The Quantified Self: Personal Monitoring and the Control of Health

Interview by Andre de Fusco
Future in Review 2011
Laguna Beach, CA
May 26, 2011

Dr. Larry Smarr
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Jacobs School of Engineering, UCSD
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I am the Future Digital Health Consumer: Measuring the State of Your Body and "Tuning" It

I Arrived in La Jolla in 2000 After 20 Years in the Midwest and Decided to Move Against the Obesity Trend

Age 51





Age 61

HEALTH IT, PEOPLE, WIRELESS

How Internet Pioneer Larry Smarr Lost 20 Pounds by Becoming a "Quantified Self"

Luke Timmerman 5/12/10

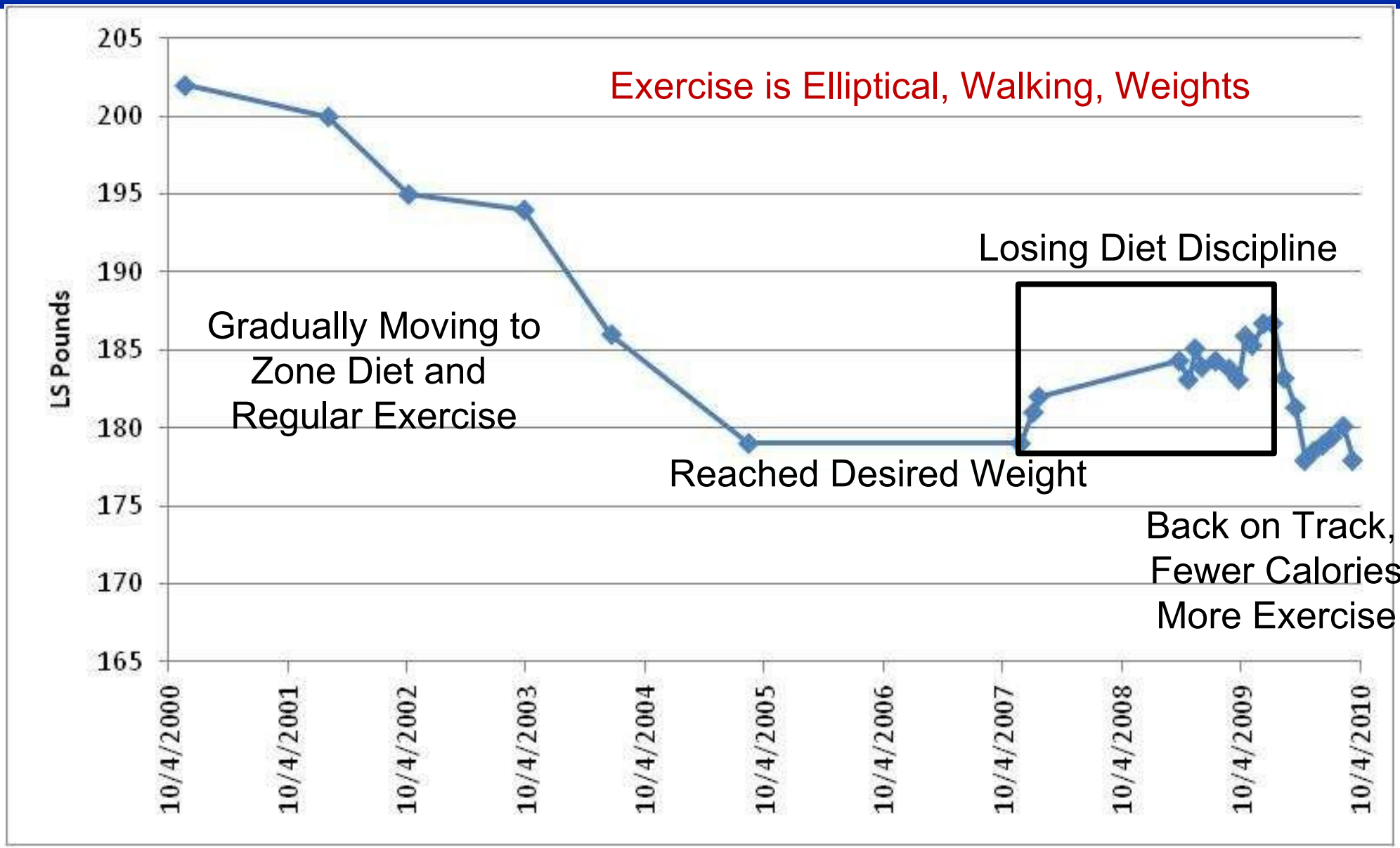
Now the Top Listed Article By Google for "Larry Smarr"

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www.xconomy.com/san-diego/2010/05/12/how-internet-pioneer-larry-smarr-lost-20-pounds-by-becoming-a-quantified-self/

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Goal: Lose Weight by Changing What & How Much I Eat, While Increasing Exercise



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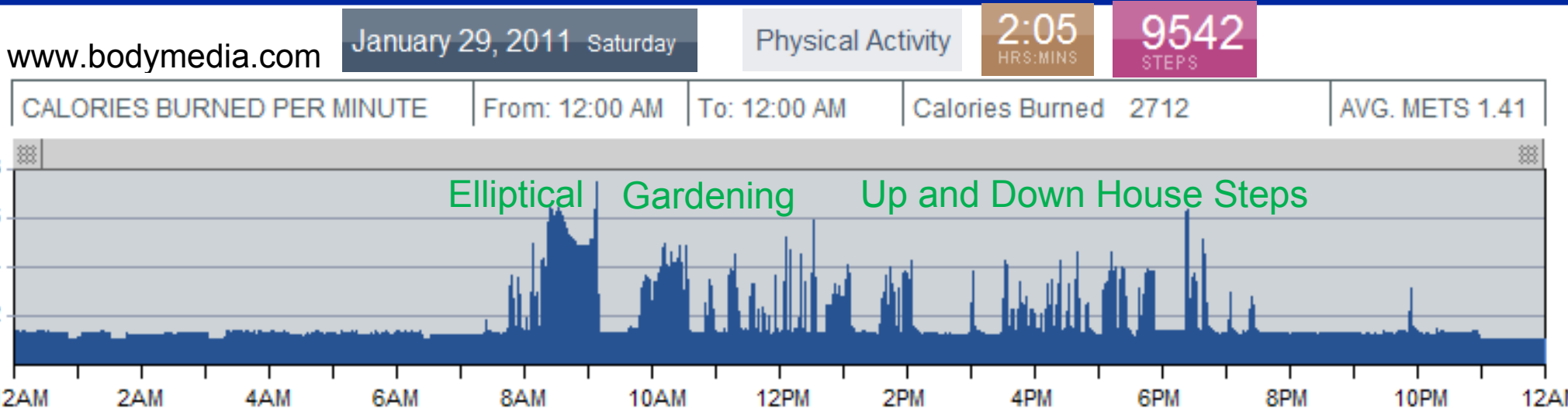
Blood Pressure 134/73 Pulse 55
Resting Pulse Lowered to 45

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Wireless Monitoring Helps Drive Exercise Goals

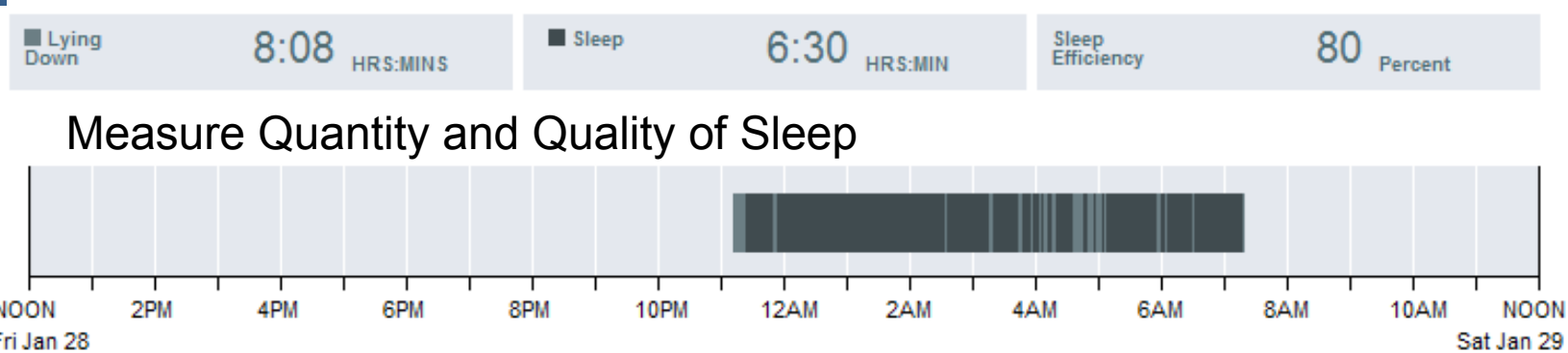
BODYMEDIA®
Know your Body. Change your life

www.bodymedia.com





25 Week Average:
2473 Calories Burned/Day
1:19 hr Physical Activity/Day (>3 METs)
6887 Steps/Day (~3.4 Miles)

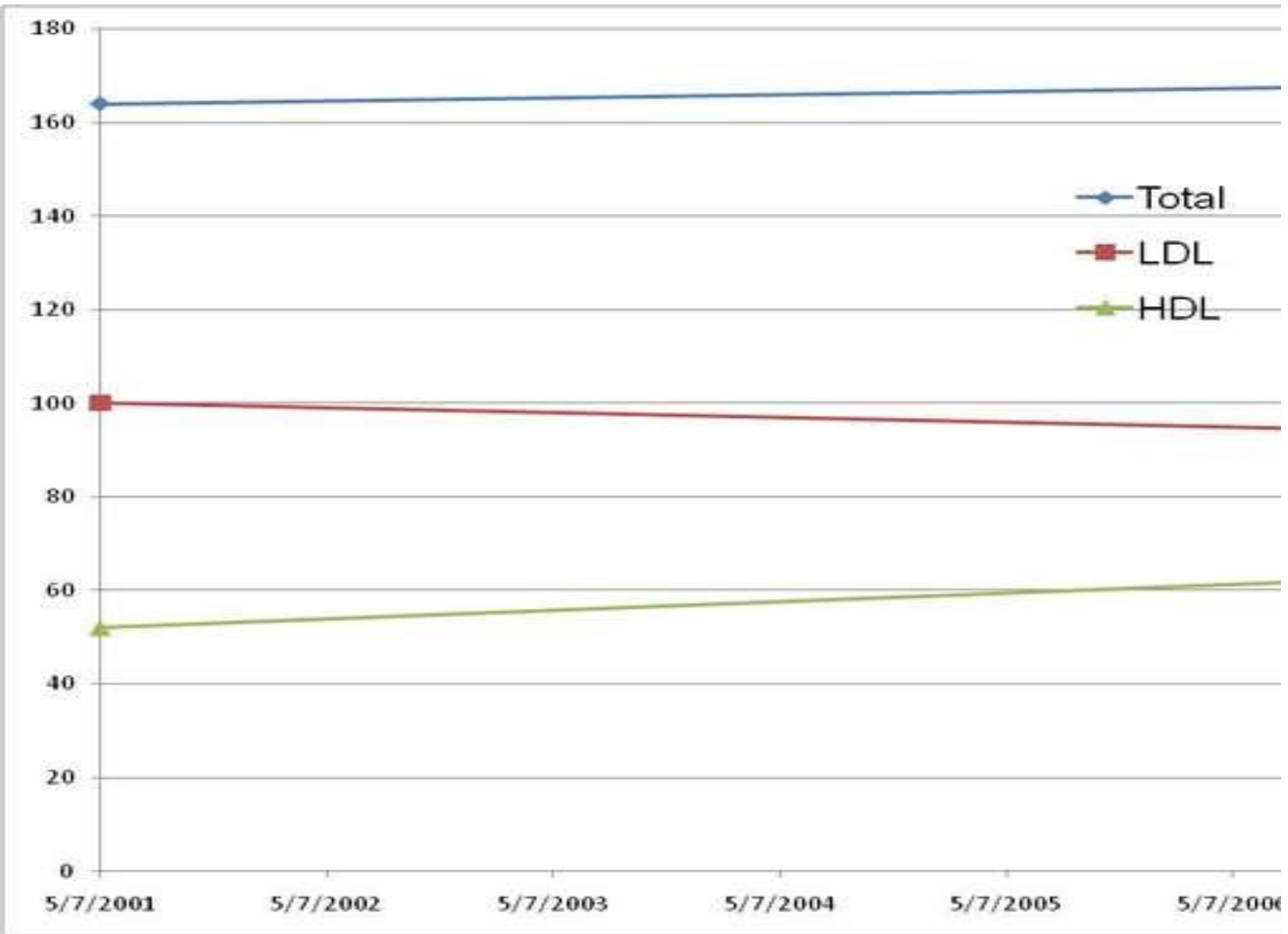


25 Week Ave: 6:51 hrs with 81% Efficiency

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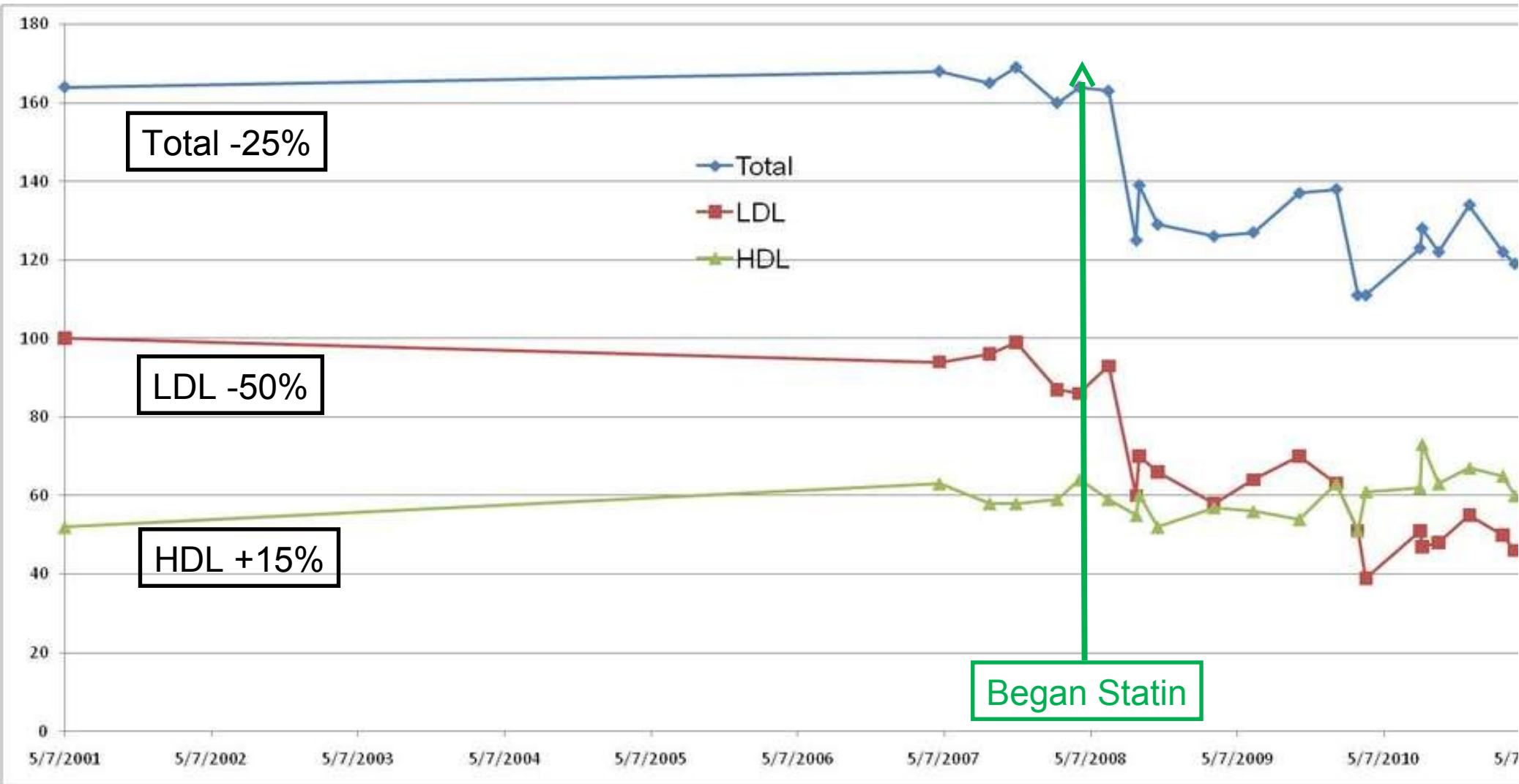
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Diet Didn't Change My Cholesterol Levels



Raising "Good" HDL Seems Most Difficult

Diet Didn't Change My Cholesterol Levels, But A Tiny Amount of Statin (10mg Daily) Did

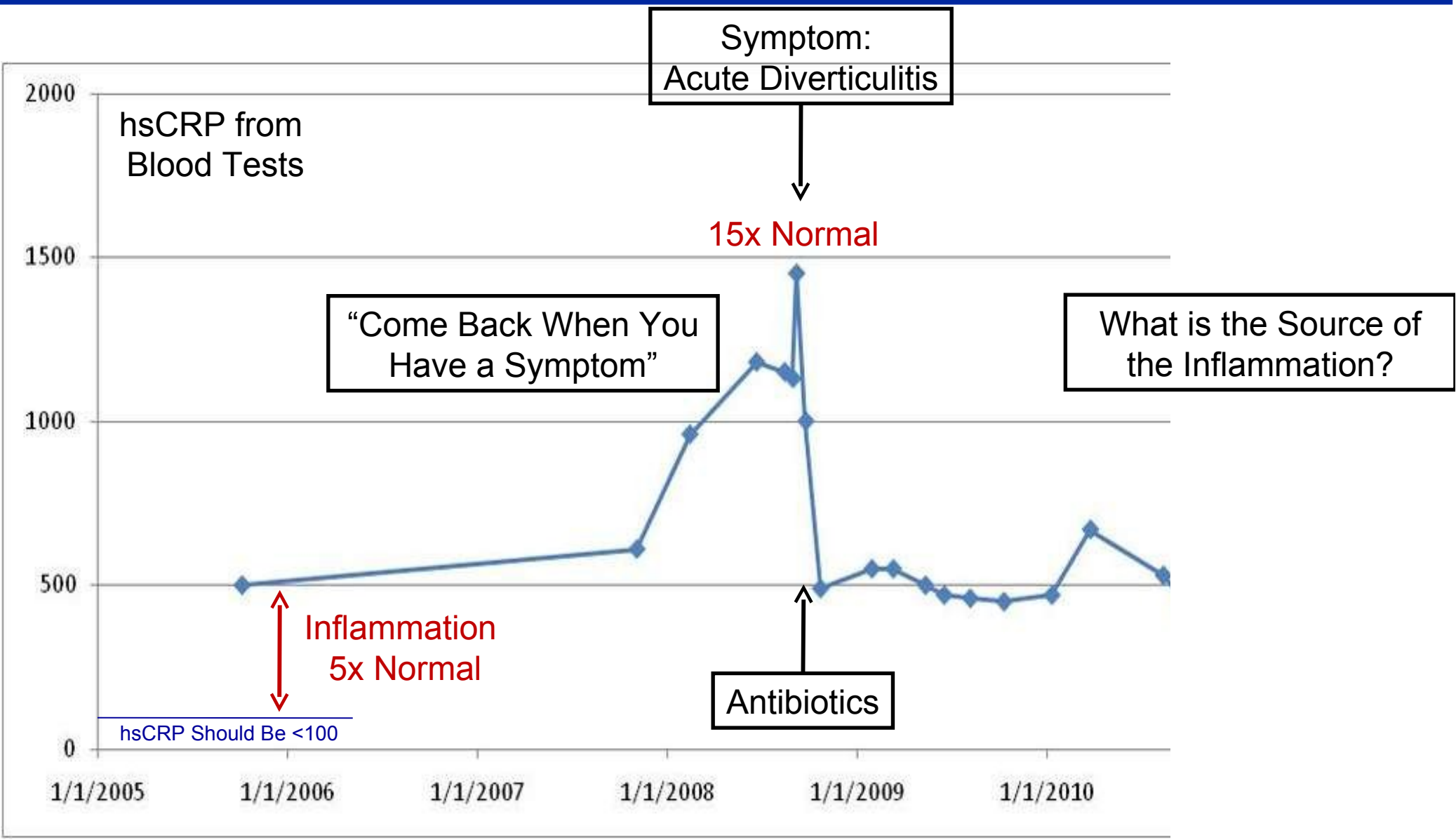


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Major Reduction in Threat of Future Heart Disease-
Plus Anti-Inflammatory Omega-3 Fish Oil Pills

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However, Measuring Complex Reactive Protein (CRP) Marker Reveals State of Chronic Inflammation

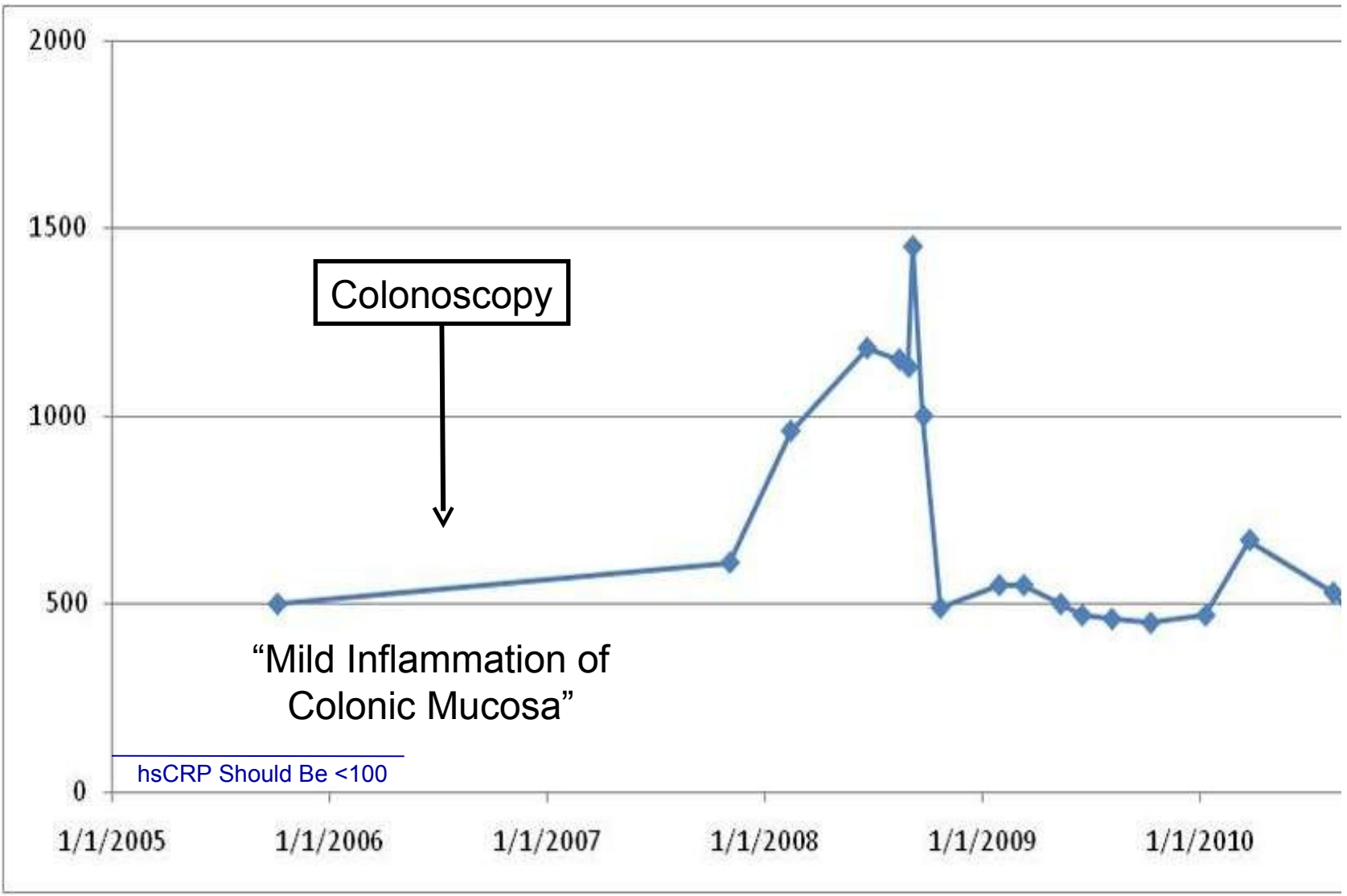


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This Non-Dietary Chronic Inflammation is Driving Plaque Formation in My Blood Vessels

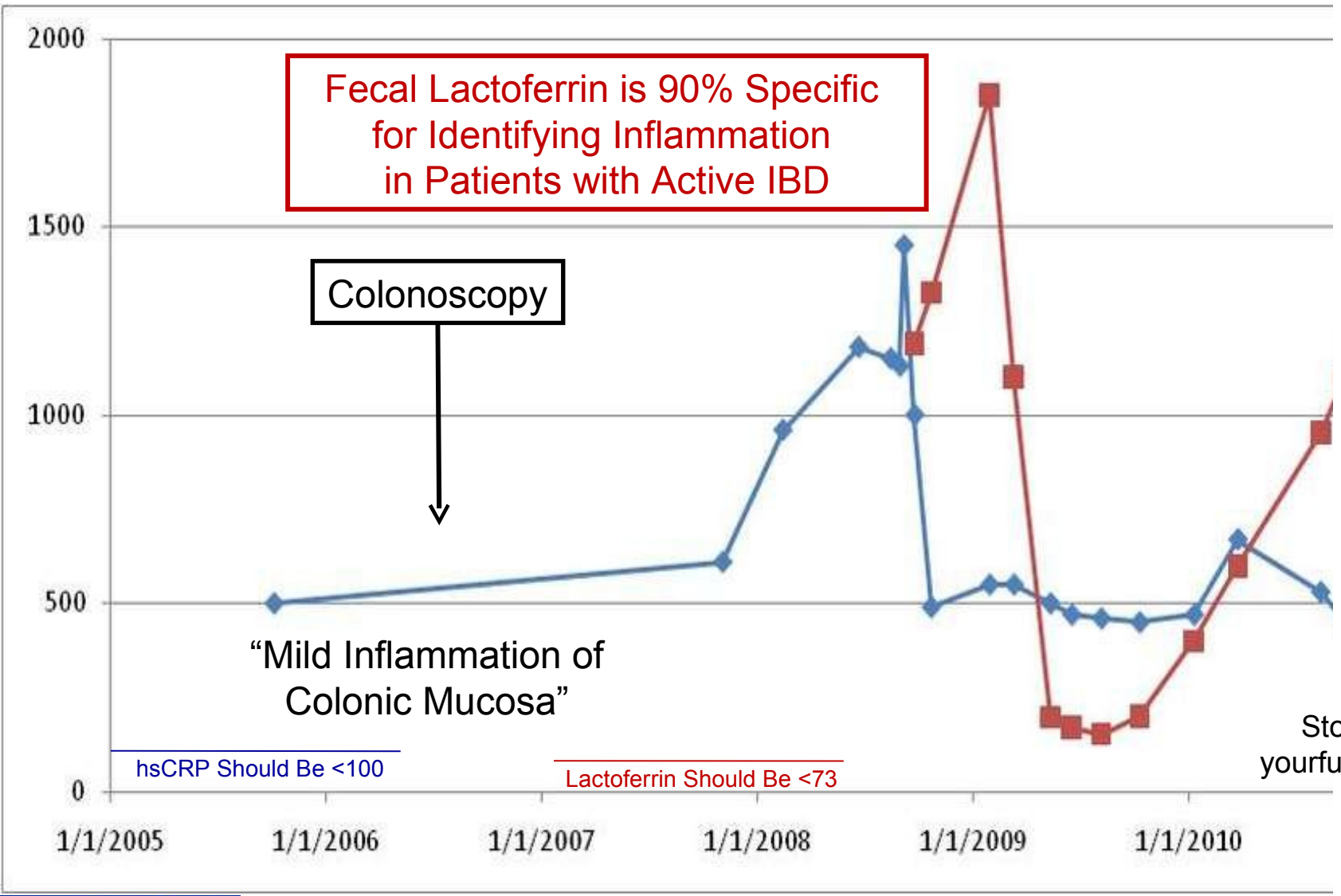
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However, Measuring Complex Reactive Protein (CRP) Marker Reveals State of Chronic Inflammation



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Measuring Stool Reveals Episodic Peaks of Lactoferrin-Specific Marker of Inflammatory Bowel Disease (IBD)

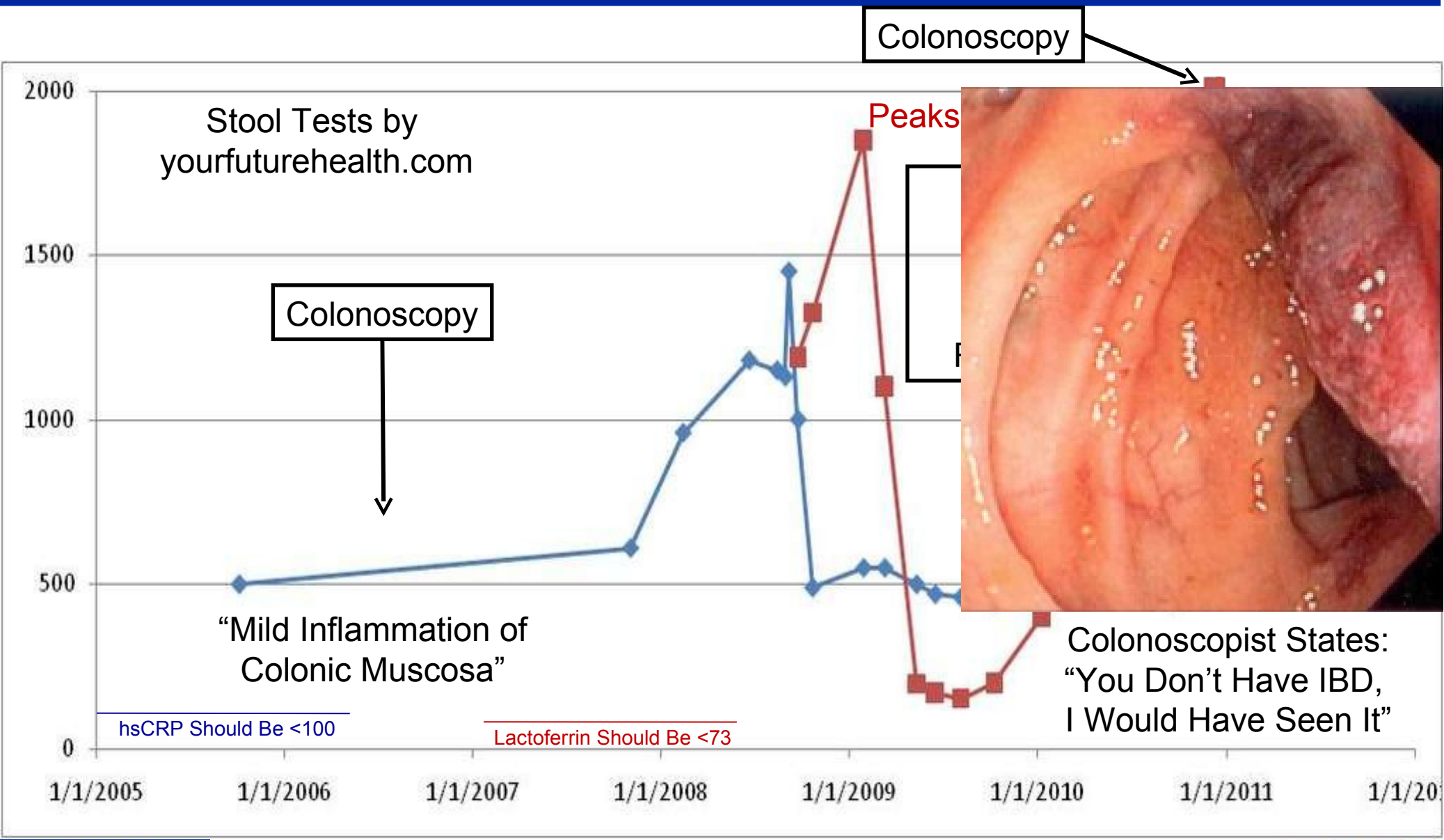


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Stool Tests by yourfuturehealth.com

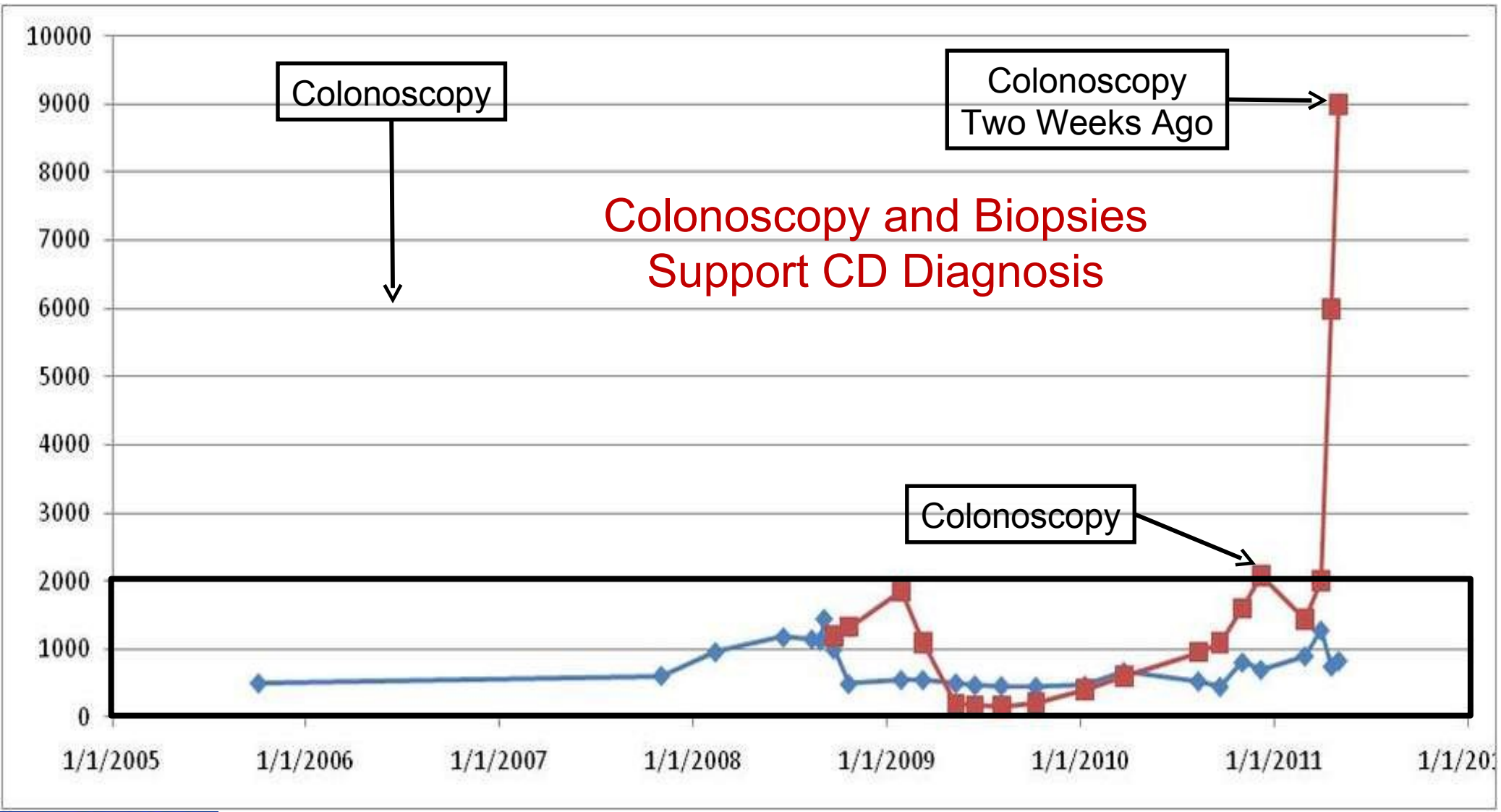
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Measuring Stool Reveals Episodic Peaks of Lactoferrin- Specific Marker of Inflammatory Bowel Disease (IBD)



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Latest Data Point Reveals Lactoferrin Spike to Active Crohn's Disease (CD) Level

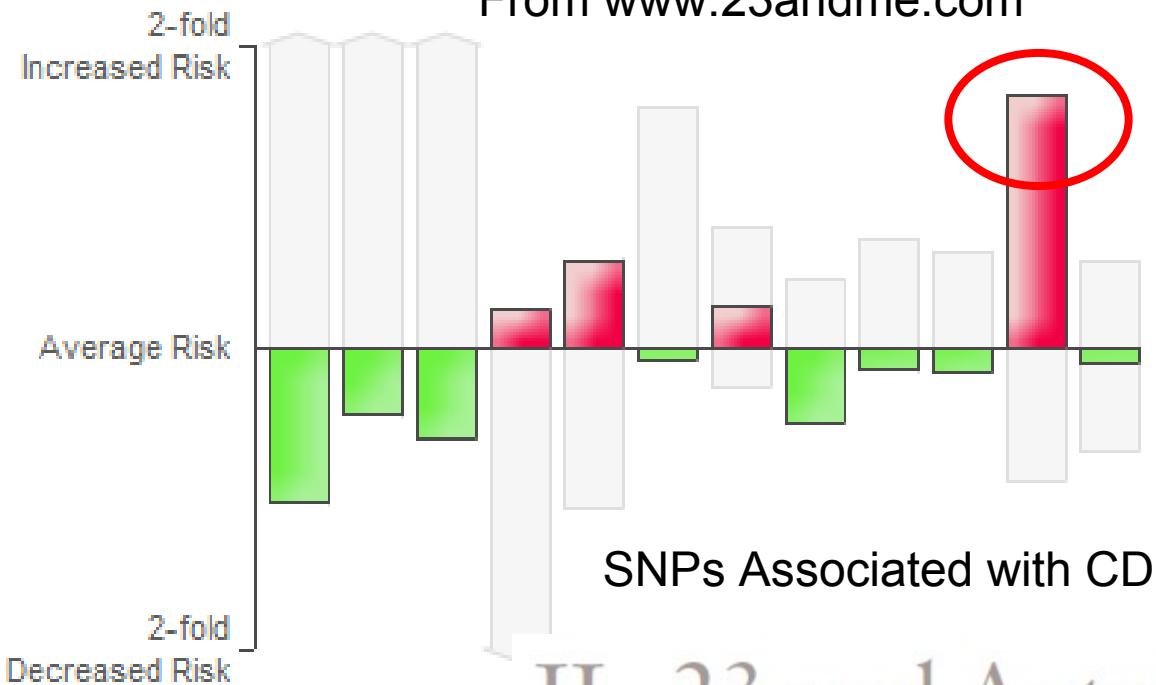


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I Wondered if Crohn's is an Autoimmune Disease, Did I Have a Personal Genomic Mutation?

From www.23andme.com



SNPs Associated with CD

Mutation in Interleukin-23 Receptor Gene—80% Higher Risk of Pro-inflammatory Immune Response

IL-23 and Autoimmunity: New Insights into the Pathogenesis of Inflammatory Bowel Disease

Clara Abraham[1] and Judy H. Cho[1,2]

Section of Digestive Diseases, Departments of [1]Medicine and [2]Genetics, Yale University,

2009

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Genetic Mutation of IL-23 Leads to Pro-Inflammatory Excess

Anti-IL-12/23: The Next Big Thing in IBD?

Sandborn WJ, Feagan BG, Fedorak RN, et al. A randomized trial of Ustekinumab, a human interleukin-12/23 monoclonal antibody, in patients with moderate-to-severe Crohn's disease. Gastroenterology. 2008;135:1130–1141.

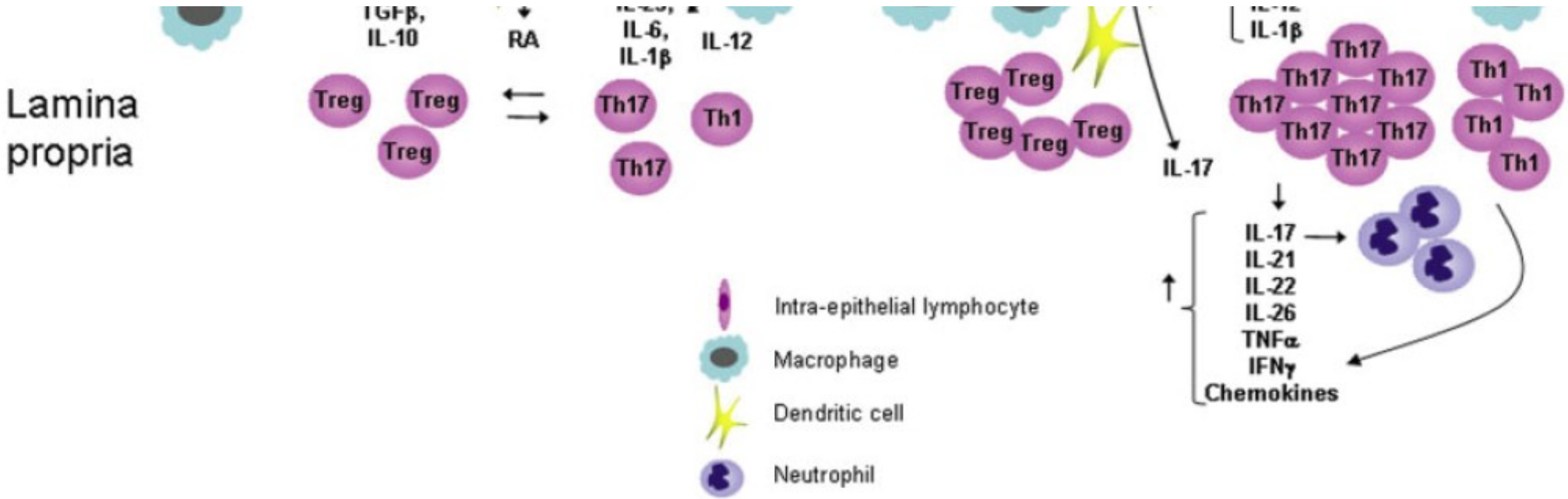


FIGURE 1. Dysregulation of intestinal immune homeostasis in CD. Under intestinal homeostatic conditions there is a balance between proinflammatory cytokines from innate cell populations (e.g., IL1β, IL-6, IL-12, IL-23) and effector T cell populations (e.g., Th1 and Th17 cells), relative to regulatory T cell populations that are influenced by factors such as IL-10, TGFβ, and retinoic acid (RA) in the environment. During CD there is dysregulation of this balance with an increased proportion of innate and effector T cell populations along with the cytokines they produce.

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~80% of Our Immune System is Based in our Gut

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Where I Believe We are Headed: Predictive, Personalized, Preventive, & Participatory Medicine

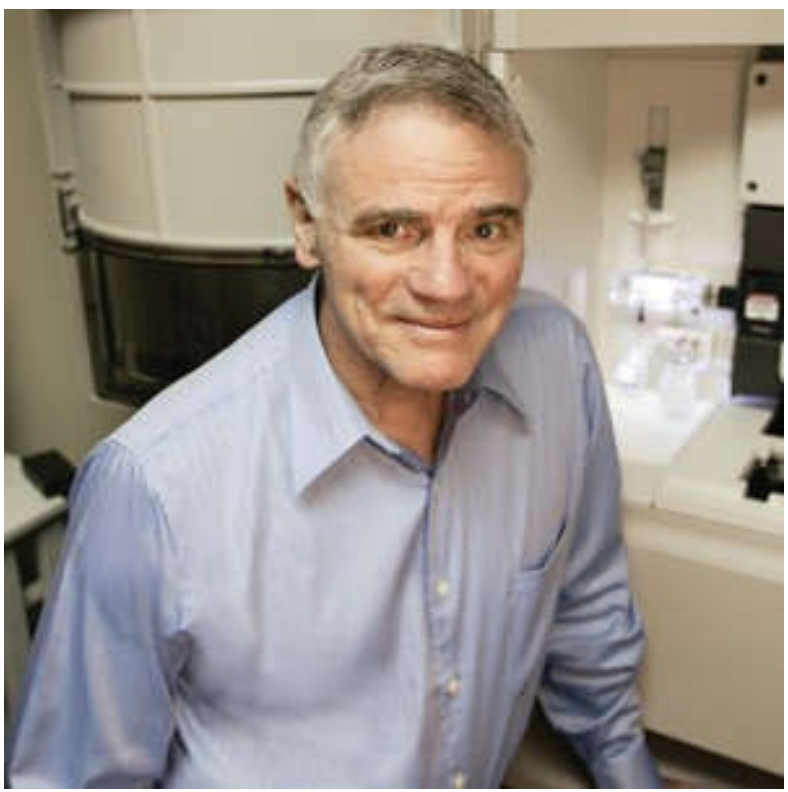
Newsweek

I am Leroy Hood's Lab Rat!

A Doctor's Vision of the Future of Medicine

Leroy Hood
NEWSWEEK

From the magazine issue dated Jul 13, 2009



Quantify ~2500 Blood Proteins,
50 Each from 50 Organs or Cell Types
from a Single Drop of Blood
To Create a Time Series

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www.newsweek.com/2009/06/26/a-doctor-s-vision-of-the-future-of-medicine.html

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