



The science & art of living the way nature intended

# The Bond Briefing

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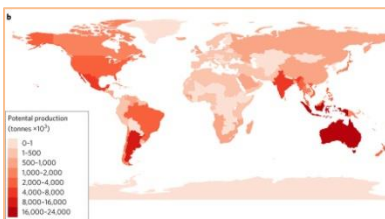


RATIONAL EVIDENCE-BASED COMMENT FOR THE GENERAL PUBLIC & HEALTH PROFESSIONALS. WE SAY EXACTLY WHAT WE THINK

**Food Security:** Sustainable Ocean Food for All. **Ancestral Gut Health:** Seasonality of Gut Bugs. **Our Sunlit Heritage:** Chrono-nutrition and Sun-Skin Repair. **Questions:** Prickly Pear. **Barmy Headlines:** Cities Older than we Thought! **Ancestral Health:** Our Living Gut – part XIV. **From Forager to Astronaut:** Keeping Mars Pioneers Alive – part II. **Epigenetic Effects – part II.** Supplements, Sunshine Deficiency, High Fat Diet. **From the Journals:** Plant Hormones – the New Micronutrients. **We Practise what we Preach:** Geoff Lung Function Test. **Spreading the Word:** Radio Interview: Humarian; Judging UK Paleo Awards: Report.

## Food Security

### Sustainable Ocean Food for All



The potential for ocean seafood farming: the redder the better  
Enlarge: <http://bit.ly/2gbNjHg>

Wild fish stocks have been declining for decades and the yearly catch has plateaued at 90 million tons. Fish farming has tried to pick up the pace but has suffered from poor husbandry, and grubby and unsustainable methods. I wrote rather gloomily about this in: **Fish Stock Sustainability**, [Aug 2009](#) [1], and in **Farmed Fish Deplete Wild Stocks** [Feb 2006](#) [2]

However, in: **Farmed Salmon Quality Decline**, [Oct 2016](#) [3] I was able to report on the industry's serious efforts to improve its techniques and sustainability.

One major change is a) to enlarge the fish farm pens and b) to move them from stuffy, polluted fjords and lochs to the open ocean. There the fish swim freer and the purifying ocean currents sweep them clean. With these techniques in place, Rebecca Gentry and colleagues at UC Santa Barbara calculate [4] that the world's demand for fish and shellfish can be supplied many times over from just a few 'hot-spots', mainly in the tropics. Also every coastal nation could easily provide for itself; the USA > 3

## Ancestral Gut Health

### Seasonality of Gut Bugs



Hadza roast tubers  
<http://bit.ly/2gNYfW7>

There are two seasons, **DRY** and **WET**, in our hunter-gatherer homeland, the Rift Valley of east Africa. The Hadzas, who still live there, have a diet which fluctuates accordingly.

In the dry season, meat, baobab and tuber consumption play a relatively larger role; in the wet season, berries, tubers, honey and baobabs prevail.

Erica Sonnenberg and colleagues at Stanford University, California, found that the Hadza gut bugs varied seasonally in harmony with the Hadza dietary intake [5]. In particular, a subset of microbial species' populations diminished in the wet season and rebounded in the dry season, when consumption of fiber-rich tubers peaked.

More surprisingly, this bacterial species appears to be the same one that is resoundingly absent in the guts of industrial populations. See **Forager Gut Bugs not like ours**, [April 2014](#) [6] and **Forager Stools**, [July 2016](#) [7]

Sonnenberg wonders if this seasonal ebb and flow of microbes is an important factor... > 4

## Our Sunlit Heritage

### Chrono-nutrition/Sun-skin Repair

We have reported many times that the skin has many ways of handling ultra-violet rays and repairing any damage they might cause: **Skin's Self Repair Mechanism**, [Oct 2010](#) [8]; **Sunscreen in our DNA**, [July 2015](#) [9]; **How Skin Resists UV Damage**, [2011 04](#) [10].

Now we have another surprising angle. Dr. Takahashi, of Howard Hughes Medical Institute, Maryland, finds that one repair enzyme called "XPA" is controlled by the timing of our meals [11].

Eating at abnormal times disrupts the biological clock of the skin, including the daytime potency of XPA.

The finding indicates that people who eat late at night may be more vulnerable to sunburn and longer-term effects such as skin aging and skin cancer,

"I did not think the skin was paying attention to when we are eating," said, Dr. Takahashi, "But previous studies have shown strong roles for the body's circadian rhythms in skin biology."

**My View?** Eating late at night? Leave that to the French and other Latins! No, there are many good reasons, including the forager template, for not eating late – and now we have yet another one.

See also for chrono-nutrition: **Meal Size and Timing** [Aug 2016](#) [12] and for chrono-types: **Night Owls: 'Fast-Life' Histories**, [Last month](#) [13].

## Questions

### Prickly Pear



**Q.** What do you make of prickly pear?

**A.** Good. They are very low in sugar (only 1 gram per 100g) and have a very low glycemic index of just 7 [14].

As with most fruits, they are rich in the usual panoply of vitamins, minerals and phytonutrients. In particular, they are rich in fiber, some 4 grams per 100 grams.

Moreover prickly pears have hard, indigestible pips which, normally, one would swallow as well. This, in my view is a good thing.

Why? This chimes with a concern I have: foragers have a high intake of totally indigestible matter (“roughage”) – something that we hardly do today. See: **Roughage** [Jan 2014](#) [15].

In my view, the question of ‘Roughage’ is a much neglected one, and is a topic that needs much more study.

## Barmy Headlines

### Evidence mounts that the first cities are much older than we thought

Dramatic new hypothesis could change the way we understand human history. <http://bit.ly/2yuUuw5>

This blog-post treads the well-worn path of exaggerating and dramatizing a reasonable observation into a sensation-seeking headline.

The original scientific article [16] is all about tropical habitat and, mainly, about how to care for it in today’s world.

In passing the researchers mention that foragers were, for the past 30,000 years probably slashing and burning tropical forest from time to time to grow foodstuffs on an occasional basis.

In this way, humans have been changing their habitat for millennia.

But we knew that anyway. Look at how the foragers have been ‘burning the bush’ for eons. As I say in ‘Natural Eating II, [page 40](#) [17]:

“Always, the band carried a “fire-stick,” a flaming brand to set the campfire at night and fire the bush on occasion to trap animals. They were quite careless about this. Sometimes whole regions went up in smoke, simply to force out a small animal 50 feet away.”

See also: **First Use of Fire in Europe, Aug 2012** [18].

So, yes, even tropical habitats are not pristine – but foragers were not building cities either. Those had to wait for the farming revolutions to get going no earlier than some 11.000 years ago.

## Ancestral Health

### Our living Gut - part XIV

[Last month](#) [19] we saw how gut dysbiosis is a factor in **Antibiotics and Breast Cancer** and **Tetracycline Zaps Sperm...**

### Type I Diabetes and Antibiotics

We have become so obsessed by the exponential rise of Type II diabetes that Type I diabetes is often forgotten. But Type I is increasing fast too. It is caused by the immune system going haywire and attacking the pancreas’s insulin-making cells. The evidence is piling up that Type I is a lifestyle disease. It usually appears in infants and children and used to be fatal before the days of insulin injections. Why would the immune system attack pancreatic cells? Many studies have implicated bad gut health.

‘Good’ bacteria in the gut are responsible for tuning-up the immune system and keeping inflammation under control. A huge disrupter of gut flora is the use of oral antibiotics. Dr Li Wen of Yale University School of Medicine, incriminates them in the onset of Type 1 diabetes [20].

### Injected Antibiotics Disrupt Infant Gut Flora

It is not only *oral* antibiotics which wiped out gut bacteria. *Injected* antibiotics can be just as devastating. Babies injected with

broad-spectrum antibiotics (Ampicillin, Gentamicin) within 48 hours of birth still had a radically diminished bacterial diversity 8 weeks later [21]. In particular, the potentially disease-causing *Proteobacterium* became dominant. Say the authors, “Altering the gut flora and thus the immune system, boosts the risk of developing asthma, allergies and obesity in the long term.”

[Next Month](#). Hospital Danger: Sepsis; Antibiotics Damage Cells.

## From Forager to Astronaut

### Keeping Mars Pioneers Alive (II)



#### Red Planet Leadership

James Melton

[www.jamesmelton.com](http://www.jamesmelton.com)

(click on image)

[Last month](#) [22] we saw how the psyche is challenged when humans are cooped up for months in a small space.

Nowadays life on an Antarctic research station is seen as a proxy for inter-planetary travel and settlement. It has been said that it is “as close to Mars as we can get” [23]. When staffing up an Antarctic station, the concerns have, rightly, been on a) identifying those whose personalities are best adapted to work there and, b) how to avoid the interpersonal meltdowns due to poor leadership.

The Antarctic winter in particular parallels deep space missions with its duration, physical danger, dependence on external supplies, isolation, enforced small-group togetherness, restricted mobility, limited social contact, and the disruption of normal recreational and professional activities [24].

Further challenges follow: communication with home, medical emergencies, equipment breakdowns, and isolation from normal family life. ‘Both sexually and socially the polar explorer must make up his mind to be starved’, wrote Cherry-Garrard in 1922 [25] (but it is taboo these days to investigate the former!)



Interpersonal relationships are seen as a critical factor in polar wintering [26]. These have a greater influence on coping, and psychological well-being, than the extreme physical environment. The quality of leadership plays a vital role in maintaining the psychological health of the expedition [27].

So much for the major pre-occupation: creating the **MENTAL** environment which, to stop the Astronauts going mad, conforms as closely as possible to their savanna-bred psyches.

**Next Month Part III** – Food self-sufficiency and Paleo.

**Continued from Page 1**

### Sustainable Ocean Food for All



... could provide for all of its fish and shellfish needs from just 0.01% of its territorial waters.

Other regions, like Indonesia, south Asia, Kenya and the Pacific islands have even greater potential.

All well and good - but the next huge challenge is fish **FOOD**.

Originally the industry, unbelievably, used wild fish to feed to farmed fish! This completely defeated any argument about sustainability. Indeed, the rise of fish farming actually led to even greater decline of fish in the wild.

Now, the fish farming industry is focusing on feedstocks of plant and algae origin. In addition they are introducing a new angle: feed the fish on a meal made from mass-produced insects. See: **Insect Nourishment May 2014** [28] and **Food Scarcity - Mini-livestock Here We Come June 2008** [29]. That relieves the Paleo zealot from having to eat the insects directly!

**Resources** for selecting sustainable fish providers:

**USA:** [www.seafoodwatch.org](http://www.seafoodwatch.org)

**UK:** [www.mcsuk.org](http://www.mcsuk.org)

**International:** <http://bit.ly/2xGWK1k>

## Briefing

**Epigenetic Effects - Part II**  
*Last month* we saw how, in the Dutch famine of 1944, pregnant women gave birth to children vulnerable to a range of diseases from Diabetes to CVD to Brain diseases.

The surprise comes in the second generation: they too gave birth to undersized babies. The Dutch famine had triggered changes in the fetus' genes which then were transmitted down through subsequent generations. This is "transgenerational epigenetics" in action.

**Supplements:** Dr. Randy Jirtle of Duke University found that when he fed pregnant mice with certain vitamin supplements, the babies and subsequent generations were born with dark fur instead of white [30]. More interestingly, they were more resistant to diabetes and obesity.

This is important: a pregnant mother's food and vitamin supplementation might be laying down permanent changes for the health not only of her children, but also of generations to come. Some of these "imprinted" genes can increase susceptibility to cancer. Jirtle speculates that autism, asthma and probably many other fast-increasing diseases might have been facilitated unintended by such supplementation.

**Sunshine Deficiency:** But epigenetic changes have a long reach: Professor George Ebers of Oxford University, UK finds that mothers who have *sunshine deficiency* give birth to children who are more likely to have multiple sclerosis (MS) [31].

**High Fat Diet:** A rat study found that pregnant females on a *high fat diet* not only sharply increased breast cancer risk in their daughters but also in the daughter's daughters [32].

**Next Month: Epigenetic Effects III,** Fathers do not get off scot-free either... High-fat diets, Psychological stress, Pollutants.

## From the Journals

### Plant Hormones: the new Micronutrients

Plants have hormones too – doing things like controlling how they grow, age, and take up water.

They have names like abscisic acid (ABA), indole acetic acid (IAI) and gibberellic acids (GAs). When we eat plants we eat these too.

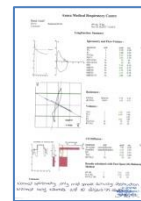
Now a study finds that they control gut bugs in such a way that GAs reduce inflammation, IAI fights tumors, and ABA reduces aspects of diabetes [33].

**My View?** Humans have co-evolved with plant hormones, so it is not surprising that we have grown to depend on them. This is a very new field of knowledge so we can expect to hear of many new dramatic findings.

## We Practise what we Preach

### Geoff Physicals

*From time to time I have a check-up which, to keep you encouraged, I share with you at:* <http://bit.ly/Bond-Physicals>



### Lung function test

I recently did a lung function test: <http://bit.ly/GB-lung-2017>. The results are normal.

### London Pea-soupers

For all of my early life we lived in London where, in the post-war years, we heated the house with several open coal fires.

As a result, as Dickens relates, London smoke fogs ('smogs') were common. They culminated in the Great London Smog of December 1952 [34].

It lasted five days during which visibility was reduced to just a couple of yards. As kids we thought it was a great lark – and we had enormous fun playing hide-and-seek in the shadowy, deserted streets.

However, this regular pollution on our young lungs seems to have left its mark. I have never smoked, so smogs seem to be the cause of the slight reduction in small airway function found in the above test.

## Spreading the Word

**EVENTS:** <http://bit.ly/bond-event>

Talks to private organizations

### RADIO INTERVIEW

My 30 minute podcast with Dr Shawn Benzinger of Humarian [35] will go live on Tuesday, November 7<sup>th</sup>. More details soon on [Facebook](#) [36], [Twitter](#) [37] and the #BondBriefing [next Month](#).

I will also record a follow-up **Q&A session** on Thursday November 9.

### JUDGING UK PALEO PRODUCTS



#### Winners

As reported [last month](#), I and five other judges spent a whole day sampling, opining on and judging a vast range of Paleo products.

I was impressed by the many small businesses, inspired by the Paleo movement, to bring healthier foods – and ways of living -- to the general public.

Many of the products are 'stepping stones' to the Paleo eating pattern

by being substitutes for conventional, but non-conforming familiar foods such as pastas, breads, muffins, protein bars, snack nibbles, and power bars.

Some judges focused on qualities such as taste, texture, image appeal, packaging and so forth.

However, in my capacity as Paleo guru, I was particularly focused on the conformity of the product to Paleo principles. Mostly the products were quite close, although it is clear that some producers have only a hazy, or pop-science, idea of what true Paleo is. So, whilst some products might have got good marks from other judges for taste etc, my view would have marked them down for non-conformity.

Each of the judges brought their own speciality but I was particularly impressed by the contribution of chef Chris Burt. His insight into the practicalities of cooking some of the package mixes was most fruitful.

Also we had some racks of organic pasture-fed lamb and beef to judge

too. His expertise, not only on how the meat cooked in the oven but also on the qualities of the raw product, was most illuminating.

The winners are now announced at: <https://ukpaleoawards.co.uk>

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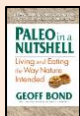
### Seasonality of Gut Bugs - I



... in human health. At any rate she says she eats plant foods in season and that way gets an intake which varies throughout the year.

As for what kinds of plant foods we should focus on in our western economies, Sonnenberg says there is no data to make recommendations. She hopes that by rotating through all the options from parsnips to broccoli that she covers, come what may, all the bases.

[Next Month: Part II](#) – woody tubers, soil bacteria, short-chain fatty acids and My View.



**Paleo in a Nutshell:** Geoff's latest work encapsulates, concisely and easily, current thinking on living the way nature intended. [www.paleo-nutshell.com](http://www.paleo-nutshell.com)



**Paleo Harvest Cookbook:** Over 170 delicious, Bond Precept conforming recipes [www.paleo-harvest.com](http://www.paleo-harvest.com)

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1 <http://bit.ly/2yoo3PQ>

2 <http://bit.ly/2yqWYh6>

3 <http://bit.ly/2giNM1t>

4 Rebecca R. Gentry et al. Mapping the global potential for marine aquaculture. *Nature Ecology & Evolution*, 2017; DOI: 10.1038/s41559-017-0257-9

5 Erica D. Sonnenburg et al. Seasonal cycling in the gut microbiome of the Hadza... *Science*, Vol. 357, Issue 6353, pp. 802-806 DOI: 10.1126/science.aan4834

6 <http://bit.ly/1rippqi6>

7 <http://bit.ly/2kmbT1M>

8 <http://bit.ly/1KtZtQq>

9 <http://bit.ly/1LM8C5p>

10 <http://bit.ly/1iPXFp9>

11 Joseph S. Takahashi et al. Time-Restricted Feeding Shifts the Skin Circadian Clock... *Cell Reports*, 2017; 20 (5): 1061 DOI: 10.1016/j.celrep.2017.07.022

12 <http://bit.ly/2cD2HCJ>

13 <http://bit.ly/2wN1aEj>

14 [www.glycemicindex.com](http://www.glycemicindex.com)

15 <http://bit.ly/1BHZ11l>

16 *Nat Plants*. 2017 Aug 3;3:17093. DOI: 10.1038/nplants.2017.93. Deep human pre-

history of global tropical forests and its relevance for modern conservation. Roberts P.

17 <http://bit.ly/NE-3>

18 <http://bit.ly/1n9k1UD>

19 <http://bit.ly/2wN1aEj>

20 *Nature* 455, 1109-1113 (23 October 2008) Innate immunity and intestinal microbiota in the development of Type 1 diabetes; Li Wen .

21 P. D. Cotter et al. ... Incomplete, Short-Term Recovery of Infant Gut Microbiota following Parenteral Antibiotic Treatment ... *Antimicrobial Agents and Chemotherapy*, 2012; 56 (11): 5811

22 <http://bit.ly/2wN1aEj>

23 Wheeler, S. (1999). *Terra incognita*. New York: The Modern Library.

24 Suedfeld, P. (1991). Polar psychology: An overview. *Environment and Behavior*, 23(6), 653–665.

25 Cherry-Garrard, A. (2003). *The worse journey in the world*. London: Pimlico. (Original work published 1922)

26 Palinkas, L.A., Suedfeld, P. & Steel, G.D. (1995). Psychological functioning among members of a small polar expedition. *Aviation, Space, and Environmental Medicine*, 66, 943–950.

27 Palinkas, L.A. & Suedfeld, P. (2008). Psychological effects of polar expeditions. *The Lancet*, 371, 9607, 153–163.

28 <http://bit.ly/1mLmUr1>

29 <http://bit.ly/2kOik2E>

30 *Mol Cell Biol*. 2003 Aug;23(15):5293-300. Transposable elements: targets for early nutritional effects on epigenetic gene regulation. Waterland RA, Jirtle RL.

31 Ramagopalan et al. Expression of the Multiple Sclerosis-Associated MHC Class II Allele HLA-DRB1\*1501 Is Regulated by Vitamin D. *PLoS Genetics*, 2009; 5 (2): e1000369

32 AACR 101st Annl Meeting April 19 2010; Exposure ... to a high-fat or estradiol supplemented diet during pregnancy ... increases mammary cancer risk in ... daughters and granddaughters; Sonia de Assis, Ph.D

33 Plant Hormones: Key Players in Gut Microbiota and Human Diseases? *Trends in Plant Science*, 2017; DOI: 10.1016/j.tplants.2017.07.003

34 <http://bit.ly/2ymw8Gt>

35 <http://bit.ly/Humaria-podcast>

36 <http://on.fb.me/Group-Bond>

37 <https://twitter.com/savvyeater>