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# Letter to the Editor

## Paleo Longevity Redux

Sir,

Geoffrey Cannon[1] repeats a widespread affirmation that 'palaeolithic people usually did not survive into what we call later middle age'. His underlying point, which is widely shared among researchers and the public at large, is that our ancestors did not live long enough to develop cancer, heart disease and other chronic illnesses. All of which forms the basis for the near-universal belief that ancient hunter–gatherers (our ancestors) really were not healthier or fitter than us moderns, and therefore their ancient dietary practices have little relevance to modern health, well-being and longevity.

On the initial point, Cannon is correct. The average life span of our ancestors was short compared with that of modern humans in developed countries, where one can expect to live into one's 60s, 70s and possibly early 80s, on 'average'. Conversely, a Neanderthal living in ancient Europe was lucky to live past her teens, and if you lived to your mid-thirties you might have been considered old in Ancient Egypt. More recently, the average life expectancy in the United States in 1900 was 47.3 years. By 1935, that age had risen to 64 years and today that number hovers in the 70s for both women and men (though women can expect to live a few years longer, on average).

The first problem with this thinking is that the 'average life span' math is misleading and tells us very little about the health and longevity of an individual, but rather gives us an average age of death for a given group or population. For example, a couple that lived to the ages of 76 and 71, but had one child who died at birth and another at age two, would produce an average life span of 37.25 [(76 + 71 + 0 + 2)/4]. Using this methodology it is easy to see how one would come to the conclusion that this group was not very healthy.

However, the precept that diet played a significant role in the abbreviated average life span of our ancestors is simply not true. There are few among us who believe that the so-called Westernized diet of highly processed grains and added sugars and fats is an optimal diet for anyone – past or present. Our soaring rates of obesity and an ever-growing list of acute and chronic diseases – occurring in alarming frequency among younger sections of the population – speak to the discordance.

It is useful to point out that our species reached its current anatomical and physiological standing nearly 200 000 years ago[2]. That is, while components of what we discern as hallmarks of behaviourally modern – such as language, art, trade networks and advanced weapons – have occurred only within the last 50 000 years, the hardware had already been in place for 150 000 years. While we may drive around in hybrid cars today, we do so in very ancient bodies and with a genome that was selected, for the most part, on a nutritional landscape very different from the one we find ourselves in today.

Before the advent and 'widespread' adoption of agriculture, which depending on where you lived occurred between 1000 and 9000 years ago, humans organised in highly mobile groups of dozens or a few hundred individuals. Archaeological data and analysis of burial populations[3] reveal that life was harsh and dominated by warfare, strife, destruction, human trophy-taking and the all-too-often practice of infanticide. All of these facts of ancient life, in conjunction with the lack of simple antibiotics and modern surgical practices, resulted in shorter average life spans than many of us enjoy today.

As agriculture took hold around the globe and groups settled down and built more permanent communities and ultimately socio-politically complex civilizations, the more homogeneous and centralised food and water supply was easily contaminated by human waste. While war and even larger massacres continued throughout the agricultural revolution, tiny microbial killers took their share of victims, especially among the young and undernourished, further reducing the cyclical nature of the average life span. As European ships set sail just a few centuries ago, new ills and evils further reduced the average life span of populations they encountered – albeit punctuated.

As war, insanitariness, killer microbes, and illness pulsed through humanity over time, our basic underlying physiological and nutritional parameters have changed little in the last few hundred thousand years. Our modern genome is in fact an ancient one and natural and cultural selection has built it to last. Under optimal nutritional conditions, such as those our genome evolved on, us modern hunter–gatherers can live healthy and long lives. We need only look to the modern Hunza of northern Pakistan or the southernmost Japanese state of Okinawa to witness the longevity that our ancient genome is selected for. With the threat of war and violence greatly reduced, and upon a sound footing of a safe food supply, our ancient bodies can be healthy well beyond 'our best-before date' Cannon writes about. On a low-calorie, high-fibre, plant-based diet, a significant portion of these populations enjoy healthy and active lives into their 80s, 90s, and often beyond 100[4]. Incredibly, the aged portions of these populations have lower rates of obesity, heart disease, diabetes, hypertension, high cholesterol, cancer and other chronic diseases than Western populations.

The modern world owes much to antibiotics and advanced surgical procedures of the last half century, resulting in dramatic increases in average life span for much of the developed and developing world, although horrific events in Darfur and other African states remind us how significant gains in average life span can easily be erased. In Iraq, a male or female could expect to live to an average age of 66.5 years in 1990, but today, following years of foreign occupation and endless violence, life expectancy has dropped to a mere 59 years for both sexes – and slightly younger for males.

The self-confidence that comforts us today as we review the average life span of our ancestors is misguided and tenuous when viewed through the captivating haze of modern medicine that literally props most of us up into our golden years. I doubt our ancestors would call this living. While we may live longer than our ancestors, we are in fact dying slower. So rather than rest on our perceived cultural and medical success as it pertains to our longevity, we should challenge ourselves and our genomes to maximise our health for optimal longevity. For those not trusting of the past and the nutritional landscape upon which we evolved, our genetic cousins, the Hunza and Okinawans, have shown us a way forward.

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5 Population Reference Bureau. *Iraq* [online], 2007. Available at http://www.prb.org/Countries/Iraq.aspx. Accessed 9 June 2007.

## Geoffrey Cannon replies:

Industrialised food systems generate foods and drinks in the shops, and therefore diets, that are pathogenic. I don't think Jeff Leach meant to suggest that I have any other view!

He mentions the Okinawans[1] and Hunzakuts[2] as examples of peoples whose traditional food systems have enabled healthy and long lives, and proposes that these are examples of different types of optimal diets revealing the human potential life span. I agree that this potentially is an important argument. The gerontologist Roy Walford has also claimed, from work on experimental animals, that the maximum human life span is around 120[3]. The convergent evidence here seems to be on the general benefits of energy restriction to levels well below what is generally now considered 'normal', together with simple and very nutrient-dense diets. Perhaps this is a way to 'cheat nature'.

The theory that humans are evolved and adapted to live until their children are adults, and then – with some exceptions – to die, is I still think the most reasonable working hypothesis, simply because – as I mentioned – there is no evident selective advantage in living longer.

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