



GLOBAL WELLNESS
SUMMIT 2018

OCTOBER 6-8 | TECHNOGYM | CESENA, ITALY

Blue Zones:

The Full and Fascinating Story Begins

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University of Sassari, Italy



GLOBAL WELLNESS
SUMMIT 2018



The discovery of Exceptional Longevity in Sardinia

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Cesena

October 6th, 2018



Why did I get involved in longevity research?

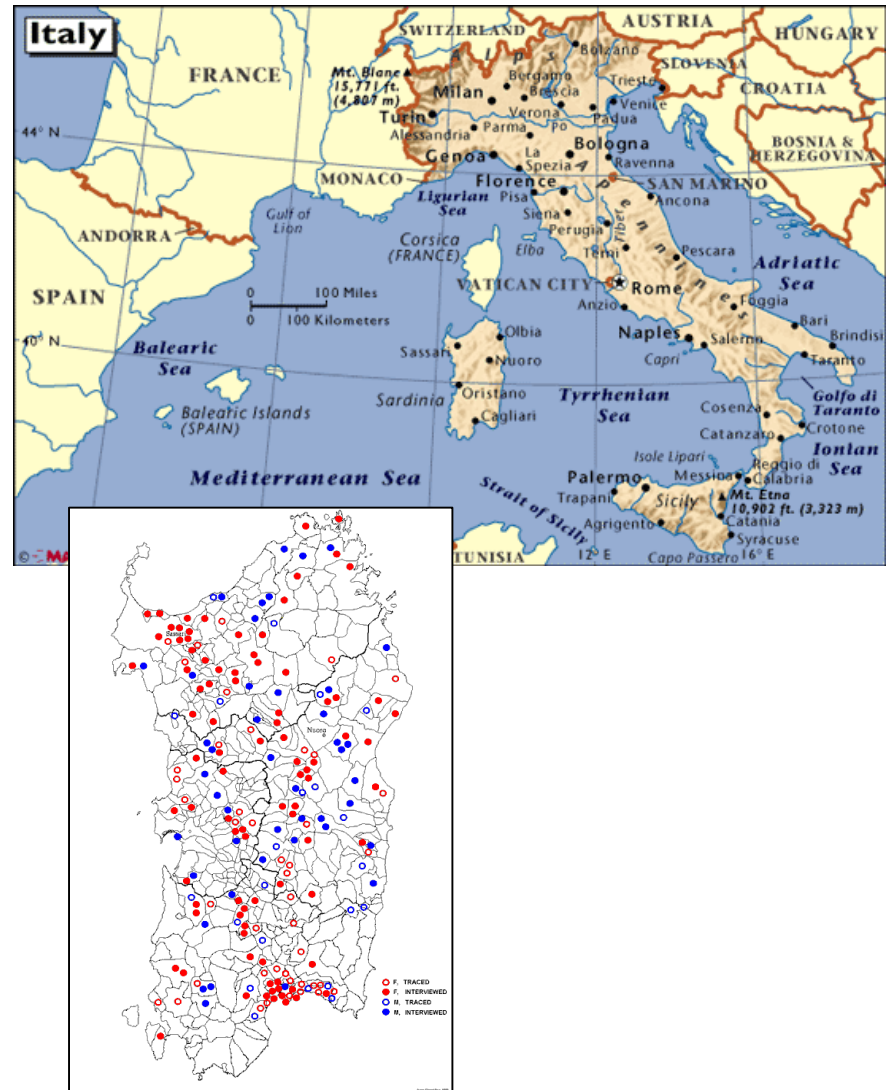
Several cases of exceptional longevity occurred in my family. My great-grand-Uncle lived to 110



**Pasquale Frascioni
(1893-2004)**

Why did I get involved in longevity research?

In 1996 I started collecting data on centenarians all over Sardinia. My database includes more than 3500 individuals who reached 100 years of age and is constantly updated.



Collaborators

Michel Poulain

Senior Researcher at Estonian Institute
for Population Studies at Tallinn
University, Estonia

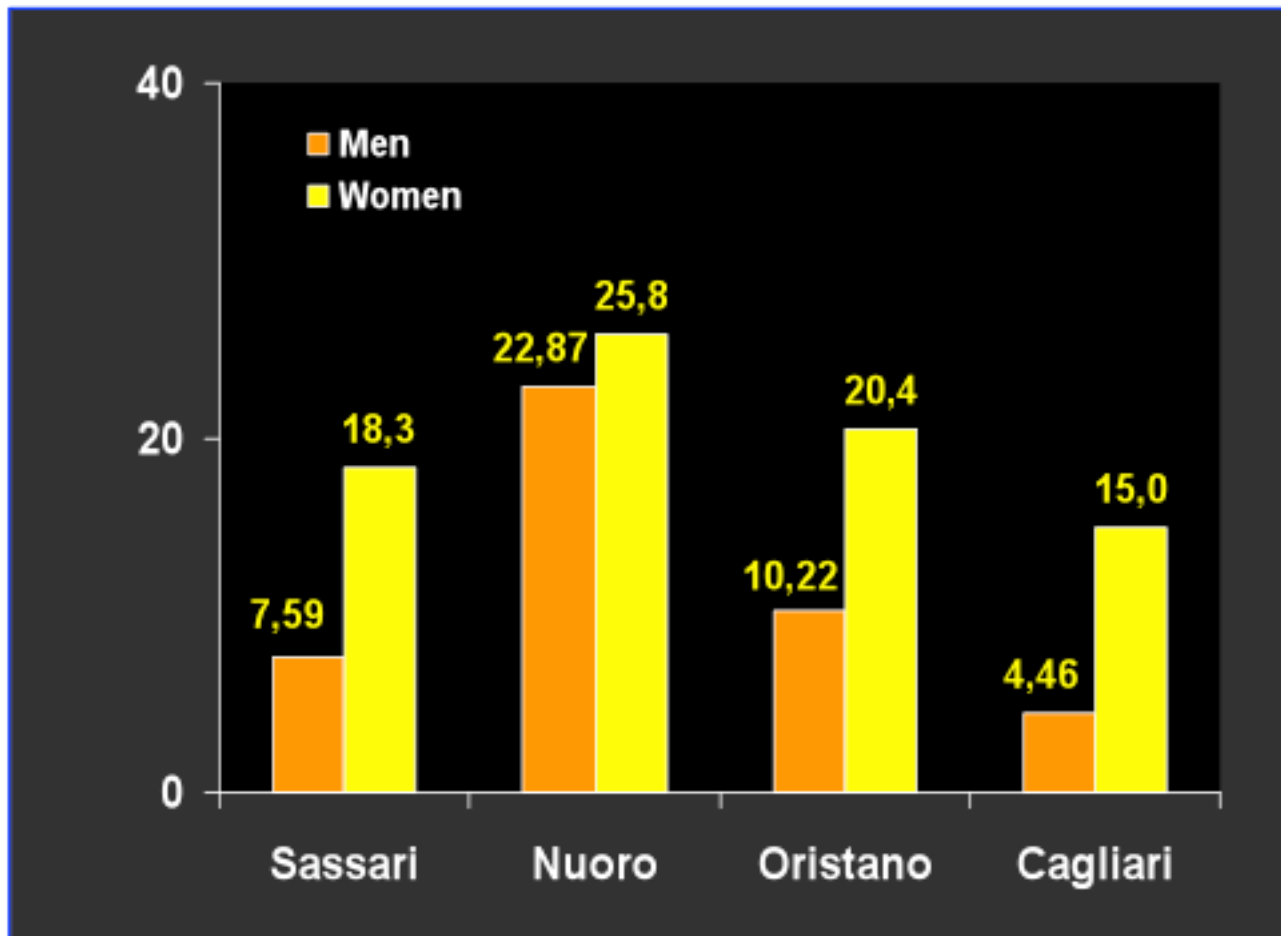


Dan Buettner

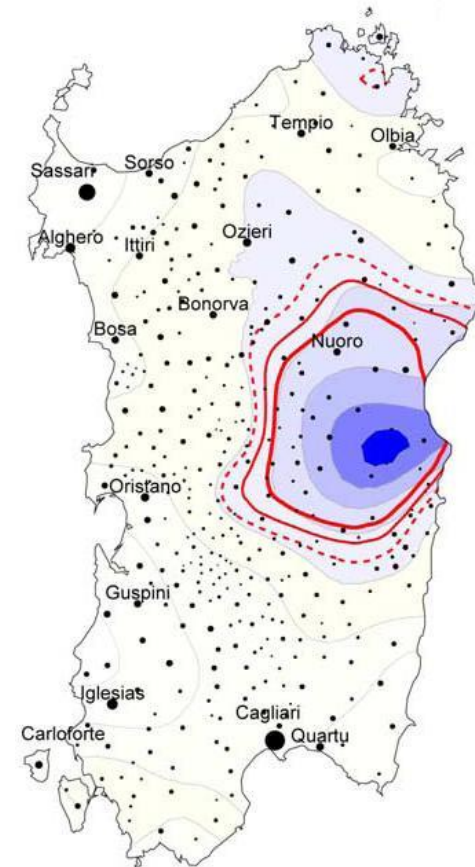
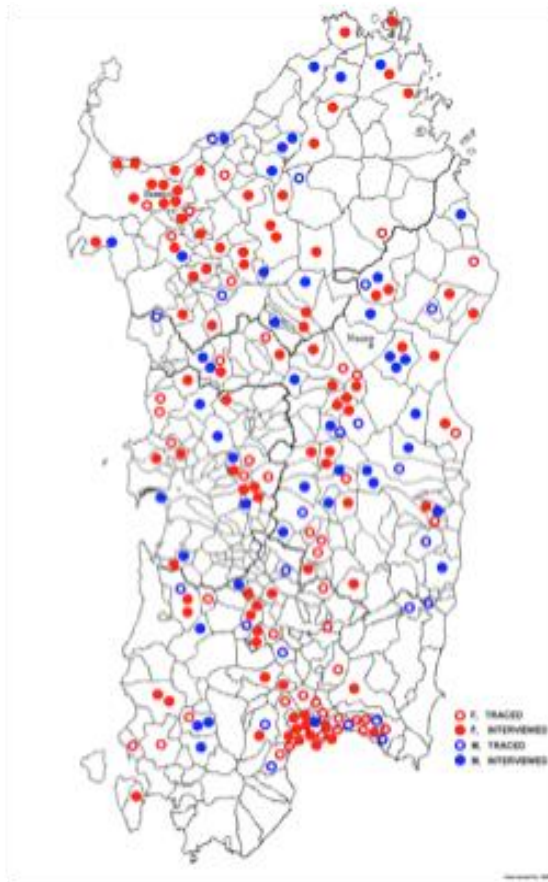
National Geographic Fellow and New
York Times Bestselling author of ***The
Blue Zones***



Centenarian prevalence in Sardinia as presented in a Montpellier meeting (1999)

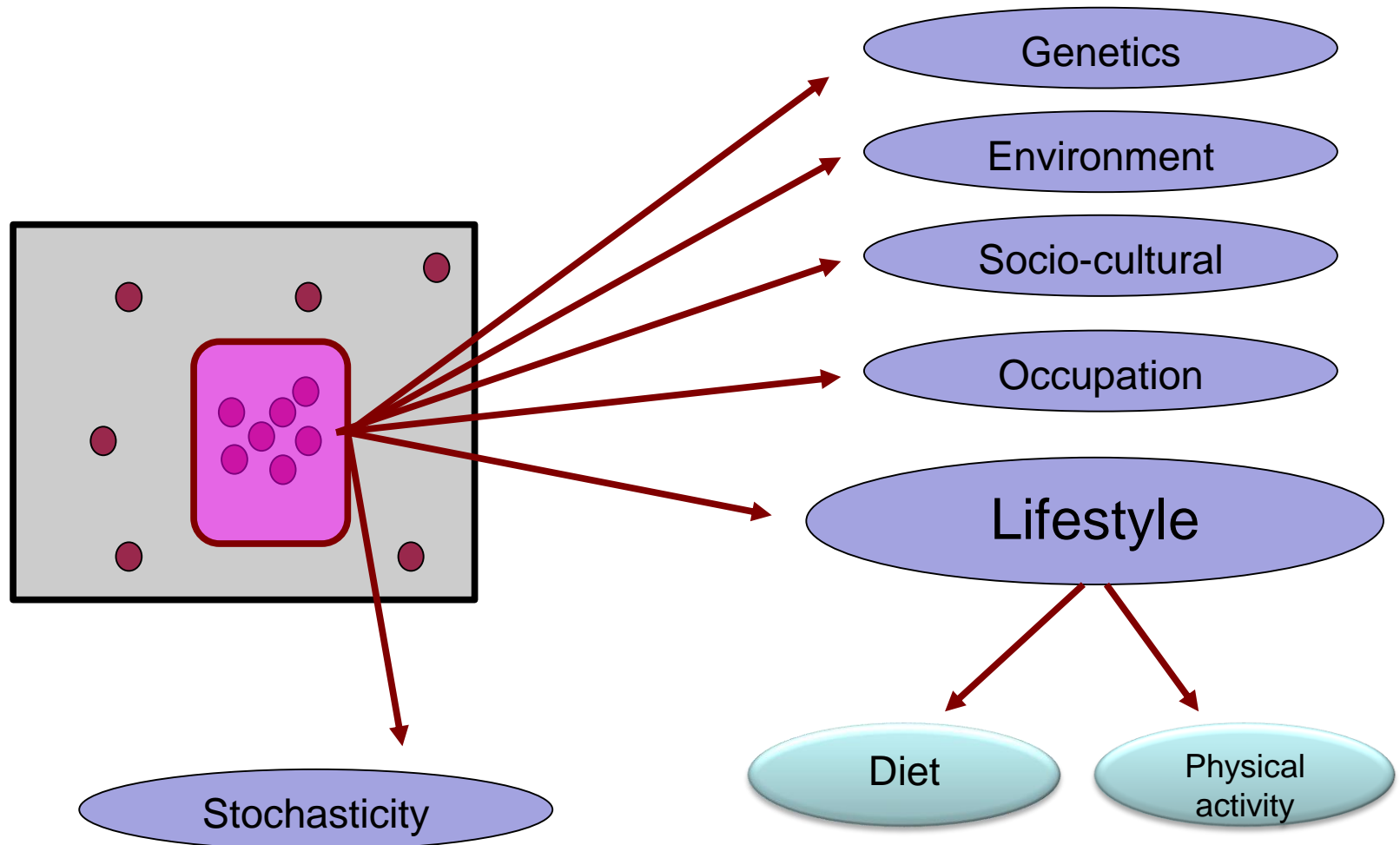


Shaping the Sardinian Blue Zone



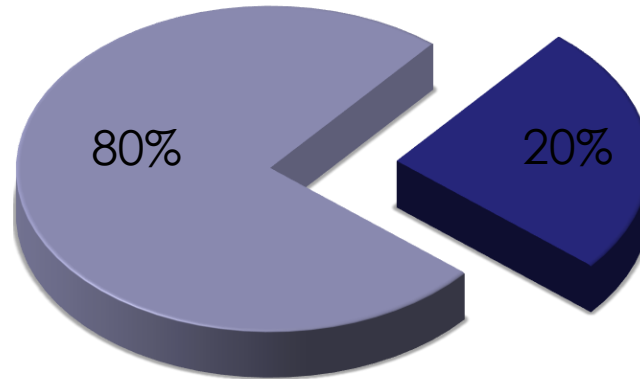
Poulain & Pes, march 2000

Is the longevity clustering due to chance or to some causal factors?



Genetic factors

Genetic Heritability of Human Lifespan



Twin studies:

McGue et al., 1993

0.22

Herskind AM et al., 1996

0.25

Ljungquist et al., 1998

<0.33

Traditional family studies:

Mayer et al., 1990

0.10-0.33

Gavrilova et al.,

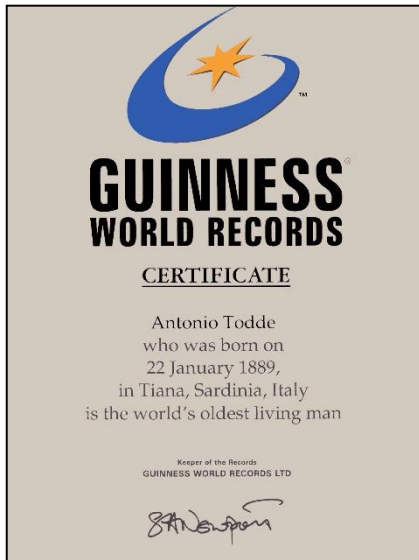
0.18-0.58

Cournil et al., 2000

0.27

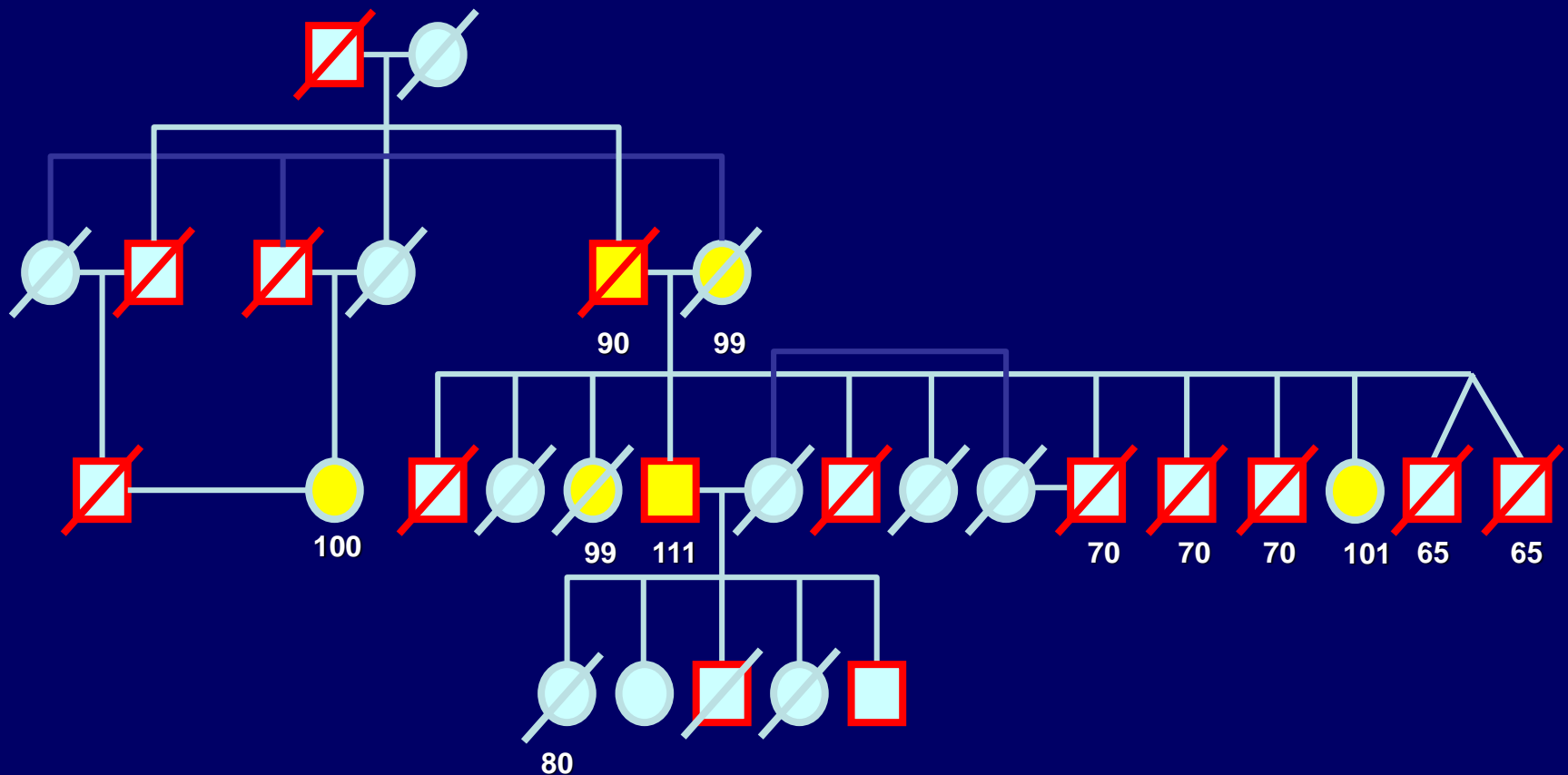
ANTONIO TODDE

The oldest man in the world in 2001



Family of Antonio Todde

- Male
- Female
- Centenarian
- Deceased



Lifestyle factors

Sardinian Blue Zone

Ecological study

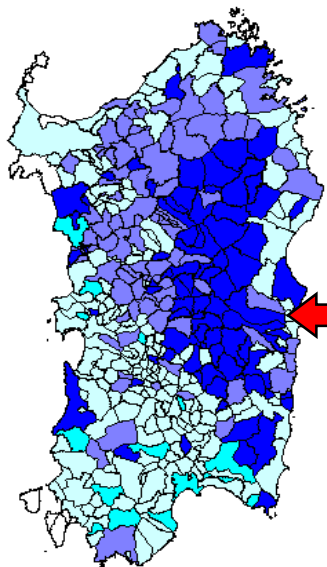
Lifestyle and nutrition related to male longevity
in Sardinia: An ecological study

G.M. Pes ^{a,*}, F. Tolu ^b, M. Poulain ^{c,g}, A. Errigo ^d, S. Masala ^d, A. Pietrobelli ^{e,h},
N.C. Battistini ^f, M. Maioli ^d

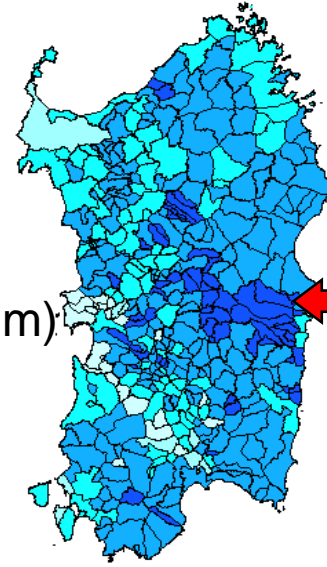
Table 2 Differences between the high male longevity area ("BZ") and the rest of Sardinia for nutrition/lifestyle variables.				
Covariates	BZ (mean \pm SD)	Rest of Sardinia (mean \pm SD)	OR (95% CI)	<i>P</i> value
Occupation/lifestyle				
Pastoralism score	2.8 \pm 1.4	1.6 \pm 1.0	1.69 (1.30–2.20)	0.0001
Average terrain's slope (%)	15.2 \pm 6.6	11.5 \pm 6.2	1.17 (1.10–1.26)	0.0001
Daily distance to workplace (km)	12.4 \pm 7.8	8.2 \pm 6.0	1.14 (1.07–1.19)	0.0001
Robustness score (0–3)	1.9 \pm 0.8	1.4 \pm 0.9	1.53 (1.15–2.04)	0.004
Body height score (1–3)	2.0 \pm 0.5	1.7 \pm 0.6	1.36 (0.77–2.40)	0.289
Cox and Snell "pseudo" R-squared = 0.307.				

Occupation / physical activity

Occupation/lifestyle				
Pastoralism score	2.8 ± 1.4	1.6 ± 1.0	1.69 (1.30–2.20)	0.0001
Average terrain's slope (%)	15.2 ± 6.6	11.5 ± 6.2	1.17 (1.10–1.26)	0.0001
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Animal husbandry

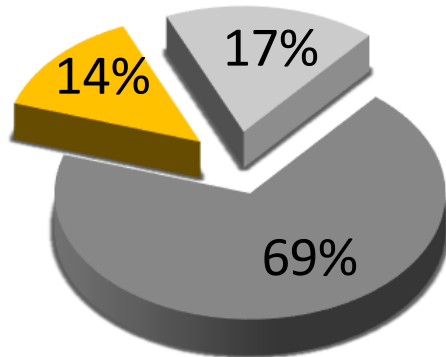


Terrain steepness

Nutrition

Calorie intake

2400 Kcal/d



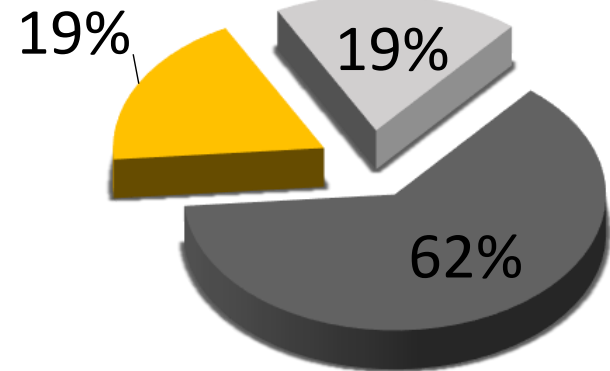
■ Carbohydrates

■ Fats

■ Proteins

Non-Blue Zone

2600 Kcal/d



Blue Zone

Carbohydrates

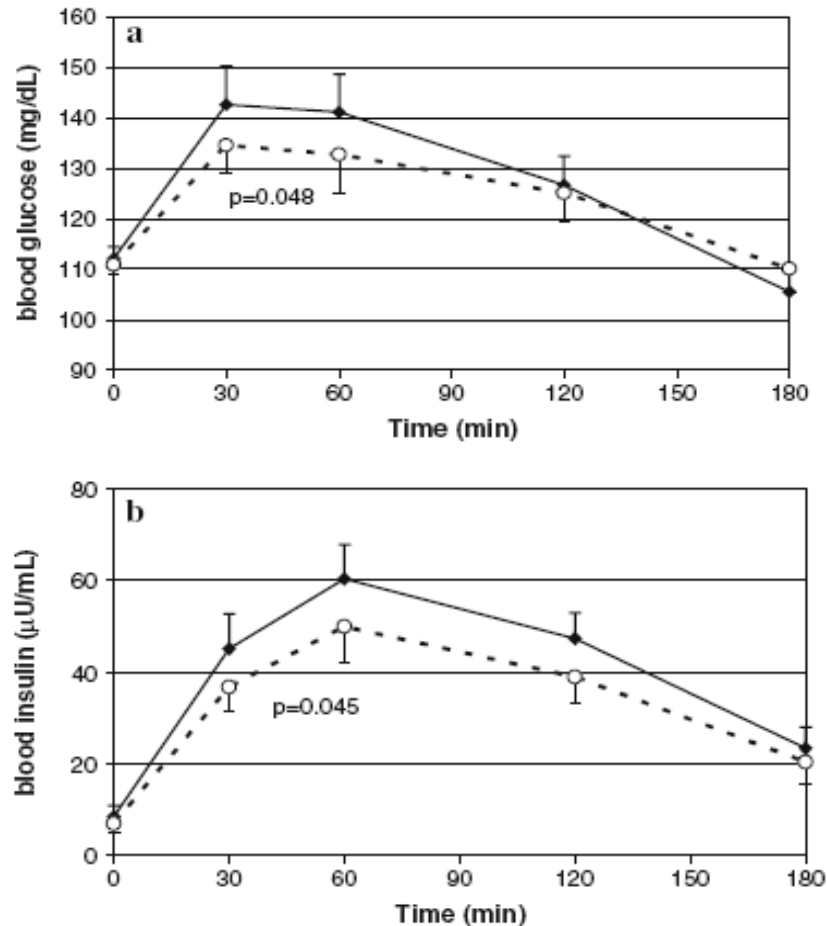
Main energy source in Sardinia



Traditional bread of the Blue Zone

Sourdough bread

Highly consumed in Sardinia before transition



Pes et al., 2008

Nutrition and longevity in Sardinia

REVIEW

Male longevity in Sardinia, a review of historical sources supporting a causal link with dietary factors

GM Pes¹, F Tolu², MP Dore¹, GP Sechi¹, A Errigo¹, A Canelada³ and M Poulain^{4,5}

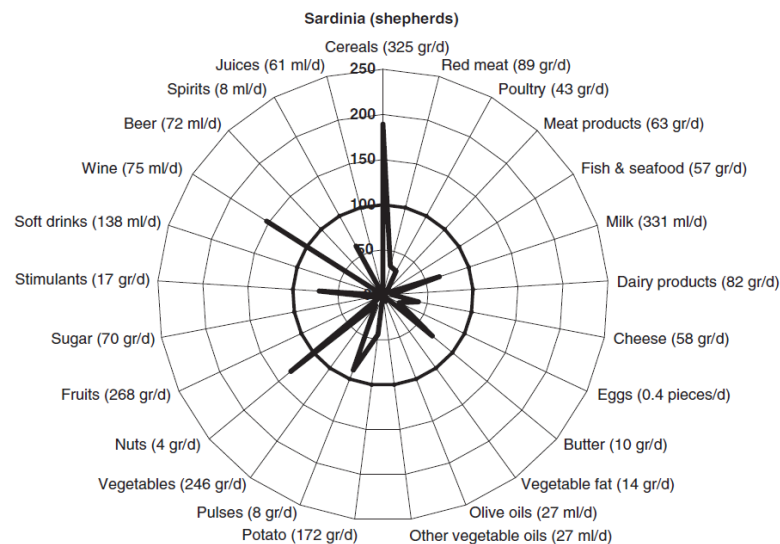
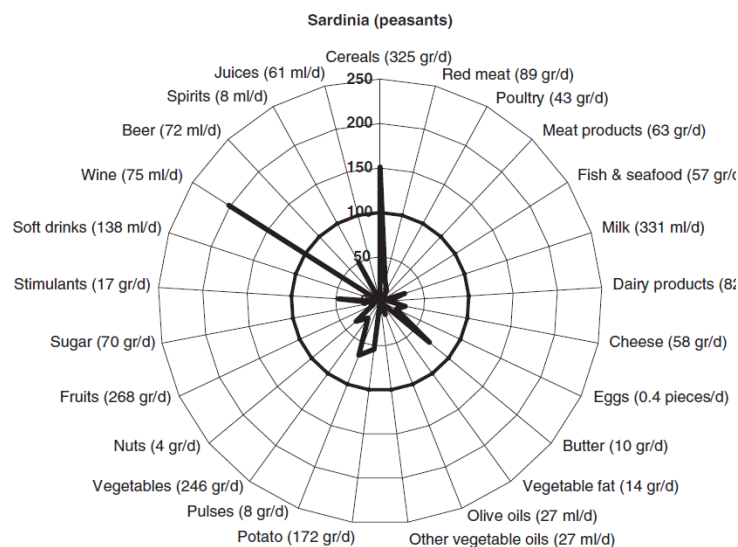
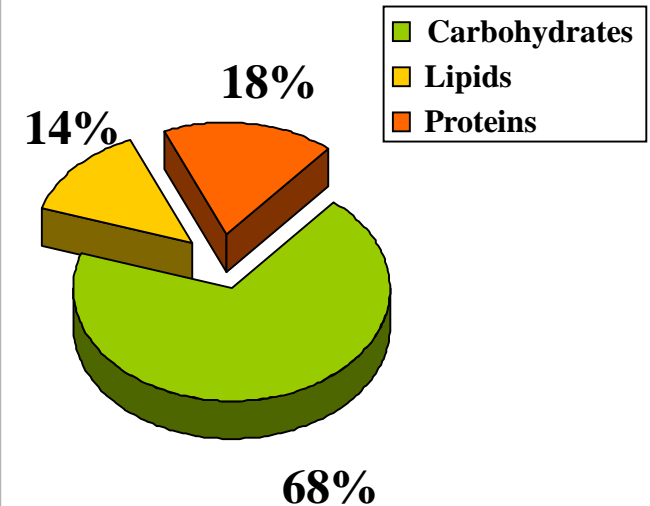


Table 2. Everyday consumption of food in 28 peasant and 17 shepherd families in the Barbagia district in the pre-WWII era¹¹

	<i>Peasants</i>	<i>Shepherds</i>
<i>Proteins (g)</i>		
Animal	19.5 (16.8%)	34.6 (29.3%)
Vegetable	96.5 (83.2%)	83.7 (70.7%)
Total	116.0	118.3
<i>Fats (g)</i>		
Animal	32.1 (74.8%)	46.6 (86.8%)
Vegetable	10.8 (25.2%)	7.1 (13.2%)
Total	42.9	53.7
Carbohydrate (g)	469.0	398.8
<i>Energy (kcal)</i>		
Without wine	2756.1	2608.8
With wine	2905.2	2719.6



Quality of food

Table 2 Differences between the high male longevity area ("BZ") and the rest of Sardinia for nutrition/lifestyle variables.

Covariates	BZ (mean \pm SD)	Rest of Sardinia (mean \pm SD)	OR (95% CI)	P value
Diet score (1–5)	2.6 \pm 1.1	2.4 \pm 0.8	1.94 (1.29–2.90)	0.004
Meat consumption (servings/person/month)	5.09 \pm 3.1	5.10 \pm 3.7	0.88 (0.79–1.10)	0.538
Wine consumption (lt/person/yr)	79.3 \pm 75.7	89.6 \pm 62.4	0.98 (0.97–1.02)	0.337
Food production				
Wheat (hl/person/yr)	1.06 \pm 1.61	1.54 \pm 1.79	0.85 (0.67–1.04)	0.215
Barley (hl/person/yr)	0.92 \pm 0.75	0.52 \pm 0.44	2.16 (1.11–5.08)	0.031
Nuts (kg/person/yr)	0.27 \pm 0.62	0.07 \pm 0.11	1.06 (0.18–5.91)	0.408
Cheese (kg/person/yr)	7.4 \pm 4.6	5.2 \pm 6.0	1.03 (0.80–1.33)	0.780
Occupation/lifestyle				
Pastoralism score	2.8 \pm 1.4	1.6 \pm 1.0	1.69 (1.30–2.20)	0.0001
Average terrain's slope (%)	15.2 \pm 6.6	11.5 \pm 6.2	1.17 (1.10–1.26)	0.0001
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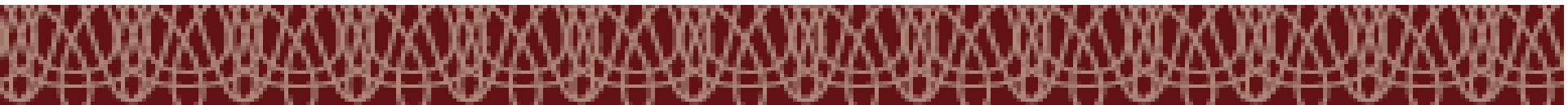
Goat milk

■ High nutritional value

- Improves lipid metabolism
- Hypocholesterolemic effect
- Short- and medium-chain saturated fatty acids
 - *Butyric (C4:0)*
 - *Caproic (C6:0)*
 - *Caprylic (C8:0)*
 - *Capric (C10:0)*
- ↑ Carnitine
- ↑ Calcium
- ↑ Selenium
- ↑ Zinc



Absence of stress?



Central Sardinia, 1908



Can the Elixir of Life be found in Sardinia?

الإكسير

Elixir of Life

ελιξίριο της ζωής

१ रक्तर

長生不老藥

不老不死の薬





Thanks for your attention and

AKENTANNOS