

## The Longevity Diet

### How to eat to live longer

Weekend

## The woman who took on revenge porn... and won

Magazine



CARLOS BARRO/REUTERS

# Every rape case to be reviewed

**Trials face delay as disclosure scandal mounts**

Richard Ford Home Correspondent  
Neil Johnston

Every rape and serious sexual assault case in England and Wales is being reviewed by the Crown Prosecution Service after the collapse of trials over failures to disclose evidence.

Some cases involving alleged sexual offences are likely to be stopped as a result of the inquiries, Alison Saunders, the director of public prosecutions, said.

Ms Saunders announced the review yesterday as police and prosecutors confirmed emergency measures relating to disclosure in an attempt to shore up public confidence in the justice system.

The move came after *The Times* revealed that four rape trials had collapsed after crucial evidence was disclosed only at the last minute.

Oliver Mears, 19, an Oxford student, was cleared of rape eight days ago after spending two years on bail. The Crown Prosecution Service (CPS) and Surrey police, which handed over relevant

evidence days before the trial, were criticised by the case judge and ordered to explain in writing the "completely unnecessary" delays.

Ms Saunders began the review last month shortly after this newspaper reported the collapse of the case against Liam Allan, 22, a criminology student accused of rape. Police had failed to disclose texts from a woman that proved his innocence.

Ms Saunders said that she was "taking steps to identify any individual cases of concern as a matter of urgency". She added: "All cases are subject to regular and ongoing scrutiny, but senior prosecutors across England and Wales are currently assessing all live rape and serious sexual assault cases to check they are satisfied that disclosure obligations have been met."

The chief prosecutor admitted that some sexual offence cases would be stopped because of disclosure issues. "Inevitably, bringing forward these case reviews means it is likely that there may be a number of cases which we will be stopping at around the same time," she said.

Prosecutors are looking at all rape and serious sex cases in which a person has been charged but has yet to be tried in the 14 CPS areas of England and Wales. Last year 3,671 people were charged with rape, according to official figures. It is not known how many people were charged with other serious sexual offences.

Another criminal case collapsed yesterday because of disclosure failures. Three people were cleared of human

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Farewell fellow globalists Donald Trump files home from the World Economic Forum in Davos after a speech to business chiefs in which he softened his isolationist rhetoric and declared he had created "a brand new United States". Reports, pages 10-11

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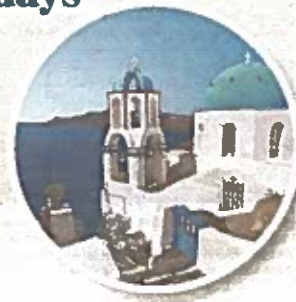
### Henry Bolton: women and me

Exclusive interview, pages 36-37



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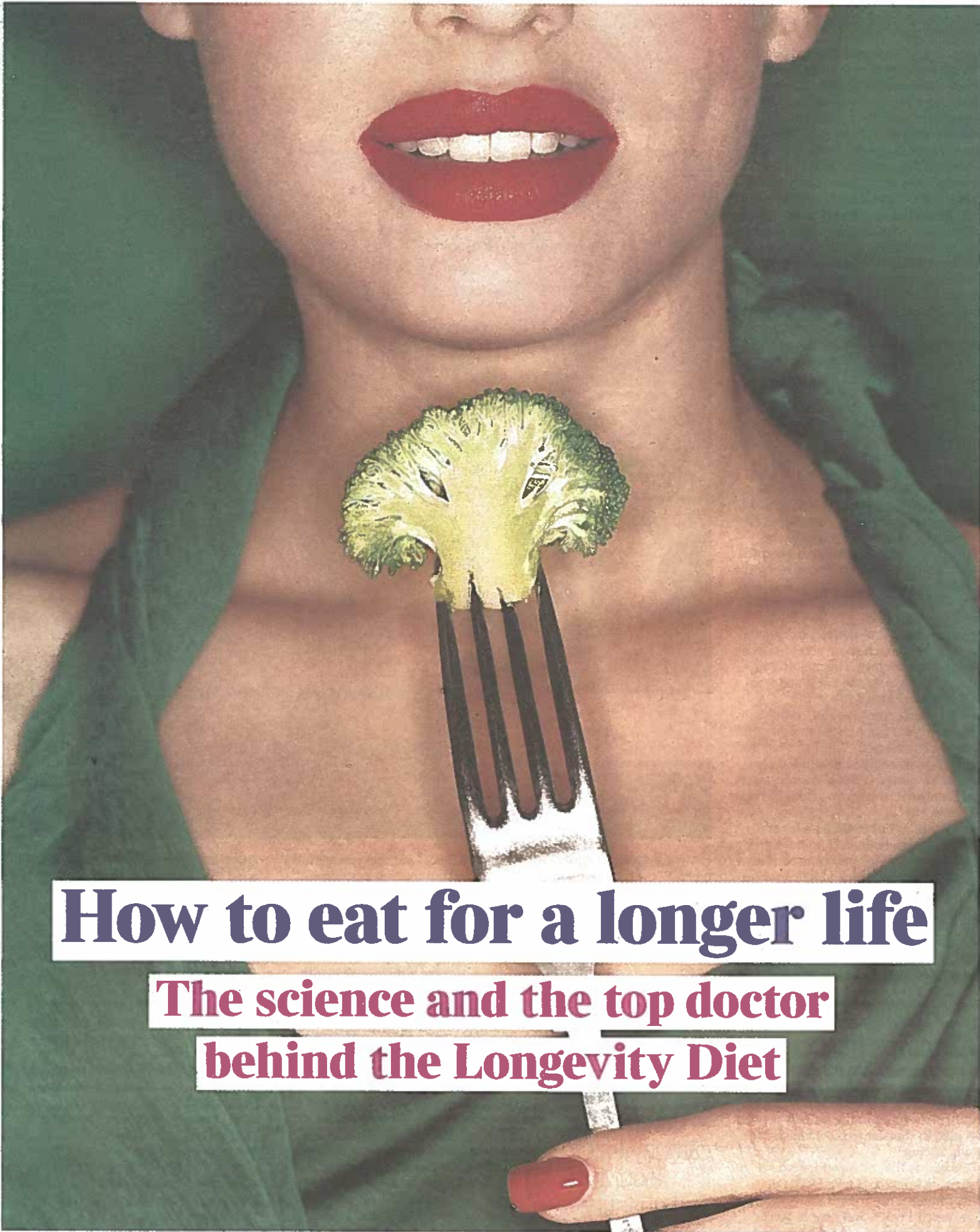




**Teens and dating** What parents should know  
**Plus** Get skipping — it's the new spinning

# Weekend

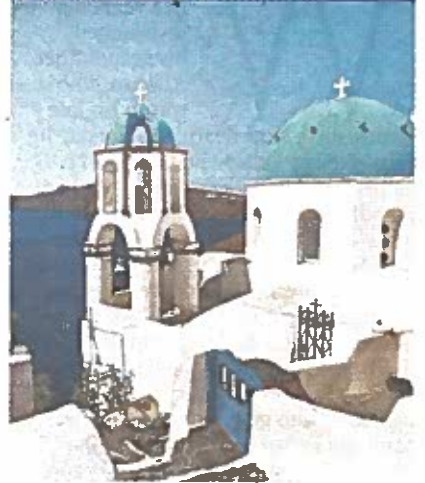
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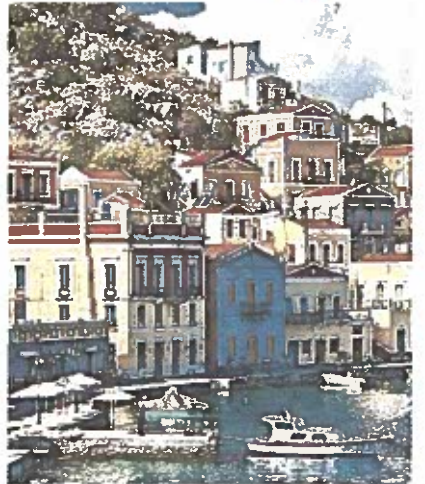
## How to eat for a longer life

The science and the top doctor behind the Longevity Diet

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## 2 Body + Soul

## Eat less, live longer: the diet that

After 30 years of research, Professor Valter Longo believes he has created a diet that could help you live to 100. *Helena de Bertodano reports*

When Valter Longo was five years old he watched his grandfather Alfonso, who was in his late sixties, die a slow death. On the day he passed away, Valter vividly remembers all his Italian relatives calling out his grandfather's name, trying to wake him up — but Longo intuitively knew he was dead: "I said, 'Can't you see that he has died?' I was like a doctor — very rational in that moment. It was an introduction to death that most five-year-olds do not have: I started viewing life as temporary."

Longo, who grew up in Genoa, was painfully aware that he missed his grandfather and wanted to stop people dying for as long as possible. From that day he decided that he needed to devote himself to a study of ageing. "At the back of my head was always the thought 'I am going to die', 'My parents are going to die'. Studying ageing became the most important thing I could do."

After 30 years of careful research and numerous scientific trials, Professor Longo is a pioneer in his field. He is director of the Longevity Institute at the University of Southern California and the Program on Longevity and Cancer at the Molecular Oncology FIRC Institute in Milan. He has studied the effect of food on the ageing process and observed the habits and lifestyles of centenarians. His best-known discovery — for which he found evidence over 20 years ago — is that fasting can cause the body's cells to regenerate. He has championed it as a means of slowing ageing and fighting disease even when it was nowhere near being taken seriously by the medical profession.

Fasting helps with weight loss, of course. Most of us are familiar with Dr Michael Mosley's popular Fast Diet (also known as the 5:2). Mosley was influenced by Professor Longo's research. "He is one of the real scientific pioneers when it comes to researching the impact of food (or lack of it) on health," Mosley says.

Longo is publishing a book called *The Longevity Diet*. Its methods, he says, will dramatically slow ageing and boost health. It is a mostly vegan diet, but includes fish two or three times a week. The book also advocates a five-day, restricted-calorie plan at least twice a year. He calls this a "fasting-mimicking diet" because it has the benefits of fasting but you are still eating 800 calories a day.

Contrary to fashionable diet programmes, he does not believe that we should cut out carbohydrates. "I think sugars should be low, starches (pasta, bread, rice) should be low to moderate, and carbohydrates from

legumes and vegetables should be high. I'm pro carbs, proteins and fats, and against carbs, proteins and fats: it is about type and quantity and not about demonising one macronutrient or the other. This is one of the most important messages of the book. Another example — animal fats are generally bad but olive oil, nuts and salmon contain fats that are good for you and associated with increased health and longevity."

All food should be consumed during two or, at most, three meals within a window of 12 hours or less every day. Coffee and alcohol in moderation are allowed — red wine is preferred. If followed and combined with exercise, Longo claims that some people can expect to live to 100, maybe even 110.

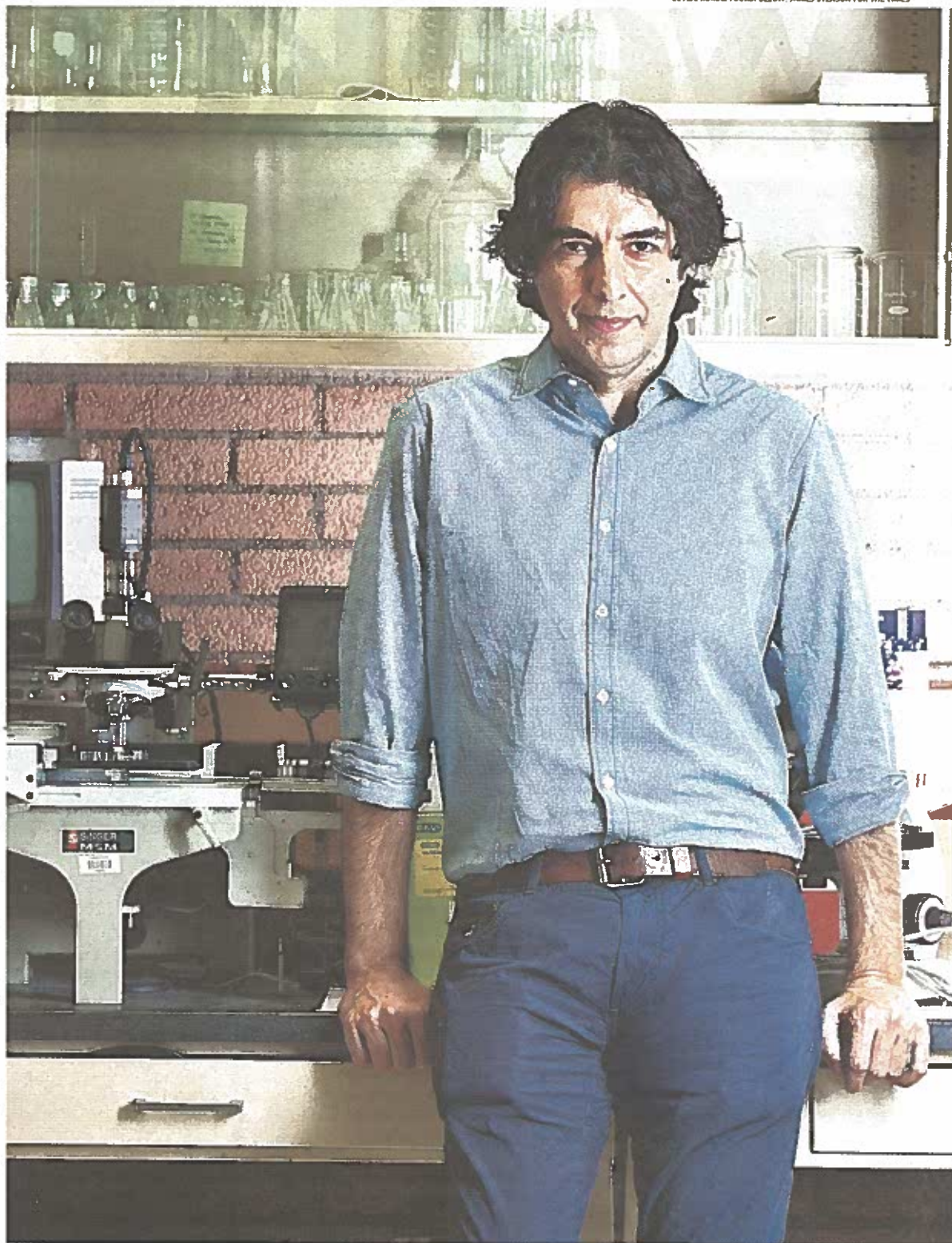
Longo discovered the restorative power of fasting about 25 years ago, when he deprived yeast cells of sugar, using only water as sustenance. Instead of becoming weak and dying they became stronger and lived longer. The results were so controversial that scientific journals refused to publish them. But the same turned out to be true of bacteria and mice. And, it turns out, humans. He is now considered one of the most influential voices in the "fasting movement"; and he is accepted — if not completely embraced — by the medical community. "Historically, most of the medical community was pretty solidly against fasting... They have often criticised it as dangerous." Now, he says, "it is much more accepted in a subgroup of doctors. The majority are starting to be interested in it and want to know more about it."

"No, I don't enjoy it at all," he says bluntly when I ask him about doing the five-day fast himself. "But I can tell the difference, not only in health but also in mental clarity. It has a spiritual effect too because it isolates you from the rest of the world."

Longo is 50 but could pass for at least 10 years younger. "I do have grey hair," he says, in his pronounced Italian accent, lifting up a lock of hair to show a couple of strands of grey.

His childhood diet centred on pasta, minestrone and tomatoes, with occasional fish or meat. Arriving in the US aged 16 to stay with an aunt (he wanted to escape Italy and become a rock star), he switched to a diet of hamburgers, chips, Tex-Mex and fizzy drinks. "It didn't occur to me yet that my diet could affect my health," he writes in his book. After settling in Chicago, he moved to the University of North Texas to pursue an undergraduate degree in jazz performance. But in the second year he decided to transfer to biochemistry to study ageing.

He insists that he never feels he is depriving himself. "I love food. I'm never hungry, my friends can't believe how much I eat — but people don't



Professor Valter Longo, age 50

“I do not believe in cutting carbohydrates. It is about type and quantity

understand food. I eat much more food [than others] but much less calories.”

Needless to say his lifestyle makes relationships difficult. "I live alone, I broke up with my ex-girlfriend recently." He has no children, but "hopefully at some point..." Is it not an option to have a relationship with someone who, say, eats hamburgers? "It's like saying if someone was a communist, could you live with a fascist?" He ponders this for a moment: "I guess maybe if the fascist was willing to become a socialist? But if the fascist was a real fascist then it would be tough... Most of my girlfriends have been reasonably willing to try [the diet]."

Also, he works so hard that he has little time for anything else in his life. "Vacations are unheard of for me." I ask him when he last took a few days off. "Maybe 20 years ago?" Nothing enrages him more than

when the lifestyle he espouses is called a fad. "I hate it when they say that. I started with bacteria, building it one step at a time. I used to get attacked by people who would say 'This is terrible, this is stupid!'"

However, he is now "armed with much more powerful weapons". "We have 15 clinical trials running in some of the biggest hospitals in the world. We have huge NIH [National Institutes of Health] funding: we just got a new \$12 million dollar grant."

The tide, he says, is finally turning. "I've been around long enough that people are starting to listen. In fact now," he starts laughing, "people are saying they have always known that fasting is good for you."

Now that his book is being published, does he feel that his work is done? "No," he replies. "I'm trying to change the world here. It's a tough job."

COVER: ROMAS FORD; BELOW: JAMES STEKSON FOR THE TIMES



# holds the key to staying young

## How to eat for a longer life Professor Longo's rules

### Follow a pescatarian diet

Aim for a diet that is close to 100 per cent plant and fish-based, limiting fish consumption to two or three portions a week and avoiding fish with high mercury content (tuna, swordfish, mackerel, halibut). If you are past the age of 65 and start to lose muscle mass, introduce more fish into the diet, along with other animal-based foods, such as eggs and certain cheeses (preferably pecorino or feta) and yoghurt made from goat's milk.

### Don't eat too much protein

Consume 0.31-0.36g of protein per pound of body weight each day. If you weigh 130lb (59kg), this would be about 40-47g protein per day (equivalent to 1.5 fillets of salmon, 1 cup of chickpeas or a 2½ cups of lentils) — of which 30g should be consumed in a single meal to maximise muscle synthesis. If you weigh 200-220lb and have 35 per cent body fat or higher, 60-70g of protein per day is sufficient (equivalent to 2 fillets of salmon, 3½ cups of lentils or 1½ cups of chickpeas), since fat cells require lower levels of protein than muscles. Protein intake should be increased slightly after the age of 65 in individuals who are losing weight and muscle. For most people, a 10 to 20 per cent increase (5-10g more each day) is sufficient. Finally, the diet should be free of animal proteins (red meat, white meat, cheese), with the exception of proteins from fish, but high in vegetable proteins (legumes, nuts, etc).

### Maximise good fats and complex carbohydrates

Every day we hear about "low carb versus high carb" or "low fat versus high fat". It shouldn't be a question of either/or, but of which type and how much of each. In fact, your diet should be rich in good unsaturated fats, such as those found in olive oil, salmon, almonds and walnuts, but as low as possible in saturated, hydrogenated and trans fats. Likewise, the diet should be rich in complex carbohydrates, such as those provided by whole bread, legumes and vegetables, but low in sugars and limited in pasta, rice, bread, fruit and fruit juices.

### The supplements to take

You can think of the human body as an army of cells always at war. The enemy includes oxygen and other molecules that damage DNA and cells; bacteria; and viruses, which are constantly trying to defeat the immune system. Like an army in need of ammunition, the body needs proteins, essential fatty acids (omega-3, omega-6), minerals, vitamins, and sufficient levels of sugar to fight the battles raging inside and outside cells. When your intake of certain nutrients



GETTY IMAGES

### Top 50 longevity foods



- Mackerel, cooked
- Sardines, canned in oil or tomato sauce
- Salmon, cooked
- Spinach, boiled
- Black-eyed peas, boiled
- Asparagus
- Lettuce
- Brussels sprouts, cooked
- Kidney beans, tinned
- Broccoli, cooked
- Mustard greens, cooked
- Almonds
- Chickpeas, tinned
- Chia seeds
- Hazelnuts
- Trout, cooked
- Kale, raw or cooked
- Squash, cooked
- Chinese cabbage/bok choy, raw
- Anchovies, tinned
- Sweet potato
- Bread, whole wheat
- Seaweed



- Chocolate, dark (45%-69% cacao solids)
- Mussels, cooked
- Lentils, cooked
- Tomatoes, tinned
- Brown rice, cooked
- Raisins, seedless
- Carrots, raw
- Red peppers, raw
- Dried apricots
- Plain yoghurt, low fat
- Oranges
- Cauliflower, raw
- Cod liver oil
- Chanterelle and shiitake mushrooms
- Sunflower seeds
- Kiwi
- Mango
- Halibut
- Herring
- Sole
- Plaice
- Flaxseed, ground
- Pecans
- Edamame beans
- Potato, baked with skin
- Oats
- Banana



becomes too low, the body's repair, replacement, and defence systems slow down or stop, allowing the damage to accumulate or fungi, bacteria and viruses to proliferate. Take a multivitamin and mineral pill, plus an omega-3 fish-oil soft gel every two or three days.

### Eat foods from your ancestry

To take in all the required nutrients, you need to eat a wide variety of foods, and it's best to choose from those that were common on your parents', grandparents' and great-grandparents' tables. This means that within the Longevity Diet's eating guidelines, you should pick foods that your grandparents ate. The human body is the result of billions of years of evolution, and even the last one thousand years have helped to filter out people not fit for a particular environment, or foods not appropriate for a particular genotype (the collection of genes in a person). For example, in many northern European countries, where milk was commonly consumed, intolerance to lactose (the sugar contained in milk) is relatively rare, whereas lactose intolerance is very common in southern European and Asian countries, where milk was not historically part of the diet of adults. Whether it's lactose or kale, quinoa or turmeric (curcumin), ask whether these

were foods common at the table when your parents or grandparents were growing up. If not, avoid them or consume them only occasionally. The potential problems are intolerances (for example, an inability to break down the lactose sugar in milk) or autoimmunities, such as the reaction to gluten-rich foods observed in people with coeliac disease.

### Eat two meals a day plus a snack

Unless your waist circumference and body weight are in the low range, it is best to eat breakfast and one major meal plus a nourishing low-calorie, low-sugar snack daily. If your weight or muscle mass is too low, then eat three meals a day plus a snack. We often hear that we should eat small meals five to six times a day. Aside from a lack of evidence supporting the benefit of such a regimen in terms of a long and healthy lifespan, it is difficult for most people to regulate food intake when eating so often. If you eat only two and a half meals a day, with just one major meal, it is harder to overeat, particularly on a mostly plant-based diet. It would take large portions of fish, beans, and vegetables to get to the calorie level that would cause obesity. Do not skip breakfast, because

this has been associated with increased risk for age-related diseases.

### Eat within a 12-hour window every day

A common practice adopted by many centenarian groups is time-restricted eating; confining all meals and snacks to within 12 hours or fewer a day. The efficiency of this method has been demonstrated in animal and human studies. Typically you would eat breakfast after 8am and finish dinner before 8pm. A shorter eating window (of ten hours or less) can be even more effective for weight loss. You should also not eat three to four hours before going to sleep.

### Practise my 'Fasting Mimicking Diet' at least twice a year

People under the age of 65 who are neither frail nor malnourished and are free of major diseases should undergo at least two five-day fasts per year in which 800-1,100 calories are consumed per day (see next page for the fasting plan). The effects of the five-day cycles of the "Fasting Mimicking Diet" on disease risk factors and the optimisation of healthy longevity are remarkable.



Continued next page



## 4 Body + Soul

## How to do the 5-day fasting plan

By Valter Longo

**T**he Fasting Mimicking Diet (FMD) is one of the key principles laid out in Professor Longo's Longevity Diet. It is called fasting mimicking because it has the benefits of fasting without having to go to the extreme of eating nothing. It is, however, a low-calorie plan. You will consume 800-1,100 calories mostly from nuts and vegetables on each of the five days. This method makes the body think it's in a completely fasted state when it is not — providing the health benefits of fasting without the deprivation and hunger. Professor Longo advises that this five-day fast should be undertaken several times a year (more if overweight).

Longo describes this five-day diet as "the ultimate medicine", since he discovered through numerous clinical trials conducted in his own laboratory that by depriving the body of food in this way, its cells begin to regenerate. When normal cells are starved, Longo found that they shift into survival mode and start to repair themselves. This effect can be seen even when you are still consuming 800 calories a day. Furthermore, Longo has shown that fasting can kill cancer cells, reverse autoimmune disorders and significantly reduce the risk of Alzheimer's.

The cornerstones of this fasting diet are Professor Longo's daily recommendations for eating. Nuts, seeds and oils that contain healthy fats, and vegetables and grains are encouraged. The diet is mostly vegan with small amounts of fish — no meat should be consumed.

**When to start the fasting diet**

Many people decide to start the diet on a Sunday night so they can end it on Friday night. This decision is based purely on social considerations, allowing them to return to the transition diet on Friday night and to a



Jenni Russell at a fasting clinic

normal diet on Saturday night.

**How to prepare for the fasting diet**

For at least one week before beginning, Professor Longo recommends following his Longevity Diet plan; ie eating a mostly vegan diet, except for sustainably sourced fish, which can be eaten two or three times a week. Food should be eaten daily within a 12-hour window (for example, only eaten between 8am and 8pm). A smaller window of about 10 or 11 hours is preferable.

You should consume small amounts of protein, as detailed on the previous

page. Multivitamin supplements of omega-3 should be taken at least twice during this preparatory week.

**How often to do the fasting diet**

■ Once a month for overweight or obese adults with at least two risk factors for diabetes, cancer, cardiovascular or neurodegenerative disease.

■ Once every two months for average-weight adults with at least two risk factors for cancer, diabetes, cardiovascular or neurodegenerative disease.

■ Once every three months for average-weight adults with at least one risk factor for diabetes, cancer, cardiovascular or neurodegenerative disease.

■ Once every four months for healthy adults with a normal diet who are not physically active.

■ Once every six months for healthy adults with an ideal diet who engage in regular physical activity.

© Dr Valter Longo 2018 Adapted from *The Longevity Diet*, to be published on February 8 (Penguin, £9.99)

**The rules**

**Day one:**  
1,100  
calories

- 500 calories from complex carbohydrates (vegetables such as broccoli, tomatoes, carrots, pumpkin, mushrooms etc)
- 500 calories from healthy fats (nuts, olive oil)
- 1 multivitamin and mineral supplement
- 1 omega-3/omega-6 supplement
- Sugarless tea (3 to 4 cups a day)
- 25 grams of plant-based protein, mainly from nuts
- Unlimited water

**Days two to five:**  
800  
calories

- 400 calories from complex carbohydrates (vegetables such as broccoli, tomatoes, carrots, pumpkin, mushrooms etc)
- 400 calories from healthy fats (nuts, olive oil)
- 1 multivitamin and mineral supplement
- 1 omega-3/omega-6 supplement
- Sugarless tea (3 to 4 cups a day)
- Unlimited water (The above components can be divided between breakfast, lunch and dinner, or they can be taken as two meals and a snack)

**After the fast:**  
24 hour  
transition

- For 24 hours after the end of the five-day fast, patients should follow a diet based on complex carbohydrates (vegetables, cereals, pasta, rice, bread, fruit, etc.), and minimise the consumption of fish, meat, saturated fats, pastries, cheeses, milk etc.

**This fast changed my life** by Jenni Russell

**V**alter Longo transformed my life. I don't say this lightly. I wake up every day astonished and grateful that it's still true.

I spent 18 years with an autoimmune disease whose relapses had me occasionally in hospital, and every couple of years or so unable to get out of bed or to work for months at a time.

This made life extremely tiresome for someone who likes dinners, parties, walking, skiing and work. I was desperately frustrated and enraged by my mind having no command over matter. Every time I became ill again I felt I had been tripped up by hidden wires. There didn't seem to be any solutions, despite the kindness and care of my consultants; what I had was chronic and lifelong.

I was permanently on several drugs, and ricocheted on and off high-dose steroids when I was particularly ill. Then

I developed breast cancer, and chemotherapy made the original illness worse. This was not a lot of fun. By now I had been through a lifetime's safe dose of steroids, so the NHS spent a couple of years giving me a drug infusion that cost

“Three and a half years later not one of my symptoms has reoccurred. I have a life back again

£25,000 a year, until the funding for it ran out.

At this point, panicked, I googled new drugs. There weren't any, but a fortnight earlier Professor Longo had published astounding research showing that mice that fasted intermittently over six months, for three days at a time, regenerated their immune systems.

Sceptical, but desperate, I thought I might as well try it out. I drank lots of water, got cross, hungry and despondent, and gave up just before the end of day three. Waste of time, I thought.

On the morning of the fourth day, almost all my symptoms were gone. Still sceptical, I fasted again a few weeks later. This time every symptom vanished. I could not believe what had happened. I went on fasting every few weeks, just to be sure, but three and a half years later, not one of my symptoms has reoccurred. I take no drugs. I have a life back.

As far as I'm concerned, water into wine has nothing on the miracle that fasting wrought for me. Because I have written about it before, several *Times* readers tried it. They tell me that it has been equally effective for them.

When I finally met Valter, he was amazed that I'd done a straightforward water fast. "But that's Cossack fasting!" he said. I pointed out that I didn't have anything else to go on; I was just following his mice. Valter has developed the Fast Mimicking Diet (FMD) because it's easier for most people to manage than just water, hot, flat, sparkling or cold. His years of rigorous research have provided the scientific underpinning for the truth that every significant religion has recognised: fasting is good for us.

I hope lots of people try it. You have nothing to lose but some weight, and possibly your temper — and a much healthier body to gain.