Cannabinoids & your Brain

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Cannabinoids
There are 3 types of cannabinoids:

- **Herbal** – occur naturally in the cannabis plant
  - Ex: THC
- **Synthetic cannabinoids** – produced artificially
  - Ex: Spice
- **Natural** – also occur naturally in humans and animals!
Cannabis has been used for as long as 3000 years.

**Past-Year Use of Illicit Drugs by High School Seniors (percent)**

- Marijuana/Hashish: 36.4%
- Synthetic Marijuana: 11.3%
- Hallucinogens: 4.8%
- Salvia: 4.4%
- MDMA (Ecstasy): 3.8%
- Cocaine: 2.7%

Source: University of Michigan, 2012 Monitoring the Future Study
How do cannabinoids work?

- Limits neuronal communication
Cannabis
(Weed, Marijuana, THC, Pot)
Cannabis

- Interrupts normal brain functions and activity
- Is stored in fat cells for days & even weeks depending on usage
Short-term Effects of THC

- Could last 1 – 24 hours
- Increased appetite
- Increased pleasure
- Impaired thinking & memory
- Dry Mouth
- Impaired coordination
- Eye redness
- Paranoia
- Increased heart rate
Is Marijuana Legal?

- Depends on location and age
- Decriminalized in California, legal in Colorado and Washington, but...
- Still illegal under Federal Government laws!
Is Weed Addictive?

• Frequent & strong cravings for the drug, the so-called dependence!

• Changing the brain → changes motivation & behavior.

• It could become a long-term habit.
Spice
(synthetic cannabinoids)
What exactly is Spice?

- Spice is a synthetic cannabinoid
- Slang names: K2, Black Mamba, Bombay Blue, Genie
How does Spice make you feel?

<table>
<thead>
<tr>
<th>Desired effects</th>
<th>Undesired effects</th>
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</thead>
<tbody>
<tr>
<td>• Euphoria</td>
<td>• Anxiety</td>
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<tr>
<td>• Relaxation</td>
<td>• Seizures</td>
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<tr>
<td>• Altered perception</td>
<td>• Paranoia</td>
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<tr>
<td>• Increased awareness of sensation</td>
<td>• Nausea</td>
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<td></td>
<td>• Increased heart rate</td>
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<td></td>
<td>• Agitation</td>
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<td></td>
<td>• Suicidal thoughts</td>
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<td>• Depression</td>
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</table>
What happens when you stop doing spice?

- Withdrawal effects are very similar to withdrawal from weed:
  - disturbed sleep & dreaming, anxiety, craving, nausea, muscle twitching, chills...
- significant tolerance
How does Spice work?

- Main actions are similar to THC.
- Could be up to 100 times as strong.
- Too many unknown chemicals to keep up with...
Legal Status

- Synthetic cannabinoids are particularly hard to control because once a substance is declared illegal, similar ones will appear to replace it.