

CHASING THE CLOUDS

ADOLESCENTS & VAPING

Abby Lange
Community Health Educator



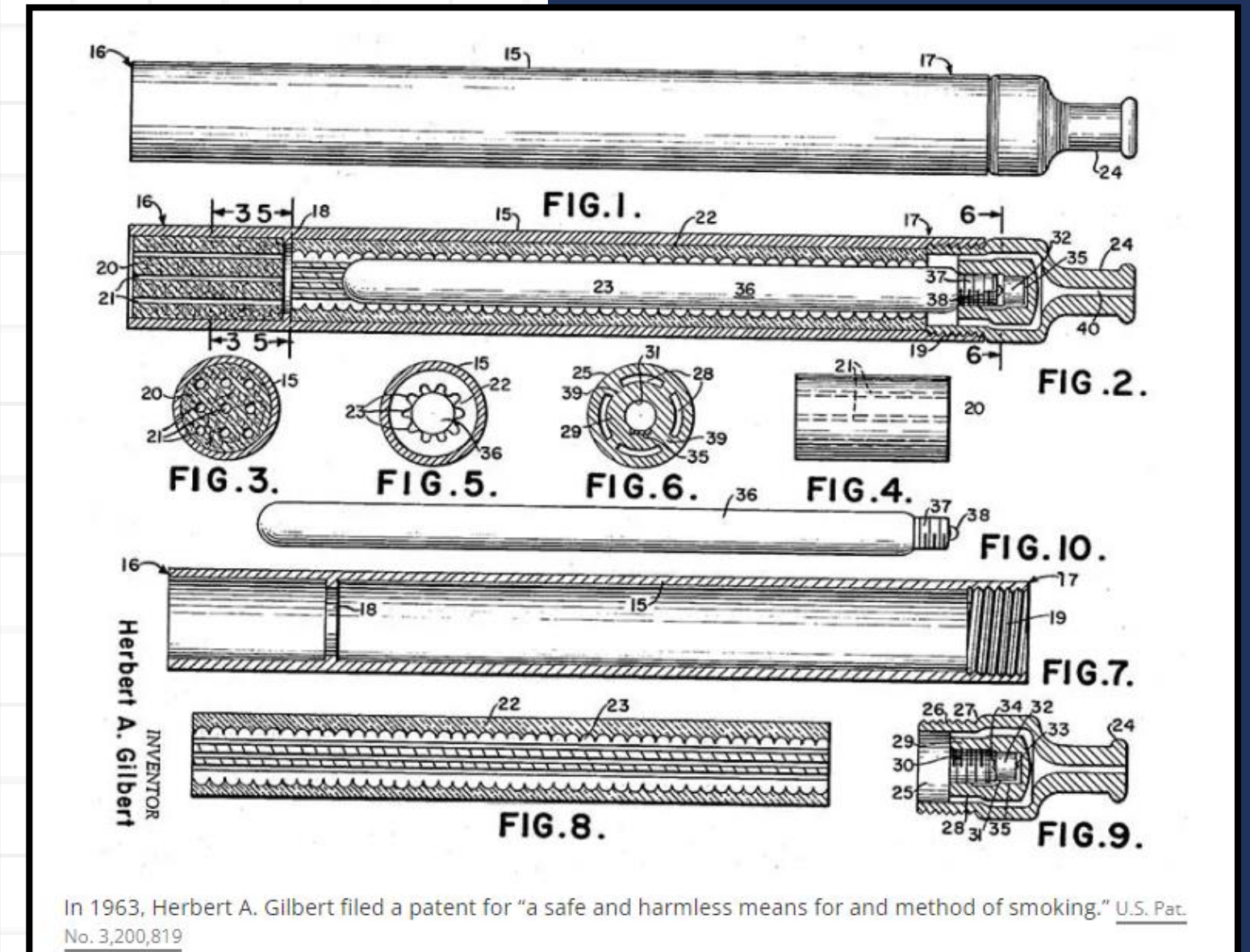
TOP HITS

- History of vapes
- Adolescent brains
- Nicotine & the brain
- Prevalence of adolescent vaping in US
- Vape ingredients
- Emerging youth cessation trends



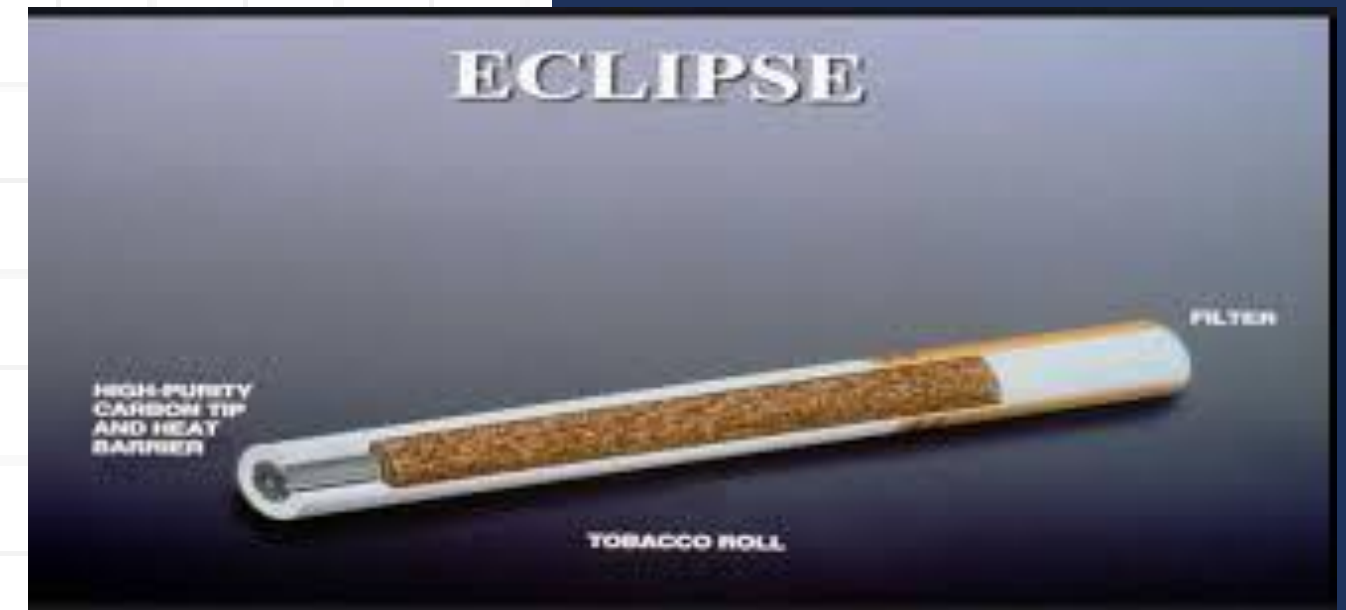
VAPE HISTORY

- Herbert A. Gilbert
- Came in 10 flavors:
 - Mint, rum, cinnamon
 - Nicotine free
- Never went on the market
- 1979
 - Physician and patient did first nicotine research



VAPE HISTORY

- 1980s & 1990s
 - FDA only regulated drug delivery devices, not tobacco products
 - Heat not burn products

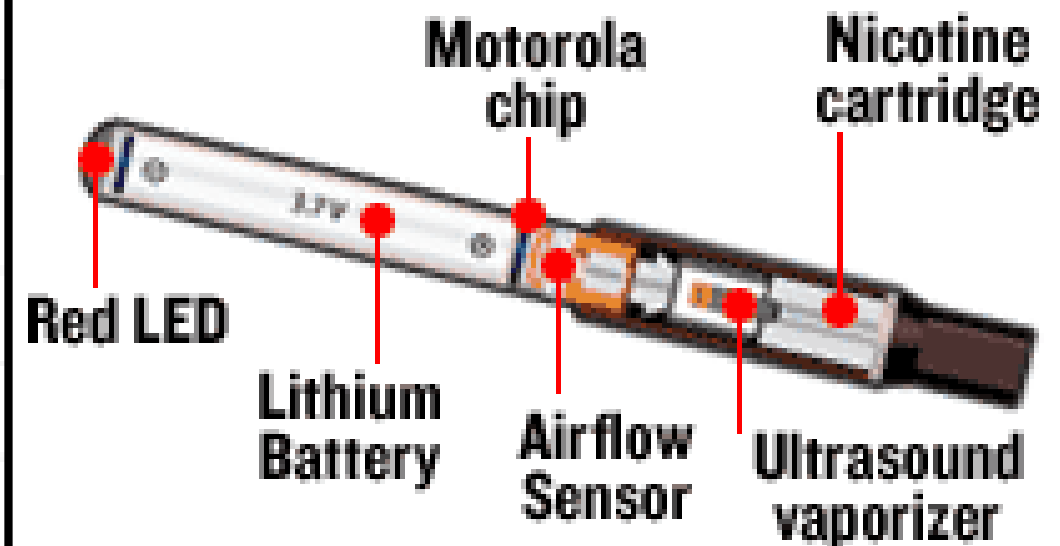


VAPE HISTORY

- Hon Lik
 - 2003
 - Ruyan
 - Patent bought by Imperial

MAKING SMOKE WITHOUT FIRE

The Ruyan atomizer turns nicotine into carcinogen-free vapor.



VAPE HISTORY

- Currently
 - High concentrations of nicotine (5%)
 - Nicotine free (?)
 - 15,000 puffs
 - 5% Nicotine (50mg/mL)
 - 16mL tank
- US industry value 29 billion
 - highest globally



VAPE HISTORY

- “Vape”
 - 2014 Oxford’s Word of the Year
- New tobacco users
- Vapes have been most popular tobacco product since 2013

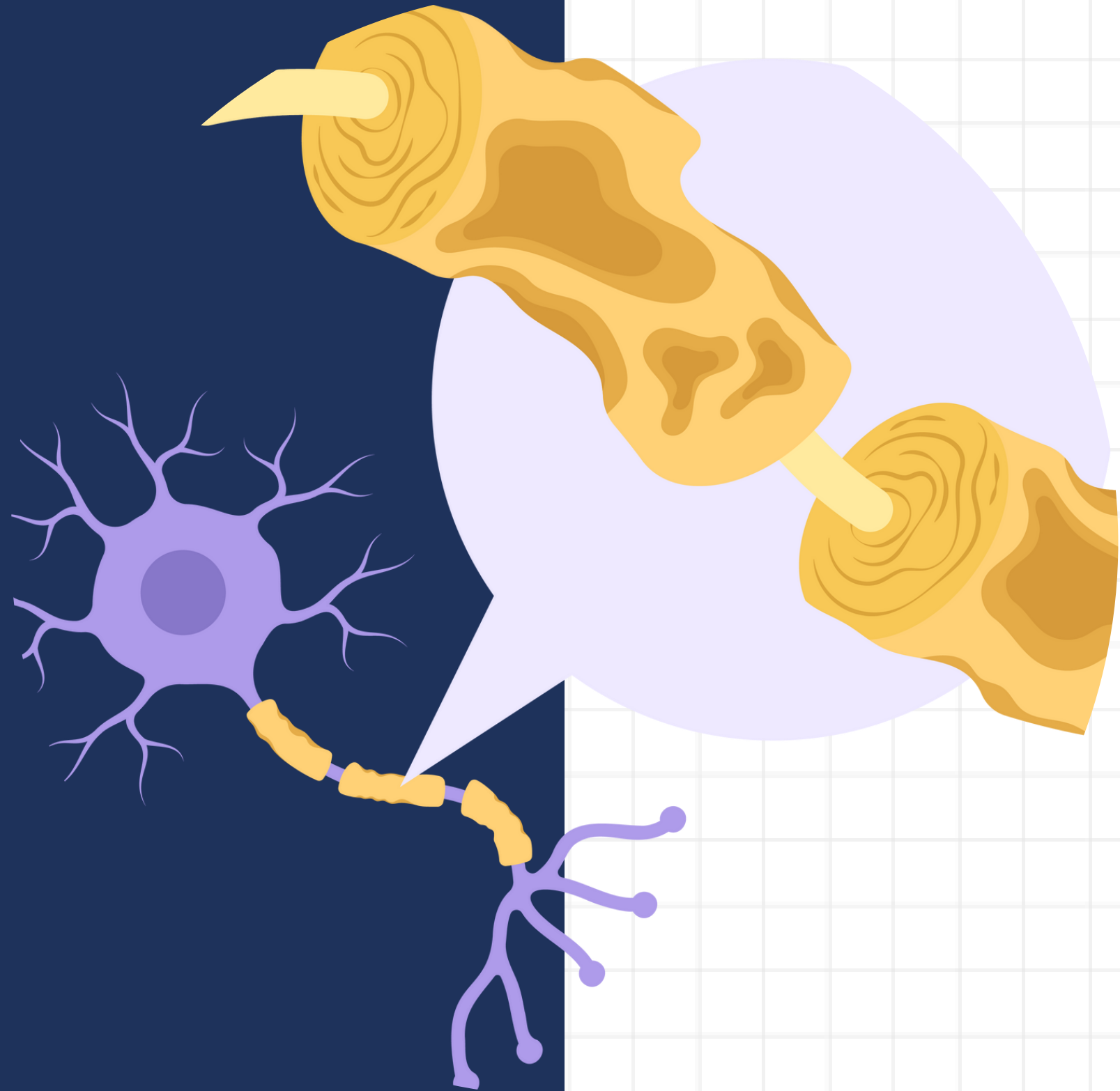


ADOLESCENT BRAINS



- Prefrontal cortex last to develop
 - 25
- Plays apart in
 - Personality
 - Behavior
 - Emotions
 - Decision making

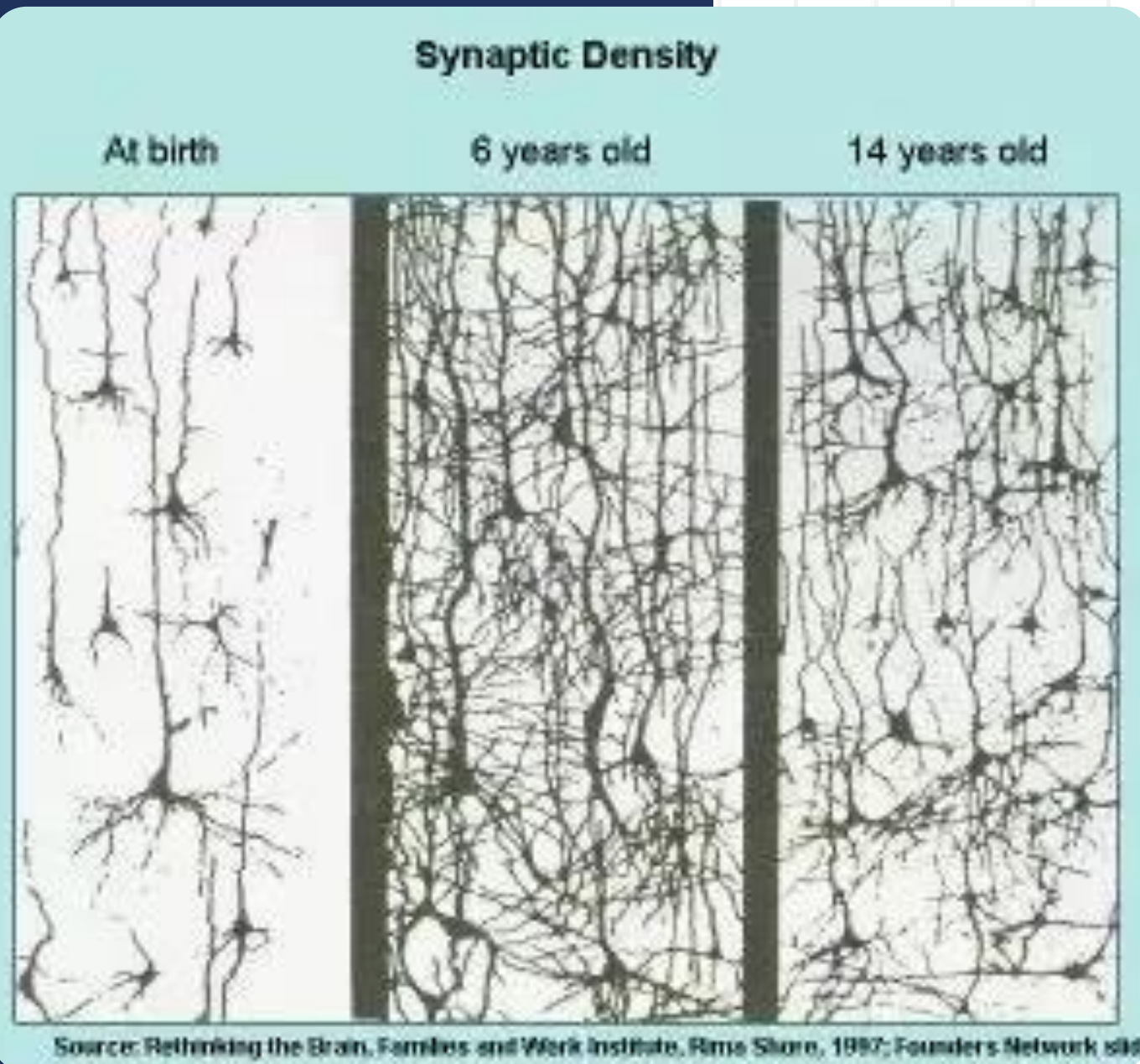
MYELINATION



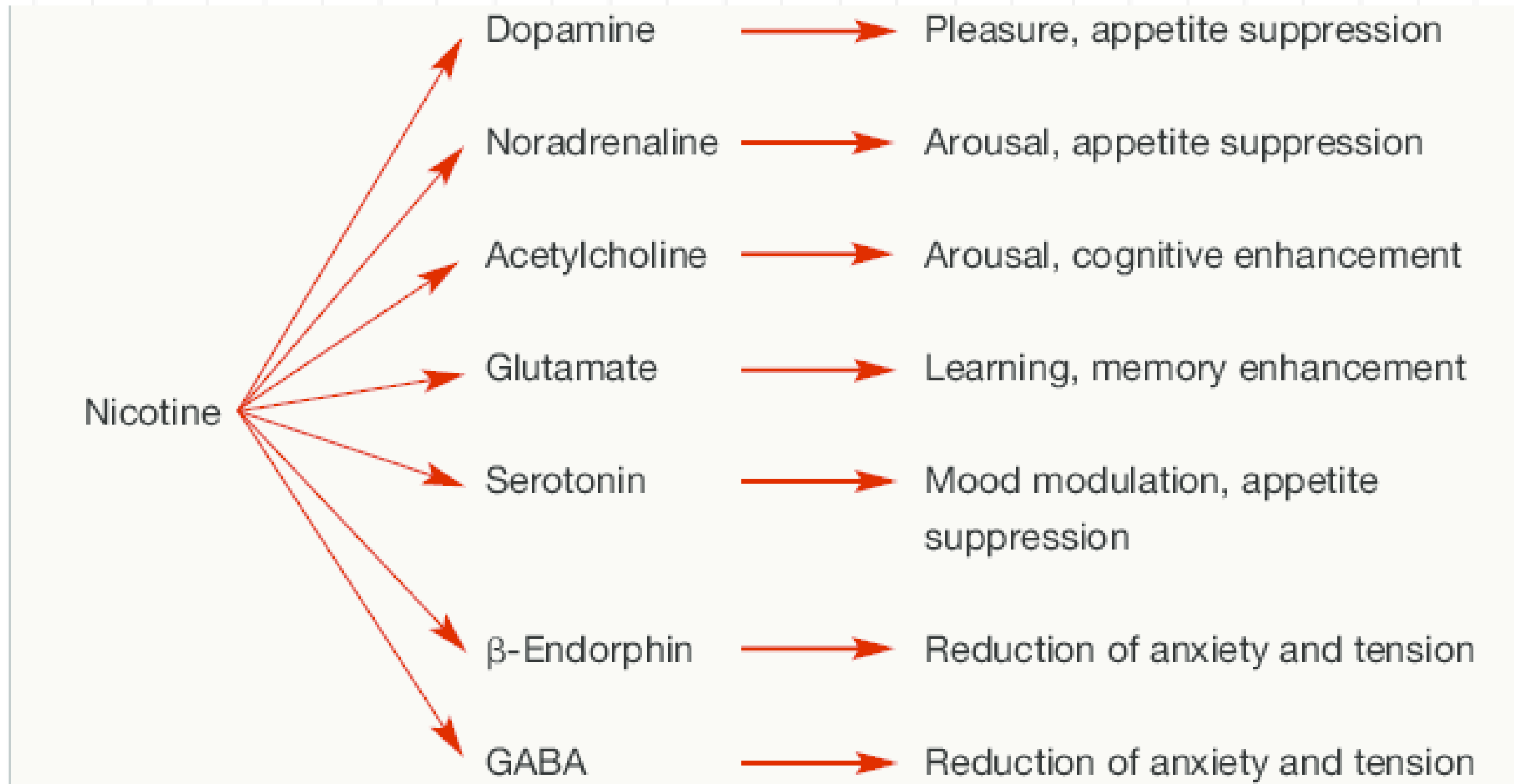
- Fatty layer around neuron
- Speeds up transmission as neuron fires
- In babies:
 - motor function
- In adults
 - faster recall
 - faster learning

SYNAPSE PRUNING

- Process where brain removes neurons and synapses that it doesn't need
 - If you don't use it, you lose it
- Sponge brain at 2, less pruning after adolescence



NICOTINE ON ADOLESCENT BRAINS



HOW MUCH?!

Cigarettes: 1-2mg

Zyn Pouch: 2-8mg

VAPE

GRAPE ICE

Disposable vapes have up to 5,000 puffs.

5,000 puffs = 25 packs of cigarettes

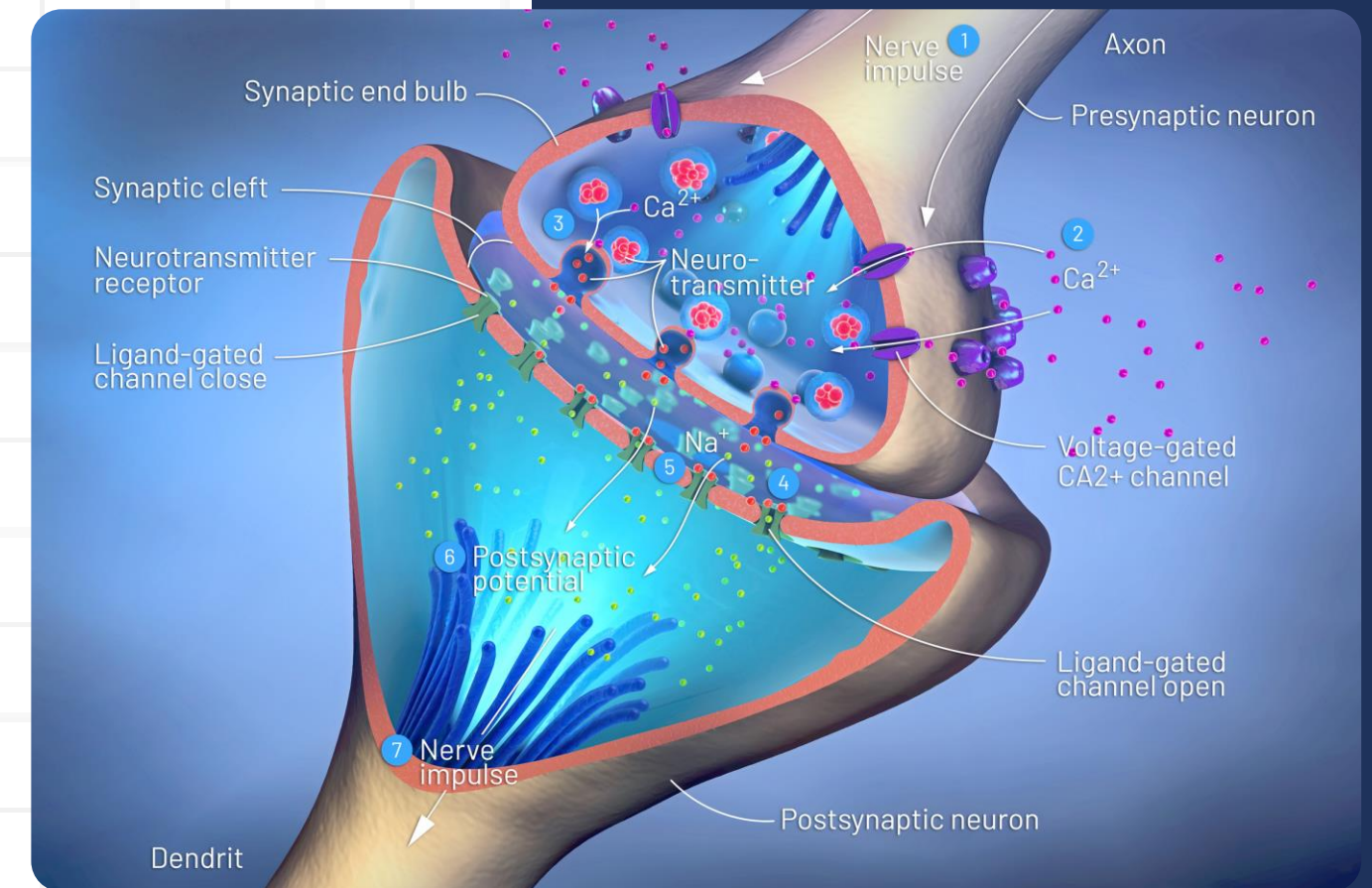


The illustration shows 25 packs of cigarettes, arranged in two rows: the top row has 12 packs and the bottom row has 13 packs. Each pack is depicted with a white top and a dark bottom, with orange cigarettes visible inside.



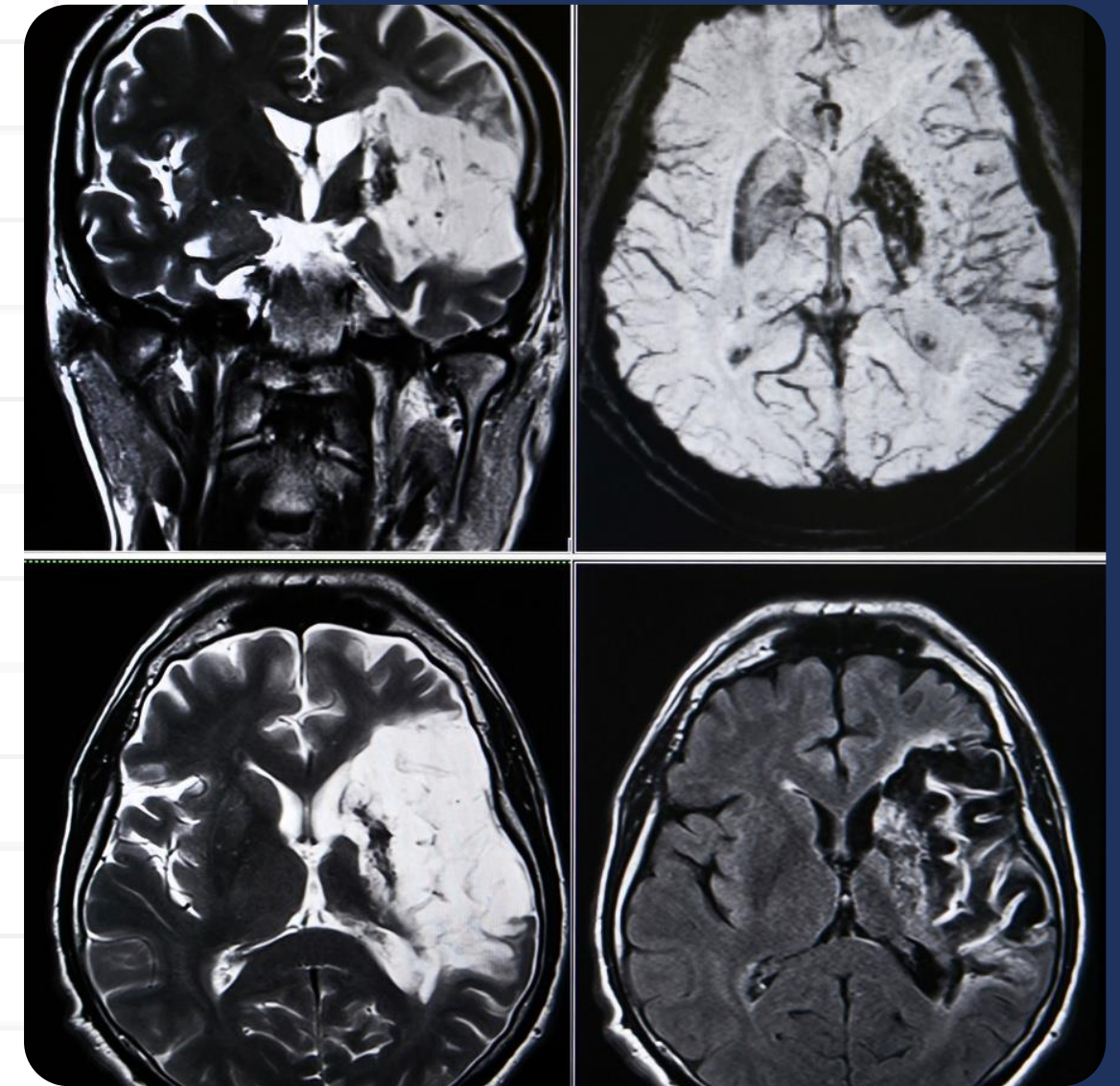
NICOTINE ON ADOLESCENT BRAINS

- Reward systems are in place
 - Easier to “hook”
 - Truly believe can quit at any time, even after a few years
- Withdrawal and craving symptoms within days to weeks of first starting
 - Doesn't require daily use



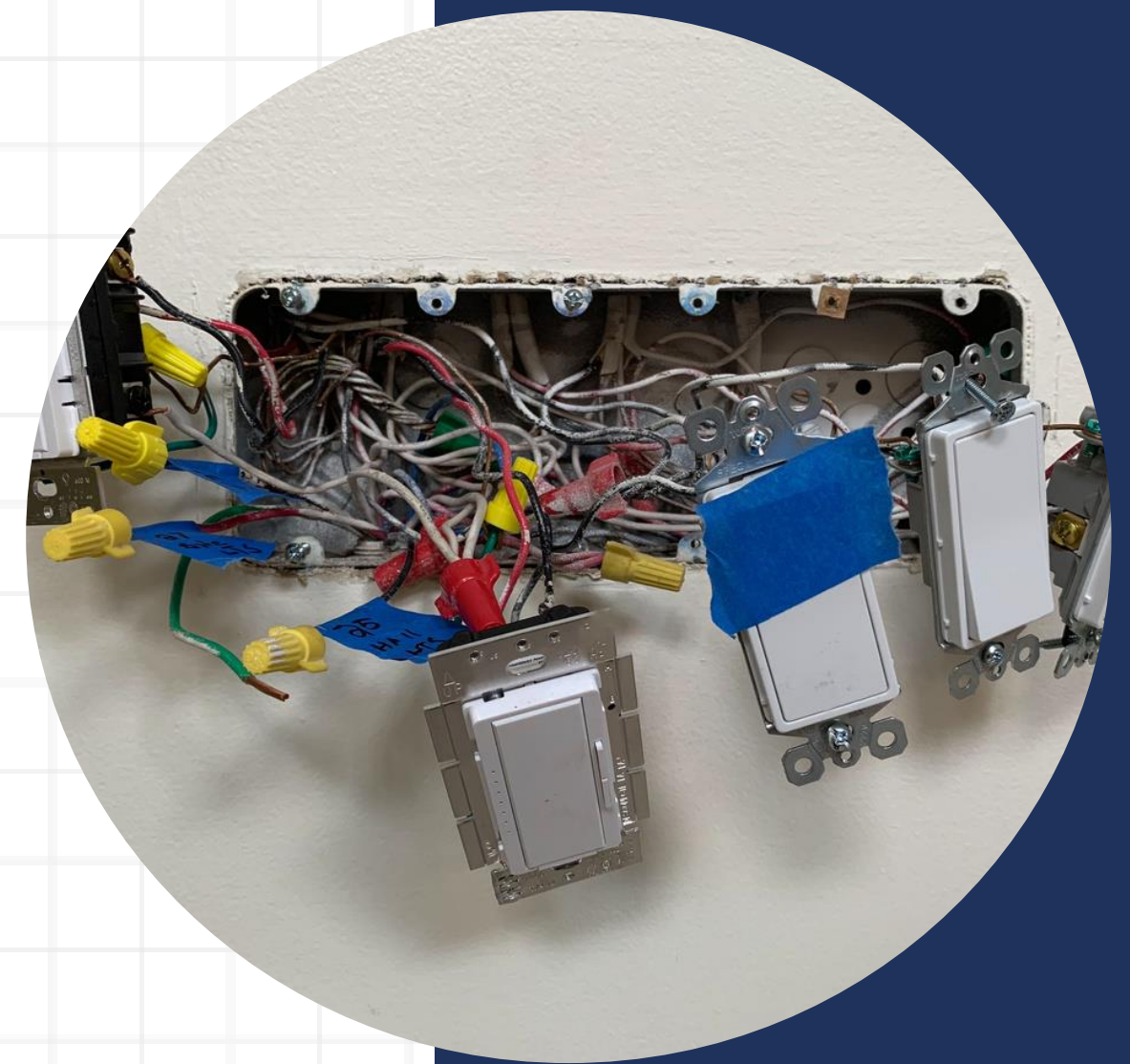
NICOTINE ON ADOLESCENT BRAINS

- Blood Brain Barrier
 - endothelial oxidative stress
 - decreased integrity
 - increased cerebral edema
- Microvascular changes
 - chronic exposure = stroke
 - Vaping vs. smoking
 - Less stroke BUT earlier onset
 - Females higher prevalence

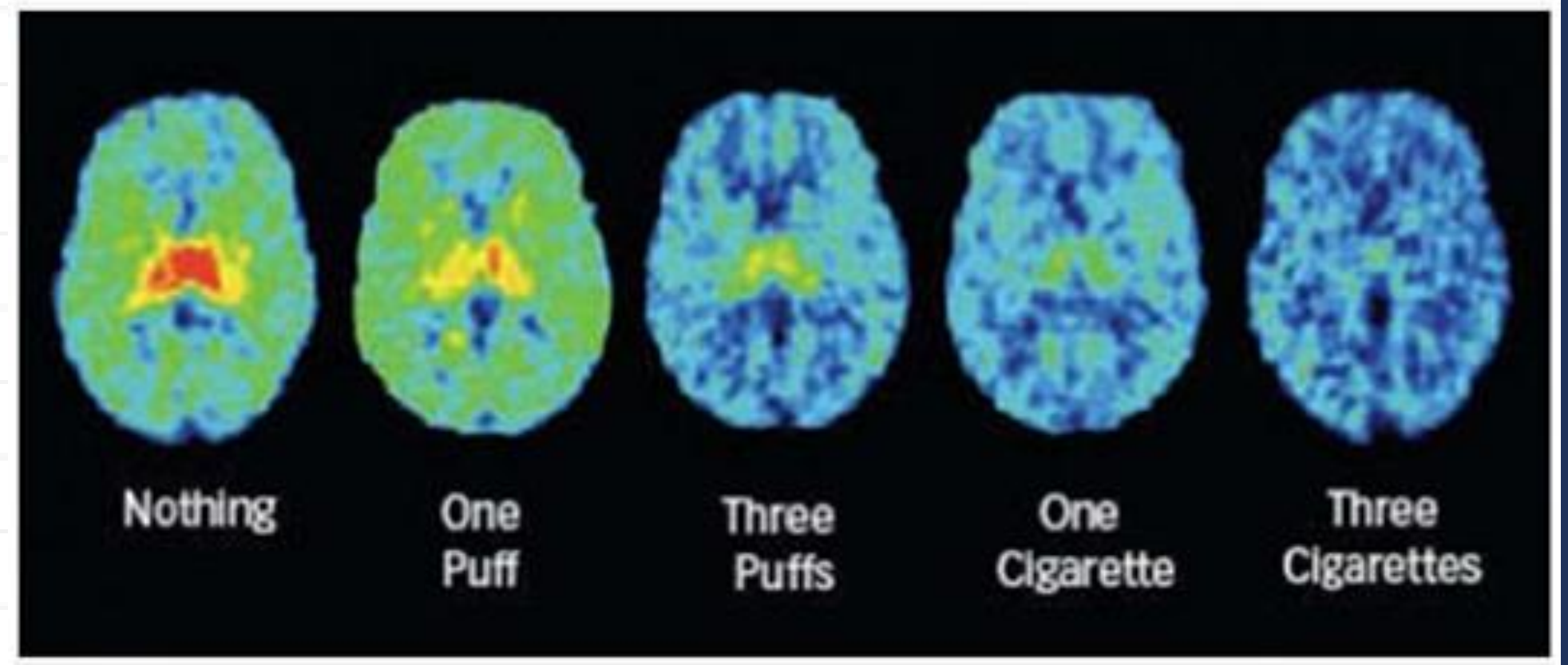


NEUROPLASTICITY

- The brain's ability to change, reorganize, or grow neural networks
- Nicotine provides short term enhancement
- Chronic exposure messes with those “connections”



NICOTINE ON ADOLESCENT BRAINS



INFLUENCES

- Easier to influence than adults
- Social media!
 - hashtags to promote
- Reasons cited for use:
 - Anxiety
 - Stress
 - Prior mental health
 - Anxiety, Depression, ADHD, Schizophrenia, Bipolar Disorder



INFLUENCES



THE GAP GENERATION



- Smoking or Nonsmoking?
- Master Settlement (1998)
 - How did we find out smoking was bad?
 - Rates have plummeted

ELECTRONIC CIGARETTES



- Switching isn't quitting
- Harm Reduction fallacy
- (73%) who use oral nicotine pouches also smoke cigarettes, and nearly half (49%) vape nicotine

MARKETING

GETTING ANSWERS

 E-Cigarette	 E-Cigarette	 E-Cigarette
 E-Cigarette	 E-Cigarette	 E-Cigarette
 E-Cigarette	 E-Cigarette	 E-Cigarette

 Puff Boy	 Game Boy	 MOTI POPI Disposable 1500 Puffs Lush Ice
 Mini Beeper 2.0	 Beeper	 Loaded TFN Disposable
 Walkie Vape	 Walkie Talkie	 Fumot Original RandM Max Pro Rechargeable 3600 Puff Disposable Vape Pen Pod Device

		
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VAPE INGREDIENTS



- Food safe flavors
- Vegetable glycerin
 - cosmetics (smooth)
 - food preservative in gel capsules
- Propylene glycol
 - food additive
 - toothpaste
 - moisturizer
 - asthma inhalers
- Nicotine

EVALI/POPCORN LUNG



- 2000-2003
- Microwaveable Popcorn Factory
 - Production & flavor mixing workers
 - Diacetyl
 - Vitamin E Acetate
- 15 deaths in 511 workers
 - 8 with EVALI
 - 4 on lung transplant list

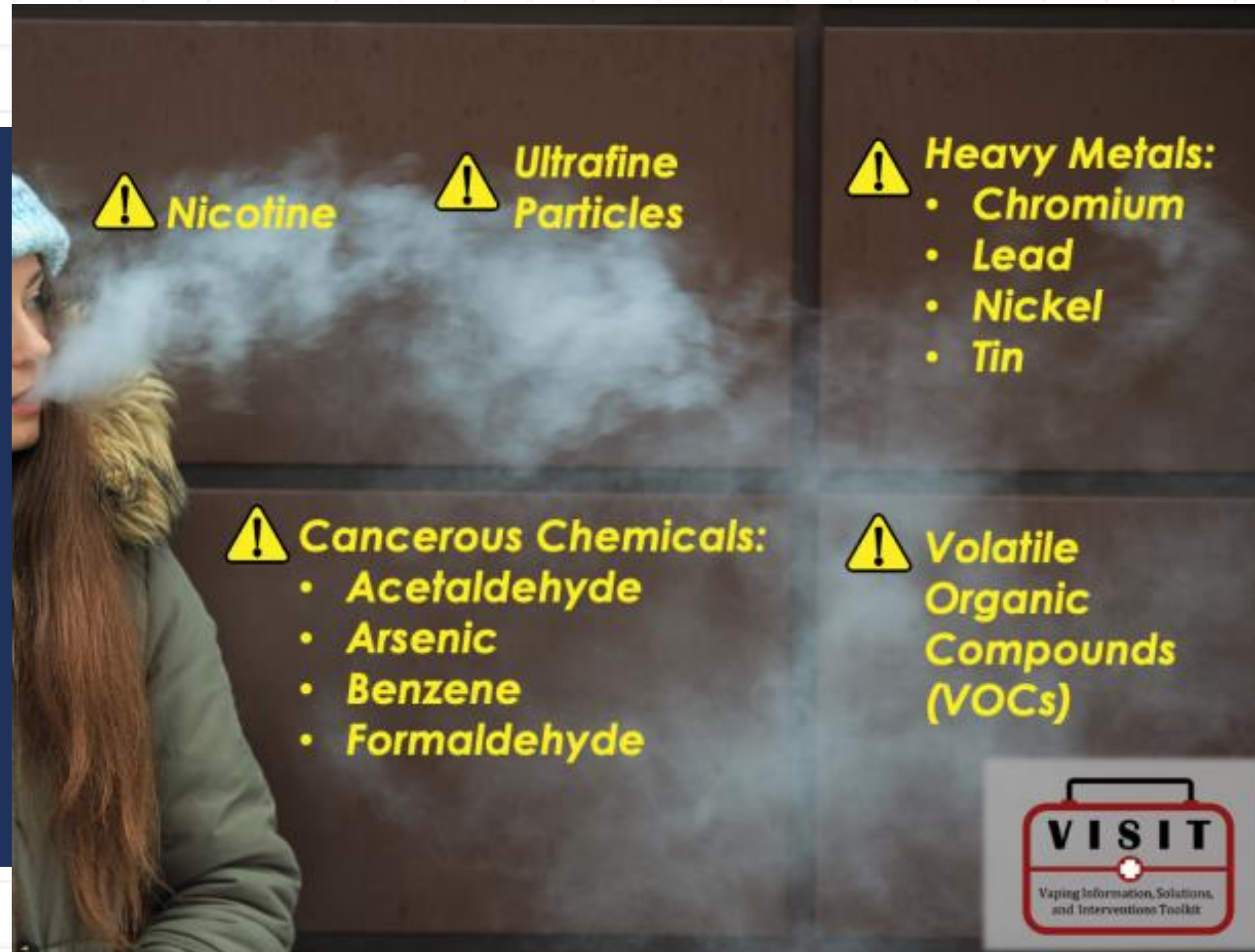
LIVED EXPERIENCE

A 22-year-old man who vaped required a double lung transplant: 'He had no idea how bad it was for him'

"He had a 1% chance of living:" 22-year-old Fargo man receives double lung transplant



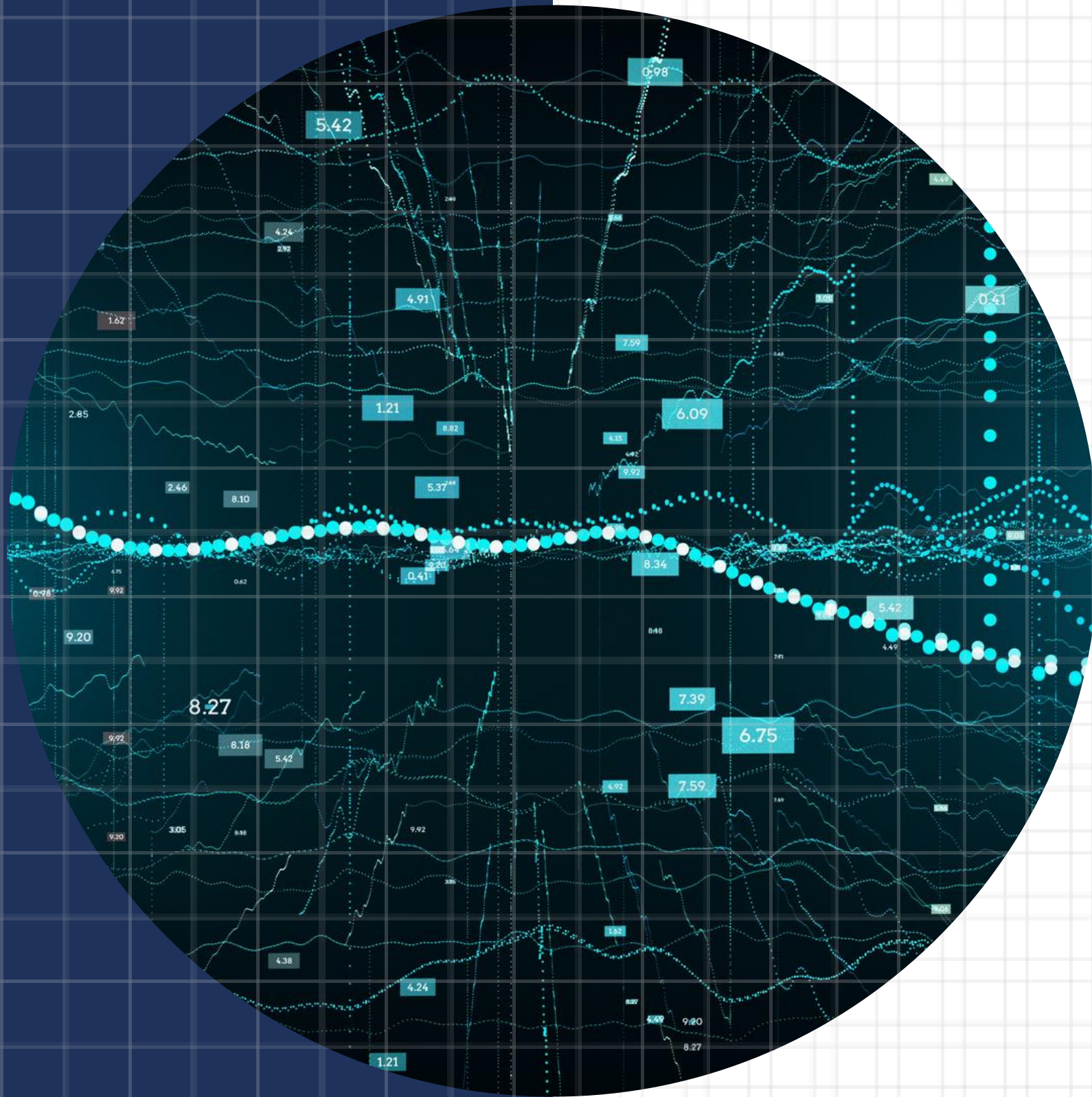
WHAT IS IN THE AEROSOL?



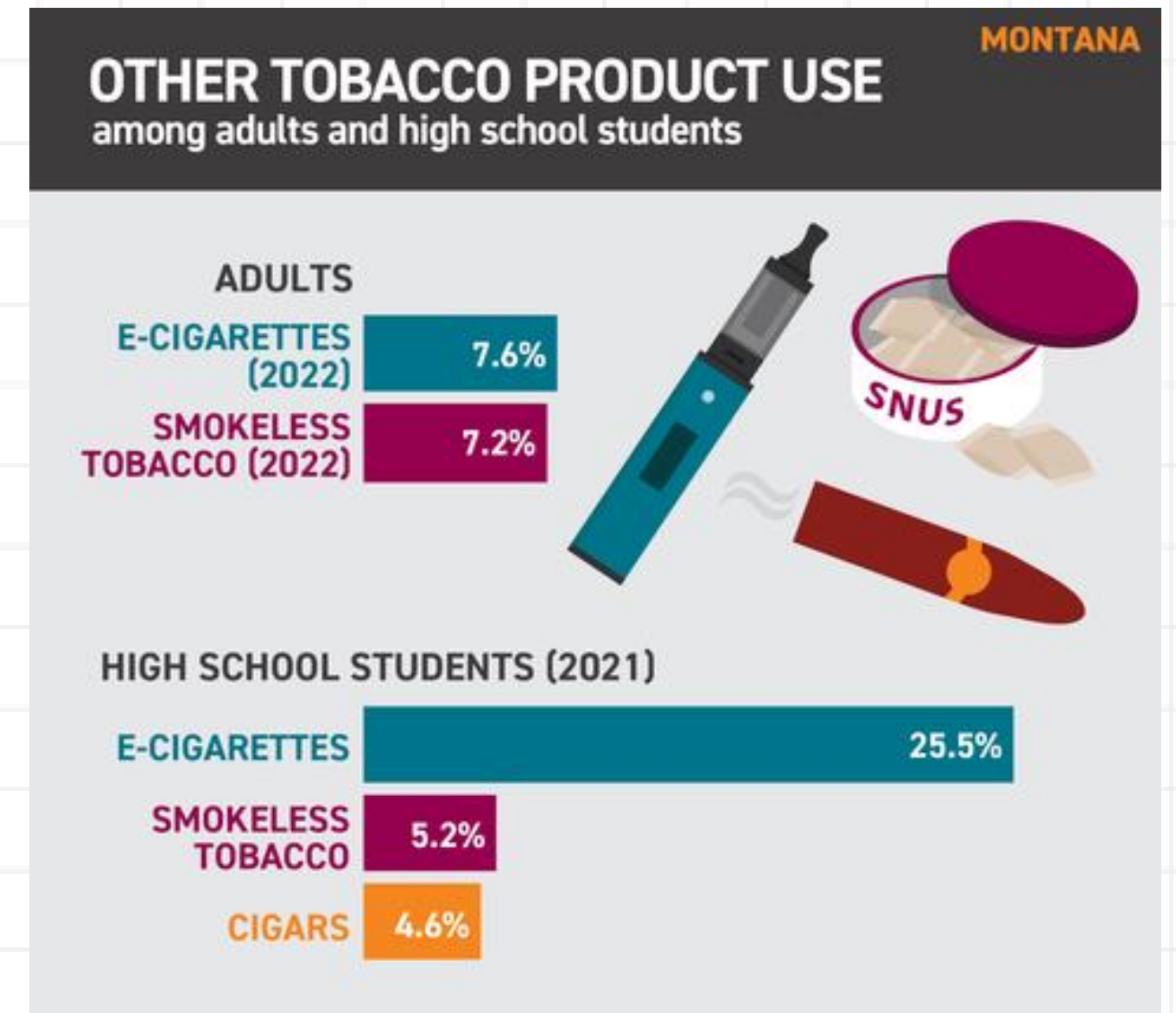
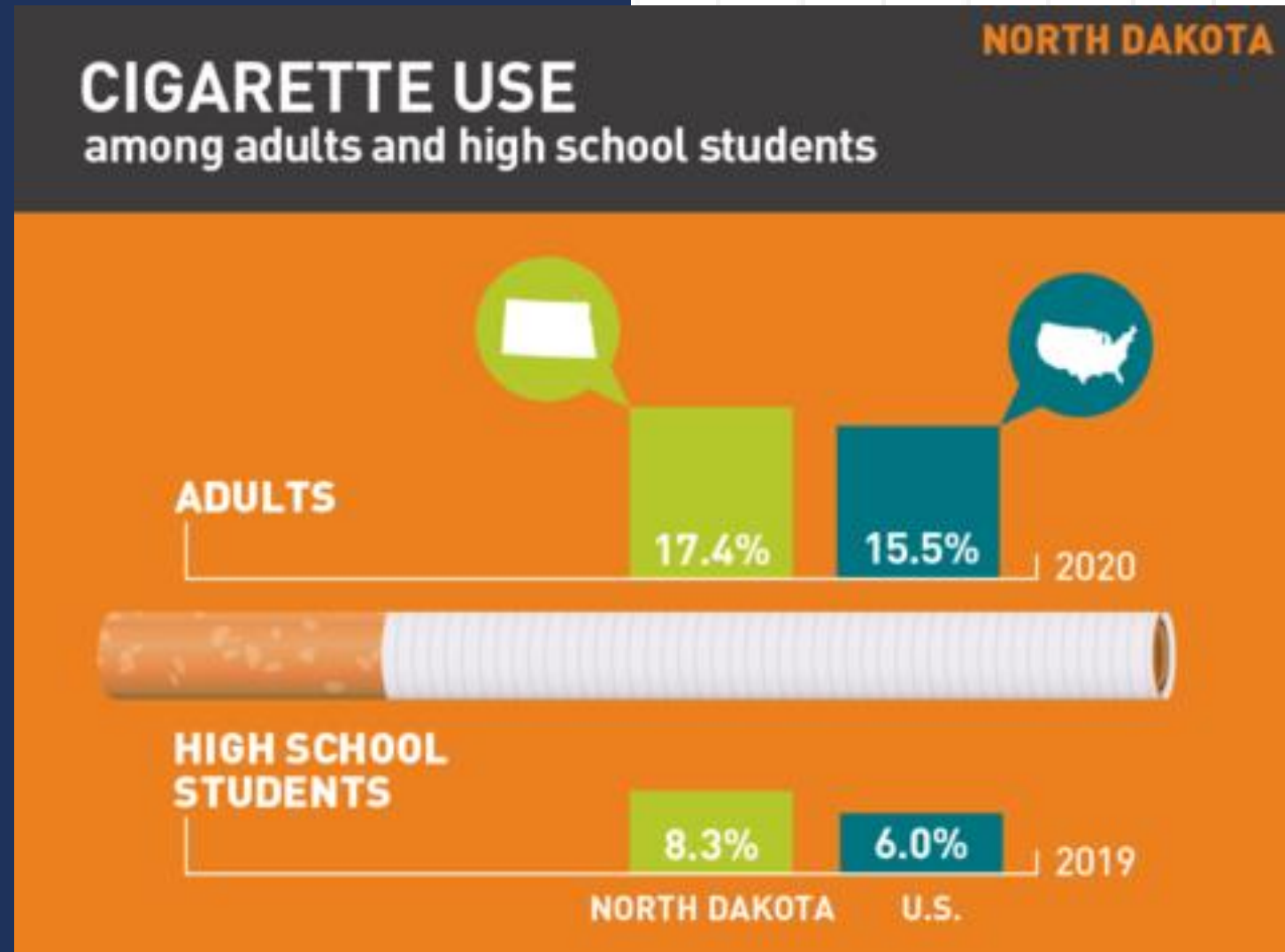
- Stanford REACH Lab
- **Not** water vapor

DATA

- 2023
 - 12.6% of HS using
 - 2022 was 16.5%
 - MS increased to 6.6% from 4.5
 - 1 in 4 that have used in past 30 days use daily



DATA



NICOTINE REPLACEMENT THERAPY



- Mayo Clinic
 - Success rate highest with individualized counseling & NRT
- Controversial use in adolescents, not FDA approved for under 18

NICOTINE REPLACEMENT THERAPY



- American Academy of Pediatrics
 - Approves off label use
- FDA approval?
 - Pros & Cons

MOTIVATIONAL INTERVIEWING



- Popular technique
 - 1990s
- Youth like autonomy
 - “We’re not here to tell you what to do.....”
- THEIR reasons to quit

ADDRESSING ADULTS

- Buy in from adults
 - Realizing not the “better” alternative to smoking
 - Habits of youth
 - CDC best practices



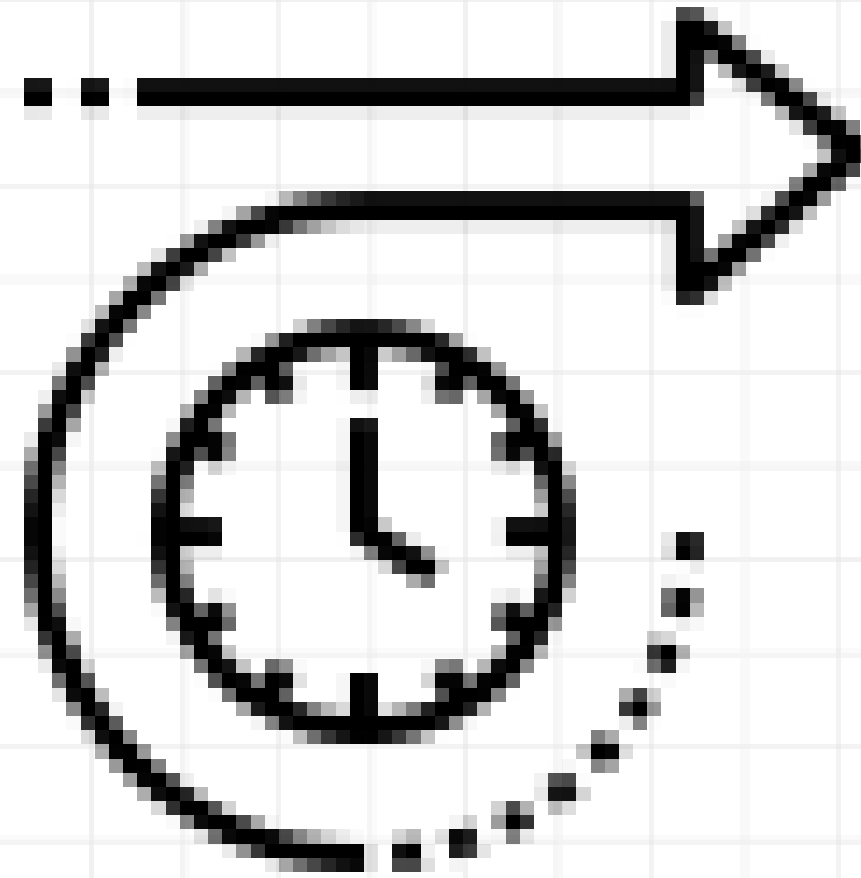
CREATIVE WAYS TO REACH ADOLESCENTS

- FCPH “Money” Game
 - Social notes from the game
 - YouTube influences
 - Counting change
 - They **HATE** giving out money



VAPE FUTURE

- Currently
 - Nicotine concentrations
 - Regulations?
 - Dual uses
 - Marijuana
 - Fentanyl
 - Benzos
 - Melatonin
 - Other?



NICOTINE POUCHES

- Zyn, Velo
- “Tobacco Free”
 - Marketed as similar to Nicorette
- Easy to conceal
- Use when can't vape/smoke



ENVIRONMENTAL IMPACT

- Lithium ion battery
 - Lithium leaks out into soil/water
- E-waste
 - 150 million devices a year
 - 8% of users dispose properly



THANK YOU!

**I hope you learn something new
today!**



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