



## Sema4 CarrierCheck Informed Consent

*Last modified July 20, 2017*

This informed consent describes the benefits, risks, and limitations of undergoing DNA testing for certain genetic conditions with Sema4's CarrierCheck test. None of your genetic information will be shared with Sema4 and your DNA will not be analyzed by Sema4 unless you confirm that you have read and understood the contents of this form.

This is a voluntary test. You may wish to seek additional, independent genetic counseling prior to agreeing to this form. If you have any questions about your medical care, you should seek the advice of your physician or other qualified healthcare provider. Never disregard professional medical advice or delay seeking it.

### What is the CarrierCheck test?

The CarrierCheck test determines if you are a carrier of one or more autosomal recessive diseases. Autosomal recessive inheritance is one of several ways that a genetic condition can be passed down through families. An autosomal recessive condition means that both copies of a gene must have disease-causing variants (or changes) for the condition to develop. This means that a child must inherit a gene carrying one copy of a disease-causing variant from the mother, as well as a gene carrying one copy of a disease-causing variant from the father.

A complete list of the genes and corresponding conditions screened for by the CarrierCheck test may be found [here](#). This test does not evaluate your carrier status for any other genetic conditions and Sema4 will not perform any other analysis on your sample without your consent.

### What is the testing process?

When you order CarrierCheck, you will be asked to provide certain demographic and family history information. This information will be reviewed by PWN's team of physicians and genetic counselors to confirm that this test is appropriate for you. A PWN genetic counselor will contact you if they have questions about the information you provided.

If this is your first time purchasing a product from the Helix marketplace, Helix will send you a saliva collection kit after a physician approves and orders your test. You will then ship your saliva sample to Helix, where your sample will be tested using next generation sequencing.

If you have previously purchased a product from Helix, Helix will securely transfer relevant genetic information to Sema4 after a physician approves and orders your test and you provide your consent.

For more information on how DNA samples are handled, please read [Helix's Terms of Use](#). You will be notified if your test is not approved.

Once Helix has finished sequencing your DNA sample, parts of your data will be shared with Sema4 and the Sema4 laboratory will analyze the data to see if you are a carrier of any of the conditions for which CarrierCheck screens. You will be able to track the status of your CarrierCheck test through your Sema4 account. The test status will update when your sample is received and processed by Helix, as well as when your results are available. A physician from PWN will review and sign off on your results, and then your results will be available for you to view through your Sema4 account.

Genetic counseling will be available to you at any time during this process and is highly recommended if you have a positive family history for any of the conditions on the panel. Genetic counseling is also recommended if you have a family history of any conditions included in carrier screening guidelines from professional societies (including spinal muscular atrophy, any other conditions that are relevant for your ethnicity, and/or any diseases for which you have a positive family history).

## Is genetic counseling included?

Your purchase of CarrierCheck includes any consultation that PWN determines is necessary prior to your taking the test, as well as one consultation to review your results with a board-certified genetic counselor from PWN. We encourage you to utilize this service and schedule an appointment with PWN after you receive your results. Genetic counselors from PWN will also be available to provide you with additional genetic counseling sessions if you wish, but PWN may charge you a separate fee for such additional genetic counseling sessions.

## What are the possible benefits of this test?

Your carrier screening results may help you and your partner make more informed decisions in the event that you decide to have children together. Your results may also help other family members understand if they have an increased risk of being carriers of the genetic conditions for which CarrierCheck screens. If you test positive, your biological relatives are more likely to be carriers of the same condition. If you test negative, this does not reduce the chance your relatives are carriers.

## What are the limitations and risks of this test?

This test is designed to detect only certain known gene variants associated with certain genetic diseases. It cannot detect every variant associated with each disease, nor does it look for all known genetic diseases that could affect you or your future children. This test only provides information about your chance to be a carrier of the specific conditions tested. For instance, the CarrierCheck test does not test for spinal muscular atrophy, which is recommended by professional organizations that publish guidelines for reproductive carrier screening. It also does not include testing for fragile X syndrome premutation carrier status, which is also recommended if there is a positive family history of a fragile X-related disorder or intellectual disability. Additionally, although the likelihood of an incorrect diagnosis or a misinterpretation of the result is extremely small, you should understand that infrequent errors may occur. The likelihood of this occurring has been estimated to be less than 1%.

The following are the carrier statuses that your report may contain:

- *Carrier (Positive):* A positive result indicates that a gene variant (or change) has been identified and that you are a carrier of a certain genetic condition. This means that you have an increased risk of having a child affected by that condition. If you test positive as a carrier for a condition, it is recommended that, before having a child, your reproductive partner is also tested for that condition to determine the chance of having an affected child.
- *No mutations detected (Negative):* A negative result indicates that no gene variant was identified. This reduces, but does not eliminate, the possibility of being a carrier for a genetic condition included in this test.
- *Indeterminate:* Sometimes we will not be able to confidently read a particular location of a person's DNA. When this is the case, your report will state "no call." An "indeterminate" result, or "no call," indicates that we cannot confidently report a positive or negative result using stringent quality-control guidelines.
- *Homozygote or compound heterozygote:* This result indicates the presence of two disease-causing variants in the same gene, which would typically indicate that you are affected by that condition, or may be affected in the future. Some of the diseases in this panel may be mild or may vary in severity, so you may not experience clinically significant symptoms.

Negative results do not guarantee that you or your children will be healthy. No single genetic test can detect all of the possible gene variants that could cause a disease. This means that, even if you test negative, there is a chance that you may still be a carrier for one of the genetic conditions on this test. If you wish to better understand your reproductive risk, your partner's carrier risk, or the risk to potential pregnancies, more comprehensive testing is available. Please contact your physician or inquire through the genetic counseling services offered by PWN, as CarrierCheck is not meant to replace medical care from your own physician. It is recommended that you seek the advice of your physician or other appropriate healthcare professional with any questions you may have regarding your results.

Some biological factors, such as a history of bone marrow transplantation or recent blood transfusions, may limit the accuracy of results. As with all medical tests, there is a chance of a "false positive" or a "false negative" result. A false positive result means that a gene variant was detected, but it is not actually there. Similarly, a false negative result means the test did not identify a gene variant that you actually have.

Additionally, you understand that genetic testing may reveal sensitive information about your own health or that of your relatives. Test results may reveal incidental, unsought information, such as discovering an undiagnosed disorder, revealing

cases of adoption, or demonstrating that a person is not the father or mother of a child.

## Use of Your Information for Research; Re-Contact

By signing this consent form, you agree that we may de-identify and use your information to support medical and academic research, including with our trusted research collaborators. De-identified information is health data where any information that could be used to identify a specific person, such as a name, email address, or date of birth, has been removed. This process is used to protect your privacy. You can learn more about the rules for de-identifying health information [here](#). If you prefer not to have any of your de-identified health information used in research consistent with this consent, you may request this by contacting [privacy@sema4genomics.com](mailto:privacy@sema4genomics.com).

You should understand that we may contact you in the future for the following reasons: Research purposes for institutional review board-approved research opportunities, the provision of general information about research findings, and/or the provision of information about the results of tests on your sample(s). You understand that you may notify Sema4 to withdraw your consent to future contact and doing such will not affect your clinical care. Further, you understand that we do not have a responsibility to re-contact you in the future when new tests are added to our menu or when additional variants are added to the test you have ordered.

## Patient Agreement and Consent

By signing and agreeing to this consent form, I acknowledge the following:

- I am the person providing the sample and consenting to this test, and I am at least 18 years of age.
- I have read and agree to the contents of this form.
- I have received sufficient information from a physician, genetic counselor, and/or other healthcare provider that described, in words that I understood, the nature of the testing that I am about to undergo, and I have had the opportunity to have all of my questions answered.
- I understand the benefits, risks, and limitations of carrier screening and the CarrierCheck product.
- I have been given the opportunity to discuss the results of the test with a physician, once I receive them, and I have been informed of the availability of genetic counseling services.
- I am responsible for informing Sema4 and/or the PWN physician of any changes in the information that I provide in connection with this test.
- I understand that Sema4 may contact me in the future for research opportunities.
- I understand that Sema4 may use my de-identified information and test results for validation, educational, and/or research purposes consistent with this consent, and this de-identified data may be submitted in a HIPAA-compliant manner to research databases for use in academic or medical research.
- I understand that this consent is being obtained in order to protect my right to have all of my questions answered before testing. I understand that the results of this testing will become part of my medical record and may only be disclosed to individuals who have legal access to this record or to individuals whom I designate to receive this information.
- I will confer with my own physician prior to taking any action in connection with the cure, treatment, mitigation, or prevention of any disease or other medical condition.
- I understand that the results of this testing will become part of my medical record and may only be disclosed to individuals who have legal access to this record or to individuals whom I designate to receive this information.

By checking the box below, I hereby sign and agree to this consent form and request that the CarrierCheck test be performed on my sample and/or DNA.

**Note: By declining this consent, it will automatically cancel your order.**