The Energy System Creating Life and Cancer from Inanimate Compounds

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Abstract

All living systems (which include cancer) are defined by three characteristics: irreversibility; growth by exponential expansion; survive mortality by information transfer creating animate successors from lifeless precursors.

Growth always obeys pure exponential functions at its start which slow with ageing to obey Gompertzian functions. Hence cancer colonies and multicellular life reach growth asymptotes. Irreversibility of the growth following transfer of information (as in ovum fertilization) is universally understood and demonstrated in pregnancy.

Anaerobic glycolysis specifically exhibits these three functions which power the growth of cancer and all unicellular life forms. This system (titled ER_{ex} denoting an Electrically conductive Reaction of EXponential growth) also automatically creates intelligence. Adult neurons *neither contain ER_{ex} (because they never become cancerous) nor can their axons transmit their message information electrically (because they fail to respond to Faraday's laws of electromagnetic induction). Glial cells which contain ER_{ex} become cancerous, MUST be the seat of intelligence, a reaction entitled CR_{ex} or the Chemical Reaction of the EXponential growth of cystathionine. Control of anaerobic glycolysis by oxygen (Pasteur's reaction) (a) permits individual cellular mitotic control so that stable multicellular life will result: (b) controls overproduction of cystathionine by CR_{ex} in glial cells.*

A glial cell with failure of the Pasteur reaction reverts either to cancer or Alzheimer's disease. These conclusions are based upon approximately 30,000 patients reviewed whilst being treated with ionizing radiation therapy, approximately 9,000 patients treated with some combination of UHF radiowaves and ionizing radiation together with approximately 1,400 patients treated with intravenous glycolytic blocking agents before UHF therapy.

N.B. This system was revealed during analysis of clinical responses to radiowave therapy in the treatment of cancer and viral diseases. No financial or other support was involved.

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Introduction: Biological Energy, Storage and Synthesis

Adenosine triphosphate (ATP) is an energy rich molecule. When one phosphate (phosphorous atom) is removed from ATP an energy-neutral adenosine diphosphate (ADP) molecule remains. The energy released as phosphate is the "pocket money" of the cell which it can use for any biological function.

Synthesis of ATP from ADP is the function of two separate carbohydrate metabolic systems, one using oxygen, called aerobic glycolysis, and the other without oxygen, called anaerobic glycolysis. Warburg experimentally confirmed these two distinct categories of carbohydrate metabolism and gave them simple, rational titles.[1]

1. Warburg's "respiration" is aerobic glycolysis. This uses oxygen with glucose to produce energy in the form of ATP. Actively metabolic cells as in the liver and kidney obtain 100 times more energy from respiration than from fermentation.

2. Warburg's "fermentation" is anaerobic glycolysis and every foetal, stem, cancer, most glial and some other specialized cells use fermentation to synthesize ATP. This is the only source of energy for cell division or mitosis. ATP is measured quantitatively by the formation of lactic acid in the absence of oxygen. The fermentation system is present in the extranuclear cell components.

This identical fermentation reaction occurs in anaerobic conditions outside the body when the cell involved is a yeast or-

ganism and produces ethyl alcohol and carbon dioxide.

Discussion: Glycolysis Analyzed

Table 1 (below) records the energy associated with the various steps of fermentation.[2] The engine "powering" Table 1 is an interconnected cyclical system of glutathione. Glutathione is an essential component of respiration as shown by Hopkins.[4,5] Needham and Lehmann, (using egg brei) established interconnected reactions for both forms of glutathione.[6] From fertilization to emergence from the egg shell glutathione is an essential component of anaerobic glycolysis in the embryo. As soon as the chicken foetus can access oxygen aerobic glycolysis commences while anaerobic glycolysis diminishes.

Ashford and Holmes confirmed two glycolytic pathways, measuring the respiratory quotients (RQ) of cancer and other cells.[7] All cancer cells have varying RQ levels less than one; indicating a combination of both systems. Geiger and Needham and Nowinski confirmed these findings.[8,9] Ashford and Holmes, Baker and Warburg reported that the Central Nervous System adult neurones exclusively metabolize by aerobic glycolysis.[7,9,10,11] Their RQ is always one.

There are no cancers which arise from adult neurones (RQ = 1). All brain cancer is from a glial cell (RQ = 0.4 to less than 1.0, variable). The conclusion must be that all adult neurones have lost all their primitive anaerobic glycolytic systems. The final maturation from a neuroblast to an adult neurone must be the expulsion or destruc-

Table 1: Reactions Involving Glycerose or Mannononose

	Phosphorous Content	Total Energy Used or Created (ATP)
Step 1: 1 glucose ––> 2 glycerose	Nil	-2
Step 2: 2 glycerose + 2 phosphoric acid (2HP) ––> 2 glyceraldehyde phosphate (2GP)	+2P	= +4
Step 3: 2GP + 2HP + 2 Reduced Glutathione (2GSH)––> 2GS-diGlycerophosphoric acid (a glutathione complex) + 2H		
Step 4: This splits into 1 oxidized glutathione (GSSG) + pyruvic acid + 4H ions + 4P	+ 4P	= + 8
Step 5: GSSG + pyruvic acid + 4H ions ––> 2GSH + Lactic acid		Nil

Note

a) Overall energy produced is ..... +6

b) 1 doubling to 2 can be binary OR exponential (Naperian) mathematics, but 4 doubling to 8 can only be exponential mathematics. Since life exclusively grows by an exponential mathematical function, Steps 2, 3 and 4 must be the creation of life.

c) Because Step 1 requires energy the exponential increase of ATP from Steps 2 to 4 is "hidden" and therefore ignored by conventional biochemists.[2]

d) In Step 4 GSSG is a single molecule (which may split to 2GSH), therefore all other substrates must be in a minimum of 2 molecules each.

e) In a closed container (brewing alcohol) then Step 5 becomes:
GSSG + pyruvic acid + 4H ions ––> 2GSH + ethyl alcohol + carbon dioxide.

f) Glucose is not a substrate for fermentation, hence its conversion to glycerose and/or mannononose in Step 1.[3]

tion of their anaerobic glycolytic systems.

This explains the phenomenon of spontaneous cure of malignant neuroblastomata in children. Some sufferers, between six and 10 years old are cured by necrosis, calcification or reabsorption of proven malignant cells. At one stage, addition of vitamin B_{12} may increase (? initiate) this process. Personal experiences of clinical observation of a self-curing childhood neuroblastoma confirm the 1 in 100,000 rarity of such cure.[12]

Table 2 sets out the mechanism whereby glutathione, cycling between its two forms, generates hydrogen ions. See **Table 2**, below; **Illustration 1** (p. 144)

ER_{ex} Characteristics and the Pasteur Reaction

Hydrogen ions are the mechanism of transfer between generations. In cancer, lactic acid accumulates in increasing quantities proportional to the extent of the disease. In a closed bottle the yeast cell acts as cancer and with each generation of yeast cells there is regular production of glutathione. The reaction will only proceed within a closed container and not even yeast, which is a low form of unicellular life, can have a perfect structure without its aerobic reactions. Yeast cells degenerate bizarrely in brewing and they may die for lack of fermentable sugar. They are amazingly regenerated in the presence of oxygen.[1]

The fermentation of a three carbon sugar to alcohol is identical to fermentation in a cancer cell. The cancer and the yeast cells use fermentation energy to divide exponentially. Cancer kills its victim by an explosion of exponential growth of useless cells from a single cell with a damaged, inoperative, Pasteur reaction. Fermentation will always burst its container if sufficient sugar is added before the bottle is sealed. Cells have their anaerobic glycolytic systems controlled by aerobic glycolytic energy and cancer is caused when the control is broken. Yeast cells have both systems and each is autonomous. Therefore yeast cells can be "regenerated" (ie they are not true cancer cells) by oxygen although a cancer cell is irreparable its other aerobic systems continue to function. The synchronous perfection between aerobic energy to interpret the genetic information which would ensure perfect daughter cells is destroyed by mitosis at such a forced accel-

Table 2: The Glutathione Cycle.

The functions of Glutathione energize the "motor" that doubles 4 ATP to 8 ATP.

Two different reactions each with 100% completion create the cycle of
2 GSH ––> GSSG ––> 2 GSH. The two reactions are:

2 GSH ––> GSSG + 2 hydrogen Ions
GSSG + 2 hydrogen Ions ––> 2 GSH.

This cycle creates irreversibility because cycling either "forward" or "backward" produces an identical result.[13]
This system is irreversible and always 100% complete per cycle. Its product is exponential quantities of ATP (energy) with time when combined with Table 1 reactions. Hydrogen ion transfer procreates these basic life reactions between generations.
Tables 1 and 2 can be integrated into a complex power generator of ATP (Illustration 1). This system demonstrates the essential place for the hydrogen ions from phosphoric acid.[14]

Illustration 1. ER_{ex} or the electrical reaction creating exponential growth.

The glutathione cycle and the phosphorous based energy creating cycle is best simplified as two meshing gear wheels. On the right is the power source of the electrically conductive glutathione cycle, 2GSH ––> sulfydryl complex –––> GSSG and 2 H ions –––> 2GSH. On the left the "gearing" which squashes glyceraldehyde phosphate with extra phosphorus. This produces an intermediate sulfhydryl complex with diphosphoglyceric acid. This breaks down into pyruvic acid, hydrogen ions and double the quantity of phosphorus previously contained with the glycerose molecule. The disulphide, GSSG is reduced to GSH and the cycle is continuous. Each cycle doubles the energy source, phosphorus, stored as ATP or Adenosine Tri-Phosphate. 434 MHz UHF targets 2GSH-GSSG system of the right hand gear wheel causing it to revolve faster when it resonates and/or fluoresces as the "E" part of ER_{ex}.[15,16] The direct target of ionising (x-rays etc) radiations must be the Sulfhydryl group because "R_{ex}" represents exponential growth and x-rays "kill" by a negative exponential destruction. Therefore x-rays "hit" only this sulfhydryl group. In cancer the pyruvic acid is converted to lactic acid by the spare hydrogen ions whilst in fermentation these ions convert it to ethyl alcohol and carbon dioxide. Pasteur was correct in his firm opinion that brewing was a "vital Process." Both systems only operate in total anoxia.[16]

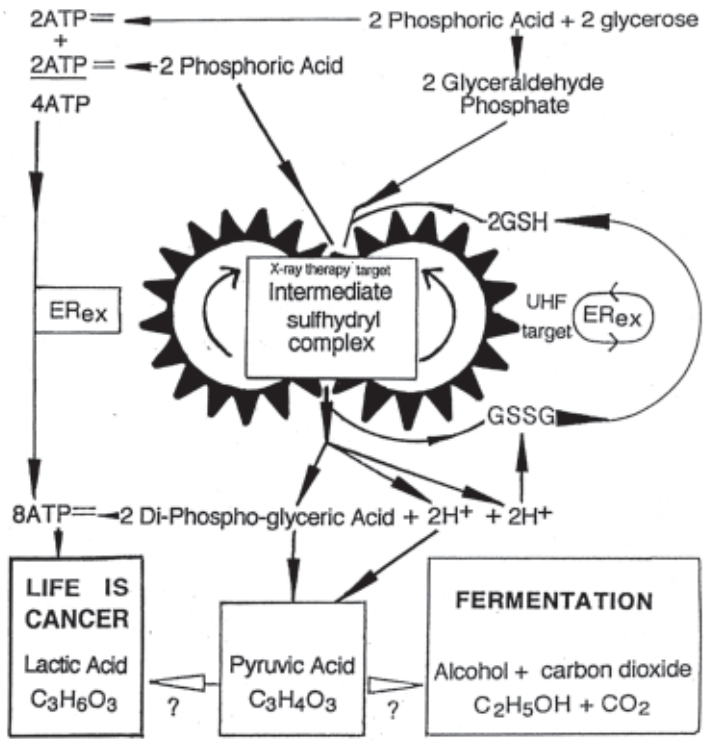
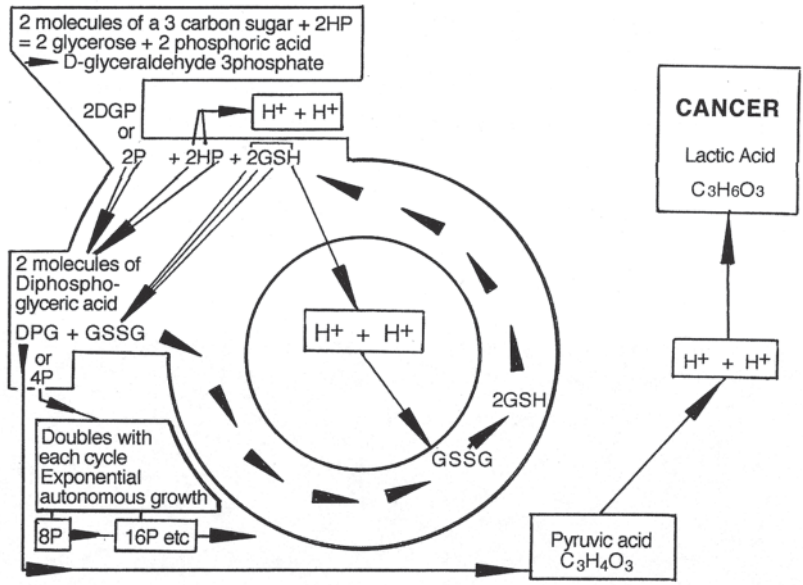


Illustration 2. Pasteur's "Vital" Start of Life.

The Electrical Reaction of Exponentiality: ER_{ex} Which Creates Life and Cancer. A rearrangement of Illustration 1. Pasteur's reaction is defined as the control of anaerobic glycolysis by aerobic glycolysis. In simple terms the energy from 3-carbon sugars either glycerose or mannononose obtained when "burnt" in an atmosphere without oxygen (before the world had developed oxygen in the atmosphere) is autonomous and titled ER_{ex}. As soon as oxygen developed in the world's atmosphere control of this reaction is simple. The reaction which is denoted ER_{ex} creates exponential growth of energy, is irreversible and therefore is superior to all other chemical reactions in the universe. It therefore also has the characteristics of intelligence and would force evolution to create developmental changes to adapt to the changing environment. Such changes were impossible until oxygen appeared in the world's atmosphere and ER_{ex} could be controlled into inactivity yet relaxed when needed. The atmosphere changes on earth would indicate the geological era of the first multicellular life.

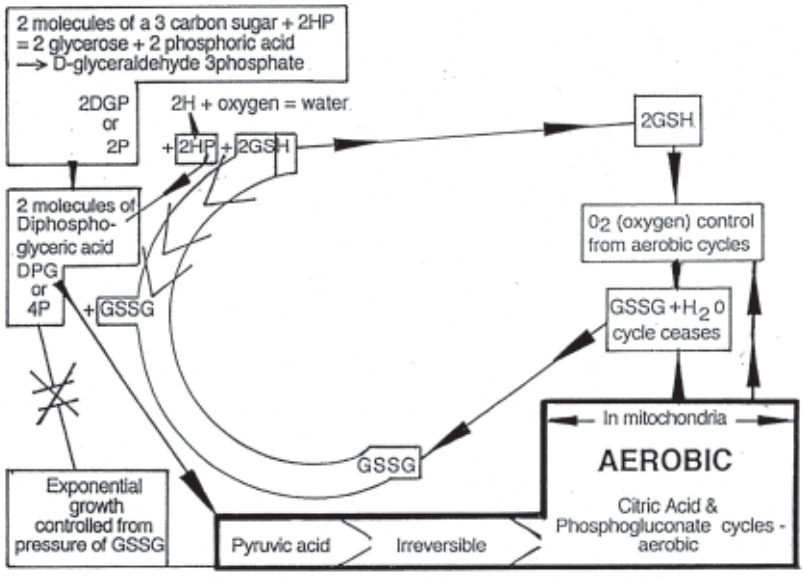


eration that "cancer" creates its own genetic changes. Cancer diagnosis possibly may be from abnormal genetic material but prevention and therapy of cancer by genetic manipulation is impossible.[17]

Illustration 2 (above) represents a different way of presenting Illustration 1 to make it easier to understand how the Pasteur reaction alters the biochemical processes which create life.

This is the explanation of the origin of the increasing content of pyruvic acid in the cancer patient with disease progression. Pyruvic acid is not metabolized for energy and this unused product appears to be responsible for wasting of cancer patients. Gold has shown that it is possible to use agents which convert the pyruvic acid back

Illustration 3. To show how the autonomous circular progression of ER_{ex} is stopped when oxidised glutathione (GSSG) can no longer be reduced to glutathione (2GSH). The damage creating cancer must occur within the starkly outlined representation of the mitochondrion attached to an ER_{ex} unit. When ER_{ex} is active to power cell mitosis the whole cell becomes anoxic. Between mitoses only the nucleus is anoxic as demonstrated by Stern.[19,20] This system is resistant to x-rays and normal cell repair is grossly enhanced because repair is stimulated. This reaction controls repair until perfection is restored when it ceases: overall control of perfection to original genetic "blue-print" is the responsibility of the phosphogluconate and citric acid aerobic glycolytic systems in the relevant mitochondria.



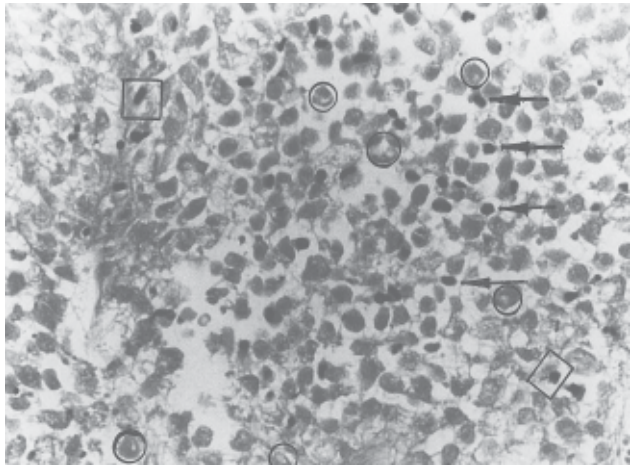
into a usable form. The wasting of the patient can thus be partly or completely controlled. Clinically, it appears that this system controls the cancer. Such is not the case because the cancer continues to progress exponentially, although for a time the wasting disappears.[18]

Illustration 3 (above) when viewed in conjunction with Illustration 2 shows exactly how the aerobic or oxygen-burning glucose-consuming cycles act to control ER_{ex}. ER_{ex} units must be in very close association with specific mitochondria in the extra nuclear cell constituents of the cytoplasm because when the system is in perfect order the pyruvic acid is irreversibly absorbed into that mitochondria and used as a nutrient for the aerobic citric acid cycle followed by the aerobic phosphogluconate cycles.[2]

The cause of cancer must lie in the mitochondria which subserve aerobic glycolysis.[1] To preserve ER_{ex} during active mitosis when the nuclear membrane is broken the surrounding extra nuclear cytoplasm is made temporarily anoxic, as shown by Stern.[19] The nucleus is always anoxic.[20]

The proof of the location of ER_{ex} in

Illustration 4. Deposition of electromagnetic energy in cancer cells reveals the extra-nuclear site of the electrically conductive ER_{ex}. Normal cells with inactive ER_{ex} are unaltered. Secondary cancer (breast primary) in the upper end of a femur. This lady requested a trial of UHF 433-434 MHz in isolation to relieve the pain in her bones. Treated with a moving field method exposing her skin to approximately 40 milliwatts per square centimetre for 90 minutes. Four days later this specimen was obtained.



Notes
A - (Arrows) Normal inflammatory cells.
B - (Squares) The normal, undamaged bone cells
C - The dead cancer cells have a featureless grey colour.
D - (Circles) Coagulation of the rims of many cancer cells are visible but the nucleus in the centre will not stain. This is the poached egg appearance of a patient treated with electrical hyperthermic method in which adequate electromagnetic radiation energy is delivered to heat the cell above 42°C. The periphery of the cell (cytoplasm) contains the electrically conductive part of the cell (ER_{ex}) which heats selectively and coagulates. This peripheral coagulation prevents dyes penetrating to the nucleus. In this secondary cancer every cancer cell was killed and is direct proof of the cancericidal effect of 434 MHz radiation. No similar proof exists for any cytotoxic chemical yet discovered!

the cytoplasm or extra nuclear cell constituent is shown in **Illustration 4**, (above with its explanatory caption). A "closed" bone (ie a secondary in rigid bone) is the only site to demonstrate this effect. Soft tissue cancer has such vascular cooling that electrical heating cannot coagulate it.

In an earlier publication a patient with a fungating cancer of the left breast/axilla was shown before and after x-ray therapy.[21] **Illustration 5A/5B** (p.148) shows the clinical features and a biopsy before treatment. There are 2% to 5% of the cancer cells in mitosis. After the biopsy in Illustration 5 this patient received 434 MHz UHF as part of a course of combined therapy and Illustration 6A (p.149) is of a second biopsy one hour after cessation of the first day's UHF exposure. 100% of the

Illustration 5A shows a biopsy taken from an ulcerative breast cancer as in 5B. There are approximately 400 billion cancer cells and only 2% to 5% of these cells are in mitosis. Treated with x-rays in air (normal body temperature) 30 doses of 200 rads per day would kill approximately 3.33% (only one in 30) when each cell has 10 ER_{ex} targets per cell which must all be killed for that cell to die. The target number per cell for any cancer can be calculated from responses to x-ray therapy with and without UHF exposure.

First Biopsy:
Mitotic rate - 2-5% and therefore growth obeys $N_T/N_o = e^{A/\alpha(1-e^{-\alpha T})}$.
X-ray response to 6,000 rads over 30 days is: $N_R/N_o = (1-(1-e^{-200/165})^{10})^{30}$ after 30 doses of 200 rads. The sensitivity of the one or two active ER_{ex} units is 165 rads and all inactive ER_{ex} units exceeds 2,000 rads (their D_o values).
So N_R/N_o = 0.9666% approximately and only 3.33% are killed.

Illustration 5A

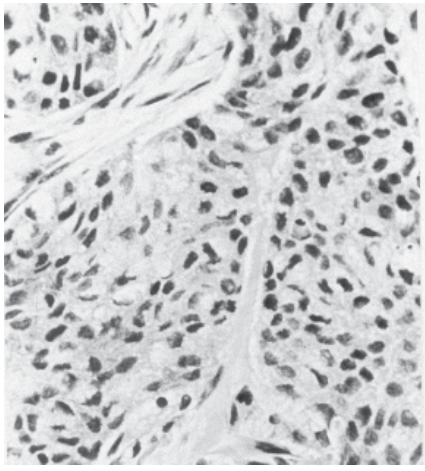
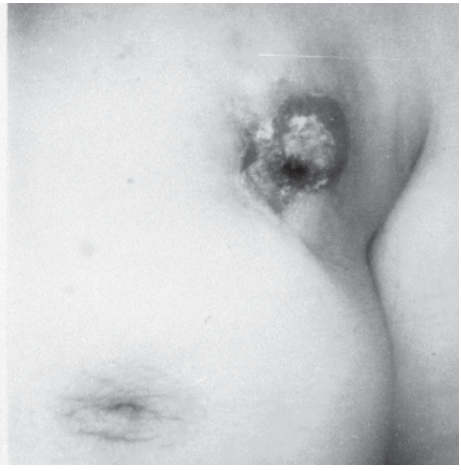


Illustration 5B



cancer cells are in mitosis. The clinical cure several years later after combined therapy is demonstrated in Illustration 6B. (p.149)

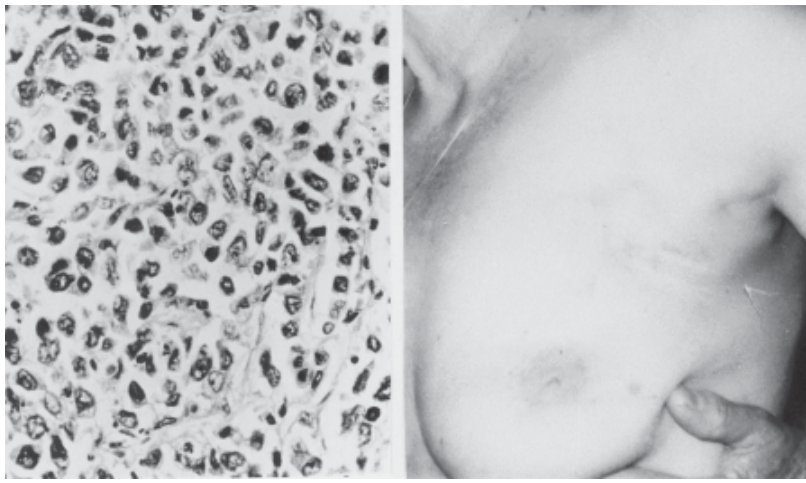
ER_{ex}: Stem Cells, Brain Cells and Intelligence

The electrical characteristics of cancer have been measured in humans and the resultant chart is presented as Appendix 1 (p. 157). Table 3 (p. 150) indicates the probable sites of ER_{ex} in a multicellular organism based upon the electrical characteristics. The human testis has similar electrical characteristics to cancer. Electromagnetic radiation (both ionizing and non-ionizing) will cause sterility. The ovum is considerably more resistant to these types of radiation and in place of it containing any ER_{ex} systems it contains the 2,000 or more nucleoli, none of which are transmitted via the sperm.[22-24] The foetal cells which respire

Illustration 6A After 434 MHz radiation on the cancer of Illustration 5 the mitotic rate is 100%. All the cancer cells are dividing and the problem of radioresistance to x-ray therapy disappears. Using 434 MHz UHF before 160 rads x-rays for 23 days in air, normothermically, potentially can kill far in excess of 400,000 billion cancer cells. A gross overkill without damage to the normal is curative. The healing stimuli of UHF on the normal Pasteur's reactions of the local and distant stem cells heal the ulcer as in Illustration 6B (see Appendix 3 for full details).

Second Biopsy:
Mitotic rate is 100% and therefore growth obeys $N_T/N_o = e^{AT}$.
X-ray response to 3,680 rads over 23 days is:
Residual/original size or $N_R/N_o = e^{-160.23/100} = e^{-37}$ after 23 doses of 160 rads when UHF has sensitised all ER_{ex} units to 100 rads or less for their D_o value.
When $N_R/N_o = e^{-37}$ the theoretical cancer cell kill is 10,000 times greater than 400 billion cancer cells without injury to normal tissues. UHF also has a simultaneous healing stimulation - hence the near perfect result.

Illustration 6A **Illustration 6B**



anoxically all contain ER_{ex}. As they mature the stem cells will have controlled ER_{ex} systems thereby rendering themselves available for repair facilities. Once a cell is fully adult, as in the specific case of mature neurons, the ER_{ex} systems disappear and cancer cannot arise from them. Active stem cells must contain controllable ER_{ex} systems. Adult cancer only arises from stem cells whose ER_{ex} is damaged. Because the respiratory quotient of brain glial cells can be below one and many must be continuously active they are the cells most likely to be affected (? damaged) by stray electromagnetic radiation. Table 3 (p.150)

Intelligence

The ability to adapt to environment is the definition of intelligence. Adaptation

Table 3. Possible cellular sites of autonomous glycolysis (cancer).

Site	ERex	Genes	Nucleoli	Mitochondrial Activity	Possible Cancer Precursors
Testis, Sperm Precursors	Yes	1/2 set	none	Intermittent	Yes & sperm count effects
Sperm	Yes	1/2 set	none	Intermittent	Possible
Ovum	No	1/2 set	2,000 +	Intermittent	No
Foetal Cells (Anoxic)	Yes	Full	Yes	Continuous	Yes
Foetal Cells (Stem)	Yes	Full	Yes	Continuous	Yes
Foetal Cells (adult type)	No	Full	Variable numbers	None	No
Adult (Stem)	Yes	Full	Yes	Intermittent	Yes
Adult (Non Stem- eg neurons)	No	Full	Variable numbers	None	No
Any age, Stem and Non-Stem, brain glial cells	Yes	Full	Yes	Continuous	Yes & intelligence defects and Alzheimer's "cancer"

All mitochondrial bodies use electron transport systems and are therefore specific recipients of EMF energy. The only vital system which controls cancer is the aerobic conversion of reduced to oxidised glutathione and the destruction of pyruvic acid in the citric acid and phosphogluconate cycles.

is associated with survival. Compared with every chemical reaction in the universe only life is able to adapt by evolution. The physical characteristics of an exponential, irreversible reaction create intelligence. Evolution is "pushed" by ER_{ex} and must be of Lamarckian form, rather than according to Darwin's chance theory. Evolution is an automatic method for the selection of conditions which will allow the exponentiality to exert maximum adaptation to environment.

Any system which creates products in rapidly increasing quantities is superior to simple chemical reactions such as sodium plus chlorine forming common salt. All such simple chemical reactions are reversible. For example invest money in a very generous bank providing 100% compounded interest. The most intelligent choice is to have the interest paid exponentially so that in one year $100 becomes $271.83. The least intelligent choice is to opt for simplicity of annual interest so that in one year $100 becomes $200.

The Site of Intelligence in the Brain

Adult neurons cannot contain ER_{ex} because they only respire using aerobic glycolysis. Glial cells vary in their respiratory quotient from 1.0 to lower values, eg 0.4, which indicates that they are using ER_{ex} for fermentation as well as respiring with aerobic glycolysis.[7,25,26]

Glial cell ER_{ex} alone creates the brain's intelligence functions, but glial cell mitoses would require an expanding skull vault. Biochemical evidence from invertebrates to the highest sophistication of mammals shows a corresponding increase in the proportion of

Table 4. The sensitivity of ER_{ex} to radiation under various clinical applications

X-ray sensitization of ER_{ex} units occurs at 434 MHz because they fluoresce and resonate at this frequency. Each cancer cell always has one or two active and up to 30 or more inactive in its extra-nuclear component.

The D_o (D_{zero}) value is the cancer's sensitivity to x-rays. It is the dose to kill 1/e of a colony (35%).

Low dose = very sensitive.
High dose = very resistant.

1. D_o values: (approximate for each active ER_{ex} unit) 160 rads - normothermic.
2. 140 to 155 rads - Whole body wax bath heating to 41.8℃.
3. 90-100 rads minimum after 434 MHz UHF stimulation. Effect lasts 20/30 minutes.
4. UHF increases x-ray response from $N_R/N_o = (1-(1-e^{-D/D_o})^x)^y$ to $N_R/N_o = e^{-D.y/D_o}$. ie 1,000 to 10,000 or more cell kill.
5. Tourniquet anoxia for limb cancers. Inactive D_o value = 10,000 rads total or 6 x 1650 or 3 x 2500 rads daily in vivo are tolerated when anoxic.

All ER_{ex} are active: Since the Pasteur reaction is rendered anoxic it is inactive and NOT damaged by these doses. Any frequency will maintain ER_{ex} activity and with these doses increase in x-ray sensitivity is unnecessary.

cystathionine in the brain. Cystathionine is therefore expressed in the brains of animal life in exponential proportion to its evolutionary status on the tree of life.[27]

The probability is that ER_{ex} uses exponential energy production to convert methionine into cystathionine, which is its proven route of synthesis.[28]

Out of Body Experiences

Accidental poisoning of humans with DL-methionine DL-sulfoximine produces out of body experiences and, in animals, feral inane behaviour. The sufferers have no recollection of real events but all will recall having died, gone to heaven and returned to earth. During the attack all their senses remain normal and test normal physiologically but the intellectual mind is completely shut off in its fantasy world. In animals the symptoms are similar; the animal can run, walk and bark but appears completely insane.[29]

This syndrome occurs in humans. Women are susceptible to experience "out of life experiences" with doses of methionine sulfoximine in excess of 0.25 mg/kg day and men in excess of 0.6 mg/kg day. All symptoms of higher intellectual disruption can be relatively quickly corrected by intravenous injections of methionine. The original report was occasioned by the accidental poisoning of Indians with a gift of spoiled grain donated by the British government to them to ease the starvation after World War II. The grain was spoilt by nitrogen trichloride as a fumicide. The active ingredient causing the symptoms was methionine sulfoximine.[30]

The complete lack of any physical abnormality as a result of methionine sulfoximine ingestion indicates that the neurones are unaffected. The glial cells which become cancerous must be the site of the misfunction

and of higher intellectual functions.

Glial cells become cancerous. They therefore contain the intelligent ER_{ex} which is normally controlled by the Pasteur reaction. When this link is broken simple glial cancer arises. The intelligence must also be mediated by ER_{ex} but it does not cause cancer. We therefore do not know the controlling factors which prevent the development of intelligence and have to assume that one's intelligence could increase exponentially with time for all our life.

Thoughts from our sensory systems are presented to all areas of our brains. The information processed exponentially by the appropriate sensory areas could increase their cystathionine content. The intelligence integrated from this conversion creates "knowledge" from mere "information." Without an input circuit which processes information exponentially computer intelligence is impossible using binary calculations.

Alzheimer's disease then assumes the same basis as cancer. It is an "exponential" creation arising from the glial cells. It is the faulty overproduction of amyloid material in place of the biochemical precursors of cystathionine. Amyloid disease grows exponentially and causes death in an identical manner to Alzheimer's disease. The label of CR_{ex} standing for the chemical reaction of exponentiality has been applied to this mechanism which creates intelligence. Uncontrolled activity of ER_{ex} causes cancer. Uncontrolled activity of CR_{ex} over produces abnormal amino acid and protein complexes and thus destroys normal intelligence functions of the central nervous system. Such irregular abnormal syntheses create tangles of proteins and amino acids which are called amyloid beta fragments. It is a chemically created "cancer" of the brain.[31]

Amyloid tangles can occur in other parts of the body, particularly the liver, the kidneys as a result of chronic sepsis as was common in the days of tuberculotic abscesses. This extra-central nervous system origin also progressed exponentially to death if untreated surgically.

The treatment of the disease using identical methods (but including methionine sulfoximine) to that applied for cancer coupled with 434 MHz UHF has been successful in improving a few patients with Alzheimer's disease and the method deserves great effort to enlarge and improve it.[31]

The Electrical Characteristics of the Brain and Nerves

If you are blindfolded and someone waves a strong magnet around your head you cannot feel or notice any sensation. This is sufficient to prove that the neurones and their axons do not conduct information by electric currents. Sensations cannot be induced which prove Faraday's laws of electromagnetic induction apply to nerve axons.[32] The electric currents that can be measured running along the neuronal axons are far too slow to permit our precise rapid coordinated muscular movements. If Galvani's currents transmitted information along nerve axons then hand/foot coordination would differ by 1/30th to 1/10th of a second[34]

If the brain and its peripheral nerves are as electrically conductive as a lightning conductor then a lightning strike would automatically burn out the entire brain and nervous network. Localized paralysis rarely occurs.[33] Temporary paralysis in lightning strike injures only the glial cells and if they fail to recover then death ensues. In cases of death by electrocution the electrical activity of the pacemaker and bundle of His in the heart which utilized true electrical conduction is damaged (burnt out) and destroyed and death occurs from heart failure. Hence death after judicial electrocution is only declared when the heartbeat has ceased. The electrocardiogram during life displays the electrical impulses from the pacemaker along the bundles of His to the heart muscle.

The electroencephalogram and other electrical measurements of brain activity are only recording our glial cells activity, plus the currents of Galvani from the very slow so-called "nerve" currents.[34] The first stages of conduction in the optic nerve (a retinal image transformed into a signal) occurs in femtoseconds and has been measured using ultra fast lasers.[35] Galvani's currents must be due to recovery associated with activity and unrelated to true nerve function transmission which is an entirely "chemical" non-ionized system of information transfer. A femtosecond is 10^{-15} seconds, one million billionths of a second.

Life in an Extremely Radioactive World

ER_{ex} creates life: it must tolerate large ionizing radiation dosages in the anoxic intensively radioactive environment of primitive earth. The tolerance of glutathione was demonstrated by Woodward.[36] Proof of such tolerance in humans is well documented. The tourniquet method of treating limb cancers developed by van den Brenk and practised by the author will prevent approximately 95% of amputations in young patients because it cures their limb cancers. The ingenuity of the system is that provided there has been no spread above the tourniquet all the cancer can be isolated and rendered anoxic. The pressures required are approximately 450 mm Hg for a leg tumour and 350 mm Hg for an arm tumour.[37]

Having placed the tourniquet in position and inflated it the arterial blood is prevented from entering the limb. The limb must then be kept warm because it will cool rapidly and without continuous warmth the oxygen will not be burnt in the limb. Some form of electrical heating must be used but any frequency will suffice and a 50 or 60 hertz electric blanket is adequate. Approximately 30 to 40 minutes later the blanket is removed and the limb is viewed with a telethermographic device to see if any hot spots in the course of the major arteries can be seen. If not then the patient is treated as soon as practicable. Any slight leak from under the tourniquet can be disastrous and require amputation in months or years to come.

Providing no oxygen is present in the limbs they will tolerate 10,000 rads in four daily treatments of 2,500 rads each or six daily treatments of 1,700 rads. The maximum single dose given and tolerated by a lower limb of a patient of van den Brenk was 6,000 rads in one application. Very few signs of these dosages are evident when the cancer has been cleared five, 10 or 20 years later. Some skin fibrosis and loss of hair is usually the only sign of treatment.[37,38,39] The Pasteur reaction is the sensitive part because it may be damaged in its mitochondria. However if it is completely inactivated by the anoxia created from the tourniquet then it is completely protected.

The autonomous mitosis of ER_{ex} is already completely anaerobic and does not require oxygen. In these limb cancers most are sarcomata, or cancers of soft tissues, and it can be calculated that the x number (the number of ER_{ex} units per cell) may be as high as 30 or more in each cell. Only one or two of these will be active at any one time but even with the effectiveness of treatment using these extremely large doses all should be simultaneously active.

Anoxic Therapy versus UHF Therapy

Without the EMR of any frequency (electric blanket) from 50 Hz to at least 915 MHz the massive doses of x-rays given will be no more effective than without the tourniquet. Using the mathematical equations in **Appendix 3**, (p.158) three single doses of 2,500 rads applied to a 15 cm diameter cancer has a theoretical cell kill many billion times greater than without the electric blanket.[37,40] This cell kill could be achieved using UHF before x-ray therapy but the tourniquet preserves the limb normality via the Pasteur reaction's repair function.

After setting up the patient for radiotherapy irradiation the blanket should be replaced between the x-ray generator and the

cancer. The necessity of an "electric" blanket stimulus from any of these frequencies indicates the danger of cancer activation in every patient exposed to any frequency stray electromagnetic radiation.

Pasteur's Reaction - The Sites where Radiation may be Damaging

By contrast 434 MHz UHF before conventional x-ray therapy has no effect upon the Pasteur reaction in the normal cells and provided the x-ray dose does not exceed 200 rads on each day of application the Pasteur's reaction will only be damaged in a very small percentage of cells. This damage is directly responsible for the long term sequelae of x-ray therapy - low grade fibrosis, skin changes in colour, hairlessness and defective sebum secretion, muscular fibrosis, long term failure of some part of the kidney, liver and brain. These sequelae can only arise from damage to the citric and/or phosphogluconate aerobic glycolysis.

The expressed paranoia of the dangers of ionizing radiation mostly occurs from damage directly to Pasteur's reaction controlling ER_{ex}. High doses (full courses of radiotherapy for cancer) very, very rarely cause cancer. In the radiotherapy records between 1935 to 1985 two patients (from in excess of 80,000 records scrutinized) probably suffered from x-ray induced cancers in the previously treated areas.[41] Single doses less than 600 rads (eg 150 to 200 rads for keloids and other non-malignant diseases, such as ankylosing spondylitis) very rarely create cancer and therefore only occasionally destroy the Pasteur system.

From 1,470 patients with non-malignant diseases, 249 patients were irradiated for ankylosing spondylitis, only one developed a proven lymphatic leukaemia and three suffered chronic hematological non-malignant changes.[41] This often curative treatment for such spondylitis ceased in the early 1980s as a result of ill advised activities of the "Green" movement.

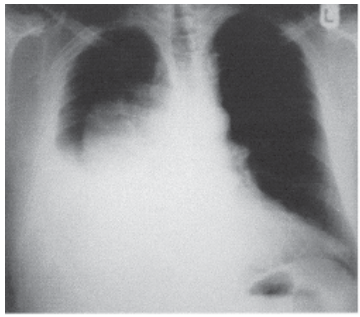
The Pasteur system is radio-resistant compared with active ER_{ex} systems which have a D_o value (sensitivity value in rads to reduce ER_{ex} numbers to 37% of the pre irradiated value) of a minimum of 95 ± 5 rads when under the influence of 434 MHz; 145-155 rads when non electrically heated to 41.8°C; 160 ± 5 rads at 37°C (unchanged by any hypo or hyperbaric oxygen pressure up to four atmospheres absolute).[40] (**Table 4**, p.152) Any mitochondrial activity involving ion transfer pathways (eg other mitochondria) may be of similar radiosensitivity. Suitable systems such as van den Brenk's need to be identified to prove this statement.

434 ± 2 MHz specifically causes cancer to fluoresce and resonate. It is the ER_{ex} units which exhibit this interaction and are specifically stimulated for approximately 30 to 60 minutes after exposure to UHF. Having stimulated the ER_{ex} units to activity there is a further peak between 22 and 26 hours later such that 24 hours after exposure to UHF an almost identical increase in radiosensitivity occurs. In the United States where 434 MHz is illegal under the FDA rules (915 MHz is their legal frequency which has no such effects) the 24 hour effect allows legal exposure from amateur 434 MHz generators which are not under a doctor's control. 24 hours later the radiotherapist can treat the patient and obtain the results desired.[42,43,44] This provides proof of the non-hermal effect of 434 ± 2 MHz at 37°C.

Appendix 2 (p.158) details the results of the author's trial treating malignant non Hodgkin's lymphomata solely with UHF and x-ray therapy compared with a trial demanded by the oncologists of UHF plus or minus x-ray therapy when the patients were synchronously given cytotoxic chemotherapy during the UHF exposure. The results speak for themselves. A controlled double blind trial was considered unethical by the Cancer Council of Western Australia on 29 August 1974 yet refused such a trial comparing UHF before x-rays and x-rays in isolation.

Illustration 7. The spectrum reflected from a large mass of secondary colon cancer (x-ray A) is typical of all large deposits of living human cancer. This appearance disappears within minutes if the patient dies. X-ray B shows reduction of the cancer load after an intravenous injection of L-Glyceraldehyde and UHF applied immediately for 30 minutes to the trunk. Almost immediately after the injection the spectrum changes to a "normal" pattern. X-ray C, three weeks later the cancer has rapidly regrown, the fluid in the chest has increased and death occurred four days later. The spectrum at the time of the x-ray was very similar to the upper tracings.

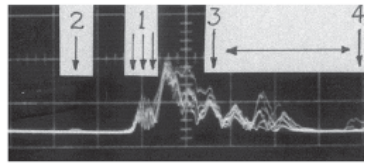
Reflected Spectrum Analysis Lung secondary from Bowel Cancer



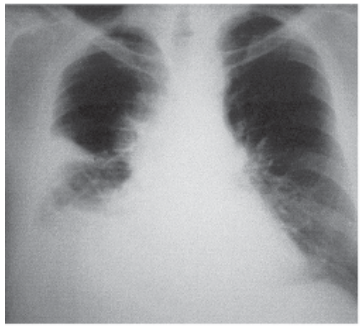
A. X-ray of large secondary bowel cancer in lung

Before Treatment: A Typical pattern

Arrow 1 = ? Fluorescence 434.6/435.2
Arrow 2 = ? Fluorescence 436.4/436.6
Arrow 3-4 = ? Resonance



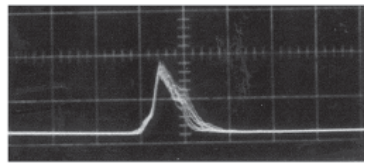
Typical reflected cancer spectrum



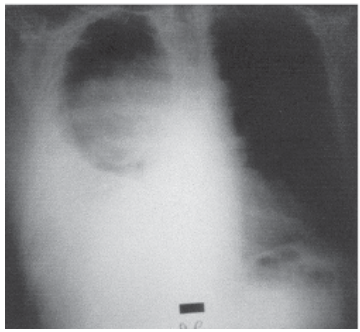
B. X-ray one week after L-Glyceraldehyde injection

X-Ray one week later

1 Minute after IV Injection of
10 GM L-Glyceraldehyde

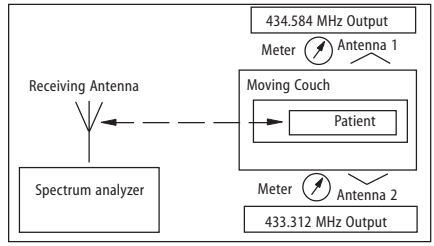


Immediate change spectrum after the injection



C. Rapid expansion of cancer three weeks after the temporary improvement

X-ray Three weeks later: sudden rapid deterioration: original spectrum again



Spectrum analyzer- Type 545/IL20 Tektronix. 1 MHz/cm 50 traces/sec, 1/8 sec exposure.

The patients treated by the combined regime of UHF plus low dose x-ray therapy rarely have either immediate reactions or complications of treatment, no sequelae or long term changes in the normal tissues due to radiation despite a dramatically improved rate of recovery and repair of such complications as metastatic cancerous fractures.[45-50]

Inhibition of ER_{ex} with L-Glyceraldehyde

Several patients with widespread cancer were observed during UHF therapy when having combined treatment. Spectrum analysis confirmed the presence of resonance and fluorescence. **Illustration** 7 (p.155) shows how an intravenous injection of L-Glyceraldehyde will almost instantaneously change the reflected spectrum back to normal. Within a short time it slowly reverts back to the abnormal spectrum. If an adequate dose of L-Glyceraldehyde is given intravenously then a very temporary improvement in the size and symptomatology of the cancer occurs. This improvement lasts usually two to three days. Since it has been established that L-Glyceraldehyde will specifically inhibit anaerobic glycolysis then these findings strongly indicate that L-Glyceraldehyde completely inhibits anaerobic glycolysis but does not kill the system.[51,52] Cancer can only replicate using D-Glyceraldehyde.

The one disease which can be guaranteed not to respond to such technology is Legionnaire's disease. This does not spread exponentially, one patient cannot infect another and either death or recovery ensues. The epidemiology of Legionnaire's disease is that a group of people appear to have been poisoned similarly and simultaneously in association with water cooled refrigeration devices. The signs and symptoms of Legionnaire's disease are identical to those of the soldiers that suffered from phosgene poisoning. Phosgene is readily produced when electrical sparking (eg from a refrigerator motor) occurs in the presence of refrigerant gases such as di-chloro-di-fluoro-methane. A slight leak from the refrigerant circuit into the water bath is the most probable cause of Legionnaire's disease. Water cannot dissolve phosgene but localizes it around the water bath. This explains why Legionnaire's sufferers never have air passage symptoms, only sudden edema of the alveoli when the gas decays into hydrochloric acid within them.[53,54]

The Future for UHF Therapy

A non-toxic non-ionizing radiation method for the control of cancer appears within sight. Such methods would destroy the electrical reaction of exponentiality, ER_{ex}.

Every human disease which progresses exponentially to death is probably suitable for this method, when fully developed for all such diseases. Cancer and viral infections are obvious. The so called auto immune diseases appear to progress exponentially. If it can be shown, as in HIV, that the body cannot mount a true immune reaction to such diseases as ankylosing spondylitis, disseminated sclerosis, scleroderma and lupus, then the method might well succeed with them. A patient who remains free of HIV in 2003 10 years after treatment was reported a few years ago.[21]

Conclusion

In summary the complete failure of radiotherapy to develop from simple uniform day to day irradiation into a specific tool that will only effect the cancer cell is entirely due to the insistence of physicists, radiotherapists and radiobiologists that the interaction of x-rays is a non specific process causing uniform ionization throughout the area irradiated.[55]

Ionizing radiation has a specific target which is "half" of the ER_{ex} reaction.

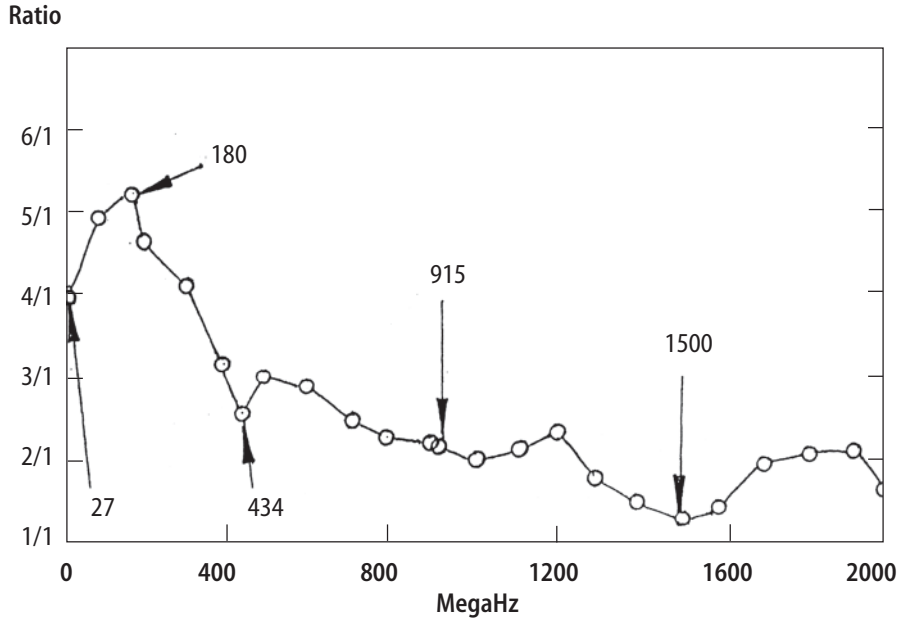
UHF also has a specific target which is the other "half" of ER_{ex}. When UHF is given to activate the glutathione cycle and irradiation is given afterwards to kill the activated sulfydryl complex reaction the two specific damaging agents of a cancer cell have become identified. The dosages required to eliminate most cancers are without morbidity, immediate side effects or long term sequelae.[45-50] Permanent destruction of ER_{ex} is easy with x-ray therapy once it is sensitized by UHF. The alternative to the x-ray is to use intravenous injections of oxidized glutathione and other similar compounds followed by UHF therapy. Results of such methods have appeared in other publications.[21,56]

Experimental confirmation that carcinogenesis primarily involves glutathione is given by Fiala et al.[57]

Appendix 1

Chart of the absolute fractional power absorption of human breast cancer compared to the absorption in the subjects' opposite normal breast measured at the mirror image site. The ratio peaks at 180 MHz and is 5.16. Resonance occurs at 434 $\pm$ approximately 10 to 15 MHz. 27 MHz is UK's standard medical usage. 915 MHz is used in USA. The ratio of 1.22 is lowest at 1500 MHz $\pm$ approximately 50 MHz. The error in each curve is the same at all frequencies at $\pm$ 0.1 of the ratio figure.

This is the average result from five patients who had unilateral breast cancer and who agreed to this study immediately preceding definitive treatment using radiowaves and x-ray therapy.



Appendix 2

The Phase One Clinical Trial was conducted at 13 & 21 McCourt Street, West Leederville, Western Australia and received its first patient in February 1974. The patients were divided into three groups:

Group 1 - 18 patients with generalised non Hodgkin's lymphoma (some previously treated with cytotoxic chemotherapy) and retreated similarly adding UHF therapy. Average age - 54 years. All 18 patients were dead by June 1988 from non Hodgkin's lymphoma. Average survival 2.8 years after UHF. 12 patients needed one or more transfusions. Sequelae of marrow depression in most. Five patients developed central nervous system deposits of NHL and required CNS radiation. This was applied prophylactically in a further three patients. Abandoned after 1984 because of the 100% death rate.

Group 2 -12 patients with generalised non Hodgkin's lymphoma (some previously treated with x–ray therapy). Average age - 49 years. Treatment of 434 MHz UHF followed by low dose x-ray therapy. In December 1987 six years after patient number 12 was treated - eight were alive, four at 13, 1 at 12, 2 at 11 and 1 at 6 years post treatment. One patient lost sight of at 10 years, one dead at 13 years in a tractor accident on his farm. Only two patients died from non Hodgkin's lymphoma at 11 and 12 years and both declined retreatment. Haematology of all survivors normal. Average total dosages of x-ray therapy was 2750 rads to each area treated. One patient required transfusion, no sequelae were seen and no patient developed central nervous system deposits.

Group 3-7 patients with retroperitoneal non Hodgkin's lymphoma. Average age - 47 years. All treated with UHF before x–ray therapy. In December 1987 all 7 patients survived - 3 at 13, 2 at 12, 1 at 11 and 1 at 8 years post treatment with normal haematology in all survivors. Two patients developed renal impairment, one developed a malignant melanoma of the leg which was similarly treated in 1983, one developed squamous skin cancer and ulcerative colitis. Two patients developed secondaries in the neck and were treated as the abdomen was at the appropriate times. Five of these patients remain alive and well when contacted in January 2002, having survived non Hodgkin's lymphoma free, 1 at 27, 3 at 25 and 1 at 22 years post treatment.

Final Conclusions from this Study

1. UHF and XRT is a potentially curative method (Groups 2 and 3).
2. Cytotoxics and UHF are only palliative (Group 1).
3. UHF potentiates cytotoxicity (Group 1).
4. Non Hodgkin's lymphoma in CNS is an iatrogenic effect of cytotoxics (Group 1).
5. UHF and XRT is the treatment of choice for all stages, sites and types of non Hodgkin's lymphoma. No sequelae occurred in any patient so treated. Most can be unequivocally cured.[45,48,49]

Appendix 3

Growth and X-ray Response Of Human Cancers

1. The growth of human malignant cancers is described by Laird as a Gompertz equation of the form.[58]

$N_T = N_o e^{A/\alpha\,(1-e^{-\alpha T})}$ Equation E1 or $N_T/N_o = e^{A/\alpha\,(1-e^{-\alpha T})}$

Where N_o = number of cells at time o
N_T = number of cells as time T. A and α are constants for the specific cancer.

Expressing e^{-aT} as a power series it can be seen that if T is small then

$N_T = N_o e^{AT}$.....Equation E2 or $N_T/N_o = e^{AT}$

As **Illustration 5** is converted by UHF to Illustration 6 (less than 5% mitoses to 100% mitoses) then 434 MHz UHF changes equation 1 to equation 2 :-

$N_T/N_o = e^{A/\alpha\,(1-e^{-\alpha T})}$ –––> $N_T/N_o = e^{AT}$

2. The response of human malignant cancers to ionising (x-rays etc) radiation is described by Johns as similar, diametrically opposed equations. They have negative exponential functions.[59] Assuming that in a biological system containing N entities and a dose dD destroys dN entities then

$dN = 1/D_o\ NdD$ where D_o is a constant

Integrating, thus equation becomes
$N_T = N_o e^{-D/D_o}$
Putting $D = D_o$ we have $N = N_o e^{-1}$

and thus D_o is the dose required to reduce the population to 1/e (or 37%) of the original value. This dose D_o is the radiosensitivity value of the cancer. If it is assumed that a multiple hit is required, that is x targets must be hit to destroy a cancer cell, then the survival curve takes the form, N_R being the residual after some N_o are killed
$N_R/N_o = (1-(1-e^{-D/D_o})^x)^y$.....Equation E3

Where N_R is the residual from N_o after receiving y doses of radiation of D rads x-rays per day and x is the number of targets in each cell which must be killed for the cell death. N_o for in air normothermic x-ray therapy is approximately 160 rads. Simple heat to 41.8°C will reduce N_o slightly to 145/150 rads but x is unaltered. (x is the ER_{ex} system, varies from 3 to at least 40 or more per cell. All must be killed to kill the cell, only 1 or 2 are active at any one time in spontaneous cancers).

When inactive ER_{ex} has a D_o value of at least 10,000 rads (totally resistant) when active the D_o value of ER_{ex} (x units) becomes a minimum of 95 rads.[31] Some or all can be temporarily activated by 434 MHz UHF. Since all are active after adequate 434 MHz UHF, x numbers of 3 to 40 or more become unity because x=1. X-ray therapy MUST BE GIVEN either 20 to 30 minutes or 24 hours later for the optimum maximum response.

The response after UHF changes Equation 3 from

$N_R/N_o = (1-(1-e^{-D/D_o})^x)^y$

to $N_R/N_o = e^{-D.y/D_o}$.....Equation 4

Therefore UHF changes Equation 1 to 2;

$N_T/N_o = e^{A/\alpha(1-e^{-\alpha T})}$ ---> $N_T/N_o = e^{AT}$ and

and 3 to 4:

$N_R/N_o = (1-(1-e^{-D/D_o})^x)^y$ ---> $N_R/N_o = e^{-D.y/D_o}$

And x must represent the ER_{ex} systems in each cancer cell: ER_{ex} is the UHF plus the x-ray target because the growth of the sulfhydryl complex of Illustration 1 grows exponentially and is killed exponentially by UHF and x-rays. As myxomatosis in rabbits is an exponentially growing killer on an exponentially growing population - so ionising radiation is the only biological killer of cancer in the world. UHF merely ensures all the targets can be simultaneously activated and therefore killed when correct temporal sequence related to x-rays is obeyed.

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