Your test tomorrow causes you to sleep poorly, but it is dark in your room all night.

There is no change to your epigenome.

You stop drinking “10-Hour Energies” and “Red Bullies” and your sleep pattern becomes more regular.

If you have any methyls, roll a die; if you roll over a four, remove one methyl group from your epigenome.

Your boss at Dairy King decides to add more night hours to your shift, exposing you to more artificial light when your body expects darkness.

Remove any acetyllys from your epigenome and add a methyl. If you have no acetyllys, add a methyl anyway.

Basketball season ends and you have no other sports in which you participate. This allows you to have a much more regular sleep pattern without 9 p.m. practices and 6 a.m. weight training.

If you have any methyls, roll a die. If you roll over a four, remove one methyl group from your epigenome.

Lightning strikes your power lines. You go to bed, but you forget to turn off all the lights. When the power returns, all the lights in your house come back on and interrupt your sleep pattern as you walk around your house turning all the lights off again.

Add one methyl to your epigenome.

You stay home from school with the flu and sleep all day. You get more sleep than normal but your sleep schedule goes back to normal the next night.

Make no changes to your epigenome.
Your younger sibling eats too much candy and decided to wake you at 2 a.m. with an air horn. Your sibling does not bother to turn on the lights so there is little change to your sleep pattern.

Make no changes to your epigenome model.

Your younger sibling eats too much candy and decides to wake you at 2 a.m. with an air horn and a strobe light. You are not amused by their attempt at creating a dance party and cannot get back to sleep. Your sleep pattern is disrupted significantly.

Add one methyl group to your epigenome.

Your body naturally regulates the amount of acetyl groups attached to your genome for normal protein production.

Remove one acetyl from your epigenome.

You are travelling overseas to a country in the west. You stay up later than usual to adjust for the time change and your sleep pattern adapts quickly.

Your epigenome does not change.

You stop playing the video game Call of Beauty before bed time and instead read scientific papers down by the fire place. This reduction in screen exposure improves your sleep cycles.

If you have any methyls, roll a die. If you roll over a 4, remove one methyl group.

Your sleep patterns are pretty good, but you decide that you would like to make them even better. You improve your sleep-wake cycle, by getting up at a consistent time everyday and going to bed when you are tired.

Add one acetyl to your epigenome model.
During the summer, you are offered two jobs: one as a custodian and another as a gardener. The custodian job will require you to work random hours, but the gardener job will let you maintain your normal sleep cycle.

If you choose the custodian job, remove any acetyls you have on your model and add a methyl. If you take the gardener job, keep your epigenome the same.

You develop insomnia (a disorder of not sleeping at night). When you can’t sleep at night, you do your homework in the brightest room in your home.

Remove any acetyls from your epigenome and replace them with a single methyl. If you don’t have acetyls, do nothing.

You win tickets on a cruise ship that travels to Alaska. During the summer at high latitudes, there is daylight almost 24 hours a day. You are not aware of this and forget to bring an eye cover for sleeping. For the two weeks on the cruise, your sleep pattern is inconsistent.

Add two acetyl groups to your epigenome model.

You are travelling to visit your grandparents during summer break. Your evening flight is delayed and rescheduled for early the next morning. You are forced to spend the night in the airport, where it is never completely quiet or dark. This disrupts your sleep schedule for the next few days.

Add an acetyl group from one of your epigenome models.

Your favorite rooster Chuckles, who wakes you up for school every morning, was run over by your neighbor. As a result of having no wake-up call, you oversleep.

Remove any acetyls and add one methyl group to your epigenome model.

Your new cat Donald Von Kittington likes to wake you up at 2 a.m. and 4 a.m. on the random nights you forget to close your door. When he wakes you up, he requires 30 minutes of attention before he allows you to return to sleep, seriously disrupting your sleep schedule.

Add a methyl group to your epigenome.
The State of Illinois passes a new law requiring all people in the state to eat meals at regular times during the day. This increases the regularity of your diet and improves your circadian rhythms.

Remove one acetyl group from your epigenome model.

Your parents ban chocolate from your house, but one day you get a piece of chocolate from a friend. This causes you to have intense cravings, causing you to sneak out of the house and raid a nearby gas station at 1 a.m. for chocolate.

This interruption to your circadian rhythm causes a methyl to be added to your epigenome.

Your favorite television show, Power Bagels, gets moved to a 3 a.m. time slot. You wake up super early on Monday, Wednesday, and Friday to watch the show. As a result you are never really able to establish a consistent circadian rhythm.

Remove any acetylts from your epigenome model and replace them with a methyl.

Your biology teacher suddenly starts giving tons of homework. As a result, you stay up late finishing homework and become addicted to caffeine, which seriously disrupts your circadian rhythms.

Remove any acetylts from your epigenome model and replace them with a methyl.

Your pet hamster, Ms. Nibbles, really enjoys running in her running wheel. Unfortunately, she is most active in the middle of the night and her wheel becomes very squeaky. At least once a week, her squeaky wheel wakes you up, but since your room remains dark there is no change to your sleep pattern.

Make no changes to your epigenome model.

After you go to bed, your mother discovers that your pet tarantula, Terry, had escaped from her cage. The loud shrieking woke you up and you were forced to search the house for hours until she was found. This causes you to be exposed to light for an extended period of time when you should have been sleeping.

Add two acetylts to your epigenome.
Your house lost power earlier in the evening while some lights were left turned on. You go to bed thinking they are turned off, but wake up during the middle of the night to bright lights when the power returns to your house.

Add one acetyl to your epigenome.

The garbage truck changes its route and now goes by your house several hours earlier in the morning than it used to. You wake up to the noise and are not able to fall back asleep.

Add one acetyl to your epigenome model.

Someone turns on the lights while you are sleeping, causing you to wake up and receive light stimulus during the night. This light pulse causes increased acetylation of the Per2 gene.

Add one acetyl to your epigenome model.

During finals at school, you get off of your normal sleep and eating pattern. While studying, you start snacking later at night, further disrupting your circadian rhythms.

Add one acetyl to your epigenome model.

You are running around all day on a Saturday and do not have time to eat until several hours after you usually have lunch. While this messes up your normal eating schedule and mildly irritates you, there is no change to your sleep patterns.

No change is made to your epigenome model.

After a disruptive finals week period at school, you continue to have a variable eating schedule, often snacking late at night. Your poor eating habits continue to cause circadian rhythm disruptions.

Remove any acetyls from your epigenome model and replace them with a methyl.
You are stressed about your midterms and do not sleep well one night. However, you remain in constant darkness during the night.

Make no changes to your epigenome model.

During finals week, you snack late at night while studying. After your finals are over, you return to your normal sleeping and eating pattern.

Remove one acetyl from your epigenome model.

After years of poor eating habits such as snacking late at night, you change your diet and lifestyle. You stop eating lots of high fat foods and eat on a normal schedule. As a result, your circadian rhythms start returning to a normal pattern.

If you have any methyls, roll a die. If you roll over a four, remove a methyl group.

While you are sleeping, your house loses power during night and your alarm clock turns off. However, the sunlight in the morning is bright enough that you get up at the same time you usually do.

Make no changes to your epigenome model.

Over the summer you work for one of the National Parks making sure trails are cleared and well marked. For the summer, you spend most of your time camping and regulate your sleep based on natural daylight. As a result, your sleep cycles are very regulated and you get very little bright and/or artificial light at night.

If you have any methyls, roll a die; if you roll over a four, remove a methyl group.

You learn that bright light at night may affect your sleep patterns. You start to keep the amount of “electrical light” at night (light from computer, TV screens, iPod, etc) to a minimum. After a while, you notice that your sleep patterns are more regular and the quality of your sleep improves.

If you have any methyls, roll a die; if you roll over a four, remove a methyl group.
A yearbook club meeting ran late and you are unable to eat lunch before you have to go to class. While you are extremely hungry during the rest of the day, skipping one meal does not affect your normal sleep pattern.

Make no changes to your epigenome model.

During the winter, you catch the flu. For a few days, you feel run down, achy, and sick. You start going to bed earlier than normal until you get better. While you get slightly more sleep per night than usual, this does not greatly affect your normal sleeping pattern.

Make no changes to your epigenome model.

Your alarm clock malfunctions and goes off at 3 a.m. instead of 6 a.m. When you wake up, you realize it's 3 hours earlier than you need to get up. You go back to sleep until your mom wakes you up on time for school. You didn't turn on the lights when you woke up early and your sleep pattern is relatively unaffected.

There are no changes to your epigenome model.

Your alarm clock malfunctions and goes off at 3 a.m. instead of 6 a.m. You start getting ready and then realize it's still dark outside. Since it's hours before you need to get up, you go back to bed. You are exposed to bright light at night when you're supposed to be sleeping and your circadian rhythm is disrupted.

Add one acetyl to your epigenome model.

Your cat, Mittens, knocks over a glass of water by your bed in the middle of the night. The noise wakes you up and you decide to clean up the water and broken glass. You are exposed to light when you would normally be sleeping.

Add one acetyl to your epigenome model.

You wake up in the middle of the night and realize you forgot to finish a midterm paper. If you don’t hand in the paper in class, your grade will fall significantly. You decide to get up and finish the paper, exposing you to an extended period of bright light.

Add two acetylats to your epigenome model.