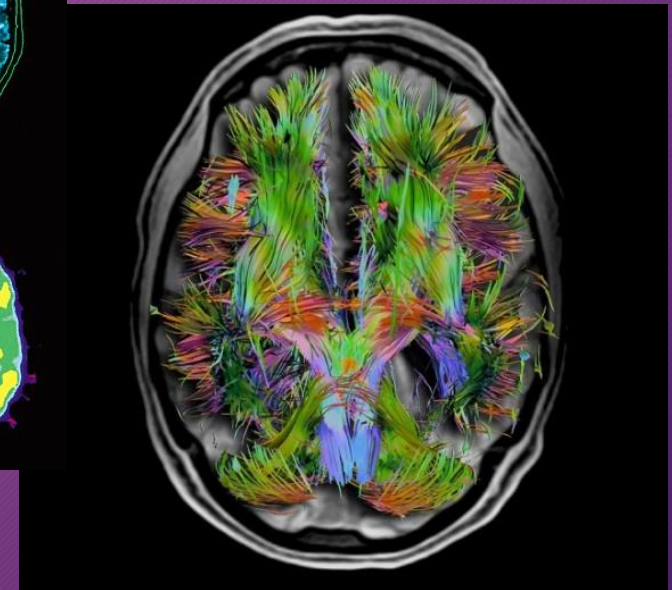
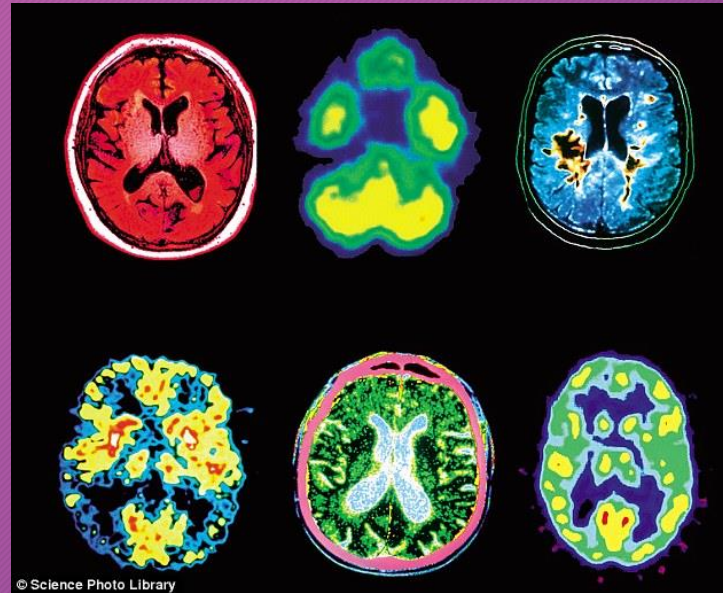


Risky Business: Helping Adolescents Manage Risk Taking Behaviors

- Michael Nerney and Associates
- PO Box 93, Long Lake, NY 12847
 - 518-624-5351
 - mcnerneyll@frontiernet.net

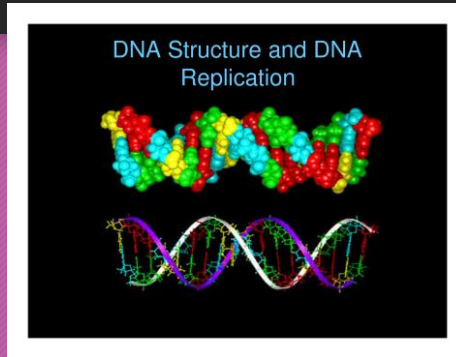
New Research on the Adolescent Brain

- Discoveries from Neuroimaging
 - fMRI
 - Diffusion Spectrum Imaging
 - SQUID Magnetometry
 - MEG Magnetoencephalography



Who is at Risk?

- Genetics



- Environment

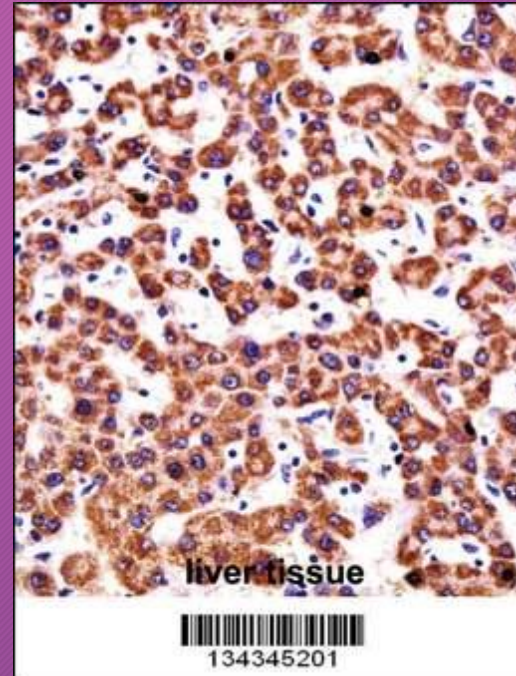


- Experiences



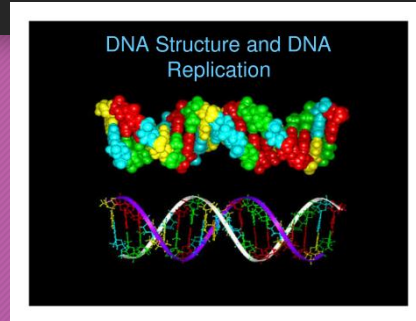
P450 CYP2D6

- Codeine converted to Morphine
- Metabolic function
- Poor
- Effective
- Moderate
- Ultra fast



A Disease of the Brain Who is at Risk?

- Genetics



- Environment

- Exposure



Brain Facts

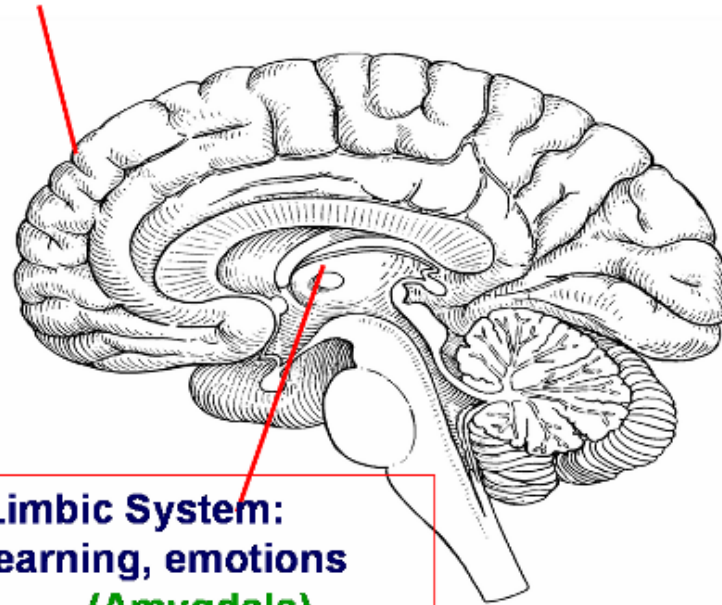
- 200 Billion Cells
- Gray Matter/White Matter



Brain Facts

- Jumping Genes
- Migration and Activation

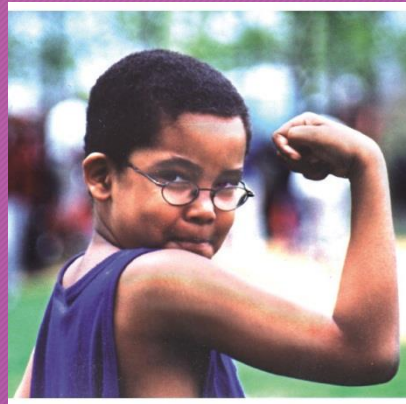
Frontal Cortex:
decision-making, self-control



Limbic System:
learning, emotions
(Amygdala)

Adolescent Hormones

- Testosterone
 - Primary and Secondary Sex Characteristics

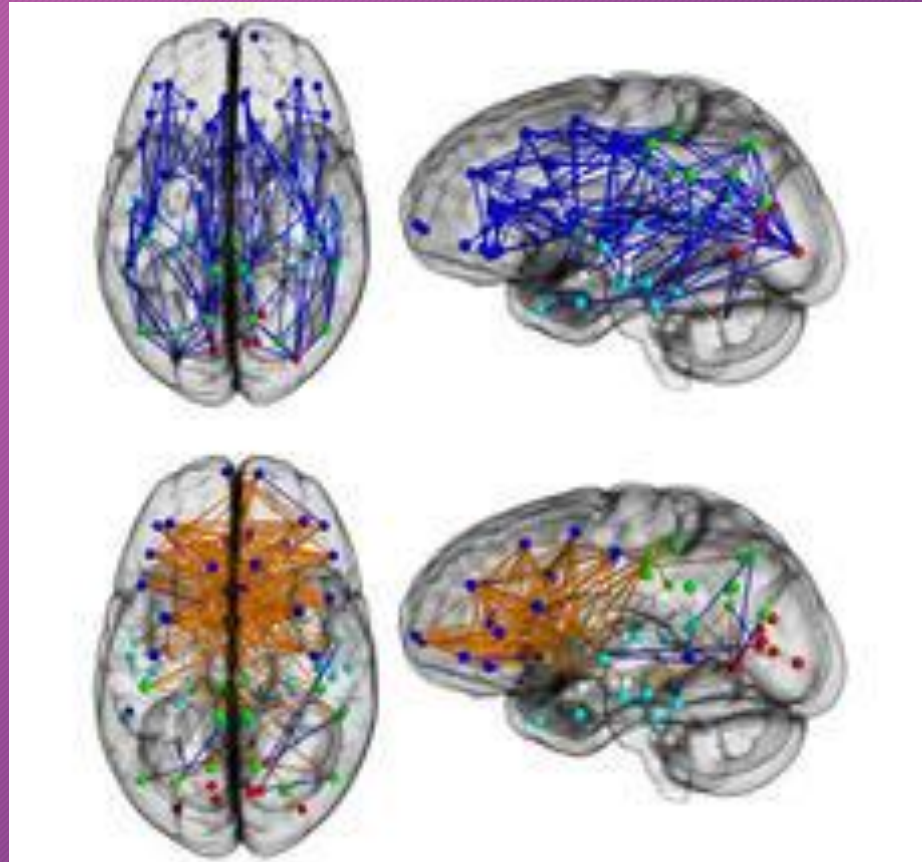


- Estrogen
 - Primary and Secondary Sex Characteristics



Gender Connectome Project

- University of Pennsylvania
 - Raquel and Reuben Gur
 - DTI
 - 949 subjects 521 Females,
 - 428 Males 8-22 years of age
- Male Brain
- *Female Brain*



Why is this Brain at Risk?

- Emotional Intensity
 - 2 to 4 Times
 - More Frequent Change
 - Male/Female
- Legitimate/Normal



Why is this Brain at Risk?

- Emotional Intensity
 - Mirror, Mirror
 - A/A sites
 - Risk/Reward in Change of Appearance
- Male/Female Brain Differences

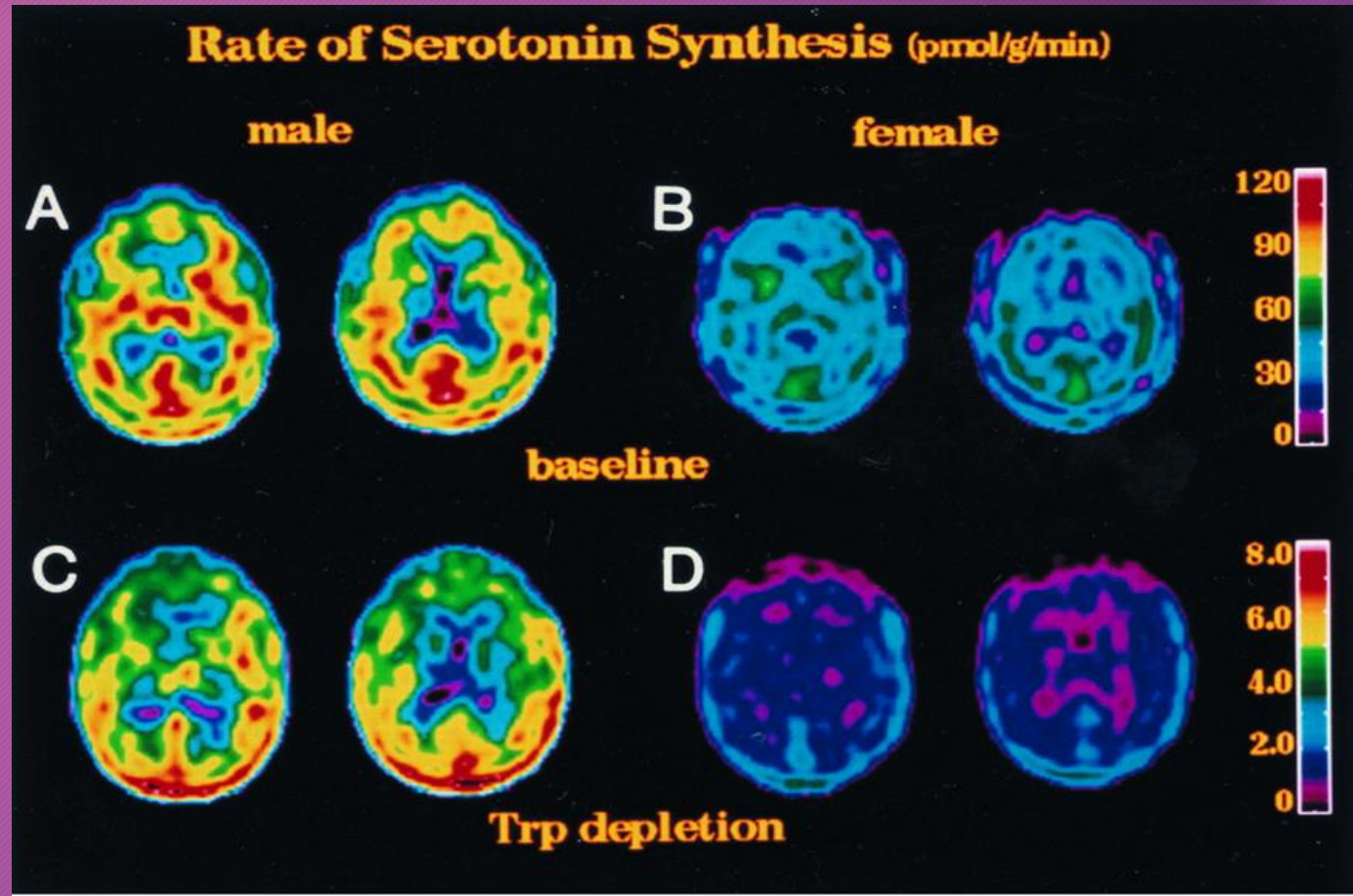


Source: detroit.cblocal.com

Why is this Brain at Risk?

Depression

Serotonin Synthesis



Why is this Brain at Risk?

- Problem Solving
 - No Load

Social/Emotional Crisis

The Crisis Chemical THP

- Emotional Support Essential



Teens and Conflict

- Migration and Activation
 - Cell Migration
 - L1
 - Benchmarks
 - “I Know!”
 - Open Conflict
- Don’t take it personally



Teen Brains and Decisions

- Love to Hate
 - Validate emotions
 - Limit judgement
- That's What I Want
 - What is the “reason”?
 - If not now, then when
 - If not that, then what



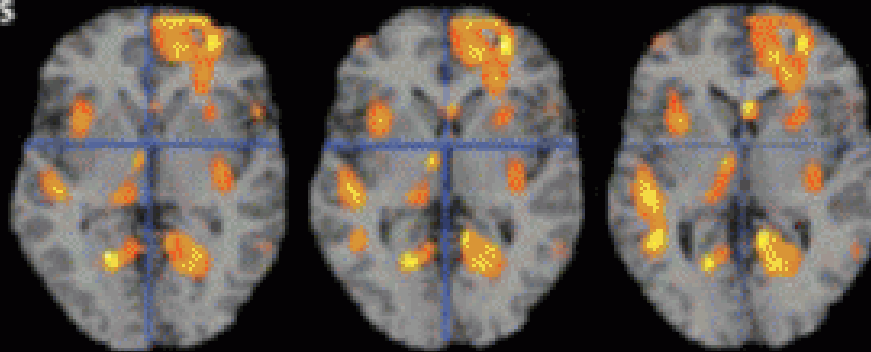
Motivation for Drug Use

- Seek drugs for:
 - Create positive effect in brain chemistry
 - Dopamine release in reward sites
 - Suppress negative emotions
 - Activation in specific sites

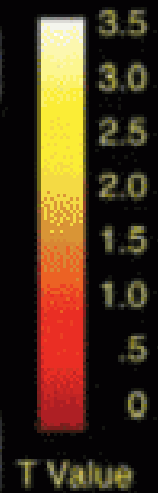
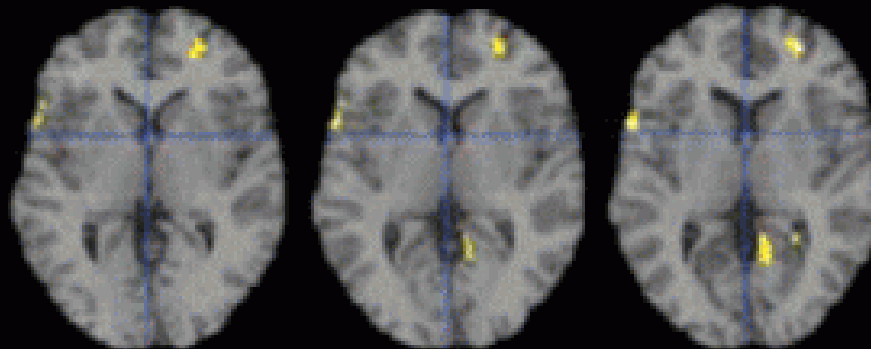


Gender Differences

Female Smokers
N=6



Male Smokers
N=5



Most Popular Drugs

- Alcohol, Nicotine and Marijuana
- Pain Pills/Fentanyl
- Heroin
- Often combined use
 - Different risk factors when combined

New Cohort

Which women and girls are most likely to binge drink?



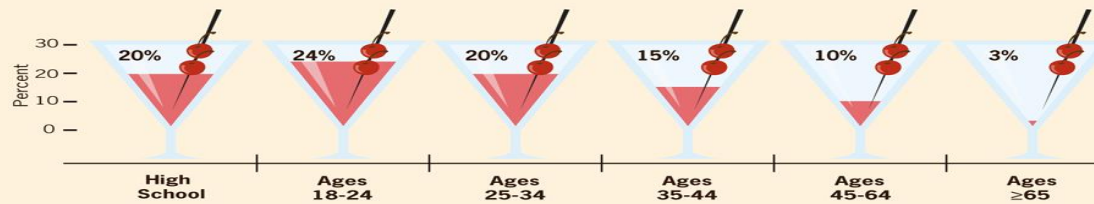
Women aged 18-34 and high school girls

Whites & Hispanics

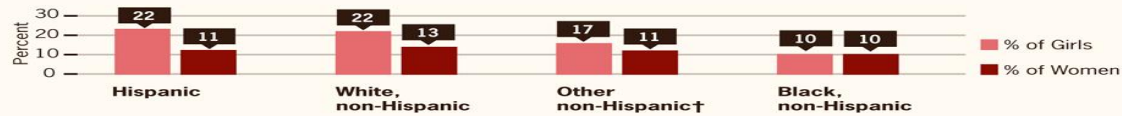


Women with household incomes above \$75,000

Binge drinking* among women and high school girls by age group



Binge drinking* by race/ethnicity among women and high school girls



†Other non-Hispanic includes Asian, Native Hawaiian/other Pacific Islander, American Indian/Alaskan Native, and multiracial.

Binge drinking* among high school students reporting current alcohol use* by grade



SOURCES: Behavioral Risk Factor Surveillance System (BRFSS) and Youth Risk Behavior Survey (YRBS), 2011.
*reported behavior in the past 30 days

Brain Facts

- Risk Taking
 - New Sites of Activity
 - Influence of Peers
 - Male/Female

- Emotional Reward



I Second That Emotion

- Social Bonding and Connecting
- You got to have friends.
- Like and Admire



Cultural and Environmental Influences

- Role Models
- TV
- Social Media



Risk Taking

- Kylie Jenner Challenge







































Risk Taking



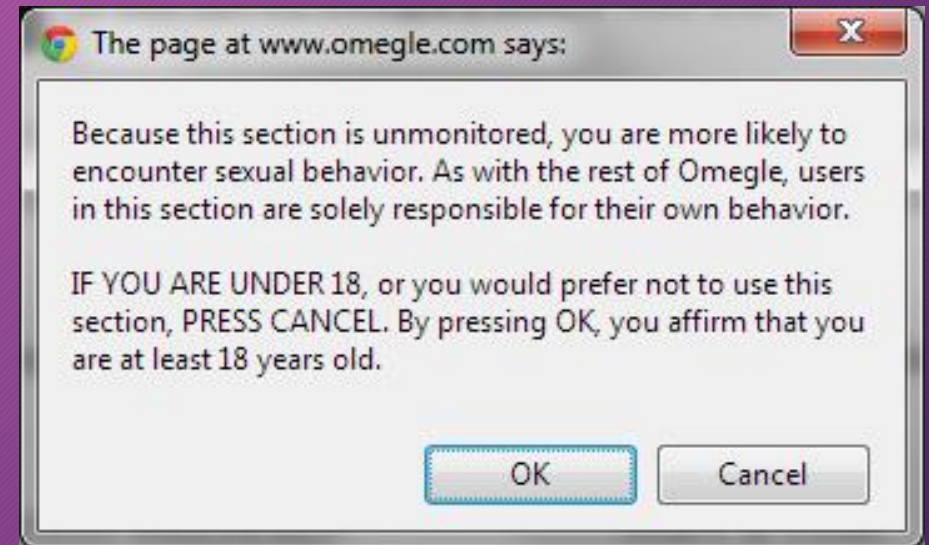
THE CHOKING GAME

AND SOME OF THE LIVES IT'S TAKEN

 Josh Huntington - 18 Yuba Falls, Idaho May 7, 1989 - Nov 14, 2007	 <i>I love you, I miss you</i> Leo McPhee - 16 Saint John's, Canada Sept 26, 1989 - March 21, 2006	 Kristian Tyler Marceno - 15 Cap, North Carolina May 20, 1993 - Nov 2, 2008
 Eric Matthew Greenup - 15 Alice, Texas April 1, 1990 - Dec 11, 2005	 Sean Sanders - 16 Lake in the Hills, Illinois Sept 21, 1990 - Feb 15, 2003	 Utah Thomas Gikard Martin - 12 August, Michigan April 16, 1996 - Nov 14, 2008
 Erik Robinson - 12 Santa Monica, California Jan 27, 1998 - April 21, 2010	 Cody Ryan - 14 Lansing, Michigan Jan 3, 1995 - Mar 17, 2008	 Tyler Mison - 13 Ipswich, United Kingdom Feb 5, 1996 - Sep 6, 2009
 Lauran Joy Baaske - 13 Beaufort, South Carolina Feb 23, 1997 - July 4, 2010	 Brianna Reid Canacari - 12 Gerrardville, Colorado Oct 3, 1997 - June 19, 2010	 Skyler W. Smith - 12 Tucson, Arizona April 4, 1999 - May 30, 2011
 Braden Erickson - 13 Tucson, Arizona Feb 19, 1992 - May 20, 2005	 Austin H. Rasmussen - 10 Tucson, Idaho Feb 20, 2002 - March 31, 2012	 Jacob - 15 St. Louis, Missouri Feb 26, 2010
 Cayden Scott Winzer - 12 Newark, Ohio Dec 12, 1994 - Jan 31, 2007	 Marka Lynn Bedolla West - 15 Ann Arbor, Michigan Dec 30, 1993 - July 16, 2009	 Alex Quinsky - 18 Yonkers, Maine Jan 26, 1993 - Nov 16, 2009
 Dallas Tol' Stovall - 13 Farmington, New Mexico Jan 22, 1995 - Oct 26, 2008	 Jay Smith - 17 Ames, Tennessee Sept 7, 1991 - Aug 3, 2009	 Justin Paul Butler - 16 California March 30, 1994 - Sep 20, 2010
 Joshua Leo Engle - 13 Burlington, Iowa Aug 8, 1998 - Nov 21, 2011	 Kelly Cathyle LaRocque - 18 Hillsboro, N. Carolina Nov 21, 1991 - Jan 7, 2010	 Nicholas Ryan Dessoffly - 16 Palmer, Ohio Oct 11, 1999 - Jan 26, 2011
 Thomas Exum Hyder - 12 Johnson City, Tennessee Aug 10, 1984 - March 10, 1977	 Xavier John Drazo - 13 California June 8, 1993 - May 21, 2006	 Jack Martin Doyle - 13 Wisconsin, Wisconsin Nov 8, 1992 - Oct 25, 2006
 Alex Beth Somers - 14 Macon, Georgia Oct 24, 1993 - Oct 5, 2008	 Billy Jay Crow - 11 Rellei, Ohio Dec 28, 1998 - Dec 23, 2010	 Brody Everett Hageman - 14 Bloomington, Illinois Dec 14, 1997 - April 4, 2012
 David G. Wright - 13 Lawrenceville, Georgia April 18, 1997 - Oct 30, 2010	 Drew Paul Albin Fiala - 11 David City, Nebraska March 17, 1998 - March 12, 2010	 Florent Tord - 13 Geneva, Switzerland May 28, 2009
 Gage Andrew Wink - 12 Shelburne, Wisconsin Oct 25, 1999 - Sept 15, 2012	 Zachary Michael Hughes - 15 Imous City, Illinois Dec 17, 1991 - Aug 5, 2007	 Zakry Jon Bridges - 14 Madras, Kentucky June 28, 1997 - Sep 5, 2011

High Risk Apps

- Omegle



Risky Business



Household Products

- Solvents

- Brain Damage
- Sudden Fatal Event



Alcohol: New Products

- Alcohol treats



- Pocket Shots

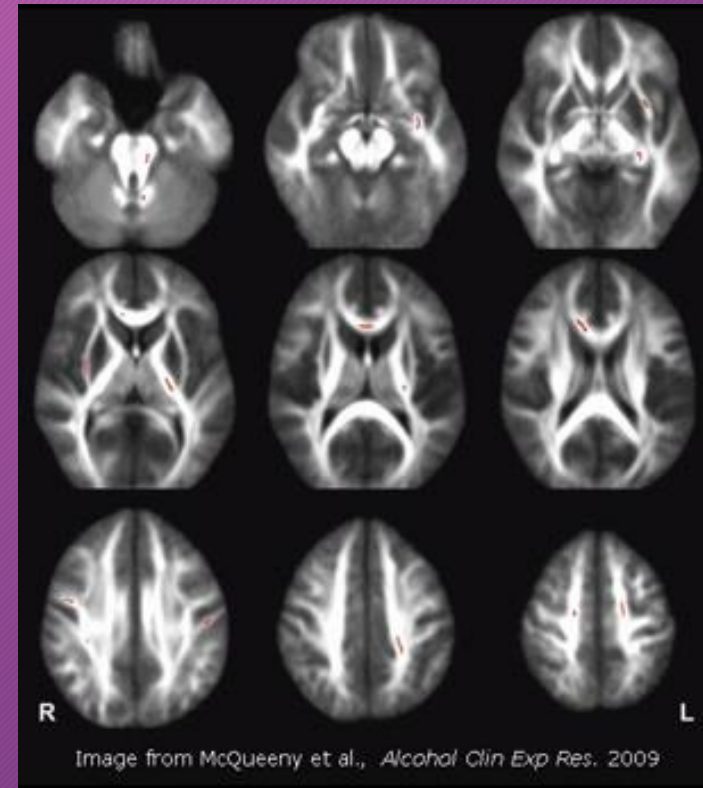


Pocket Shot



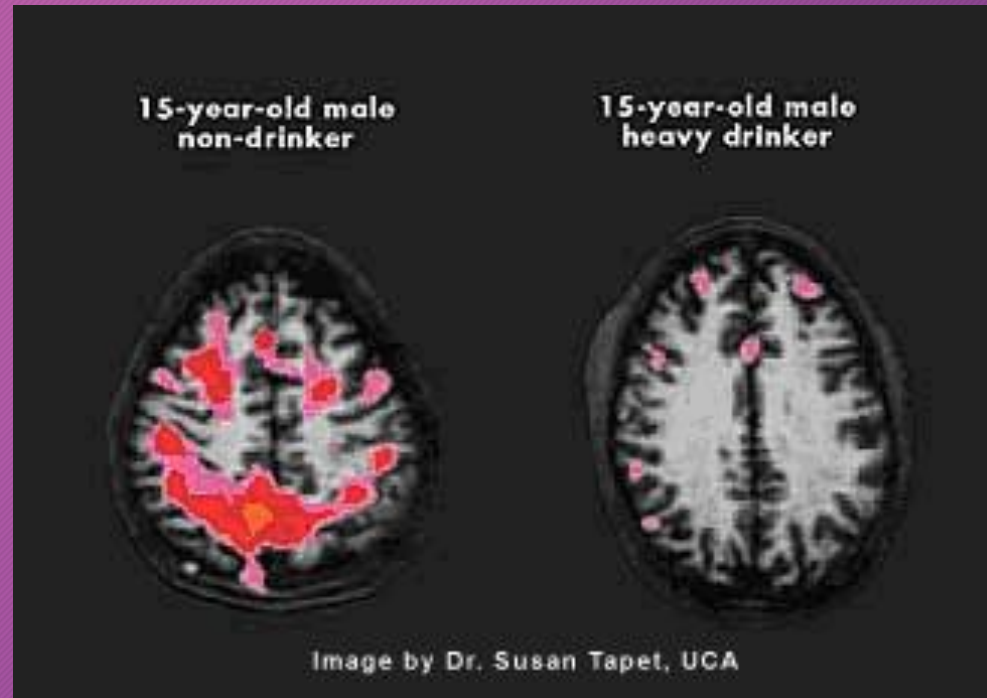
Long Term Outcomes of Underage Drinking

- 10% Loss of Volume in Prefrontal Cortex
 - Executive Function
 - Learning
 - Reasoning



Long Term Outcomes

- 10% Loss of Volume in Hippocampus
 - Memory
 - Motivation
 - Social Behaviors



Alcohol: the Costs

- 13 teens die each day in the US
- 600,000 HS and college students injured per year
- 70,000 alcohol-involved sexual assaults per year
- Drop outs/Flunk outs
- Unwanted pregnancies
- Addiction potential



Impulse Control

- PRDM2

Down regulated

Disrupts impulse control



New Products

- Marijuana edibles



New Products: Dabbing

- Butane Hash Oil
- Amber, Shatter, Ear Wax



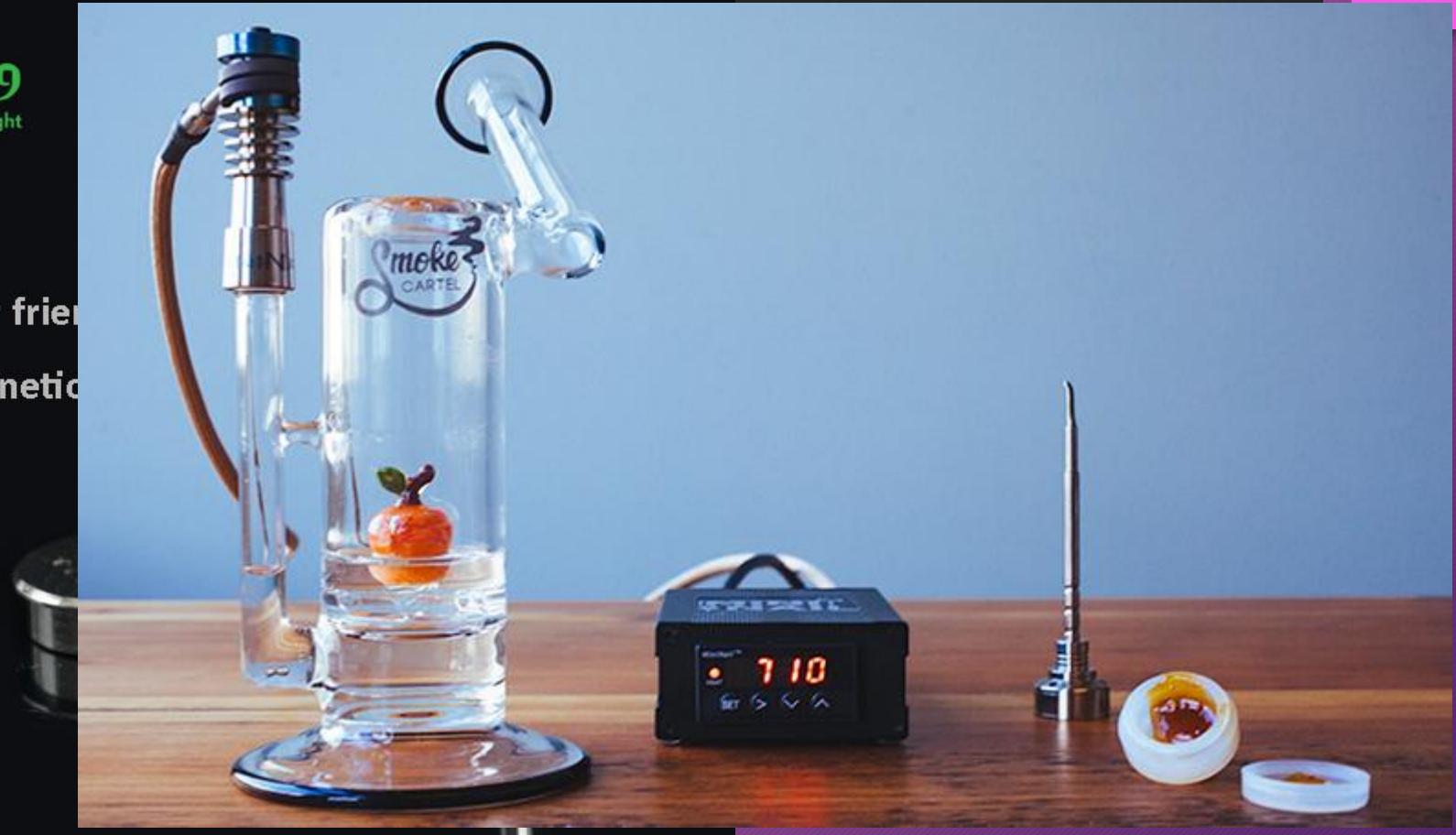
The Healthy Alternative



Devices



User friendly
Magnetic



Alcohol and Drug Combinations

- Robo-shots/Mucys
 - Dextromethorphan
 - Opioid cough suppressant
 - Plus alcohol
 - Rapid and powerful intoxication
 - Motor control
 - Impulse control
 - Delusional



Medicine Cabinet

- Rx and OTC
 - Parents and Grandparents
 - Siblings



Heroin: Pharmacology

- Source



On the Street

- Price
- As low as \$12



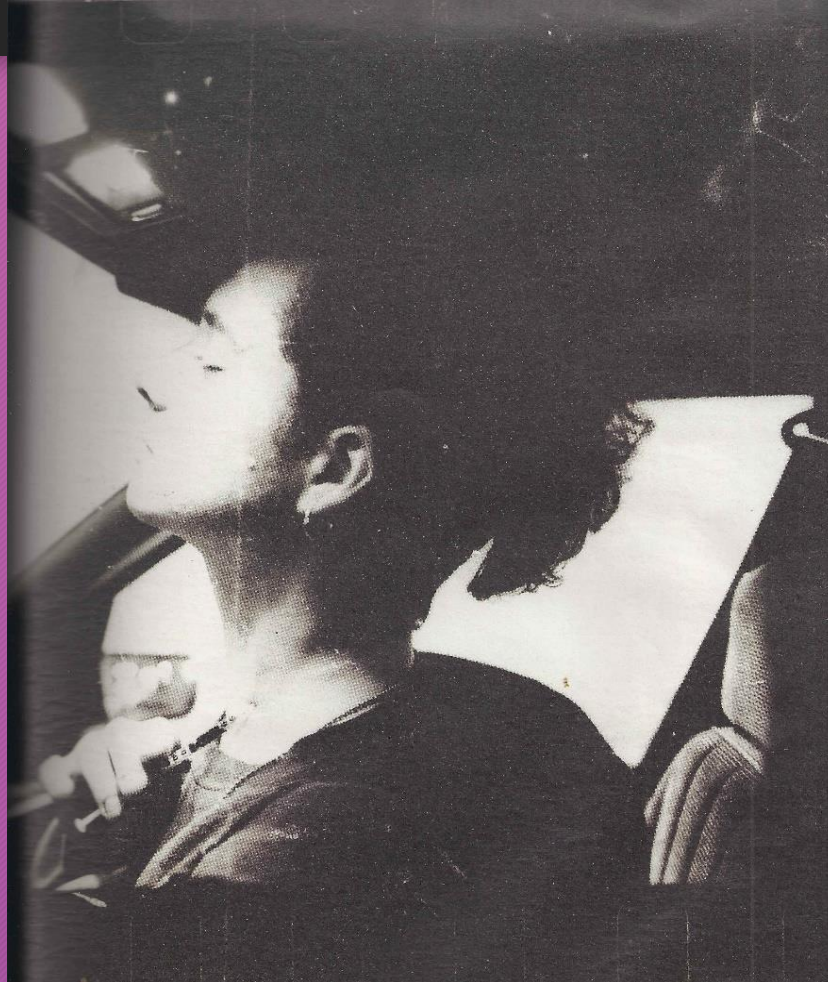
Route of Administration

Routes of Administration

- Snorting
- Smoking
- Injecting
IV, SC, IM



Route of Administration



Risk Factors

- Addiction



- Infection



- Overdose



Heroin and other drugs

Heroin use is part of a larger substance abuse problem.

Nearly all people who used heroin also used at least 1 other drug.

Most used at least **3** other drugs.

Heroin is a highly addictive opioid drug with a high risk of overdose and **death** for users.

People who are addicted to...



ALCOHOL

are

2x



MARIJUANA

are

3x



COCAINE

are

15x



Rx OPIOID PAINKILLERS

are

40x

...more likely to be addicted to heroin.

SOURCE: National Survey on Drug Use and Health (NSDUH), 2011-2013.

Opioid effects

- *NOT* better than other options
- Pain complex; physical, emotional, social, vocational
- Sleep
 - *Only opioids*: Decrease Pain, Reduce Anxiety, Induce Sleep, and Create Euphoria

By the Numbers

Drug Overdose fatalities in the US
152 per day 55,400 per year

Alcohol fatalities in the US.
241 per day 88,000 per year



Prom Night

- The Best of Times/The Worst of Times
- Social event
- The Bad News
- 300+ 63% no seat belt



High Risk

- Driving
- Swimming
- Falls
- Burns



The Cabin in the Woods

- Highest Risk for Females
 - Second Location
 - More bad outcomes



A Day at the Beach

- Spring, Summer, and Fall
- Open water drownings
- Male /Female

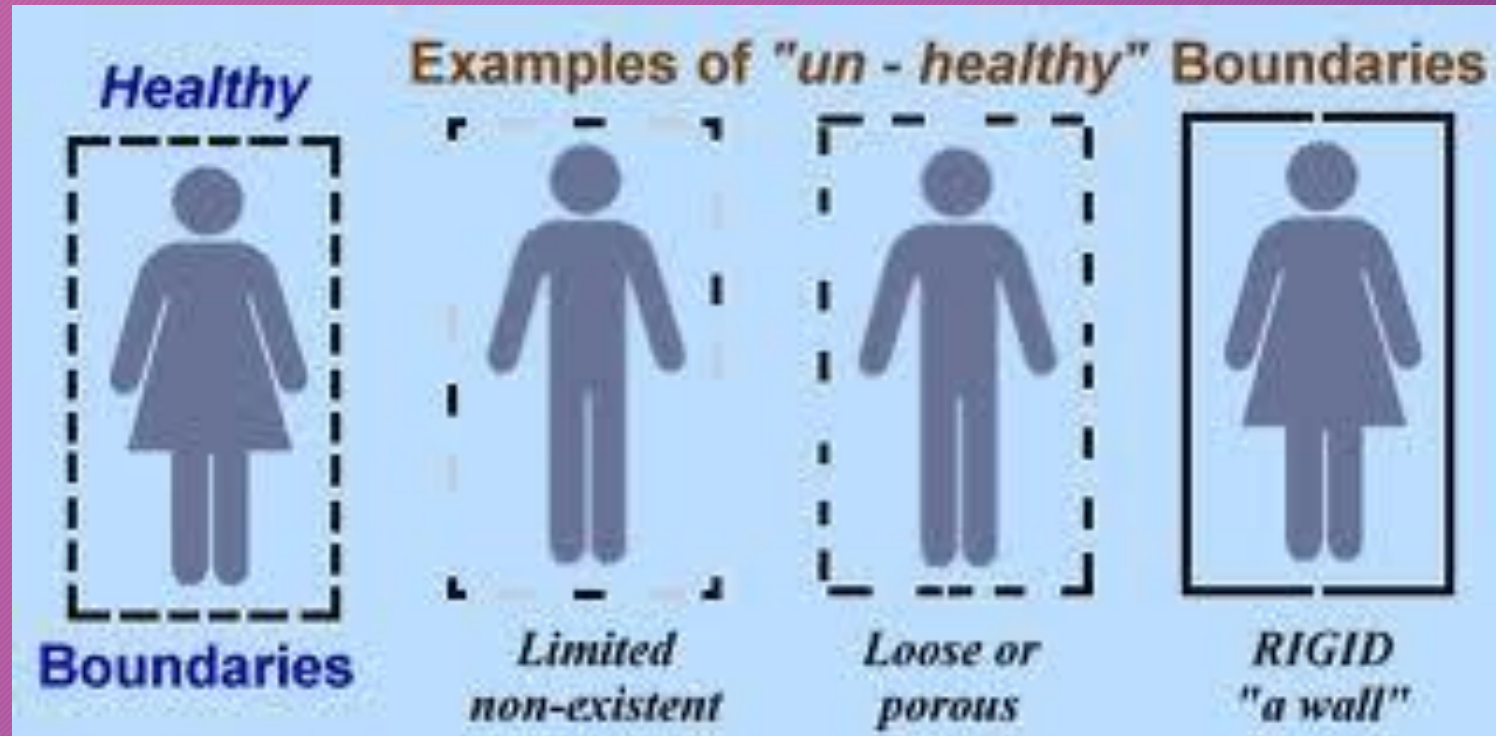


Healthy Options

- Evaluate Risk Spectrum
- Introduce Activities
- Role Model
- Create Opportunities



Boundaries



Boundaries

Negotiable

Curfew
Sleepovers
Concerts
Peer Drivers

Non-Negotiable

Drug and Alcohol Use
Parental Contact
Transportation
Impaired Drivers

Effective Language for Risk Assessment

- Immediate
- Social/Emotional
Physical Appearance
- Impact on Others

Consequences

- Immediate
- Proportional
- Short term
- No Add Ons



Effective Language

- The “If - then” construct
 - Signifies accountability, not power
 - Has remindability built in
 - Not what we want, but what is necessary



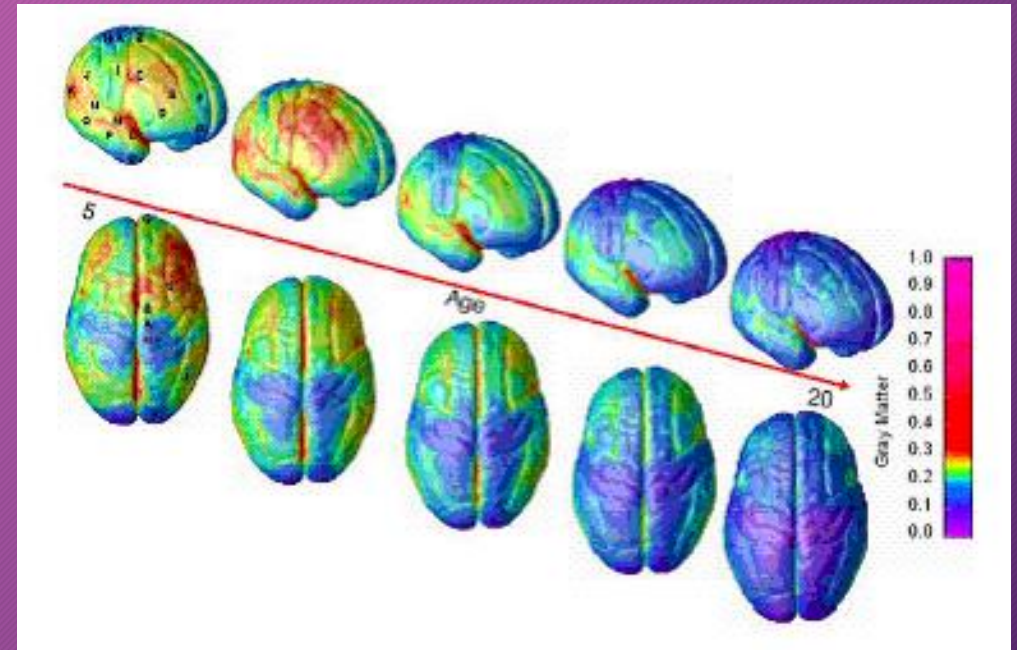
Why is this Brain at Risk?

A Work in Progress

- Stages of Adolescent Development

Emerging Adult Brain

- The Long and Winding Road



Wrap Up

- Validate Emotions
- Social Bonding
- Risk-Taking Opportunities
- Crisis Support
- Early Intervention

