



**MAMMALIAN
MILK
ZOOMER**

Mammalian Milk Zoomer

To identify, monitor, and manage sensitivity to special dairy products



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1360 Bayport Ave. Ste. B
San Carlos, CA 94070

Final Report Date:	10-28-2019 20:37	Specimen Collected:	11-30-2015
Accession ID:	1512010000	Specimen Received:	12-01-2015 00:00

LAST NAME	FIRST NAME	GENDER	DATE OF BIRTH	ACCESSION ID	DATE OF SERVICE
TESTNAME	PATIENT	MALE	1961-01-20	1512010000	11-30-2015

PATIENT

Name: PATIENT TESTNAME
 Date of Birth: 1961-01-20
 Gender: Male
 Age: 58

Telephone #: test@vibrantsci.com
 Street Address: 1021 HOWARD AVENUE SUITE B
 City: SAN CARLOS
 State: CA Zip #: 94070

Fasting: FASTING No. of hours: 12.0

PROVIDER

Practice Name: Vibrant IT4 Practice
Provider Name: Vibrant IT4, MD (999999)
 Phlebotomist:
 Street Address: 999999 PRACTICE STREET AVE
 City: SAN CARLOS
 State: CA
 Zip #: 94404
 Telephone #: 666-666-6662
 Fax #: 111-222-0000

For doctor's reference

Vibrant Wellness is pleased to present to you, 'Mammalian Milk Zoomer', to help you make healthy lifestyle, dietary and treatment choices in consultation with your healthcare provider. It is intended to be used as a tool to encourage a general state of health and well-being.

The Vibrant Mammalian Milk Zoomer is a test to measure antibody levels to commonly consumed food antigens at the peptide level. The panel is designed to give a complete picture of an individual's levels of IgG (subclasses 1, 2, 3, 4) and IgA (subclasses 1, 2) antibodies to these antigens in serum.

Interpretation of Report: The report begins with the Mammalian Milk Zoomer summary page which displays a summary score for each food which is a unified score calculated from IgA and IgG reactivity with higher weightage for IgA than IgG. The summary also lists all antigens against which the antibody levels are positive or moderate or negative in the reference range. Following the summary section is the complete list of the all antigens tested in a graphical format along with the levels of antibodies to enable a full overview along with the corresponding reference ranges. The classification of Positive (Red) to Moderate (Yellow) to Negative (Green) denotes the level of IgG and/or IgA antibodies detected. Additionally, the previous value is also indicated to help check for improvements every time the test is ordered. All contents provided are purely for informational purposes only and should not be considered medical advice. Any changes based on these choices are to be made in consultation with the clinical provider.

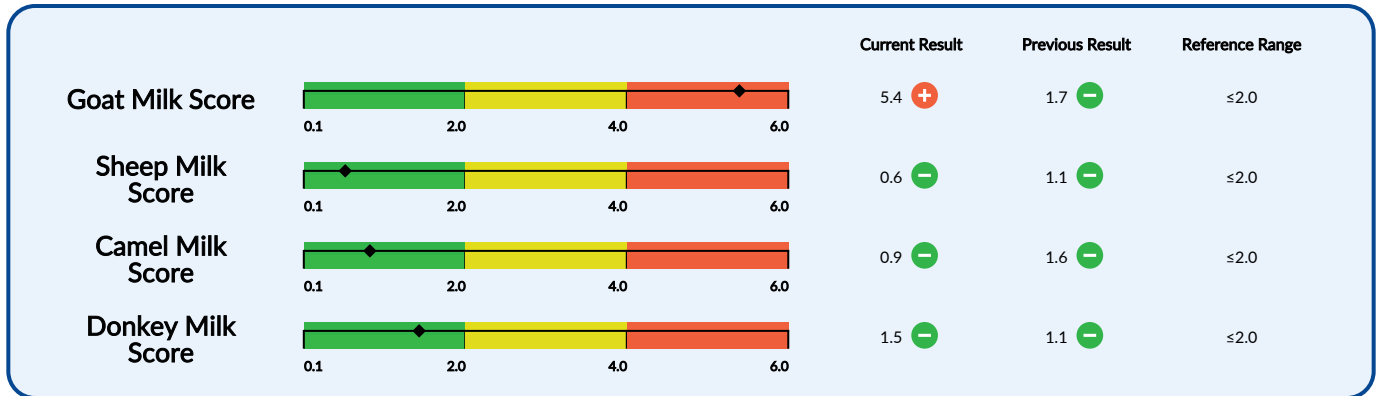
The Vibrant Wellness platform provides tools for you to track and analyze your general wellness profile. Testing for the Mammalian Milk Zoomer panel is performed by Vibrant America, a CLIA certified lab CLIA#:05D2078809. Vibrant Wellness provides and makes available this report and any related services pursuant to the Terms of Use Agreement (the "Terms") on its website at www.vibrant-wellness.com. By accessing, browsing, or otherwise using the report or website or any services, you acknowledge that you have read, understood, and agree to be bound by these terms. If you do not agree to accept these terms, you shall not access, browse, or use the report or website. The statements in this report have not been evaluated by the Food and Drug Administration and are only meant to be lifestyle choices for potential risk mitigation. Please consult your physician for medication, treatment, diet, exercise or lifestyle management as appropriate. This product is not intended to diagnose, treat, or cure any disease or condition.

Please Note - It is important that you discuss any modifications to your diet, exercise and nutritional supplementation with your physician before making any changes.

To schedule an appointment with Vibrant Clinical Dietitians please call: Toll-Free 866-364-0963.

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TESTNAME	PATIENT	MALE	1961-01-20	1512010000	11-30-2015

SUMMARY



Positive		Moderate		Negative			
(IgG + IgA)	IgM	(IgG + IgA)	IgM				
Goat Milk Kappa casein	Goat Milk Alpha S1 casein		Goat Milk Kappa casein	Goat Milk			
				Alpha S2 casein Alpha lactalbumin	Beta lactoglobulin Beta casein	Lactoperoxidase	Lactoferrin
				Sheep Milk			
				Alpha S1 casein Beta lactoglobulin	Kappa casein Beta casein	Uterine milk protein Chymosin	Alpha lactalbumin
				Camel Milk			
				Alpha S1 casein Whey acidic protein	Kappa casein Alpha lactalbumin	Alpha S2 casein Lactotransferrin	Beta casein Chymosin
				Donkey Milk			
				Alpha S1 casein Alpha lactalbumin	Alpha S2 casein Beta lactoglobulin	Kappa casein	Beta casein

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Goat Milk

Goat milk offers a huge amount of nutrients and approximately 65% of the world's population drinks goat milk. Goat milk is easier to digest compared with traditional cow milk. Research also suggests that goat milk may enhance the body's ability to absorb important nutrients from other foods.¹

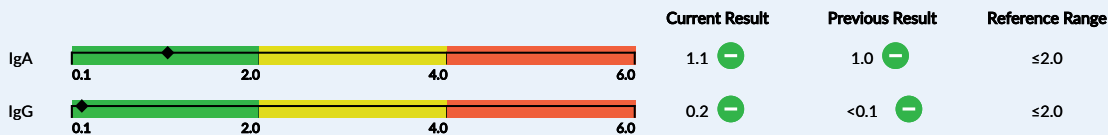
Alpha S1 casein

Alpha S1 casein is one of the four casein proteins found in goat milk and is the most important of the four for cheese making. The alpha S1 casein gene (CSN1S1) that produces the protein shows polymorphisms which affect the amount of protein and fat produced, with higher levels associated with the best cheese making. Research suggests that low levels of alpha S1 casein, may be associated with reduced milk sensitivities for some people.²



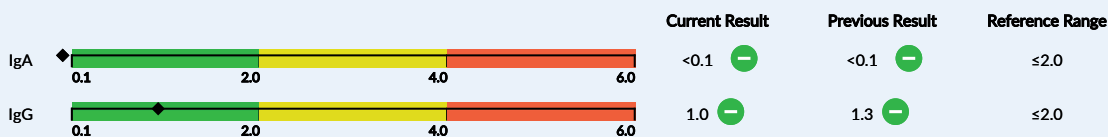
Alpha S2 casein

Alpha S2 casein has an important role in the capacity of milk to transport calcium phosphate. Human milk contains no α-S2 casein, making α-S2 caseins in goat milks a possible cause of allergenicity. A rare mutation in some goats yields milk with no α-S2 casein, but when the casein fraction was tested for allergenicity, only a small decrease in allergenicity was detected.³



Beta lactoglobulin



Beta-lactoglobulin (BLG) is predominant allergen in goat milk. Hydrolysis and heat do not suppress the allergenicity of BLG, and fermentation byproducts increases its immuno-reactivity.⁴



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Lactoperoxidase

Lactoperoxidase LPO is a natural constituent of goat milk. LPO is an iron heme group basic glycoprotein. Hydrogen peroxide and hypothiocyanate are indispensable for antimicrobial activity. The biological significance of LPO is involved in the natural host defense system against pathogenic microorganisms.⁵

	Current Result	Previous Result	Reference Range
IgA	1.7 	<0.1 	≤2.0
IgG	1.7 	0.2 	≤2.0

Lactoferrin

Goat milk lactoferrin is a candidate for infant formula supplementation because of its high homology with its human counterpart. Lactoferrin has been proven to promote biological activities, including antioxidant, antibacterial, antiviral activities, iron- (and other metals) binding and immunomodulation.⁶ In addition, goat milk lactoferrin has both anticancer and antimicrobial activity.⁷

	Current Result	Previous Result	Reference Range
IgA	0.8 	1.0 	≤2.0
IgG	0.7 	0.5 	≤2.0

Alpha lactalbumin

Alpha-lactalbumin (α-LA) is a 14 kDa Ca²⁺-binding milk protein synthesized in the secretory cells of lactating mammary glands. Its main function is to interact with b1,4-galactosyltransferase-1 (b4Gal-T1) to form lactose synthase complex, which is responsible for the production of lactose.⁸

	Current Result	Previous Result	Reference Range
IgA	0.5 	0.2 	≤2.0
IgG	0.4 	1.6 	≤2.0

Kappa casein

The caseins represent approximately 80% of the goat milk proteins. κ-Casein is a calcium-insensitive protein which forms a protective layer around the calcium-sensitive caseins (α₁-, α₂-, β-, and γ-), resulting in stable casein micelles.⁹

	Current Result	Previous Result	Reference Range
IgA	3.7 	0.8 	≤2.0
IgG	4.2 	0.2 	≤2.0

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Beta casein

Goat milk has a protein composition, A2 β -casein, similar to that of breast milk and contains abundant nutrients. The A2 β -casein fraction is abundant in essential amino acids, especially, branched-chain amino acids (leucine, valine, and isoleucine). The goat A2 β -casein fraction may be useful as a food material with good digestibility and hypoallergenic properties for infants, the elderly, and people with metabolic disorders.¹⁰



Sheep Milk

Sheep milk is commonly used to make cultured dairy products such as cheese including feta (Greece), ricotta (Italy), and Roquefort (France). Sheep milk contains higher levels of total solids (protein and fat) and more major nutrients than goat and cow milk.

Alpha S1 casein

Alpha S1 casein is one of the four casein proteins found in sheep milk. The Alpha s1 Casein gene (CSN1S1) that produces the protein shows polymorphisms which affect the amount of protein and fat produced, with higher levels associated with the best cheese making. Research suggests that low levels of Alpha s1 Casein, may be associated with reduced milk sensitivities for some people.¹¹



Kappa casein







The four caseins (α S1-, α S2-, β - and κ -casein) are the major proteins in sheep milk, accounting for about 80% of total protein in sheep milk. Among the 4 caseins, κ -casein (CSN3) accounts for approximately 15% of total casein, and thus represents one of the most important proteins due to its essential role in micelle formation and stabilization, and thus determines the manufacturing properties of milk.¹²



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Uterine milk protein

The uterine milk (UTM) proteins are the major progesterone-regulated proteins secreted by the sheep uterus during pregnancy. A major action of progesterone is to induce expression of genes encoding for secretory proteins of the uterine endometrium. These proteins participate in several roles deemed essential for survival of the conceptus and include enzymes, transport proteins, and regulatory proteins.¹³

		Current Result	Previous Result	Reference Range
IgA		1.4 	0.8 	≤2.0
IgG		1.2 	1.9 	≤2.0






Alpha lactalbumin

α-Lactalbumin is a protein occurring in the milk of mammals and is especially high in concentration in human milk. Sheep α-Lactalbumin is a metalloprotein, containing one atom of Ca per molecule and is important from a biological standpoint in that it is involved in lactose synthesis.¹⁴

		Current Result	Previous Result	Reference Range
IgA		0.4 	1.1 	≤2.0
IgG		1.2 	1.4 	≤2.0

Beta lactoglobulin

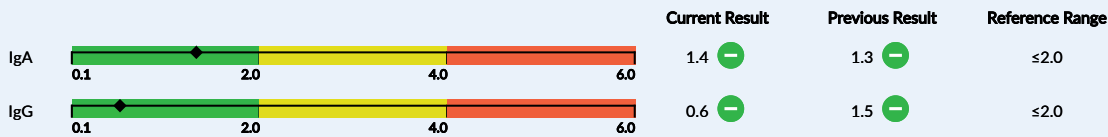
β-Lactoglobulin, the principal protein in the whey, consists of a polypeptide chain of 162 amino acids. Three genetic variants have been described in sheep's milk: β-Lg A, β-Lg B, and β-Lg C.¹⁵

		Current Result	Previous Result	Reference Range
IgA		1.6 	0.9 	≤2.0
IgG		2.0 	2.0 	≤2.0

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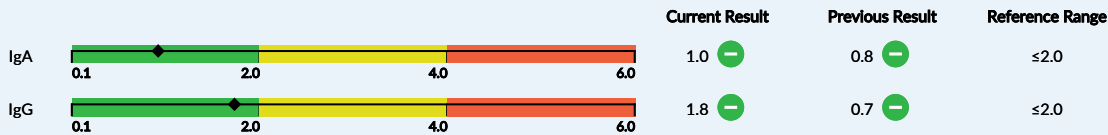
Beta casein

Casein is a protein with a very similar molecular structure to gluten and 50% of people who are gluten intolerant are casein intolerant as well. Casein exists in two variants, A1 beta-casein and A2 beta-casein, which are differentiated only by a single amino acid in their protein chains. A2 is considered the original beta-casein because A1 only appeared a few thousand years ago and it is often the A1 beta-casein that people react poorly to. Sheep milk lack the A1 beta-casein, which is what makes them more tolerable, but because the A1 and A2 proteins are so similar, sheep milk can still cause food sensitive problems.¹⁶



Chymosin

Chymosin is a protease that selectively hydrolyzes the Phe105–Met106 peptide bond of κ-casein triggering its clotting in the presence of calcium ions to yield the curd. There has been broad interest in using recombinant sheep chymosin as an alternative coagulating enzyme in cheese production.¹⁷

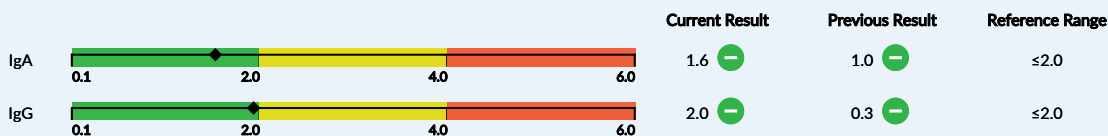


Camel Milk

The camel dairy farming industry has been growing in the United States as an environmentally friendly alternative to cow dairy farming using a species well-adapted to arid regions. Camel milk has different nutritional characteristics compared with cow milk, but the proportions of nutrients can be highly variable based on a number of factors, including type and age of camel, climate, what it eats, and milking method. Camel milk can readily be made into yogurt, but can only be made into butter if it is soured first, churned, and a clarifying agent is then added.

Alpha S1 casein




Alpha S1 casein has an important role in the capacity of milk to transport calcium phosphate. Alpha S1 casein composes of 22% of camel milk, compared with 38% of that in cow milk.



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Kappa casein

The amount of κ -casein is found to be relatively lower in camel milk compared with other milks including cow milk, goat milk, etc. The low amount results in formation of a casein network that can easily disrupt during cutting of cheese curd, leading to loss of dry matter (casein) to the whey.¹⁸

	Current Result	Previous Result	Reference Range
IgA	0.5 	1.5 	≤ 2.0
IgG	0.8 	0.2 	≤ 2.0


Alpha S2 casein

Human milk contains no alpha S2 casein, making alpha S2 casein in camel milks a possible cause of allergenicity. Camel milk composes of 9.6% alpha S2 casein, which is very close to 10% of that in cow milk.¹⁹

	Current Result	Previous Result	Reference Range
IgA	0.4 	1.8 	≤ 2.0
IgG	1.2 	1.0 	≤ 2.0





Beta casein

There is a similar relative abundance of β -casein in camel milk as in human milk (65%), which is much higher than 39% of that in cow milk. Hydrolysis of camel β -casein by chymotrypsin results in increased antioxidant properties and inhibition of ACE, which suggests camel milk casein as a natural anti-hypertensive agent similar to what can be obtained from bovine milk.²⁰

	Current Result	Previous Result	Reference Range
IgA	0.7 	0.1 	≤ 2.0
IgG	1.2 	1.7 	≤ 2.0

Whey acidic protein

Camel whey protein has been suggested as a new dietary approach to the management of free radicals and for the treatment of different health disorders. Whey acidic protein (WAP) has been reported to decrease the proliferation of human breast cancer cells, suggesting that WAP can be used as a therapeutic factor for the treatment of breast cancer.²¹

	Current Result	Previous Result	Reference Range
IgA	1.2 	0.7 	≤ 2.0
IgG	0.7 	1.7 	≤ 2.0

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Alpha lactalbumin

Alpha-lactalbumin is a calcium-binding globular protein in camel milk. It is known to possess noticeable anticancer activity, which is determined by the ability of this protein to form complexes with oleic acid. Studies have shown effectiveness of alpha-lactalbumin complex as a promising entity for cancer remedy, particularly for breast cancer.²²

	Current Result	Previous Result	Reference Range
IgA	1.8 	1.9 	≤2.0
IgG	1.9 	2.0 	≤2.0





Lactotransferrin

Lactoferrin is the main iron-binding protein of camel milk. The potential of camel milk lactoferrin for its ability to inhibit the proliferation of the colon cancer cell, DNA damage and its antioxidant activities have been reported.²³

	Current Result	Previous Result	Reference Range
IgA	0.6 	0.9 	≤2.0
IgG	1.5 	0.7 	≤2.0

Chymosin

Camel chymosin are aspartic peptidases that are used industrially in cheese production. Despite having 85% sequence identity, camel chymosin shows a 70% higher milk-clotting activity than bovine chymosin towards bovine milk.²⁴

	Current Result	Previous Result	Reference Range
IgA	2.0 	1.6 	≤2.0
IgG	1.2 	1.9 	≤2.0

Donkey Milk

Donkey milk can be used as a substitute for infants and children who suffer from cow milk proteins intolerance and multiple food hypersensitivity. Donkey milk is considered to be an effective functional food due to its high content of ω-3 fatty acids, which is believed to support the prevention of cardiovascular diseases, and chronic inflammatory processes. The high percentage of medium and short-chain fatty acids also potentiates the antioxidant properties of this milk. Both colostrum and milk from donkey has been linked with reduced risk of immune-related diseases and atherosclerosis because of its strong vasodilatory and antimicrobial properties.²⁵

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Alpha S1 casein

Donkey milk is characterized by a low casein content (35–45%), with values very close to human milk (<30%). The caseins found are mainly α 1- and β -caseins, which shows a considerable heterogeneity. Donkey caseins has been found to have the maximum percentage of a helix, which indicated it to be a good candidate against breast cancer cells.²⁶



Alpha S2 casein

Alpha S2 casein is a minor casein protein in donkey milk. Donkey milk is characterized by a low casein content (35–45%), with values very close to human milk (<30%). Donkey caseins has been found to have the maximum percentage of a helix, which indicated it to be a good candidate against breast cancer cells.²⁷



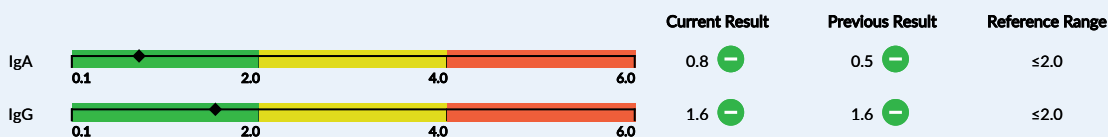
Kappa casein

κ -Casein is a calcium-insensitive protein which forms a protective layer around the calcium-sensitive caseins, resulting in stable casein micelles. Donkey milk has a very low κ -casein level compared with that of cow milk.²⁸



Beta casein

Research has shown that β -caseins usually have a temperature and concentration-dependent self-assembling behavior. Recently, β -casein micelles have been proposed as natural nanocarriers for the delivery of hydrophobic compounds. Studies have proven that donkey and human β -caseins do not cross-react with bovine anti- β -casein antibodies, therefore they have the potency for the development of self-assembling systems with lower hypoallergenic property.



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Alpha lactalbumin

Alpha-lactalbumin is a natural whey protein containing a naturally high content of all essential and branched-chain amino acids, making it a unique protein source. α -lactalbumin concentration in donkey milk is 1.8 mg/mL, very close to human milk. It has been shown that α -lactalbumin presents antiviral, anti-stress, and antitumor properties, especially for breast cancer.²⁹



Beta lactoglobulin

β -lactoglobulin is highly involved in hydrophobic ligand transport and uptake, enzyme regulation, and the neonatal acquisition of passive immunity. Recently it was demonstrated that resveratrol, a natural polyphenolic compound with antioxidant activity, interacts with β -lactoglobulin, forming complexes that could be used as an effective carrier of folic acid in functional foods.³⁰



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Micelles

is used to describe the structure that certain very large molecules will form when dispersed in a solvent.

Chymotrypsin

a digestive enzyme which breaks down proteins in the small intestine. It is secreted by the pancreas and converted into an active form by trypsin.

Glycoprotein

a class of proteins that have carbohydrate groups attached to the polypeptide chain.

Hypoallergenic

meaning "below normal" or "slightly" allergenic, is used to describe items that cause or are claimed to cause fewer allergic reactions.

Lactose

a sugar present in milk. It is a disaccharide containing glucose and galactose units. People with lactose intolerance are unable to fully digest the sugar in milk.

Oleic Acid

a mono-unsaturated omega-9 fatty acid found in various animal and vegetable sources.

Peptidase

an enzyme that catalyzes proteolysis, the breakdown of proteins into smaller polypeptides or single amino acids.

Polymorphism

a discontinuous genetic variation resulting in the occurrence of several different forms or types of individuals among the members of a single species.

Recombinant

relating to or denoting an organism, cell, or genetic material formed by recombination.

Vasodilatory

the widening of blood vessels and increasing blood flow in a region.

LAST NAME	FIRST NAME	GENDER	DATE OF BIRTH	ACCESSION ID	DATE OF SERVICE
TESTNAME	PATIENT	MALE	1961-01-20	1512010000	11-30-2015

This test has been developed and its performance characteristics determined by Vibrant America Clinical Laboratory, a CLIA certified lab. These assays have not been cleared or approved by the U.S. Food and Drug Administration.

Vibrant Mammalian Milk Zoomer panel does not demonstrate absolute positive and negative predictive values for any condition. Its clinical utility has not been fully established. Quantification of specific IgG and IgA antibodies is not an FDA-recognized diagnostic indicator of allergy. Clinical history and current symptoms of the individual must be considered by the healthcare provider prior to any interventions. Test results should be used as one component of a physician's clinical assessment.

Mammalian Milk Zoomer testing is performed at Vibrant America, a CLIA certified laboratory and utilizes ISO-13485 developed technology. Vibrant America has effective procedures in place to protect against technical and operational problems. However, such problems may still occur. Examples include failure to obtain the result for a specific antibody due to circumstances beyond Vibrant's control. Vibrant may re-test a sample in order to obtain these results but upon re-testing the results may still not be obtained. As with all medical laboratory testing, there is a small chance that the laboratory could report incorrect results. A tested individual may wish to pursue further testing to verify any results.

The information in this report is intended for educational purposes only. While every attempt has been made to provide current and accurate information, neither the author nor the publisher can be held accountable for any errors or omissions.

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