My summary of Robert Miller's "4 PILLAR GENE REMEDIATION STRATEGIES"

which I hope can help me live with, manage, and perhaps even resolve, the medically incurable Follicular non-Hodgkins Lymphoma (fNHL) I was diagnosed with, July 2013. *Sean Callagy, November 2015***

Background/Credibility:

1988	*July*: 45 year old Robert Miller, Calgary, Canada, diagnosed Stage 4. Opted to 'watch and wait'. *Nov*: spontaneous regression with node almost entirely disappearing. Begins research in medical libraries.
1990	*August*: oral Chlorambucil successfully reduces swollen node blocking main lymphatic return duct. *December*: hyperthermia treatment to abdomen.
1990-98	Discordant regression (some nodes enlarge, others decrease). But overall gain in tumour load including one reaching >10cm in abdomen.
1998	*November*: bowel problems apparent. Tries Chlorambucil again. No response this time. *December*: night sweats, day chills, fatigue, appetite loss & sustained high LDH. Started CHOP using exercise & hot baths on treatment days to boost circulation & dilate blood vessels (to maximise body distribution of chemo).
1999	*April*: "dramatic" reduction in abdominal node size. In Summer a slow-growing node starts in groin. Begins researching & starting disciplined application of natural strategies. Significant regression of node in groin & no treatments until...
2008	*November*: second transformation and started R-GDP chemo.
2009	*June*: external signs of fNHL had receded. LDH normal.
2011	*March*: less lymphoma evident than at any time in past 23 years.
2012	*April*: "no active lymphoma".
2014	*June*: a requested abdominal scan confirms "no lymphoma was seen".

Now thriving in his early 70s, Miller is grateful for the right medical interventions at the right time while evolving his Gene Remediation Strategies - strategies based solely on medical science and intended to correct the faulty gene expression driving fNHL *(epigenetics)*. In this regard he has been fortunate that his oncologist works alongside two members of the Gascoyne team which, in 2012, completed coding of some 109 fNHL-associated genes.

These Gene Remediation Strategies consist of 4 Pillars deliberately designed to work synergistically to promote and sustain a beneficial balance of gene expression – while also creating a nodal microenvironment unsuited to cancerous activity.

Time will tell just how complete and effective these strategies are. But reviewing his last 25 years, Miller reports consistent application of all 4 Pillars was accompanied by regression, while neglecting one or more brought deterioration. Many of his site's 2000+ members, including some who have gone 7-9 years without relapse, echo this observation. So, with (a) medical science backing each individual Pillar and (b) anecdotal evidence endorsing their simultaneous application, there seems every reason for me to hope for similar results.

All the more so because, since 1999, each of these 4 Pillars had become increasingly compromised in my own life. To such extent that, in the years immediately prior to diagnosis, none existed! Also, struggling to cope with being deeply unhappy and stressed, I was eating large amounts of processed foods and refined sugars. Hence, having been living such an unhealthy life, I am now hopeful that consistent, daily application of these strategies will allow long-term management of fNHL - if not complete resolution in time.

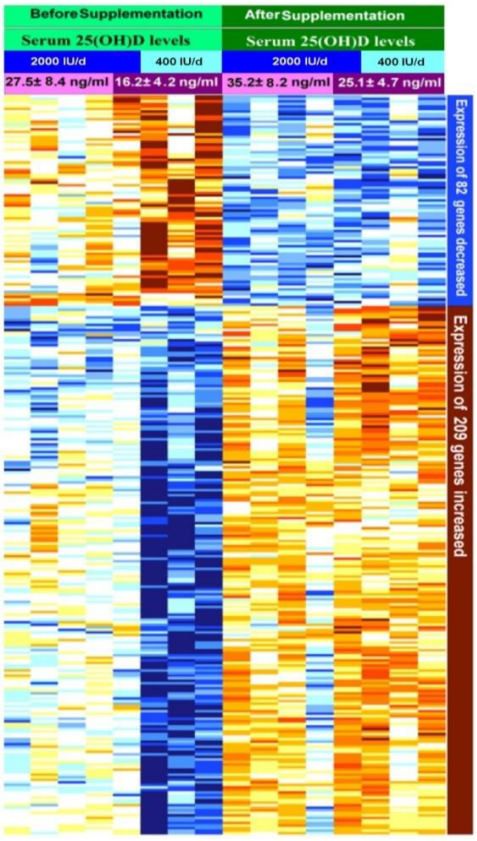
Miller's analysis of medical research, personal experience and reports from members, suggests that while all four are important (like 4 legs on a table), there may in fact be an order of priority in the 4 Pillars. They are summarised here in that order.

Sean Callagy, November 2015

*** The reader is advised to note some **very** important caveats at the end of this document! ***

1. VITAMIN D: "... becomes *a powerful steroid hormone in the body,* plays a major role in genetic expression. Between 10 and 15% of the c 25,000 genes in the human body have vitamin D receptors, including cancer cells.

In 2013, a major study found that when vitamin D3 levels in the blood are increased by supplementation for as little as two months, significant positive anti-cancer alterations in gene expression occurred in at least 160 genetic signaling pathways linked to cancer as shown in the figure...



Colors ranged from blue to brown; High expression = brown, average expression = white, low expression = blue). Clustering of the 291 genes affected by vitamin D3 supplementation was based on stimulation (brown) or inhibition (blue) of gene expression (Holick, et. al., 2013)"

Also, several PubMed studies show a positive association between higher Vit D levels and better immune function, reduced cancer risk and better long-term prognosis for people with various cancers (including lymphoma). Also some evidence linking increased sun exposure with reduced cancer risk, and perhaps combining supplementation with sun exposure gives best results.

Method: initially 5,000iu Vitamin D3 daily with nuts, seeds, berries and yoghurt breakfast. But when blood levels reached 159, cut back to every second day. Spring 2014 began regularly consuming blue and other hard cheeses, and supplementing 45ug Vit K, to increase Vit K levels to reduce risk of mis-depositing of calcium into blood vessel walls (*this possible side-effect of synthetic Vit D was highlighted when CAT Scan 3, Dec 2013, showed a moderately calcified coronary artery (yet CAT Scan 2, Sept 2013, no such calcification was reported; only significant interim change was starting 2 x 5,000iu caps on alternate days to accelerate rise in Vit D levels);* **Magnesium Citrate also being taken to accompany calcium in yoghurt** (Miller suggests 300mg).

"25 (OH) D" blood test in July 2013 showed Vit D plasma levels of 60.4nmol/L (already 1 week supplementing, so initial figure probably lower). Nov 2013: 94nmol/L. July 2014: 159 nmol/L. Dec 2014: 155nmol/L. Sept 2015: 129nmol/L. (medically accepted range: 50-125; but various researchers suggest optimal range is 120-140nmol/L).

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2. EXERCISE: powerful epigenetic regulator affecting up to 7000 genes (citing Ling et. Al, 2013)**. Also,** (Citing Luo, et. al., 2010; Jones, et. al., 2013), **muscle contraction increases production of AMPK enzyme which influences blood purification, mitochondrial activation, insulin sensitivity and reduces blood glucose levels by influencing how fats and carbohydrates are used to make energy in the body. This in turn promotes the "Warburg Effect" in which caner cells are starved of an energy source. AMPK can also correct faulty signaling of the p53 "ringleader" gene and the mTOR pathway.** Other benefits include increased oxygenation of body tissues and circulation of lymph fluid.

Exercise-induced reduction of blood sugar levels declines from a post-exercise peak to zero over a 17-hour period. Therefore, to ensure 24-hour benefit, two bouts of exercise are recommended daily (Miller's so-called "daily double").

Method: 2 x 30min or longer bouts of light to moderate aerobic exercise daily. Usually achieved by a brisk walk after both breakfast and supper. Also, a personal choice, once or twice weekly I cycle 80-90% of my maximum possible distance – sometimes including brief high intensity bursts. Because, as Michael Moseley notes in the BBC's "The Truth About Exercise", along with other benefits, high intensity training can dramatically increase insulin sensitivity – enabling more efficient processing of blood sugars. When outdoor exercise is not possible, kettle bell and/or body-based workouts are performed.

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3. SLEEP & STRESS MANAGEMENT: "Often chronic stress and sleep deprivation reinforce each other... The result is chronic inflammation in the body and high cortisol levels in the blood, which are both key accelerators of cancer growth."

"Research indicates that the expression of over 700 genes is altered during sleep... During sleep, *the ROS cascade is an oxygenation process that eliminates old and damaged cells, including cancerous cells."* (Cites Dijk, et, al., 2013)

"Chronic disruption of circadian rhythm has been linked to increased incidence of many different types of cancer... Cell biologists are finding there is a sub-category of "circadian genes which regulate the expression of other genes responsible for producing key anticancer enzymes and proteins. These biologists suspect that epigenetic changes due to circadian rhythm disruption contribute to dysfunctions in cell division and proliferation, DNA damage, and tumor growth." (Cites Savvidis and Koutsilieris, 2012)

"Prolonged exposure to stress, whether it is mental, physical, or emotional, often sends a perpetual "fight or flight" message to hormonal systems in the body, leading to a constant overproduction of cortisol. Under prolonged stress, constant cortisol production leads to "cortisol resistance" and lowered immunity. This actually sets into motion epigenetic signaling that creates *chronic inflammation*, a known causal factor for many diseases, including cancer." (Cites Turner, et. al., 2012)

Method: first time in life am now sleeping in a pitch black room to maximise production of Melatonin (a hormone which can act as an antioxidant, enhance immune function as well as playing a central role in circadian rhythm). No pilot lights. No street or hall light penetrating into the room. Unable to see hand in front of face after 10mins of eyes adjusting. **Also, during the day I (a) prioritise pleasurable activities like playing music, walking, bird-watching, cycling, freediving and (b) avoid, or at least minimise involvement in, or exposure to, situations I find intense or stressful.**

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4. DIET: avoid refined and quick release sugar sources to minimise blood glucose levels, avoid insulin spiking and assist the Warburg Effect. Ensure plenty of *Sulforaphane* through Broccoli & Brussel Sprouts to inhibit Histone Deacetylase as it can block epigenetic correction (Citing Ho et. al., 2009)**. Ensure consumption of a wide range of anti-angiogenesis factors but especially *Ellagic Acid*** (Citing Li et. al., 2012) **for which I take Raspberries and Walnuts at breakfast**. For similar reasons Ginger and Turmeric (as powders in porridge and whole roots chopped into stews, soups etc), Parsley, Sweet Potatoes, Apples and more foods listed on http://eattobeat.org now comprise the bulk of my diet.

Leading edge research also suggests **amino acids play a significant role in cancer regulation and immune function (by being central to immunoglobulin production)**. Balanced protein intake via quality animal products (meat, fish, eggs) is recommended and supplementing with isolated amino acids discouraged (esp. Glutamine which may accelerate tumor activity). 4-6 monthly post-chemo blood results continue to show (a) an unbalanced amino-acid profile, suggesting more dietary protein is needed and (b) IGs considerably lower than pre-chemo levels (if no increase once my amino-acid profile improves, will consider IG supplementation).

Some evidence also suggests 'good fats' and some foods can reduce inflammation. So am taking raw milk yoghurt (probiotics) and avocados, unsalted butter, Olive, Coconut and/or Hemp Oils. Sea Salt, Himalayan Salt and Seaweeds are being used to ensure intake of broad spectrum of minerals and trace elements.

For now I've minimised supplements (Vit. D, Vit. K, Magnesium and some green powders). But in time, if blood markers deteriorate, will introduce the suggested Kelp, Resveratrol, Selenium, Vit B12, Wild Pacific Salmon Oil and Red Palm Oil (for Vit. E).

All quotes above are from Robert Millers 33-page "Article 10 Getting Follicular Lymphoma Cells to Die on Their Own". In some of those quotes Miller refers to, or directly quotes, authors of medical literature. These references (with hyperlinks) are below. However, these references constitute only nine of some twenty-seven given in "Article 10". To access the entirety of that, and Miller's other well-referenced Articles and monthly newsletter, please register on LymphomaSurvival.com

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References:

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N.B.: While developed with fNHL in mind, as they are epigenetic in effect, these strategies may also prove valuable to those with other forms of cancer. In either case, the reader is cautioned that this is a SUMMARY document of MY understanding and MY application of these strategies. So it may contain errors and most certainly ***does not*** *contain all the details (especially regarding diet). Also, as epigenetic science evolves and Miller and his team continue to learn, these strategies may be refined or added to at short notice. For those reasons, and the fact that I am not prepared to coach others about them, those seeking to fully understand, properly apply and remain up to date with these strategies, should register on* http://LymphomaSurvival.com