





# What do the following people have in common?

- Ronald Reagan (U.S. President)
- Winston Churchill (Prime minister)
- Frank Sinatra (singer)
- Henry Ford (car mogul)
- Jonathan Swift (author)
- Aaron Copeland (composer)
- Willem De Kooning (painter)
- Rita Hayworth (actress)

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They all died with Dementia of the Alzheimer type.







whatever happened to our sexual relations?

I don't know.
I don't even
think we got
a Christmas
card from them
this year.









Benefits in Cognitive Function, Blood Pressure, and Insulin Resistance Through Cocoa Flavanol Consumption in Elderly Subjects With Mild Cognitive Impairment: The Cocoa, Cognition, and Aging (CoCoA) Study

Giovambattista Desideri, Catherine Kwik-Uribe, Davide Grassi, Stefano Necozione, Lorenzo Ghiadoni, Daniela Mastroiacovo, Angelo Raffaele, Livia Ferri, Raffaella Bocale, Maria Carmela Lechiara, Carmine Marini and Claudio Ferri

Hypertension. 2012;60:794-801; originally published online August 14, 2012;
doi: 10.1161/HYPERTENSIONAHA.112.193060

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- The time required to complete Trail
   Making Test A and Trail Making Test B
   was (P<0.05) lower and</p>
- Verbal fluency test score was (P<0.05) better in subjects assigned to high flavanols.
- Changes of insulin resistance explained ≈40% of composite z score variability through the study period (partial r²=0.4013; P<0.0001)</li>



## Conclusion

 "Regular consumption of cocoa flavanols might be effective in improving cognitive function in elderly subjects with mild cognitive impairment".

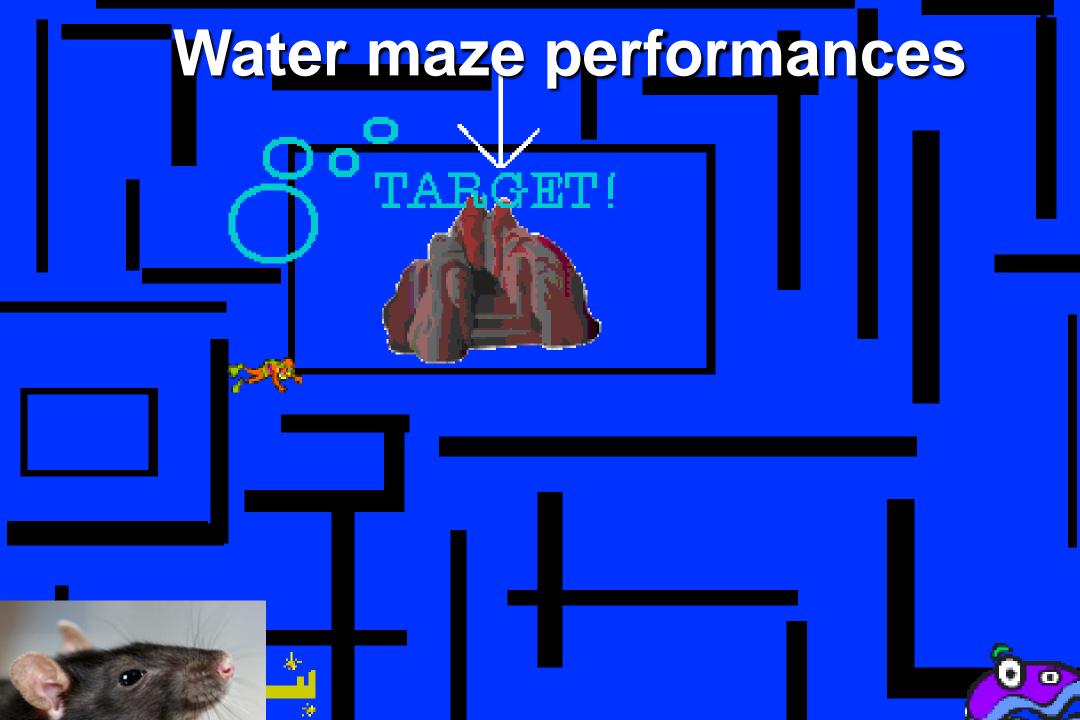
- We found a significant inverse relationship between flavonoid intake and dementia in a 5-year follow- up study of a cohort of 1367 elderly subjects.
- The age-adjusted RR of dementia was 0.55 for the two highest tertiles compared to the lowest (95% CI:  $0.34\pm0.90$ ; p = 0.02).



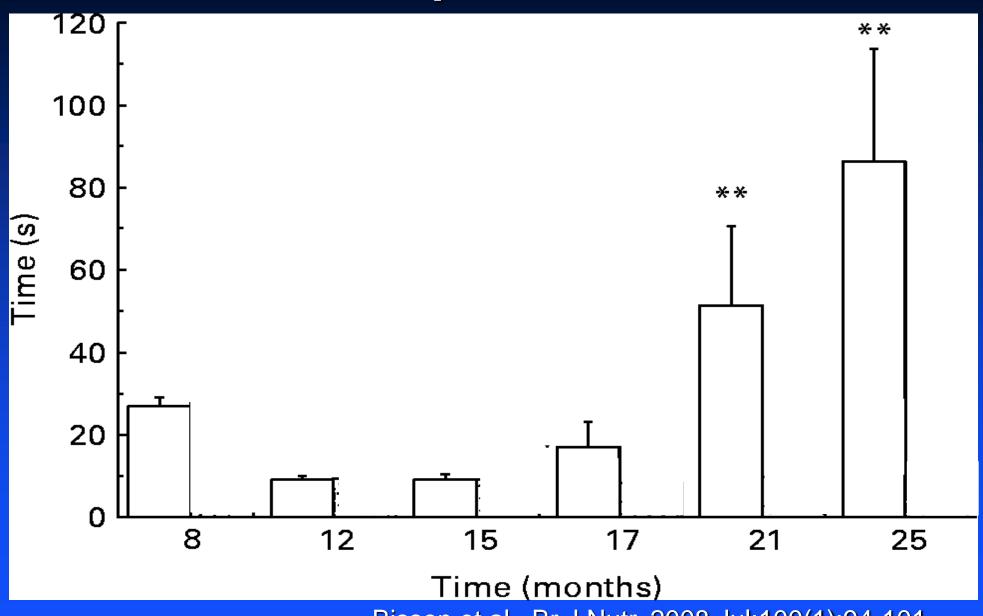
Bisson JF, Nejdi A, Rozan P, Hidalgo S, Lalonde R, Messaoudi M.

Effects of long-term administration of a cocoa polyphenolic extract (Acticoa powder) on cognitive performances in aged rats.

Br J Nutr. 2008 Jul;100(1):94-101.

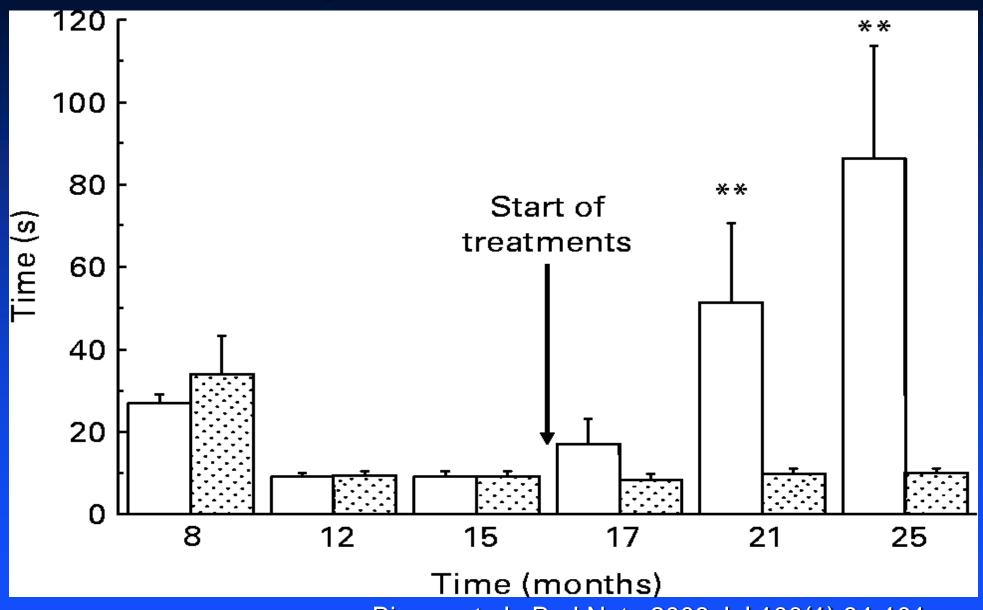


## Water maze performances



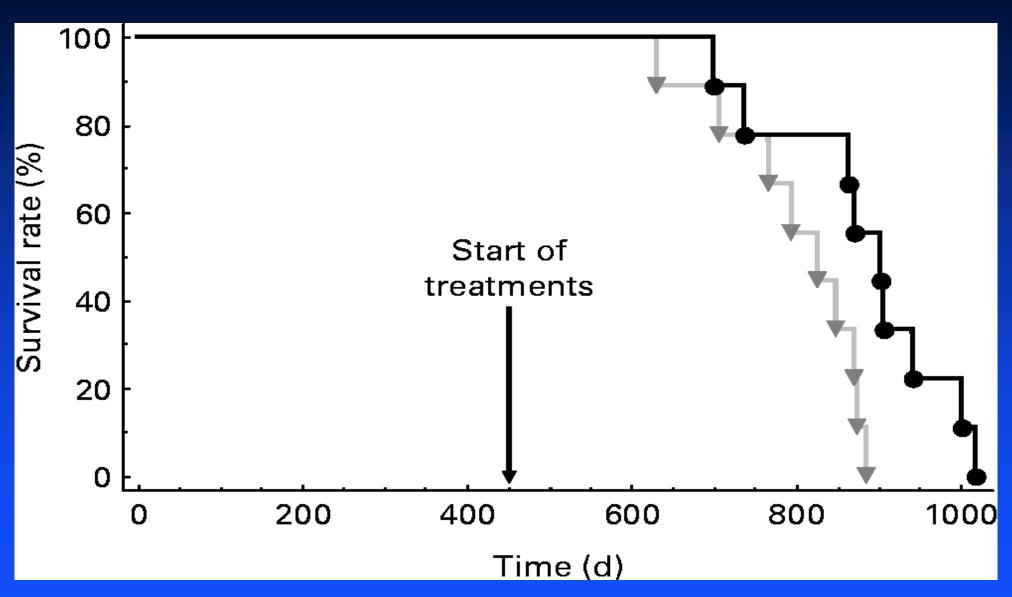
Bisson et al., Br J Nutr. 2008 Jul;100(1):94-101

## Water maze performances with cocoa



Bisson et al., Br J Nutr. 2008 Jul;100(1):94-101

## **Survival Rates**



Bisson et al., Br J Nutr. 2008 Jul;100(1):94-101

- Acticoa powder improved cognitive performances in water maze paradigms and increased lifespan.
- These results suggest that Acticoa powder may be beneficial in retarding age-related brain impairments, including cognitive deficits in normal ageing...

# Experimental Biology

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In

#### RESEARCH ARTICLE



A flavonol present in cocoa [(-)epicatechin]

enhances snail memory

Lee Fruson, Sarah Dalesman and Ken Lukowiak"

🚹 Author Affiliations

→ Author for correspondence (lukowiak@ucalgary.ca)

Received January 16, 2012.

Accepted July 2, 2012.



•

Dietary consumption of flavonoids (plant phytochemicals) may improve memory and neuro-cognitive performance, though the mechanism is poorly





## Cocoa and Cardiovascular Health Roberto Corti, Andreas J. Flammer, Norman K. Hollenberg and Thomas F. Lüscher

Circulation. 2009;119:1433-1441

doi: 10.1161/CIRCULATIONAHA.108.827022

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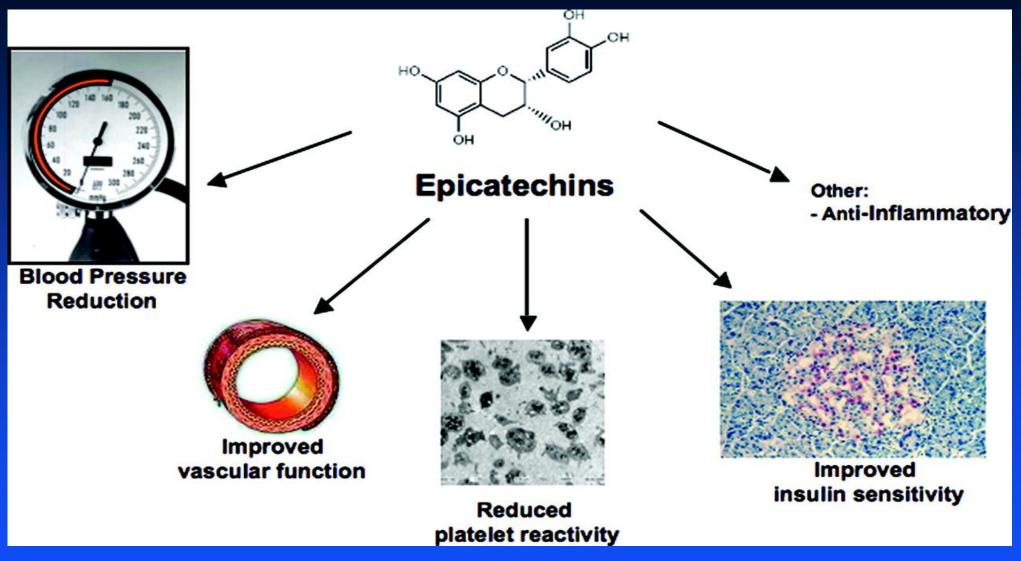
http://circ.ahajournals.org/content/119/10/1433



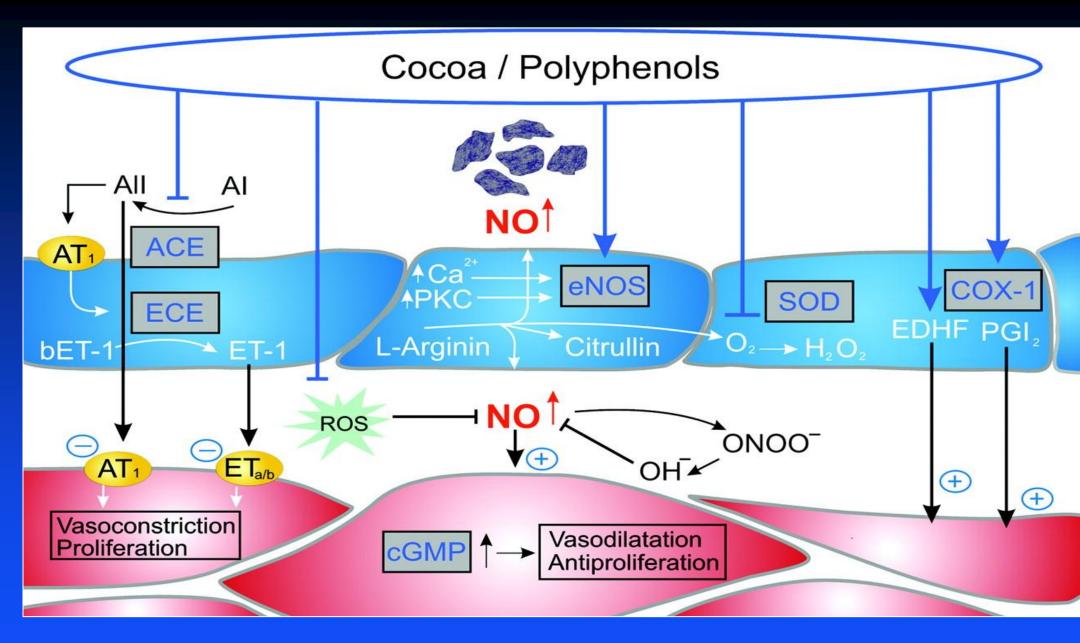
Corti R et al. Circulation 2009;119:1433-1441



## Health-relevant effect of epicatechins.



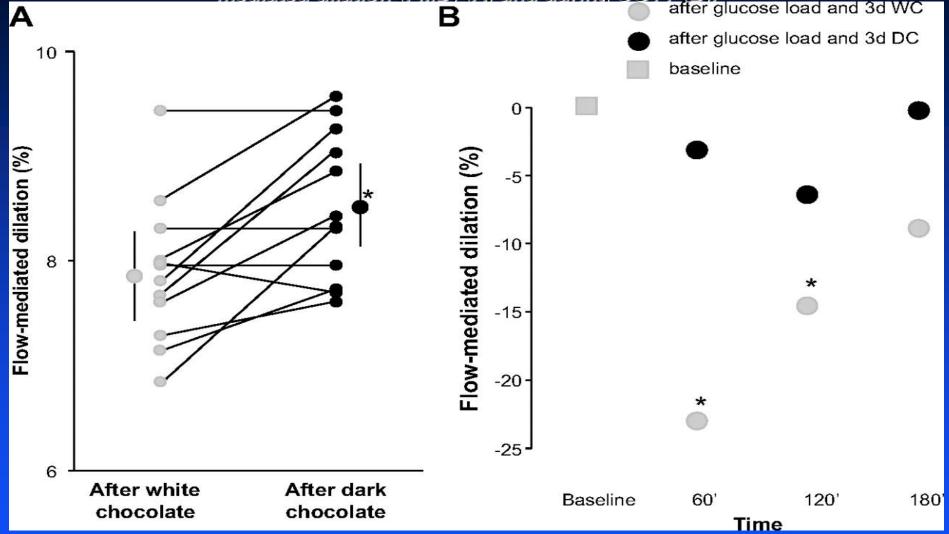




"The beneficial effects of cacao are most likely due to an increased bioavailability of NO. This may explain the improvement in endothelial function, the reduction in platelet function, and the potentially beneficial effects on blood pressure, insulin resistance, and blood lipids".

Effect of 3 days of white chocolate (WC) and dark chocolate (DC) administration on baseline flow-mediated dilation (FMD) (A) and during OGTT (B).

after glucose load and 3d WC



Grassi D et al. Hypertension 2012;60:827-832



Circulation 2007; 116: 2360-2362

### **Editorial**

#### Is It the Dark in Dark Chocolate?

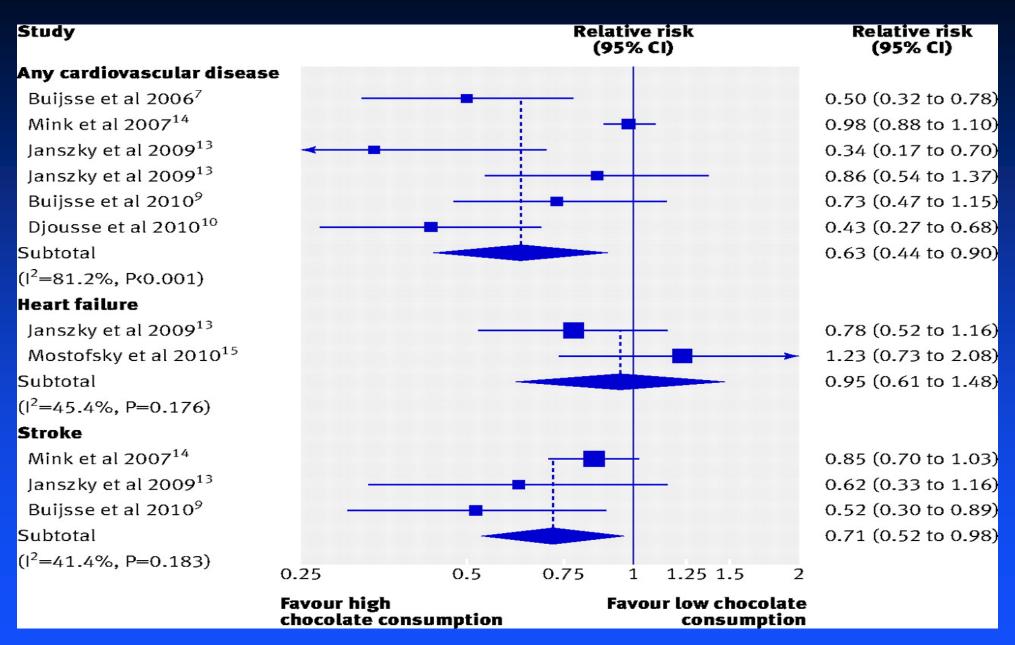
Norman K. Hollenberg, MD, PhD; Naomi D.L. Fisher, MD

When we first entered this scientific area about 10 years ago, we did not fully appreciate the emotional content of discussions involving chocolate. Contacts between medical scientists and the lay press tend to be sporadic. When chocolate is the issue, however, the lay press interest becomes intense and widespread. We have participated in many dozens, probably hundreds, of interviews about our research into the vascular effects of cocoa. Two questions inevitably emerge. The first is, "Is there some way of identifying which chocolate available for purchase is especially good for you?" The second is, "Does this mean that chocolate is a health food?" Reporters have been almost without exception rather

One relatively underreported effect of alkalization is, in fact, darkening of cocoa, so that a very dark chocolate might be essentially devoid of flavanols.

If the industry wants us to use chocolate as a health food, then they will have to change their behavior. Specifically, what the world needs is a label on each package that describes the flavanol content of the chocolate. It should be obvious that the percent of cocoa, like the color of chocolate, does not represent a measure of flavanols at all. The medical community should encourage the industry to participate. Probably the most effective mechanism is for the lay press to stop

#### Relative risks for cardiovascular disease



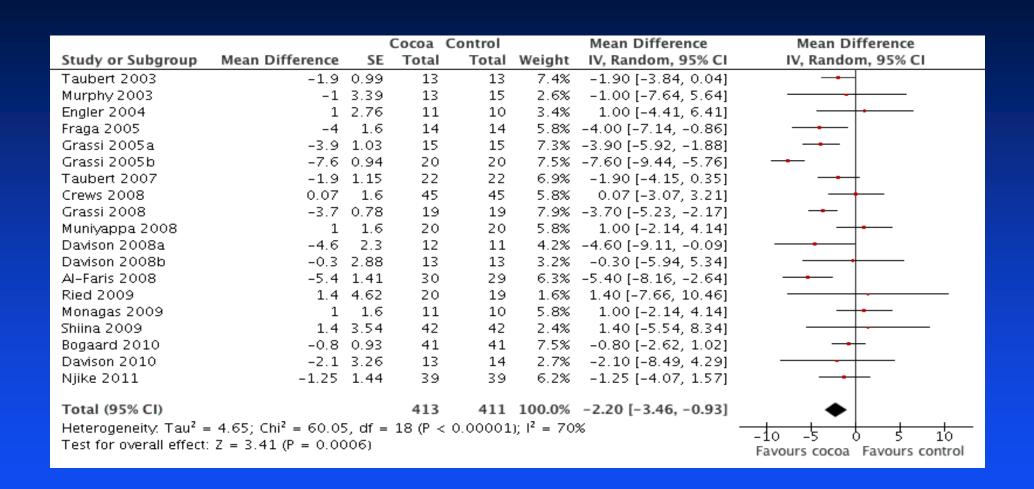
#### **Conclusions:**

We found that higher levels of chocolate consumption might be associated with a one third reduction in the risk of developing cardiovascular disease. Corroboration is now required from further studies, especially experimental studies to test causation rather than just association.

#### Effect of cocoa on blood pressure (Review)

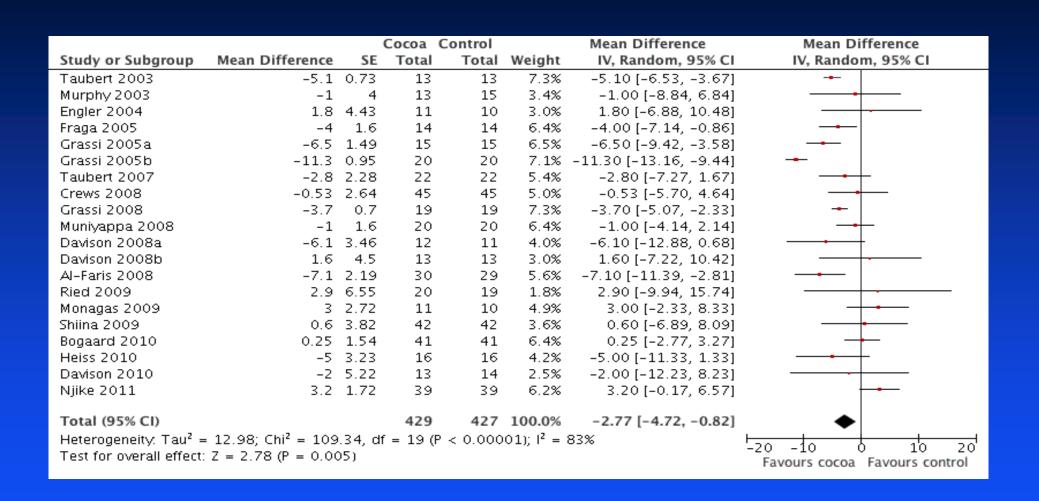
Ried K, Sullivan TR, Fakler P, Frank OR, Stocks NP





Ried K, Sullivan TR, Fakler P, Frank OR, Stocks NP. Effect of cocoa on blood pressure.

Cochrane Database of Systematic Reviews 2012,



Ried K, Sullivan TR, Fakler P, Frank OR, Stocks NP. Effect of cocoa on blood pressure.

Cochrane Database of Systematic Reviews 2012,

 Meta-analysis of 20 studies involving 856mainly healthy participants revealed a small but statistically significant blood pressure reducing effect of -2.8 mm Hg systolic and -2.2 mm Hg diastolic.

- Meta-analysis of 20 studies involving 856mainly healthy participants revealed a small but statistically significant blood pressure reducing effect of -2.8 mm Hg systolic and -2.2 mm Hg diastolic.
- While a significant effect with trials of two weeks duration (n=9) was evident, it was not with trials of longer duration (n=11).



# A metaanalysis is like a sausage . . .

Only God and the butcher know what goes in it and neither would ever eat any!

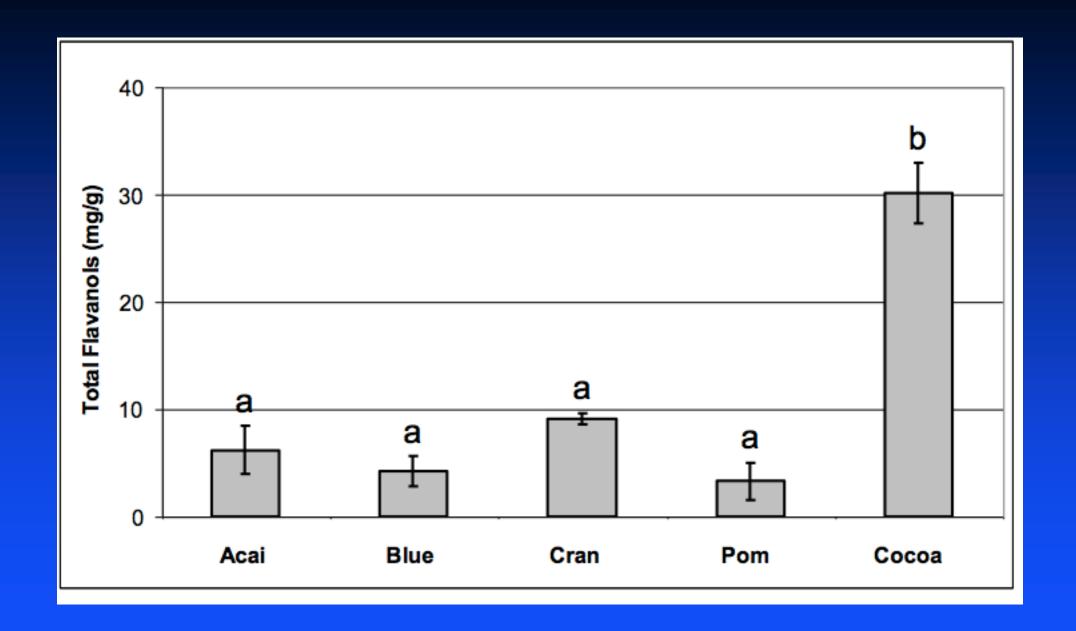
## Cacao seeds are a "Super Fruit": A comparative analysis of various fruit powders and products

Stephen J Crozier\*, Amy G Preston, Jeffrey W Hurst, Mark J Payne, Julie Mann, Larry Hainly, Debra L Miller

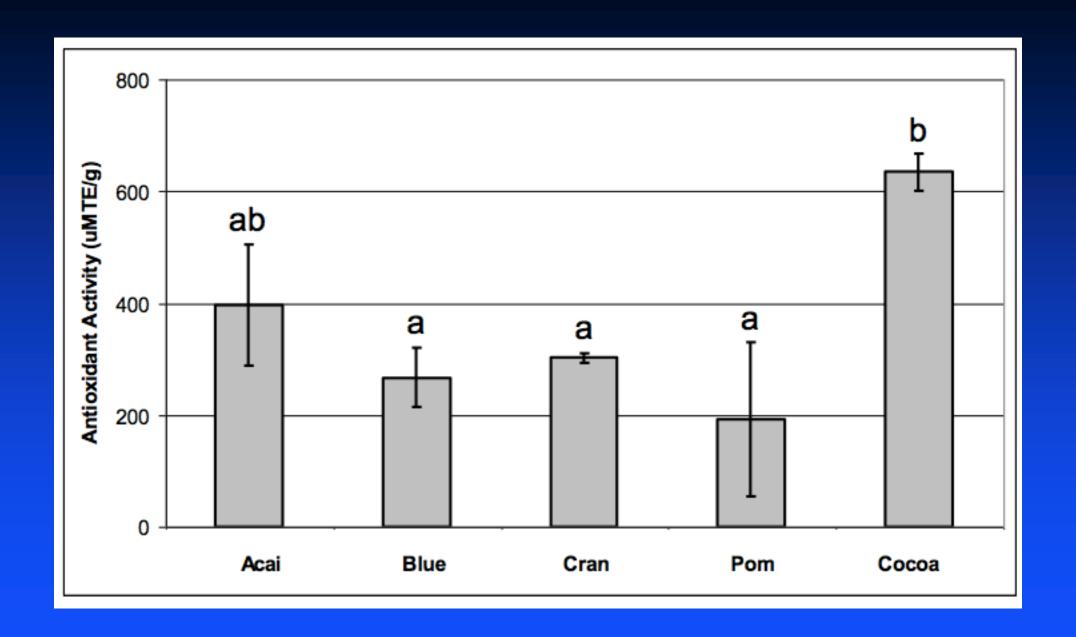
#### **Abstract**

**Background:** Numerous popular media sources have developed lists of "Super Foods" and, more recently, "Super Fruits". Such distinctions often are based on the antioxidant capacity and content of naturally occurring compounds such as polyphenols within those whole fruits or juices of the fruit which may be linked to potential health benefits. Cocoa powder and chocolate are made from an extract of the seeds of the fruit of *the Theobroma cacao* tree. In this study, we compared cocoa powder and cocoa products to powders and juices derived from fruits commonly considered "Super Fruits".

**Results:** Various fruit powders and retail fruit products were obtained and analyzed for antioxidant capacity (ORAC (µM TE/g)), total polyphenol content (TP (mg/g)), and total flavanol content (TF (mg/g)). Among the various

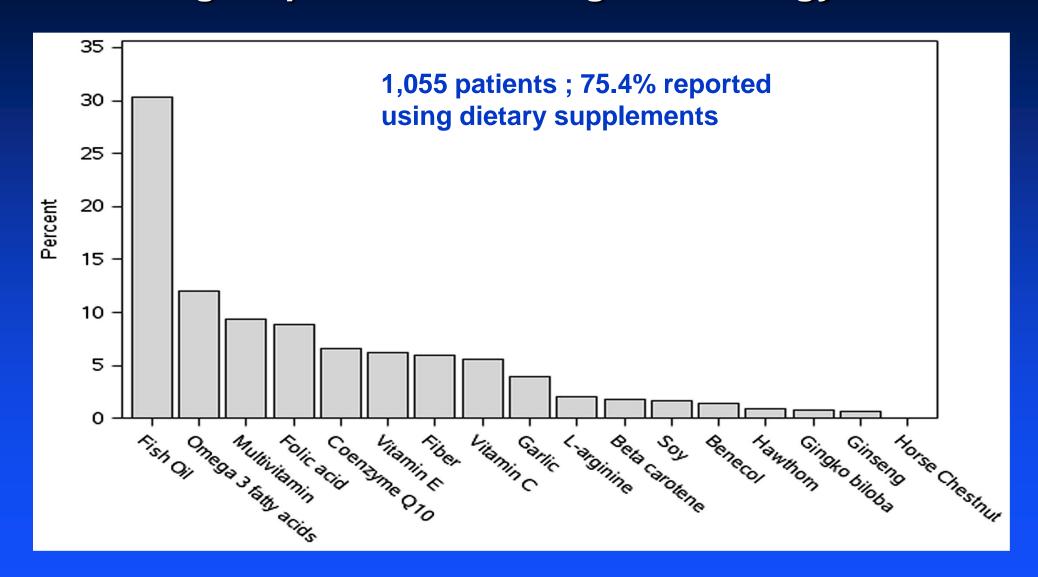


Crozier et al. Chemistry Central Journal 2011, 5:5



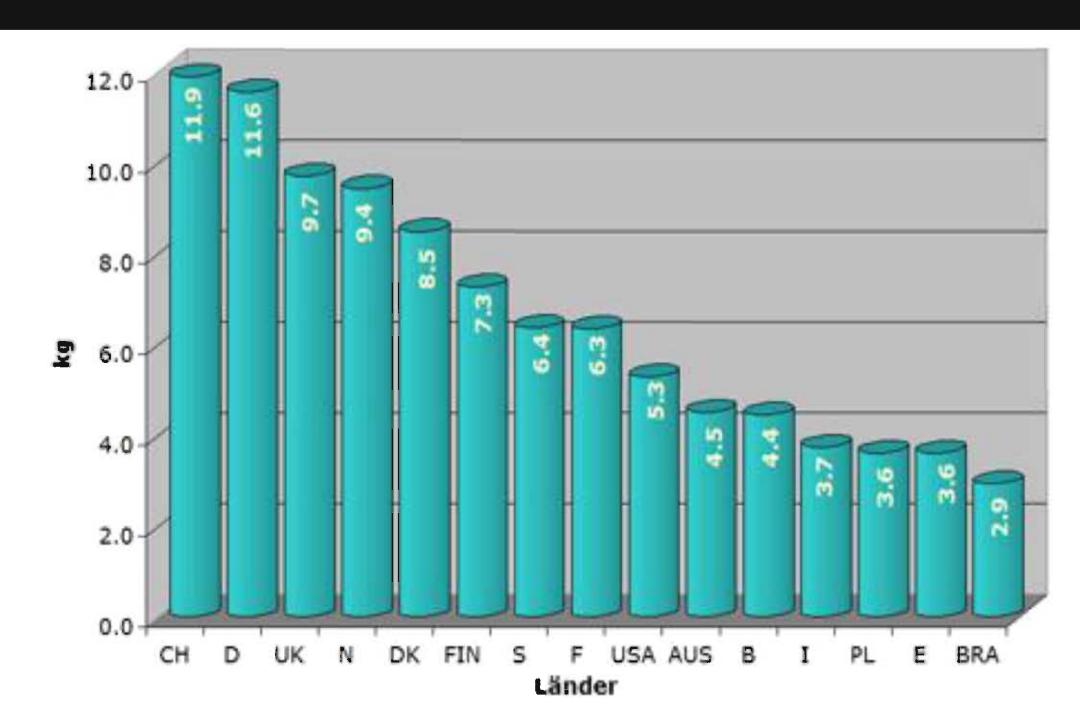
Crozier et al. Chemistry Central Journal 2011, 5:5

## Use of 17 dietary supplements for cardiac symptoms among outpatients attending a cardiology clinic



#### **Hypothesis:**

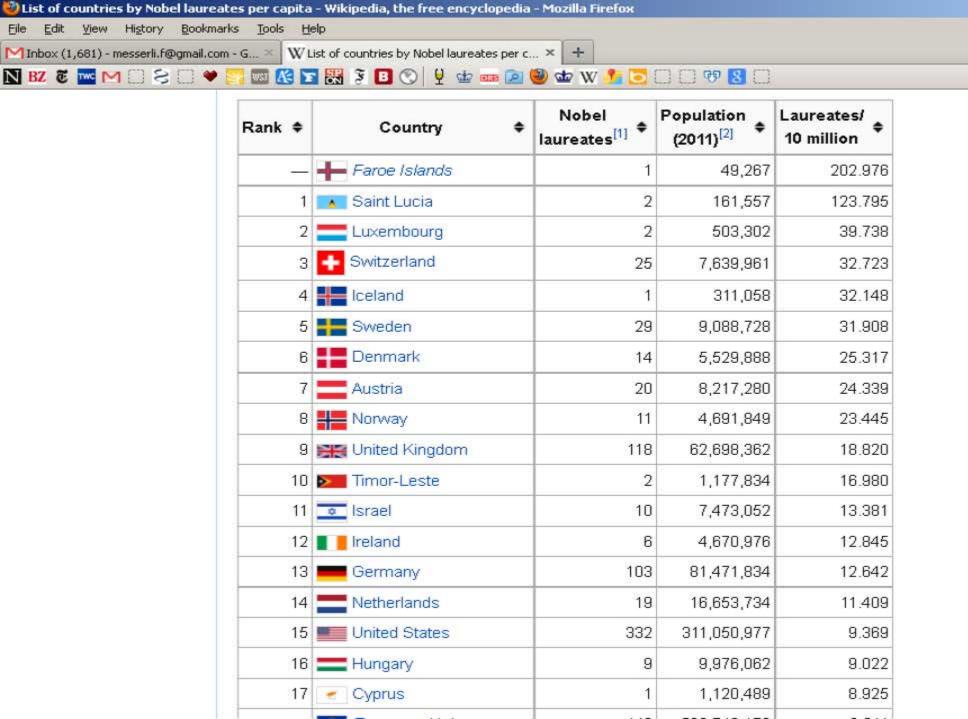
Since chocolate consumption could improve cognitive function not only individually but possibly in the general population, a correlation might be expected between chocolate consumption and cognitive function among various countries..



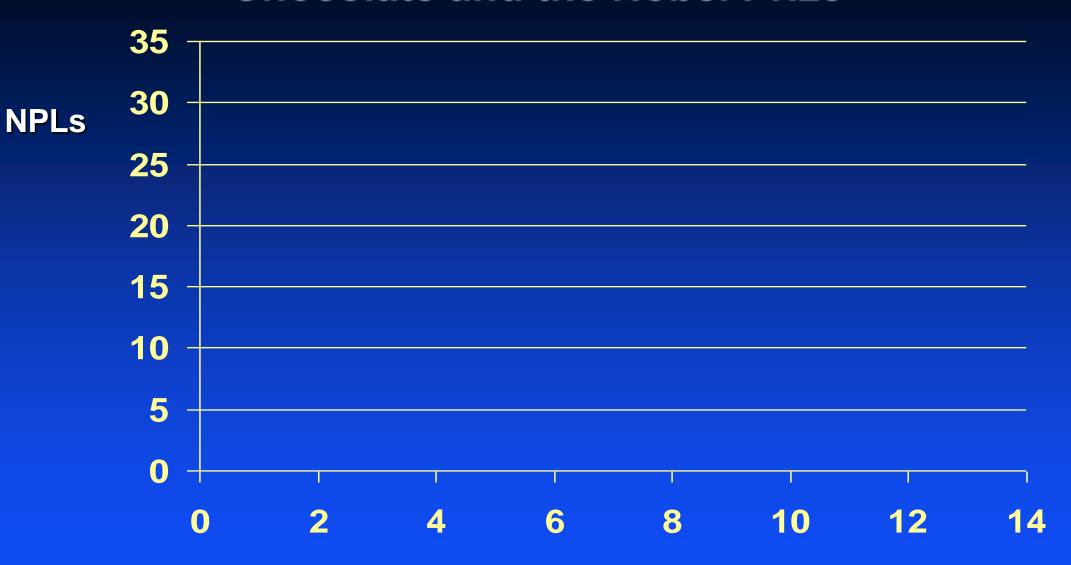
## **Hypothesis:**

Since chocolate consumption could improve cognitive function not only individually but possibly in the general population, a correlation might be expected between chocolate consumption and cognitive function among various countries...

Conceivably the total number of Nobel Prize Laureates (NPLs) per capita could give us some measure of the overall cognitive function of a given country...



#### **Chocolate and the Nobel Prize**



Chocolate consumption in kg/year/capita

#### **Chocolate and the Nobel Prize**



Chocolate consumption in kg/year/capita

## Now what?

- editorial@nejm.org
   via manuscriptcentral.com
- Sep 19. 2012
- Dear Dr. Messerli,

Thank you for submitting your article on chocolate consumption, cognitive function, and Nobel laureates to the Journal. We greatly enjoyed it and would like to publish it as an Occasional Note -- in fact, our hope is to publish it in early October, to coincide with the announcements of this year's Nobel Prizes...

#### EMBARGOED until October 10. 2012, at 10.00 AM

#### OCCASIONAL NOTES

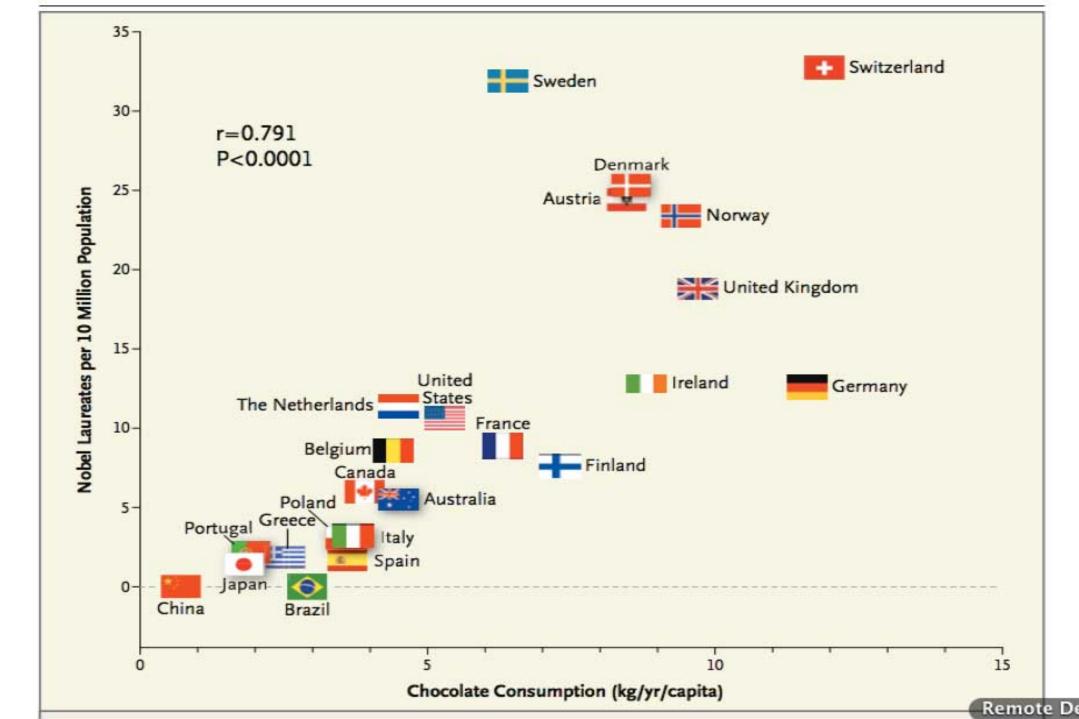
## Chocolate Consumption, Cognitive Function, and Nobel Laureates

Franz H. Messerli, M.D.

Dietary flavonoids, abundant in plant-based foods, have been shown to improve cognitive function. Specifically, a reduction in the risk of dementia, enhanced performance on some cognitive tests, and improved cognitive function in elderly patients with mild impairment have been associated with a regular intake of flavonoids. A subclass of flavonoids called flavanols, which are widely present in cocoa, green tea, red wine, and some

Thus, the numbers must be read as the number of Nobel laureates for every 10 million persons in a given country.

All Nobel Prizes that were awarded through October 10, 2011, were included. Data on per capita yearly chocolate consumption in 22 countries was obtained from Chocosuisse (http://www.chocosuisse.ch/web/chocosuisse/en/instruction\_material.html),{Q1} 'Theobroma-cacao{Q2} (http://

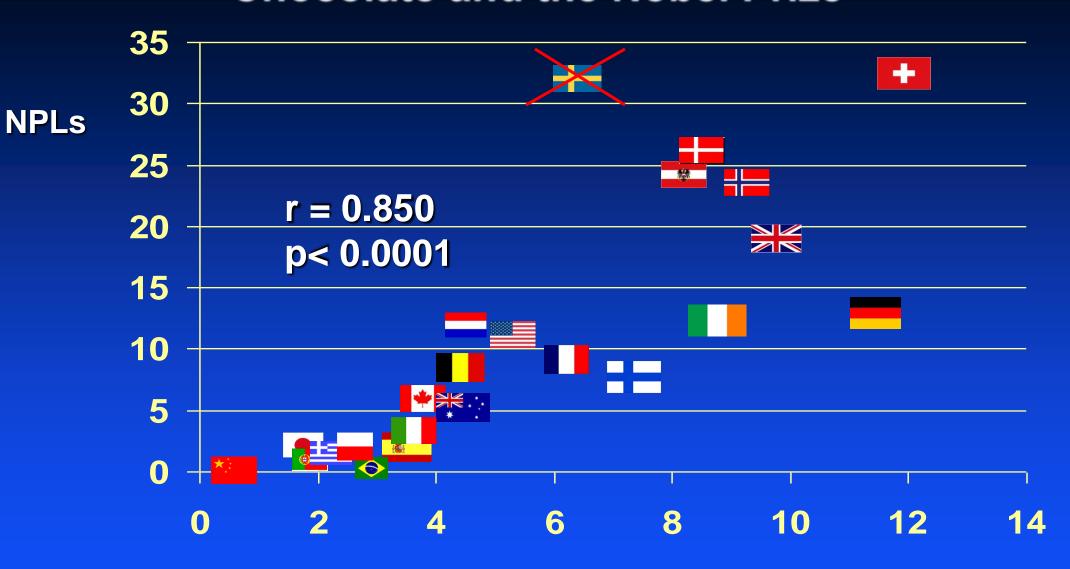


"With a per capita chocolate consumption of 6.4 kg/year Sweden should have produced a total of about 14 NPLs, yet we observe 32.

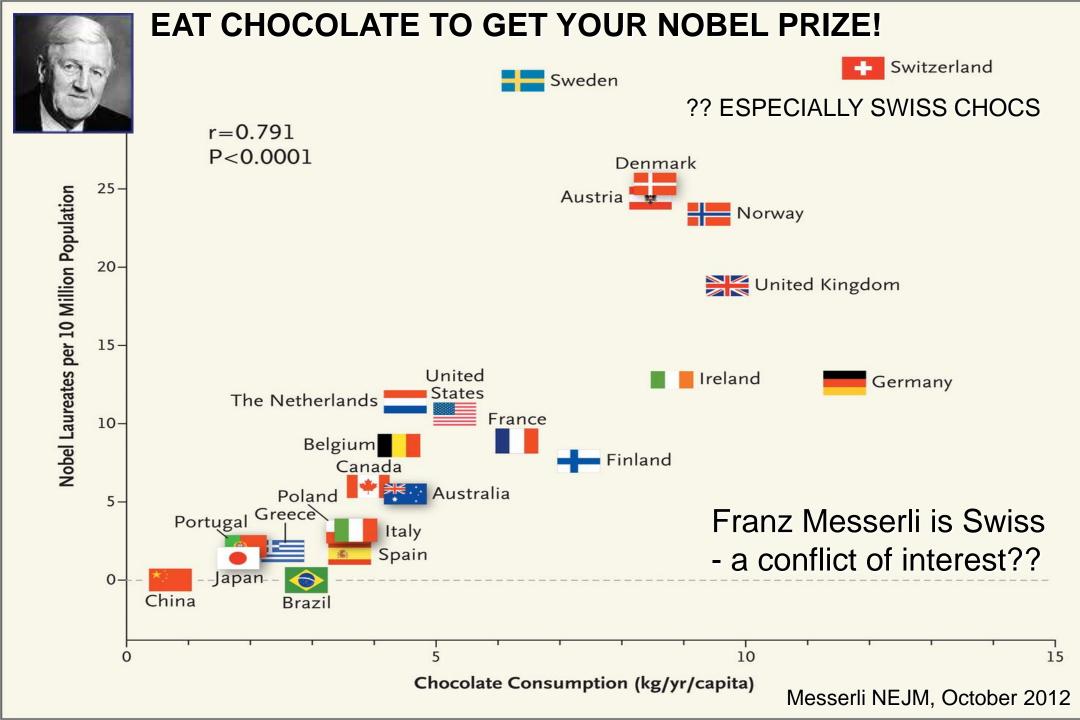
"With a per capita chocolate consumption of 6.4 kg/year Sweden should have produced a total of about 14 NPLs, yet we observe 32.

The observed exceeds the expected more than twofold, meaning that either the Nobel Committee in Stockholm has some inherent patriotic bias...or, perhaps, that the Swedes are particularly sensitive to chocolate and even minuscule amounts greatly enhance their cognition".

#### Chocolate and the Nobel Prize



Chocolate consumption in kg/year/capita





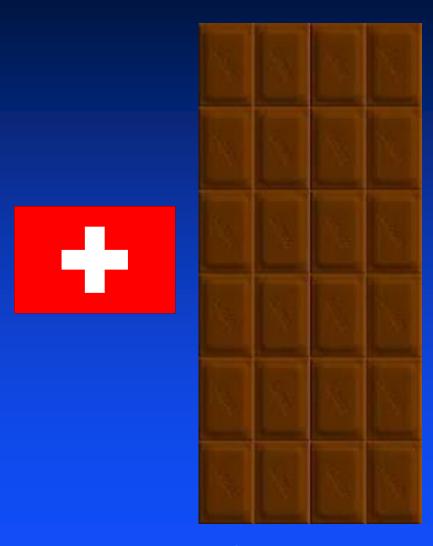
Rolf Zinkernagel, MD received the 1996 Nobel Prize in Medicine for the discovery of how the immune system recognizes virus-infected cells. With this he became the 24th Swiss Nobel laureate

#### Dear Franz,

I seem to be your outlier because my yearly consumption is less than 500 g - Sorry!
I shall let you know when I am in NYC next time.
All the best

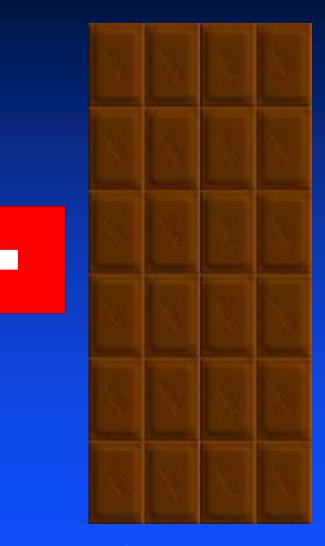
Rolf

## **Chocolate Consumption**



Switzerland 11.9 kg or 119 bars/year

## **Chocolate Consumption**



Switzerland 11.9 kg or 119 bars/year

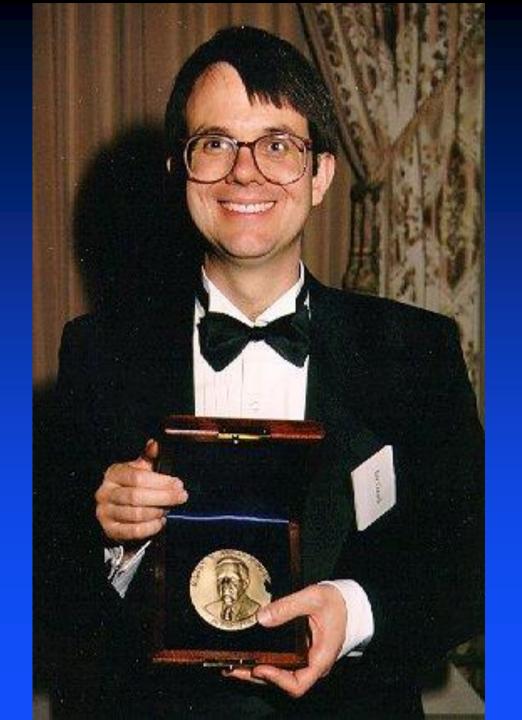




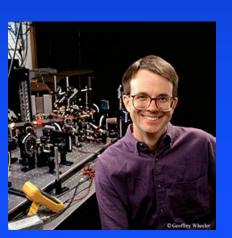
Professor Zinkernagel < 500 g or 5 bars/year



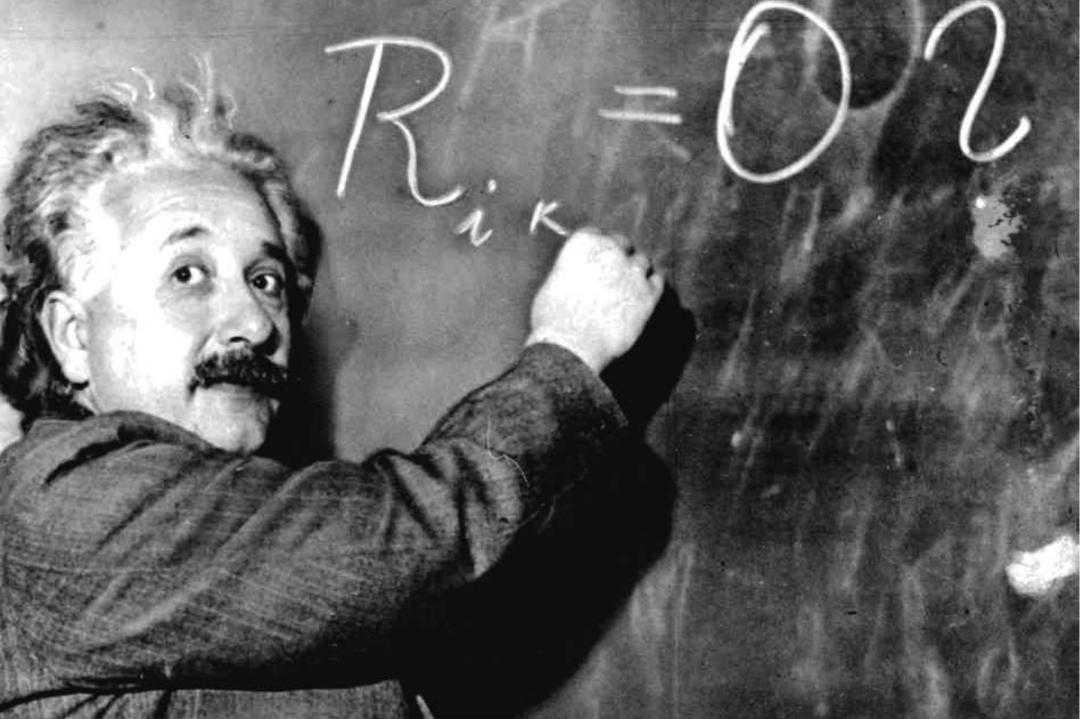
For synthesizing the first Bose-Einstein condensate in 1995, Cornell, Wieman, and Ketterle shared the Nobel Prize in Physics in 2001



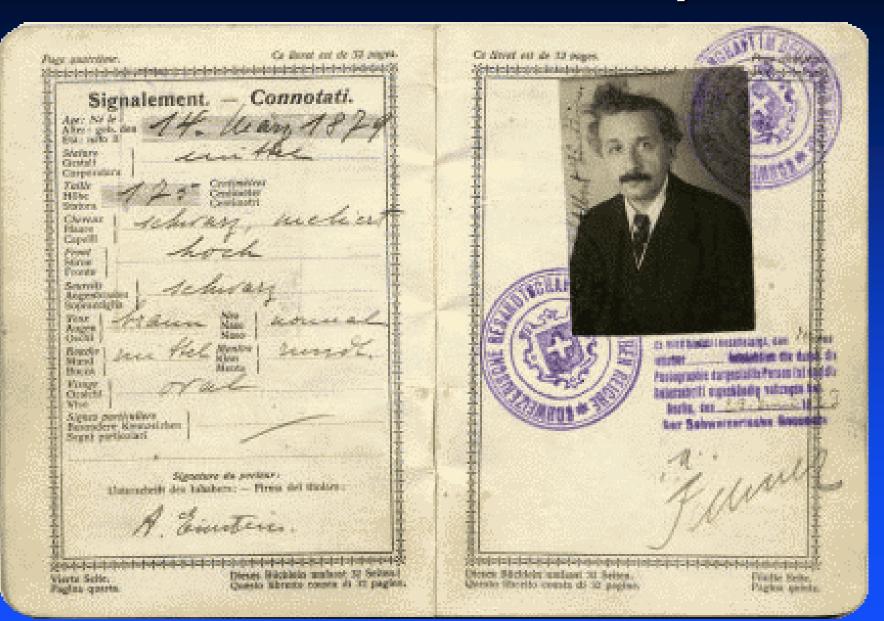
""I attribute essentially all my success to the very large amount of chocolate that I consume. Personally I feel that milk chocolate makes you stupid. Now dark chocolate is the way to go. It's one thing if you want like a medicine or chemistry Nobel Prize, but if you want a physics Nobel Prize it pretty much has got to be dark chocolate.



Eric Cornell, American physicist, Nobel Laureate in 2001 interviewed by Frederic Joelving, Reuters. October 05.2012



## Einstein's Swiss Passport





urkundet hiemit:

#### Herr Albert Einstein von Allen, geboren den 14. Marz 1879,

beonehte die aarganische Mantonoschule a mar die III. & IV. Masse der Gewerbeschule.

Rach abgelegter schriftle mindt Mahritatoprinfung am 18., 19. \$ 21. September sowie am 30. September 1896 erhielt desselbe folgende Doten:



#### Kantons Aargau -

urkundet hiemit:

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besuchte die aarganische Hantonsschule a smar die II. & IV. Offasse der <u>Gewerbeschule</u>.

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Claran den 3 1 Oktober 189G.

Elm Mamen des Erniehungorales.

Der Grasident:

Der Wehrelar:

#### Albert Einstein Sworn in as US citizen in 1940



#### **Einstein's Citizenships**

- Württemberg/Germany (1879–1896)
- Stateless (1896–1901)
- Switzerland (1901–1955)
- Austria (1911–1912)
- Germany (1914–1933)
- United States (1940–1955)

#### Einstein's Citizenships

- Württemberg/Germany (1879–1896)
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- Switzerland (1901–1955)
- Austria (1911–1912)
- Germany (1914–1933)
- United States (1940–1955)

Potential Exposure to Swiss Chocolate



#### OCCASIONAL PAPER

#### The cerebral cortex of Albert Einstein: a description and preliminary analysis of unpublished photographs

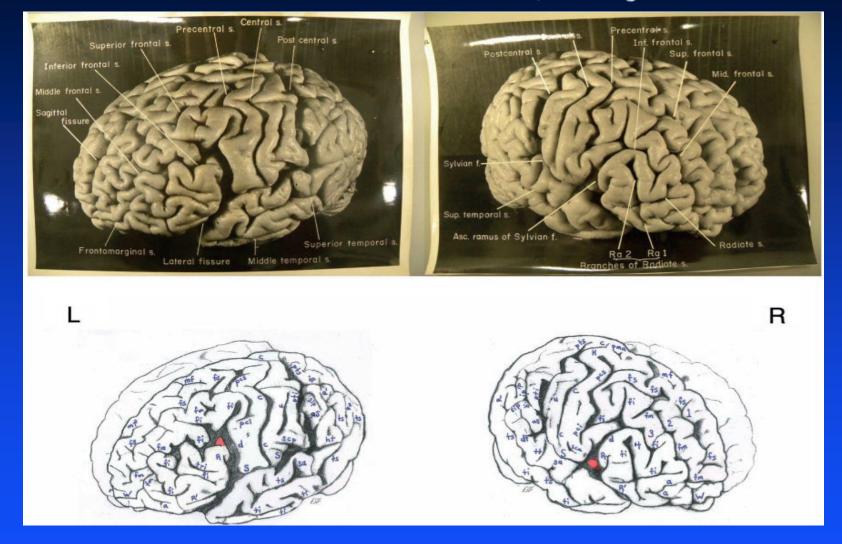
Dean Falk, 1,2 Frederick E. Lepore 3,4 and Adrianne Noe5

- 1 Department of Anthropology, Florida State University, Tallahassee, FL 32306-7772, USA
- 2 School for Advanced Research, Santa Fe, NM 87505, USA
- 3 Department of Neurology, Robert Wood Johnson Medical School, Piscataway, NJ 08854, USA
- 4 Department of Ophthalmology, Robert Wood Johnson Medical School, Piscataway, NJ 08854, USA
- 5 National Museum of Health and Medicine, Silver Spring, MD 20910, USA

Correspondence to: Dean Falk, School for Advanced Research. 660 Garcia Street. Santa Fe, NM 87505, USA E-mail: dfalk@fsu.edu or falk@sarsf.org

Upon his death in 1955, Albert Einstein's brain was removed, fixed and photographed from multiple angles. It was then sectioned into 240 blocks, and histological slides were prepared. At the time, a roadmap was drawn that illustrates the location within the brain of each block and its associated slides. Here we describe the external gross neuroanatomy of Einstein's entire cerebral cortex from 14 recently discovered photographs, most of which were taken from unconventional angles. Two of the photographs reveal sulcal patterns of the medial surfaces of the hemispheres, and another shows the neuroanatomy of the right (exposed) insula. Most of Einstein's sulci are identified, and sulcal patterns in various parts of the brain are compared with those of 85 human brains that have been described in the literature. To the extent currently possible, unusual features of Einstein's

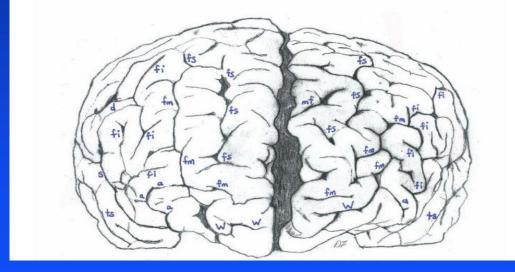
Top: Photographs of the left (L) and right (R) lateral surfaces of Einstein's brain taken with the front of the brain rotated toward the viewer, with original labels.



Top: Photograph of a fre



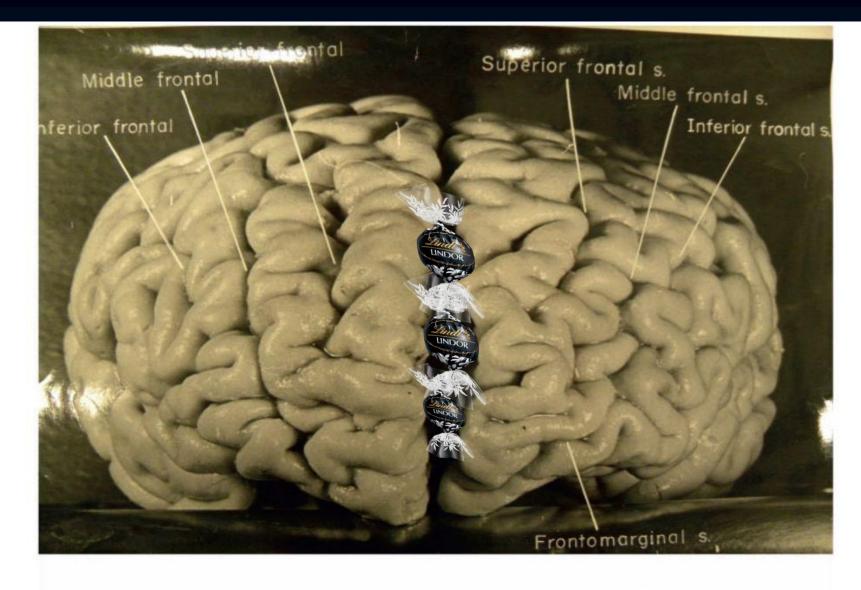
orientation, with original



"Einstein's brain has an extraordinary prefrontal cortex, which may have contributed to the neurological substrates for some of his remarkable cognitive abilities".

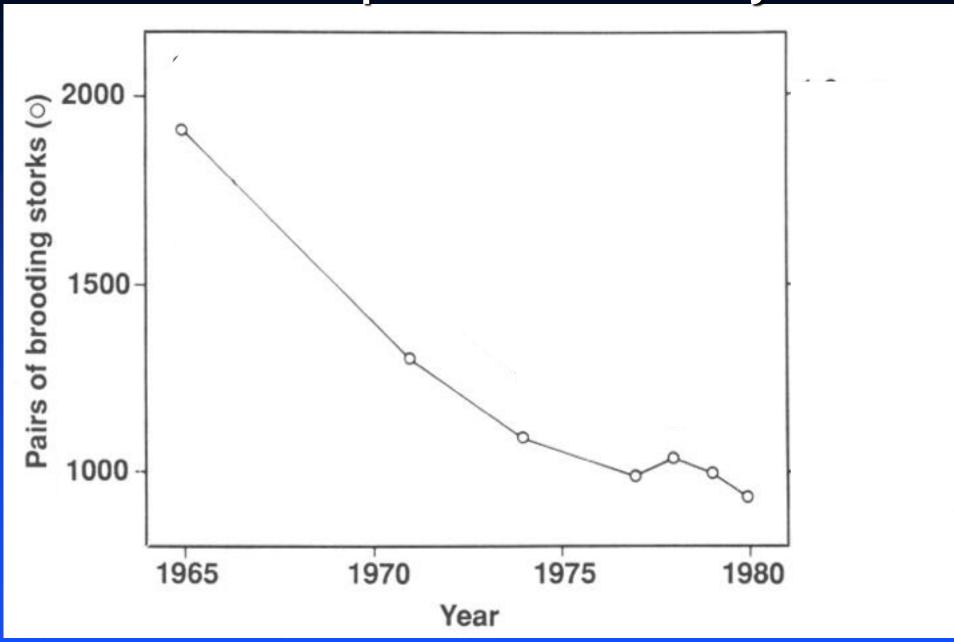
Top: P

original



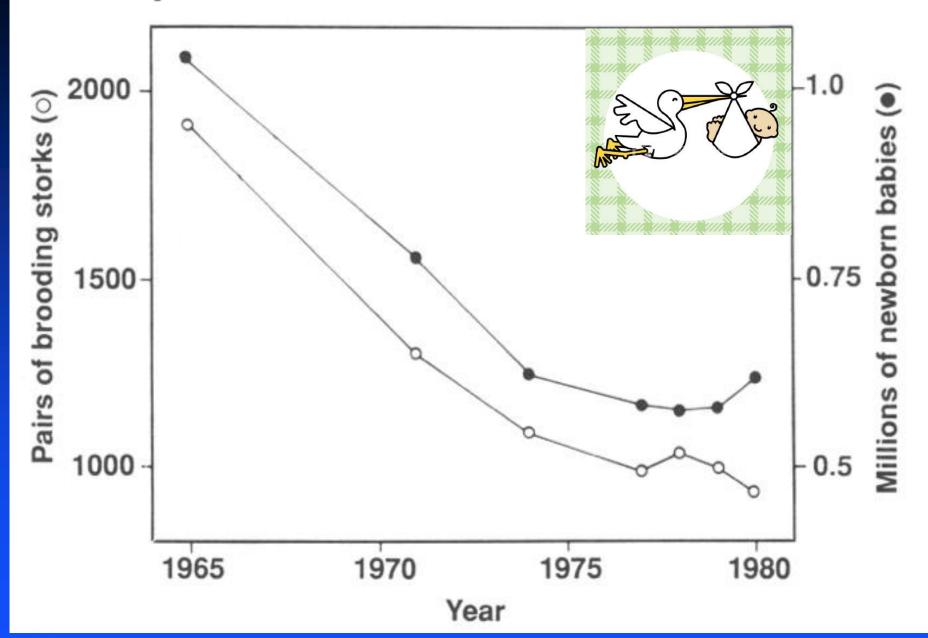
# p < 0.0001

#### **Stork Population in Germany**



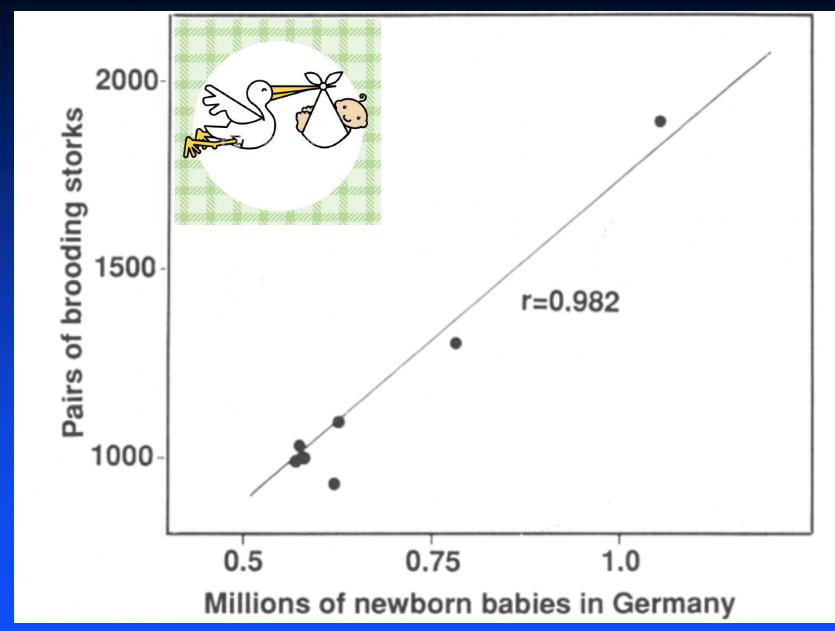
Sies, H. Nature 1988, 332, 495

#### Stork Population and Newborn Babies in Germany



Sies, H. Nature 1988, 332, 495

#### Stork Population and Newborn Babies in Germany



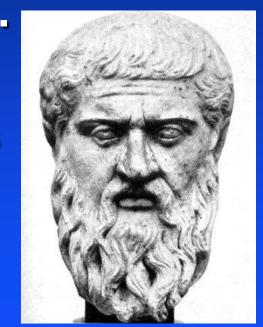






## **Mortality and Trials with Greek Acronyms**

We reviewed the main cardiovascular clinical trials published from 2000 to 2011 in Medline and other databases. After extensive review, we selected trials with at least 1000 person-years and which reported total mortality as an outcome event.

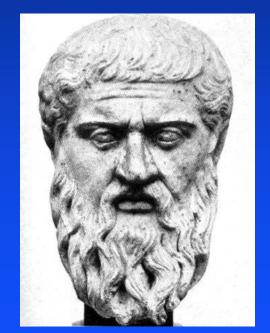


We found 149 trials that met our selection criteria (webappendix), 19 of which showed a significant reduction in total mortality:

ARISTOTLE, PLATO, ADVANCE-BP, CARE-HF, COMET, COMMIT-clopidogrel, COPERNICUS, CREATE-ECLA-Reviparin, EMPHASIS, EPHESUS, GISSI-HF-PUFA, HOPE, HPS-simvastatin, JUPITER, MADIT-2, OASIS-6, RAFT, SCD-Heft- ICD, and TAPAS.

### **Mortality and Trials with Greek Acronyms**

Overall, 100% of Greek philosopher trials showed a significant reduction in all-cause mortality, compared with 17 (12%) of 147 trials with any other kind of acronym (p=0.016, Fisher's exact test).







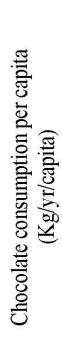


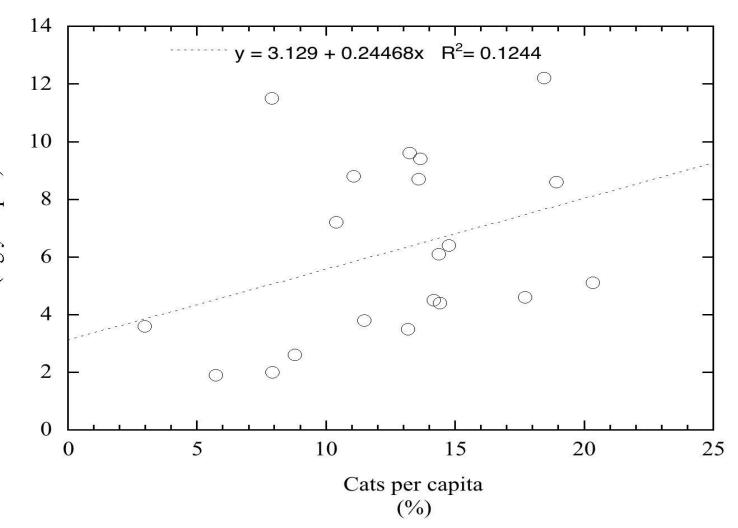
#### Cat to Human population : Sheet1

Country	Cat Population	Human Population	% cat to human
USA	56.10	275.85	20.34%
Austria	1.51	7.98	18.92%
Switzerland	1.31	7.10	18.45%
Netherlands	2.78	15.70	17.71%
Hungary	1.80	10.30	17.48%
Slovenia	0.32	1.98	16.16%
Romania	3.40	22.50	15.11%
Sweden	1.30	8.80	14.77%
Belgium	1.47	10.20	14.41%
France	8.40	58.40	14.38%
Australia	2.65	18.70	14.17%
Norway	0.60	4.40	13.64%
Denmark	0.72	5.30	13.58%
Bulgaria	1.10	8.30	13.25%
UK	7.76	58.60	13.24%
Poland	5.10	38.70	13.18%
Russia	17.00	146.90	11.57%
Italy	6.53	56.90	11.48%
Croatia	0.50	4.50	11.11%
Ireland	0.41	3.70	11.08%
Czech Rep	1.10	10.30	10.68%
Finland	0.53	5.10	10.39%
Macedonia	0.20	2.00	10.00%
Greece	0.95	10.80	8.80%
Portugal	0.80	10.10	7.92%
Germany	6.48	82.00	7.90%
Malta	0.03	0.38	7.89%
Albania	0.20	3.10	6.45%
Janan	7.24	126.40	5 73%



#### Cats and Chocolate Consumption per capita



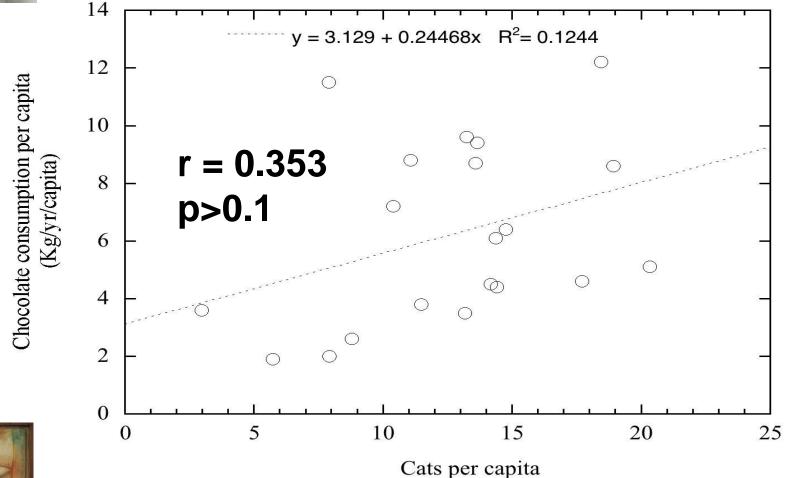






#### Cats and Chocolate Consumption per capita

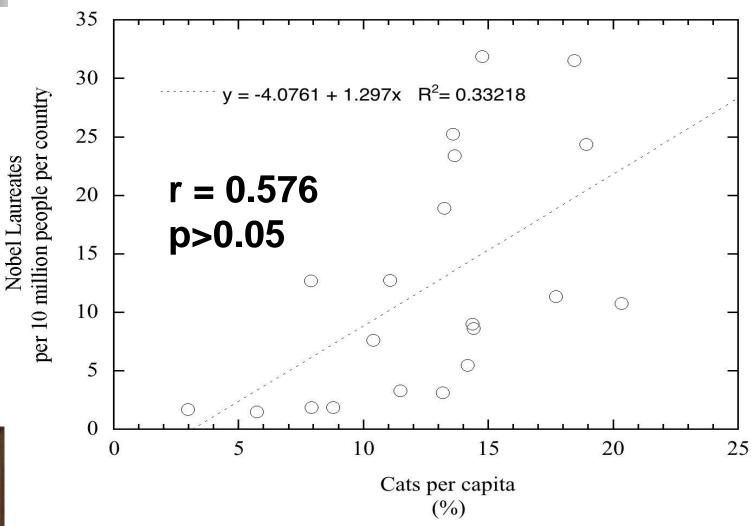
(%)

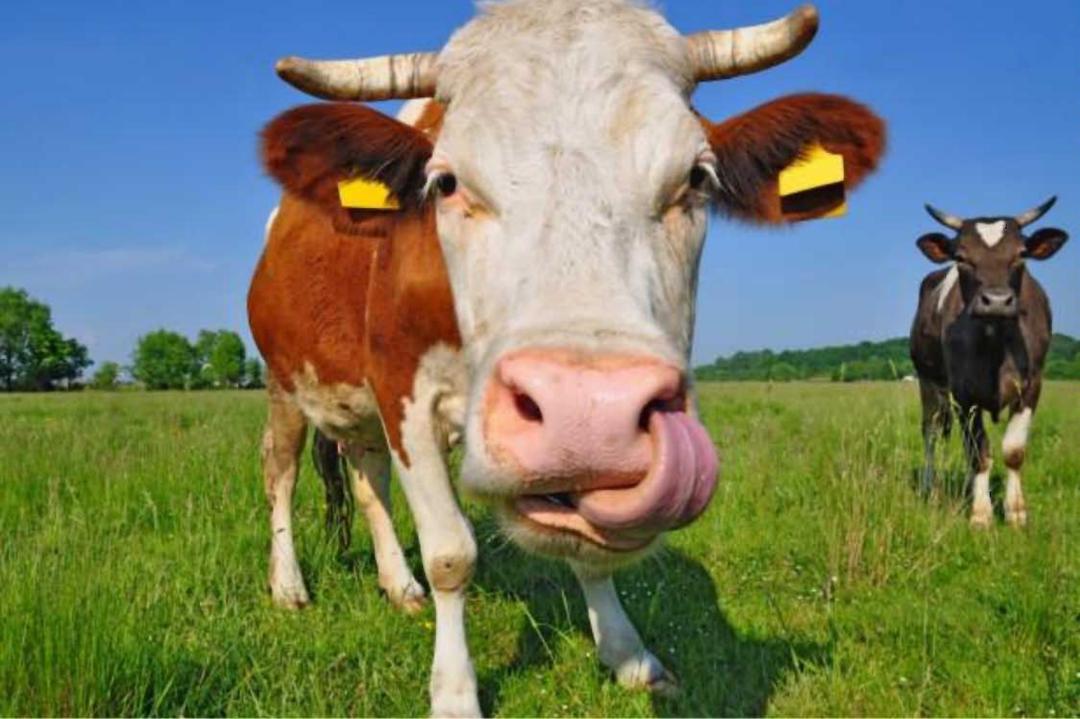




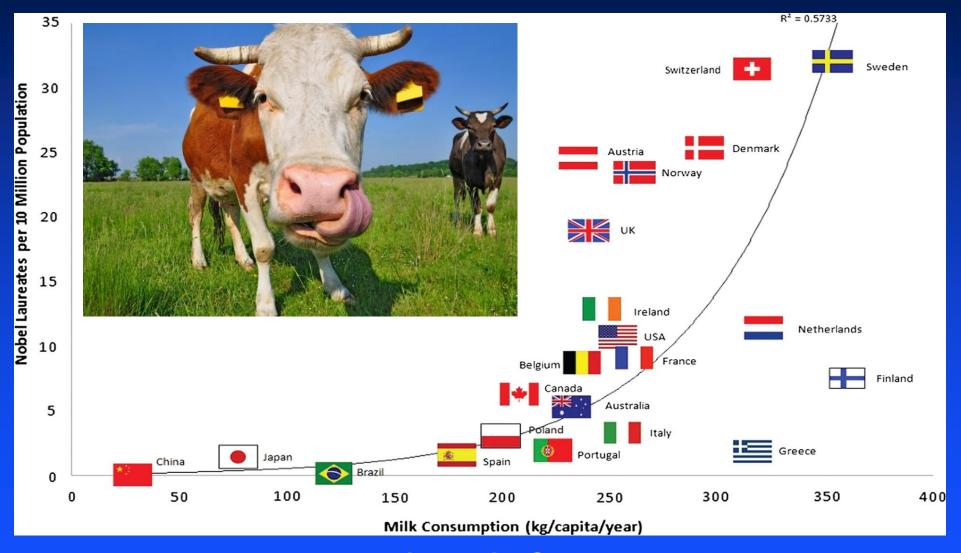


#### Cats and Nobel Laureates per capita





## Correlation between countries' annual per capita milk consumption and the number of Nobel laureates per capita



Linthwaite S, Fuller GN. Pract Neurol 2013;13:63.

the correlation with milk does not find Sweden an outlier, absolving the Nobel Committee from Messerli's suggestion of patriotic bias.

to improve your chances of winning Nobel prizes you should not only eat more chocolate but perhaps drink milk too: or strive for synergy with hot chocolate?

# p < 0.0001



#### Herzschutz durch Kakaoflavanole

#### ISABELLA SUDANO, ANDREAS J. FLAMMER, ASTRID HIRT, SILVIYA CANTATORE, FRANK ENSELEIT, FRANK RUSCHITZKA, GEORG NOLL, ROBERTO CORTI



Isabella Sudano



Andreas J.

Das medizinwissenschaftliche Interesse an Kakao geht auf Beobachtungen bei den auf Inseln vor Panama lebenden Kuna-Indios zurück (1). In dieser Population traten Bluthochdruck sowie der altersbedingte Blutdruckan-

sine desalide manieur

fasst die gewonnenen Erkenntnisse zusammen.

wie Obst, Gemüse, Rotwein, Nüsse oder Tee möglicherweise positive Effekte auf unsere Gesundheit (2). Diese Effekte werden unter anderem auf die antioxidativ wirksamen Polyphenole, insbesondere die Flavanole, zurückgeführt.

Des Clauses also halt dissesses Cabalialadas

In den letzten Jahren ist die Anzahl wissenschaftlicher Publikationen über kardiovaskulär protektive Effekte von Kakao und Kakaoprodukten deutlich angestiegen. Der nachfolgende Übersichtsartikel

> Schokolade ist aber nicht gleich Kakao

auch durch die gleichzeitige Einnahme anderer Nahrungsmittel beeinflusst Werden (4).

#### Kakoo und Blutdruck

Nach den ersten Beobachtungen in Panama haben zahlreiche klinische Studien den Effekt von Kakao und Kakaoprodukten auf den Blutdruck evaluiert (5). In

errai 2012 aukliniastan Mataganahana (6



Wanna go to Stockholm?



# Wanna go to Stockholm? Eat your Chocolate!

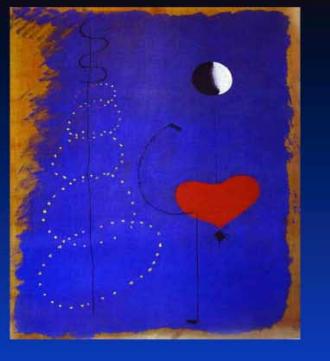


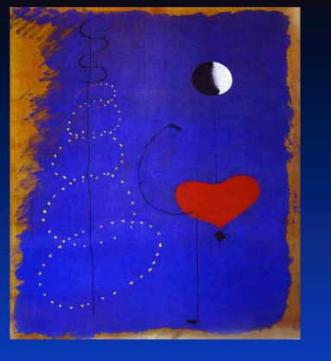


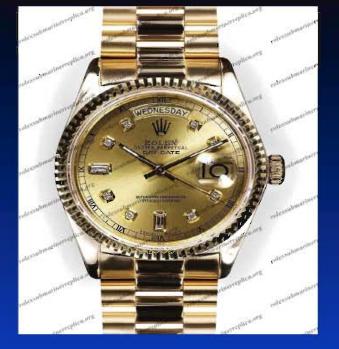


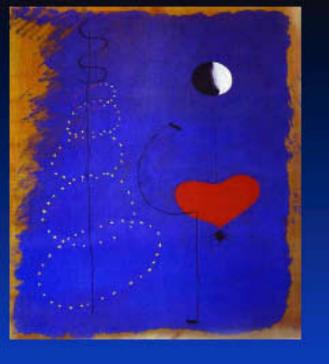


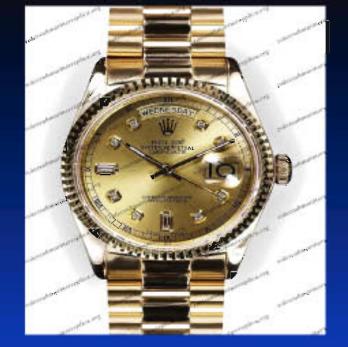


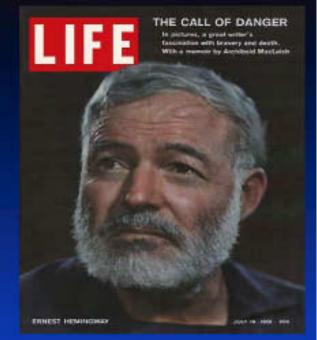


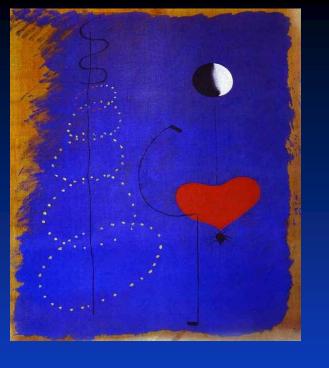


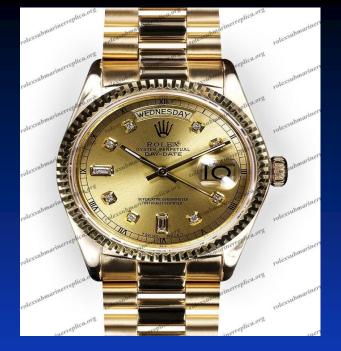


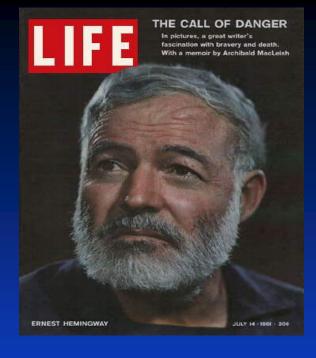












"It's just a muscle. Only it is the main muscle. It works as perfectly as a Rolex Oyster Perpetual. The trouble is you cannot send it to the Rolex representative when it goes wrong. When it stops, you just do not know the time. You're dead."

#### THE PERSON LEAST LIKELY TO HAVE A HEART ATTACK

He is an effeminate municipal worker or embalmer, completely lacking in physical and mental alertness. He has no drive, ambition or competitive spirit. He never has attempted to meet a deadline.

## THE PERSON LEAST LIKELY TO HAVE A HEART ATTACK

He is low in income, blood pressure, blood sugar, uric acid and cholesterol. He has been on Lindt Chocolate, pyridoxine, and long term anticoagulant therapy ever since his prophylactic castration.

Irvine Page, 1960



