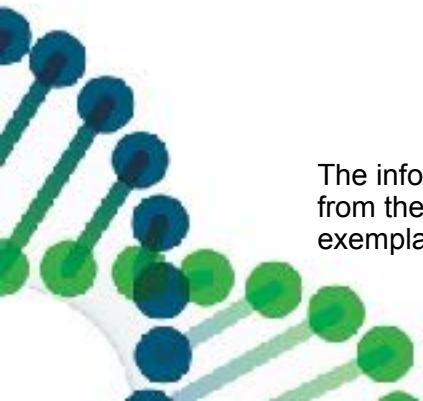




Stress:

Thinking Multidimensionally



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Disclosure:

Relationship with commercial interests - None
Disclosure of commercial support - None
Conflict of interest - None





Which Drug Do I Need for Stress?

(c) 2017: Dr BenLynch

Anxiolytics, Benzodiazepines

Class Summary

By binding to specific receptor sites, benzodiazepines appear to potentiate the effects of gamma-aminobutyrate (GABA) and facilitate inhibitory GABA neurotransmission and other inhibitory transmitters. These agents are effective on standing-dose and as-needed (prn) schedules

Panic Disorder Medication, Medscape, Nov 2016

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Lorazepam

- [View full drug information](#)

Lorazepam is a sedative hypnotic with a short onset of intermediate half-life. By increasing the action of GABA neurotransmitter in the brain, lorazepam may depress including the limbic and reticular formations.

Clonazepam

- [View full drug information](#)

Clonazepam is a sedative hypnotic that is a long-acting benzodiazepine with a half-life of approximately 36 hours and an intermediate onset of action. It facilitates inhibitory GABA neurotransmission and other inhibitory neurotransmission.

Alprazolam

- [View full drug information](#)

Alprazolam is used for the management of anxiety attacks. It is a short-acting anxiolytic with an intermediate onset of effects. This agent binds to receptors at several sites within the CNS, including the limbic system and the reticular formations. The effects of alprazolam may be mediated through the GABA receptor system. Alprazolam has been widely reviewed in the literature, although its use is currently discouraged because of its higher potential to elicit dependency.

Diazepam

- [View full drug information](#)

Diazepam is an anxiolytic benzodiazepine and has a rapid onset of effects. This medication depresses all levels of the CNS (eg, the limbic and reticular formations), possibly by increasing the activity of GABA.

Panic Disorder Medication, Medscape, Nov 2016

Which Drug Do I Need for Stress?

“If we are intellectually honest, we must discard old ideas and look for new paradigms to explain the cause of symptoms in a disease... if we test a rationally designed therapy in patients with the disease, but it fails repeatedly.”

Dr. Anthony Linnane

Cell danger response, Naviaux

(c) 2017: Dr BenLynch



Which Gene is Associated with my Stress?

(c) 2017: Dr BenLynch



MTHFR C677T +/+

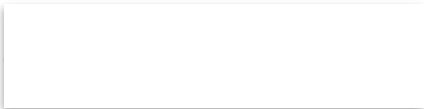
COMT V158M +/+

MAOA T941G -/-



NEW!  updated to now include mood stabilizers, anxiolytics/hypnotics and 4 additional genes!

 A personalized approach to help patients get their lives back

 a clinically proven, genetic-based decision support tool that can help get patients on the right medication faster.

And the other 19,000? And gene:gene:gene:... communication?

Which Gene is Associated with my Stress?

“If we are intellectually honest, we must discard old ideas and look for new paradigms to explain the cause of symptoms in a disease... if we test a rationally designed therapy in patients with the disease, but it fails repeatedly.”

Dr. Anthony Linnane

Cell danger response, Naviaux

(c) 2017: Dr BenLynch



Which Vitamins do I take for my Stress SNPs?

(c) 2017: Dr BenLynch

MTHFR C677T +/-



MTHF

COMT V158M +/-



HydroxoB12

MAOA T941G -/-



Riboflavin

Category	RSID	Gene	Expected	Genotype: Risk	Genotype Freq	Gene Function	Consequences	Encourage	Avoid
Neurotransmitter Levels	rs4680	COMT	G	AG: 1/2	48.2074%	Degrades catecholamines, Phase II, inactivates hydroxy-estrogens	Slower breakdown dopamine, oestrogen, worrier, prone to anxiety, more sensitive to green tea	Hydroxy B12 (hydroxycobalamin)	Methyl B12, Methyl donors, Cannabis
Neurotransmitter Levels	rs6323	MAO-A	G	TT: 2/2	N/A	Oxidizes serotonin, dopamine, epinephrine, norepinephrine	Lower expression of MAO A	Progesterone	Curcumin, Estrogens, Androgens
Folate One-Carbon Metabolism / Methylation (FOCM)	rs651852	BHMT08	T	CT: 1/2	48.0752%	Methylates homocysteine to methionine	Downregulation	Phosphatidylcholine, TMG, Phosphatidylserine, Zinc	
Folate One-Carbon Metabolism / Methylation (FOCM)	rs234706	CBS	G	AG: 1/2	39.9436%	Adds l-serine to homocysteine to produce l-cystathionine	Increased responsiveness to homocysteine-lowering effects of folic acid. Marginally increased disposal of homocysteine.	Vitamin B6	
Folate One-Carbon Metabolism / Methylation (FOCM)	rs1805087	MTR	A	GG: 2/2	4.79560%	Converts homocysteine into methionine	Upregulation that can deplete methyl-b12.	Methyl b12, L-methylfolate, Lithium orotate, Grapeseed extract	
Folate One-Carbon Metabolism / Methylation (FOCM)	rs1802059	MTRR	G	AA: 2/2	9.58110%	Methylates, recycles vitamin b12	Less active enzyme	Methyl B12	

Which Vitamins do I take for my Stress SNPs?

“If we are intellectually honest, we must discard old ideas and look for new paradigms to explain the cause of symptoms in a disease... if we test a rationally designed therapy in patients with the disease, but it fails repeatedly.”

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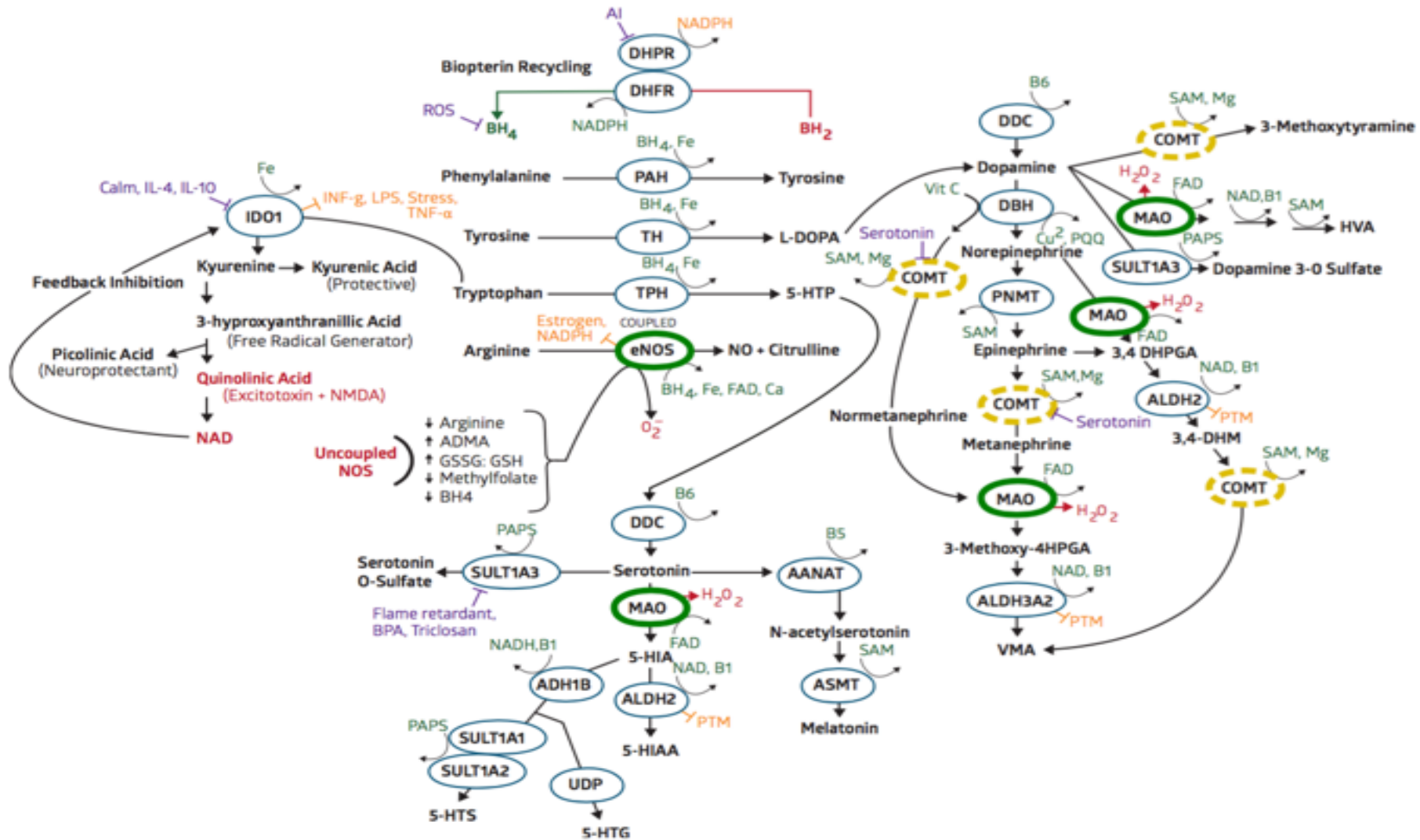
Cell danger response, Naviaux

(c) 2017: Dr BenLynch



Which Pathway is Associated with Stress?

(c) 2017: Dr BenLynch



Which Pathway is Associated with Stress?

“If we are intellectually honest, we must discard old ideas and look for new paradigms to explain the cause of symptoms in a disease... if we test a rationally designed therapy in patients with the disease, but it fails repeatedly.”

Dr. Anthony Linnane

Cell danger response, Naviaux

(c) 2017: Dr BenLynch



**STOP
THINK
OBSERVE
PROCEED**



What is Stress?



(c) 2017: Dr BenLynch

[illegible]



How do we resolve stress?

(c) 2017: Dr BenLynch



How do we resolve stress?

Nutritious Food

Restorative Sleep

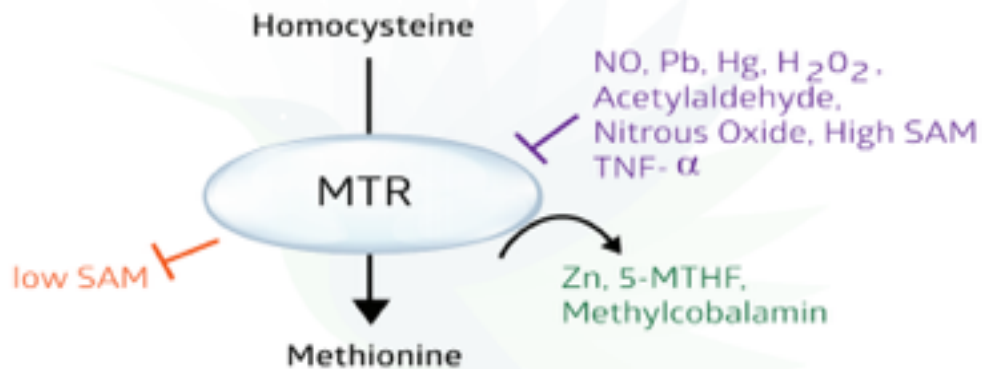
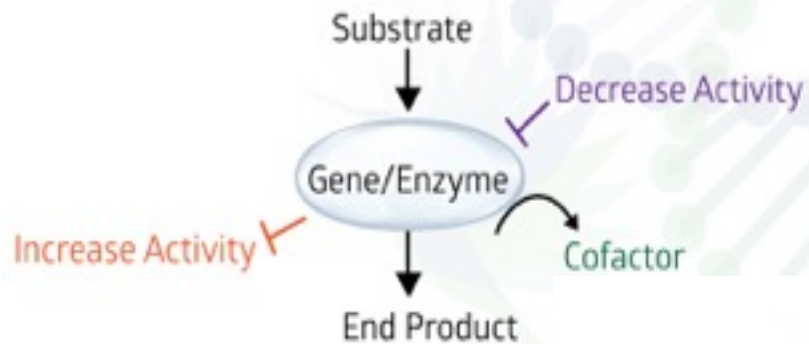
Happy Mitochondria

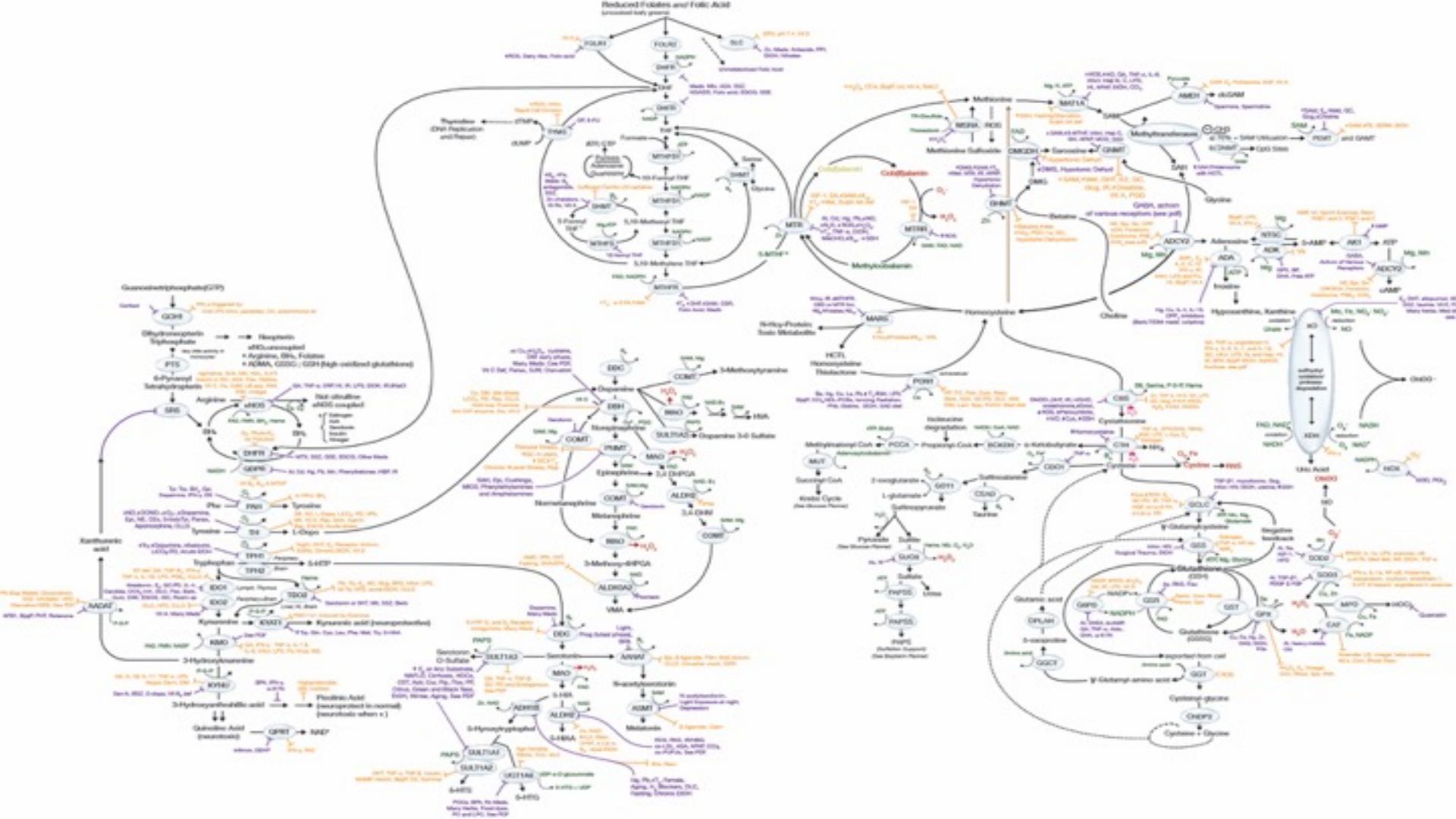
Community

Gratitude



“Fix MY SNPs, MTHF’R!!”





Practical

Alignment

Foundations

Timeline



Logical

Plot

Response

Trigger



Strategic

Plan

Docere

Pulse

ALIGNMENT



RS#	Call	Risk Allele	Gene	Variation	Result	RS#	Call	Risk Allele	Gene	Variation	Result
rs1051266	CT	T	SLC19a1	G80A	+/-	rs12934922	AT	T	BCO1	R267S	+/-
rs2236225	AA	A	MTHFD1	G1958A	+/+	rs7501331	CC	T	BCO1	A379V	-/-
rs1801131	TT	G	MTHFR	A1298C	-/-	rs6420424	AA	A	BCO1 (PKD1L2)	C754T	+/+
rs1801133	AG	A	MTHFR	C677T	+/-	rs11645428	GG	G	BCO1		+/+
rs1801394	AA	G	MTRR	A66G	-/-	rs6564851	GG	G	BCO1		+/+
rs1532268	CC	T	MTRR	C524T	-/-	rs601338	GG	A	FUT2		-/-
rs72558181	CC	T	MAT1A	R264H	-/-	rs1800566	GG	A	NQO1		-/-
rs28934891	CC	T	CBS	D444N	-/-	rs1800562	GG	A	HFE	C282Y	-/-
rs4920037	AG	A	CBS	C19150T	+/-	rs1799945	CG	G	HFE	H63D	+/-
rs5742905	AA	G	CBS	T833C	-/-	i3002468	AA	T	HFE	Ser65Cys	-/-
rs234706	AG	A	CBS	C699T	+/-	rs7946	CT	T	PEMT	5465G>A	+/-
rs4880	AG	A	SOD2	A16V	+/-	rs174537	GG	G	FADS1		+/+
rs1799895	CC	G	SOD3	Ex3-631C>G	-/-	rs174548	CC	G	FADS1		-/-
rs1695	AG	G	GSTP1	Ile105Val	+/-	rs1535	AA	G	FADS2		-/-
rs1138272	CC	T	GSTP1	A114V	-/-	rs1800629	AG	A	TNF-alpha		+/-
rs1050828	C	T	G6PD	G202A	-/-	rs34637584	GG	A	LRRK2	2109S	-/-
rs1050829	T	C	G6PD	A376G	-/-	rs2228570	NA	G	VDR	Fok1	NA
rs5030868	G	A	G6PD	C563T (Medit.)	-/-	rs731236	AA	G	VDR	Taq1	-/-
rs1050450	GG	A	GPX1	Pro199Leu	-/-	rs1544410	CC	T	VDR	Bsm1	-/-
rs1800783	TT	A	NOS3/eNOS	-1495A>T	-/-	rs7412	CC	C	APOE	Arg176Cys	+/+
rs1800779	AA	G	NOS3/eNOS	A(-922)G	-/-	rs429358	CT	C	APOE		+/-
i6018900	NA	T	SULT1A1	638G>A	NA	-/- = not present; +/- = one mutation; +/+ = double mutation; +/-* = mutation on the X chromosome in a male.					
rs6323	T	G	MAOA	T941G	-/-						
rs1137070	C	T	MAOA	1410T>C	-/-						
rs1799836	C	C	MAOB		+/*						
rs4680	AG	A	COMT	V158M	+/-						
rs4633	CT	T	COMT	H62H	+/-						
rs10156191	CT	T	AOC1/ABP1	Thr16Met	+/-						

-/- = not present; +/- = one mutation; +/+ = double mutation; +/-* = mutation on the X chromosome in a male.

Predicted NAT2 acetylator phenotype with probability estimate: **INTERMEDIATE (0.996967)**

APOE genotype: APOE 3/4

Practical

✓ Alignment
Foundations
Timeline



Logical

Plot
Response
Trigger



Strategic

Plan
Docere
Pulse

FOUNDATIONS

GAPS / No salads
Electronics to relax
Irregular sleep/wake

Snacking frequently
Frequent urination / thirsty
Marathon Addict

Rapid breather
Use chemicals
No filtration

Practical

- ✓ Alignment
- ✓ Foundations
- Timeline



Logical

Plot
Response
Trigger



Strategic

Plan
Docere
Pulse

TIMELINE

Brain Fog
Fatigue

Active EBV /
Yeast

Insomnia

Stress!!

Root canal
nitrous use

Energy
Drinks /
Sugar /
Marathons

Estrogen
Hormone /
Urticaria /
GAPS

Chronic
Fatigue

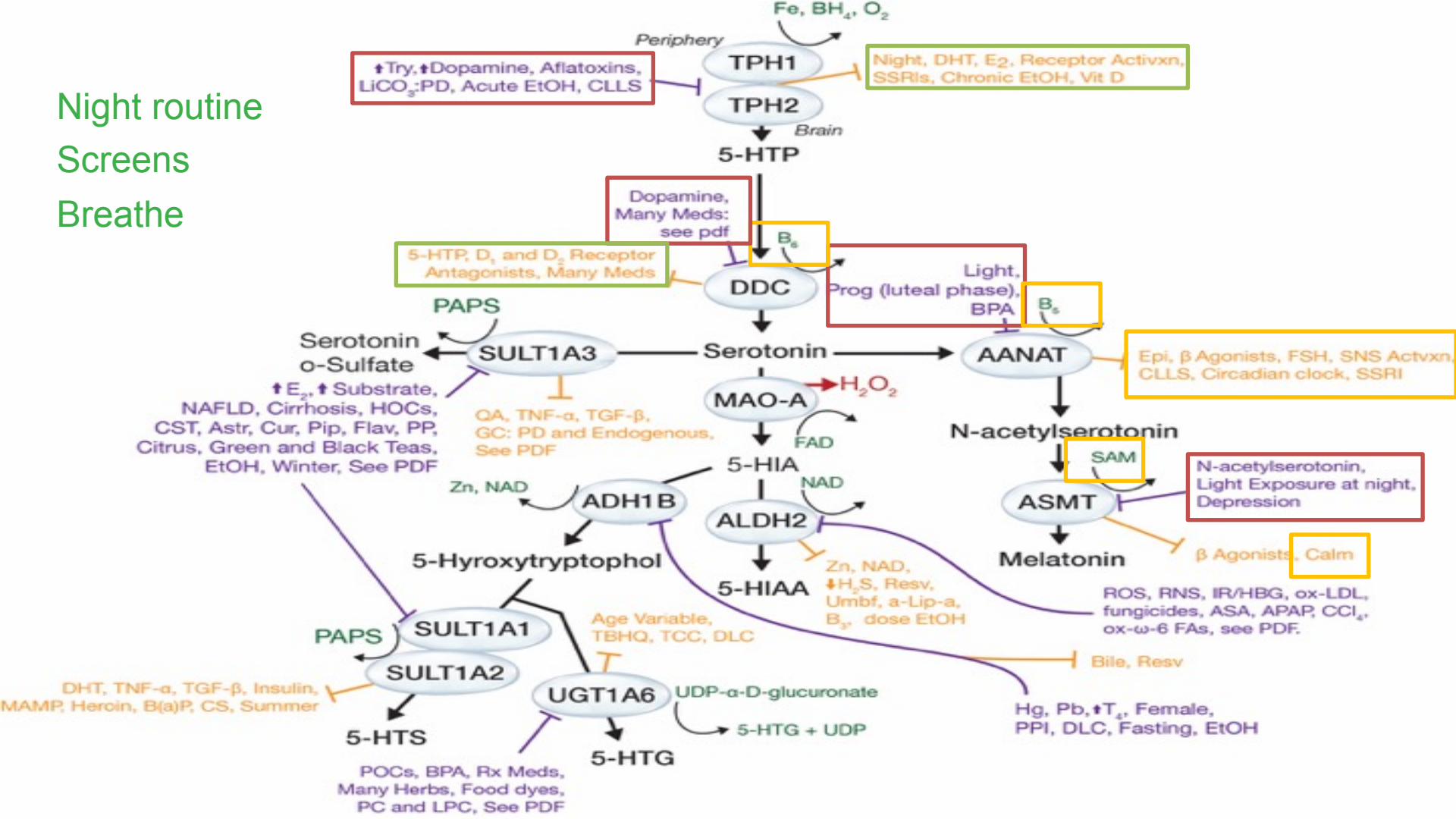
- ✓ Alignment
- ✓ Foundations
- ✓ Timeline

Plot
Response
Trigger

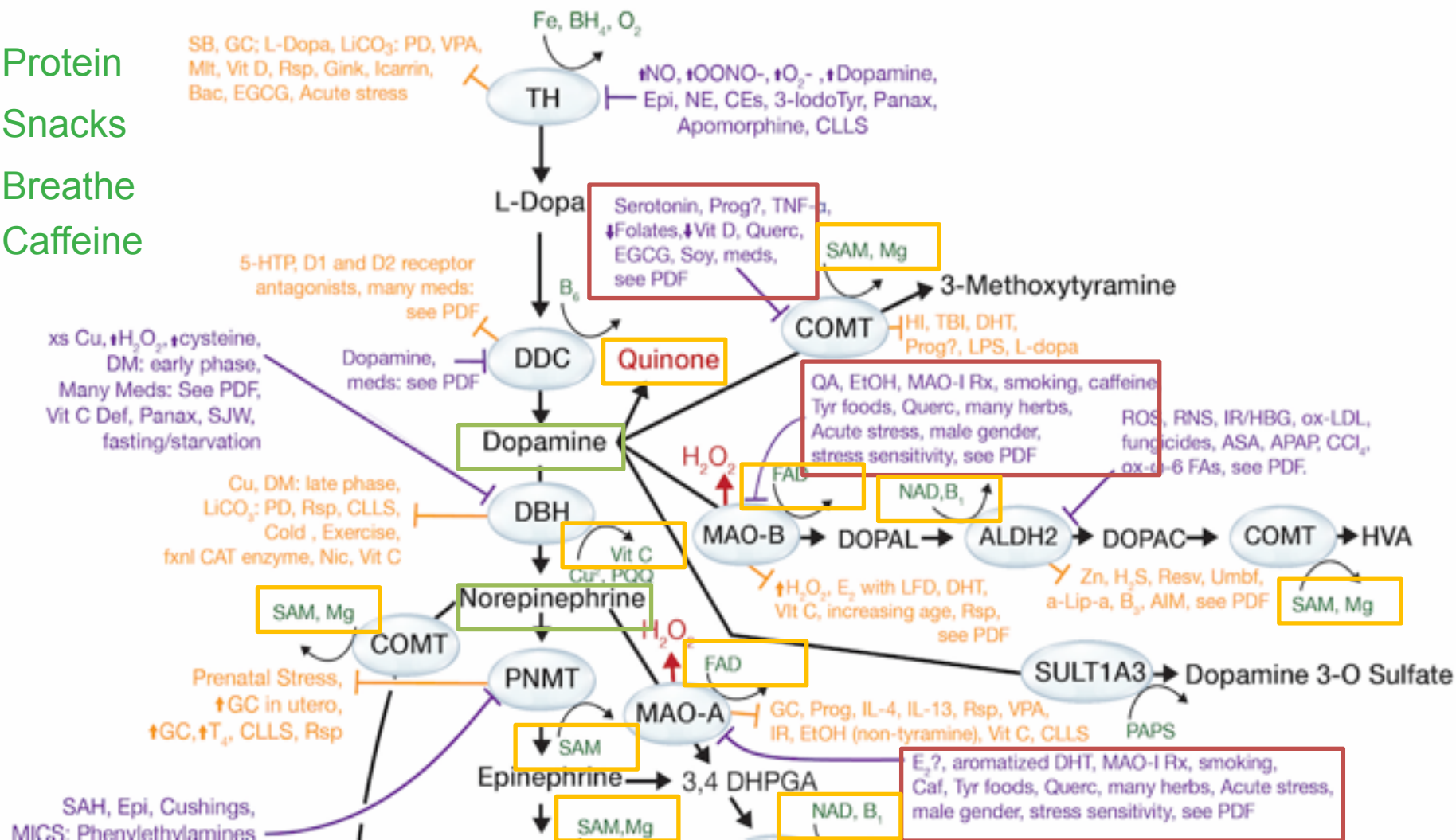
- Plan
- Docere
- Pulse

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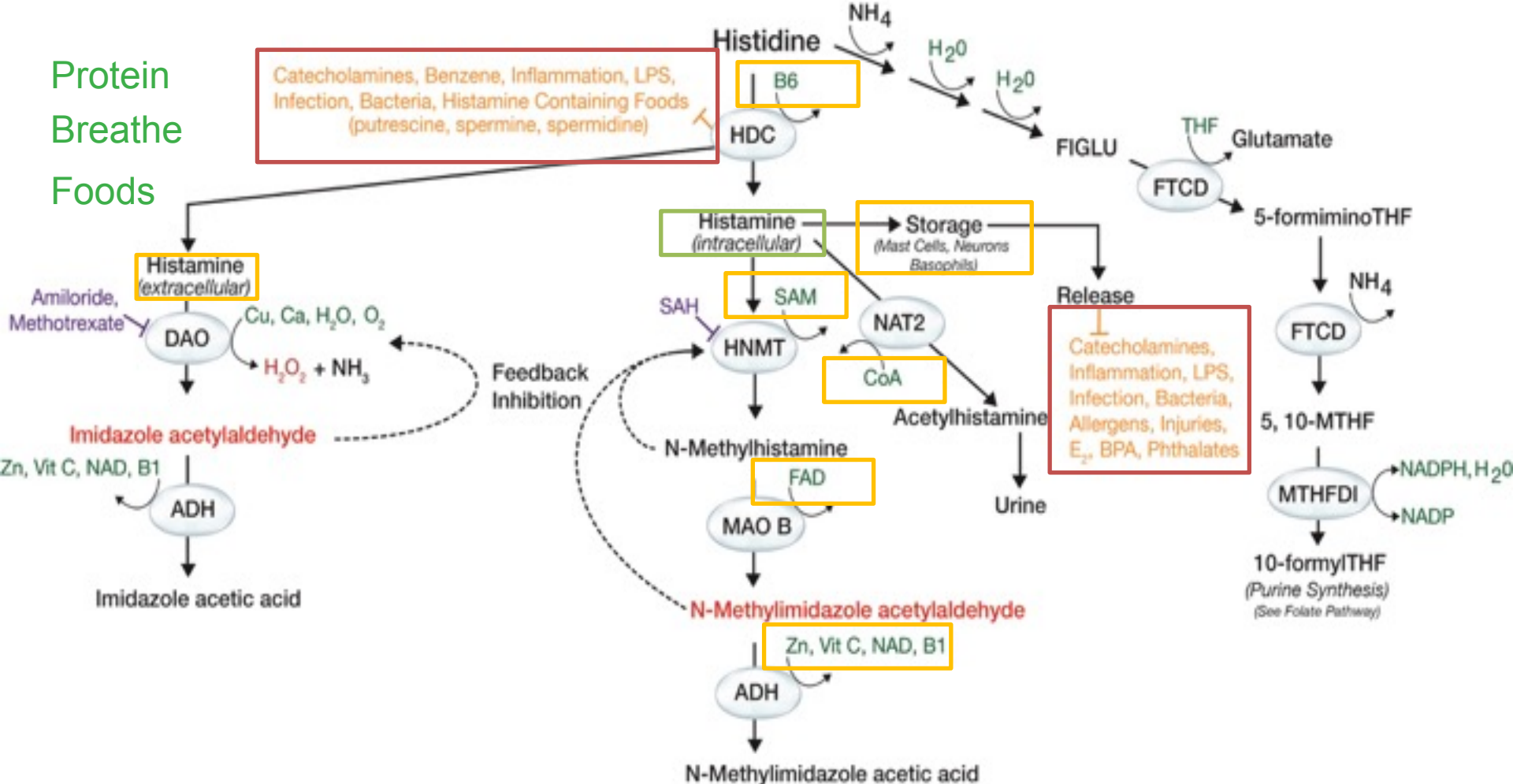
Night routine
Screens
Breathe



Protein
Snacks
Breathe
Caffeine

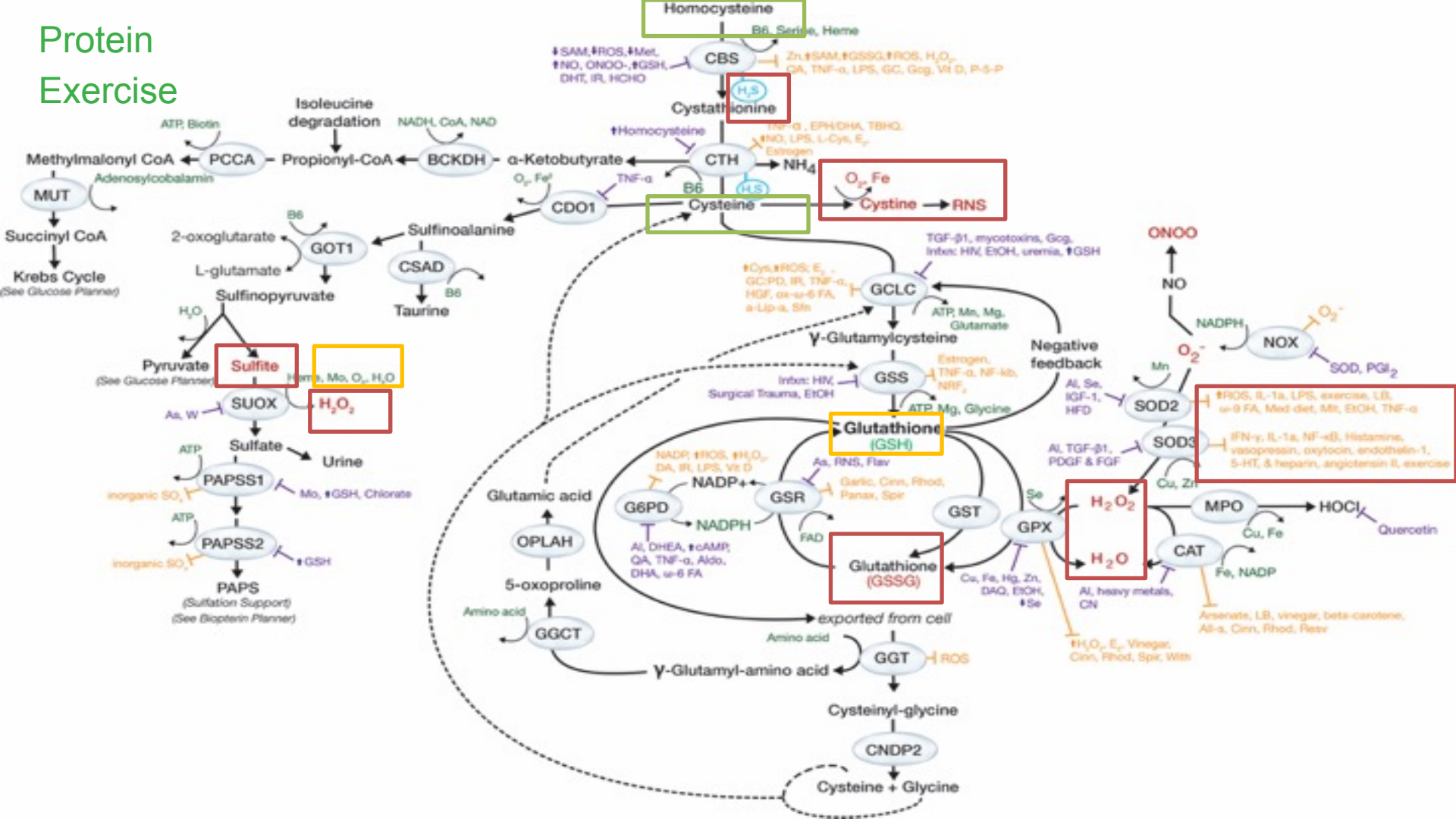


Protein
Breathe
Foods

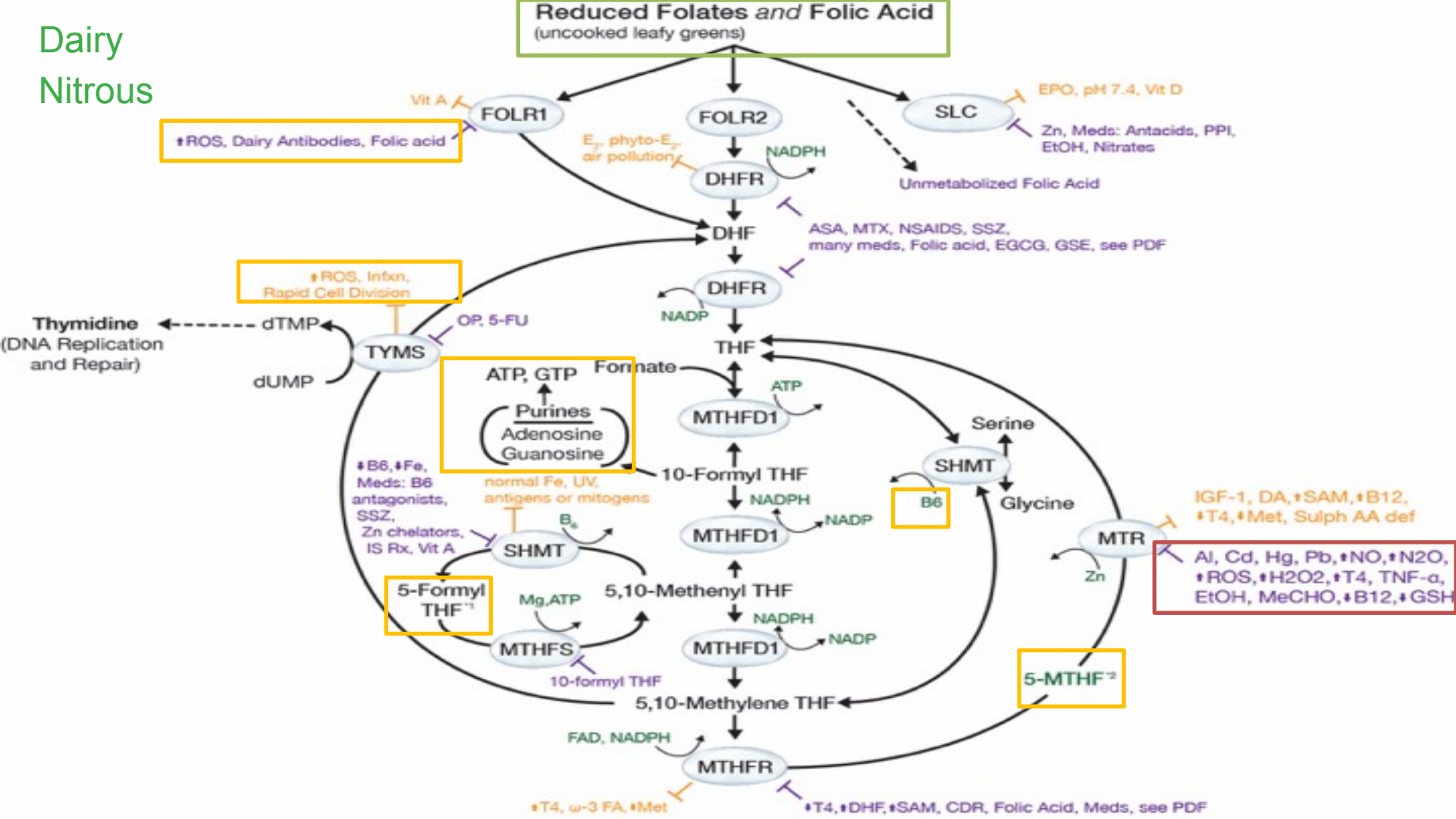


(c) 2015: Benjamin Lynch, ND

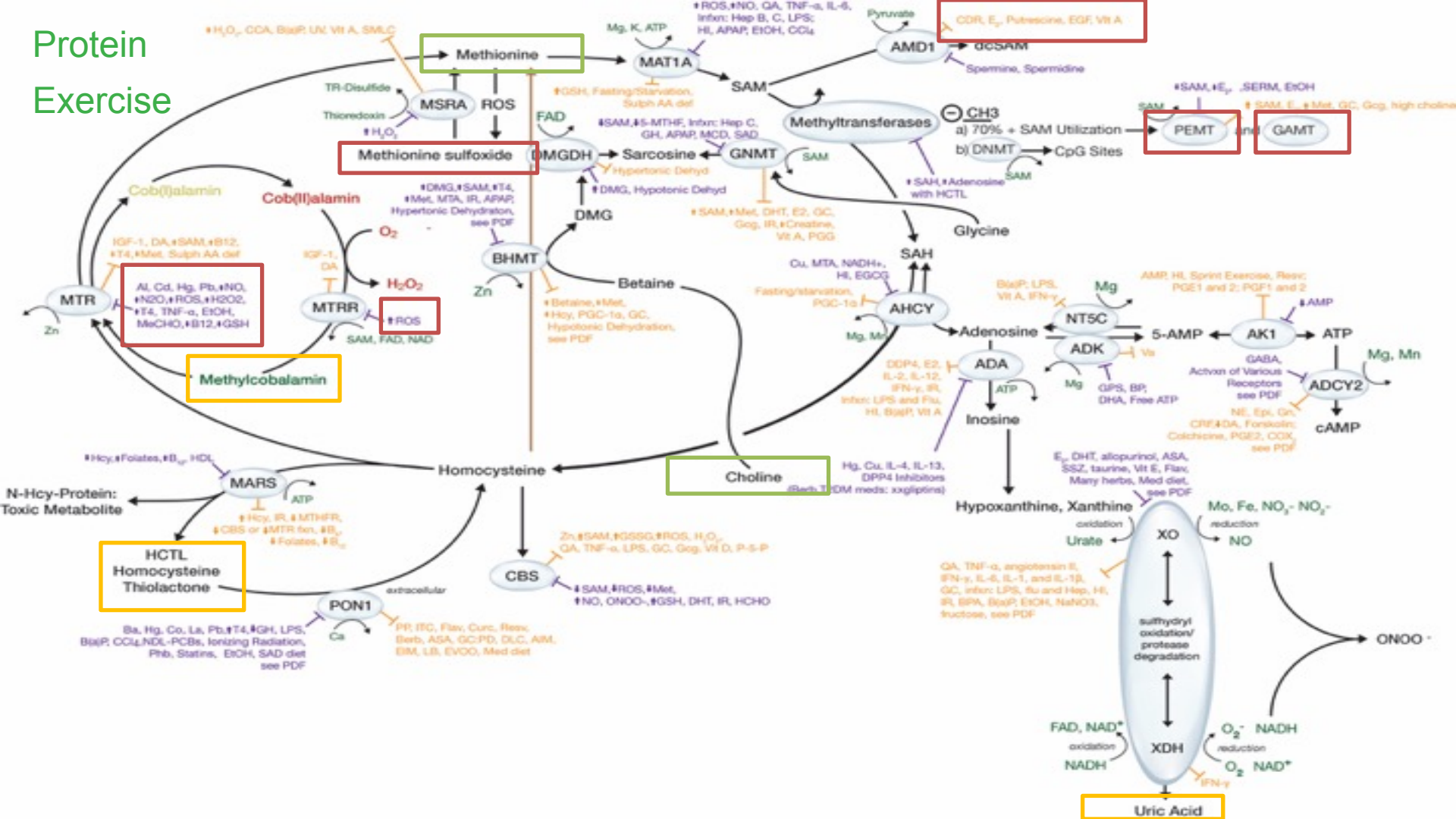
Protein Exercise



Dairy
Nitrous



Protein Exercise



Practical

- ✓ Alignment
- ✓ Foundations
- ✓ Timeline

Logical

- ✓ Plot
- Response
- Trigger

Strategic

- Plan
- Docere
- Pulse

Cell Danger Response / Primary Trigger

Brain Fog
Fatigue

Active EBV /
Yeast

Insomnia

Stress!!

Root canal
nitrous use

Energy
Drinks /
Sugar /
Marathons

Estrogen
Hormone /
Urticaria /
GAPS

Chronic
Fatigue

Practical

- ✓ Alignment
- ✓ Foundations
- ✓ Timeline



Logical

- ✓ Plot
- ✓ Response
- ✓ Trigger



Strategic

Plan
Docere
Pulse

Plan and Educate Why / How

Protein reduction

Breathe

Dairy stop

Nitrous avoid

Exercise reduction

Histamine Foods

Night routine establish

Screens filtered

Practical

- ✓ Alignment
- ✓ Foundations
- ✓ Timeline



Logical

- ✓ Plot
- ✓ Response
- ✓ Trigger





























Strategic

- ✓ Plan
- ✓ Docere
- Pulse**

Pulse

Electrolytes
Adaptogens
Molybdenum

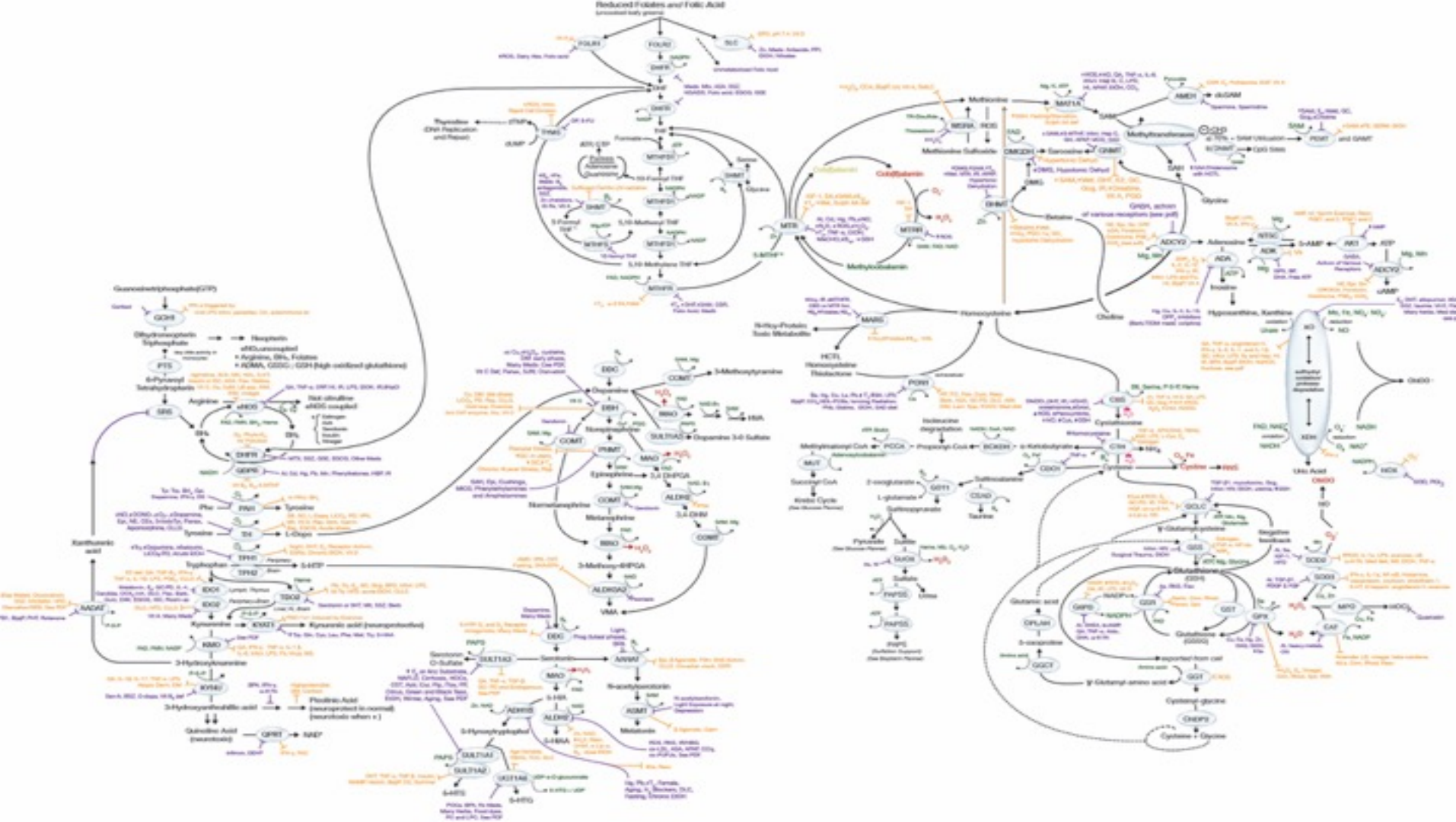
[Click  to re-sort the table]

 Associated Gene 	Total Publication 	Meta-analysis Publication
GSTM1 	266	15
SLC6A4 	254	6
GSTT1 	228	13
SOD2 	204	5
GSTP1 	177	6
PON1 	115	4
CAT 	107	2
GPX1 	96	1
COMT 	96	0
BDNF 	89	2
NOS3 	87	1
APOE 	79	0
OGG1 	70	0
FKBP5 	69	0
CYBA 	68	0
NR3C1 	65	1
HMOX1 	64	1
MPO 	63	2
NQO1 	62	3
CRHR1 	59	0
MTHFR 	49	1
TNF 	46	2



Which Pathway is Associated with Stress?

(c) 2017: Dr BenLynch



STRESS

Environment

- Heavy Metals
- Mold
- Infections
- Chemicals

Lifestyle

- 'Yes'
- Overtraining
- Overworked
- Focused outward
- Disconnected
- 'want' vs 'need'

Diet / Supplements

- SAD
- Folic acid
- PC
- Protein
- Deficiencies
- Vegetarian
- Blood sugar swings

Genetics

- COMT
- MTHFR
- MAOA
- SOD
- NOS3
- GST
- DHFR
- TPH2
- BDNF
- TNF
- IL1
- IFNG
- FUT2
- CYT
- NAT2
- FADS2
- PEMT
- CRH

PRACTICAL → LOGICAL → STRATEGIC → OPTIMIZE

Do NOT
Start
Here

STRESS

- Not a condition
- Not a genetic condition
- Altered gene expression → *cell danger response*



PRIORITY IS MOST IMMEDIATE

- ~~CONCERN~~ fight or flight
- Infection - fight or die
- Inflammation - heal or die

LIMITED RESOURCES - MOST URGENT WINS

TREATMENT GOAL:

Assist body in its priorit(ies) so optimal mood returns

References

All papers shown in presentation are published in PubMed and cited

HuGE Navigator: Phenotype Database provides genes assoc w stress

Medscape provides drug information

All diagrams shown have references organized by pathway and gene.

References may be found here:

<https://seekinghealth.org/bibliography/>