

Current Addictions Explained: Meth & Fentanyl

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QUESTION:

Why do most people with heroin, oxycodone, or fentanyl addictions keep using opioids despite all the problems and hassle?

ANSWER:

To avoid opioid withdrawal

Fentanyl

How did we get here?



Sumerian Cultivation

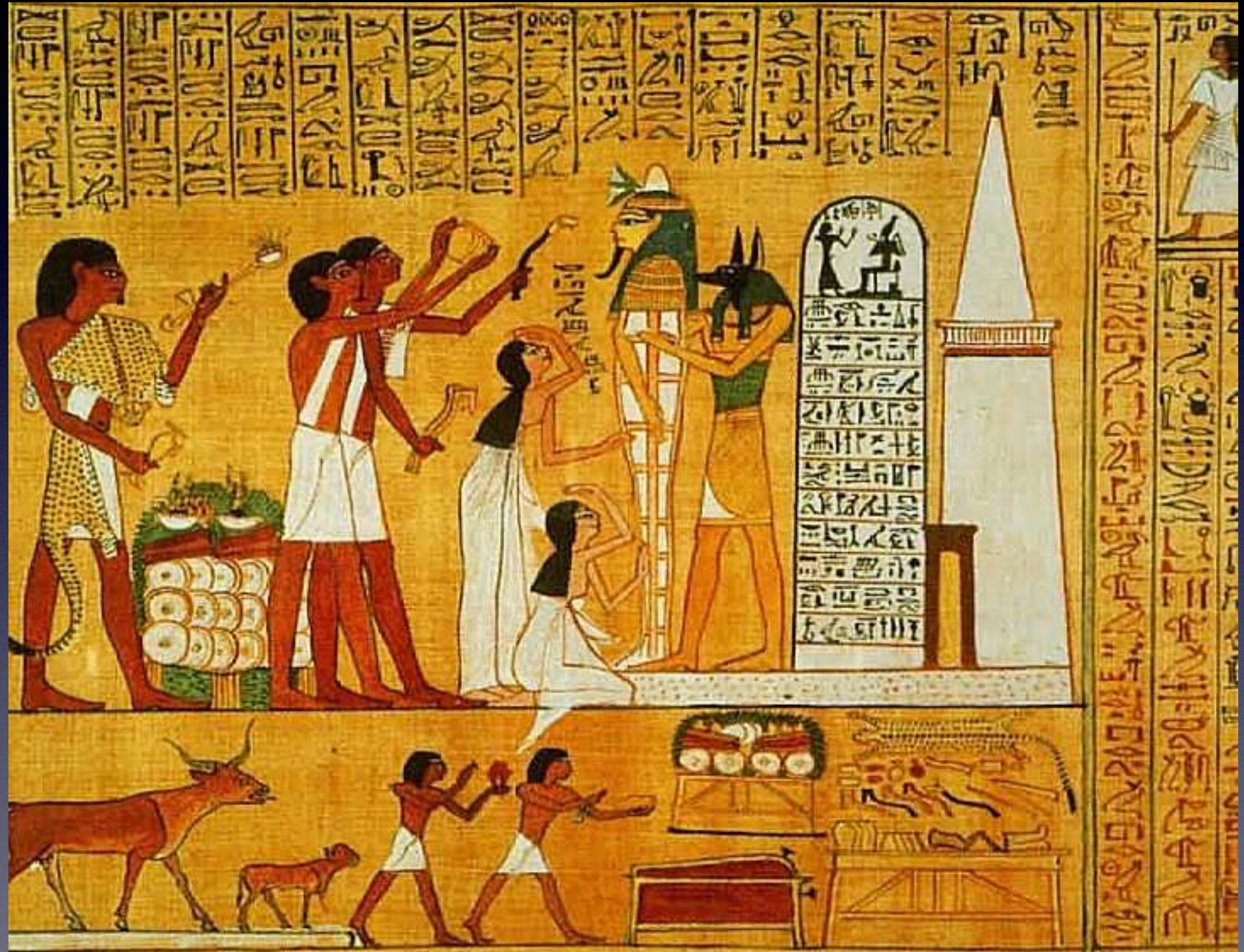
“Hu! Gil”
Joy plant

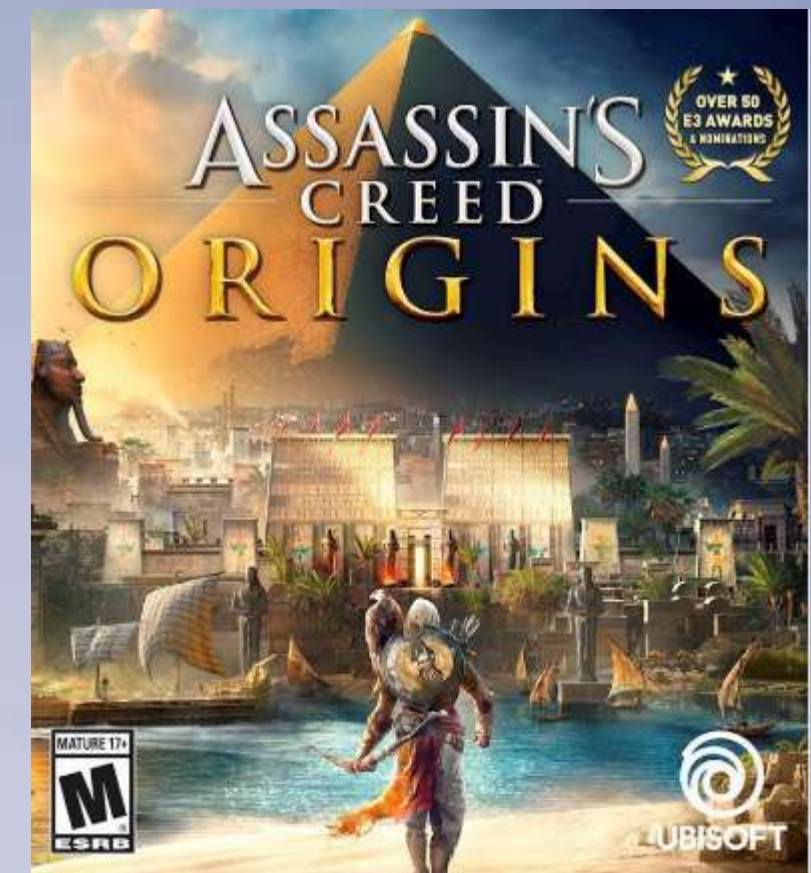
7000 years
ago

Opium poppy cultivation moves to Egypt

Ebers Papyrus scroll, which was an encyclopedia of medicine in ancient Egypt, describes opium use for help with sleep, pain, to calm

3500 years ago





The Silk Road



Artist: Alexei Vladimirovich Issupoff



How to make heroin

Step 1



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Morphine
&
Codeine

Lime
a.k.a. Calcium Oxide



Opium

Step 2

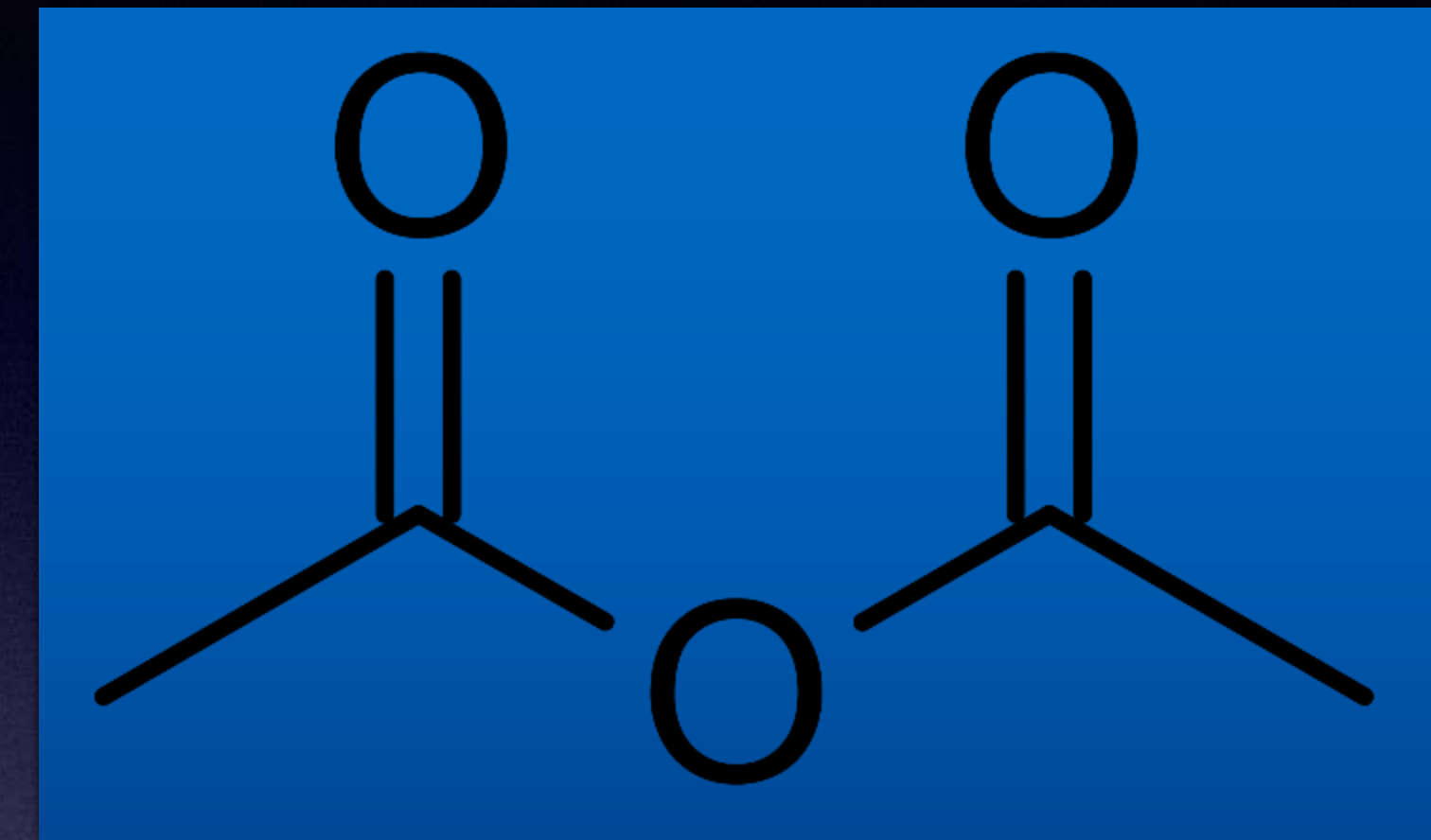


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187° F

+



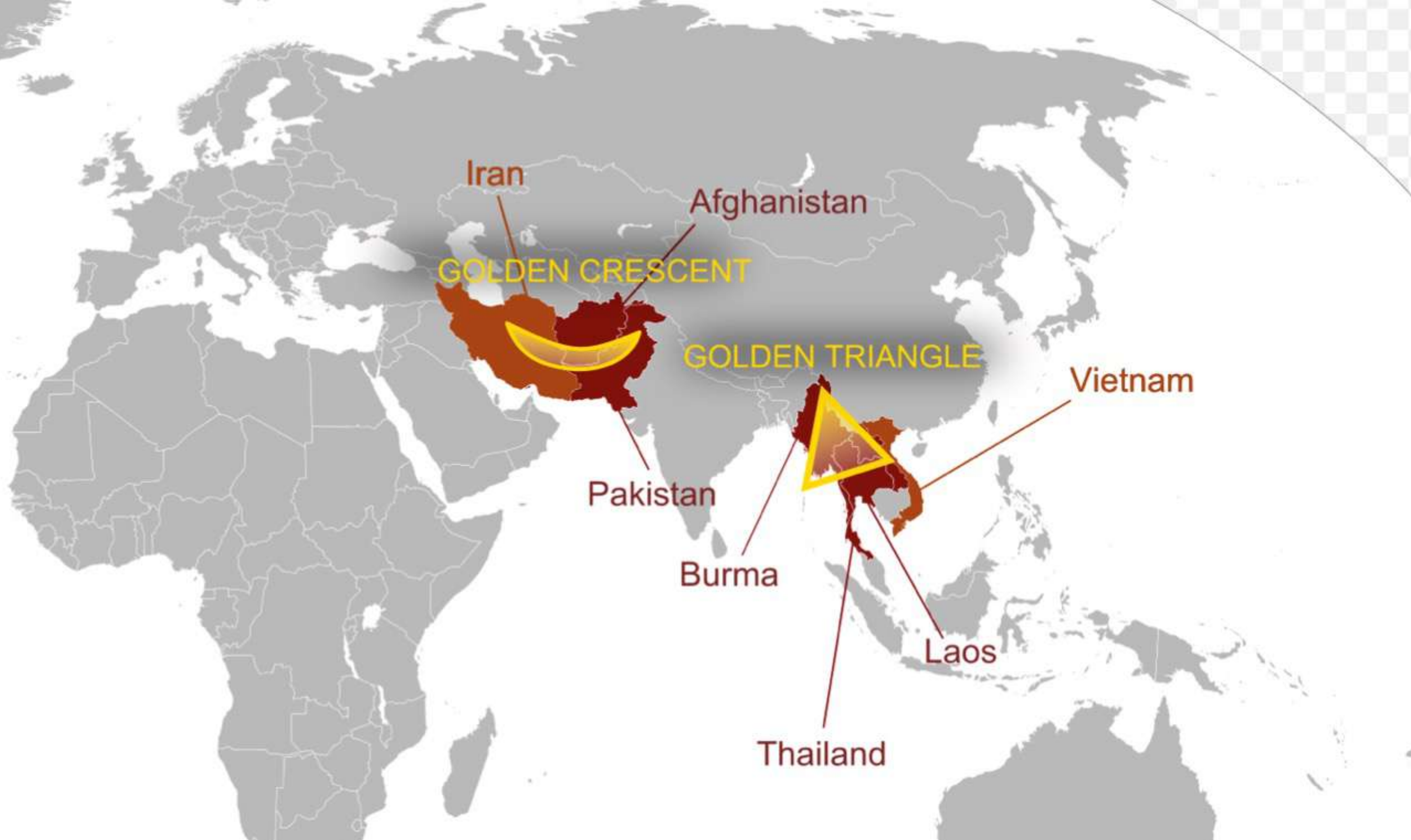
Acetic Anhydride

=

Diacetylmorphine

a.k.a.

Heroin



Iran

Afghanistan

GOLDEN CRESCENT

GOLDEN TRIANGLE

Vietnam

Pakistan

Burma

Laos

Thailand

Estimated heroin flows from Asia to the world (in tons)



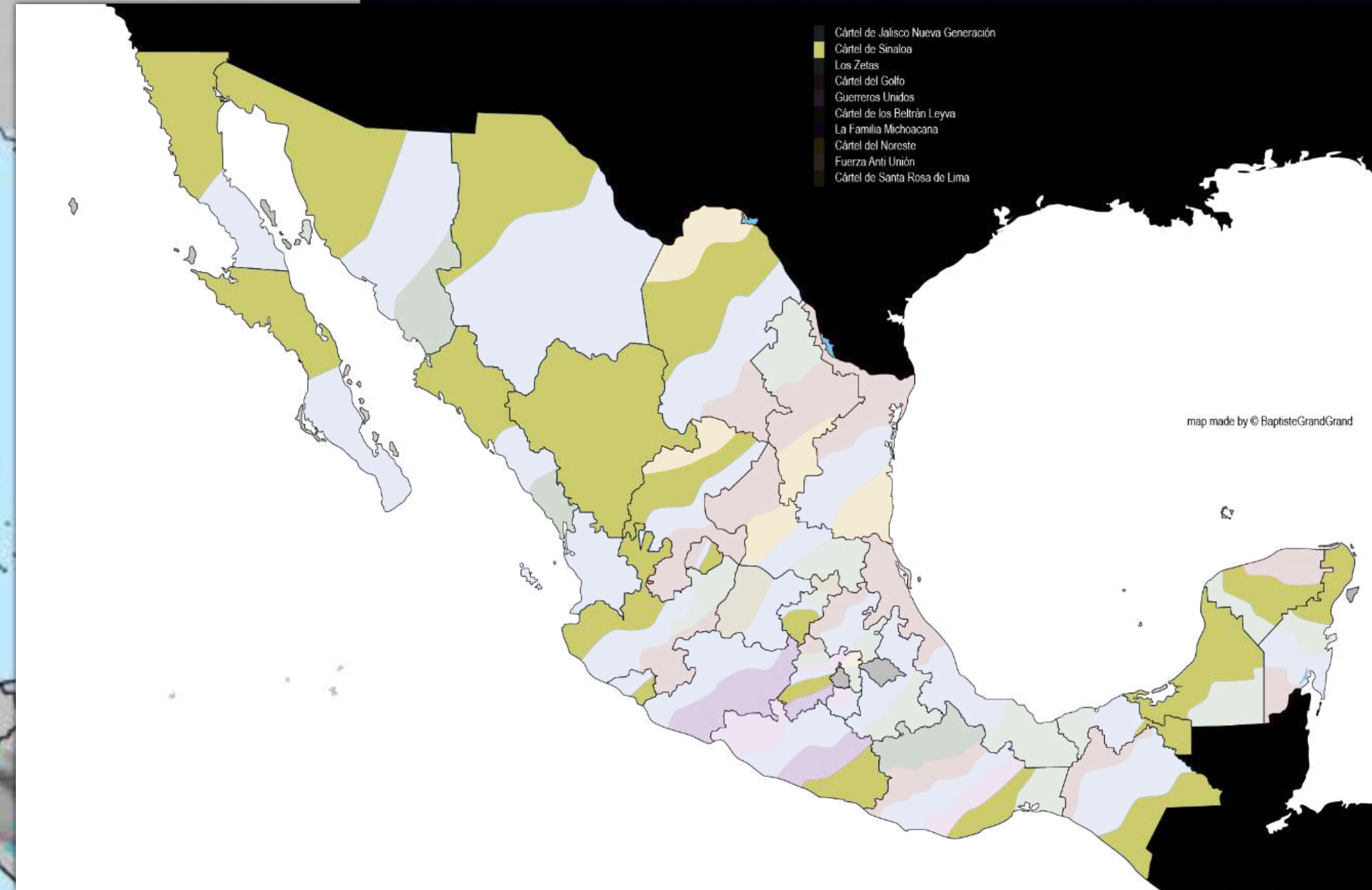
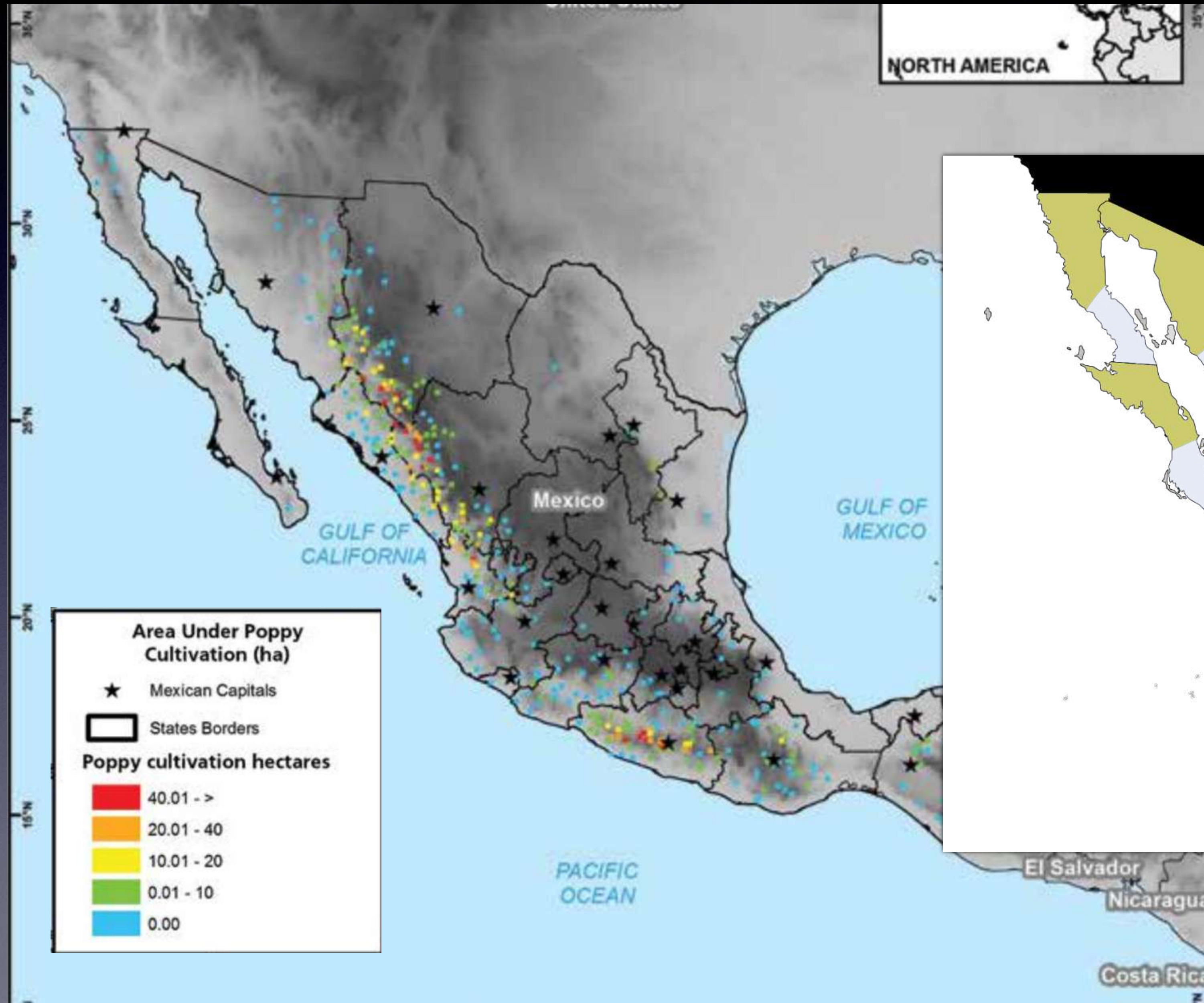
Source: Addiction, crime and insurgency: The transnational threat of Afghan opium, UNODC

Then The Pharmaceutical Opioid Epidemic Happened



The Pharmaceutical Opioid Epidemic created an opportunity for organized crime from Mexico

Cartel Sinaloa



Cartel Sinaloa created a heroin distribution network across the USA

2017 Pharmaceutical opiate distribution hotspots



How to make fentanyl

Fentanyl

Fentanyl, 1-phenethyl-4-*N*-propinoylanilinopiperidine (3.1.63), is an extremely powerful intramuscular and intravenous analgesic. The synthesis of fentanyl is accomplished beginning with 1-benzylpiperidin-4-one (3.1.48), which is condensed with aniline to form the corresponding Schiff base (3.1.59). The double bond in this product is reduced by lithium aluminum hydride, and the resulting 1-benzyl-4-anilinopiperidine (3.1.60) is acylated using propionic acid anhydride. The resulting 1-benzyl-4-*N*-propinoylanilinopiperidine (3.1.61) undergoes debenzylation using hydrogen and a palladium on carbon catalyst, to give 4-*N*-propanoylanilinopiperidine (3.1.62), which is *N*-alkylated by 2-phenylethylchloride, to give fentanyl (3.1.63) [39,40].



How are they making it?



Source: Santa Clara, California Department of Health



Blues are more appealing than heroin, and have a lower barrier to entry

- Smoking vs “blasting”



How is fentanyl different than heroin & oxy?

- Fentanyl is:
 - 50-100 times more potent than morphine
 - 75-100 times more potent than oxycodone
- CDC Guideline conversion for Chronic Opioid Therapy:
 - Fentanyl (transdermal, mcg/hr): 2.4 Morphine Mg Equivalents (MME)

How is the fentanyl experience different than heroin & oxy?

Strong potency of fentanyl drives up opioid tolerance

+

Fast-acting brief mu-opioid effect, followed by rapid dissociation from receptors

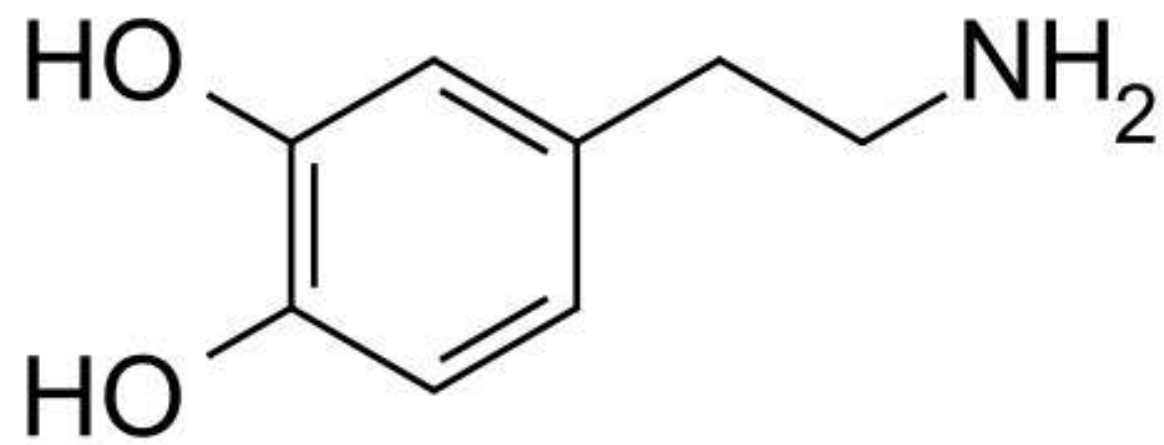
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Severe and frequent opioid withdrawal

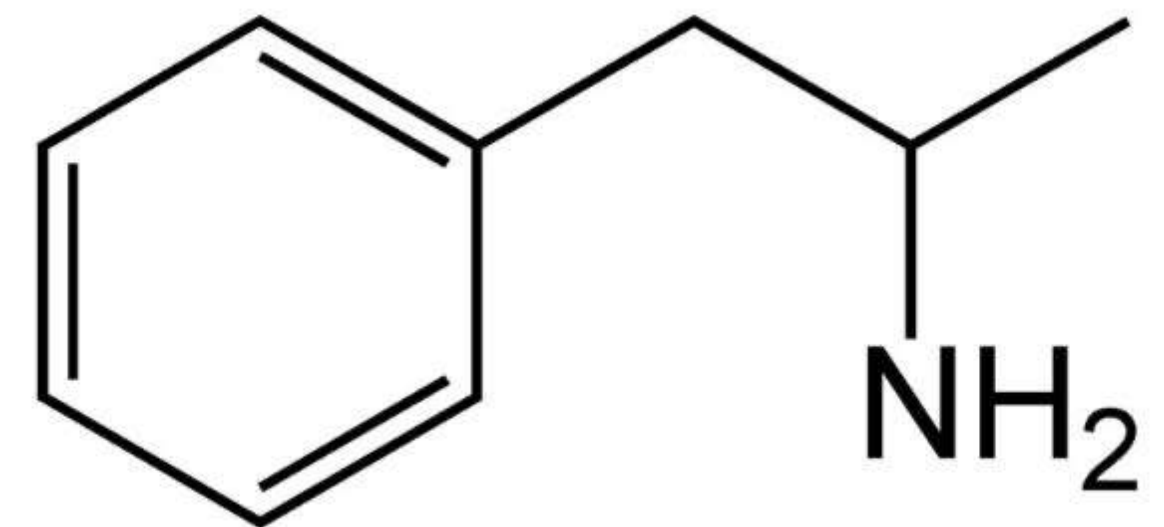
Is treating fentanyl use different than heroin use or oxy use?

- Yes & No
- Fentanyl withdrawal interferes with steady state methadone benefits
- Higher rates of precipitated withdrawal when starting buprenorphine

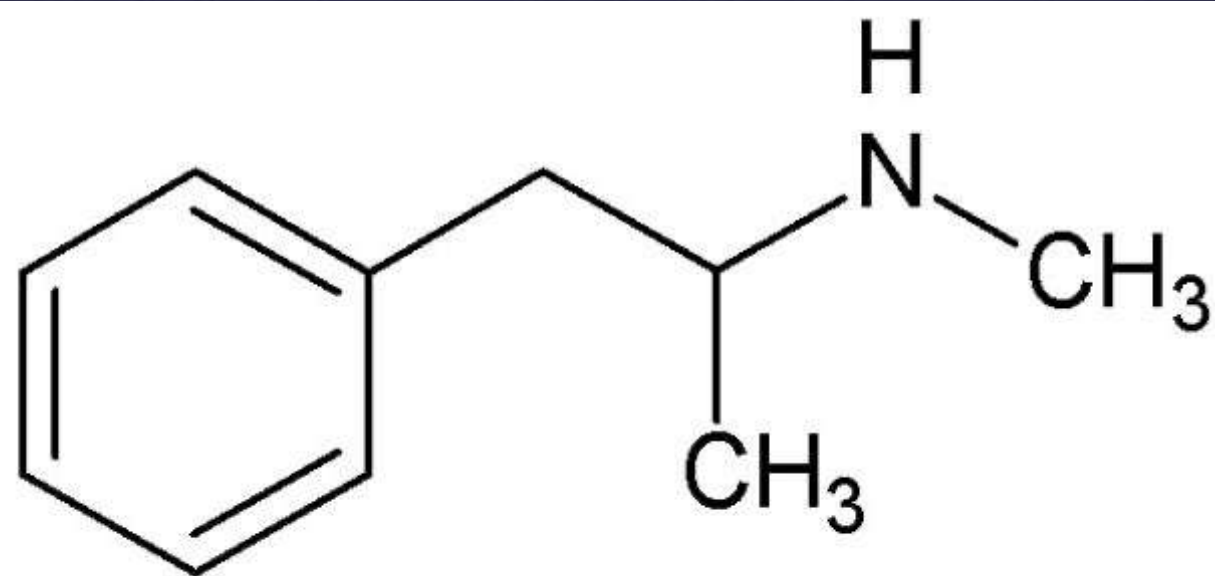
What about methamphetamine?



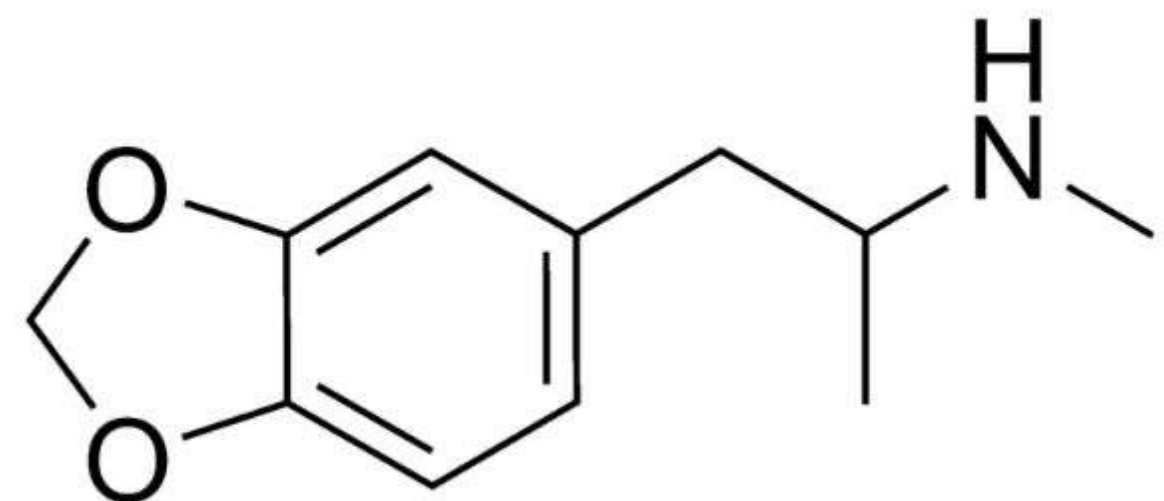
Dopamine



Amphetamine



Methamphetamine



Methylenedioxymethamphetamine
(ecstasy)

History of methamphetamine in the USA

- 1960s-1970s: Amphetamines (including meth) become popular with truck drivers, athletes, college students, west-coast motorcycle gangs.
- 1980: Phenyl-2-propanone (P-2-P) is federally controlled.
- 1980s: West-coast motorcycle gangs discover ephedrine and pseudoephedrine can be cooked into methamphetamine using simple equipment. Mexican Cartels quickly dominate the meth market, and still do today.
- 1988: Pharma has been fighting regulation of ephedrine-products, but agrees to regulation of POWDER form only. Pills remain unregulated and turned into methamphetamine. METH USE EXPLODES, moving from the West Coast towards the East Coast.
- 1994: U.S. Gov't discovers chemical plants in India are supplying Mexican Cartels, asks them to stop, and they do. Ephedrine sales regulation put in place.
- 1995: Pseudoephedrine conversion to meth requires a process that is flammable and explosive.
- 1996: Pseudoephedrine sales regulated in USA. The Mexican Cartels (80% meth market share) buy precursors from Southeast Asian chemical manufacturers.
- 2006: UNODC World Drug Report calls Meth the most abuse hard drug in the world.
- 2009: Mexico bans ephedrine imports. Mexican Cartels import precursors from Californian producers.
- 2015: Most of the meth labs in the US are shut down. Mexican Cartels control entire market.
- 2023: Mexican Cartels are still manufacturing meth and shipping it north to the USA.

How are they making it?



Source: Santa Clara, California Department of Health





Source: Santa Clara, California Department of Health



How do we treat meth use?

Help people understand what meth does to their BODY

Heart Attack

Stroke

Heart Failure

Urinary Retention

Brain Damage/Dementia

Psychosis

Methamphetamine kills more people in NM than heroin

Encourage 12-step/mutual help groups, church attendance

Thank you!

QUESTIONS?