Neuropolis Squad
(From: GVL)

Help a team of forensic scientists investigate a car accident that left one person dead and another seriously injured. Was it an accident or foul play? Was alcohol involved?

To get started go to: http://nsquad.rice.edu/
Select Episode 1 to get started but be advised, each episode requires about 20-30 minutes and if you exit before you finish you will have to start that episode over again.
Be sure to answer all the questions as you progress.

Episode 1

1. List all the items collected from the crime scene. Glass, paint, plastic, a toad, a towel with spots, beer can, running shoe, slimy substance with fibers

2. Truth or Trash Challenge – write truth or trash after each statement.
   a. Alcohol gives you energy. Trash
   b. Beer has less alcohol per ounce than wine or liquor. Truth
   c. Drinking coffee helps you sober up. Trash
   d. Alcohol makes you sexier. Trash
   e. Teen drivers have more alcohol related crashes than drivers over 21. Truth
   f. Drinking different kinds of alcohol in one setting will make you more drunk. Trash
   g. Alcoholics drink too much because they lack will power. Trash
   h. Vomiting is the body’s defense to prevent alcohol poisoning. Truth
   i. Alcoholism is a treatable disease. Truth
   j. Almost every teen drinks alcohol. Trash

3. Complete the Information about the crash victim:
   a. Name: Cody Mara
   b. Gender: Male
   c. Weight: 180 lbs
   d. Case History Notes - Car Crash Route 40, Suspicious Accident, possible hit and run, body smelled of alcohol at crash scene
   e. External Examination – Bruised eye, Multiple head injuries, Large Bruise on neck, Material under finger nails, Scratches and bruises to upper right arm and Rabbit tattoo lower left arm

4. Summarize the contributions of each of the following Body Detectives:
   a. Antistius – One of the most famous autopsies over 2000 years ago by Professor Antistius on Julius Caesar
   b. James Marsh – In 1836 he designed the Marsh Test. A test that would preserve forensic evidence for trial (it tested for chemical ie. Poison)
   c. Matthieu Orfila – his study of poisons
   d. Alexander Gettler – early 1900’s NY Toxicologist, found a way to measure intoxication
e. Mildred Trotter – 1940’s Developed methods for determining the age, height and many other characteristics of a dead person from skeletal evidence
f. Sir Alec Jeffreys – 1950’s genetic fingerprinting

5. Alcohol is a drug that makes you drowsy and slows down your ability to think and react. These type of drugs are collectively called what? Depressant
6. The liver makes bile, what is the function of bile? Helps it digest fats
7. What percent of the alcohol is absorbed into the bloodstream from the stomach? 20%
8. What percent of alcohol is absorbed by the small intestine? 80%
9. What organ filters out alcohol from the blood? Liver
10. List three causes of fatty liver. Short Term Memory Loss, Obesity and Rapid Weight Loss
11. What is the condition that can occur as a result of liver cells damaged by hepatitis? Cirrhosis
12. List two causes of cirrhosis. Hepatitis from long term Alcohol use and Hepatitis from Virus
13. The slide of Cody Mara’s liver showed that he had what condition? Fatty Liver, Short term Alcohol Use
14. What seems to have happened to Bryce in the lab at the end of episode 1? Your Opinion

Episode 2

1. What did the police find in Cody’s car that indicates he went to The Pit prior to the crash? A parking lot ticket
2. What are 4 symptoms of alcoholism? Craving, Loss of Control, Withdrawal and Tolerance

THE PIT CAFÉ AND BAR
3. What helps the body metabolize chemicals? Enzymes
4. What is the first enzyme to break down alcohol in the liver? Alcohol Dehydrogenase
5. What does the Blood alcohol concentration (BAC) measure? The percent of alcohol in a person’s blood stream
6. List four factors that can affect a person’s BAC. Gender, Weight, Serving per hour and metabolism
7. On average, how many servings of alcohol can the liver metabolize per hour. one

THE TOXICOLOGY LAB
8. Which three fluids are normally used to test for ethanol? Vitreous, blood and urine
9. Which method is used to screen fluids for ethanol? HGC – Headspace Gas Chromatography
10. Is alcohol present in any of the following blood samples?
   a. C. Rice – Yes
   b. J. Wong – Yes
   c. J. Mendoza – No

Adapted from N Squad. Source: http://nsquad.rice.edu/index.php
Episode 3

The Dragon’s Lair
1. In Danger Road, the tokens made driving more difficult. What drug do these tokens represent? Alcohol

Chateau Q
2. What do the sections of DNA known as genes contain instructions for making? Proteins
3. List four factors that influence alcohol use. Genes, Family, Peers & Community

SUNRISE TREATMENT CENTER
4. Describe the functions of the different parts of the brain:
   a. Prefrontal cortex – Planning, Organizing, think and impulse control
   b. Brain stem – Breathing, Heart Rate, Blood Pressure, Swallowing and Vomiting
   c. Cerebellum – Balance and Coordination
   d. Hippocampus – Memory
   e. Nucleus Accumbens – Feelings and Emotions
5. What is plasticity? Wiring of the brain
6. Alcohol can reduce the size of which two brain areas that undergo extensive wiring during adolescence? Hippocampus and Prefrontal Cortex
7. List three symptoms of alcoholism linked to neuroadaptation. Compulsive, tolerance and withdrawal
8. Why is alcoholism considered a disease? Chemical and Structural Changes in the body, especially the brain
9. Name 2 methods used to treat alcoholism. Medication and Counseling

FORENSIC BIOLOGY LAB
10. Whose DNA is on the Blu Dog beer can from the crash scene? Do you trust your detective skills? If so you decide if you got this correct or not.

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