



*This is a sample report intended for illustrative purposes only. Some content and data have been changed. To purchase the full report, please visit [www.xcode.life](http://www.xcode.life)*

*Your guide to personalized allergy response*

# GENE ALLERGY AND DRUG SENSITIVITY



*\*For Informational Purposes Only. Not for Medical use*

## Table of contents

Penicillin Allergy	14
Amoxicillin-Clavulanate Allergy	15
Cephalosporin Allergy	16
Flucloxacillin Allergy	17
Aspirin Allergy	18
Diclofenac Allergy	19
Codeine Allergy	20
Acetaminophen (Paracetamol) Allergy	21
Allopurinol Allergy	22
Azathioprine Allergy	23
Asparaginase Allergy	24
Co-trimoxazole Allergy	25
Nevirapine Allergy	25
Abacavir Allergy	26
Clozapine Allergy	26
Efavirenz Allergy	27
Phenytoin Allergy	28
Carbamazepine Allergy	29
Benzene Sensitivity	30
Arsenic Sensitivity	31
Lead Sensitivity	32
Mercury Sensitivity	33
Trichloroethylene Sensitivity	34
Motion Sickness	35
Misophonia	36
Photic Sneeze	37
Contact Dermatitis	38
Allergic Rhinitis (Hay Fever)	39
Lactose Intolerance	40
Gluten Intolerance	41
Peanut Allergy	42
Egg Allergy	43
Milk Allergy	44
Cockroach Allergy	45
Birch Pollen Allergy	46
Dust Mite Allergy	47
Grass Allergy	48
Mold Allergy	49
Cat Allergy	50
Dog Allergy	51

Histamine Intolerance

52

Nut allergy

53

**This is a sample report**

---

# Introduction

---

Nearly 50 million Americans suffer from some form of allergy. Sometimes, our immune systems react to substances that are generally harmless. When encountering dust, fungal spores, or pollen, your immune system may overreact by manufacturing antibodies that ""attack"" the substance. This sort of reaction can cause difficulty breathing, sneezing, runny nose, watery or itchy eyes, and various other symptoms.

Everyone with an allergy has an interesting story about how they discovered that their body reacted violently to seemingly harmless allergens. Once an allergy is triggered, the symptoms can range from annoying to deadly. From an evolutionary angle, allergies provided an alarm that kept humans away from toxic chemicals, either venomous animals or plants. The reaction from the body's immune system acted as a warning system that prompted our ancestors to move to other parts of the forest.

A drug allergy is the abnormal reaction of your immune system to a medication. More often than not, drug allergies are often confused with side effects that are listed on a drug label. Drug allergies are more serious than side effects, with symptoms ranging from a mild skin rash to anaphylaxis (a life-threatening condition that affects multiple body systems).

Some Interesting facts about genes and allergies & sensitivities.

- **A child with a parent with allergy is 3 to 6 times more likely to have asthma**
- **Food allergies lead to 150 to 200 fatalities every year in the U.S**
- **Allergies are the sixth leading cause of chronic illness in the U.S, with an annual cost of \$18 million**
- **Allergic rhinitis affects 30% of the Indian population**
- **Nearly 80% of histamine intolerant patients are middle-aged**
- **Heritability for allergic diseases is estimated to be 95% for asthma, 84% for atopic dermatitis and 91% for allergic rhinitis**
- **Upto 70% of the variation in the risk for motion sickness is genetic**
- **Adverse drug reactions (ADRs) which account for 3 to 6% of all hospital admissions and occur in 10 to 15% of hospitalized patients. Drug allergies account for nearly 10% of all ADRs.**
- **75% of patients have detectable changes in their DNA that impact drug metabolism and hence their risk for drug allergies.**

Gene variations are partly responsible for the risk of allergies and sensitivities. Other factors include environmental triggers, stress, and the gut microbiome population and diversity.

In this report, we profile genes associated with the risk for various indoor, outdoor, and food allergies, chemical sensitivities, and drug allergies.

We hope this genetic report helps you better understand your body and safeguard yourself from exposure to allergens for a healthier life.

# Introduction

---

**Human health is a complex interplay between genetics and the environment (lifestyle, diet, activity, stress, etc.). Your genes and the environment that you are exposed to, both play a vital role in your well-being.**

This report is presented in a user-friendly language and format. The following tips will help you get the best information value out of the report.

## **1. The word "likely" is used often in the report. What does it mean?**

People generally know that high cholesterol can lead to heart conditions. However, some individuals with high cholesterol may not develop heart disease. Similarly, smoking can lead to lung disease, but not always. Hence, certain genetic parameters can lead to certain outcomes, but other factors may modify the outcome. "Likely" means it is more likely that one will see the outcome, but other factors may modify it.

## **2. What does the term "moderate" mean in the report?**

Moderate implies neither high nor low, rather an intermediate or an average outcome. For example, a moderate likelihood for wrinkles is intermediate between high and low likelihood.

## **3. How do I know which result applies to me?**

Only results with a check mark (✓) or exclamation (!) apply to you. The others are not applicable. All possible outcomes are provided in the table to provide a context to your outcome.

## **4. Where did the information contained in the report come from?**

The genetic markers used in this report are based on scientific studies published in international journals. A list of references is available to read on our web blog.




## **5. Some sentences are colored in green, some in brown, and others in red; why?**





Low risk for a specific condition is indicated in green while a high risk, is highlighted in red. Moderate or Neutral outcomes are indicated in brown (or orange).

## **6. What is the difference between lactose intolerance and milk allergy?**





Lactose intolerance occurs due to an insufficient amount of lactase enzyme, resulting in the inability to digest lactose, a sugar present in milk. On the other hand, milk allergy is an allergic reaction to the proteins present in milk.

# YOUR SUMMARY RESULTS

Trait Name	Your Result	Your Outcomes
<p><b>Penicillin Allergy</b> Genetic variations in allergic responses to penicillin <a href="#">Learn More</a></p>		<p>Highly likely to have an allergic response to penicillin</p> <p>Highly likely to have an allergic response to penicillin</p> <p>Highly likely to have an allergic response to penicillin</p>
<p><b>Amoxicillin-Clavulanate Allergy</b> Genetic variations in allergic responses to amoxicillin-clavulanate <a href="#">Learn More</a></p>		<p>Highly likely to have an allergic response to amoxicillin-clavulanate</p> <p>Highly likely to have an allergic response to amoxicillin-clavulanate</p> <p>Highly likely to have an allergic response to amoxicillin-clavulanate</p>
<p><b>Cephalosporin Allergy</b> Genetic variations in allergic responses to cephalosporin <a href="#">Learn More</a></p>		<p>Highly likely to have an allergic response to cephalosporin</p> <p>Highly likely to have an allergic response to cephalosporin</p> <p>Highly likely to have an allergic response to cephalosporin</p>





<p><b>Flucloxacillin Allergy</b>  Genetic variations in allergic responses to flucloxacillin  <a href="#">Learn More</a></p>		<p>1. Introduction</p> <p>2. Genetic Variations</p> <p>3. Clinical Implications</p> <p>4. Conclusion</p>
<p><b>Aspirin Allergy</b>  Genetic variations in allergic responses to aspirin  <a href="#">Learn More</a></p>		<p>1. Introduction</p> <p>2. Genetic Variations</p> <p>3. Clinical Implications</p> <p>4. Conclusion</p>
<p><b>Diclofenac Allergy</b>  Genetic variations in allergic responses to diclofenac  <a href="#">Learn More</a></p>		<p>1. Introduction</p> <p>2. Genetic Variations</p> <p>3. Clinical Implications</p> <p>4. Conclusion</p>
<p><b>Codeine Allergy</b>  Genetic variations in allergic responses to codeine  <a href="#">Learn More</a></p>		<p>1. Introduction</p> <p>2. Genetic Variations</p> <p>3. Clinical Implications</p> <p>4. Conclusion</p>



<p><b>Acetaminophen (Paracetamol) Allergy</b>          Genetic variations in allergic responses to acetaminophen  <a href="#">Learn More</a></p>		<p>Genetic variations in allergic responses to acetaminophen</p> <p>Genetic variations in allergic responses to acetaminophen</p> <p>Genetic variations in allergic responses to acetaminophen</p>
<p><b>Allopurinol Allergy</b>          Genetic variations in allergic responses to allopurinol  <a href="#">Learn More</a></p>		<p>Genetic variations in allergic responses to allopurinol</p> <p>Genetic variations in allergic responses to allopurinol</p> <p>Genetic variations in allergic responses to allopurinol</p>
<p><b>Azathioprine Allergy</b>          Genetic variations in allergic responses to azathioprine  <a href="#">Learn More</a></p>		<p>Genetic variations in allergic responses to azathioprine</p> <p>Genetic variations in allergic responses to azathioprine</p> <p>Genetic variations in allergic responses to azathioprine</p>
<p><b>Asparaginase Allergy</b>          Genetic variations in allergic responses to asparaginase  <a href="#">Learn More</a></p>		<p>Genetic variations in allergic responses to asparaginase</p> <p>Genetic variations in allergic responses to asparaginase</p> <p>Genetic variations in allergic responses to asparaginase</p>



<p><b>Co-trimoxazole Allergy</b> Genetic variations in allergic responses to co-trimoxazole <a href="#">Learn More</a></p>	<p>✓</p>	<p>1. Introduction</p> <p>2. Background</p> <p>3. Objectives</p> <p>4. Methods</p> <p>5. Results</p> <p>6. Discussion</p> <p>7. Conclusion</p> <p>8. References</p>
<p><b>Nevirapine Allergy</b> Genetic variations in allergic responses to nevirapine <a href="#">Learn More</a></p>	<p>✓</p>	<p>1. Introduction</p> <p>2. Background</p> <p>3. Objectives</p> <p>4. Methods</p> <p>5. Results</p> <p>6. Discussion</p> <p>7. Conclusion</p> <p>8. References</p>
<p><b>Abacavir Allergy</b> Genetic variations in allergic responses to abacavir <a href="#">Learn More</a></p>	<p>✓</p>	<p>1. Introduction</p> <p>2. Background</p> <p>3. Objectives</p> <p>4. Methods</p> <p>5. Results</p> <p>6. Discussion</p> <p>7. Conclusion</p> <p>8. References</p>
<p><b>Clozapine Allergy</b> Genetic variations in allergic responses to clozapine <a href="#">Learn More</a></p>	<p>✓</p>	<p>1. Introduction</p> <p>2. Background</p> <p>3. Objectives</p> <p>4. Methods</p> <p>5. Results</p> <p>6. Discussion</p> <p>7. Conclusion</p> <p>8. References</p>

<p><b>Efavirenz Allergy</b> Genetic variations in allergic responses to efavirenz <a href="#">Learn More</a></p>		<p>Pharmacokinetics of efavirenz</p> <p>Pharmacodynamics of efavirenz</p> <p>Adverse effects of efavirenz</p> <p>Drug interactions of efavirenz</p> <p>Contraindications of efavirenz</p> <p>Precautions of efavirenz</p> <p>Warnings of efavirenz</p> <p>Indications of efavirenz</p> <p>Dosage of efavirenz</p> <p>Administration of efavirenz</p> <p>Storage of efavirenz</p> <p>Stability of efavirenz</p> <p>Excipients of efavirenz</p> <p>Manufacturers of efavirenz</p> <p>References of efavirenz</p>
<p><b>Phenytoin Allergy</b> Genetic variations in allergic responses to phenytoin <a href="#">Learn More</a></p>		<p>Pharmacokinetics of phenytoin</p> <p>Pharmacodynamics of phenytoin</p> <p>Adverse effects of phenytoin</p> <p>Drug interactions of phenytoin</p> <p>Contraindications of phenytoin</p> <p>Precautions of phenytoin</p> <p>Warnings of phenytoin</p> <p>Indications of phenytoin</p> <p>Dosage of phenytoin</p> <p>Administration of phenytoin</p> <p>Storage of phenytoin</p> <p>Stability of phenytoin</p> <p>Excipients of phenytoin</p> <p>Manufacturers of phenytoin</p> <p>References of phenytoin</p>
<p><b>Carbamazepine Allergy</b> Genetic variations in allergic responses to carbamazepine <a href="#">Learn More</a></p>		<p>Pharmacokinetics of carbamazepine</p> <p>Pharmacodynamics of carbamazepine</p> <p>Adverse effects of carbamazepine</p> <p>Drug interactions of carbamazepine</p> <p>Contraindications of carbamazepine</p> <p>Precautions of carbamazepine</p> <p>Warnings of carbamazepine</p> <p>Indications of carbamazepine</p> <p>Dosage of carbamazepine</p> <p>Administration of carbamazepine</p> <p>Storage of carbamazepine</p> <p>Stability of carbamazepine</p> <p>Excipients of carbamazepine</p> <p>Manufacturers of carbamazepine</p> <p>References of carbamazepine</p>
<p><b>Benzene Sensitivity</b> Genetic variations in sensitivity to benzene <a href="#">Learn More</a></p>		<p>Pharmacokinetics of benzene</p> <p>Pharmacodynamics of benzene</p> <p>Adverse effects of benzene</p> <p>Drug interactions of benzene</p> <p>Contraindications of benzene</p> <p>Precautions of benzene</p> <p>Warnings of benzene</p> <p>Indications of benzene</p> <p>Dosage of benzene</p> <p>Administration of benzene</p> <p>Storage of benzene</p> <p>Stability of benzene</p> <p>Excipients of benzene</p> <p>Manufacturers of benzene</p> <p>References of benzene</p>



## **PENICILLIN ALLERGY**

**Moderate: Moderately likely to be allergic to penicillin.**

Penicillins are a group of drugs with antibacterial properties administered to treat any bacterial infection. They are one of the first antibiotics to be discovered. 10% of Americans have been documented to have a penicillin allergy - the immune system, instead of fighting

### **Recommendations:**

- You have a moderate genetic tendency to be allergic to penicillin.
- If you experience any symptoms of penicillin allergy, get yourself evaluated by an allergist or immunologist.

**Genes Analyzed:** IL4, IL18, HLA-DRA, IL4R

**Number of Gene Markers Found:** 6

**Number of Gene Markers Analyzed:**8



## AMOXICILLIN-CLAVULANATE ALLERGY

**Low: Less likely to be allergic to amoxicillin–clavulanate.**

Amoxicillin–Clavulanate is a prescription antibiotic. Amoxicillin is a penicillin antibiotic, while clavulanate helps prevent the bacteria from becoming resistant to amoxicillin. This drug is used to treat several bacterial conditions like pneumonia and ear, skin, and urinary

### Recommendations:

- You have a low genetic tendency to be allergic to amoxicillin–clavulanate.

**Genes Analyzed:** HLA-G, PTPN22, HLA-DQB1

**Number of Gene Markers Found:** 3

**Number of Gene Markers Analyzed:**3



## CEPHALOSPORIN ALLERGY

**High: Highly likely to be allergic to cephalosporin.**

Cephalosporins are antimicrobials used to treat several bacterial infections. They come under "broad-spectrum antibiotics" as they work against a wide range of bacteria. Cephalosporins, like most antimicrobials, disrupt the cell wall integrity, thereby killing the bacteria.

### Recommendations:

- You have a high genetic tendency to be allergic to cephalosporin.
- If you experience any symptoms of cephalosporin allergy, get yourself evaluated by an allergist or immunologist.
- If you are diagnosed with cephalosporin allergy, cephalosporin or any other similar  $\beta$ -lactam antibiotics should be avoided. You can request your doctor for other similarly effective antibiotic drugs.

**Genes Analyzed:** MS4A2 (FCER1B)

**Number of Gene Markers Found:** 1

**Number of Gene Markers Analyzed:**1



## FLUCLOXACILLIN ALLERGY

**Low: Less likely to be allergic to flucloxacillin.**

Flucloxacillin is a prescription antibiotic used to treat skin, ear, and bone infections, infections caused due to external wounds or injuries, and infections in the foot due to leg ulcers and diabetes. It is derived from penicillin. Flucloxacillin is generally safe for usage during pregnancy and breastfeeding. It can be administered to children as well, at an

### Recommendations:

- You have a low genetic tendency to be allergic to flucloxacillin.

**Genes Analyzed:** HCP5, NR1I2, HSPA1L, TNF

**Number of Gene Markers Found:** 4

**Number of Gene Markers Analyzed:**4



## ASPIRIN ALLERGY

**Moderate: Moderately likely to be allergic to aspirin.**

Aspirin or acetylsalicylic acid is a drug that is routinely used in treating pain, inflammation, and fever. It may also be used to prevent heart attacks, strokes, or chest pain as it prevents the aggregation of platelets and subsequent clot formation. Aspirin allergy is more common

### Recommendations:

- You have a moderate genetic tendency to be allergic to aspirin.
- If you experience any symptoms of aspirin allergy or acetylsalicylic acid (ASA) allergy, get yourself evaluated by an allergist or immunologist.

**Genes Analyzed:** TGFB1, ZBTB22, CEP68, PTGER2, HNMT, SLC6A12, TAPBP, LOC401320, IL4, SLC30A9, TLR3, TBXA2R, LTC4S, TSC1, FSIP1, TBXAS1, HLA-DPB1, HLA-DPB2, PEAR1, CYP2D6, ACE, PTGIR, CHIA, PPARG, ADORA1

**Number of Gene Markers Found:** 28

**Number of Gene Markers Analyzed:**37





## DICLOFENAC ALLERGY

**Moderate: Moderately likely to be allergic to diclofenac.**

Diclofenac is a Non-Steroidal Anti-Inflammatory Drug (NSAID) used to treat mild to moderate pain and relieve rheumatoid arthritis and osteoarthritis symptoms. It is also often used with muscle relaxants to bring down spasm pains. Allergy to other NSAIDs increases

### Recommendations:

- You have a moderate genetic tendency to be allergic to diclofenac.
- If you experience any symptoms of diclofenac allergy, get yourself evaluated by an allergist or immunologist.

**Genes Analyzed:** IL4, ABCC2, IL10, UGT2B7

**Number of Gene Markers Found:** 4

**Number of Gene Markers Analyzed:**4

# Disclaimer

---

Xcode provides genetic assessment services for research or investigational use, and Xcode's reports should be interpreted or used exclusively by professional practitioners, including but not limited to certified physicians, dietitians, nutritionists, sports therapists, and others in similar professions ("Professional Practitioners"). Xcode does not provide any direct medical advice to individual patients. Only a qualified medical practitioner can provide relevant medical or healthcare advice, diagnosis, or treatment based on this report. Genetic information must always be considered in conjunction with other information about your health, such as lifestyle, family history, risk factors, biomedical data, diet, nutrition, and physical activity, among other factors. A single gene mutation is not the only factor that influences health conditions or outcomes; several other factors like environment and lifestyle may influence the health outcome. You are responsible for ascertaining that your Professional Practitioner is qualified to consider the genetic information indicated in this report in conjunction with all other information made available to them about you, including your family health history, lifestyle, bio-medical data, and any other information that you may provide to the Professional Practitioner. Xcode shall not be held responsible for any misinterpretation of this report by your Professional Practitioner or any matter arising out of this report.

Only full genome sequences are exhaustive. All other forms of genetic tests only provide a limited subset of genetic information relevant to specific conditions. Since this report is not generated by conducting a whole genome sequence test, the results reported are limited to a specific set of mutations known to be associated with specific conditions. Genetic information is also subject to revision based on the latest advances in scientific research. Therefore the interpretation of results reported herein may vary or be altered subject to ongoing research. Sometimes, the interpretations may vary from company to company based on which studies are being given a higher preference compared to others.

Xcode's role is limited to providing genetic test results and a broad set of recommendations. More detailed recommendations that may be specific to you are to be made by qualified Professional Practitioners only. General guidelines provided in our report are for information purposes only and are meant to aid your Professional Practitioner in rendering the relevant professional or medical advice and treatment. While assessing your genetic parameters and providing the report and recommendations, we do not consider your past or existing health conditions and any medication you took (either in the past or currently), even if you may have provided us with such information. Our report and recommendations are to be acted upon in consultation with a medical or other health and wellness professional practitioner.

Your reliance upon the report is solely at your discretion. As with all health and medical-related matters, you should exercise adequate care using the information provided in this report or on our website. Xcode disclaims any responsibility for any errors and omissions by you or other persons either during the collection of DNA samples or delivery of the DNA sample to Xcode. We make no warranties of any kind, either express or implied, including, without limitation, the implied warranties of merchantability, fitness for a particular purpose, accuracy and non-infringement. The information in this report is for Research Use Only (RUO) or Investigational Use Only (IUO), meant to assist in further clinical diagnosis or treatment by Professional Practitioners.



This is a sample report intended for illustrative purposes only. Some content and data have been changed. To purchase the full report, please visit [www.xcode.life](http://www.xcode.life)