

개인 유전체 기반 다이어트

최 경 환
이원다이애그노믹스

심포지엄 : 건강기능식품, 어떻게할 것인가?

Contents

- Chapter 01. The Future of Wellness
- Chapter 02. Genomic data in Life style
- Chapter 03. Beyond the clinical, Go to real life
- Chapter 04. Personal Diet based on Genetic information
- Chapter 05. Opinions

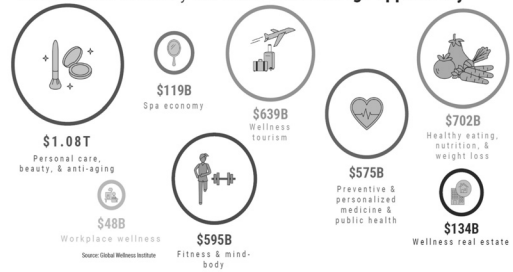
EDGC
EDGE GENOMICS
Genome Center



What's Next in Wellness?

A \$4.2 TRILLION MARKET

The wellness economy is a **multi-market mega opportunity**



Source: CBREIGHTS

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Wellness, Why now?

DEVELOPED & EMERGING MARKETS
...embrace wellness



MILLENNIAL POPULATION
...go hyper-health conscious



HEALTHCARE SYSTEM
...in crisis



SOCIAL MEDIA MARKETING
...amplifies wellness



Source: CBREIGHTS

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What is a choice to better way?

PROACTIVE

Improving health,
Improving satisfaction
Reducing costs



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The wellness landscape is vast

Personalized nutrition typically involves creating customized products or services based on factors such as one's genetic makeup, lifestyle, or environment.



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Personalizing Diet

Wearables and apps are helping to track nutrient intake



Personalized pills look to boost wellness



"At-home testing kits take off"



Customized food and beverage gains traction

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What determines your health?

Our DNA is believed to be one of the most important parts in understanding our health

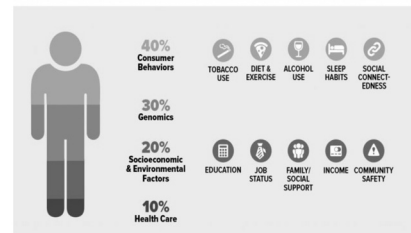
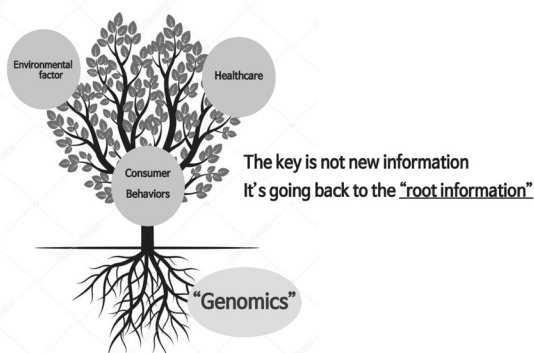


Image source: NEJM 2007

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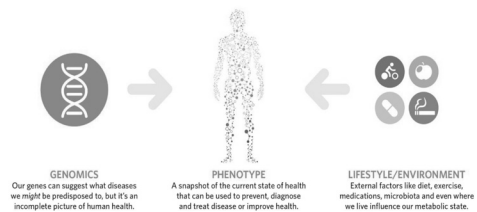
What determines your health?



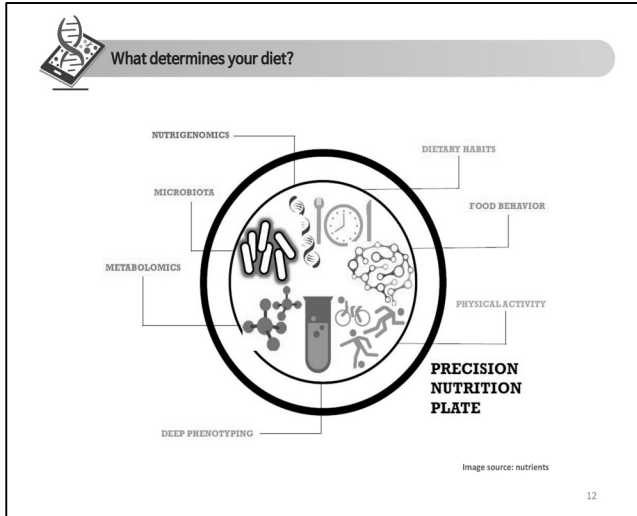
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What determines your health?



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Genomics information Can Help to

CLINICAL UTILITY
When a patient or provider meaningfully uses genetic data to help make a clinical decision

LEGEND
■ Utility is applicable
□ Utility will soon be applicable

CLINICAL
Genetic variants that are linked to diseases and potential health risks and provide clinical information for family planning
Are you at risk of breast cancer or Alzheimer's? What drug(s) should you take? Are you preparing for a family?

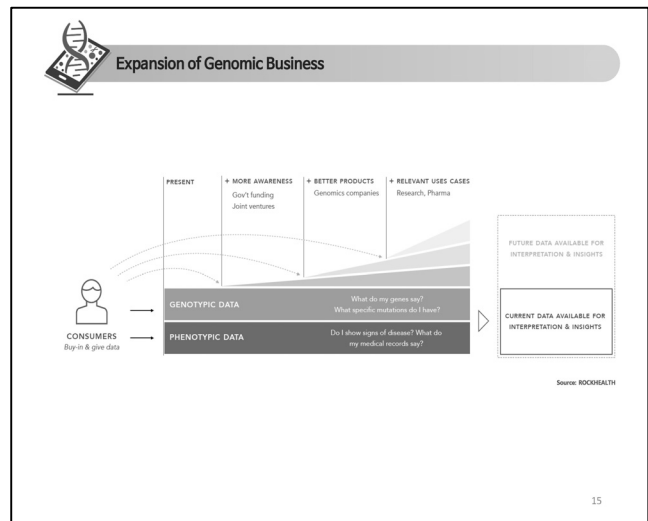
WELLNESS
Genetic variants that can influence personal characteristics and lifestyle and environmental factors
Do you have insomnia? Should you take supplements? How might your genes affect your diet?

LIFESTYLE
Genetic variants that can influence personal characteristics and attributes
Do you like the taste of cilantro? Are you predisposed to be a sprinter? What is your ancestry?

PERSONAL UTILITY
When a consumer derives satisfaction or value from knowing the results of a genetic test

The focus in consumer genomics has thus far been on clinical applications

Source: BIOETHICS



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Personal Diet based on Genetic information: EDGC - mygenplan

The screenshot shows the 'mygenplan' app interface. It includes sections for 'Genetic Test Results' (e.g., CA, CB, CC, BA, BB, BC, AA, AB, AC), 'Dietary Recommendations' (e.g., 'Eat more of this', 'Eat less of this'), and 'Personalized Diet Plan' (e.g., 'Eat more of this', 'Eat less of this'). The interface is designed to provide users with personalized dietary advice based on their genetic information.

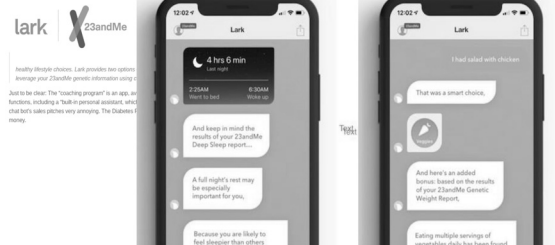


Personal Diet based on Genetic information: 23andMe + Lark

Lose Weight with 23andMe and an AI App!

23andMe has partnered with Lark Health to offer a new type of automated coaching program that uses artificial intelligence to help you make healthy lifestyle choices.

By Peter Shanks | 10.23.2019
BIOETHICS 116(5)



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Personal Diet based on Genetic information: Nurtigenomix

The answer may be in your genes

In 400 BC, Hippocrates noted that "positive health requires knowledge of man's primary constitution." This was just an ancient way of saying that we cannot achieve optimum health without knowing about our genes. We now know that specific variations in our genes can explain how we will respond to the foods, beverages and supplements we consume.



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Personal Diet based on Genetic information: Nurtigenomix



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Personal Diet based on Genetic information: DNAfit

DNAfit

Diet Fit Listen to your genes. Shape up your meals.

Diet Insights

A selection of in-depth and easy to use genetic insights to help you personalise your diet.

Reports Include

- ✓ Optimal Diet Type
- ✓ Carbohydrate & Fat Response
- ✓ Anti-Oxidant & Omega 3 Need
- ✓ Folate, Vitamin B & D Need
- ✓ Salt, Alcohol & Caffeine Sensitivity
- ✓ Lactose Tolerance
- ✓ Coeliac Predisposition
- ✓ Phase 1 & Phase 2 Detoxification

Personalised Meal Plans

Our genetically-guided meal planning & recipe platform is included with Diet Fit.

MealPlanner includes

- ✓ Recipes built around your tastes, genetics and target weight
- ✓ Ingredients list linked to an online shopping basket

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Personal Diet based on Genetic information: DNAfit

A BRIEF OVERVIEW OF YOUR KEY RESULTS

Optimal Diet Type for Weight Management Low Carbohydrate Plan

Your Recommended Nutrient Overview

| | |
|-----------------------|--|
| Increase | Fats, Acid, Vit B6 & B12, Coenzyme Q, Omega 3, Fibre |
| Decrease | Salt, Saturated Fats, Refined carbs / sugars, Grilled meat |
| Lactose Intolerance | Lactose tolerant |
| Celiac Predisposition | Negative |

Individual Food Sensitivities

| | | |
|---|---|----------------------|
| Salt Sensitivity | Alcohol Response | Caffeine Sensitivity |
| Intolerance sensitivity to salt: <2,200 mg / day sodium | Positive effect of alcohol on cholesterol | Fat metabolism |

CARBOHYDRATE SENSITIVITY

What carbohydrate response are you?

| VERY LOW | LOW | MEDIUM | HIGH | VERY HIGH |
|----------|------|--------|------|-----------|
| | Low | Medium | High | |
| | 10 | 20 | 30 | |
| | 40 | 50 | 60 | |
| | 70 | 80 | 90 | |
| | 100 | 110 | 120 | |
| | 130 | 140 | 150 | |
| | 160 | 170 | 180 | |
| | 190 | 200 | 210 | |
| | 220 | 230 | 240 | |
| | 250 | 260 | 270 | |
| | 280 | 290 | 300 | |
| | 310 | 320 | 330 | |
| | 340 | 350 | 360 | |
| | 370 | 380 | 390 | |
| | 400 | 410 | 420 | |
| | 430 | 440 | 450 | |
| | 460 | 470 | 480 | |
| | 490 | 500 | 510 | |
| | 520 | 530 | 540 | |
| | 550 | 560 | 570 | |
| | 580 | 590 | 600 | |
| | 610 | 620 | 630 | |
| | 640 | 650 | 660 | |
| | 670 | 680 | 690 | |
| | 700 | 710 | 720 | |
| | 730 | 740 | 750 | |
| | 760 | 770 | 780 | |
| | 790 | 800 | 810 | |
| | 820 | 830 | 840 | |
| | 850 | 860 | 870 | |
| | 880 | 890 | 900 | |
| | 910 | 920 | 930 | |
| | 940 | 950 | 960 | |
| | 970 | 980 | 990 | |
| | 1000 | 1010 | 1020 | |
| | 1030 | 1040 | 1050 | |
| | 1060 | 1070 | 1080 | |
| | 1090 | 1100 | 1110 | |
| | 1120 | 1130 | 1140 | |
| | 1150 | 1160 | 1170 | |
| | 1180 | 1190 | 1200 | |
| | 1210 | 1220 | 1230 | |
| | 1240 | 1250 | 1260 | |
| | 1270 | 1280 | 1290 | |
| | 1300 | 1310 | 1320 | |
| | 1330 | 1340 | 1350 | |
| | 1360 | 1370 | 1380 | |
| | 1390 | 1400 | 1410 | |
| | 1420 | 1430 | 1440 | |
| | 1450 | 1460 | 1470 | |
| | 1480 | 1490 | 1500 | |
| | 1510 | 1520 | 1530 | |
| | 1540 | 1550 | 1560 | |
| | 1570 | 1580 | 1590 | |
| | 1600 | 1610 | 1620 | |
| | 1630 | 1640 | 1650 | |
| | 1660 | 1670 | 1680 | |
| | 1690 | 1700 | 1710 | |
| | 1720 | 1730 | 1740 | |
| | 1750 | 1760 | 1770 | |
| | 1780 | 1790 | 1800 | |
| | 1810 | 1820 | 1830 | |
| | 1840 | 1850 | 1860 | |
| | 1870 | 1880 | 1890 | |
| | 1900 | 1910 | 1920 | |
| | 1930 | 1940 | 1950 | |
| | 1960 | 1970 | 1980 | |
| | 1990 | 2000 | 2010 | |
| | 2020 | 2030 | 2040 | |
| | 2050 | 2060 | 2070 | |
| | 2080 | 2090 | 2100 | |
| | 2110 | 2120 | 2130 | |
| | 2140 | 2150 | 2160 | |
| | 2170 | 2180 | 2190 | |
| | 2200 | 2210 | 2220 | |
| | 2230 | 2240 | 2250 | |
| | 2260 | 2270 | 2280 | |
| | 2290 | 2300 | 2310 | |
| | 2320 | 2330 | 2340 | |
| | 2350 | 2360 | 2370 | |
| | 2380 | 2390 | 2400 | |
| | 2410 | 2420 | 2430 | |
| | 2440 | 2450 | 2460 | |
| | 2470 | 2480 | 2490 | |
| | 2500 | 2510 | 2520 | |
| | 2530 | 2540 | 2550 | |
| | 2560 | 2570 | 2580 | |
| | 2590 | 2600 | 2610 | |
| | 2620 | 2630 | 2640 | |
| | 2650 | 2660 | 2670 | |
| | 2680 | 2690 | 2700 | |
| | 2710 | 2720 | 2730 | |
| | 2740 | 2750 | 2760 | |
| | 2770 | 2780 | 2790 | |
| | 2800 | 2810 | 2820 | |
| | 2830 | 2840 | 2850 | |
| | 2860 | 2870 | 2880 | |
| | 2890 | 2900 | 2910 | |
| | 2920 | 2930 | 2940 | |
| | 2950 | 2960 | 2970 | |
| | 2980 | 2990 | 3000 | |
| | 3010 | 3020 | 3030 | |
| | 3040 | 3050 | 3060 | |
| | 3070 | 3080 | 3090 | |
| | 3100 | 3110 | 3120 | |
| | 3130 | 3140 | 3150 | |
| | 3160 | 3170 | 3180 | |
| | 3190 | 3200 | 3210 | |
| | 3220 | 3230 | 3240 | |
| | 3250 | 3260 | 3270 | |
| | 3280 | 3290 | 3300 | |
| | 3310 | 3320 | 3330 | |
| | 3340 | 3350 | 3360 | |
| | 3370 | 3380 | 3390 | |
| | 3400 | 3410 | 3420 | |
| | 3430 | 3440 | 3450 | |
| | 3460 | 3470 | 3480 | |
| | 3490 | 3500 | 3510 | |
| | 3520 | 3530 | 3540 | |
| | 3550 | 3560 | 3570 | |
| | 3580 | 3590 | 3600 | |
| | 3610 | 3620 | 3630 | |
| | 3640 | 3650 | 3660 | |
| | 3670 | 3680 | 3690 | |
| | 3700 | 3710 | 3720 | |
| | 3730 | 3740 | 3750 | |
| | 3760 | 3770 | 3780 | |
| | 3790 | 3800 | 3810 | |
| | 3820 | 3830 | 3840 | |
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| | 3880 | 3890 | 3900 | |
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| | 3940 | 3950 | 3960 | |
| | 3970 | 3980 | 3990 | |
| | 4000 | 4010 | 4020 | |
| | 4030 | 4040 | 4050 | |
| | 4060 | 4070 | 4080 | |
| | 4090 | 4100 | 4110 | |
| | 4120 | 4130 | 4140 | |
| | 4150 | 4160 | 4170 | |
| | 4180 | 4190 | 4200 | |
| | 4210 | 4220 | 4230 | |
| | 4240 | 4250 | 4260 | |
| | 4270 | 4280 | 4290 | |
| | 4300 | 4310 | 4320 | |
| | 4330 | 4340 | 4350 | |
| | 4360 | 4370 | 4380 | |
| | 4390 | 4400 | 4410 | |
| | 4420 | 4430 | 4440 | |
| | 4450 | 4460 | 4470 | |
| | 4480 | 4490 | 4500 | |
| | 4510 | 4520 | 4530 | |
| | 4540 | 4550 | 4560 | |
| | 4570 | 4580 | 4590 | |
| | 4600 | 4610 | 4620 | |
| | 4630 | 4640 | 4650 | |
| | 4660 | 4670 | 4680 | |
| | 4690 | 4700 | 4710 | |
| | 4720 | 4730 | 4740 | |
| | 4750 | 4760 | 4770 | |
| | 4780 | 4790 | 4800 | |
| | 4810 | 4820 | 4830 | |
| | 4840 | 4850 | 4860 | |
| | 4870 | 4880 | 4890 | |
| | 4900 | 4910 | 4920 | |
| | 4930 | 4940 | 4950 | |
| | 4960 | 4970 | 4980 | |
| | 4990 | 5000 | 5010 | |
| | 5020 | 5030 | 5040 | |
| | 5050 | 5060 | 5070 | |
| | 5080 | 5090 | 5100 | |
| | 5110 | 5120 | 5130 | |
| | 5140 | 5150 | 5160 | |
| | 5170 | 5180 | 5190 | |
| | 5200 | 5210 | 5220 | |
| | 5230 | 5240 | 5250 | |
| | 5260 | 5270 | 5280 | |
| | 5290 | 5300 | 5310 | |
| | 5320 | 5330 | 5340 | |
| | 5350 | 5360 | 5370 | |
| | 5380 | 5390 | 5400 | |
| | 5410 | 5420 | 5430 | |
| | 5440 | 5450 | 5460 | |
| | 5470 | 5480 | 5490 | |
| | 5500 | 5510 | 5520 | |
| | 5530 | 5540 | 5550 | |
| | 5560 | 5570 | 5580 | |
| | 5590 | 5600 | 5610 | |
| | 5620 | 5630 | 5640 | |
| | 5650 | 5660 | 5670 | |
| | 5680 | 5690 | 5700 | |
| | 5710 | 5720 | 5730 | |
| | 5740 | 5750 | 5760 | |
| | 5770 | 5780 | 5790 | |
| | 5800 | 5810 | 5820 | |
| | 5830 | 5840 | 5850 | |
| | 5860 | 5870 | 5880 | |
| | 5890 | 5900 | 5910 | |
| | 5920 | 5930 | 5940 | |
| | 5950 | 5960 | 5970 | |
| | 5980 | 5990 | 6000 | |
| | 6010 | 6020 | 6030 | |
| | 6040 | 6050 | 6060 | |
| | 6070 | 6080 | 6090 | |
| | 6100 | 6110 | 6120 | |
| | 6130 | 6140 | 6150 | |
| | 6160 | 6170 | 6180 | |
| | 6190 | 6200 | 6210 | |
| | 6220 | 6230 | 6240 | |
| | 6250 | 6260 | 6270 | |
| | 6280 | 6290 | 6300 | |
| | 6310 | 6320 | 6330 | |
| | 6340 | 6350 | 6360 | |
| | 6370 | 6380 | 6390 | |
| | 6400 | 6410 | 6420 | |
| | 6430 | 6440 | 6450 | |
| | 6460 | 6470 | 6480 | |
| | 6490 | 6500 | 6510 | |
| | 6520 | 6530 | 6540 | |
| | 6550 | 6560 | 6570 | |
| | 6580 | 6590 | 6600 | |
| | 6610 | 6620 | 6630 | |
| | 6640 | 6650 | 6660 | |
| | 6670 | 6680 | 6690 | |
| | 6700 | 6710 | 6720 | |
| | 6730 | 6740 | 6750 | |
| | 6760 | 6770 | 6780 | |
| | 6790 | 6800 | 6810 | |
| | 6820 | 6830 | 6840 | |
| | 6850 | 6860 | 6870 | |
| | 6880 | 6890 | 6900 | |
| | 6910 | 6920 | 6930 | |
| | 6940 | 6950 | 6960 | |
| | 6970 | 6980 | 6990 | |
| | 7000 | 7010 | 7020 | |
| | 7030 | 7040 | 7050 | |
| | 7060 | 7070 | 7080 | |
| | 7090 | 7100 | 7110 | |
| | 7120 | 7130 | 7140 | |
| | 7150 | 7160 | 7170 | |
| | 7180 | 7190 | 7200 | |
| | 7210 | 7220 | 7230 | |
| | 7240 | 7250 | 7260 | |
| | 7270 | 7280 | 7290 | |
| | 7300 | 7310 | 7320 | |

최 경 환. 개인 유전체 기반 다이어트

Personal Diet based on Genetic information: genopalate

genopalate

OUR SERVICES PRODUCTS STORES AND BLOG ACCOUNT

MY GENES RECOMMEND HIGH CARBOHYDRATES

TOP FOODS
• Bell Peppers
• Spinach
• Tomatoes

Eat For Your Genes
Get your personalized nutrition report to eat the right foods for your body.

Learn the 85+ Best Foods for Your Genes Across 16 Categories

Meats, Cheeses, Fruits, Vegetables, Leafy Vegetables, Seafoods, Grains, Nuts, Peas, Other Proteins, Milk and Dairy, Eggs

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Personal Diet based on Genetic information: mygenomebox

mygenomebox

ABOUT US DNA APP MARKET MY FILES MY PAGE CONTACT

Weight Loss Regimen FREE
Strength Training FREE
Weight Gain During... FREE
Exercise-Induced... FREE
Weight Gain on High... FREE
Eating Distribution FREE
Sweet Tooth FREE
Hunger FREE
Snacking FREE
Lactose Intolerance FREE
Asparagus Metabolism... FREE
Folate Diet FREE
Food Desire FREE
Hypertension & Sodium FREE
Type 2 Diabetes on... FREE
Safety FREE
Cilantro Taste FREE
Phytoestrogen Diet FREE

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Innovation of Global company

Nestle pivots to health research with artificial intelligence and DNA testing for personalised diets

Campbell Soup drops Habit, selling its nutrition company to Viome

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Next step...

Can DNA and blood tests reveal which foods are optimal for and individual's diet?

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There is no way but to go...

Position of the Academy of Nutrition and Dietetics: Nutritional Genomics

DEAD END
OPPORTUNITY

VS

Effect of personalized nutrition on health-related behaviour change: evidence from the Food4Me European randomized controlled trial

International Journal of Epidemiology, Volume 46, Issue 2, April 2017, Pages 578-588, <https://doi.org/10.1093/ije/dyw186>
Published: 12 August 2016 Article history

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