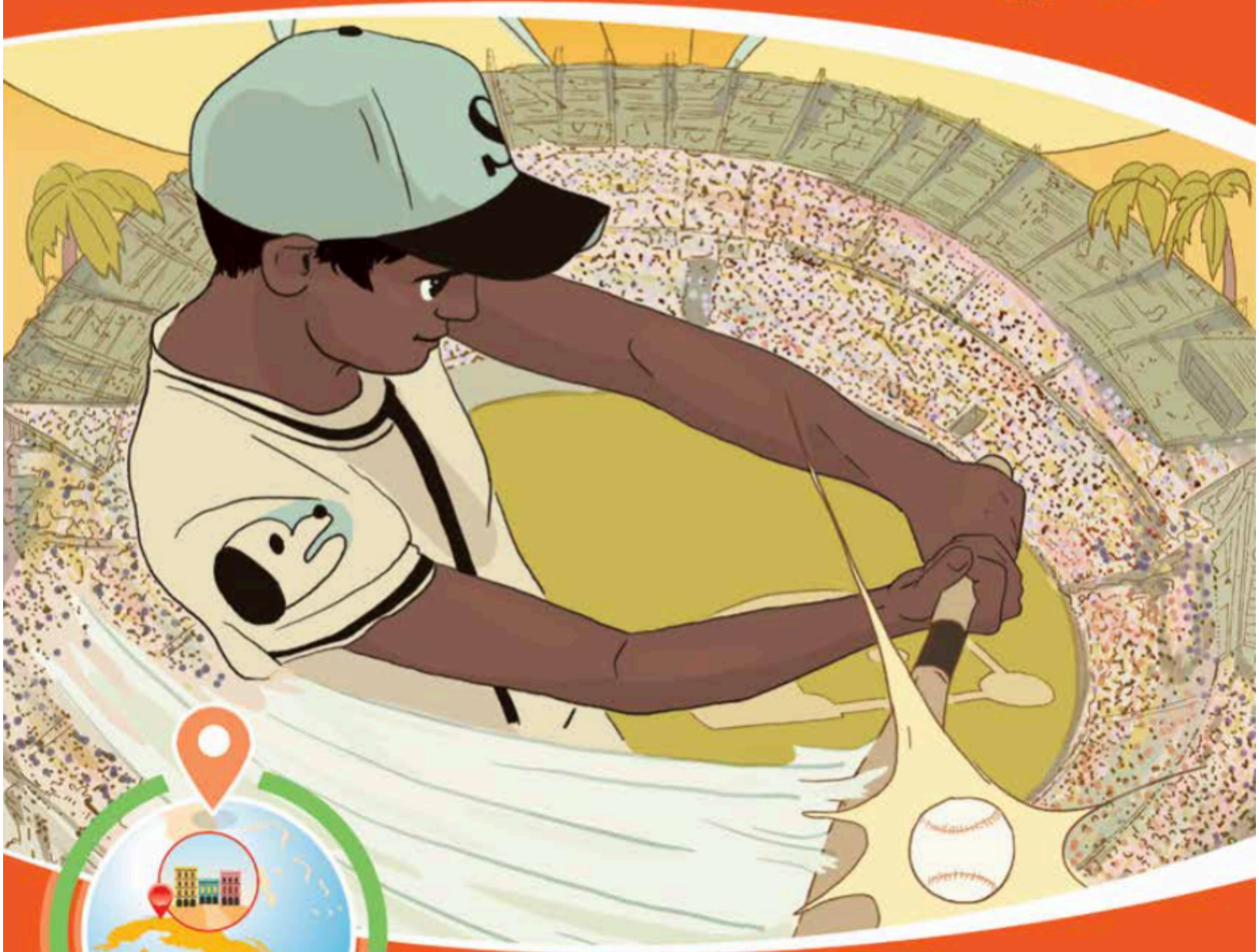


8

# The Endocrine System

Grand Slam!



Prepare to be astounded by the signals flashing everywhere in the endocrine system. Your travels will take you to Cuba, home of great food, amazing music, and baseball.

**The year is 1954, the place is Havana, Cuba.**

# Hello Adventurer!

## Welcome to Adventure 8!

**Hello, Adventurer!** In this workbook, you will learn about Havana, Cuba and your body's Endocrine System. There will be information to read, activities to complete, and quizzes to take when you are ready to challenge yourself! Take your time along the way - spend as much or as little time as you like on each activity.

**Good luck, and have fun!**

*Destination:  
Havana, Cuba!*





## Learn about the Endocrine System.

There are 9 glands in the Endocrine team lineup, producing hormones that zip around your body, communicating through special channels.

We hope you enjoy this Adventure, but remember, to become an endocrinologist requires further study!

### **VISIT: 1954 Havana, Cuba**

In the Caribbean Sea, this island republic is full of music, poetry, and baseball.

Meet Pepe, Jaime, and other athletes learning to work together.



**Enter this portal for....**



# Time Skaters Adventure 8 Grand Slam!



**Experience** *Endocrine Expertise*

**Talk About a Team**

Part **3**  
**Know  
Your  
Appetite**

**See** *Know Your Appetite*, shop for ingredients, and get your kitchen ready!

**Prepare** *Cuban Style Black Beans* and *t*

**Share** your dishes with your family. Discuss *Thoughts for Young Chefs* around the table!



Part **4**  
**Show  
What  
You  
Know!**

**Finish strong** with *In it to Win it!*

**Check out** *Further Reading* for more opportunities to learn.



# Learning Calendar

Part **1**  
**Know  
Your  
History**



**Locate** Cuba on the world map using a globe, an atlas, an online map, or checkout Google Earth.

**Read** the comic, **Grand Slam!**  
Find it at the beginning of this Adventure Guide!

**Gather** the adventure equipment from around your house - use the checklist on pages 42 and 43!

**Dive into** *Know Your History*

**Make** *Baseball's Secret Language Your Own*

**Get to** Know Your Son Cubano

**Uncover** *Hidden Message Poems*

**Puzzle** through *Evolution of the Revolution* Crossword

**Recite** *Cuban Comprehension*

Part **2**  
**Know  
Your  
Endocrine  
System**

**Explore** *Know Your Endocrine System*

**Question** *Show Me the Sugar!*

**Find** *Adrenal Aegis*

**Become** a *Matchmaker*



So that's it, huh?  
The skeleton key?



Yes. Though I'm *not* sure it's  
made out of bone. Observe.

When I analyzed the  
makeup of this key, I found  
something very strange.

There wasn't any collagen or  
calcium, as is typically found  
in bone. No...

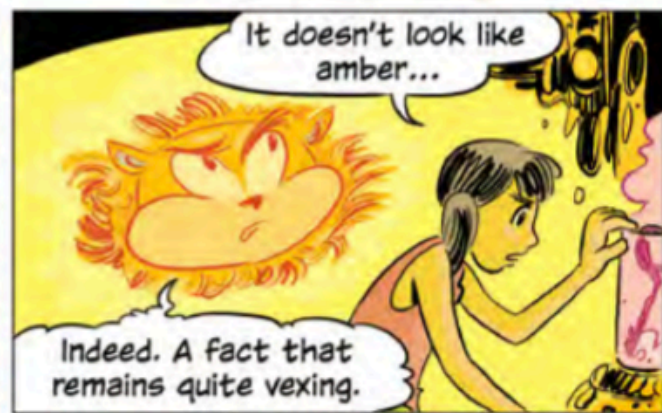


This substance is a macromolecule,  
comprised of labdatriene carboxylic acids.

Carbolic labda-what?



This key is made of amber.



It doesn't look like  
amber...

Indeed. A fact that  
remains quite vexing.



Also vexing is the fact that it  
doesn't seem to interact with  
the other pieces of amber.

Come on, little guy.  
Do something!



What was that?

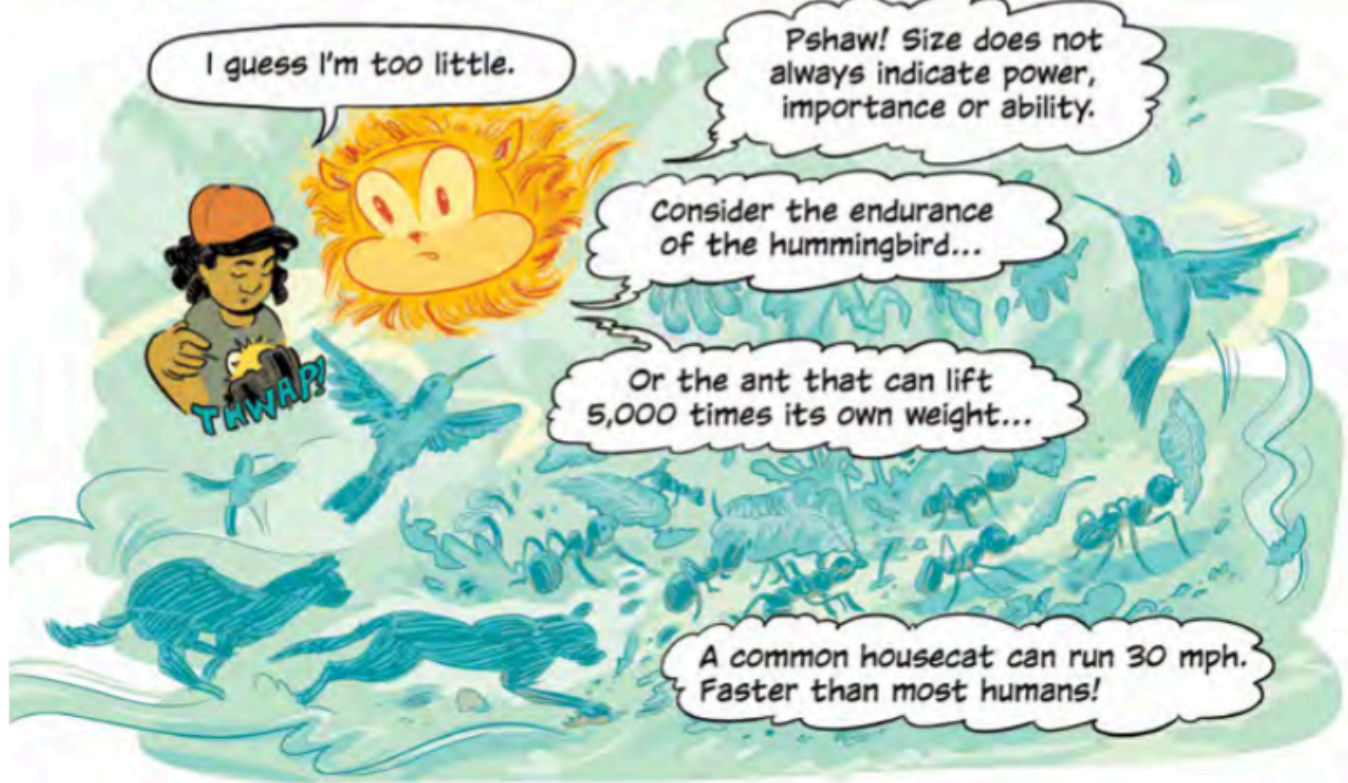
Huh?

It...it moved.





But some of the other guys said I can't match up.





# Know Your History

## Cuba, 1954

### Cuba, Conquered & Traded

After conquering the Cuban natives, the Spanish established Havana. But did you know the city was once (for a short time) in British hands? In 1762, the British captured Havana, held it for less than a year, then traded it back to Spain. The Spanish enslaved and brought hundreds of thousands of African people to Cuba to plant and harvest sugarcane. In 1898, during the Spanish-American War, the United States helped Cuba fight for freedom from Spain. The U.S. controlled the island until the Republic of Cuba was created in 1902, formally gaining its independence.

### Havana High Life



After Cuba became independent, Havana developed its unique Cuban feel. The business of growing sugarcane and producing sugar had made the city wealthy.

In the 1920s, hotels, restaurants, and nightclubs sprang up. The beautiful beaches, old

Spanish buildings, and lively music and dance drew movie stars, like Ava Gardner and Frank Sinatra, and even American mobsters to Havana to vacation, play, and enjoy "The Havana High Life."



# Make Baseball's Secret

## Language Your Own

If you've been to a baseball game, you may have noticed the players using gestures with their hands and bodies (right hand to left elbow) to communicate silently with each other. But did you know the real signs are surrounded by a string of false signals (called "dekes" for decoys) to confuse the other team?

**In a typical 9-inning game, over 1,000 signals can pass from catcher to pitcher, coach to batter, and between outfielders.**

Typically, a set of signs will include a bunch of "*fake signs*," then an "*indicator*" and a "*hot sign*." The indicator lets the player know that the hot, or important sign, is coming. And the fake signs confuse the other team.

For example, the indicator might be placing the left hand on the right knee, while the hot sign might be to tip your cap. These signs are the only ones that matter, but they are embedded in a series of tummy rubs, arm crossings, nose flicks, and just about anything else the coach can think up.



# Know Your Cuban Baseball

**In Cuba, baseball is not just a game—it's a symbol of resistance and freedom.**

## Just Try to Ban Baseball

Baseball was introduced to the island in the 1860s by Cuban students returning from colleges in the U.S. and American sailors who sailed into port. Cubans quickly adopted the sport, and leagues started all over the island. But, in 1869, after the first Cuban War of Independence, Spanish rulers banned baseball. They tried to make Spanish-style bullfighting the national sport. Luckily for fans, banning baseball just turned the game into a symbol of resistance against the Spanish.



## The Sugar Mill Leagues

In the 1950s, amateur (or non-professional) leagues were the heart and soul of Cuban baseball. One popular form was sugar mill baseball.

Each team represented a different sugar mill and the players—sugarcane cutters and factory workers—competed against each other in weekly games. Players in the league may have used baseball as an escape from the harsh working conditions of the mill, but sugar mill baseball produced some of the most talented players in Cuban baseball.



*Want to communicate with people in secret?  
Use the idea behind baseball signs to create your own secret language!*



## Materials:

- **Yourself and one or more partners** - (if you have four or more people, break into teams)

## Directions:

1. Find a spot to practice where your team won't be overheard.
2. With your partners, decide what your 'indicator sign' will be. This is a gesture that tells your teammates that an important signal is coming.
3. Create three or four signs for actions. You may want to write them down for later reference. Just remember to hide that piece of paper!
4. Practice a few false signs that don't mean anything, so you can use those as fluidly as the real ones.
5. Once you and your partners have learned the signs, try them in action with the false ones. If you had enough people to form teams, have each team take turns doing the signs while the others try to guess which are real.

# Know Your Endocrine System

The teamwork performed by glands in your endocrine system regulates, controls, and coordinates many bodily functions. It is in charge of communication between cells, tissues, and organs, using signals called hormones. Hormones are like chemical sparks.

## Here is Your Endocrine Team Lineup!



### **Hypothalamus**

#### **General Manager:**

Processes information from the brain and directs messaging between hormones and cells.



### **Pituitary**

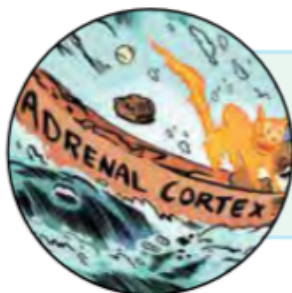
#### **Assistant Manager:**

Stores and releases hormones made by the hypothalamus and regulates other glands.



### **Thyroid**

Regulates metabolism, growth, and development. Thyroid hormones are like social butterflies, trying to communicate with EVERY cell!

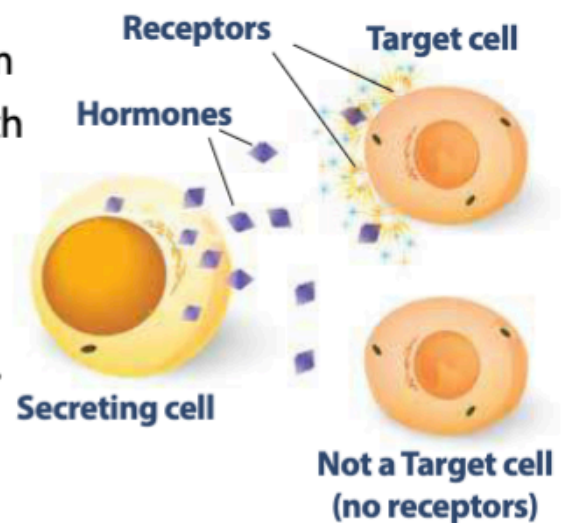


### **Adrenal**

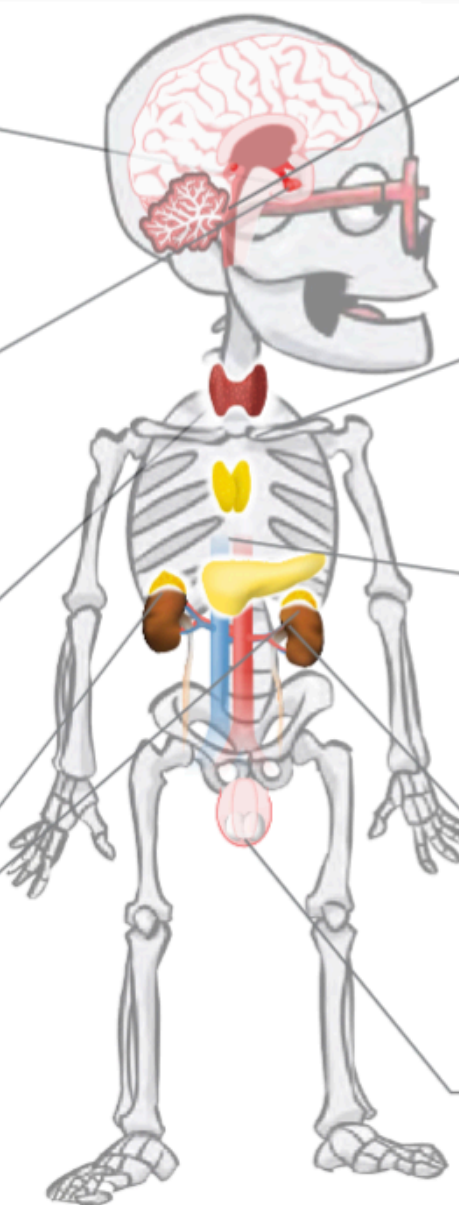
Influences metabolism and response to stress. Two parts, cortex and medulla, produce corticosteroid and adrenaline hormones.

They excite and ignite cells into action. Your endocrine glands make hormones and secrete them directly into your bloodstream, to communicate with special "target" cells.

Like a key fits a lock, cells with receptors respond only to specific hormones. These hormones and cells help you absorb energy from the food you eat. They also help you grow, and they are sometimes even responsible for changes in your moods.



### Just like a baseball team!



#### **Pineal**

Helps regulate sleep patterns by secreting the hormone melatonin.



#### **Parathyroid**

Regulates the balance of calcium in your body and tells bones to release some, if needed.

#### **Thymus**

Only active until puberty, produces and secretes hormone thymosin. Also stimulates T cells for the immune system.



#### **Pancreas**

Switch Hitter: Regulates levels of sugar in the blood and helps break down foods in the digestive system.

#### **Reproductive**

Also called gonads, makes and secretes hormones that control mood. Testes for boys and ovaries for girls.

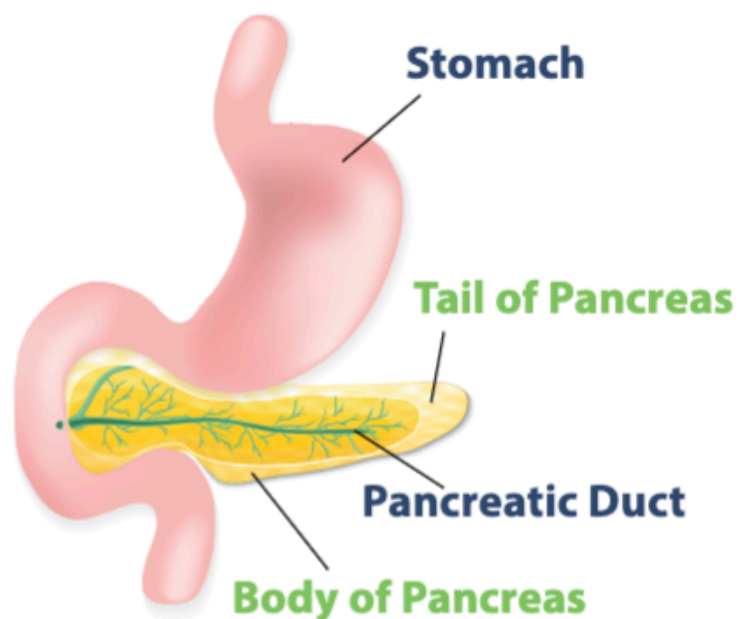


# Know Your Pancreas

## Finding the Sweet Spot

One of your largest glands, your six-inch-long pancreas, lies deep within your abdomen between your stomach and your spine. This switch hitter bats for both your digestive and endocrine systems to regulate the level of sugar in your blood.

A small section of cells within the pancreas create specific hormones, **insulin\*** and **glucagon.\***



Insulin and glucagon work in opposite ways. When your blood sugar levels are too high, insulin tells your cells to absorb and use glucose. When your blood sugar levels are too low, glucagon tells your cells to release glucose because your body needs this energy.

But sometimes the pancreas doesn't do its job properly, and has trouble maintaining insulin levels. When it does not produce enough insulin—sometimes none at all—the condition is called type 1 diabetes and it is more common in kids than adults.

\*Say it like this:

**insulin** - "in-suh-lin" **glucagon** - "glu-cuh-gon"

The strongest syllable is always shown in **CAPITALS** and **red**.



coloring  
opportunity

# Adrenal Aegis



*Your body has two adrenal glands! the cortex and the medulla*

The **adrenal cortex** controls the release of hormones that regulate your body's breakdown of fats, proteins and carbohydrates, and also helps keep your blood pressure under control. It also produces hormones that regulate your immune system. You would not last long without your adrenal cortex helping out every day.

The other gland is the **adrenal medulla**. You need the cortex every day, but the medulla serves a different purpose: emergencies. When your nervous system tells the body you are stressed, the adrenal medulla kicks into action.

**This is an important part of the fight-or-flight response, which helps give you the extra energy to get through dangerous situations.**

In the long term increasing your heart rate, rushing blood to your muscles and blood and spiking your blood sugar level wouldn't be good for you but it can help you get out of a sticky situation.

## Materials:

- A carbonated beverage
- Two glasses or cups
- Ice cubes
- Some towels just in case



## Directions:

1. Set up your two cups next to each other, one with ice in it and the other without.
2. Pour the carbonated beverage into the cup without the ice. There should be some amount of fizz.
3. Next, pour the carbonated beverage into the cup with ice. Observe what happens. Just like your adrenal medulla helps to kick off a reaction, the ice helps make much more fizz.

Ice only causes a small reaction, but you'd need to be very careful if you used mentos. Talk about too much stimulation!



# Cuban Style Black Beans


Prep time 10 minutes | Cook time 10 minutes



Black beans are a basic ingredient in Cuban cuisine and often featured in daily meals. When the black beans are prepared for “congrí,” the white rice takes on the inky color of the black beans, representing the fusion of cultures from Spain and Africa.

When preparing beans without rice, the “sofrito” gives the beans their flavor. Sofrito is a fried blend of onions, peppers, garlic, and oregano and serves as a base for many dishes. It is also an important part of chicken dishes, stews, and sauces, adding a distinct Cuban flavor to dishes made with otherwise basic ingredients.

## Ingredients:


- 1 can plain black beans, drained
- 2 tablespoons olive oil
- 3 cloves of garlic, peeled and crushed
- 1 medium onion, peeled and chopped 
- 1 mild large green chili, such as anaheim or a green bell pepper
- 3 teaspoons of ground cumin
- 1 bay leaf
- 1/2 teaspoon chili powder

Salt and pepper to taste

---



## Preparation:

1. Heat the oil in a saucepan over medium heat. Gently sauté the garlic, onion, and green chili until they are tender. 
2. Add the cumin, bay leaf, and chili powder. Stir until mixed with the vegetables.
3. Add the drained beans to the vegetables and stir. Bring to a boil then reduce the heat to low.
4. Cover and simmer for 5 minutes. Adjust the seasoning with salt and pepper.

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