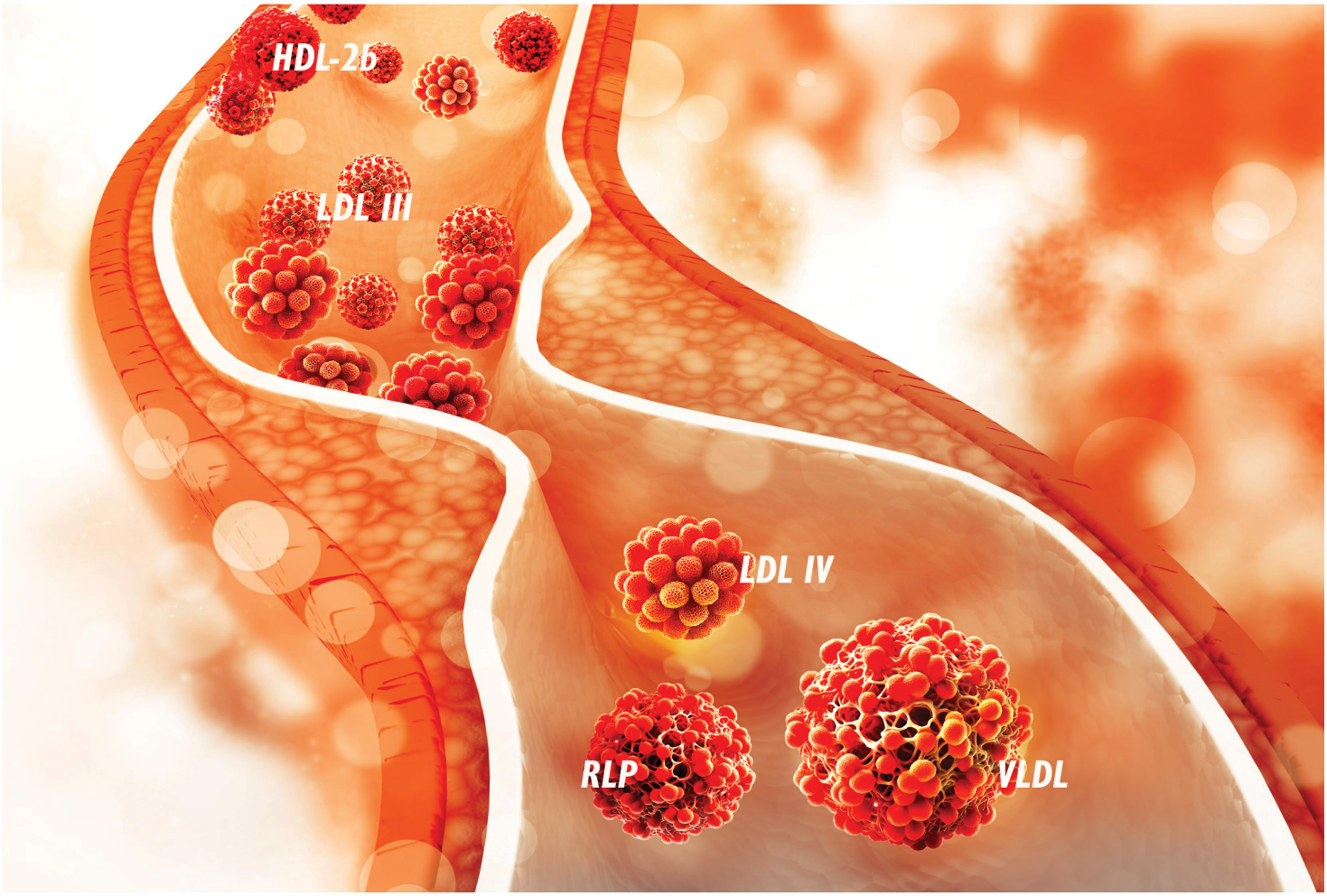
SpectraCell Laboratories
Science + Health + Solutions



Lipoprotein Particle Profile™ (LPP®)

Cellular Precision, Personalized Solutions

Patient: **Doe, Jon**

Accession ID: 0000000000

Provider: Sample Test

Order Status: Complete

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6030 N Course Drive, Houston, TX 77072
1(800) 227-5227 | support@spectracell.com | www.spectracell.com

PATIENT

NAME	AGE
Doe, Jane	**59**
DOB	GENDER
2/25/1960	**Female**
PATIENT ID	
00-000-00000	

SPECIMEN

ACCESSION ID	DATE COLLECTED
0000000000	**04/17/2019**
ORDER ID	DATE RECEIVED
0000-00000000000-000000	**04/18/2019**
	DATE REPORTED
	04/24/2019

PROVIDER

ACCOUNT ID	CLIENT NAME
000000	**Sample Provider, MD**
ADDRESS	
123 S. Any Street	
ANYWHERE, TX 77000	

Normal | Borderline | Out of Range

Lipoprotein Particle Numbers

Tests	In Range	Out of Range	Reference Range	Units
VLDL Particles (0 34 68 102 136 170)		123	<85	nmol/L
Total LDL Particles (0 360 720 1080 1440 1800)		905	<900	nmol/L
Non-HDL Particles (0 400 800 1200 1600 2000)		1028	<1000	nmol/L
Remnant Lipoprotein (0 60 120 180 240 300)		236	<150	nmol/L
Dense LDL III (0 120 240 360 480 600)		390	<300	nmol/L
Dense LDL IV (0 40 80 120 160 200)	55		<100	nmol/L
Total HDL Particles (14000 11200 8400 5600 2800 0)		5925	>7000	nmol/L
Buoyant HDL 2b (3000 2400 1800 1200 600 0)	1769		>1500	nmol/L

Lipid Panel

Tests	In Range	Out of Range	Reference Range	Units
Total Cholesterol (0 80 160 240 320 400)	198		<200	mg/dL
Triglycerides (30 84 138 192 246 300)		344	30-150	mg/dL
HDL (100 80 60 40 20 0)		34	>40	mg/dL
LDL (40 84 128 172 216 260)		108	40-130	mg/dL
Non-HDL Cholesterol (0 64 128 192 256 320)		164	<160	mg/dL

Vascular Inflammation

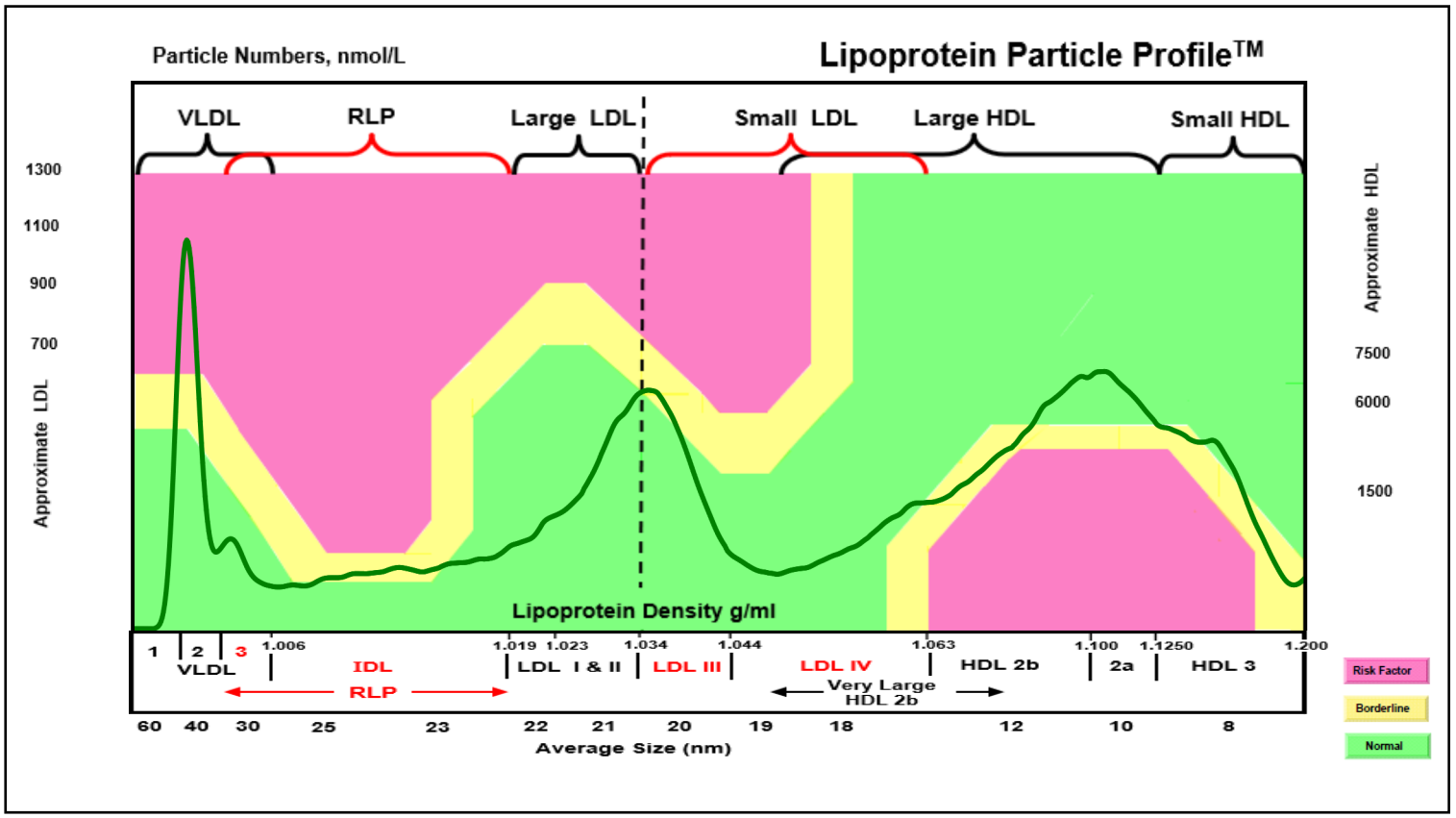
Tests	In Range	Out of Range	Reference Range	Units
Insulin (0 5 10 15 20 25)	16.1		<21.0	µIU/mL
hs-CRP (0 1 2 4 5 6)		2.69	<3.00	mg/L
Lipoprotein(a) (6 17 28 38 49 60)	4.6		<30.0	mg/dL
Apolipoprotein B (40 72 104 136 168 200)		99	40-100	mg/dL
Apolipoprotein A1 (250 200 150 100 50 0)	124		>115	mg/dL
Homocysteine (0 4 9 13 18 22)		12.3	<11.0	µmol/L

PATIENT: **Doe, Jane** PROVIDER: **Sample Provider, MD** DATE REPORTED: **04/24/2019** ACCESSION ID: **000000000**

Metabolic Syndrome Traits

Tests		In Range	Out of Range	Reference Range	Units
Metabolic Syndrome Traits			1	Zero	

A diagnosis of metabolic syndrome is confirmed if any three of the following traits exist in a patient: (1)high triglycerides [>150mg/dL]*; (2)low HDL [<40mg/dL in men, <50mg/dL in women]*; (3) elevated small dense LDL III and LDL IV [>400 nmol/L]*; (4) high fasting glucose [>100mg/dL]; (5) high blood pressure [>130/85]; (6) high waist circumference [>40 inches in men, >35 inches in women]. *Included in this section of report. Clinician must determine traits (4), (5), (6).



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Lipoprotein Particle Profile (Component Summaries)

This information is provided for educational purposes.

Lipoprotein Particle Numbers – Lipoproteins are ball-shaped proteins in the blood that transport fats (lipids) throughout the body. The fact that lipoproteins – not the cholesterol that is carried within them – causes cardiovascular disease by penetrating the endothelial lining of the arteries, becoming oxidized and contributing to arterial plaque, has been well established. Further, the most effective treatment will depend on which lipoproteins are elevated, so measuring lipoprotein particle numbers enables a clinician to (1) determine accurately the level of cardiometabolic risk and (2) how best to treat it.

Remnant Lipoprotein (RLP) – This highly atherogenic lipoprotein causes platelet aggregation and impairs vascular relaxation. Unlike other LDL particles which have to be oxidized before they are taken into the arterial intima by macrophage cells, RLP can contribute to plaque buildup even when not oxidized. Foam cells (the sticky contributors to arterial plaque) contains high levels of RLP. Treatment with omega 3 fatty acids can be efficacious.

Dense LDL III and LDL IV – These lipoproteins are small and can thus more easily penetrate and damage the lining of the arteries due to their size, causing plaque and atherosclerosis. They are highly correlated to cardiovascular disease.

HDL2b – This is a protective lipoprotein that indicates how well cholesterol is being cleared by the liver (reverse cholesterol transport system). HDL is made in the liver as HDL3 and as it travels through the body accumulating cholesterol it becomes the larger and lipid-enriched HDL2b. It positively correlates with heart health.

Lipid Panel – The lipid panel measures cholesterol, not lipoproteins (which carry cholesterol). Although directly measuring the actual number of lipoproteins (versus the amount of cholesterol inside them) is widely recognized as a superior tool in assessing cardiometabolic health, clinicians and patients tend to be familiar with a standard lipid panel and its historical use. It is important to note that half of all people who have a heart attack will have cholesterol values that fall in the normal range. Thus, the lipid panel is most useful when viewed in the context of other biomarkers, particularly lipoprotein particle numbers. Elevated triglycerides and low HDL-cholesterol are highly correlated to metabolic syndrome and increase the risk of heart disease significantly.

Vascular Inflammation – Cardiovascular disease is generally considered an inflammatory process and the analytes included here are important determinants of cardiometabolic risk, particularly with respect to vascular inflammation.

Insulin – Insulin is a hormone made by beta cells (β-cells) in the pancreas and secreted in response to elevated blood sugar. Its main function is to regulate plasma glucose levels within a narrow range and is correlated to the efficiency with which a person can metabolize carbohydrates. If one becomes de-sensitized to the action of insulin (insulin resistant), more is needed to achieve adequate glucose-lowering effects, thus altering metabolism to favor fat storage over efficient energy production. High fasting insulin indicates insulin resistance and possible pre-diabetes. Stimulatory hormones (i.e. adrenaline, cortisol) can also reduce insulin levels.

hs-CRP – High Sensitivity C-reactive Protein (hs-CRP) is an acute phase protein that reflects the presence of inflammation in the body. High CRP, regardless of cause, is strongly correlated to the risk of sudden cardiac death and low-grade chronic systemic inflammation raises the risk of metabolic syndrome, heart disease, diabetes and other degenerative diseases.

Lipoprotein(a) – This unique lipoprotein is particularly dangerous because it inhibits the formation of plasmin which is an enzyme that dissolves blood clots. High levels of Lp(a) are strongly linked to thrombosis significantly raising the risk of blood clots and associated cardiac events. It can also penetrate the arterial lining, become oxidized and build plaque, thus contributing to atherosclerosis independent of its thrombotic potential.

Apolipoprotein B – ApoB100 is a protein produced in the liver that attached to the surface of all low-density lipoproteins (LDL), regardless of type. Every molecule of VLDL, RLP, Lp(a) and LDL has exactly one, and only one apoB100 molecule attached to it and thus, apoB reflects the level of atherogenic lipoproteins in the blood.

Apolipoprotein A1 – ApoA1 is a protein that is attached to the surface of all high-density lipoproteins (HDL) and is thus reflective of the amount of protective lipoproteins in the blood. It facilitates the removal of fats (cholesterol) from arterial walls by enabling its transport back to the liver for eventual excretion. Like HDL, low levels raise risk of heart disease.

Homocysteine – A metabolic intermediate, this protein is dangerous at high levels because it indicates poor methylation (detoxification) ability. Homocysteine will also act as an arterial abrasive, physically damaging the endothelial lining of blood vessels. High levels are strongly linked to kidney and heart disease, stroke and dementia.