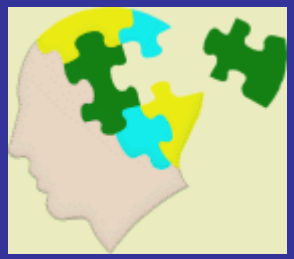


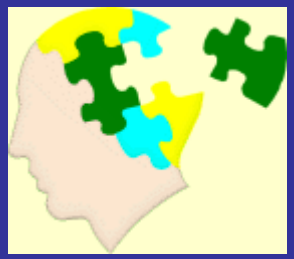
# Autism Society of America - Colorado Chapter
# Autism: Intervention Strategies and Synergies Conference and Exposition
# September 18-21, 2002
# Red Lion Denver Central
# Keynote Address


**Presented By:-**

**Rosemary Boon, Psychologist.**
**M.A.(Psych), MAPS, AACNEM, ACHC.**
**Grad.Dip.Ed., Grad.Dip.Ed Studies(Sch.Counsel) Bsc**

**SYDNEY, AUSTRALIA**

**WEBSITE: www.learningdiscoveries.org**
**EMAIL: rboon@iprimus.com.au**



# *Autism is more than just genetics.....*

it is a multifactorial disorder requiring multimodal interventions


**Presented By:-**

**Rosemary Boon,**

**Psychologist**

**M.A.(Psych), Grad.Dip.Ed., Bsc., Grad.Dip.Ed Studies(Sch.Counsel), MAPS, AACNEM, ACHC.**


# Characteristics of ASD.....

- **A pervasive developmental disorder - usually evident before age 3, ranging from mild to severe**
- **Impacts brain development in areas of social interaction, communication skills and sensory responses adversely affecting educational performance**
- **Approximately 80% have some degree of mental retardation and most do not reach independence as adults (Siegel 1996).**
- **Often includes resistance to change and repetitive or perseverative/stereotyped movements**

# Statistics worldwide show…

- **The incidence of Pervasive Developmental Disorders, Learning Difficulties, ADHD, Auto-Immune Disorders, and Psychiatric Disorders are increasing.**

| | |
|---|---|
| • **ADHD** | **1:10 (10%)** |
| • **SLD** | **1:5 (20%)** |
| • **Autism** | **1:135 (USA)** |

**The California (1999) report showed a 273% increase in the State of California between 1979 and 1992.**

- **Autism / ASD** **1:50 (Aust.)**
- **"Classical" autism** **5:100,000 (UK)**
- **ASD** **15:100,000 (UK)**
- **CFS** **1:50 (2%)**
- **Anxiety & Depression** **1:5 (20%)**

*(Mind of a Child Conference - Sydney, March, 2002)*

**Autism is the most frequently occurring form of pervasive developmental disorder (PDD)**
*(Siegel 1996).*

**Numerous causes have been postulated**

- **Genetics**
- **Neurological Dysfunction**
- **Immune Dysfunction**
- **Gastrointestinal Factors**
- **Environmental Factors**

# The genetic factors.....

- **”Genetic fragility or predisposition”.**
  *(Shattock, Durham 1999)*

- **A family with 1 autistic child has a 3-5% chance of having another child with autism**
  **- 90% concordance in monozygotic twins**
  *(Rogers et.al. 1999)*

- **A family with no autistic children has a 0.1-0.2% chance of having a child with autism**

- **3 out of 4 autistic people are male**

## The genetic factor continued…….

- **From 2-10 genes involved** *(Bailey et.al. 1996)*
- **There may be up to 19 genes involved - 5% of autism may be quantified by a genetic syndrome.** *(Mary Coleman)*
- **A Genome Wide screen for Autism: Strong evidence for linkage to chromosomes 2q, 7q, 16p and 7q32 region .** *(International Molecular Genetics Study of Autism Consortium. Am. J. Hum. Genet. 69: 570-581 (2001)*
- **"Genes load the gun and the environment pulls the trigger"** *(Gupta 2002 - Mind of a Child - Sydney, Australia).*

# Environmental factors.....

**There is increased exposure to:**

**- chemicals - Sick Building Syndrome and pollution; food additives/preservatives; metal toxicity including mercury, lead, cadmium, aluminium, copper.; pesticides etc.**

**- mercury - amalgams(3-17ug daily); coal fired power stations (51%); incinerators -medical (10%), municipal (19%); saltwater fish (tuna, swordfish, halibut, salmon); cosmetics, medications and personal items.**

**- vaccinations - Thimerisol- causes neurological damage in infants later diagnosed with autism or overwhelms the immature immune systems of vulnerable children leading to brain infections by invasive microorganisms and chemicals**

*(Rimland BITN-2002; Bernard - 2000 ARC Research -Sub. Am. Congress)*

# “Is Autism a Unique Type of Mercury Poisoning”?.....

- **This question is posed by Sallie Bernard et.al. in the above titled paper, submitted to the American Congress in 2000**
- **The summary of the comparison of characteristics of autism and mercury poisoning and their similarity is nothing short of alarming.**
- **Mercury toxicity is difficult to quantify**

- antibiotics (suppression of immune system & increased gut permeability)

- milk (irritates gut  and dairy free diet reduces mental symptoms in adults)

- gluten (MRI shows inflammation of white matter in cerebrum and irritates gut)

- sugar (108 ways refined sugar is detrimental to health)

- GMO foods

- sound - increase in intensity of stimuli

- EMF radiation (mobile phones, VDU's- computers, TV,microwave technology, appliances etc.)

- hand held computer games (produce frontal lobe abnormalities)

- media and video games (affects behaviour, violence and suicide)

# Social and environmental changes influencing health and development

- **Social structure**

**- absence of fathers**

**- babies separated from parents for sleep and travel**

**- breast feeding reduced from 3-7 yrs to 3-6 months**

**- bottle feeding doubles risk of ADHD**

**- deficiency of DHA** *(Broadhurst et.al.; Stordy; Levine; Oski)*

- **“Long chain polyunsaturated fatty acid deficiency at any stage of foetal and/or infant development can result in irreversible failure to accomplish specific components of brain growth - optimal brain development requires DHA and AA provided by breast milk”.**
  *(Broadhurst et. al. British Journal of Nutrition 1998)*

- **……..“For every year of delay, more than 2 million formula-fed, full-term babies born annually in the United States may experience a disadvantage of 3-6 IQ points compared with breast-fed full-term babies…… the difference is even greater for infants with low weight at birth”.**

- **Because formula-fed babies “are deprived of this essential building block (DHA/AA) there are incalculable quality of life issues”……**

*Frank Oski M.D., former chairman of pediatrics John Hopkins University School of Medicine. Nutrition 1997*

- **Pregnancy**

**- more mothers smoking (27%)**

**-caffeine (low birth rate and breathing problems)**

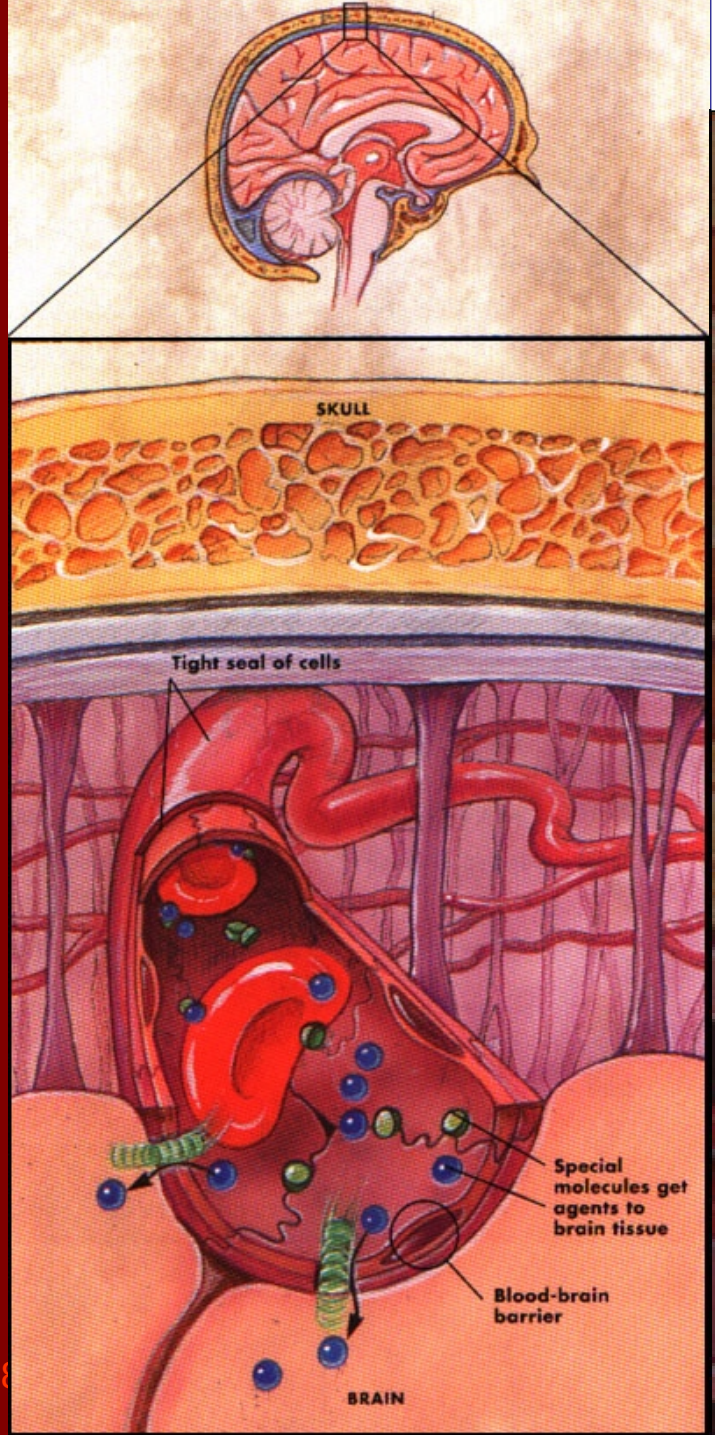
**-alcohol (> 50% - even 1 glass/week increases the risk of delinquent behaviour)**

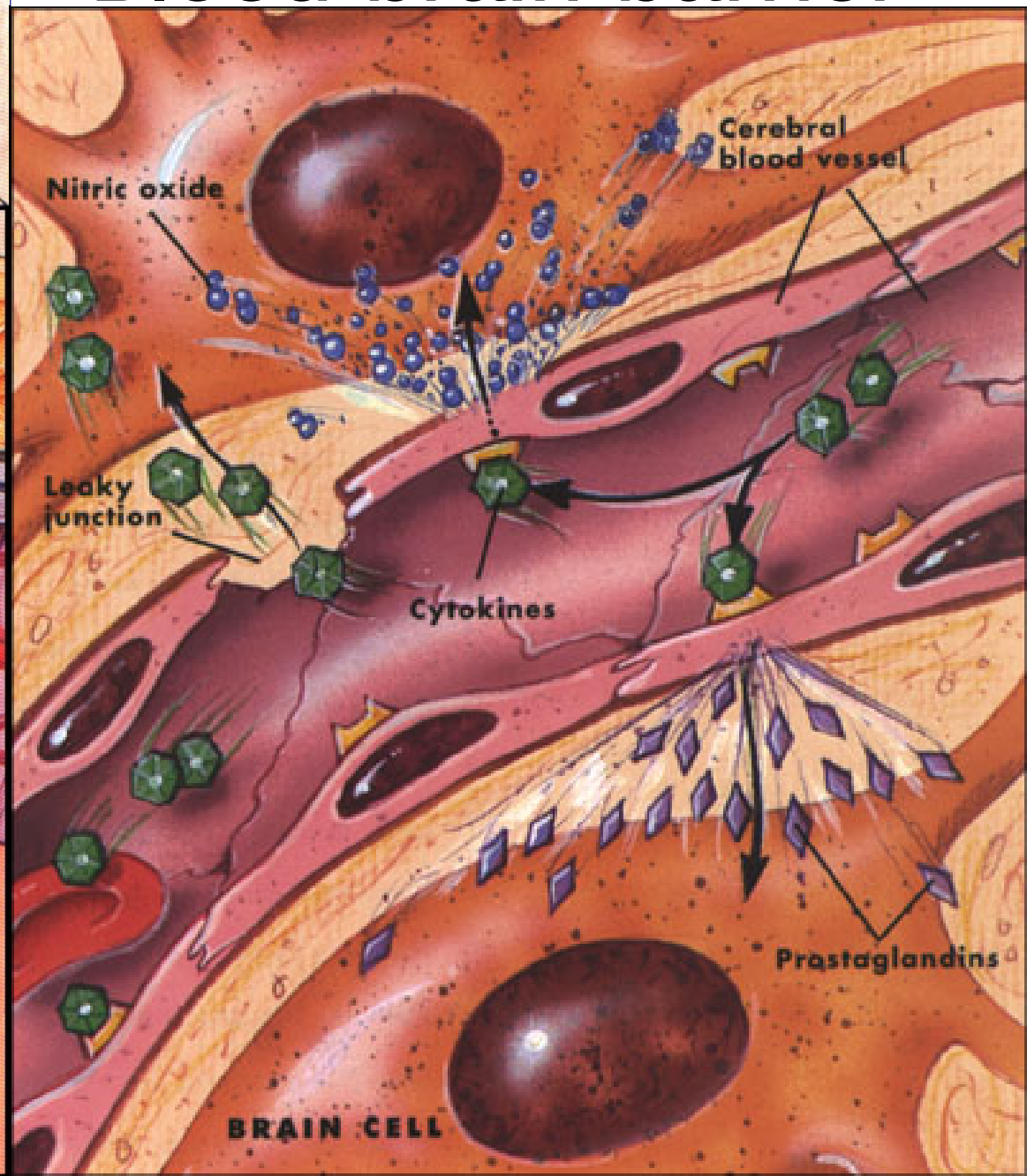
**-amalgam fillings** *(Bernard et.al. 2000)*

**-maternal stress - causes decreased blood flow and low birth weight**

**-8x higher rate of antibiotic use in mothers of autistic children - ill and producing cytokines** *(Waring, MOA 2002)*

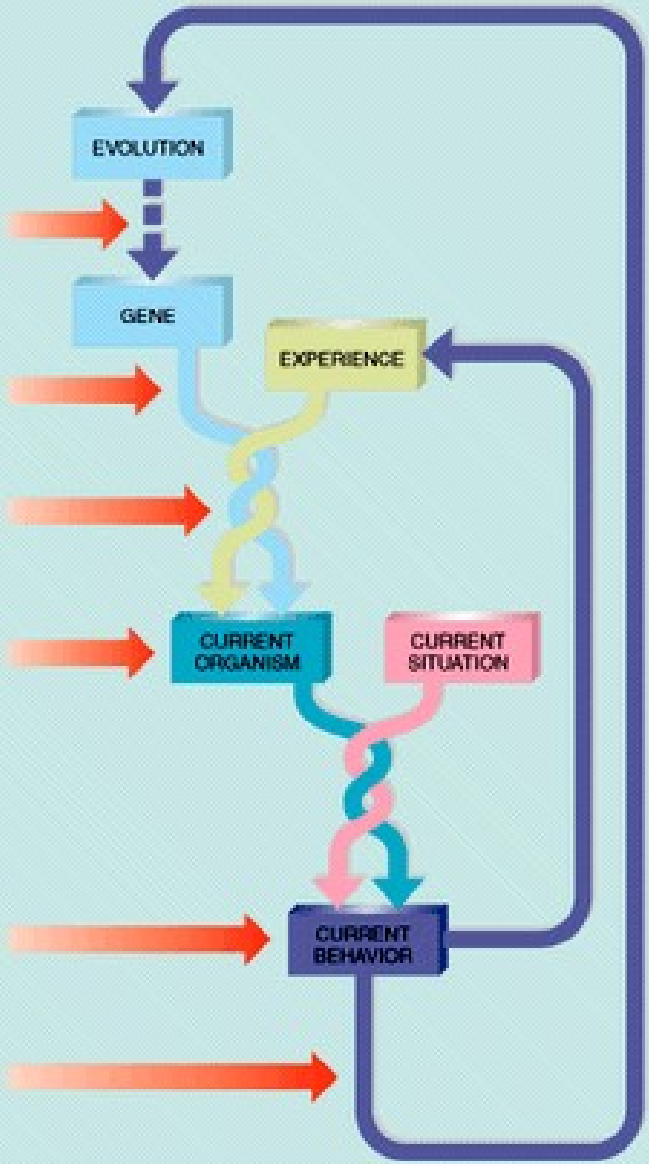
# Blood brain barrier



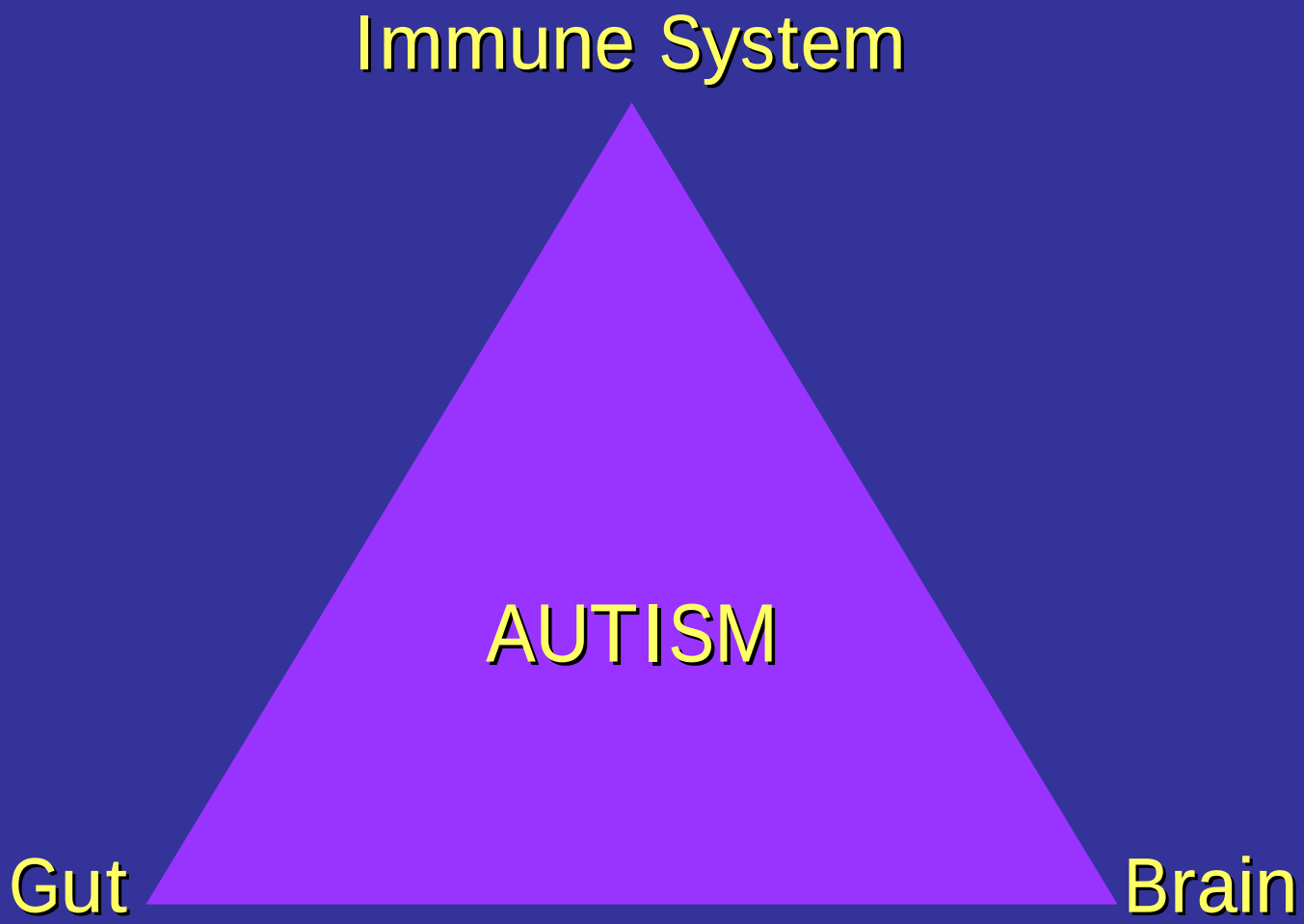



# ▸ The Biology of Behavior

1. Evolution influences the pool of behavior-influencing genes available to the members of each species.
2. Each individual's genes initiate a unique progam of neural development.
3. The development of each individual's nervous system depends on its interactions with its environment (i.e., on its experience).
4. Each individual's current behavioral capacities and tendencies are determined by its unique patterns of neural activity, some of which are experienced as thoughts, feelings, memories, etc.
5. Each individual's current behavior arises out of interactions among its ongoing patterns of neural activity and her or his perception of the current situation.
6. The success of each individual's behavior influences the likelihood that his or her genes will be passed on to future generations.



# The interactive factors……




*From Gupta - MOA 2002*

# 1 in 5 children will develop learning difficulties and/or pervasive developmental disorders. What can be done?...

- Individual researchers and clinicians around the world are beginning to realise that intensive multi-modal intervention designed around the individual's unique neuro-biochemical, metabolic and genetic makeup can make a difference to outcomes.

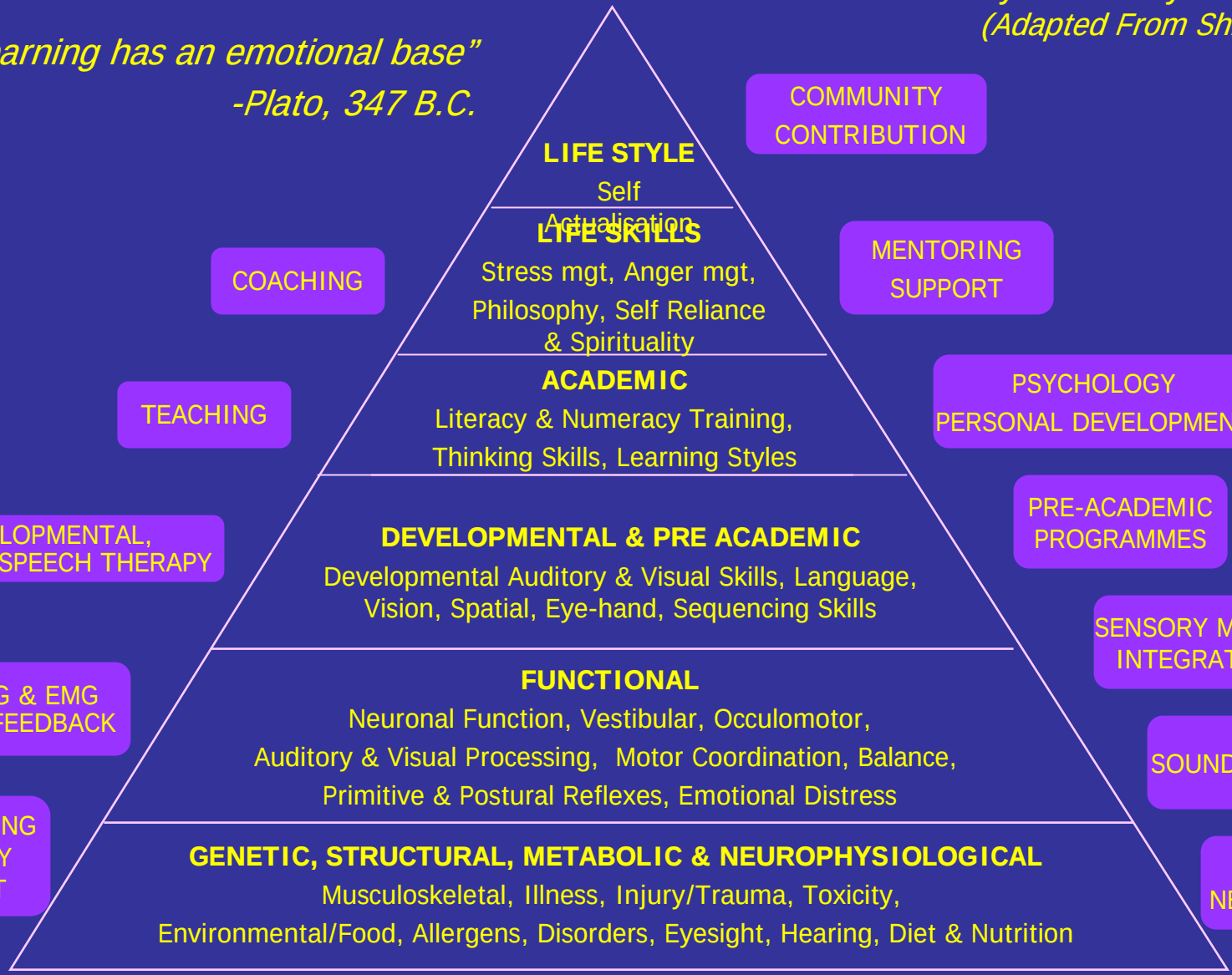
- **Diverse strategies are currently in place and continually being developed for effective early intervention as our shared knowledge base of these disorders grows.**

- **The complexity of ASD requires the integration of research findings so that fundamental cellular dysfunction is systematically addressed through multi modal interventions.**

# The Pyramid of Learning, Development & Wellbeing

by Rosemary Boon 1996
*(Adapted From Shiel & Dyson)*

*"All learning has an emotional base"*
*-Plato, 347 B.C.*




COMMUNITY CONTRIBUTION

COACHING

MENTORING SUPPORT

TEACHING

PSYCHOLOGY PERSONAL DEVELOPMENT

DEVELOPMENTAL, VISION & SPEECH THERAPY

PRE-ACADEMIC PROGRAMMES

SENSORY MOTOR INTEGRATION

EEG & EMG BIOFEEDBACK

SOUND THERAPY

COUNSELLING & FAMILY SUPPORT

FLEXYX NEUROTHERAPY

NUTRITION & SUPPLEMENTS

GUT & IMMUNE SYSTEM

HEALTH & MEDICAL PRACTITIONERS

ENVIRONMENTAL CONSULTANT

CHIRO, OSTEO, CRANIO, BOWEN

# Formal Assessment.....

**1. History**, including environmental and familial history, pre/neonatal development.

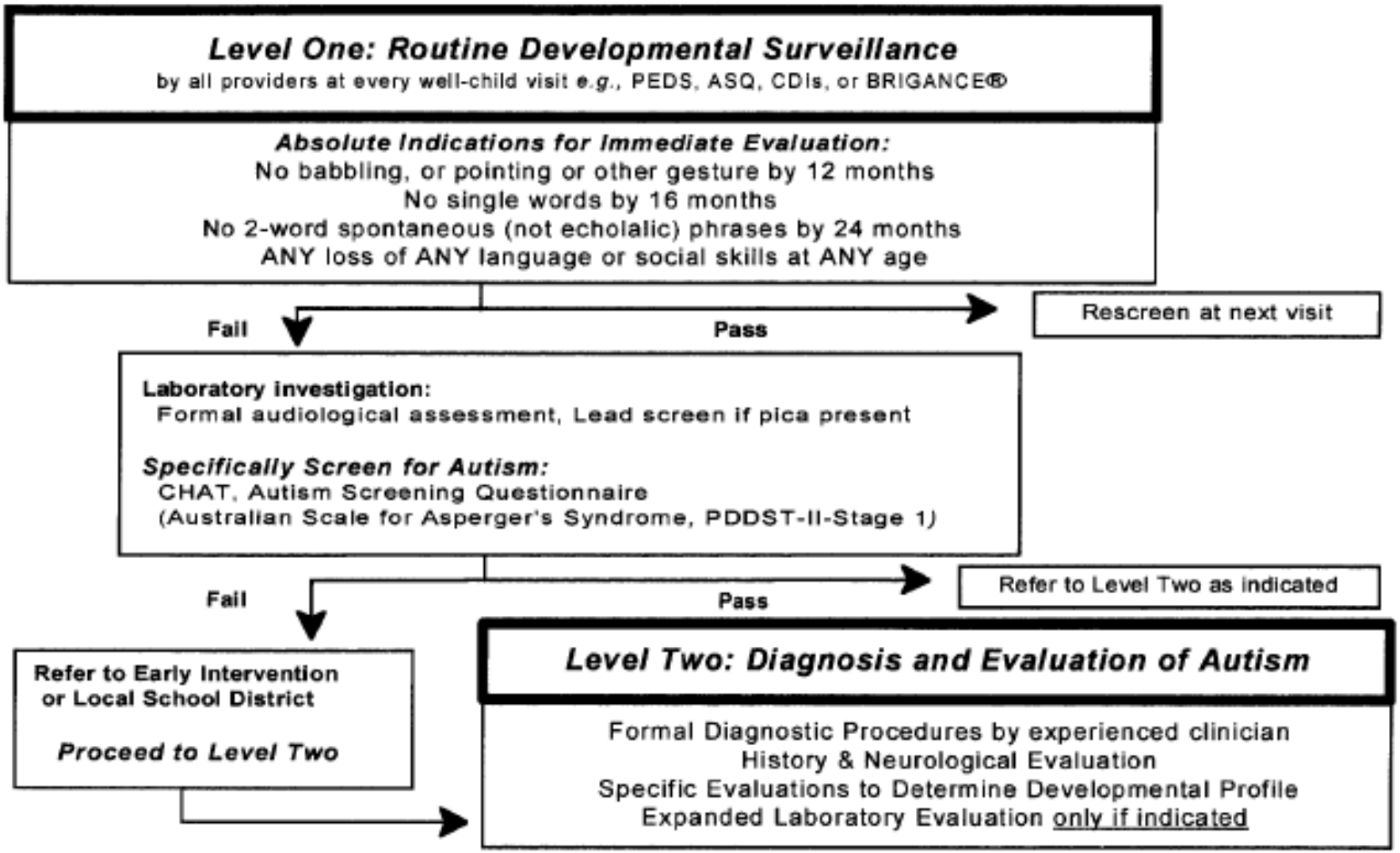
**2. Physical examination** - skin, nails, hair, eyes, ENT etc.

**3. Biomedical evaluations** (e.g., as needed, EEG, metabolic work-up, genetic studies, and nutrition)

**4. Checklists including** - DSM IV criteria, ATEC (ARI), PDD Screening Tests I & II (Seigal) The Australian Asperger's Scale (Garnett and Attwood).

# Screening and diagnosis of autism ……..

***(From the Report of the Quality Standards Subcommittee of the American Academy of Neurology and the Child Neurology Society - 2000)***






- **First concerns of parents need to be checked into……**

**5. Assessment of current challenges and functioning,** including:-

- developmental capacity (attention, engagement and thinking)
- processing capacity (auditory & visual, motor planning and sequencing, visual-spatial skills and sensory-motor integration)
- at home with caregivers and siblings, with peers in educational and social settings

**6. Observation**

At least two 45 minute sessions with the caregiver or clinician to provide the basis for forming a hypothesis about the child's functional capacities

**7. Speech and language evaluation** including articulation, syntax, pragmatics, semantics, receptive and expressive languages

**8. Evaluation of cognitive functions**, including neuro-psychological and educational assessments

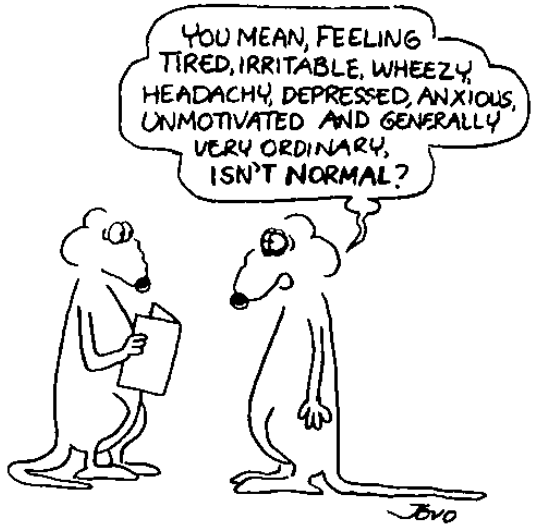
**9. Mental health evaluations of family members, family patterns, and family needs**

**10. Family and caregiver functioning**

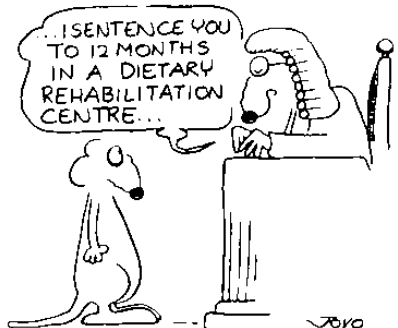
# Laboratory Investigations……

- **Stool Analysis**
- **Organic Acid Test**
- **Urinary Peptide Test**
- **Food Allergy Testing**
- **Intestinal Permeability Studies**
- **Gluten Antibody Studies (Gliadin endomesial and reticulin)**
- **Secretory IgA (Saliva or stool)**
- **Immunilogical testing (Immune markers, immunolglobulins, activated T Cell subsets (NK cells)**
- **Sulphation studies**

# Are you affected by foods?






*From "Fed Up" by Sue Dengate, 1999*

# Gastrointestinal factors.....

- **Malabsorption** *(J. Autism/Childhood Scizo, 1971 1(1):48-62)* **-freq. Reports acholic stools, undigested fibers, proteins, positive Sudans.**

- **85% of autistics meet criteria for malabsorption** *(B. Walsh, 500 patients)*

- **Maldigestion - elevated urinary peptides** *(P. Shattock, Brain Dysfunct 1990, 338-45 & 1991, 4:323-4; KL Reicheldt, Develop Brain Dys 1994, 7:71-85, and others; Z Sun and Cade Autism 1999, 3: 67-83)*

- **Abnormal Intestinal Permeability** *(P. D'Eufemia Acta Pediatr 1995, 85: 1076-9)*

Gastrointestinal factors continued……

- **G.I. Symptoms reported by parents - diarrhoea, constipation, gas, belching, probing, visibly undigested food and need for rubs**

- **Microbial Overgrowth - fungal, bacterial and viral**
*(William Shaw, Biological Basis of Autism and PDD, 1997)*

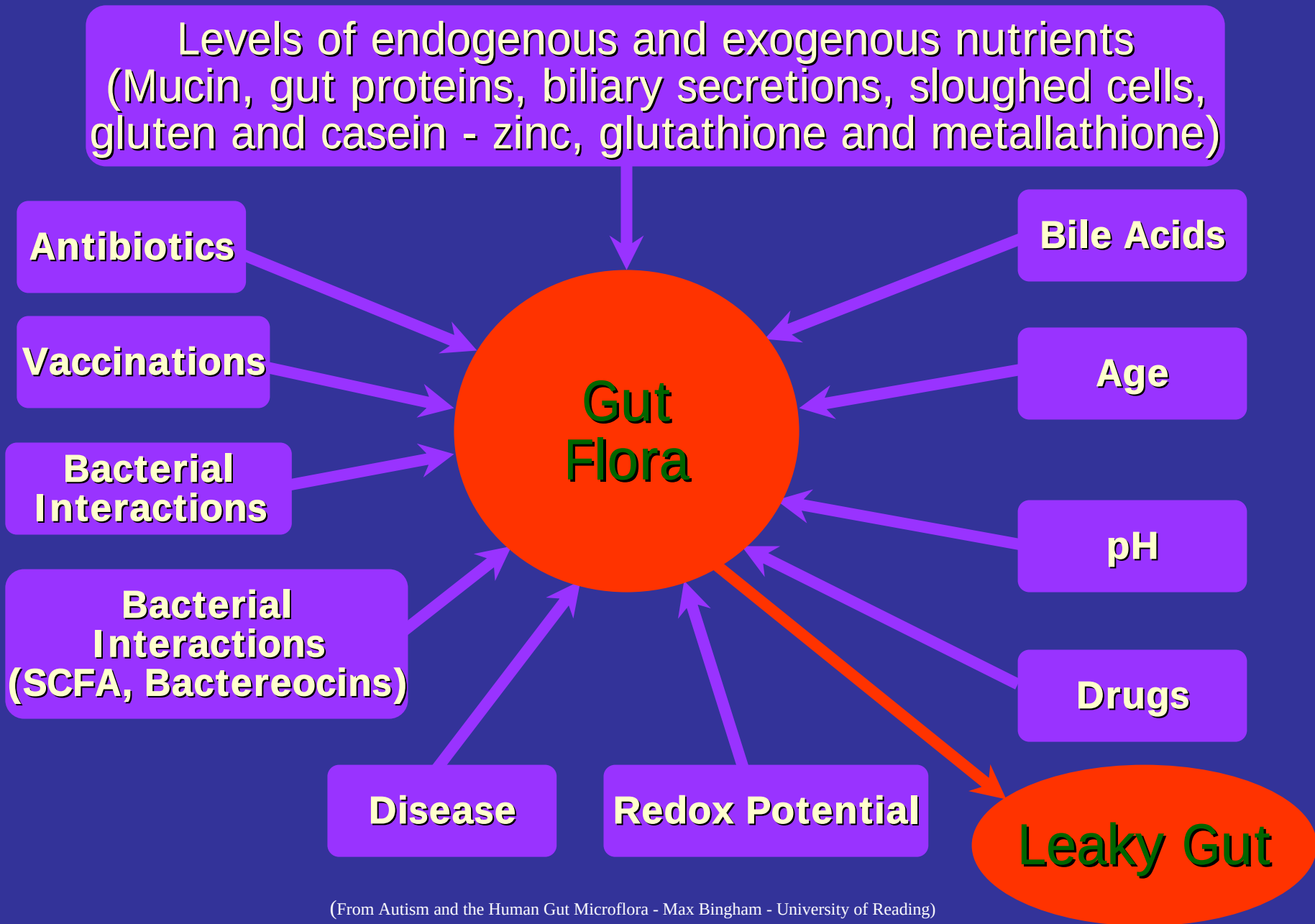
**- Clostridium - high wheat content in diet**
*(E. Bolte Med Hypoth, 1998, 51:133-144)*

- **Aerobic Lactobacillus - high rice in diet**
(J. Child Neurology, 15: 429-435; P. Shattock & A. Broughton, JAG elevations; Andre Wakefield, Lancet, 1998, 351:637; T.J. Borody, Centre for Digestive Diseases, NSW, Australia)

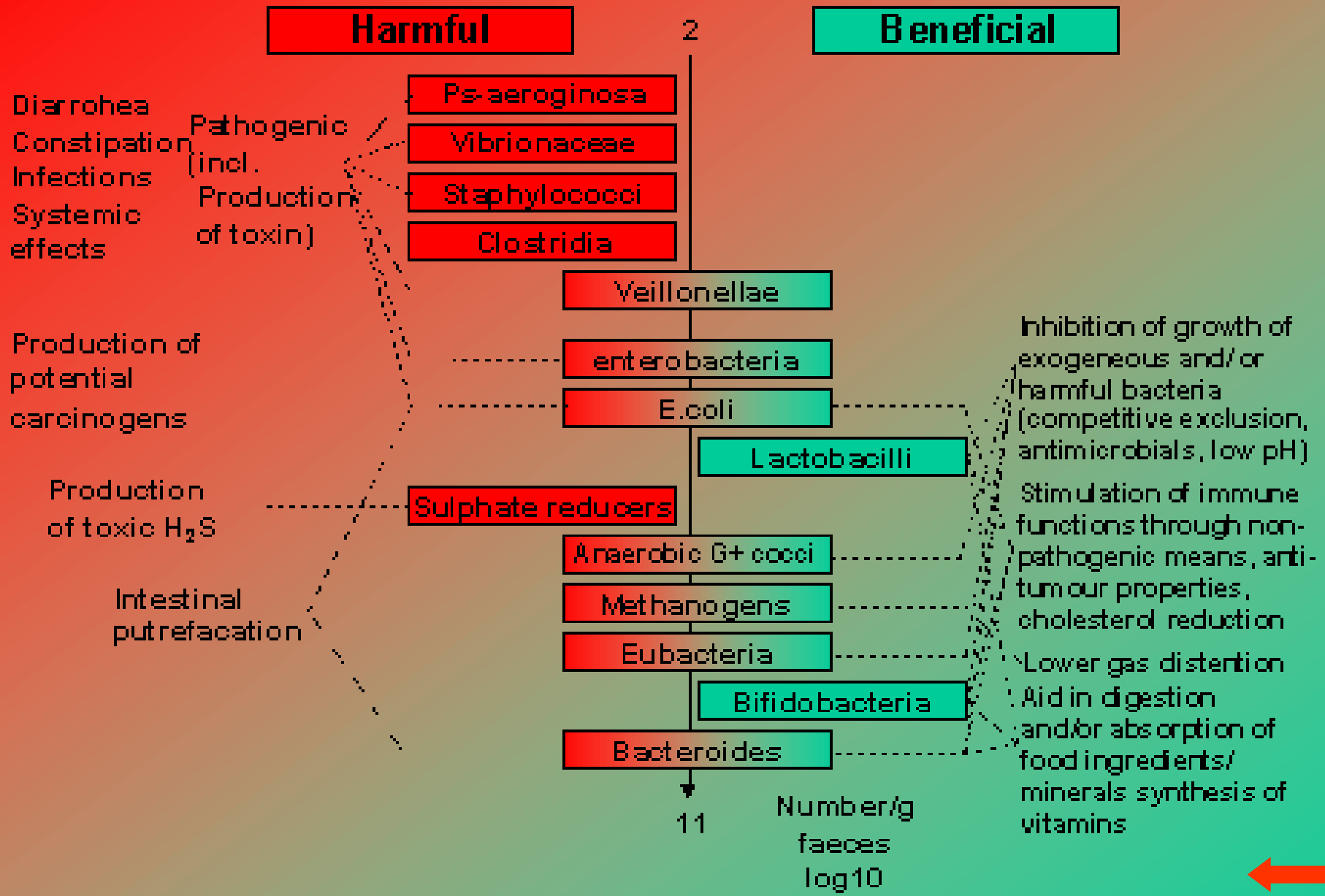
- **Fecal and urine samples from 36 patients revealed significantly lower aerobic flora (56.3%) compared to healthy controls (70-95%). By contrast lactic acid bacteria *Enterococcus/Streptococcus* was significantly higher in autistic subjects (40.1%) than in healthy subjects (5%).**

- **The excretion of C18 fatty acids was positively correlated with lactic acid bacteria. Alteration of fecal lipids significantly associated with intermediaries of the Krebs and Urea cycles, suggesting that fecal microflora may affect multi system homeostasis.** *(Bioscreen Pty Ltd Collaborative Pain Research Unit, University of Newcastle, Australia, 2002)*

# Factors affecting gut flora.....




(From Autism and the Human Gut Microflora - Max Bingham - University of Reading)


Harmful
2
Beneficial
Diarrohea
Constipation
Infections
Systemic effects
Pathogenic (incl. Production of toxin)
Ps-aeroginosa
Vibrionaceae
Staphylococci
Clostridia
Veillonellae
enterobacteria
E.coli
Lactobacilli
Sulphate reducers
Anaerobic G+ cocci
Methanogens
Eubacteria
Bifidobacteria
Bacteroides
Production of potential carcinogens
Production of toxic $H_2S$
Intestinal putrefacation
Inhibition of growth of exogeneous and/or harmful bacteria (competitive exclusion, antimicrobials, low pH)
Stimulation of immune functions through non-pathogenic means, anti-tumour properties, cholesterol reduction
Lower gas distention
Aid in digestion and/or absorption of food ingredients/ minerals synthesis of vitamins
11
Number/g faeces log10

# Who want's to party??????.....

(From Autism and the Human Gut Microflora - Max Bingham - University of Reading)