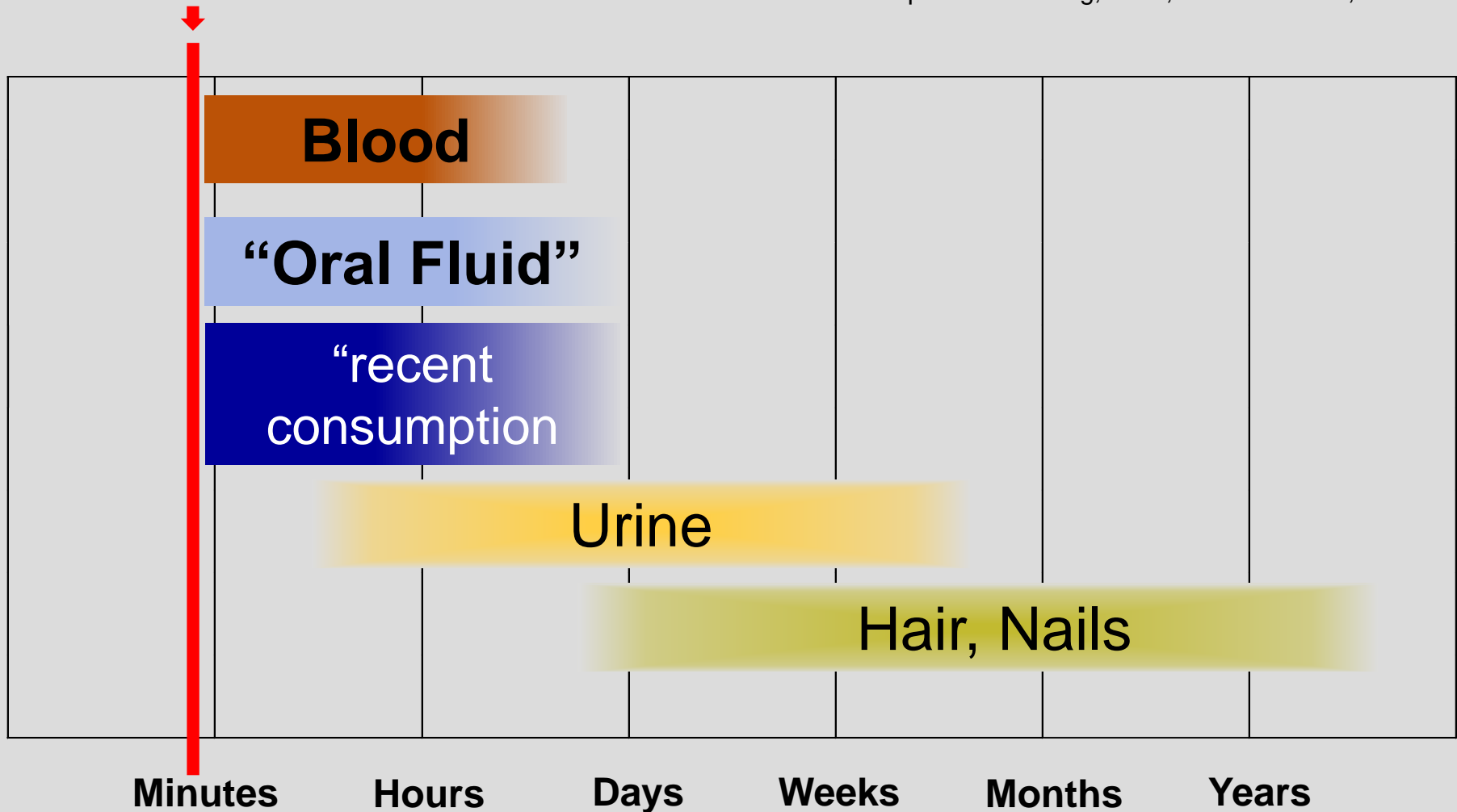
This technique makes the DrugTest[®] 5000 system more reliable than visually read tests.

Plus: Temperature control

Window of Detection

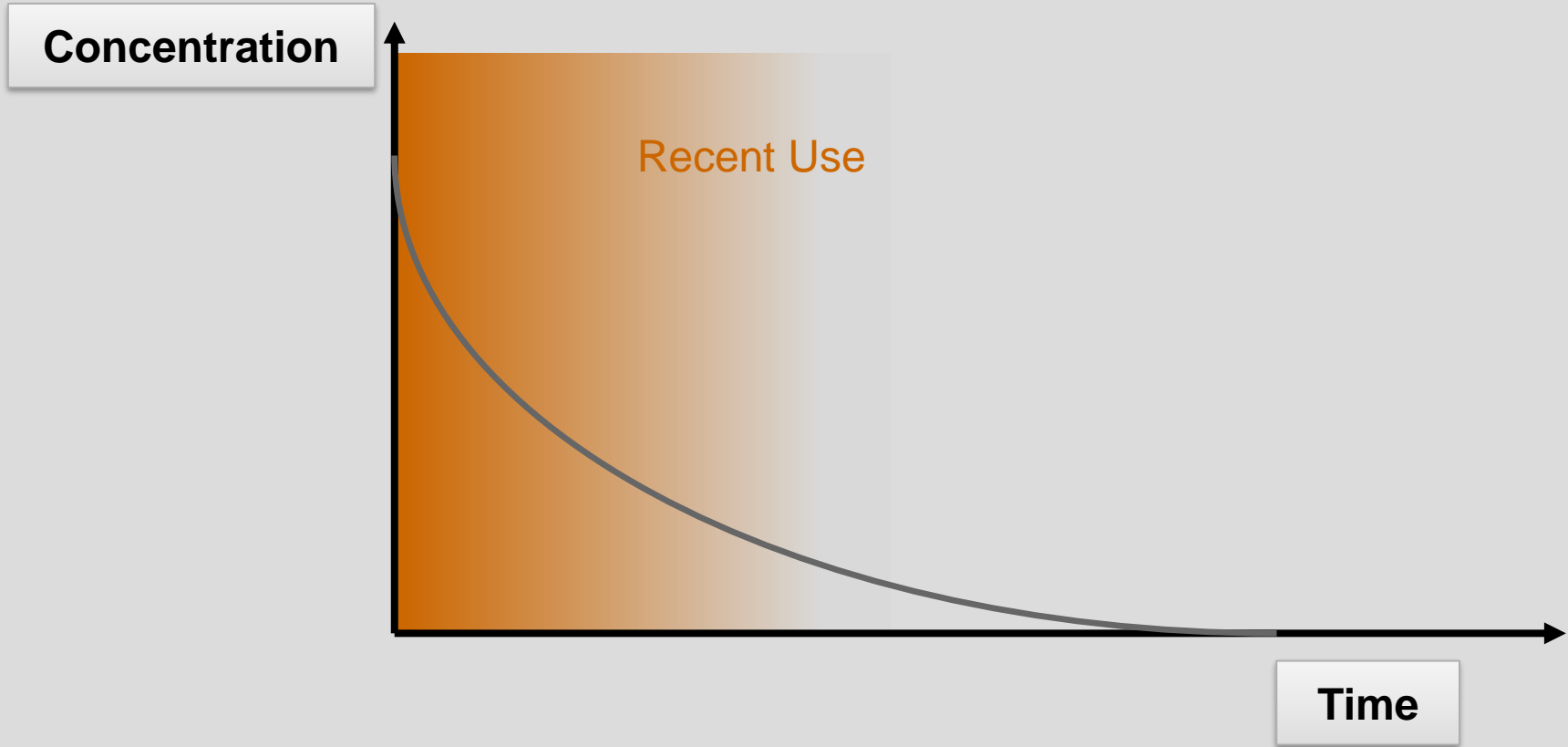
Timepoint of consumption

From: Caplan & Goldberg, 2001, J. Anal. Tox 25, 396-399

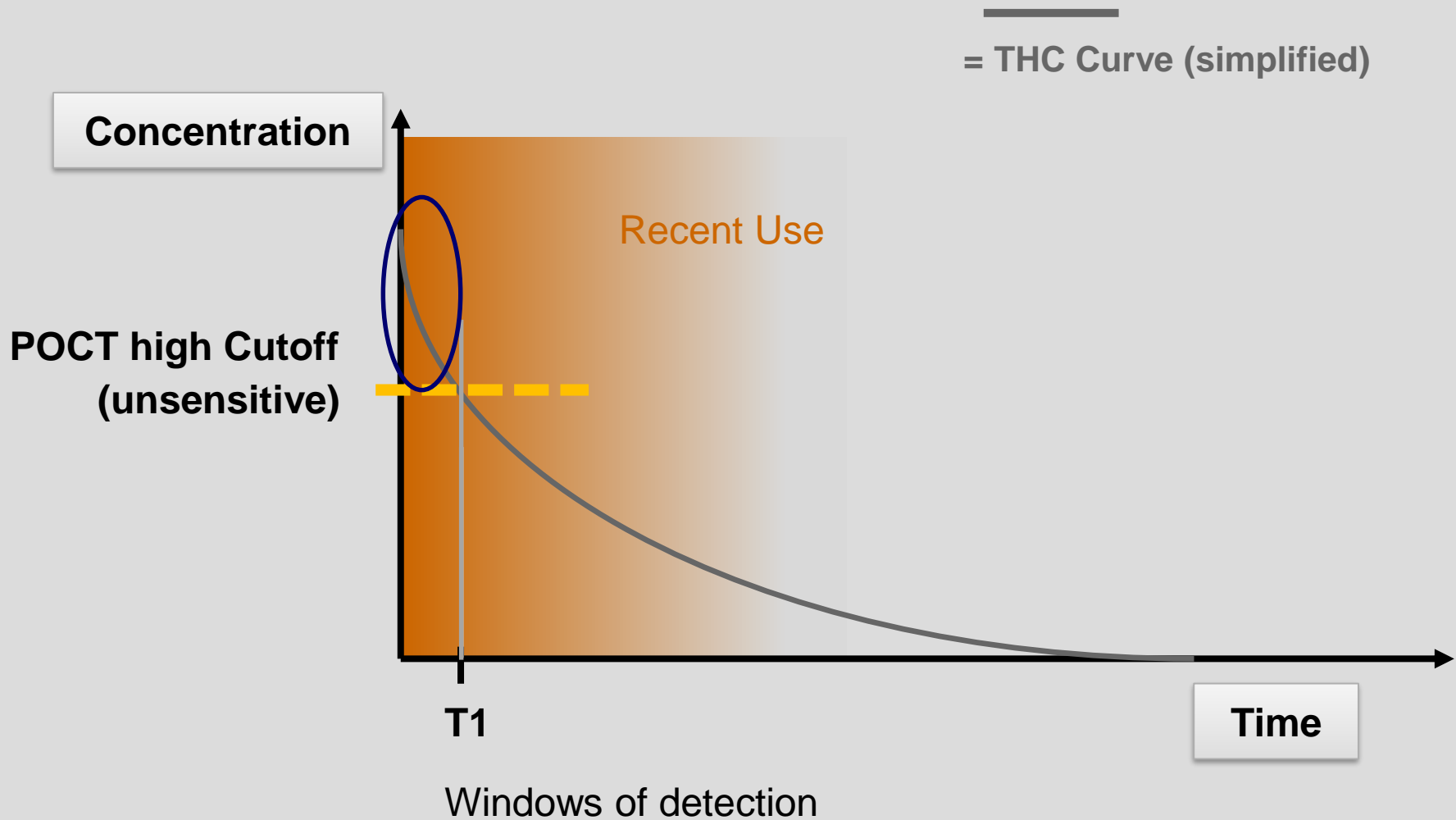


„Cut-off“ when drug testing

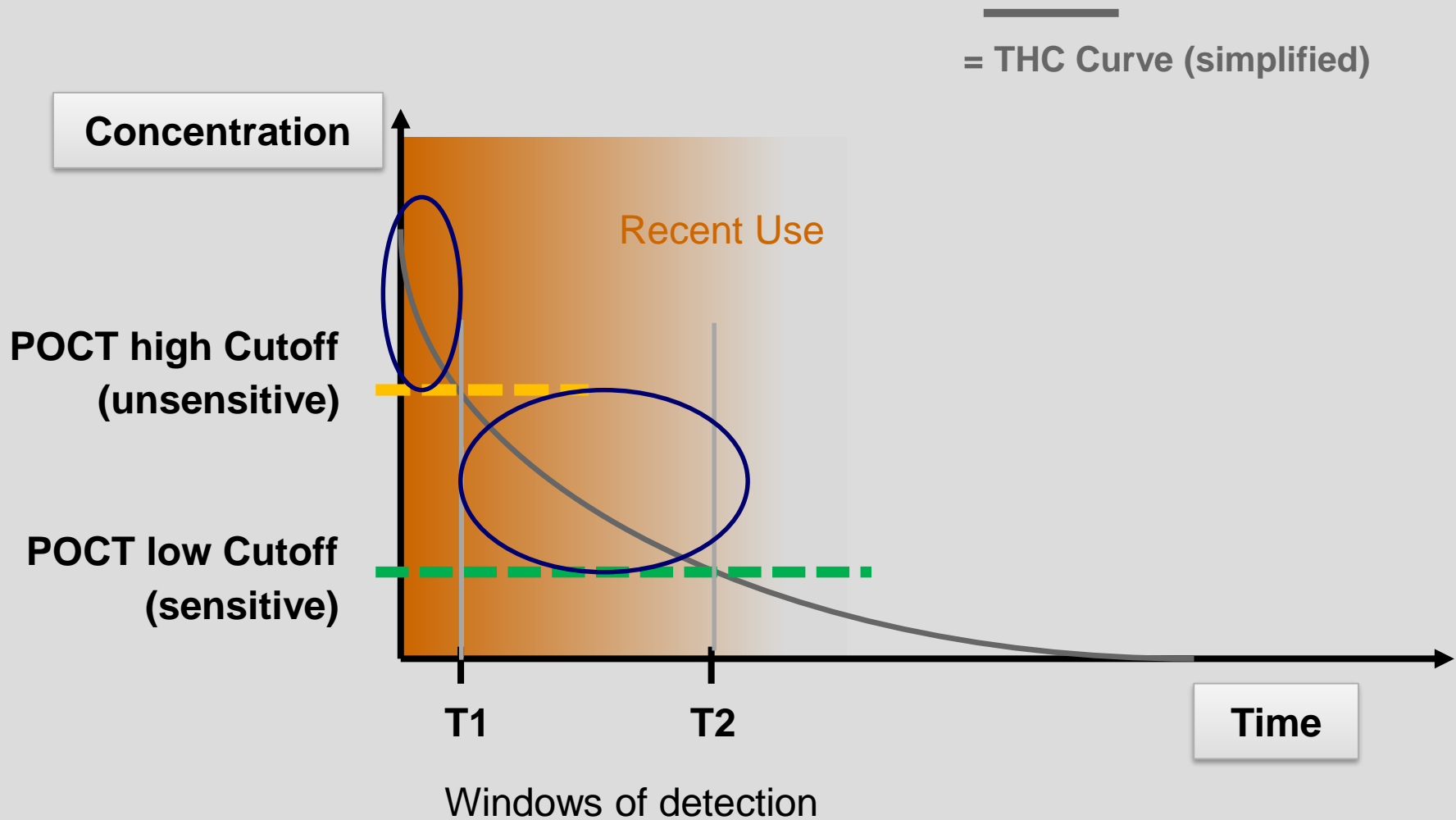
—
= THC Curve (simplified)



„Cut-off“ when drug testing



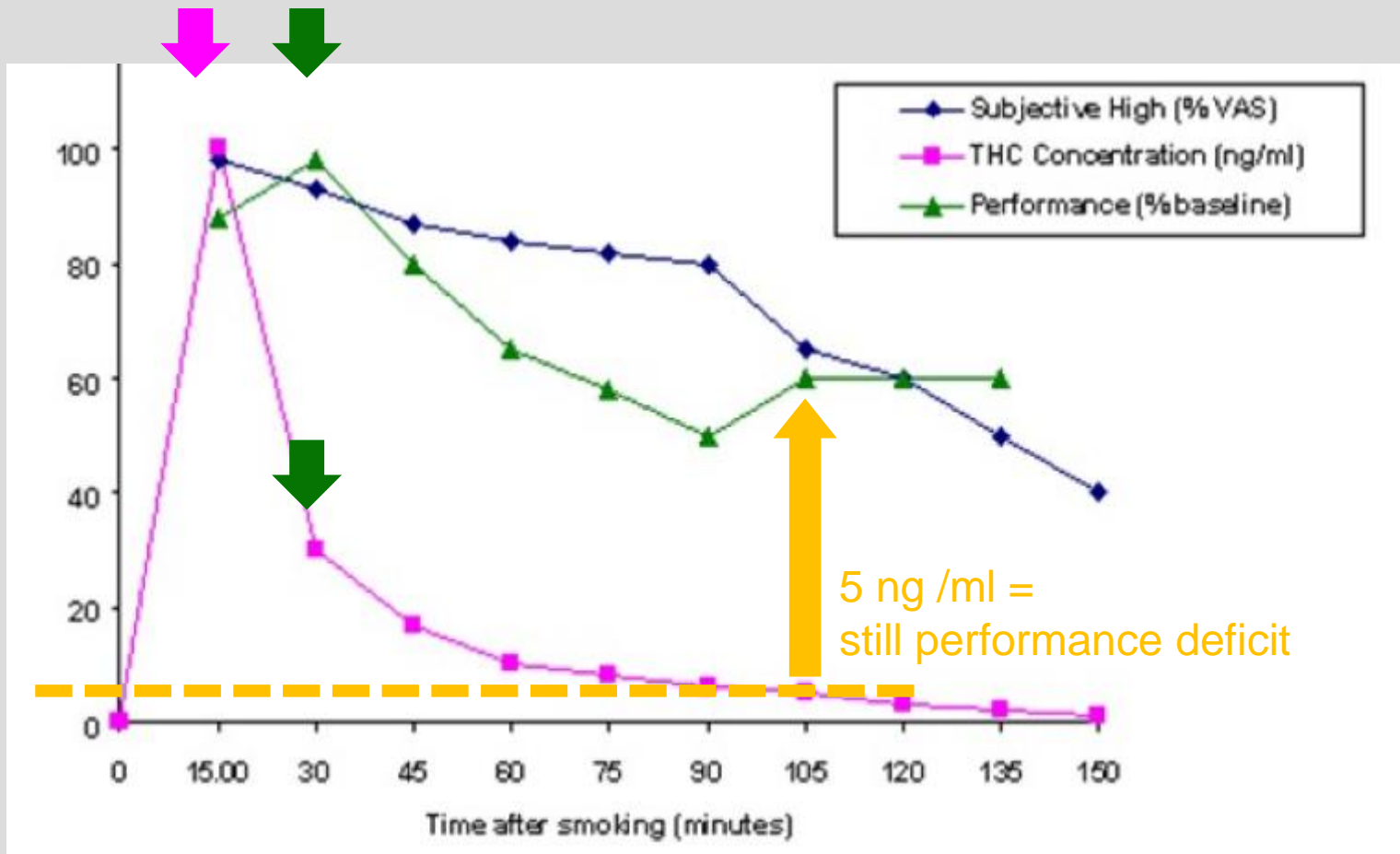
„Cut-off“ when drug testing



Cannabis - Pharmacology

THC Conc – Performance Deficit – Subjective High

Standardization:
each maximum got the value 100



To cover as much potentially impaired persons as possible → sensitive detection, low cutoff

Cost Calculator

DrugTest 5000: What's Your Tolerance

Value Calculator Oral-Fluid versus Urine Drug Testing (hypothetical)

Item Description	Oral-Fluid	Urine
Number of Tests	1,000	1,000
Cost per screening test	\$40.00	\$20.00
Cost per test regime	\$40,000.00	\$20,000.00
Positive Rate in %**	2%	6%
Number of Lab Confirmations	20	60
Cost for Lab Confirmation Each	\$150.00	\$100.00
Total Cost for Lab Confirmation	\$3,000.00	\$6,000.00
Downtime in days	20	180
Cost per downtime day	\$200.00	\$200.00
Total Downtime Cost****	\$4,000.00	\$36,000.00
Lab Re-test	\$3,000.00	\$6,000.00
Labour Hire Per Person, Per Day	\$300.00	\$300.00
Labour Hire Total	\$6,000.00	\$54,000.00
Total Cost	\$56,000.00	\$122,000.00

** There are more positive tests in Urine testing due to the longer duration of test period – ie months not hours.

**** There is a longer downtime in Urine testing as it takes longer for the drug to dissipate and so the employee must stay away from the workplace longer

DrugTest 5000: What's Your Tolerance



Risk	Mitigation
Employee gets positive test days after consuming THC	Replace urine test with oral fluid test to ensure small window of detection and best indication of recent use
Lost time due to employees waiting for test results	Use OF POCT screener to get result on-spot within minutes. Return workers to work upon negative test
Lack of national standard for workplace drug testing	Develop policy that suits the workplace using proven technology – OF mobile screener validated by Canadian government for roadside law enforcement
Challenge by employees/unions	Use technology with least invasive sample collection, high degree of accuracy, results in minutes, indication of recent use (short window of detection)

Draeger DrugTest 5000

Test Cassette – Cut Off Levels

5 ng/ml THC (Δ^9 -tetrahydrocannabinol)

Immunoassay (Competitive Inhibition)

Electro-Optical Reader

Clear Results / No Interpretation

Integrated Data Management

Non-invasive & hygienic

**Only oral fluid screening device approved in
Canada by the DOJ for roadside testing**



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THANK YOU

DrugTest 5000: What's Your Tolerance



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