SUPPLEMENTAL INFORMATION

Return of Genetic Testing Results Survey

The main purpose of this survey is to learn participant preferences about whether genetic testing results should be returned, which results should be returned, and how they should be returned.

1. Beliefs about research genetic testing results

***Directions**: Please indicate how strongly you agree or disagree with each of the following statements. Please circle one response for each item.*

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
A) Research genetic testing is the same as clinical genetic testing	1	2	3	4	5
B) Research genetic testing is more prone to test errors than clinical genetic testing	1	2	3	4	5
C) Genetic research will **never** find a genetic explanation for my aortic disease.	1	2	3	4	5
D) Genetic research **will** find a genetic explanation for my aortic disease someday.	1	2	3	4	5
E) Genetic research **will** find a genetic explanation for my aortic disease **in the next year**.	1	2	3	4	5
F) Genetic research **will** find a genetic explanation for my aortic disease **in the next 5 years**.	1	2	3	4	5

2. Causes of my aortic condition

We are interested in what you consider may have been the cause of your aortic condition. As people are very different, there is no correct answer for these questions. We are most interested in your own views about the factors that caused your aortic condition, rather than what others including doctors or family may have suggested to you.

***Directions**: Please indicate how much you agree or disagree that the following could be causes for your aortic condition by circling the appropriate box.*

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
A) Stress or worry	1	2	3	4	5
B) Hereditary - it runs in my family	1	2	3	4	5
C) A Germ or virus	1	2	3	4	5
D) Diet or eating habits	1	2	3	4	5
E) Chance or bad luck	1	2	3	4	5
F) Lifestyle choices	1	2	3	4	5
G) Poor medical care in my past	1	2	3	4	5
H) Pollution in the environment	1	2	3	4	5
I) Aging	1	2	3	4	5
J) Alcohol	1	2	3	4	5
K) Smoking	1	2	3	4	5
L) Accident or injury	1	2	3	4	5
M) Fate	1	2	3	4	5
N) Other medical condition Specify:_____	1	2	3	4	5

***Directions**: In the table below, please list in rank-order up to three of the most important factors that you believe caused YOUR aortic condition. You may use any of the items from the box above (A-N), or you may add additional ideas of your own.*

The most important causes for me:

1. _____
   (A-N or your own reason)
2. _____
   (A-N or your own reason)
3. _____
   (A-N or your own reason)

Background:

Some inherited factors (*genes*) are already known to be associated with aortic aneurysm (*enlargement of aorta*) and dissection (*tearing or separating of the aorta*). Different genes associated with **aortic aneurysm and dissection** have varying levels of impact on patient care.

Changes (*variants)* within these genes may have either strong or unknown associations with aortic aneurysm and dissection. Some changes are classified as disease associated (*pathogenic*), while others may be of uncertain significance.

Some gene variants are medically actionable and will therefore change your clinical management. Others will not change a person's cardiovascular care but can provide information for family members.

Research genetic testing cannot be used for clinical decision-making.

The next portion of the survey contains four scenarios with different types of genetic results possibilities.

Directions*: For the following scenarios, please read each scenario and then circle your answer for each of the questions below.*

Scenario 1A. How likely are you to want to know if you have a disease associated change (pathogenic variant) in a gene associated with aortic aneurysm and dissection if it ***would*** **change your cardiovascular medical management?** For example, there could be imaging of other arteries or earlier surgical repair. *(Please circle your choice.)*

Extremely likely	Very likely	Somewhat likely	Somewhat unlikely	Very unlikely	Extremely unlikely
1	2	3	4	5	6

1B. Research genetic testing is not validated for clinical use, and therefore, **it must be repeated through clinical genetic testing**. For the above scenario, how much would you be willing to pay to have your result clinically validated? *(Please write in your dollar amount on the line below.)*

$_____
($0 - $3,000)

Scenario 2A. How likely are you to want to know if you have a disease associated change (pathogenic variant) in a gene associated with aortic aneurysm and dissection if it ***would NOT*** **change your cardiovascular medical management?** *(Please circle your choice.)*

Extremely likely	Very likely	Somewhat likely	Somewhat unlikely	Very unlikely	Extremely unlikely
1	2	3	4	5	6

2B. Research genetic testing is not validated for clinical use, and therefore, **it must be repeated through clinical genetic testing**. For the above scenario, how much would you be willing to pay to have your result clinically validated? *(Please write in your dollar amount on the line below.)*

$_____
($0 - $3,000)

Scenario 3A. Sometimes in genetic testing, we find **variants of uncertain significance (VUS)** which are gene changes that may possibly be associated with aortic aneurysm but that we do not currently know how to interpret. We may find more information over time to say whether or not it increases the risk for aortic aneurysm and dissection. VUS are NOT *medically actionable*—meaning that your doctor would not recommend testing family members and it would not change the way you are treated. How likely are you to want to know if you have a **variant of uncertain significance**? *(Please circle your choice.)*

Extremely likely	Very likely	Somewhat likely	Somewhat unlikely	Very unlikely	Extremely unlikely
1	2	3	4	5	6

3B. Research genetic testing is not validated for clinical use, and therefore, **it must be repeated through clinical genetic testing**. For the above scenario, how much would you be willing to pay to have your result clinically validated? *(Please write in your dollar amount on the line below.)*

$_____
($0 - $3,000)

Scenarios 4 and 5 About 3% of the time, research genetic testing could also find information about risk for cancer or other heart conditions *besides* aortic aneurysm and dissection. These results are known as **secondary findings**. Medically actionable secondary findings would change your recommendations for screening and management for cancers or other heart conditions.

4A. How likely would you be to want to know medically actionable secondary findings related to **cancer**?

Extremely likely	Very likely	Somewhat likely	Somewhat unlikely	Very unlikely	Extremely unlikely
1	2	3	4	5	6

4B. Research genetic testing is not validated for clinical use, and therefore, **it must be repeated through clinical genetic testing**. For the above scenario, how much would you be willing to pay to have your result clinically validated? *(Please write in your dollar amount on the line below.)*

$_____
($0 - $3,000)

5A. How likely would you be to want to know medically actionable secondary findings related to **other heart conditions**?

Extremely likely	Very likely	Somewhat likely	Somewhat unlikely	Very unlikely	Extremely unlikely
1	2	3	4	5	6

5B. Research genetic testing is not validated for clinical use, and therefore, **it must be repeated through clinical genetic testing**. For the above scenario, how much would you be willing to pay to have your result clinically validated? *(Please write in your dollar amount on the line below.)*

$_____
($0 - $3,000)

Directions: *Please answer the following questions with regard to receiving research genetic testing results.*

6A. For each choice below, how acceptable would the following options be for you to receive research genetic test results? *(Please circle your choice for each item below)*

	Highly acceptable	Acceptable	Unacceptable	Highly unacceptable	I do not use
A) Password protected patient portal	1	2	3	4	N/A
B) Letter	1	2	3	4	N/A
C) Email	1	2	3	4	N/A
D) Phone call	1	2	3	4	N/A
E) In-person appointment	1	2	3	4	N/A
F) Phone call followed by patient portal	1	2	3	4	N/A
G) Phone call followed by letter	1	2	3	4	N/A
H) Phone call followed by email	1	2	3	4	N/A
I) Phone call followed by in-person appointment	1	2	3	4	N/A
J) Other _____	1	2	3	4	N/A

Please indicate by letter (A-J) what would be your **most preferred** way to receive research genetic testing results:

Y u

_____
(Letter A-J)

6B. For each option below, who would be acceptable to disclose and discuss your research genetic test results? *(Please circle your choice for each item below)*

	Highly acceptable	Acceptable	Unacceptable	Highly unacceptable
A) A member of the research study team	1	2	3	4
B) A genetics specialist	1	2	3	4
C) My primary care physician	1	2	3	4
D) My cardiovascular specialist	1	2	3	4
E) Other _____	1	2	3	4

Please indicate by letter (A-E) who would be your **most preferred** provider to disclose and discuss your research genetic testing results:

_____
(Letter A-E)

Questions regarding family and research genetic testing results:

1. We all share half of our genes with our first degree relatives (parents, siblings, children), Therefore, if someone has a disease associated change (pathogenic variant) in a gene associated with aortic aneurysm or dissection, then each first degree relative has a 50% risk (1 in 2 chance) of sharing the same variant. If a variant is found in an individual with an aortic aneurysm, then their family members can be tested for that specific variant. Family members also found to have the variant would be recommended to have screening with an ultrasound to monitor their aorta. Early detection and management of aortic aneurysm reduces the chance of having an aortic dissection which can be life threatening.

Based on **family implications only**, how likely are you to want to know if you have a disease associated change *(pathogenic variant*) in a gene associated with aortic aneurysm and dissection? *(Please circle your choice)*

Extremely likely	Very likely	Somewhat likely	Somewhat unlikely	Very unlikely	Extremely unlikely
1	2	3	4	5	6

2. Would you share the information about medically actionable genetic testing results (results with screening and management options) with the following people? *(Please circle your choices)*

A) Children	Yes	No	Undecided	Not Applicable
B) Siblings	Yes	No	Undecided	Not Applicable
C) Parents	Yes	No	Undecided	Not Applicable
D) Spouse/Partner	Yes	No	Undecided	Not Applicable
E) Other relatives	Yes	No	Undecided	Not Applicable
F) Employer	Yes	No	Undecided	Not Applicable
G) Primary Care Physician	Yes	No	Undecided	Not Applicable
H) Cardiovascular specialist	Yes	No	Undecided	Not Applicable
I) Other_____	Yes	No	Undecided	Not Applicable

3. If you were found to have an uncertain research genetic testing result, how likely would you be to recruit some relatives to participate in this research study (CHIP) if it could help the research team understand the result (e.g., provide more evidence to determine if the result is associated with aortic aneurysm and dissection)? *(Please circle your choice)*

Extremely likely	Very likely	Somewhat likely	Somewhat unlikely	Very unlikely	Extremely unlikely
1	2	3	4	5	6

4**.** What do you believe is the best way for the researcher to handle genetic variants (changes) of uncertain or unknown significance? *(Please circle one answer only)*

A) The researcher should decide whether or not to give back the results.
B) The researcher and the participant should decide together.
C) The participant should decide.
D) All results should be returned to participants, even if the meaning is uncertain.
E) An independent committee made up of members of the public and scientists should decide if the results should be offered to research participants.
F) Other _____

5. During genetic testing, different errors can occur in the handling of participants' samples. Before providing you with your own research genetic testing results, how confident does the lab need to be that these are truly your results and not someone else's? *(Please circle one answer only)*

A) 99.99% sure (error rate of 1 in 1,000)
B) 99% sure (error rate of 1 in 100)
C) 98% sure (error rate of 2 in 100)
D) 95% sure (error rate of 5 in 100)
E) 90% sure (error rate of 10 in 100)
F) 80% sure (error rate of 20 in 100)

Participant background:

1. Please circle how true each statement is for you:

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
A) How often do you have problems learning about your medical condition because of difficulty understanding written information?	1	2	3	4	5
B) How confident are you filling out medical forms by yourself?	1	2	3	4	5
C) How often do you have someone (like a family member, friend, hospital/clinic worker or caregiver) help you read hospital materials?	1	2	3	4	5

2. What is the **highest** grade or level of school you have **completed** or the **highest degree** you have **received**? (*Please circle one answer only*)

A) Less than high school graduate
B) High school graduate or GED
C) Some college
D) Associate's degree
E) Bachelor's degree
F) Master's degree or Professional degree (MA, MS, JD, etc.)
G) Doctoral degree (MD, PhD)

NOTE: <u>Genome sequencing</u> is genetic testing of all of someone's genes.

Genetics Questions:

Directions: *Please answer the following questions about how much you agree with the following statements about genome sequencing (genetic testing of <u>all</u> of someone's genes).*

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
A) Once a variant in a gene that affects a person's risk of a disease is found, that disease can always be prevented or cured.	1	2	3	4	5
B) A health care provider can tell a person their exact chance of developing a disease based on the results from genome sequencing.	1	2	3	4	5
C) Scientists know how all variants of genes will affect a person's chances of developing diseases.	1	2	3	4	5
D) Even if a person has a variant in a gene that affects their risk of a disease, they may not develop that disease.	1	2	3	4	5
E) Genome sequencing is a routine test that most people can have through their physician's office.	1	2	3	4	5
F) Genome sequencing may find variants in a person's genes that they can pass on to their children.	1	2	3	4	5
G) Genome sequencing may give a person information about their chances of developing several different diseases.	1	2	3	4	5
H) Genome sequencing may find variants in a person's genes that will increase their chance of developing a disease in their lifetime.	1	2	3	4	5
I) Genome sequencing may find variants in a person's genes that will decrease their chance of developing a disease in their lifetime.	1	2	3	4	5
J) Genome sequencing may find variants in a person's genes that may determine how they respond to certain medicines.	1	2	3	4	5

****See top of page for definition of genome sequencing.***