THE INSTITUTE OF NUTRITIONAL ENDOCRINOLOGY®

BIOFIT

BLUEPRINTBOOTCAMP

Nutrigenomics
Nutrients

Dr. Ritamarie Loscalzo

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Nutrients in Blood and History

Nutrient Scorecard

Percent score is calculated by dividing your score by the max score and multiplying by 100. Look up the % score in the chart below to determine priority.

Nutrient	Max Score	Your Score	Your % Score	Priority: 1=low (green) 2=medium (blue) 3=high (yellow) 4=very high (red)
Essential Fatty Acids	99			
Amino Acids	24			
Vitamin A	30			
B Vitamins	45			
Vitamin B1	15			
Vitamin B2	30			
Vitamin B3 (Niacin)	45			
Vitamin B5 (Pantothenic Acid)	45			
Vitamin B6	51			
Vitamin B7 (Biotin)	21			
Vitamin B9 (Folate)	51			
Vitamin B12	81			

Assessments

Scorecards

Nutrient Scoring Scale

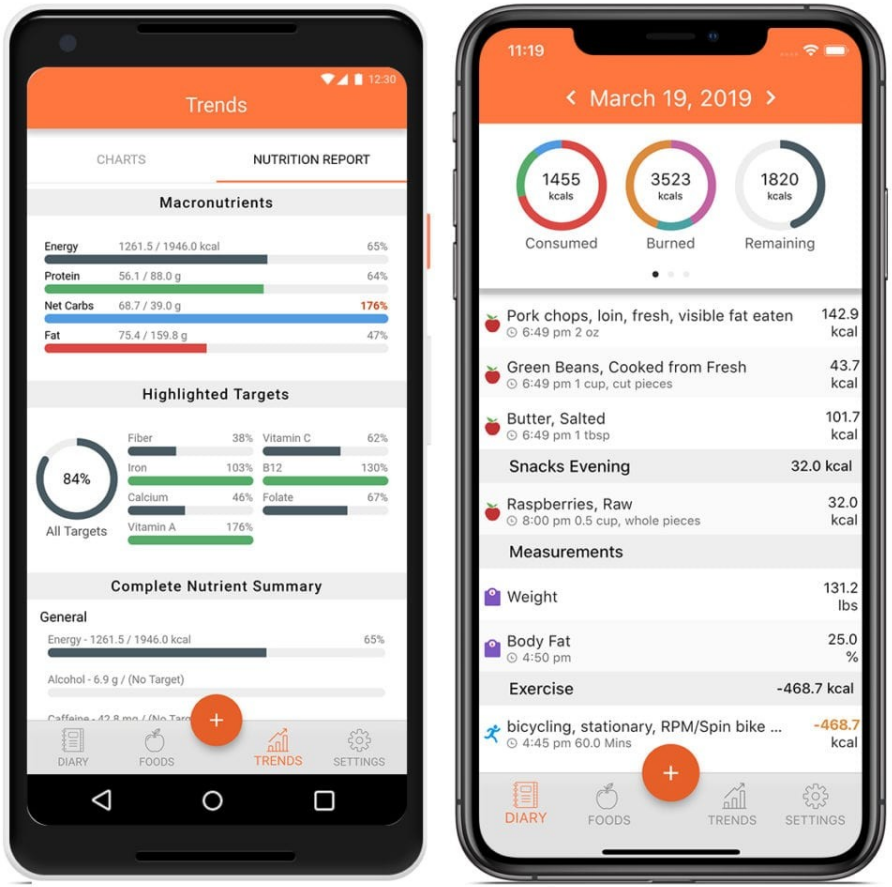
0-10% - Overall good balance. Sound nutrition and healthy habits will maintain good balance.

11-20% - In need of a tune up to restore balance before serious illness sets in. Diet and lifestyle improvements should shift to normal.

21-35% - Things are out of balance and need attention.

36-50% - Very compromised and likely to significantly affect your state of health, well-being and energy level.

51-100% - Severely compromised and requires immediate attention.



cronometer

NUTRITION TRACKER

Eat smarter.
Live better.

Nutrient Related Genes

- **Vitamin A:** BCMO1
- **Vitamin B2** (riboflavin)**:** MTHFR
- **Vitamin B6:** NBPF3
- **Vitamin B12:** FUT2, MTR, MTRR. TNC1&2
- **Vitamin B9 (Folate): MTHFR, DHFR, FOLR 1, 2 &3**
- **Vitamin C:** SLC23A1
- **Zinc:** SLC30A8
- **Iron:** HFE, TF
- **Magnesium:** TRPM7

Vitamin D Related SNPs

- **VDR:** Vitamin D receptor
- **GC rs2282679:** Encodes enzyme that transports vitamin D in blood to cells
- **CYP24A1:** Role in maintaining calcium homeostasis
- **CYP27B1:** Encodes an enzyme that activates Vitamin D
- **DHCR7:** Regulatory switch between cholesterol and vitamin D synthesis
- **GRCh38 rs4588:** Vitamin D binding protein

Vitamin and Mineral Imbalances

Vitamin B-6

Gene	RSID	Risk Allele	Genotype	Phenotype	Page #
NBPF3	rs4654748	C	TT	-/-	367

Vitamin D

Gene	RSID	Risk Allele	Genotype	Phenotype	Page #
VDR Bsm	rs1544410	T	CT	+/-	368-369
VDR Taq	rs731236	A	AG	+/-	368-369
GC	rs2282679	G	TT	-/-	370-371
GC	rs7041	T	CC	-/-	370-371

Vitamin A

Gene	RSID	Risk Allele	Genotype	Phenotype	Page #
BCMO1	rs4889294	C	CT	+/-	372-373
BCMO1 A379V	rs7501331	T	CT	+/-	372-373
BCMO1 R267S	rs12934922	T	AT	+/-	372-373
BCMO1 (PKD1L2) C754T	rs6420424	A	GG	-/-	372-373
BCMO1	rs11645428	G	GG	+/+	372-373
BCMO1	rs6564851	G	TT	-/-	372-373

Zinc

Gene	RSID	Risk Allele	Genotype	Phenotype	Page #
SLC30A8	rs11558471	A	AA	+/+	374

Iron

Gene	RSID	Risk Allele	Genotype	Phenotype	Page #
HFE C282Y	rs1800562	A	AG	+/-	375-377
HFE H63D	rs1799945	G	CC	-/-	375-377

Vitamin B-9

Gene	RSID	Risk Allele	Genotype	Phenotype	Page #
DHFR A16352G	rs1643649	C	CT	+/-	378
DHFR A20965G	rs1643659	C	CT	+/-	378
DHFR	rs1650697	A	AG	+/-	378
DHFR C19483A	rs1677693	T	GT	+/-	378
FOLR1 G-20A	rs2071010	A	AG	+/-	379-381
FOLR2 G-1316A	rs651933	A	AG	+/-	379-381
FOLR2	rs7925545	G	AA	-/-	379-381
FOLR3 A3771G	rs7925545	G	AA	-/-	379-381

Vitamin B-12

Gene	RSID	Risk Allele	Genotype	Phenotype	Page #
TCN1 G4939288A	rs526934	G	AG	+/-	382-384
TCN2 A8700G	rs9606756	G	AA	-/-	382-384
TCN2 C766G	rs1801198	G	CG	+/-	382-384

Vitamin C

Gene	RSID	Risk Allele	Genotype	Phenotype	Page #
SLC23A1	rs10063949	C	TT	-/-	N/A

Genetic Lifehacks

Learn. Experiment. Optimize.

https://drritamarie.com/GeneticLifeHacksNutrients

SelfDecode

https://drritamarie.com/BiofitSDNutrition

Food-Related SNPs

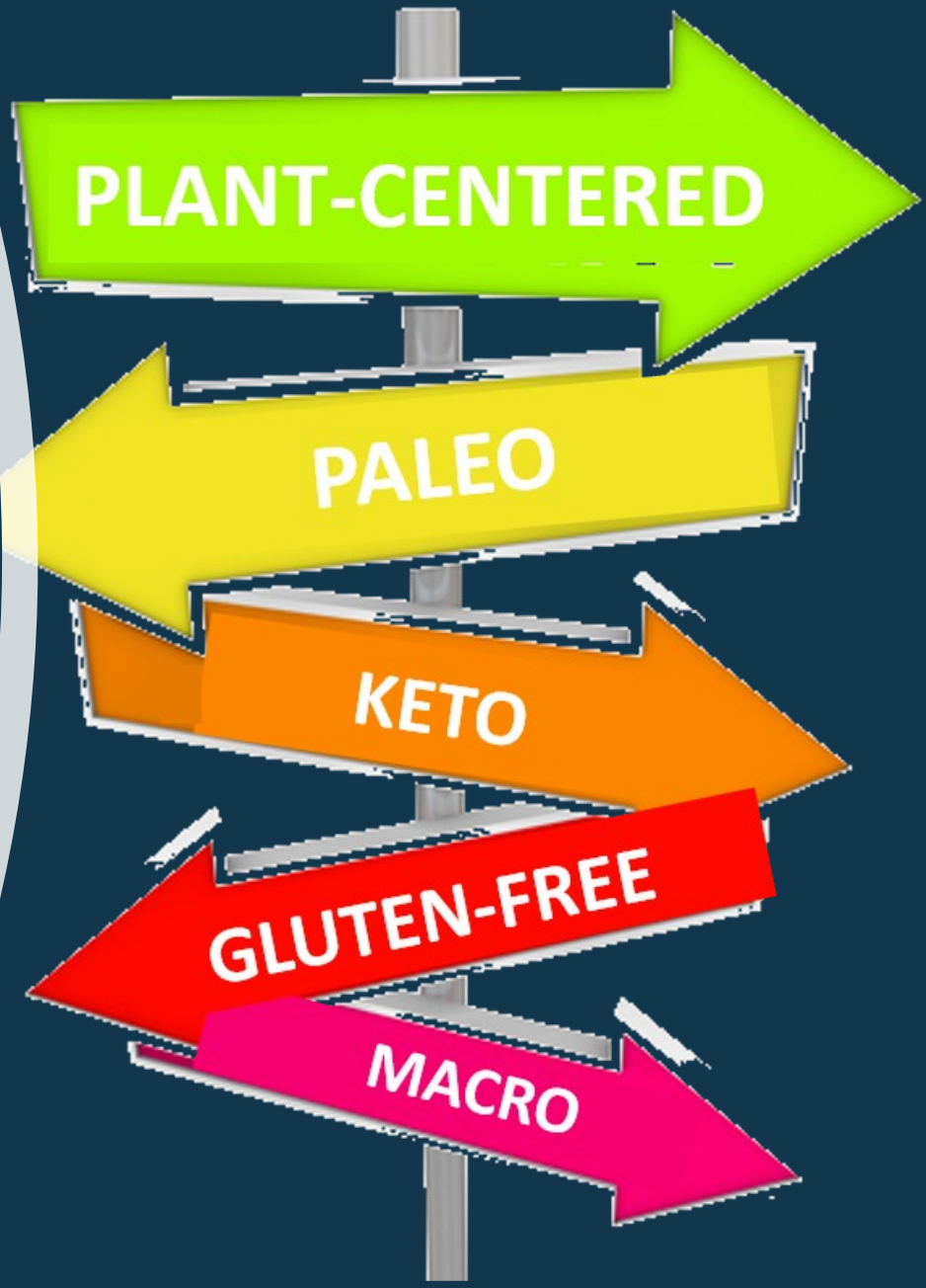
- **Bitter Taster:** TAS2R38 rs713598, rs1726866
- **Sweet Taster:** TAS1R3 rs35744813
- **Salt Sensitive:** GNB3, NOS3, ACE, AGT
- **Alcohol Intolerance:** ALDH2, CYP2E1

Vitamin and Mineral SNPs

Gene & Variation	rsID	Risk Allele	Function	Health Risks	Actions to Take to Protect: Avoid: Iron-rich foods	Avoid: Smoking or drinking	Avoid: Warfarin	Increase These: Vitamin A	Vitamin B-complex – activated form	Vitamin B3	Vitamin B6 – activated (P5P)	Vitamin B9 (Folate)	Vitamin B12	B12 – other – shots / patch	Vitamin C	Vitamin D	Vitamin E	Vitamin K2	Alpha-lipoic acid	Glucoraphanin	Glutathione	Probiotics	Zinc	Green, leafy vegetables	Vitamin A-rich foods	Zinc-rich foods	Stomach acid levels	Stress reduction techniques	Donate blood	Exercise	Plant-based Diet	Lab Testing: Fe/Ferritin/Transferrin/TIBC	Cancer Screenings	RBC-Magnesium Blood Test	Magnesium Tolerance Test	Zinc Tally/ functional test	Folate /Methylation Profile	CBC	Vitamin A test	Eye Exam	Zinc Tally Test	DUTCH Test	Vitamin D	Homocysteine	Methyl Malonic Acid (MMA)	NutrEval - Genova
BCM01 R267S A379V C754T	 rs12934922 rs7501331 rs6420424	 T T A	•Conversion of beta carotene to **Vitamin A**	• Eye problems • Immune issues • Acne & eczema				✓							✓	✓	✓		✓	✓	✓			✓																✓		✓					
NBPF3	rs4654748	C	•Involved in clearance of **Vitamin B6** •Helps make serotonin and norepinephrine •Proper brain function	• Difficulty concentrating / memory loss • water retention • depression • muscle weakness • Hi homocysteine							✓																✓															✓		✓
SLC30A8	rs11558471	A	•Helps the body transport **zinc**	• Low testosterone • Mental health • Lack of appetite																		✓			✓											✓				✓					
HFE C282Y H63D	 rs1800562 rs1799945	 A G	•Helps the body absorb **iron**	• Hemochromatosis • Alzheimer's	✓																							✓				✓					✓							
TF (transferrin)	rs1049296		•Regulates **iron** •Codes for transferrin, - delivery of iron to the tissues	• Increased risk of Alzheimer's, especially with high iron • Iron overload -risk of cancer and infections	✓																																							
VDR Bsm Taq	 rs1544410 rs731236	 T G	•Provides instructions for creating protein for **Vitamin D** receptor	• Bone loss • Immune issues • Risk of insulin resistance												✓		✓				✓				✓											✓					✓			

SNPs Related Specific Food Avoidance

- **Gluten-free** – HLA DQ2, DQ8, DQ1, DQ3, DQ7
- **Dairy Free** – LCT, MCM6 (lactose), FLG rs17616434 and rs2069772
- **Anti-yeast/fungal** – DEFB1, FUT2
- **SCD, GAPS, FODMAPs** – FUT2, AMY1
- **Low oxalate** – CaSR, SPP1, AGXT, i5012629 and i5012628 on GRHPR
- **Low salicylates** – MTHFR, CYP2C9, UTG1A6
- **Low phenols** – SULT1A1, SULT1A2
- **Low sulfur** – CBS, SULT



Labs to Measure Nutrient Status

SERUM TEST

RED BLOOD CELLS

WHITE BLOOD CELLS

SPECTRA CELL

NUTR-EVAL OR ION

ORGANIC ACIDS

What I Do About Nutrient Imbalance SNPs

- Track “usual”diet for 5 days in cronometer
- Look at nutrients that scored high on symptom surveys
- Determine foods to add to diet to make up balance
- Supplement as needed

Replenish Nutrients With Food

- **Green Leafy Vegetables:** minerals, B-vitamins, antioxidants
- **Sea Vegetables:** minerals and omega-3 fats
- **Chia Seeds, Flax Seeds, Hemp Seeds:** omega-3 fats
- **Pumpkin Seeds:** zinc
- **Brazil Nuts:** selenium

SNPs Related to Oxalates

- CaSR
- SPP1
- AGXT
- GRHPR
  - i5012629
  - i5012628

SNPs Related to Salicylates

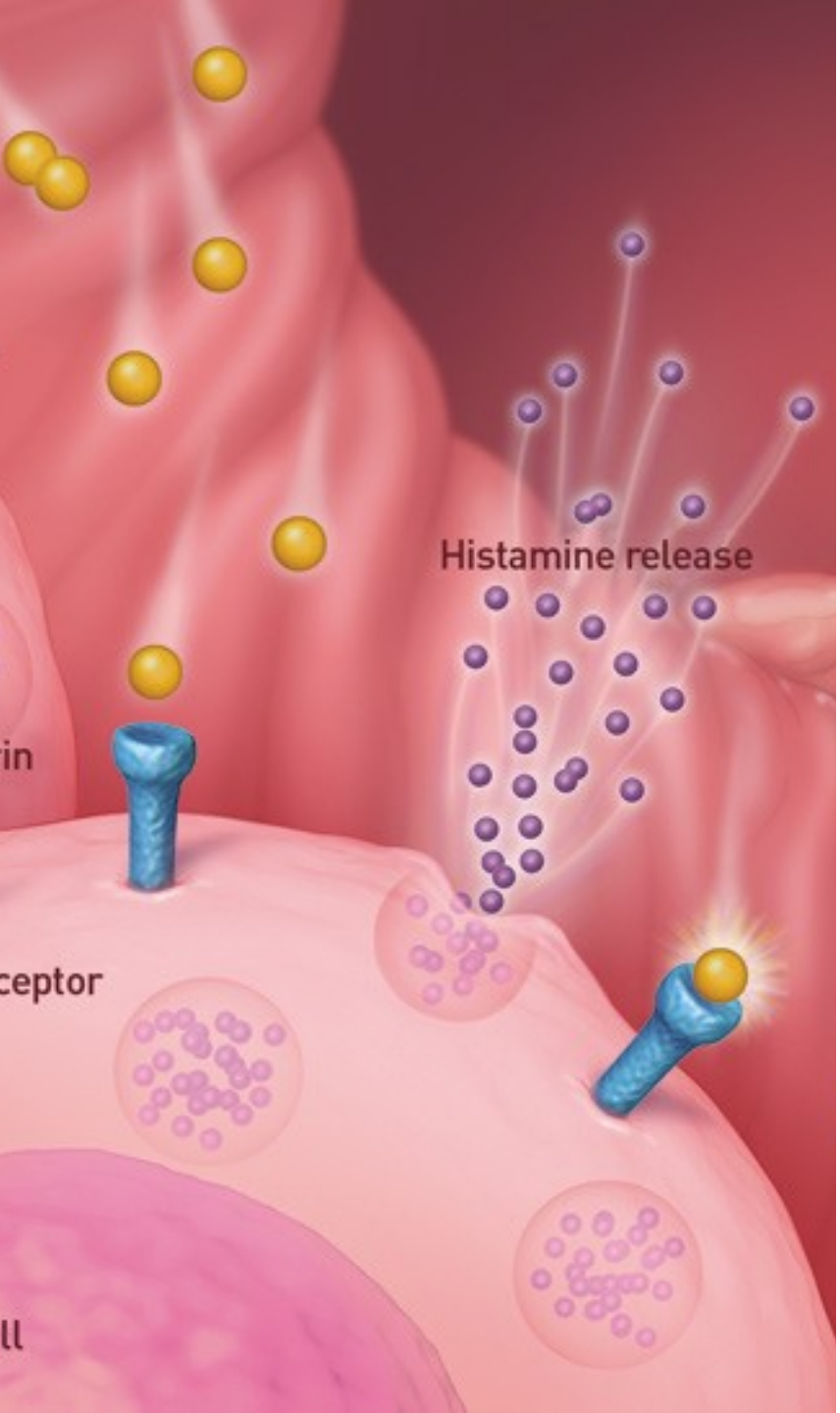
- MTHFR
- CYP2C9
- UTG1A6

SNPs Related to FODMAPs Sensitivity

- MGAM
- 15Phe rs9290264
- FUT2
- AMY1

SNPs Related to Lectin Sensitivity

- CNR1 rs1049353 - cannabinoid receptor 1
- ERAP2 - commonly associated with many autoimmune diseases
- STAT3 - linked to gut inflammation, IBD, and cancer
- JAK2 - alters gut permeability and may contribute to Crohn's disease
- NRF2 - may affect gut permeability
- COMT - participates in methylation in the gut mucosa [R]



Histamine-Related Genes

- **AOC1/ABP1** – regulates how much DAO enzyme produced and level of histamine extra-cellularly
  - rs2052129
  - rs2268999
  - rs10156191
  - rs1049742
- **Histamine-N-Methyltransferase (HNMT)** - regulates histamine intra-cellularly by metabolizing it to N-methylhistamine
  - I3000469
  - rs1050891
- Also relationship with NAT2, MTHFR, MAO, PEMT