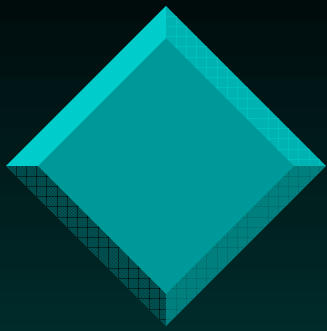




*Life:*

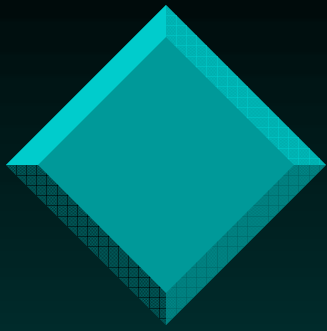
*One Test at A Time*

Testing protocols for the health  
care professional throughout the  
lifespan of the patient



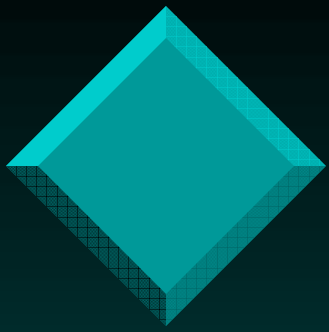
## *Why listen to me?*

- ❖ 20 years experience in the field of laboratory interpretation.
- ❖ Carbon Based has a 12 person medical advisory board including MD's, ND's, DC's, CN's, PhD's that I consult with regularly.
- ❖ I spend 15-20 hours a week reading the literature, not the abstracts.



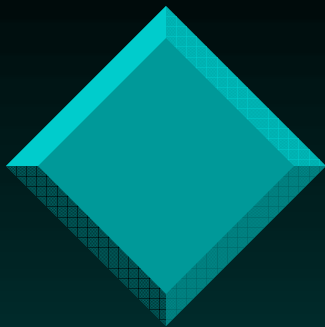
## *Why listen to me?*

- ❖ And as some of you know I have a personal reason for researching health, my daughter Tasya.
- ❖ She was diagnosed with generalized myoclonic epilepsy with a possible progressive form which would leave her retarded.



## *Why listen to me?*

- ❖ This was not an acceptable possibility.
- ❖ I have spent the past 5 years uncovering all the different tests available to help save my child.
- ❖ I also have a 2 year old who had a disturbing Environmental Pollutants Test recently.

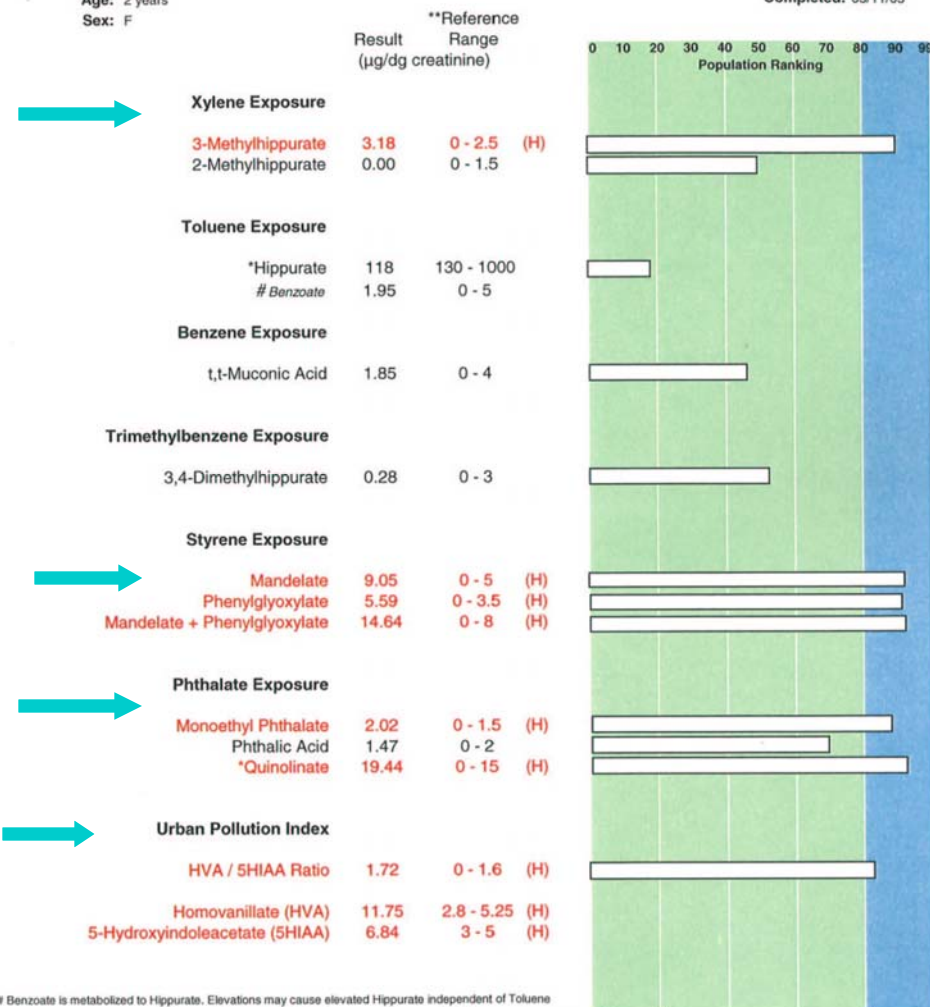


# Anika's recent EPP Test results

Physician: Joel Grimwood, DC  
 Patient: Anika Schauss  
 Accession #: 200504349  
 Age: 2 years  
 Sex: F

Assay Batch #: 0503080A

Collected: 02/23/05  
 Received: 02/25/05  
 Completed: 03/11/05



# Benzoate is metabolized to Hippurate. Elevations may cause elevated Hippurate independent of Toluene

(µg/mg creatinine)

\*\* Reference ranges are gender specific

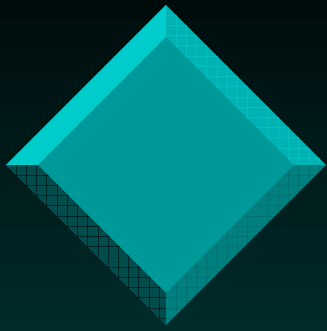
CLIA #: 50DO965661

© US BioTek 2003

US BioTek Laboratories has developed and determined the performance characteristics of this test.

This test has not been evaluated by the U.S. Food and Drug Administration.

This test does not assess for neonatal inborn errors of metabolism and is based on stable renal function and normal renal clearance in the adult.



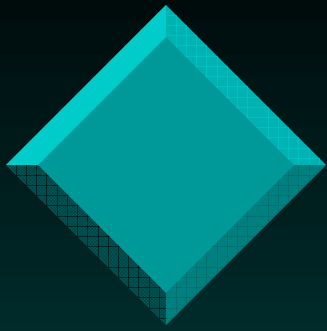
## *Why listen to me?*

- ❖ “Science without conscience is the ruin of the soul” – Rabelais
- ❖ The Carbon Based commitment is to merge the science of laboratory test interpretation with conscience and a commitment to excellence.



# *Life Its what you make of it*

- ❖ Prelude – Before Life Begins
- ❖ Act I
  - A Developing Fetus
- ❖ Act II
  - Childhood Developmental Issues – Autism, Epilepsy, ADHD and More
- ❖ Act III
  - Adolescents - Living with Ritalin
- ❖ Act IV
  - Early Stage Adults – Prevention, Prevention, Prevention
- ❖ Act V
  - Overweight, Tired, Can't Concentrate and You Can't (or won't) Get Up
- ❖ Act VI
  - Alzheimer's, Cancer, Heart Disease and Quality of Life

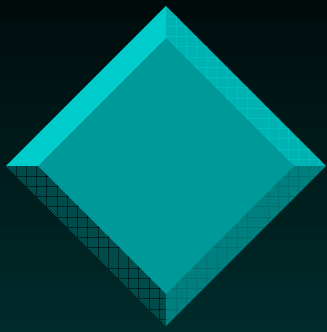


## *Prelude to Life*

- ❖ There are some important issues to assess before someone decides to have a child.
- ❖ Every man and woman who decides to have a child should absolutely have the following test:

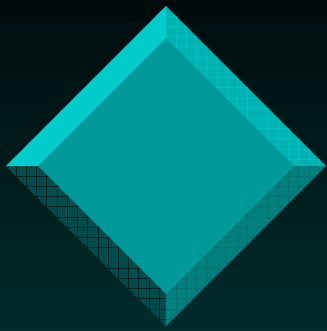
**Environmental Pollutants Profile**

**Lab: US Biotek**



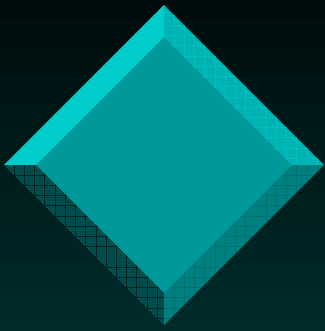
# *Environmental Pollutants Panel*

- ❖ Benzene
- ❖ Styrene
- ❖ Toluene
- ❖ Phthalates
- ❖ Xylene
- ❖ Trimethylbenzene
- ❖ Urban Pollution Index
- ❖ It's a simple, first morning urine test.
- ❖ Collection is done on a dip strip.
- ❖ Sample is mailed to the lab in Seattle.
- ❖ No freezing or difficult preparation needed



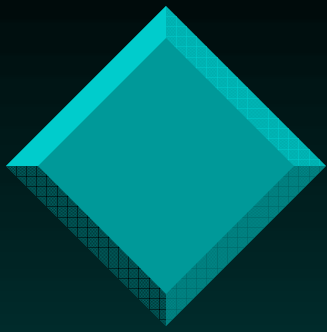
# *Environmental Pollutants Panel*

- ❖ Phthalates a plasticizer used in cosmetics, shampoos, and perfumes are powerful endocrine disruptors.
- ❖ They are used to hold color and scent in consumer products, used in glues, solvents, insect repellants, lubricants, adhesives as well as a component of time released medications.
  - ◆ Temporal variability of urinary phthalate metabolite levels in men of reproductive age. Hauser R, et al, Environmental Health Perspectives, December 2004.



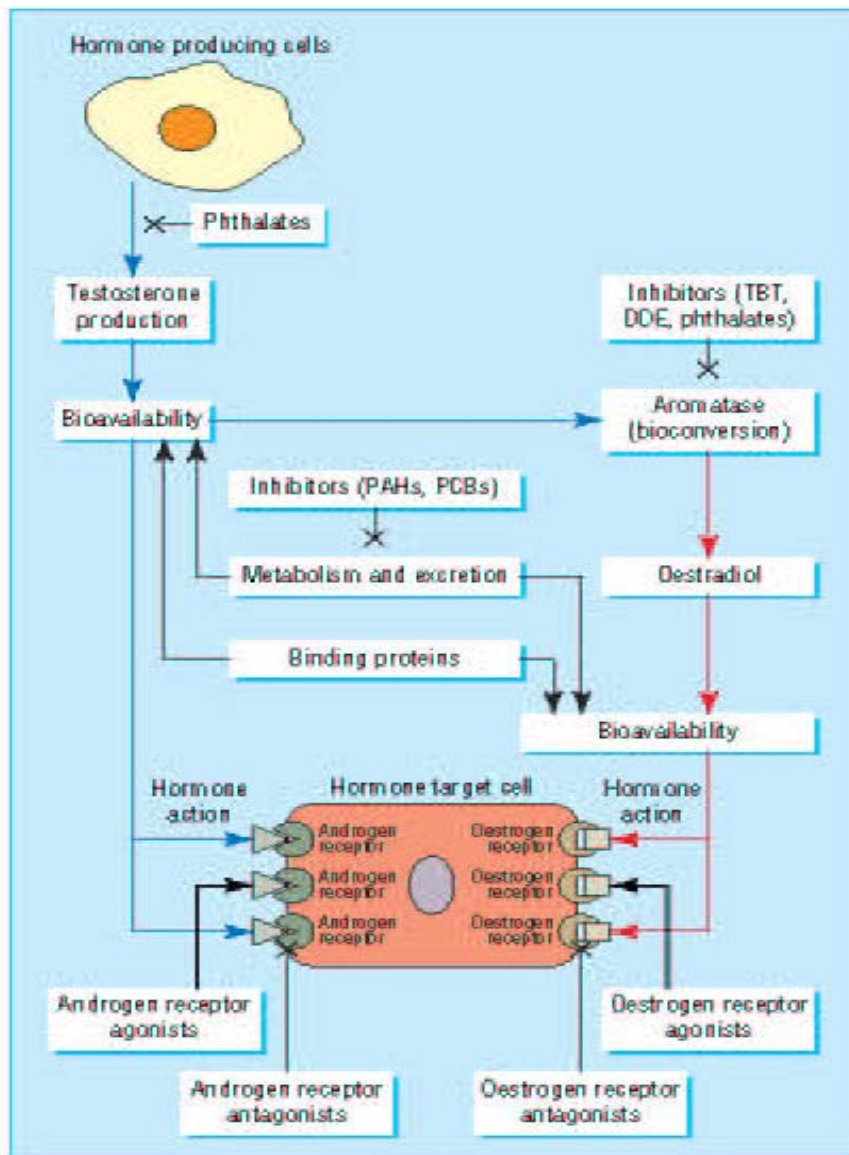
# *Environmental Pollutants Panel*

- ❖ A study has implicated phthalate exposure to DNA damage to male sperm
  - ◆ The Relationship between Environmental Exposures to Phthalates and DNA Damage in Human Sperm Using the Neutral Comet Assay Susan M. et al Environmental Health Perspectives July 2003.
- ❖ They will also change the anogenital distance in developing male fetuses. The higher the level of phthalates the greater the damage.
  - ◆ Male Rats Exposed to Linuron in Utero Exhibit Permanent Changes in Anogenital Distance, Nipple Retention, and Epididymal Malformations That Result in Subsequent Testicular Atrophy. McIntyre BS, Barlow NJ and Foster PMD, Reproductive and Developmental Toxicology 2002.



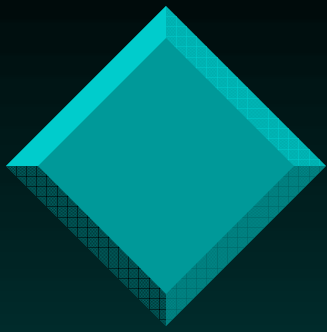
# *Environmental Pollutants Panel*

- ❖ Phthalate exposure has been correlated to the shortening duration of pregnancy
  - ◆ Exposure to phthalates commonplace in pregnant women may shorten duration of pregnancy by one week. Latini G. et al – Environmental Health Perspectives November 2003.
- ❖ Environmental chemicals are being strongly implicated in fetal development and reproductive health.
  - ◆ How strong is the evidence of a link between environmental chemicals and adverse effects on human reproductive health? Sharpe RD and Irvine DS, British Medical Journal, February 21, 2004.



# Phthalate Effects

**Fig 1** Potential pathways of endocrine disruption by environmental chemicals. DDE=1,1-dichloro-2,2-bis(p-chlorophenyl)ethylene; PAHs=polycyclic aromatic hydrocarbons; PCBs=polychlorinated biphenyls; TBT=tributyltin



# *Phthalates*

- ❖ March 2004 issue of EHP – According to the CDC, 97% of 2,540 individuals tested had been exposed to one or more phthalates.
- ❖ While the industry maintains that the levels found in humans and animals are low, it is important to note that it is *chronic, long-term exposure* that should be of great concern.



*Act*

# *1 – The Developing Fetus*

- ❖ Each trimester is unique
- ❖ 1<sup>st</sup> Trimester
  - This is where you can still safely make nutritional changes.
    - ◆ Plasma Amino Acids - MetaMetrix
    - ◆ Urine Organic Acids – MetaMetrix or US Biotek
    - ◆ Comprehensive Blood Chemistry – LabCorp or Quest
  - Also known as a Foundational Wellness Profile

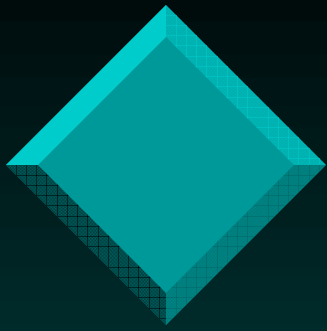


*Act*

# *1 – The Developing Fetus*

## ❖ 2<sup>nd</sup> and 3<sup>rd</sup> Trimester

- Riskier to make nutritional changes
  - ◆ Liability door opens if anything goes wrong.
- Still can assess progression – Use a Comprehensive Blood Chemistry
- Elevations in Cholesterol - going above 250 is normal, healthy and desirable.
- Elevations in Uric Acid - up to 8.0 is normal and healthy.



## *Ages 0 - 2*

- ❖ Aside from genetic testing, there is little accurate testing in the realm of alternative and complementary health.
- ❖ The lack of well-defined and clinically relevant reference ranges are the main reason why testing at this age is not normally applicable.



## *Act II – Childhood Development*

- ❖ Ages 2-14
- ❖ The main concerns:
  - ADHD
  - Autism
  - Epilepsy
  - Recurrent infections
  - General health



## *Act II – Childhood Development*

- ❖ Ages 2-14
- ❖ It is important that whatever lab you use they use different ranges for children.
- ❖ Carbon Based is in the midst of review over 26,000 lab tests to refine our reference ranges for children.
- ❖ We are the only laboratory interpretation company that is doing this.
- ❖ Basing anything on faulty ranges creates faulty recommendations that can cause dangerous side effects.



## *Act II – Childhood Development*

- ❖ Autism
- ❖ There are many theories some more valid than others.
- ❖ One thing autism is not is a yeast issue based on Organic Acid Testing.
- ❖ Tartarate, Citramalate and Arabinose are *NOT* yeast markers.



## *Act II – Childhood Development*

- ❖ Abe Lincoln was once asked, "If a horse's tail is called a leg, how many legs does a horse have?" "Four," Abe replied, "calling a horse's tail a leg does not make it a leg."
- ❖ Great Plains Laboratories can say all it wants that these results are yeast markers but it still isn't so. Science trumps rhetoric here.



*Act*

## *II – Childhood Development*

### ❖ Autism:

#### – Basic testing

- ◆ Hair elements - Doctor's Data
- ◆ Urine Organic Acids - US Biotek or Metamatrix
- ◆ Comprehensive Blood Chemistry – Quest or LabCorp
- ◆ Plasma Amino Acids – Metamatrix



*Act*

## *II – Childhood Development*

### ❖ Autism:

#### – Adjunct testing

- ◆ ApoE Genetic Testing – Athena Labs
- ◆ LEAP MRT Allergy Testing – Signet Diagnostics
- ◆ RBC Fatty Acids – Metametrix



## *Act II – Childhood Development*

### ❖ Autism:

- Assessing neurotoxins such as mercury is critical.
- Possible Mercury, Autism Connection Found in Study!  
Texas school districts with the highest level of the toxic metal had the highest rate of the disorder, researchers say.

By Thomas H. Maugh II

LA Times Staff Writer

March 17, 2005



## *Act II – Childhood Development*

### ❖ Apolipoprotein E Genetic Test

- Dr. Boyd Haley has proposed that many autistic children have impaired mercury detoxification capacity due to the ApoE4 allele.
- ApoE4 consists of Arginine/Arginine which makes the child unable to clear mercury from the brain. This may be why some children react negatively to the vaccines with thimerasol.



## *Act II – Childhood Development*

### ❖ Mercury

- Since this has supposedly been removed from the vaccines, why has the levels of autism not gone down?
- Environmental dumping of mercury is at an all-time high world wide.
- Polar bears are showing extreme levels of mercury in their bones.



## *Act II – Childhood Development*

### ❖ Mercury

- The Great Salt Lake in Utah may have the highest levels of methylmercury known to mankind.
- Capped waste dumps, are releasing incredible amounts of methylmercury into the atmosphere.
- One mercury thermometer can pollute 100 acres where bacteria can methylate the mercury.



## *Act II – Childhood Development*

### ❖ Autism:

- We must also be aware of other toxins that can affect neurological development such as perchlorates and phthalates.
- Today's world is like a surreal toxic soup. Unfortunately we don't know how the combination of all the toxins will affect children.
- Assessing what you can and eliminating the exposure and improving detoxification capabilities is essential.



*Act*

## *II – Childhood Development*

### ❖ Bedwetting

- Urine Organic Acids
- Plasma Amino Acids
- Comprehensive Blood Chemistry

HUH??



## *Act II – Childhood Development*

- ❖ In some cases of bedwetting there is a problem with the urea cycle which does not allow the body to rid itself of ammonia properly.
- ❖ If this happens, the urine in the bladder during the night becomes somewhat caustic leading to uncontrollable



## *Act II – Childhood Development*

- ❖ Ornithine or Arginine are depressed in the PAA test.
  - This indicates a potential urea cycle disruption.
- ❖ Citrate and Orotate are elevated in the OAT.
  - This indicates increased ammonia.
- ❖ RBC, Hemoglobin, Hematocrit and Albumin are elevated in the CWP.
  - This suggests dehydration.



## *Act*

# *II – Childhood Development*

- ❖ This child had his fluid intake restricted which caused the urine, which was hyperammonemic already to become more caustic, causing him to urinate in the middle of the night as the bladder was getting irritated.
- ❖ His practitioner increased his fluid intake, added ornithine, a balanced amino acid blend and within 2 weeks his bedwetting disappeared and his school work improved dramatically. Oh, and the psychiatrist no longer thought he needed Ritalin to control his hyperactivity.



*Act*

## *II – Childhood Development*

**Flip Chart Time!!!**



## *Act II – Childhood Development*

- ❖ Allergy Testing for children with ADHD.
- ❖ You could run IgG and/or IgE testing with decent results to determine what foods to avoid but the results often times miss offending foods.
- ❖ A MRT – Mediator Release Test may be the best bet to get a clinical correlation between food intake and health.



## *Act II – Childhood Development*

- ❖ Mediator Release Testing
- ❖ In many cases is much more accurate than IgG or IgE.
- ❖ Has not been proven effective as a stand alone test for autism, ADHD or epilepsy but it may be beneficial in all these cases.
- ❖ Tests for 123 foods and 27 additives.

*Act*

## *III - Adolescents - Living with Ritalin*

- ❖ Ritalin deficiency is the leading cause of adolescent problems in the United States.

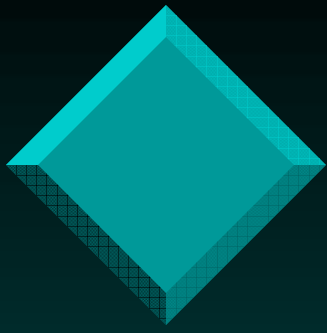


*Say what did he  
just say????*



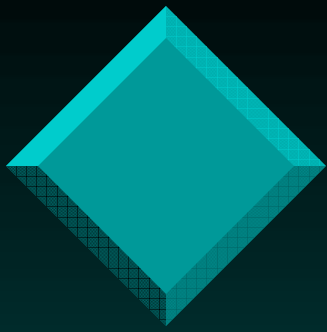
## *Act – III Adolescents - Living with Ritalin*

- ❖ Of course that was a ridiculous statement.
- ❖ We have had great success with the Foundational Wellness Profile with adolescents and children in resolving a lot of neurodevelopmental disorders.
- ❖ I would probably add (if resources are available) and Environmental Pollutants Panel and a Hair Elements test.



## *Trends in Laboratory Testing*

- ❖ There is a major difference between men and women. No surprises here.
- ❖ Many labs do not address this issue.
- ❖ Carbon Based is in the midst of redefining all of its reference ranges for age, sex and gender through the use of its 26,000+ test result database.



# *Trends in Laboratory Testing*

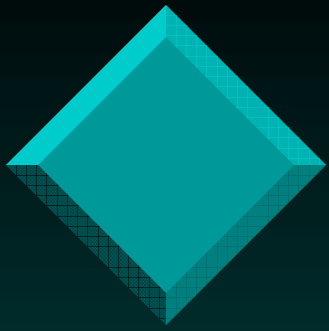
## ❖ Alpha Keto Glutarate

- Male Average Result – 6.1 ug/mg creatinine
- Female Average Result – 14.7 ug/mg creatinine

Male Reference Range - 4.0 to 8.5 ug/mg

Female Reference Range – 9.5 to 19 ug/mg

Due to the difference between male and female AKG appearing to by average is actually elevated, showing the potential for false negative results without gender-specific ranges.



# *Trends in Laboratory Testing*

**Time for Flip Charts Again**



## *Act IV – Early Adulthood*

- ❖ 20 to 30 – We can abuse our bodies and bounce right back.
  - But I'd like to feel a little better.
- ❖ The primary test here should be a standard Comprehensive Blood Chemistry.
- ❖ From this test you can assess which other tests might make a difference.
- ❖ This also is the most cost effective means of testing.



*Act*

*V — Overweight, Can't Concentrate and Your Tired You Can't (or won't) Get Up*

- ❖ 30 to 40 – We can abuse our bodies and the pain killers are helping out.
  - But I'd like to feel a lot better.
- ❖ The primary test here should be a standard Foundational Wellness Profile.
- ❖ A combination of Urine Organic Acids, Plasma Amino Acids and a Comprehensive Blood Chemistry.



## *Act V – Adulthood*

- ❖ If you have a patient with IBS (Irritable Bowel Syndrome) presenting with diarrhea, then the LEAP MRT Test is the one test to run.
- ❖ It measures cell mediated inflammatory response to foods and additives and a diet based upon the most reactive foods will bring a positive response to the patient within 5 days.



## *Act V – Adulthood*

- ❖ If you have a patient with migraines then the LEAP MRT Test is the one test to run.
- ❖ Relief to the patient should come within 5 to 7 days.
- ❖ Controlling cell mediated inflammatory responses through diet is essential in treating the migraine sufferer. LEAP has numerous studies showing benefits of this kind of dietary regime.



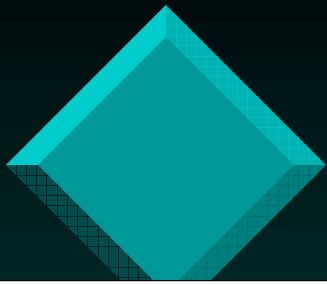
## *Act V – Adulthood*

- ❖ A Foundational Wellness Profile can help determine abnormal biochemical pathways and apply the important concept of “biochemical individuality” (thank you Dr. Roger Williams), a concept that has been given lip service by most in our profession.
- ❖ This is an area that Carbon Based and their CellMate Reports do better than anyone else.

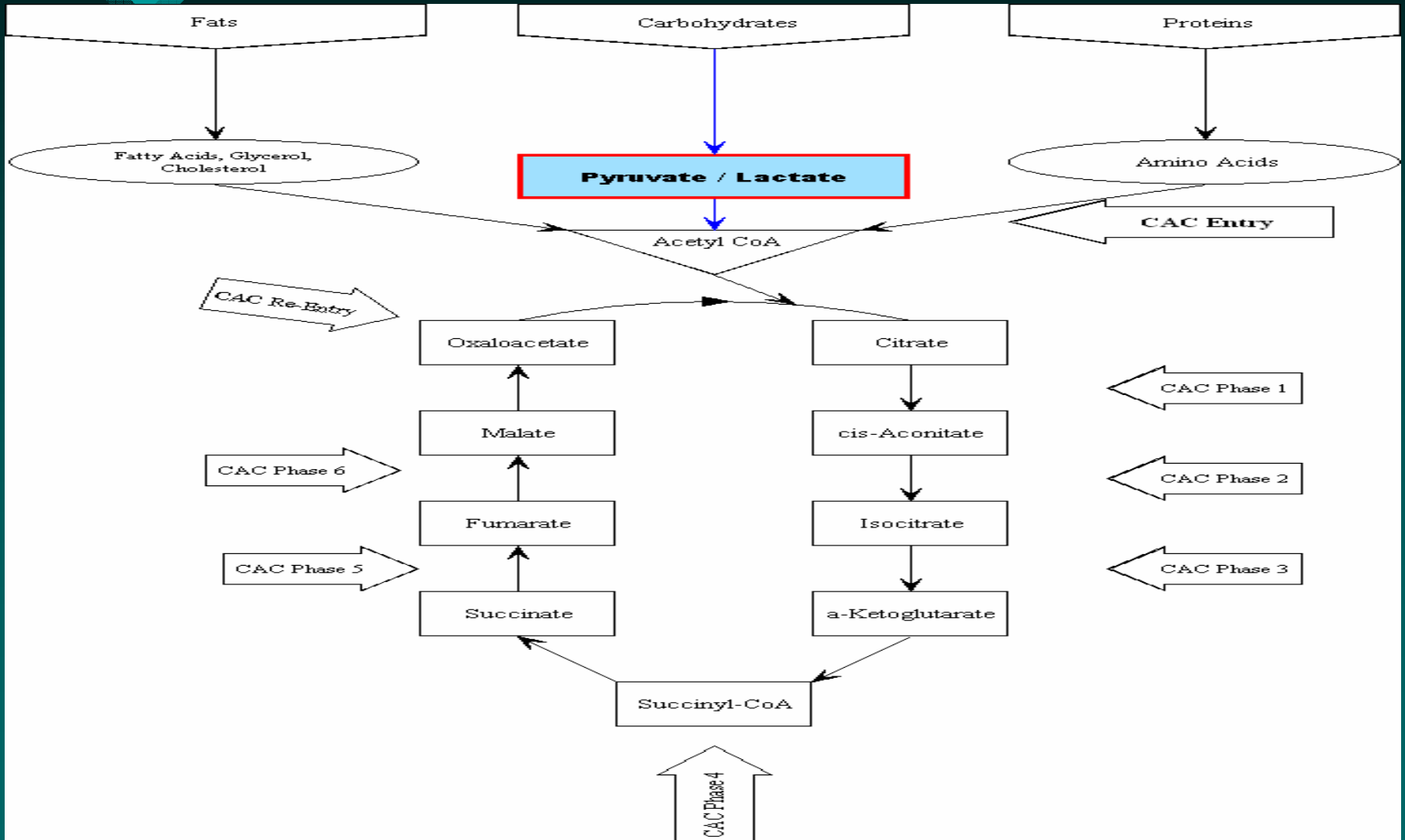


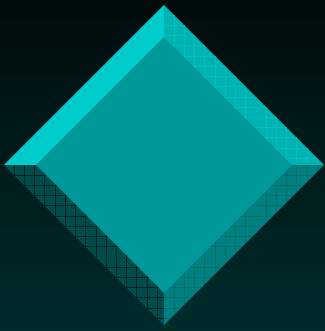
## *Act V – Adulthood*

- ❖ At this stage of life, one of the chief complaints is .....
- ❖ Lack of Energy
  - Followed by .....
- ❖ Poor focus, concentration and weight gain.
- ❖ All of these may be a reflection of an impaired citric acid cycle.



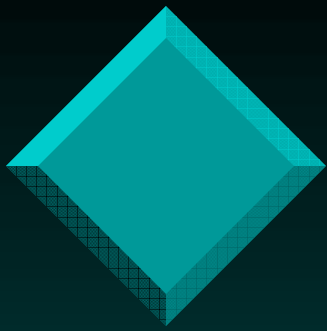
# Citric Acid Cycle





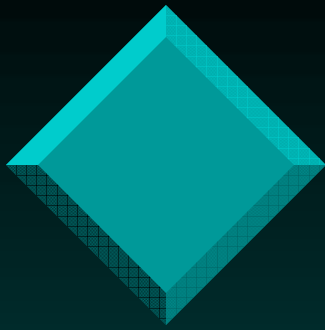
# *Citric Acid Cycle*

- ❖ An extreme example:
- ❖ Compound 1080 –  
“The poison that keeps on killing”
- ❖ Fluoroacetate is a natural form of the slightly more toxic sodium fluoroacetate, also known as the notorious rodent poison 'Compound 1080'.
- ❖ When ingested and metabolized, fluoroacetate is transformed in cells to fluorocitrate – a strong enzyme inhibitor. Fluorocitric acid blocks the CAC Cycle completely! It stops all cellular energy production.



# *Citric Acid Cycle*

- ❖ Compound 1080 is an extreme case, tartaric acid is a more common one.
- ❖ It is a common component of many foods and drinks especially wine and grapes. It is generally considered as safe (GRAS) and does not need to be listed on most food products.
- ❖ It is not a yeast by-product. Remember Abe and the tail...
- ❖ It may interfere with the Citric Acid Cycle at the point where Malate comes in.



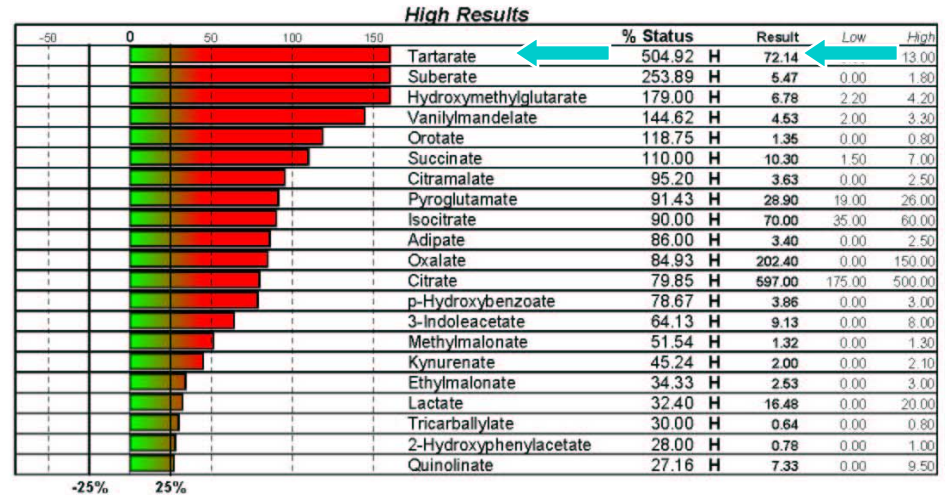
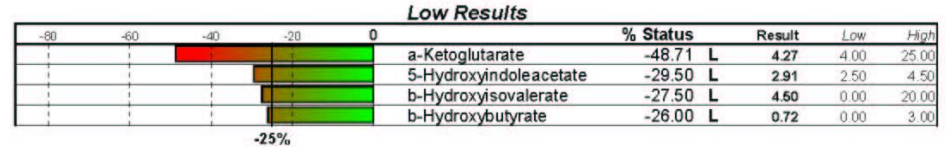
# Example of Elevated Tartarate

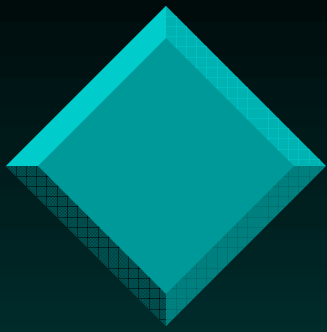
## Basic Status High/Low

Statin and SSRI Patient  
 Male / Age: 84  
 Client ID: (17220)

Urine Organic Acid Date: 1/10/2005  
 Integrative Health Care (6087)  
 Dr. Able Insight  
 775-555-5555

The % Status is the weighted deviation of the laboratory result.





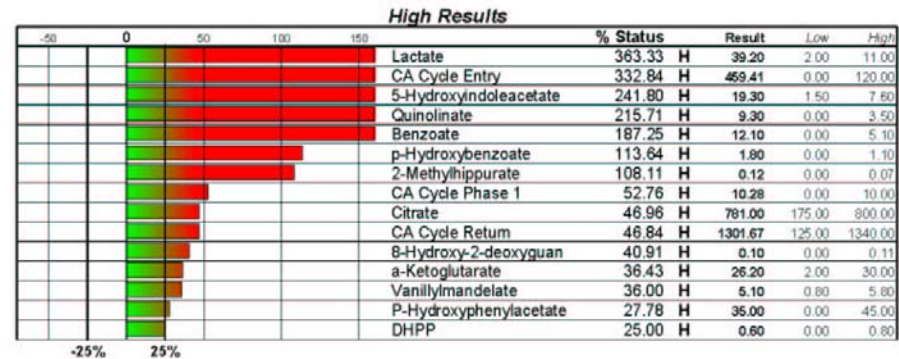
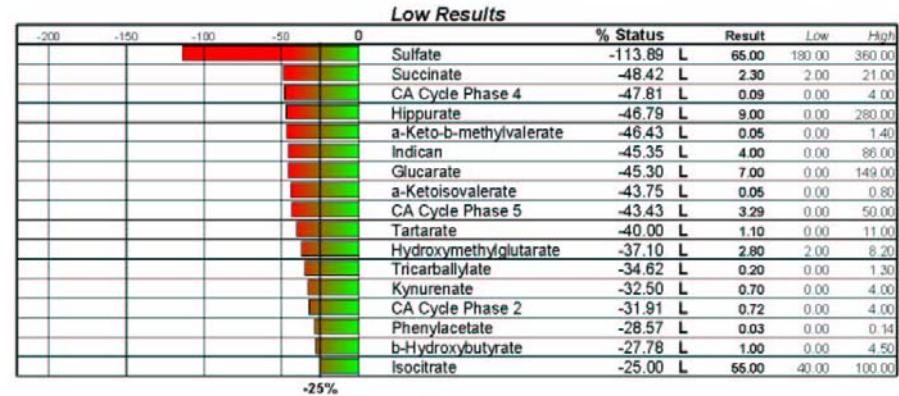
Sample of a patient with a citric acid cycle disruption. The test to determine a CAC cycle problem is a urine organic acid test. Carbon Based is the first and only company (not even the labs do this) to be able to pinpoint the location of the disturbance and help find the potential toxin.

### Basic Status Report (High/Low)

Urine Organic Acid Date: 5/22/2003

Female / Age: 34

The % Status is the weighted deviation of the laboratory result.





*V – We're all adults right?*

**Flip Chart Time Yet Again**



## *Act V – We're all adults right?*

- ❖ Men are from Pluto, Women are from right here on Earth.
- ❖ 2/3rds of the people who run these tests are women.
- ❖ 2/3rds of men are afflicted with “SSS” also known as the Skeptical Spouse Syndrome.
- ❖ Presented correctly, the CellMate Reports™ are well known cures for SSS.



## *V – We're all adults right?*

- ❖ Elevated LDL levels may not just be a factor of lifestyle and genetics.
- ❖ One of the most used cooking surfaces, Teflon, is the cornerstone of a lawsuit in the United States.
- ❖ It has been implicated as a causative factor in elevated cholesterol.
- ❖ The perfluorochemicals (PFC's) are in Stainmaster, Teflon, Scotchguard, and Gore-Tex, all from DuPont.
- ❖ The company did not reveal the known health problems caused by this chemical.
- ❖ Elevated LDL may be a marker for toxicity exposure.



## *V – We're all adults right?*

- ❖ PFC's have been found in 90% of the people tested in the United States.
- ❖ It has also been found in similar percentages of people in Korea, China, India and Japan. These were the only countries tested so far.
- ❖ 17 of 18 species of animals tested positive for perfluorochemicals!



## *V – We're all adults right?*

- ❖ Blood lead has been shown to be a predictor of homocysteine levels in adults.
  - ◆ *EHP* January 2005 Schafer JH
- ❖ Elevated uric acid is the best single marker for the risk of coronary heart disease.
- ❖ There is no known cause and effect relationship between Uric Acid and CVD.
- ❖ Uric Acid is an antioxidant so an elevation could be a natural response to increased oxidative stress.
- ❖ Glycine is a commonly used natural treatment for high UA.
- ❖ Antioxidants are recommended by the CellMate Report automatically when UA is elevated.



## *V – We're all adults right?*

- ❖ Weight loss issues
- ❖ Laboratory animals undergoing toxicity testing showed decreased body temperatures.
- ❖ Researchers believe that the movement towards hypothermia may be a protective device used by the body to slow down the effects of the toxins.



## *Act V – We're all adults right?*

- ❖ A theoretical model I have proposed over the past few years is that the greater number of people being seen today with low basal temperature is our response to an increase in toxic load.
- ❖ Lower Metabolism and low temperature = Slower Toxic Effects = More Weight Gain = Slower Weight Loss



## *Act V – We're all adults right?*

❖ *In the July 2004 International Journal of Obesity, Dr. Angelo Tremblay of Laval University said the following:*

“Pollution seems to be a new factor affecting the control of thermogenesis in some obese individuals experiencing body-weight loss.”



## *Act V – We're all adults right?*

- ❖ Because of the variability of toxicity from individual to individual, atmospheric conditions and accentuated toxicity issues we need to utilize highly sensitive laboratory interpretation methods to determine the best protocol of treatment.



## *V – We're all adults right?*

- ❖ Running an Environmental Pollutants Test and possibly a RBC Mineral Toxin Test would be a first step in assessing the potential of toxins being the cause of an increase in the risk of cardiovascular disease.
- ❖ This is also the case with cancer as many of these toxins are highly carcinogenic.



## *Act VI — Alzheimer's, Cancer, CVD & Quality of Life?*

- ❖ Testing the genetic marker for Apolipoprotein E is helpful in assessing the risk of both Alzheimer's disease and Cardiovascular disease.
- ❖ Individual's with the ApoE4 allele pairing of Arginine/Arginine are much more likely to develop these two diseases.



## *Act VI — Alzheimer's, Cancer, CVD & Quality of Life?*

- ❖ Individual's with the ApoE2 allele pairing of Cysteine/Cysteine are much less likely to develop these two diseases.
- ❖ People with the ApoE3 allele pairing of Cysteine/Arginine have risks obviously less than E4 but more than E2.
- ❖ There are a number of theories but one seems to top the charts.



## *Act VI — Alzheimer's, Cancer, CVD & Quality of Life?*

- ❖ As we mentioned earlier with autism, it may be that the ability to effectively remove mercury from the brain and the rest of the body may be related to this genetic trait.
- ❖ If we go by the theory that toxicity is a risk factor for developing cardiovascular disease than one cannot find a more toxic substance than mercury.



## *Act VI — Alzheimer's, Cancer, CVD & Quality of Life?*

- ❖ Another critical test to run would be a Plasma Amino Acid Panel.
- ❖ The elderly are notorious for having a low protein diet and poor digestion so their levels of amino acids are usually very depleted.
- ❖ Repletion with a customized amino acid blend is highly effective at increasing mental acuity as well as boosting energy (and a reported side-effect is increased libido).