Report Summary for
Joe Cohen

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</table>

This risk estimate is solely based on the genetic variants used in this report and is not diagnostic or conclusively predictive. Any concerns or lifestyle changes should always be discussed with a health professional first.

The combination of optimal lifestyle choices and personalized genetics provides a new and powerful approach to reducing your risk for sleep disorders in the long-run and enhancing the quality of your sleep each night.

Top Suggestions

The following are the top suggestions made in this report. We have taken your genetic makeup into consideration when identifying these. Please remember to consult a health professional first if you have any concerns. For a full list of your prioritized recommendations skip to the Conclusion section.

1. **Develop a meditation practice to reduce stress and help facilitate sleep.**
2. **Maximize your sunlight during the day and cut out blue wavelength light exposure in the evenings.**
3. **Develop a frequent yoga practice to help reduce stress and facilitate sleep.**
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Welcome to your Sleep DNA Wellness Report

Our goals with this report are to:

- introduce you to your genetics
- explain how they play a role in your sleep
- give you suggestions to fix potential problems

This report is divided into three sections:

1. **Sleep Patterns**
2. **Sleep Metrics**
3. **Sleep Disorders**

For each section, we introduce a number of key genetic markers that the latest scientific studies have demonstrated can affect how you sleep. Then we take a look at your personal genotype file and create this report based on what your unique genetic makeup says about each individual marker.
Sleep is incredibly important for your health and normally follows a daily rhythm. When you sleep, your mind enters different stages of unconsciousness while your brain processes and consolidates new memories, and carries out other important maintenance functions. Meanwhile, your body performs many different repair and rejuvenation processes, such as repairing your muscles and other organs to enable them to recover from normal daily stressors. Getting enough sleep is absolutely critical to make sure your body and mind are functioning at their best [1].

Because sleep is so important, we’ve evolved many genetic mechanisms that regulate different aspects of how we sleep. Your genetic makeup for the genes involved in these mechanisms can inform you about your possible association with different sleep patterns and behaviors.

The main mechanism that our body uses to regulate sleep is referred to as the Circadian Rhythm, which is like an internal “clock” that controls your sleep-wake cycles. Circadian rhythm genes -- such as CLOCK, PER1, and CRY1 -- affect the patterns of our daily behavior. Variations in these genes can disrupt this pattern, which leads to sleep disorders [2, 3].
Your DNA is a like a long string packed into every cell in your body. Along this string are “bases”, lined up like beads. There are four bases marked by the letters: A, G, C, and T. These align in very specific sequences to create genes. Your unique genetic makeup is stored in the sequence of these bases.

The sequence formed by these bases varies between people. For example, at a specific location in a sequence, 75% of the population might have a “G”, while the other 25% may have an “A”. The difference is only one base, so this type of genetic variation is called a Single Nucleotide Polymorphism or SNP (pronounced “snip”). In this example, the SNP has only two possible variations: “G” or “A”.

You inherit two copies of each gene: one from your mother, and one from your father. In the case of the example SNP above, if you were to carry one of each variant (e.g. “AG”), you would be considered heterozygous for this SNP. If you carried two of the same copies (“GG” or “AA”), you would be homozygous for this SNP. These two-letter designations are your genotype for a specific gene.

We can extend our example by pretending that the gene is involved in enabling us to fall asleep. People with the “G” variant might have a version of the gene that allows them to fall asleep quickly, while people with the “A” variant might have a copy that makes them fall asleep more slowly. This would mean that people with the “A” version would be more likely to have difficulties falling asleep at night, which could increase their risk for sleep-related complications.

Now you see how having access to this knowledge can empower people to take steps to keep themselves healthy. In our example, someone who knew they had the “AA” genotype could use this information to make lifestyle adjustments to help with getting to sleep at the right time each night.

For this report we discuss SNPs that have been associated with sleep-related traits. However, it is in no way a comprehensive list of all the SNPs or genes that are related to sleep, and there are many more genetic variations yet to be discovered. As scientists continue to discover more about the genetics of sleep, we will update our reports to take these new findings into account -- so be sure to check back for future updates!
Some Caveats to Consider

Before we get started, there are four important points to keep in mind as you read through your results:

1. **Your environment plays a major role in determining if you develop a trait or not.**

   While your genetic information is very valuable, it is only one piece of the puzzle. The way you interact with your environment can have a profound impact on your health. Many different factors -- such as diet, exercise, smoking, alcohol, pollution, and even the amount of social interaction you get -- all have the potential to override any genetic risk factors you might have! Nonetheless, knowing your genetic make-up is one of the best ways to educate yourself about what lifestyle choices can help you maximize your long-term health and well-being.

2. **Risk factors are a sum of averages.**

   Because of how scientific studies are conducted, the degree of risk associated with any specific SNP has to be determined by averaging together data from many different study participants. The exact amount of risk for any single individual, however, is unknown. There are also many individual SNPs that may contribute to a single trait or function -- and some of these SNPs might increase risk for a trait, while others may decrease it.

3. **Results from some studies may apply only to specific ethnic groups.**

   A study of sleep patterns in Korean male infants is not necessarily going to identify the same SNPs as a study of sleep patterns in Irish elderly females. Some SNPs may confer risk regardless of the specific population being studied, while others may only be relevant to particular groups.

4. **The data we have is only a small part of your entire genetic makeup.**

   It is important to remember that the genotype file you provide us with only covers a very small proportion of your entire genome (about 0.05% for a typical 23andMe file). You will carry many more genetic variations than just the ones we report on here, and these can potentially have a strong impact on your predisposition towards certain traits. As the field of genetics progresses, more and more of your genome will become accessible and able to be analyzed.

   That being said, we analyze the most widely-studied and well-understood genetic variants currently known to science. Our databases are constantly being updated and expanded. We will continue to update this report to ensure the most accurate information available is used to help you make informed decisions about your health.

With these points in mind, you are now ready to read on and learn all about your genetic makeup, the impact it may have on your sleep, and how you can take advantage of all this information!
Disrupted Sleep Patterns

Maintaining a normal sleep pattern helps you feel rested, and is crucial for keeping your body and mind healthy. When your sleep is disrupted you feel more tired and stressed. Long-term sleep disruption can also contribute to more serious health problems like obesity, diabetes, or high blood pressure (hypertension).

Disorders that interfere with your ability to sleep at the appropriate times often result in chronic irritability and fatigue. They can also make you more vulnerable to infections and even increase your risk of developing mental health issues. Although sleep disorders are sometimes caused by temporary stress and other environmental factors, genes can also play a major role in determining who will develop problems maintaining a healthy sleep pattern [2].

Insomnia

Insomnia is the most common sleep problem. It can affect a person's ability to fall asleep, stay asleep, or even both at the same time! Therefore, people who suffer from insomnia have difficulty getting enough sleep on a regular basis, which leads to chronic tiredness, irritability, difficulty concentrating, and a general lack of energy.

Women and older adults are more likely to suffer from insomnia. Insomnia is usually treated with
medications, light therapy, counseling, and improving one's sleep habits [4].

A combination of social, psychological, and genetic factors can cause insomnia [5]. Several genes have been associated with a higher risk for insomnia (PER, APOE, and PGC-1α), while others have been linked to decreased risk (AHR and CLOCK) [6].

Some of the genes associated with insomnia are related to the growth and development of the nervous system and neurons (CEP152, KHDRBS3, MTUS2, and MTNR1B), while others are involved in inflammation, neuroprotection, and sleepiness (P2RY2).

### Insomnia SNPs

<table>
<thead>
<tr>
<th>SNP</th>
<th>Your Genotype</th>
<th>Associations</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>rs1791933</td>
<td>CT</td>
<td>Very slightly reduced association with insomnia</td>
<td>7</td>
</tr>
<tr>
<td>rs2388082</td>
<td>CC</td>
<td>Average association with insomnia</td>
<td>8</td>
</tr>
<tr>
<td>rs2725544</td>
<td>AA</td>
<td>Typical risk for insomnia</td>
<td>9</td>
</tr>
<tr>
<td>rs4702</td>
<td>AA</td>
<td>Slightly reduced association with insomnia</td>
<td>10</td>
</tr>
</tbody>
</table>

Based on your genetic makeup for the SNPs above, you have a lower-than-average risk of experiencing insomnia-like symptoms.

While your genetic makeup suggests you are not at high risk, if you do experience insomnia-like symptoms you should avoid screen (mobile/computer) use before bed, and try wearing amber sunglasses to block blue light in the evening [11, 12].

If you find it hard to wind down before going to bed, yoga and mindfulness meditation have both been reported to help alleviate insomnia-related issues [13, 14].

Some supplements can reduce the time it takes to fall asleep and increase sleep quality. Two well-studied options are magnesium and passionflower [15, 16, 17].

If you are struggling with both insomnia and inflammation, change your diet to avoid inflammatory foods and consider anti-inflammatory supplements (such as curcumin or Boswellia) [18, 19].

To learn more about the genetics of insomnia read this SelfHacked post.

### Narcolepsy

Narcolepsy is commonly known as the sleep disorder that causes people to fall asleep unexpectedly while doing everyday tasks. But narcolepsy also has two other main symptoms: excessive daytime sleepiness, and sudden, uncontrollable muscle weakness or paralysis (cataplexy).

Narcolepsy can be caused by disruptions in the REM stage of sleep (the stage in which you usually experience dreams). These REM interruptions can cause people to hallucinate or even become paralyzed while falling into or out of sleep. The disorder is most commonly treated with medications and with behavioral adjustments, such as taking regular naps [3, 2].

Many different environmental and genetic factors can contribute to the development of narcolepsy.
Studies have found that people with autoimmune disorders are at particularly high risk [20]. Several genes have also been associated with the risk of developing narcolepsy (HLA-DR2/DQW1 and TCRA) [2].

Other known genetic risk factors include genes related to the ability to break down fats (CPT1B), as well as some genes involved in the inflammatory response (P2RY11 and IL10RB).

Narcolepsy SNPs

<table>
<thead>
<tr>
<th>SNP</th>
<th>Your Genotype</th>
<th>Associations</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>rs1154155</td>
<td>TT</td>
<td>Average risk for narcolepsy</td>
<td>21</td>
</tr>
<tr>
<td>rs1551570</td>
<td>CT</td>
<td>Slightly reduced risk for narcolepsy</td>
<td>22</td>
</tr>
<tr>
<td>rs2305795</td>
<td>AG</td>
<td>Very slightly associated with narcolepsy</td>
<td>23</td>
</tr>
<tr>
<td>rs2834188</td>
<td>AG</td>
<td>Slightly less susceptible to narcolepsy</td>
<td>22</td>
</tr>
<tr>
<td>rs5770917</td>
<td>TT</td>
<td>Average risk for narcolepsy</td>
<td>24</td>
</tr>
</tbody>
</table>

Based on your genetic makeup for the SNPs above, it is difficult to predict whether you are more likely than the average person to experience narcolepsy-like symptoms.

If you do suffer from daytime drowsiness, you may wish to consider ensuring you get adequate sunlight to help stimulate vitamin D production, as people with narcolepsy usually have lower vitamin D levels [25]. Lower orexin levels are also frequently observed, methods of increasing orexin include exercise and supplementing with forskolin [26, 27].

Conventional treatments for narcolepsy include the prescription of stimulants such as modafinil and antidepressants such as selective serotonin reuptake inhibitors.
“Sleep Metrics” means a way of measuring something related to sleep, such as your sleep quality and duration, the average amount of time it takes for you to fall asleep after going to bed, or your breathing patterns and heart rate during sleep. By combining these measurements with participants' genetic information, scientific studies are able to identify genetic variations that are associated with different aspects of sleep. When your genetic makeup is compared to the results of these studies, it can provide insights into your own sleep.

**Chronotype**

Even though most of us are awake throughout the day, we actually have different individual patterns of being awake. For example, some of us might be at our most alert in the mornings (“*early birds*”) while others feel like they are most awake in the evenings (“*night owls*”).

These patterns of wakefulness are known as chronotypes. A person’s chronotype can tell us a lot about whether they tend to be more productive in the morning or in the evening.

If you’re a night owl, you may find it harder to adapt to a morning schedule and feel even more tired when you don’t get a good night’s sleep. You may also be socializing and exercising less, eating unhealthily, and even getting less sunlight than the early birds. Night owls are more likely to suffer from depression, obesity, and diabetes [28, 29, 30].

The fact that much of your circadian rhythm is regulated by biological mechanisms means that genetic
factors play a major role in setting a person’s circadian rhythm [31]. Read on to view your genetic makeup for SNPs associated with different chronotypes.

### Chronotype SNPs

<table>
<thead>
<tr>
<th>SNP</th>
<th>Your Genotype</th>
<th>Associations</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>rs10462021</td>
<td>AG</td>
<td>Slightly more likely to be a night owl</td>
<td>32</td>
</tr>
<tr>
<td>rs10493596</td>
<td>CT</td>
<td>Very slightly associated with being a morning bird</td>
<td>33</td>
</tr>
<tr>
<td>rs12927162</td>
<td>AG</td>
<td>Very slightly associated with being a night owl</td>
<td>33</td>
</tr>
<tr>
<td>rs1801260</td>
<td>AG</td>
<td>Slightly more likely to be a night owl</td>
<td>34</td>
</tr>
<tr>
<td>rs228697</td>
<td>CC</td>
<td>Not associated with either chronotype</td>
<td>32</td>
</tr>
<tr>
<td>rs2653349</td>
<td>AG</td>
<td>Very slightly more likely to be a morning bird</td>
<td>33</td>
</tr>
<tr>
<td>rs7123390</td>
<td>AG</td>
<td>Slightly more likely to be a morning bird</td>
<td>35</td>
</tr>
<tr>
<td>rs934945</td>
<td>CT</td>
<td>Slightly more likely to be a morning bird</td>
<td>36</td>
</tr>
</tbody>
</table>

Your genetic makeup for the SNPs above is associated with both morning birds and night owls.

Some of your genetic variations suggest you have a slightly increased risk of complications due to inadequate sleep and being exposed to blue light at night. You may wish to consider avoiding blue wavelength light in the evenings as it can disrupt your circadian rhythm, making it harder for you to sleep [37]. Wearing blue-blocking glasses around the house is a simple and effective way of reducing your exposure.

Blue wavelength light at night can cause a reduction in the sleep-inducing molecule, melatonin [38, 39]. In addition, blue light exposure at night is unhealthy in many ways and will exaggerate your tendency to stay up late. If you are unable to avoid exposure then you may wish to consider taking melatonin supplements to help you sleep [40].

You carry one copy of the ‘G’ risk allele for SNP rs1801260. This SNP is linked to the circadian rhythm gene CLOCK and an increased likelihood of being a night owl [34]. Levels of the CLOCK gene follow a circadian rhythm with reduced levels in the evenings, following dinner [41]. The C allele shows relatively higher CLOCK levels after dinner which may contribute to difficulties in getting to sleep [42]. In order to counter your genotype you could consider trying a caloric restriction diet as it is reported to reduce CLOCK levels [43].

To learn more about chronotypes and discover how you can reset yours using chronotherapy read this SelfHacked post.
Sleep Quality

The quality of your sleep can have a big impact on your energy levels during the day. High-quality sleep will help you feel rested, while poor-quality sleep can make you feel tired or irritable. Both your environment and your genes work together to determine the quality of your sleep [44].

Genetic variations associated with sleep quality influence neurons involved with the sleep-wake cycle e.g. rs2302729 in CACNA1C, and rs9836672 in FGF12, both impact the way messages are sent along nerves resulting in disrupted sleep.

Sleep Quality SNPs

<table>
<thead>
<tr>
<th>SNP</th>
<th>Your Genotype</th>
<th>Associations</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>rs1005956</td>
<td>CT</td>
<td>Slight increase in sleep quality</td>
<td>9</td>
</tr>
<tr>
<td>rs1986116</td>
<td>TT</td>
<td>Slight decrease in sleep quality</td>
<td>9</td>
</tr>
<tr>
<td>rs2302729</td>
<td>CC</td>
<td>Typical sleep quality</td>
<td>9</td>
</tr>
<tr>
<td>rs6265</td>
<td>CT</td>
<td>Very slightly associated with increased sleep quality</td>
<td>45</td>
</tr>
<tr>
<td>rs9836672</td>
<td>CC</td>
<td>Average sleep quality</td>
<td>9</td>
</tr>
</tbody>
</table>

Based on your genetic makeup for the SNPs above, you have a normal degree of association with reduced sleep quality.

If you experience issues with sleep quality, you may wish to consider ensuring you get adequate physical exercise during the day [46, 47, 48]. But be careful to not overdo the exercise in the evenings. In fact, in the evenings it would be best to reduce stimuli as much as possible, this especially applies to blue wavelength emitting digital devices as they can disrupt your circadian rhythm [49]. If you must view computer screens at night then try using the application f.lux which reduces the amount of blue light your screen emits.

SNP rs6265 is linked to the gene BDNF and how deep we sleep [45]. BDNF helps our brains grow and respond to stress [50]. The 'T' allele of rs6265 causes less BDNF to be produced which results in less deep sleep. You are heterozygous for the 'T' allele (CT) which may mean you have lower levels of BDNF and less deep sleep when compared to someone who is homozygous for the beneficial 'C' allele (CC). While you still get a slightly beneficial effect from the single 'C' you carry, you can boost your BDNF levels by getting adequate aerobic exercise [51].

For a more detailed explanation of how to increase sleep quality and reset your circadian rhythm read this SelfHacked post.
Sleep Duration

The recommended sleep duration for adults is **7-9 hours** [52, 53, 54]. Sleeping for fewer than 7 hours -- or for more than 9 hours -- can lower your energy levels, make you drowsy throughout the day, or even increase your risk of developing sleep disorders like insomnia.

Not getting enough sleep can also throw your body out of rhythm and disrupt your immune system, increasing your risk of infections. In the long term, getting insufficient sleep may even increase your likelihood of developing mental health conditions such as depression or anxiety [55, 2].

Some of the genetic variations that affect sleep duration influence how the brain sends and receives messages about the body’s sleep-wake cycle (e.g. rs265981 in DRD1 and rs17737465 in CPQ). Other SNPs influence the production of the molecules that the body uses to regulate the sleep-wake cycle (e.g. rs2042126 in NAALADL2) and molecules that form and remove connections between brain cells (e.g. rs2051457 in NELL1).

### Sleep Duration SNPs

<table>
<thead>
<tr>
<th>SNP</th>
<th>Your Genotype</th>
<th>Associations</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>rs10493631</td>
<td>TT</td>
<td>Average sleep duration</td>
<td>56</td>
</tr>
<tr>
<td>rs1380703</td>
<td>AA</td>
<td>Slight increase in sleep duration</td>
<td>57</td>
</tr>
<tr>
<td>rs17737465</td>
<td>AA</td>
<td>Typical sleep duration</td>
<td>9</td>
</tr>
<tr>
<td>rs2042126</td>
<td>GT</td>
<td>Very slight decrease in sleep duration</td>
<td>9</td>
</tr>
<tr>
<td>rs2051457</td>
<td>GG</td>
<td>Normal sleep duration</td>
<td>56</td>
</tr>
</tbody>
</table>

Based on your genetic makeup for the SNPs above, you have an average association with sleep duration.

While your genetic makeup suggests you are not at high risk, you may still experience problems getting adequate sleep. If this is the case then you may consider optimizing your sleeping environment. Block out light at night, wear blue-light-blocking glasses in the evening, and put up blackout curtains to ensure no external light disrupts you. Try earplugs to eliminate any possible noise distractions. A white noise generating device can also be very useful to help with obscuring any potentially disruptive noises during the night.

If you find it hard to stay asleep, you may also wish to consider using extracts from *valerian* roots or hops to increase sleep duration [58, 59].

To read about all the ways in which sleep duration can impact your life visit [this SelfHacked post](#).
Sleep disorders are a group of conditions that affect your ability to consistently get restful sleep, or disrupt your sleep in certain stages.

Several genes may increase the risk for these conditions [2]. However, keep in mind that both genes and environment together determine whether you develop these conditions.

**Restless Leg Syndrome**

Restless Leg Syndrome (RLS) is a common disorder where someone has a constant and uncontrollable urge to move their legs. The urge is so irresistible that the person can only find relief through movement. The symptoms include itchiness, sudden jerking or twitching, aching, or tingling. These symptoms appear when resting or sitting down, they tend to get worse during the evening [2, 60].

Genetics play a major role in determining who develops RLS -- up to 60% of affected individuals have a family member with the same disorder. Several genes have been linked to RLS: MEIS1, BTBD9, and PTPRD all contain SNPs that influence whether or not someone will develop RLS [2].
Restless Leg Syndrome SNPs

<table>
<thead>
<tr>
<th>SNP</th>
<th>Your Genotype</th>
<th>Associations</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>rs1229984</td>
<td>CT</td>
<td>Increased association with restless leg syndrome</td>
<td>61</td>
</tr>
<tr>
<td>rs12593813</td>
<td>AA</td>
<td>Typical risk for restless leg syndrome</td>
<td>62</td>
</tr>
<tr>
<td>rs1975197</td>
<td>GG</td>
<td>Normal risk for restless leg syndrome</td>
<td>62</td>
</tr>
<tr>
<td>rs2300478</td>
<td>GT</td>
<td>More susceptible to restless leg syndrome</td>
<td>62</td>
</tr>
<tr>
<td>rs3923809</td>
<td>AG</td>
<td>More susceptible to restless leg syndrome</td>
<td>63</td>
</tr>
<tr>
<td>rs4626664</td>
<td>GG</td>
<td>Typical association with restless leg syndrome</td>
<td>64</td>
</tr>
<tr>
<td>rs9296249</td>
<td>TT</td>
<td>Increased association with restless leg syndrome</td>
<td>65</td>
</tr>
<tr>
<td>rs9357271</td>
<td>TT</td>
<td>Increased association with restless leg syndrome</td>
<td>62</td>
</tr>
</tbody>
</table>

Based on your genotypes for the above SNPs, you appear to have a moderately above-average risk of RLS.

This places you in a higher risk category, you may wish to consider ensuring you get adequate exercise during the day and avoiding caffeine in the afternoon and evenings. Additionally, you may wish to consider taking iron supplements as RLS is associated with iron deficiency [66]. Make sure you get a test to measure iron levels in your blood first though, as it is not a good idea to supplement if you already have sufficient iron levels.

Conventional treatments for RLS may also include dopamine stimulants, anti-anxiety drugs, or other medications [67].

**Grinding Teeth**

Some people uncontrollably grind their teeth or clench their jaw during sleep -- a condition known as *bruxism*. This condition can lead to tooth damage, facial and muscle pain, disturbed sleep, and even problems with speaking or eating. Bruxism can be caused by anxiety, stress, alcohol consumption, cigarette smoking, caffeine, and upper airway resistance syndrome [68, 69].

Apart from these lifestyle factors, sleep bruxism also has a significant genetic aspect and often runs in families. Certain genes have been associated with a higher chance of having sleep bruxism (HTR2A and DRD3), while others have been linked to a reduced risk (DRD2) [70, 71].
Grinding Teeth SNPs

<table>
<thead>
<tr>
<th>SNP</th>
<th>Your Genotype</th>
<th>Associations</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>rs1800497</td>
<td>AG</td>
<td>Slightly reduced risk for teeth grinding</td>
<td>72</td>
</tr>
<tr>
<td>rs6280</td>
<td>TT</td>
<td>No increased risk for teeth grinding</td>
<td>72</td>
</tr>
<tr>
<td>rs6313</td>
<td>AG</td>
<td>Increased risk for teeth grinding</td>
<td>73</td>
</tr>
</tbody>
</table>

Based on your genetic makeup for the SNPs above, you have a roughly average risk of bruxism.

While your genetic makeup suggests you are not at high risk, if you do experience bruxism-like symptoms you may wish to consider reducing stress as it can be a major contributor to teeth grinding behavior. Cultivating a meditation practice reduces markers associated with stress such as cortisol, CRP, and blood pressure [74].

In more extreme cases mouth guards are available to keep your teeth separated while you sleep.

**Obstructive Sleep Apnea**

Obviously, even though we’re not conscious when we sleep, our body still needs to keep breathing throughout the night! Unfortunately, in some people, their airway collapses during sleep, which causes them to constantly wake up in order to breathe. This stresses the body and prevents restful sleep. This long-term condition -- known as obstructive sleep apnea -- leads to many chronic health issues beyond sleep, and also makes patients much more tired and accident-prone during the day.

If left untreated, sleep apnea can also increase one’s risk of cardiovascular problems, such as high blood pressure (hypertension) and even heart failure.

The genetic variants that contribute to sleep apnea are more prevalent in some ethnic groups than others. For example, African-Americans and Pacific Islanders have been found to carry more genetic variants associated with sleep apnea than Europeans [75].

Other genes associated with obstructive sleep apnea are those involved in transporting cholesterol and fat throughout the body (APOE), as well as some genes that are involved in inflammation (TNF, IL6, and IL2).

Obstructive Sleep Apnea SNPs

<table>
<thead>
<tr>
<th>SNP</th>
<th>Your Genotype</th>
<th>Associations</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>rs157580</td>
<td>AA</td>
<td>Average risk for obstructive sleep apnea</td>
<td>76</td>
</tr>
<tr>
<td>rs1800629</td>
<td>GG</td>
<td>Average risk for obstructive sleep apnea</td>
<td>77</td>
</tr>
<tr>
<td>rs7412</td>
<td>CC</td>
<td>Significantly associated with obstructive sleep apnea</td>
<td>78</td>
</tr>
<tr>
<td>rs769455</td>
<td>CC</td>
<td>Typical susceptibility for obstructive sleep apnea</td>
<td>78</td>
</tr>
</tbody>
</table>

Based on your genotypes for the above SNPs, you have a very slightly above-average risk of...
obstructive sleep apnea.

If you do experience symptoms of sleep apnea (loud snoring, fatigue, morning headaches, poor cognitive function, and insufficient good quality sleep despite sleeping enough hours) speak to your doctor about getting tested and diagnosed for sleep apnea [79].

In addition, avoid excess alcohol as it is strongly linked to obstructive sleep apnea.

Although your genes predispose you to sleep apnea, you may not develop it because your lifestyle and health status also play a large role. Sleep apnea can develop later in life due to aging, obesity or weight gain (including during pregnancy), and any factors that can narrow the airway passage such as allergies [80, 81].

Every case of sleep apnea is different. If you have sleep apnea, your doctor may recommend a continuous positive airway pressure machine, dental appliances, or surgeries.
Conclusion

This ends your SelfDecode Sleep Genetics Report -- we hope you found it informative and enlightening!

The goals of this report were:

1. To introduce you to the basic science of what your genes are, and how they work.
2. To show how your genotype for different SNPs can be associated with different sleep traits.
3. To illustrate how individual SNPs may be impacting your ability to sleep, and the quality of sleep that you get.
4. To demonstrate how having access to this information can help you make more educated decisions about your lifestyle, diet, and supplements to live a healthier and happier life.

Prioritized Suggestions

The following is a prioritized list of all the suggestions made throughout your report. We have used your SNP data to help us identify which might be most relevant to you.

Please keep in mind that we do not have information on the majority of genetic variations you carry, the environment you live in, and your lifestyle choices. As such, this list is not guaranteed to be 100% accurate. To help resolve this issue we will be releasing updated versions of our reports that include more SNPs, please check our reports page to see if there is a new report waiting for you.

1. Develop a meditation practice to reduce stress and help facilitate sleep.
2. Maximize your sunlight during the day and cut out blue wavelength light exposure in the evenings.
3. Develop a frequent yoga practice to help reduce stress and facilitate sleep.
4. Ensure you get adequate daily exercise.
5. A caloric restriction diet may be of benefit to you.

If you’d like to learn more, we encourage you to:

- Use SelfDecode to explore your genetics further.
- Check out our Gene Reports page to learn more about the specialized SNP reports we offer.
- Check back in with us to receive updated versions of the reports you have already purchased.
- Get in touch! We’d love it if you let us know how this report helped you improve your health, as well as what new information or features you would like to see in future versions.

In closing, please keep in mind that this report is not an official medical document, and should not be used to replace traditional medical approaches for diagnosis or treatment. Any health concerns you have should always be discussed with a licensed professional in the appropriate medical field (doctor,
psychologist, nutritionist, etc.) before making any major medical decisions.

The science behind personalized genetics is rapidly growing and is making new discoveries every day. At SelfDecode, we are committed to staying on the cutting edge of all of the latest science. This exciting field is constantly producing new findings and challenging existing ideas -- and for this reason, we encourage all our readers to check back regularly as we continue to incorporate the latest findings into our Gene Reports! No report on the market will have 100% of all the existing scientific information, but we strive to provide the most comprehensive reports available. Email alerts regarding new versions of this report will be sent so you can continue to access the latest scientific information about your genetics and your health.
References

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