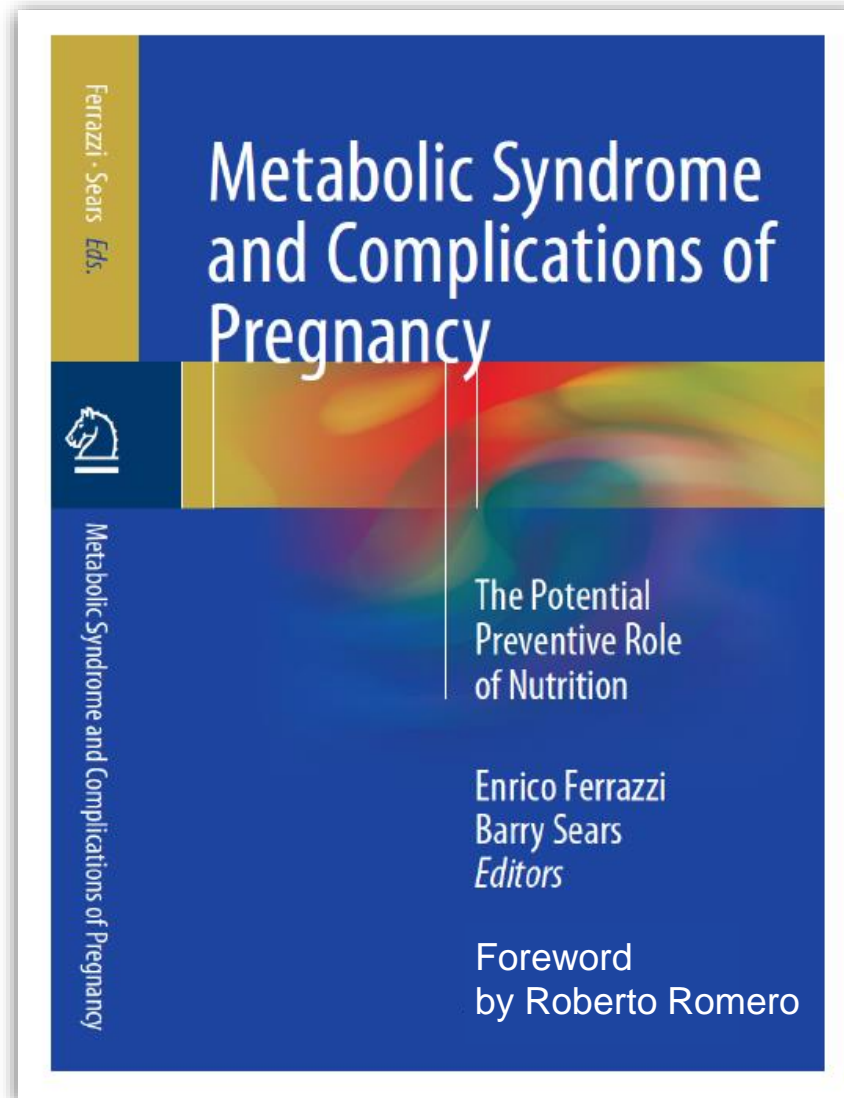


20% DI SCONTO AGLI ISCRITTI AL CORSO



Corso Formativo di
base per il counselling
nutrizionale in gravidanza
per Ginecologi e Ostetriche.

L'ALIMENTAZIONE,
L'OBESITÀ E LE
GRANDI SINDROMI
OSTETRICHE.

Olii
sani



Acqua

26 FEBBRAIO 2016

MILANO

Auditorium Ospedale dei Bambini V. Buzzi

www.nutrizioneingravidanza2016.eu

Prevenzione dei disordini ipertensivi maternogenici e del diabete gestazionale

E Ferrazzi



UNIVERSITÀ DEGLI STUDI
DI MILANO



Dept Woman Mother and Neonate –
BUZZI CHILDREN'S HOSPITAL,
ASST-FBFS -MILANO

University of Milan, School of Medicine,

background on HDP and on GD

HDPs - PREECLAMPSIA, a placental disease. Which placental disease?



HDP- CLINICAL PHENOTYPE WITH IUGR

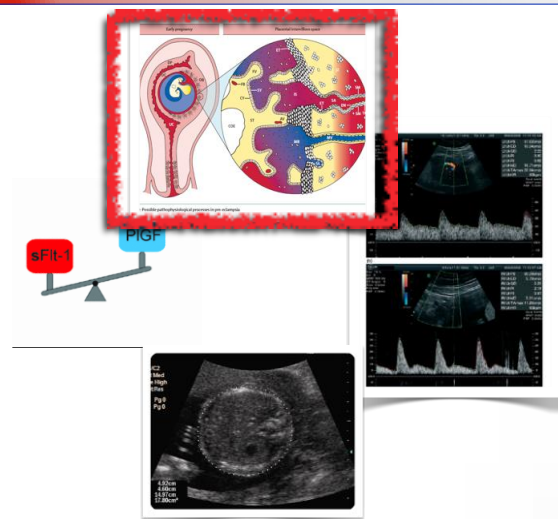
early poor placentation

ALL - number of un modified spiral arteries - MINIMAL LESIONS

EARLY HDP WITH IUGR

minimal contribute to

LATE HDP
LATE IUGR



endothelial
dysfunction:
HDP
organ damage

a typical placental damage characterized by **“terminal villi ... over-crowded with diminished inter-villous pore size impeding intervillous perfusion with increasing intervillous hypoxia and Syncithio Trophoblast stress**. This type of syncithio ttrophoblast stress stress has no antecedent pathology, so the fetuses are well-grown...”



Risk factors for pre-eclampsia in a large cohort of Latin American and Caribbean women

Agustin Conde-Agudelo *Perinatal Researcher*, José M. Belizán *Director*

LATE PE -**13**/ EARLY PE **1**

RESULTS

A total of 878,680 women were included in the present analysis. Of these, 42,530 women (4.8%) developed pre-eclampsia and 1872 (0.2%) were complicated by eclampsia.

The mean gestational age at delivery was significantly lower for women with pre-eclampsia compared with normal pregnancies (38.3 (2.5) vs 38.9 (2.1) weeks, respectively; $P < 0.0001$).

HDP- CLINICAL PHENOTYPE WITH IUGR

HDP- CLINICAL PHENOTYPE WITH AGA

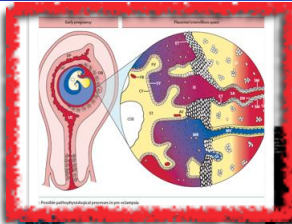
early poor placentation

late villi crowding

ALL - number of un modified spiral arteries - MINIMAL LESIONS

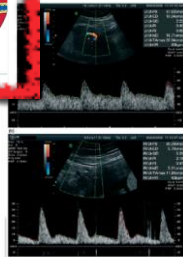
EARLY HDP WITH IUGR
LATE HDP
LATE IUGR

minimal contribute to



sFlit-1

PIGF



weeks

PIGF/sFlit-1 REDUCTIONS > 34

VILLI CROWDING ABNORMAL RATIO
TERTIARY VILLI - INTERVILLOUS SPACE

severe
dyslipidemia
excess of
**ACUTE
ATHEROSIS**

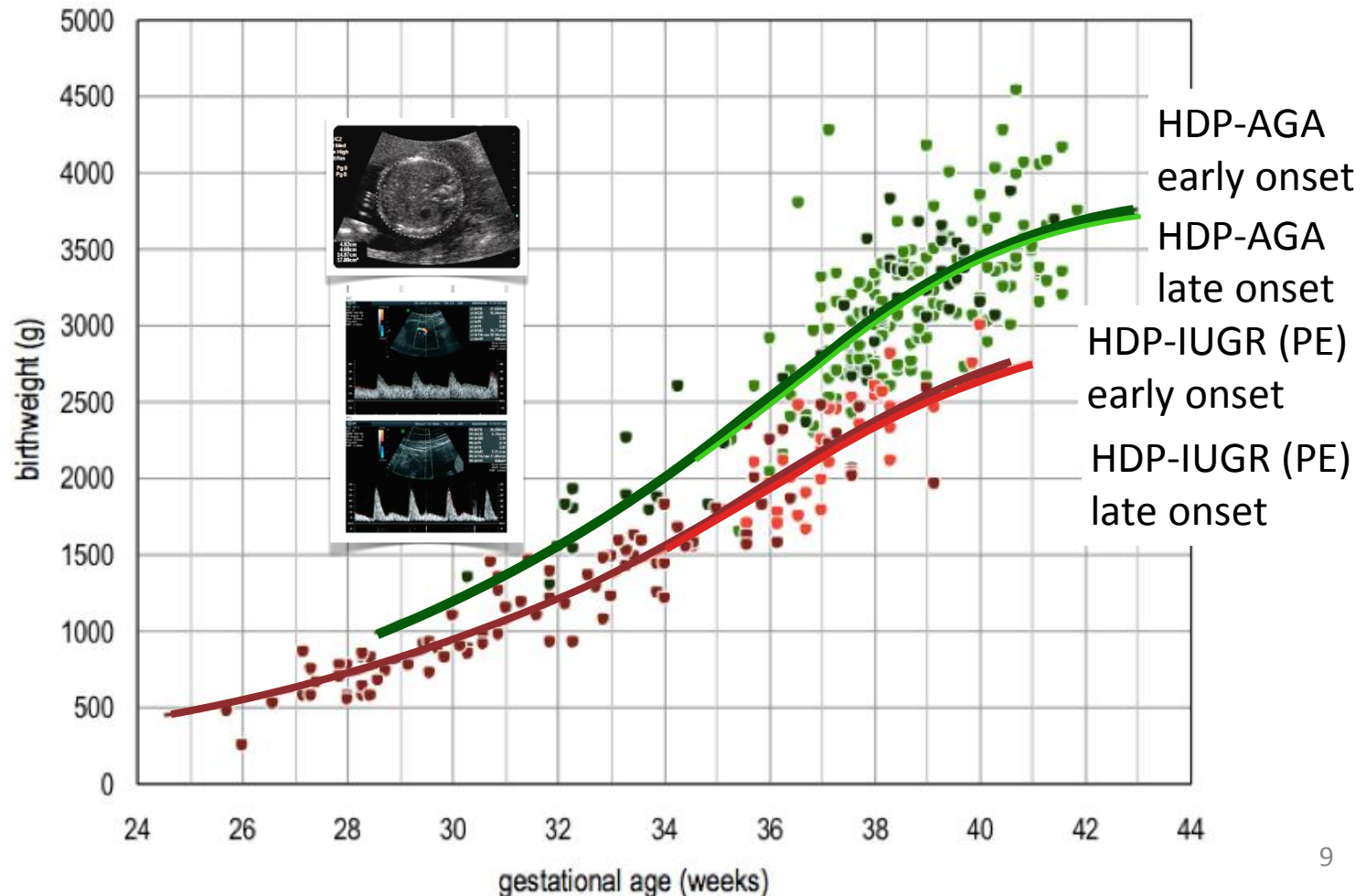
**NORMAL
PLACENTA**

**endothelial
dysfunction:
HDP
organ damage**

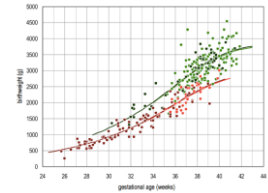
PRE-pregnancy
low grade
inflammation
vascular and
systemic -
**METABOLIC
SYNDROME**

AIPE - Italian branch of ISSHP multicentre retrospective study

patients admitted for HDPs: newborn weight classified according to traditional early and late onset **at admission** for HDP-AGA (dark green-light green) and for HDP-IUGR (dark red - light red)



AIPE STUDY - BEDSIDE CLINICAL PHENOTYPES OF HDP



Odd Ratios of **HDP with AGA** fetuses in patients with composite index of risk factors for metabolic syndrome

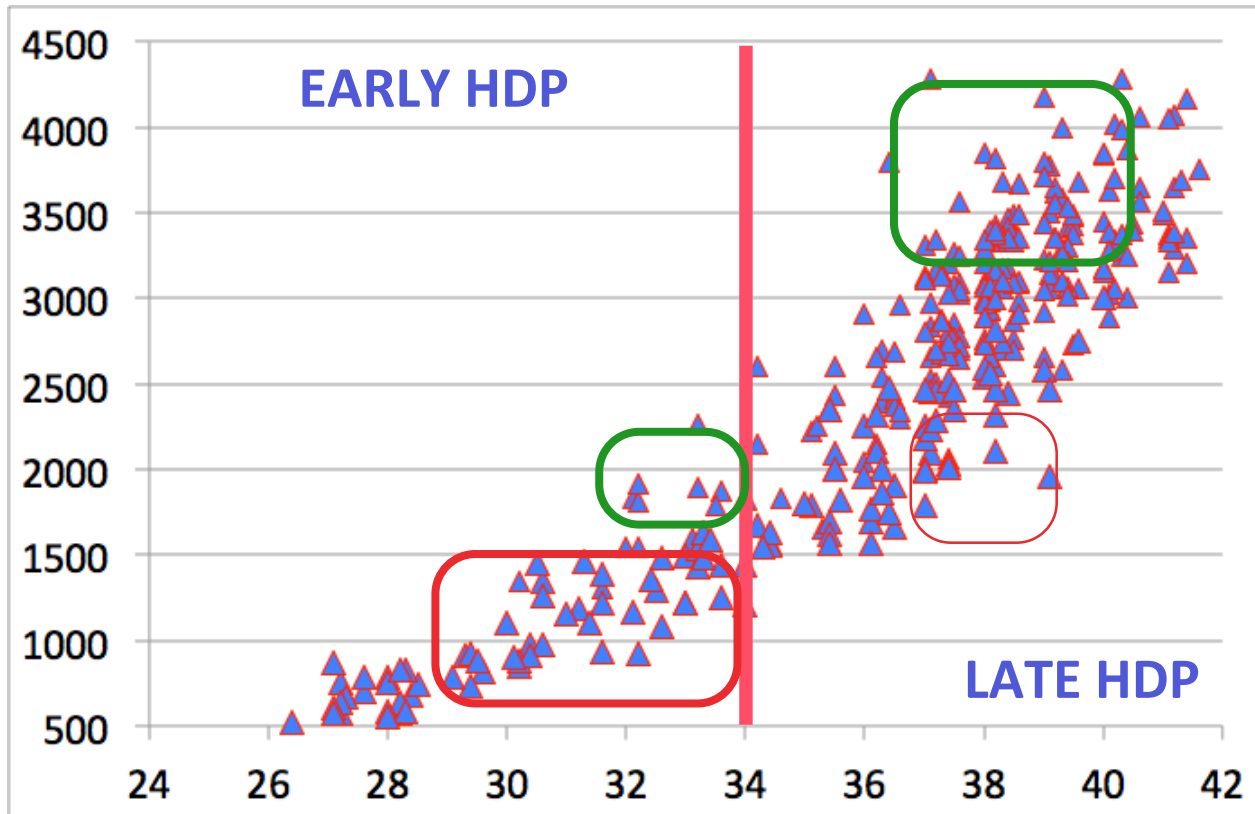
risk factors	OR _{crude} (95%CL)	OR _{adj} ^{ADM} (95%CL)	OR _{adj} ^{DEL} (95%CL)
family hypertension			
chronic hypertension			
gestational diabetes			
BMI ≥25 (kg/m ²)			
maternal age ≥35.5 (years)			
Composite index rfMS	2.63 (1.59- 4.35)	2.79 (1.57- 4.97)	2.20 (1.21- 3.99)

2° studio

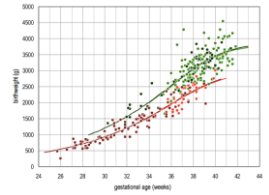
AIPE - Italian branch of ISSHP

multicentre retrospective study

patients admitted for HDPs: newborn weight at delivery



AIPE STUDY - BEDSIDE CLINICAL PHENOTYPES OF HDP

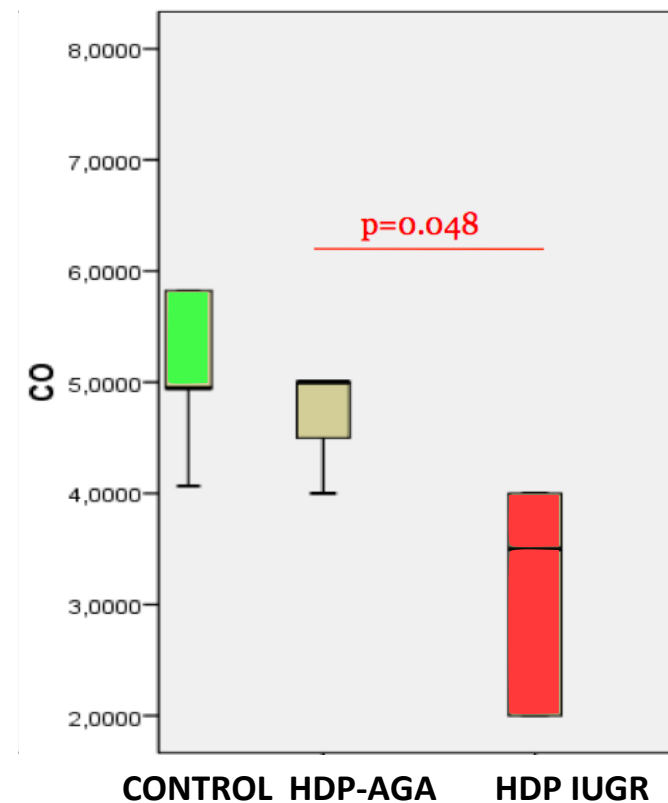
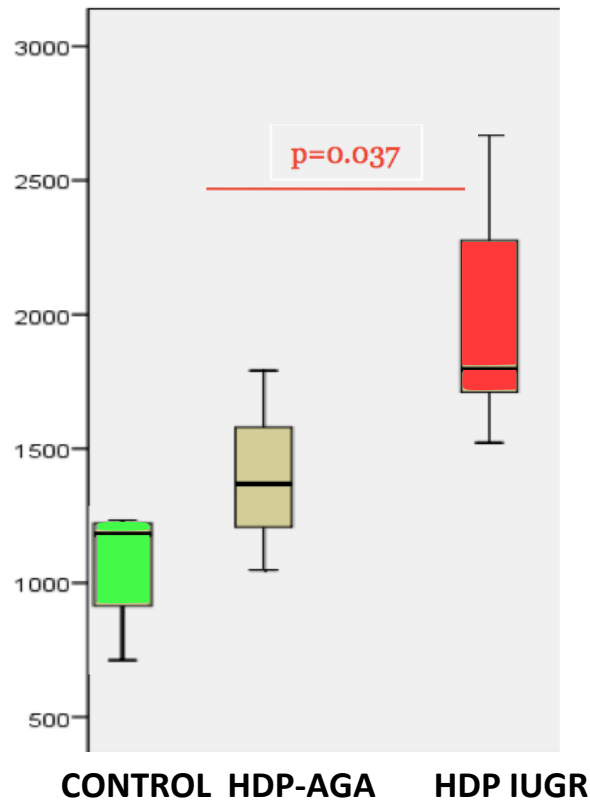


Odd Ratios of **Late onset HDP** in patients with composite index of risk factors for metabolic syndrome

risk factors	OR _{crude} (95%CL)
family hypertension	
chronic hypertension	
gestational diabetes	
BMI ≥25 (kg/m ²)	
maternal age ≥35.5 (years)	
Composite index rfMS	1.46 (0.89-2.39)

THE EVA STUDY - maternal cardiovascular function in HDP

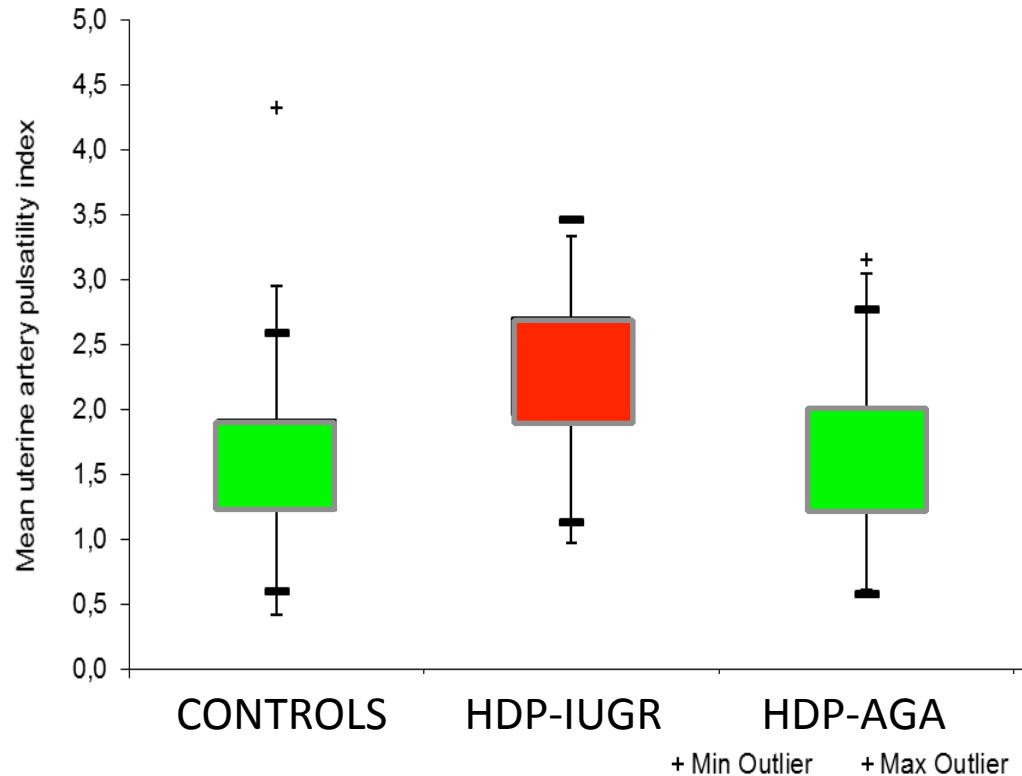
TOTAL VASCULAR RESISTANCE - MATERNAL CARDIAC OUTPUT



PATIENTS and METHODS

4321 PREGNANT WOMENT AT -12-13 WEEKS

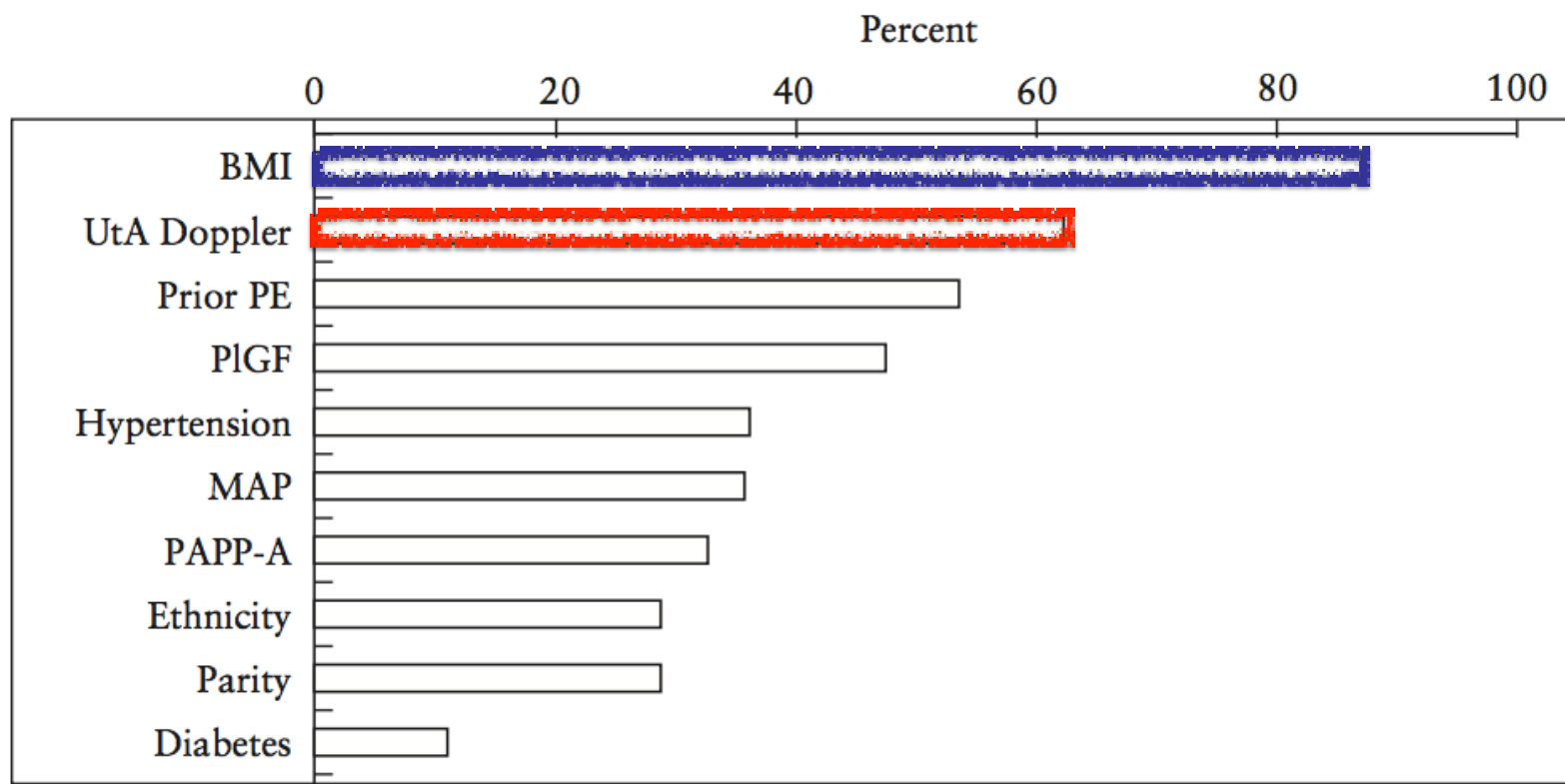
IRCCS BURLO - OSPEDALE BUZZI UNMI



Editorial

First-trimester screening for pre-eclampsia:
moving from personalized risk prediction
to prevention

A. A. BASCHAT

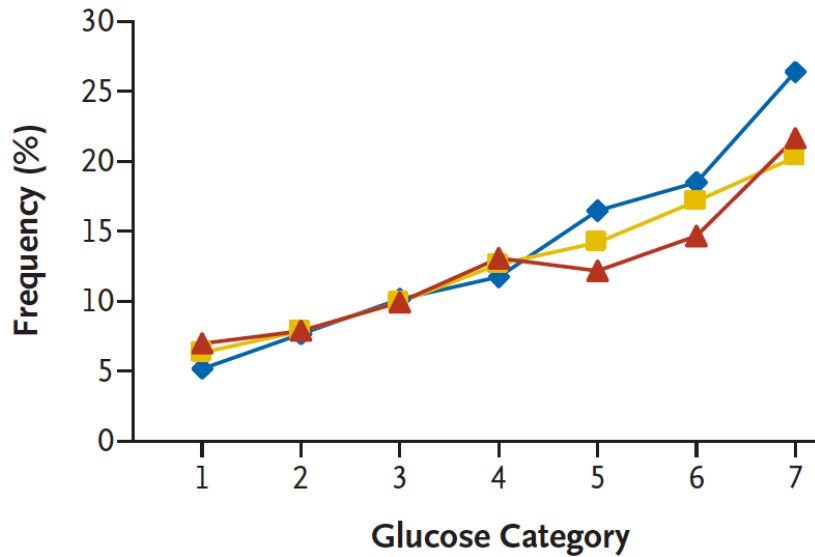


background on GD

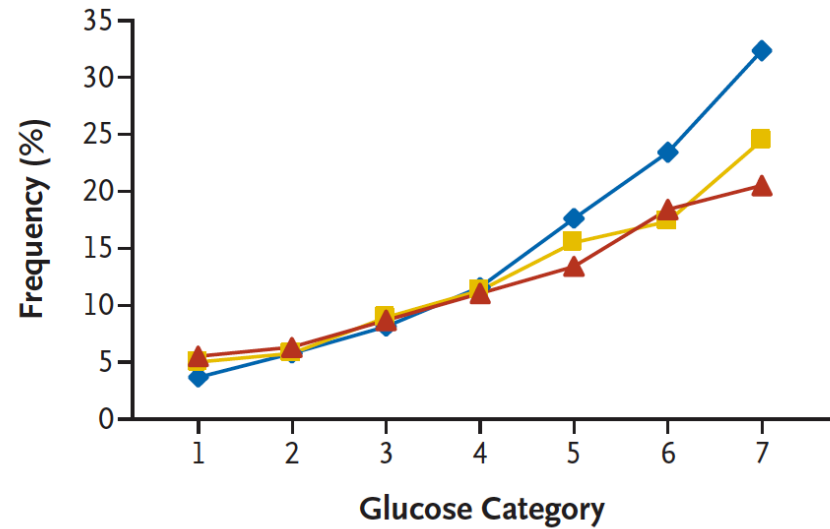
Hyperglycemia and Adverse Pregnancy Outcomes

The HAPO Study Cooperative Research Group*

A Birth Weight >90th Percentile



D Cord-Blood Serum C Peptide >90th Percentile



The Hyperglycemia and Adverse Pregnancy Outcome (HAPO) study: paving the way for new diagnostic criteria for gestational diabetes mellitus

Donald R. Coustan, MD; Lynn P. Lowe, PhD; Boyd E. Metzger, MD; Alan R. Dyer, PhD

il 16 % delle donne nelle
aree metropolitane
europee risulta positivo
allo screening per il
Diabete Gestazionale

**Subjects,
cumulative %**

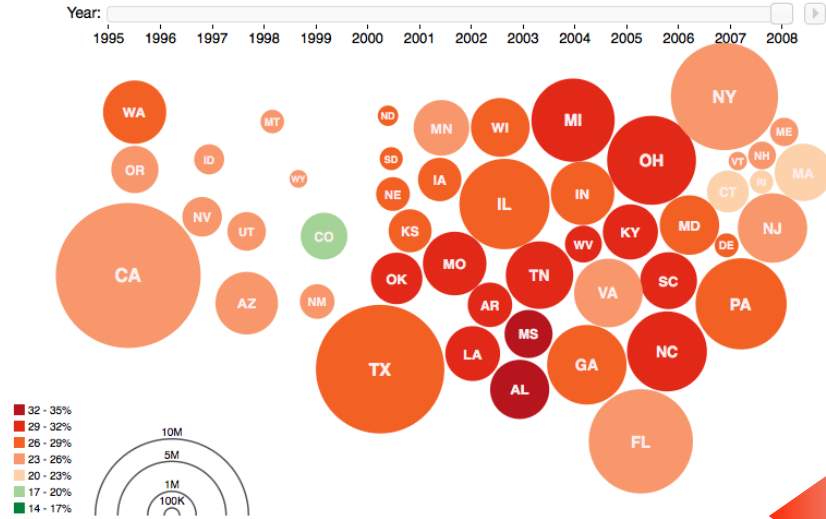
8.3

14.0

16.1

what is gestational diabetes mellitus under this diagnostic
perspective ?
AN ENVIRONMENTAL DISEASE ?

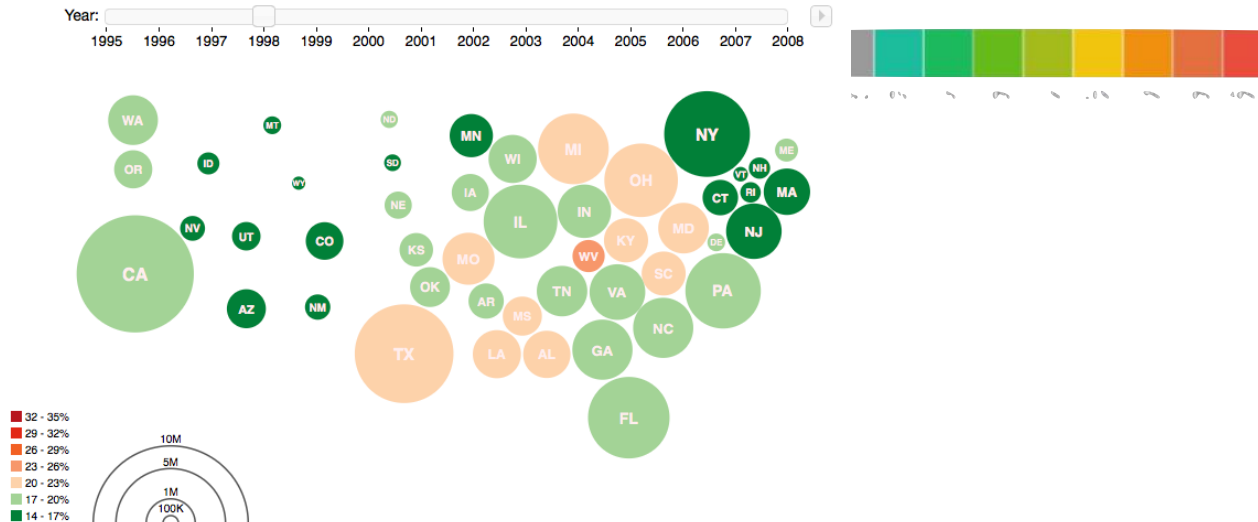
Dorling Cartogram of Obesity in the United States (1995 to 2008)



Absolute number of obese people per state and percentage of obese people, represented with circle area and color respectively. California dominates the map due to its large population size, while color indicates that Mississippi and Alabama are the states with the highest obesity rate.

Source: [National Center for Chronic Disease Prevention and Health Promotion](#)

Dorling Cartogram of Obesity in the United States (1995 to 2008)



truncal obesity and metabolic syndrome add up to placenta TH1 immunologic milieu in late pregnancy

PARTNER #1 in inflammation

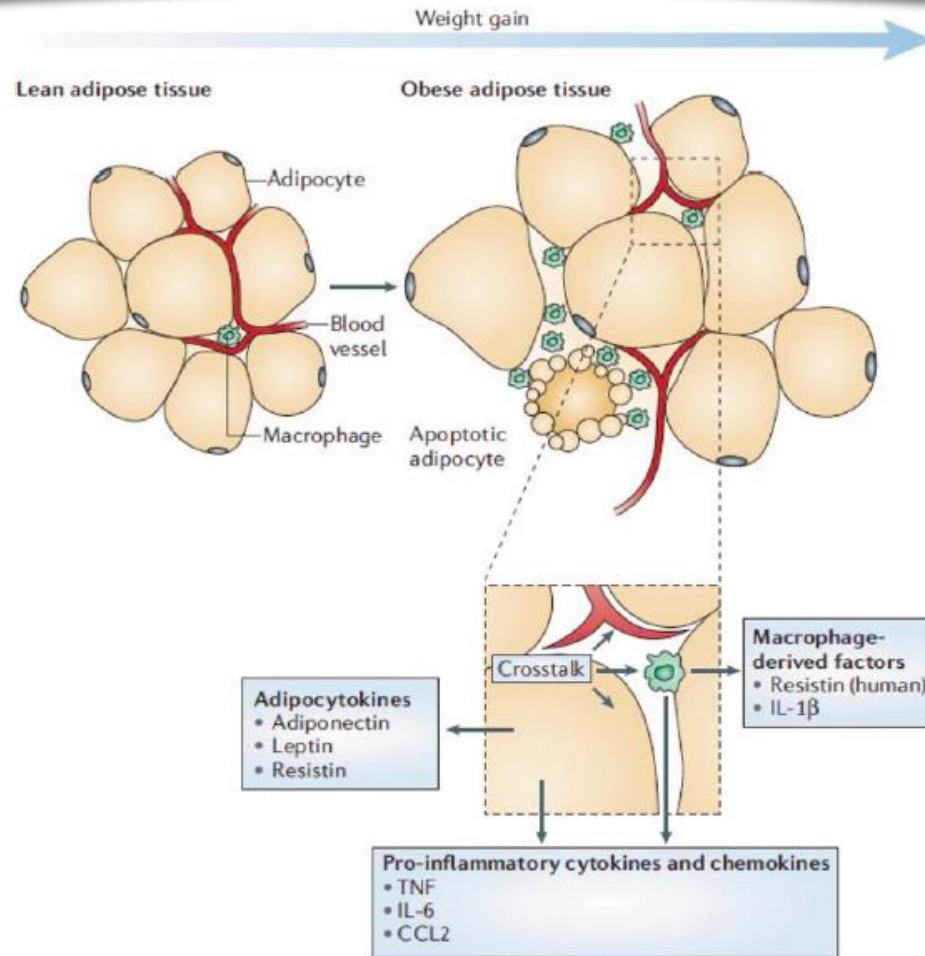


Figure 1 The visceral adipose tissue leads to recruitment of macrophages. These cells, macrophages and adipocytes synthesize a "cytokine-adipocytokines" mix which activates a pro-inflammatory milieu. Tilg H, Moschen AR. Adipocytokines: mediators linking adipose tissue, inflammation and immunity. *Nat Rev Immunol* 2006; 6(10): 772–83.

THE EVIDENCE FOR LATE-ONSET PRE-ECLAMPSIA AS A MATERNOGENIC DISEASE OF PREGNANCY

ENRICO FERRAZZI, TAMARA STAMPALIJA and JEAN EDGARD AUPONT

Fetal and Maternal Medicine Review / Volume 24 / Issue 01 / February 2013, pp 18 - 31



PARTNER #2 in inflammation

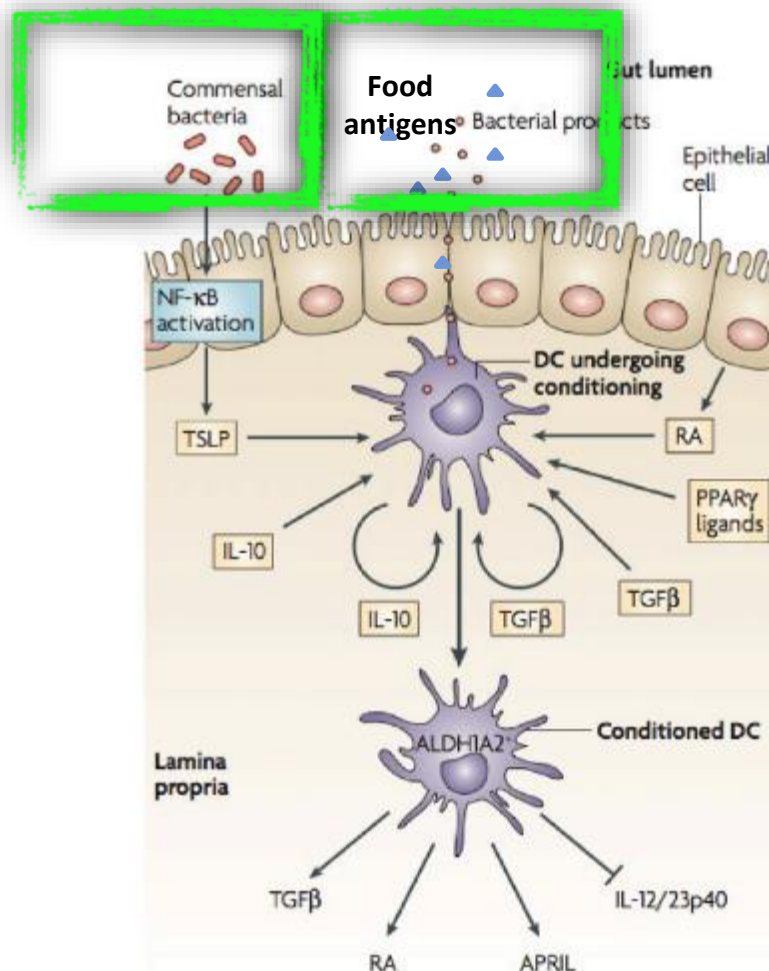
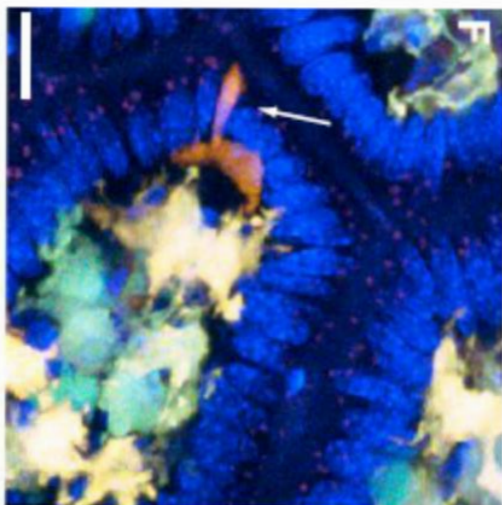
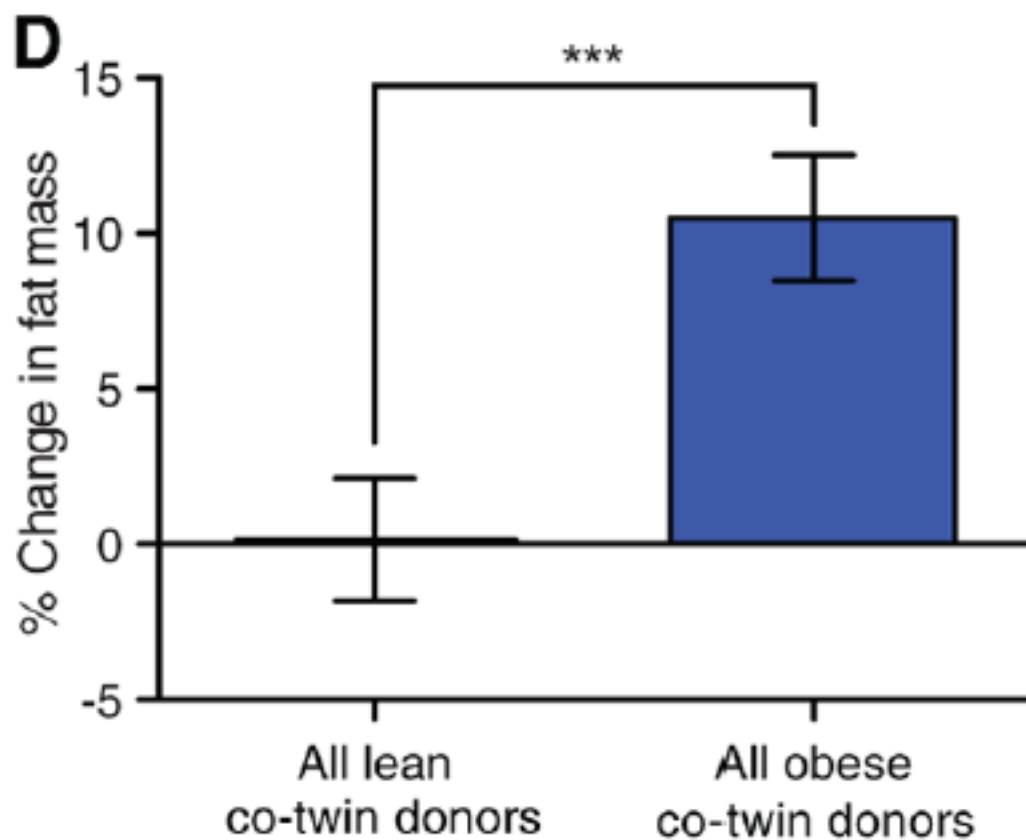


Figure 2 Under eubiotic milieu, the intestinal endothelial cells secrete both mucins and cytokines which conditions dendritic cells to promote an anti-inflammatory cellular and mediator and to dampen effector responses. Intestinal dendritic cells, conditioned by thymic stromal lymphopoietin and eubiotic bacteria, activate a typical T Helper type 2 response. **Defective conditioning of DCs may contribute to low-grade inflammation**

Cultured gut microbiota from twins discordant for obesity modulate adiposity and metabolic phenotypes in mice

Vanessa K. Ridaura¹, Jeremiah J. Faith¹, Federico E. Rey¹, Jiye Cheng¹, Alexis E.



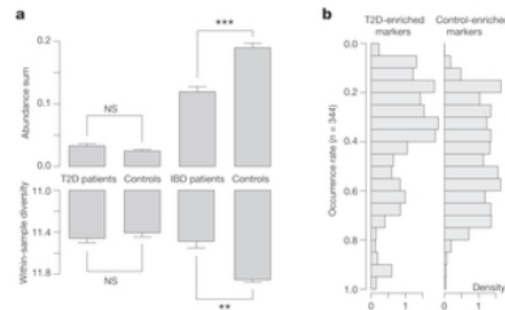
A metagenome-wide association study of gut microbiota in type 2 diabetes

Nature (2012) doi:10.1038/nature11450

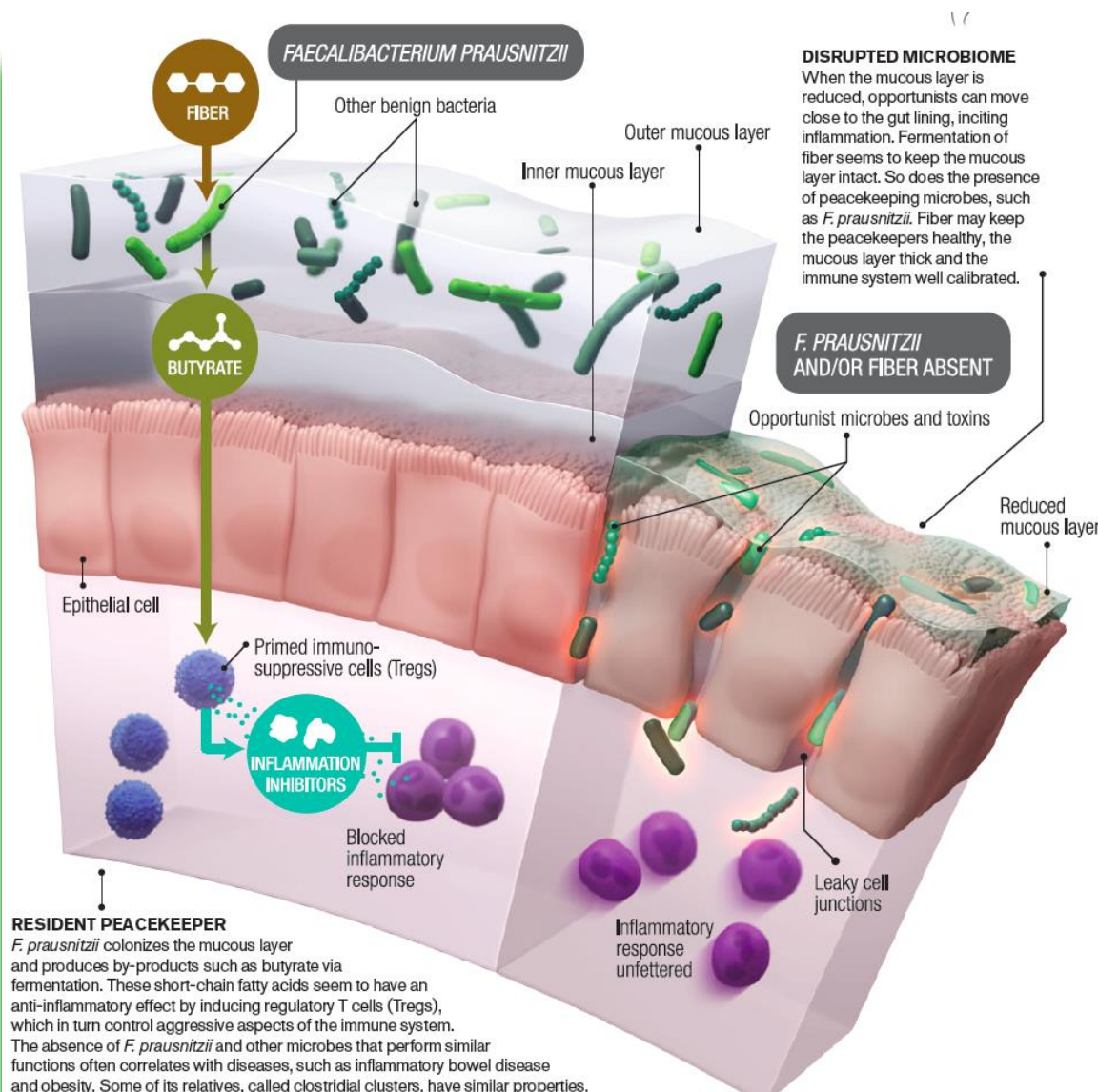
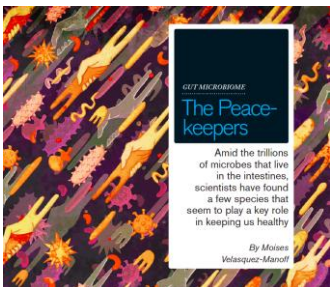
MGWAS analysis showed that patients with type 2 diabetes were characterized by a moderate degree of gut microbial dysbiosis, a decrease in the abundance of some universal butyrate-producing bacteria and an increase in various opportunistic pathogens, as well as an enrichment of other microbial functions conferring sulphate reduction and oxidative stress resistance

Figure 3: Gut microbiota of T2D patients show a moderate degree of dysbiosis.

X



a, An ecological comparison between T2D patients ($n = 170$) and control ($n = 174$) in all samples, as well as inflammatory bowel disease (IBD) patients ($n = 25$) and control ($n = 99$) from published MetaHIT samples⁸. The upward bars denote the g...



Modulation of human dendritic cell phenotype and function by probiotic bacteria

A L Hart, K Lammers, P Brigidi, B Vitali, F Rizzello, P Gionchetti, M Campieri, M A Kamm, S C Knight, A J Stagg

Gut 2004;53:1602–1609. doi: 10.1136/gut.2003.037325

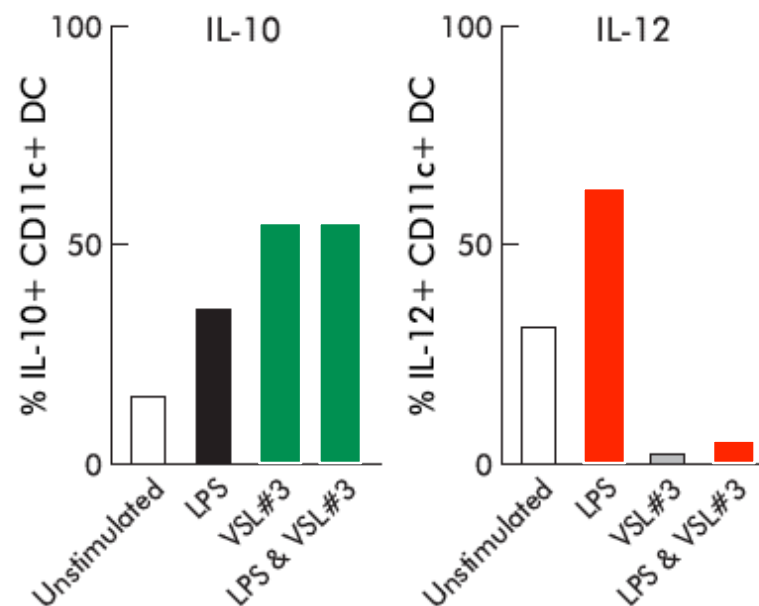
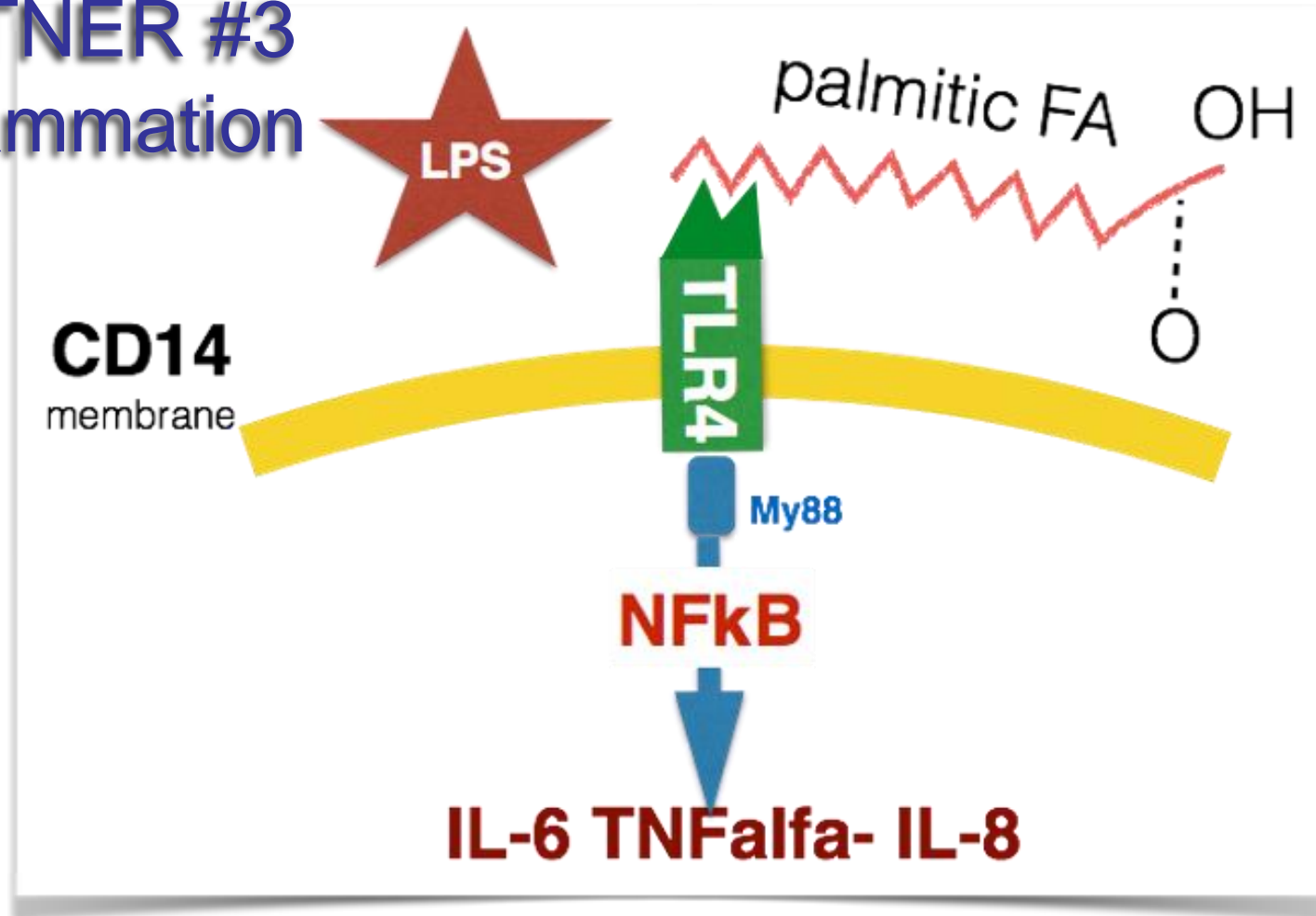


Figure 3 Co-culture of VSL#3 with LPS decreased the proinflammatory effects of LPS. In whole blood, VSL#3 at 10^8 CFU/ml and LPS at $1 \mu\text{g/ml}$ were co-cultured and cytokine production assessed by intracellular staining. The proportion of CD11c+ DC producing IL-10 and IL-12 in these co-cultures is shown. The data shown are representative of three independent experiments.

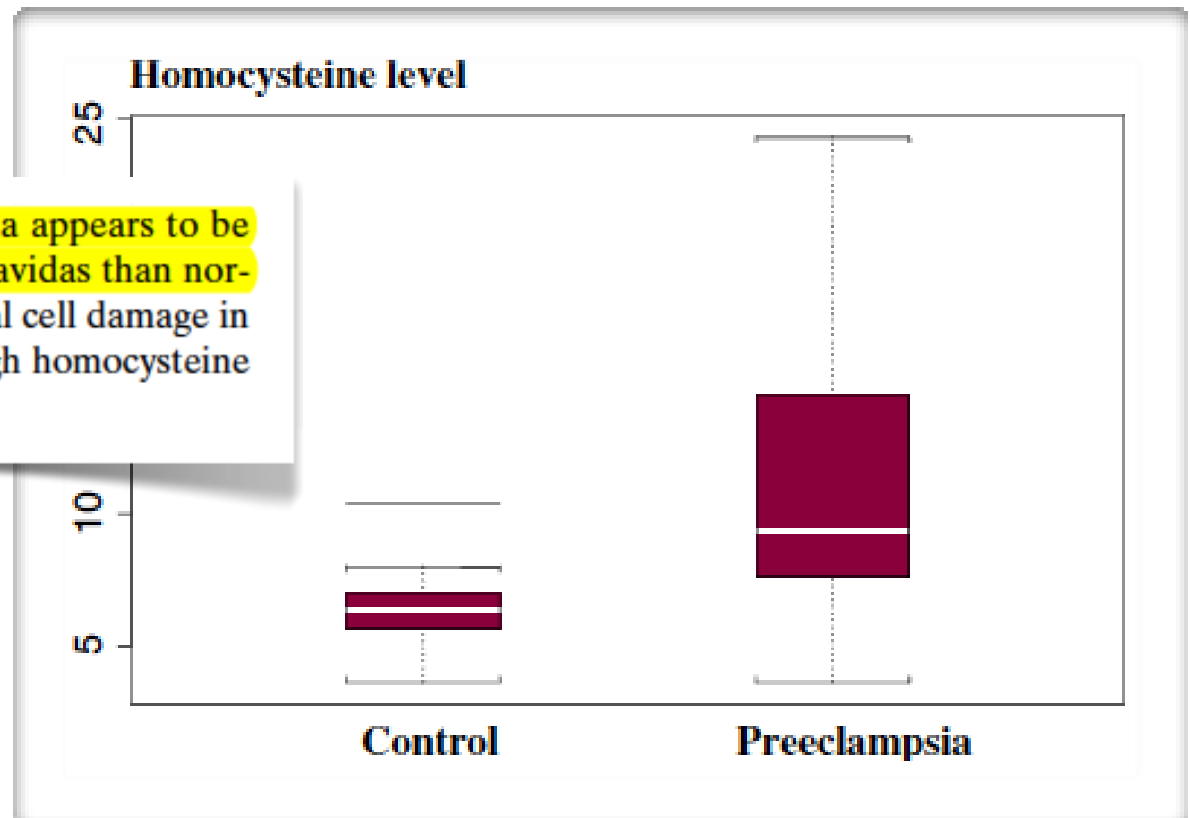
Long chain Fatty Acids interact with TLR4 receptors as LPS, and activate intracellular NFkB to produce pro inflammatory cytokines

PARTNER #3 in inflammation



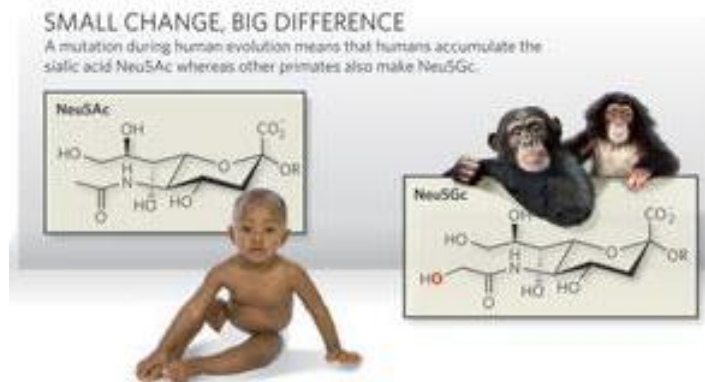
Homocysteine, folic acid and B12 serum levels in pregnancy complicated with preeclampsia

In conclusion hyperhomocysteinemia appears to be more common among preeclamptic gravidas than normal controls suggesting that endothelial cell damage in some patients may be mediated through homocysteine vascular toxicity.



Human evolution: Details of being human

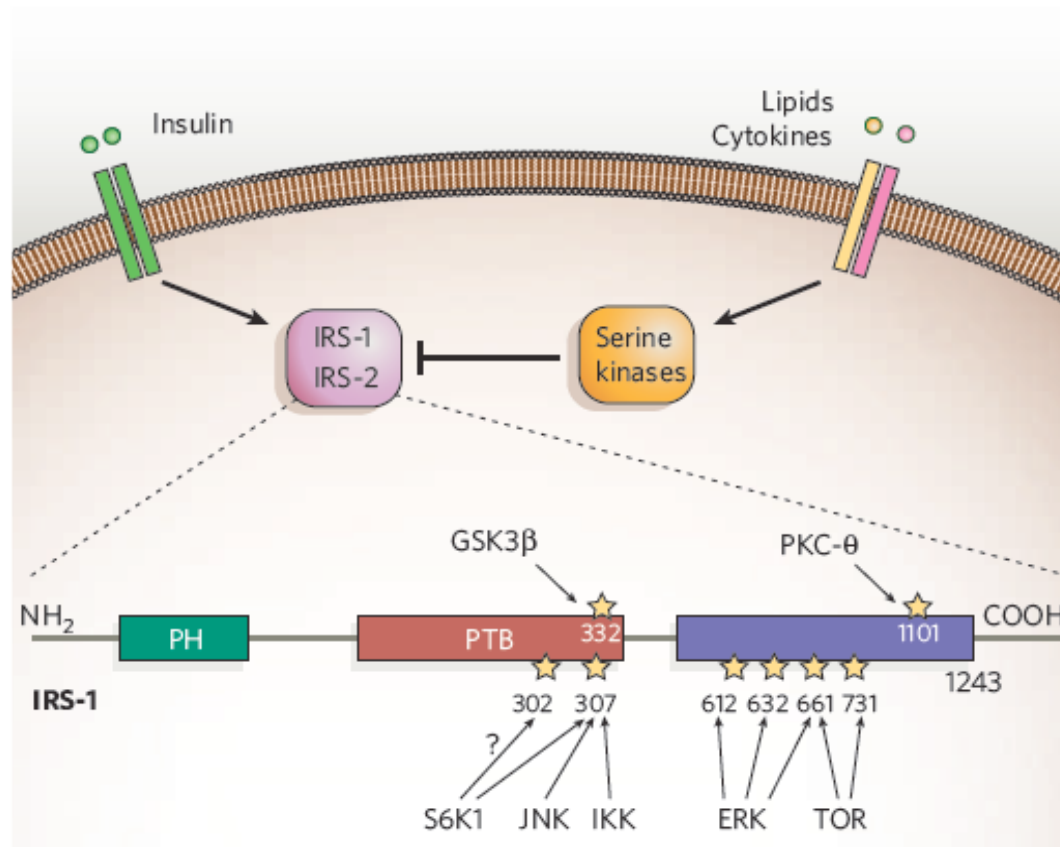
A difference in one molecule led physician Ajit Varki to question what sets humans apart from other apes. Bruce Lieberman meets a man who sees a big picture in the finer points.

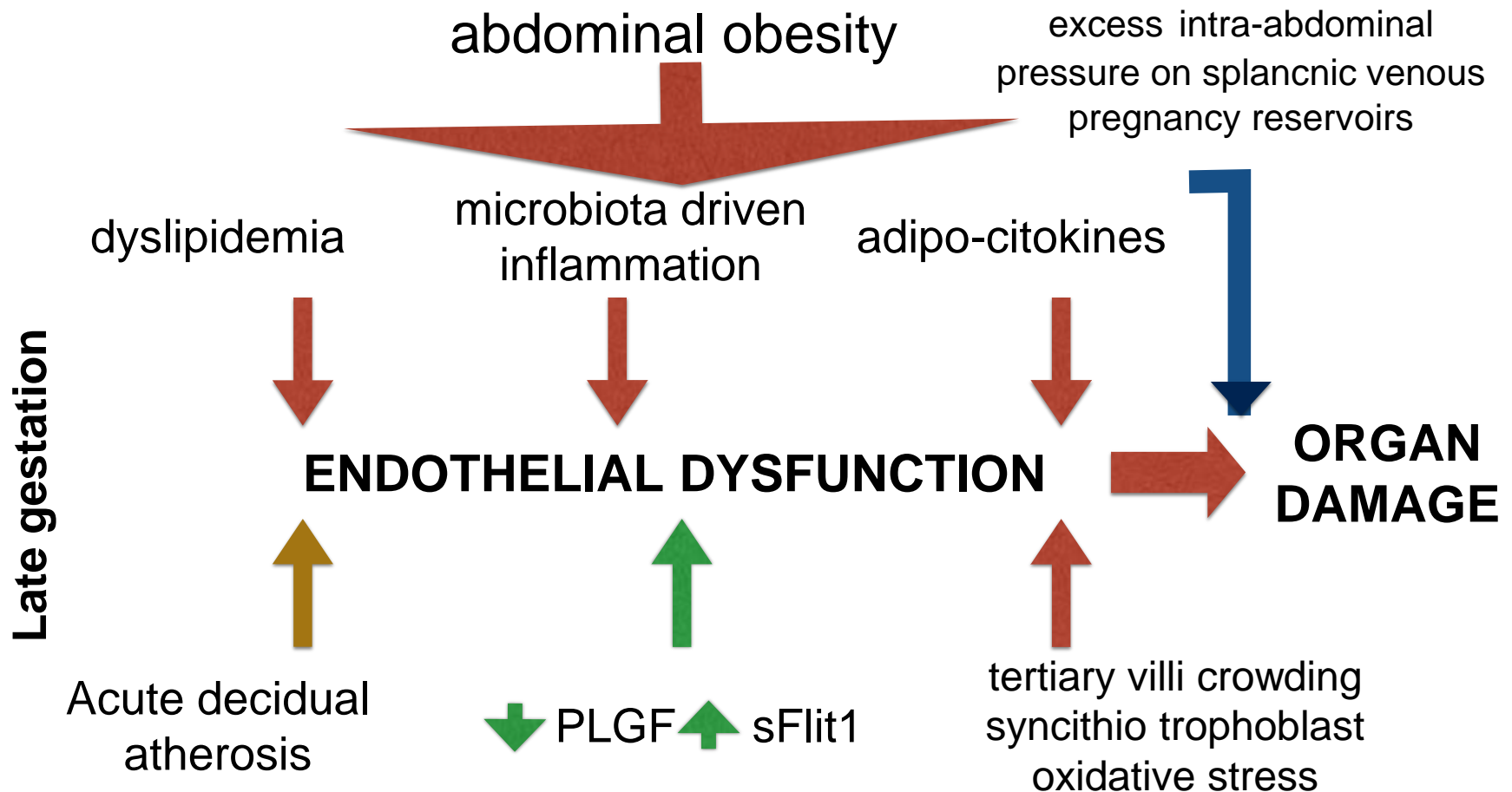


Varki's recent work has brought him back to the immune reaction he observed nearly 25 years ago. Even though humans don't make Neu5Gc, it is eaten in animal products that contain it, such as meat and milk. Varki and Gagneux wonder whether — among meat-eaters at least — Neu5Gc elicits an immune reaction that might contribute to a whole spectrum of human-specific diseases that are associated with chronic inflammation, including heart disease and cancer. Such diseases would not have been such a problem when humans had shorter life spans.

Inflammation and metabolic disorders

Gökhan S. Hotamisligil¹





obesità e overweight gain in gravidanza:

1. problemi ostetrici
2. problemi neonatali
3. salute della donna nella V° decade di vita
4. salute del bambino e dell'adulto
5. salute della discendenza

obesità e overweight gain in gravidanza:

1. problemi ostetrici
2. problemi neonatali
3. salute della donna nella V° decade di vita
- 4. salute del bambino e dell'adulto**
5. salute della discendenza

Childhood Obesity and Metabolic Imprinting

The ongoing effects of maternal hyperglycemia

Maternal hyperglycemia and childhood obesity

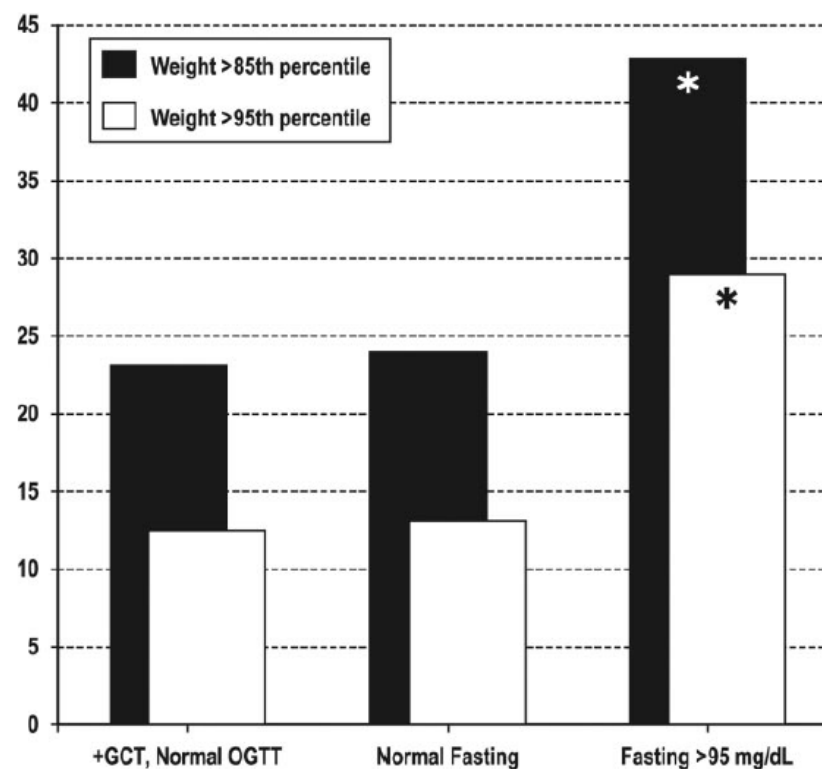
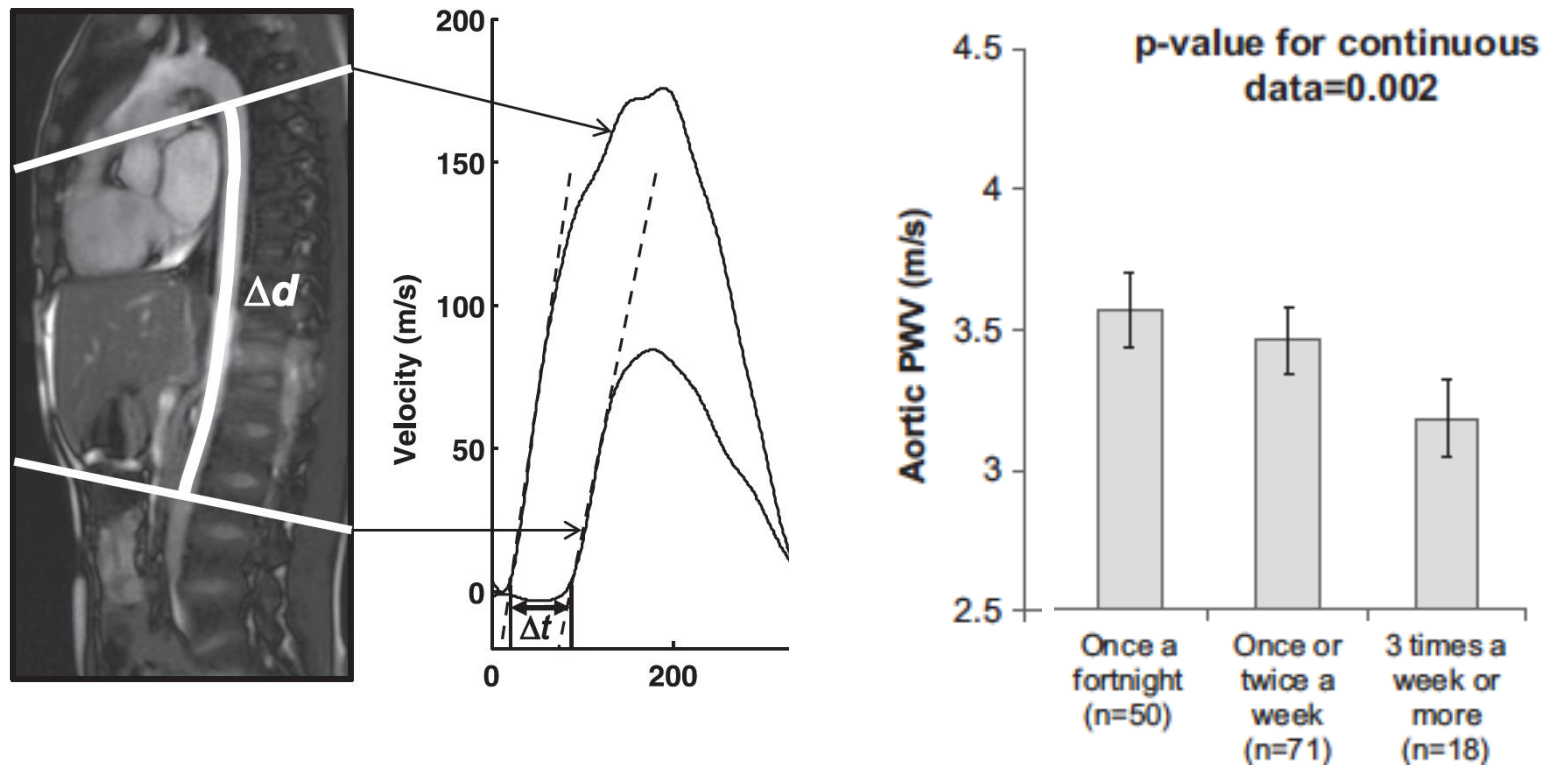


Figure 1—Relationship of fasting maternal hyperglycemia in pregnancy with childhood obesity at age 5–7 years, among the subsample with abnormal GCT and complete follow-up OGTT results:

**Higher Oily Fish Consumption in Late Pregnancy
Is Associated With Reduced Aortic Stiffness
in the Child at Age 9 Years**
Circ Res. 2015;116:1202-1205.

Jennifer Bryant, Mark Hanson, Charles Peebles, Lucy Davies, Hazel Inskip, Sian Robinson,
Philip C. Calder, Cyrus Cooper, Keith M. Godfrey

Figure 2. Maternal oily fish intake in late pregnancy vs pulse wave velocity (PWV; means and 95% confidence intervals).



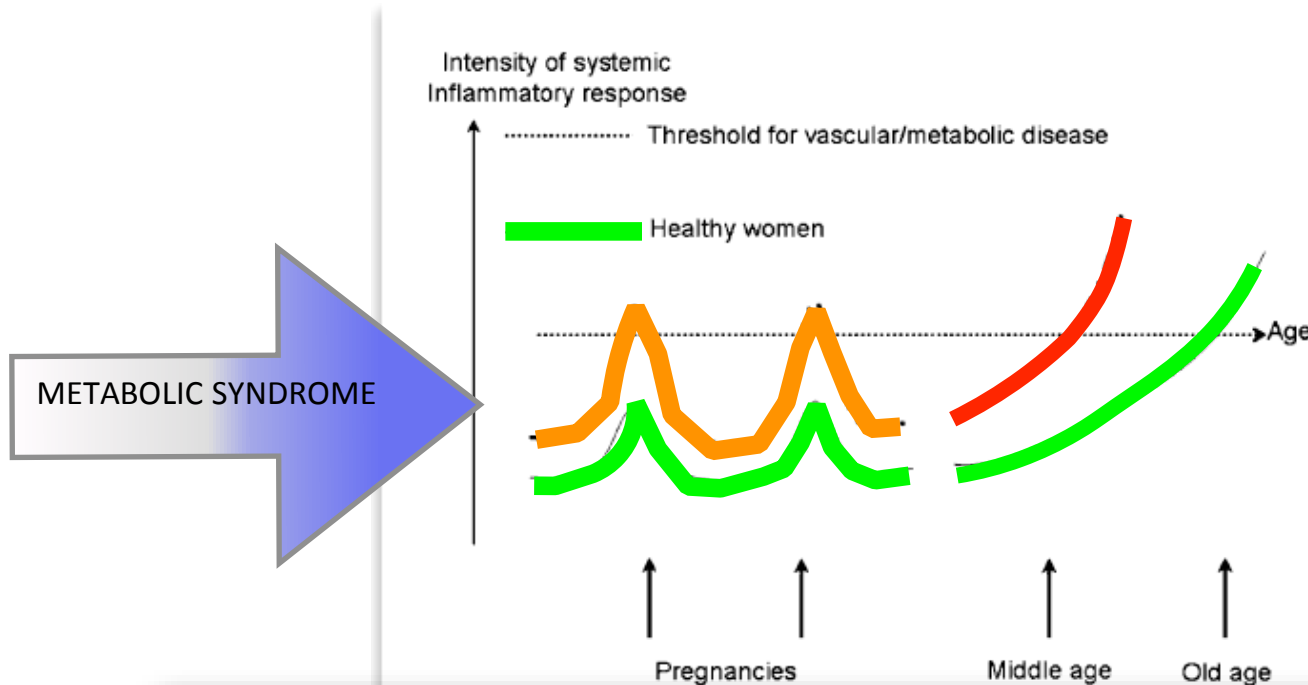
obesità e overweight gain in gravidanza:

1. problemi ostetrici
2. problemi neonatali
- 3. salute della donna nella V° decade di vita**
4. salute del bambino e dell'adulto
5. salute della discendenza

Inflammation and pre-eclampsia

A.M. Borzychowski*, I.L. Sargent, C.W.G. Redman

women with metabolic syndrome



each pregnancy generates an inflammatory response that, in those with underlying medical conditions, may cause maternal responses to cross the thresholds for overt diseases which otherwise become apparent later in life

obesità e overweight gain in gravidanza:

interventi per modificare lo stile di vita

interventi per modificare la legislazione sugli alimenti

MACRO-ETHNICITIES
ADAPTED TO
DIFFERENT
NUTRITIONAL
PROFILES

CONSIDER LACTOSE INTOLERANCE



National
Institute of
Diabetes and
Digestive
and Kidney
Diseases
NATIONAL
INSTITUTES
OF HEALTH

Who is at risk for lactose intolerance?

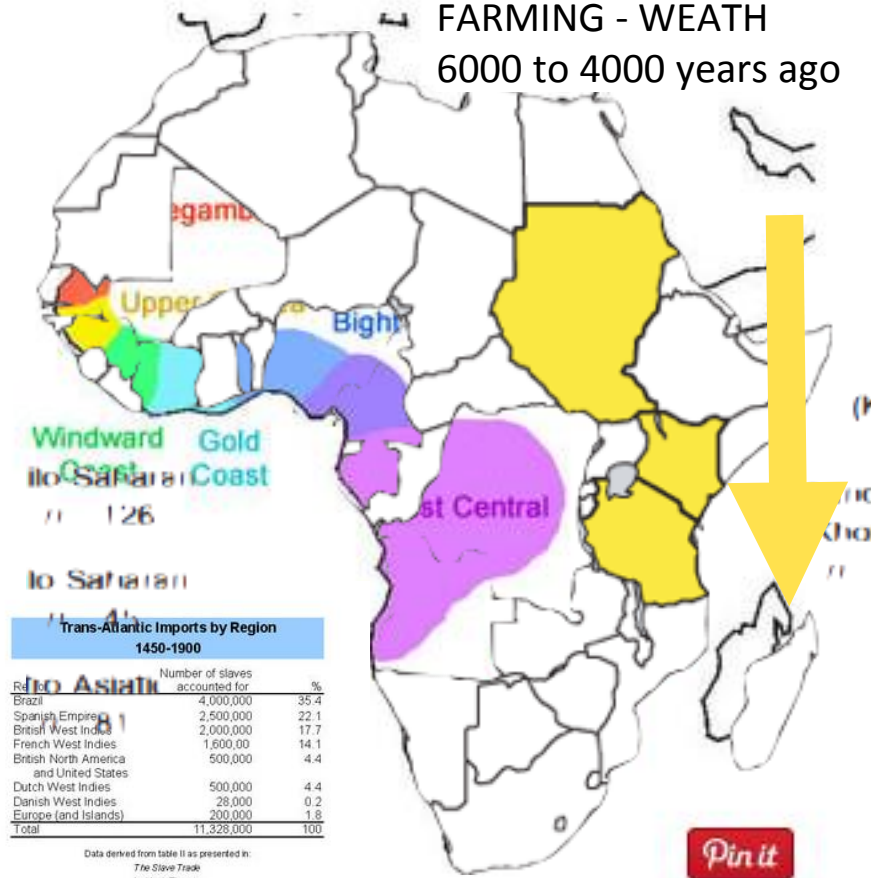
Between 30 and 50 million Americans are lactose intolerant and certain ethnic and racial populations are more affected than others. Up to 80 percent of African Americans, 80 to 100 percent of American Indians, and 90 to 100 percent of Asian Americans are lactose intolerant. The condition is least common among people of northern European descent.

pregnancy - foes #2 inappropriate food for macro ethnicity

CATTLE -COWS AND BUFFALOS

FARMING - WEATH

6000 to 4000 years ago



Trans-Atlantic Imports by Region 1450-1900		
	Number of slaves accounted for	%
Brazil	4,000,000	35.4
Spanish Empire	2,500,000	22.1
British West Indies	2,000,000	17.7
French West Indies	1,600,000	14.1
British North America and United States	500,000	4.4
Dutch West Indies	500,000	4.4
Danish West Indies	28,000	0.2
Europe (and Islands)	200,000	1.8
Total	11,328,000	100

Data derived from table II as presented in:
The Slave Trade
by Hugh Thomas
Simon and Schuster, 1997,
ISBN 0-60481063-6

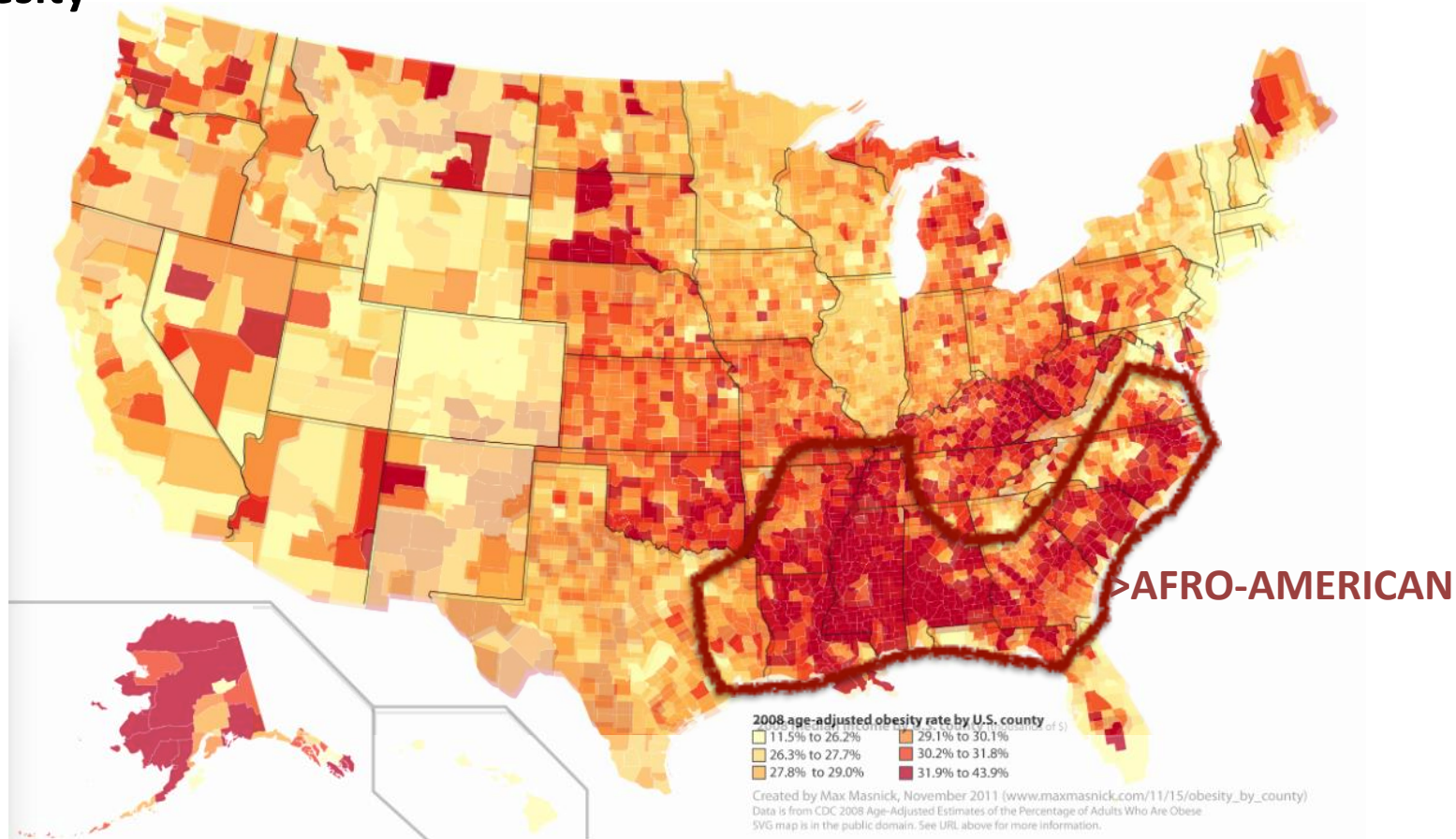
Pin it

Trans-Atlantic Slave Trade.

Image: © Alistair Boddy-Evans. Used with Permission.

pregnancy - foes #1 #2 and #3-
poverty
macro-ethnicity inappropriate food
obesity

macro-ethnicity by county
obesity by county
income by county



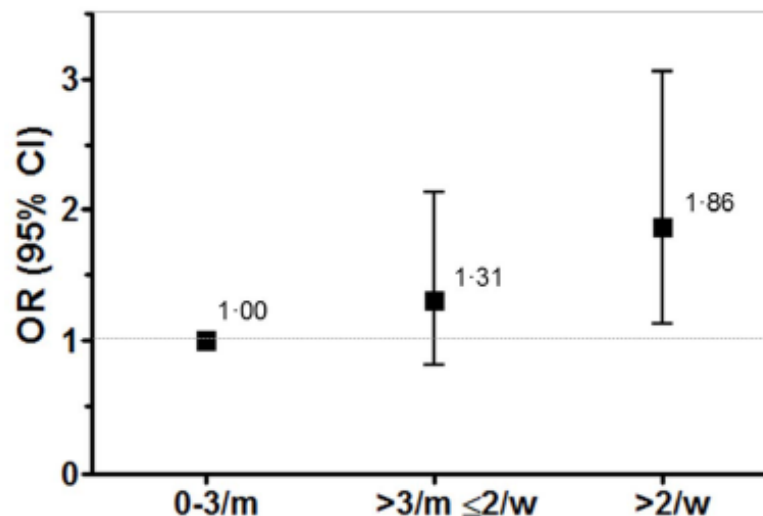
MACRO-ETHNICITIES ADAPTED
TO DIFFERENT NUTRITIONAL
PROFILES:
caucasian of southern european
ancestry

Fast Food Consumption and Gestational Diabetes Incidence in the SUN Project

Ligia J. Dominguez^{1*}, Miguel A. Martínez-González², Francisco Javier Basterra-Gortari^{2,3}, Alfredo Gea², Mario Barbagallo¹, Maira Bes-Rastrollo^{2*}



GRUPPI UGUALI
età = 29anni
BMI = 21
familiarità
per diabete 10%



**rischio doppio di
sviluppare diabete
gestazionale**

**numero di pasti
fast food settimana**

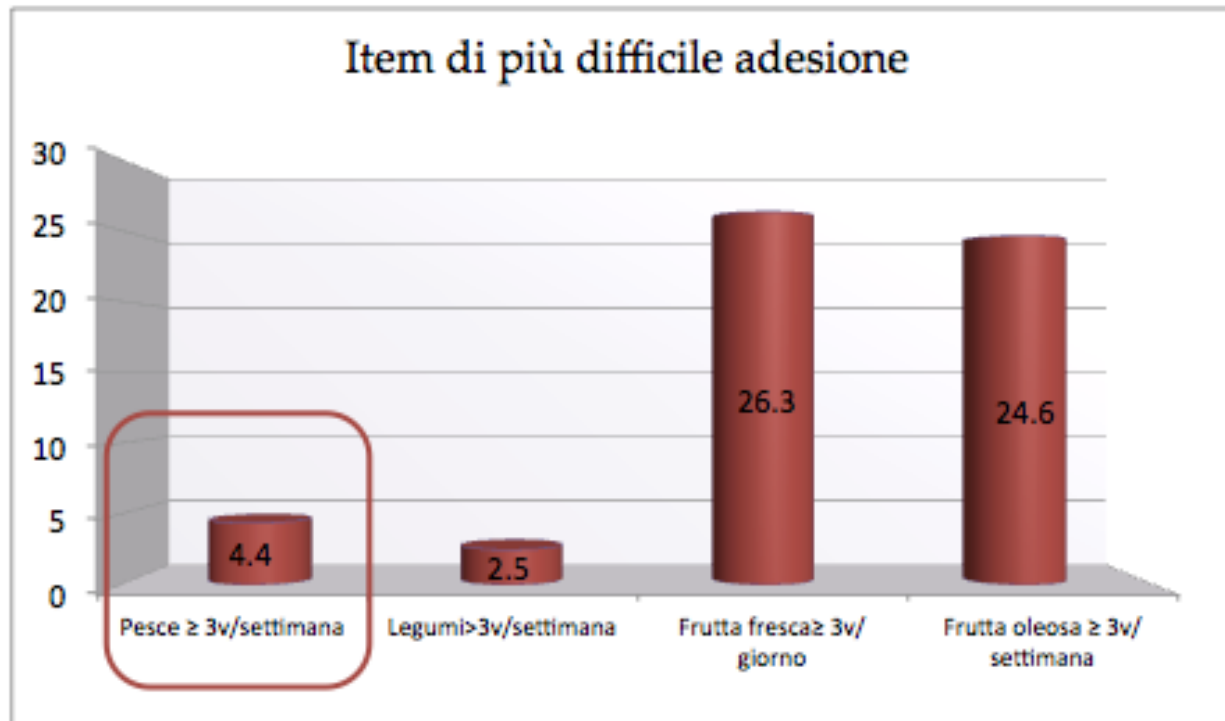
Figure 2. Odds ratio (OR) and 95% confidence interval (CI) for incident gestational diabetes according to frequency of fast food consumption in the SUN project (n = 3,048 pregnant women).

120 gestanti

eta 32 anni, BMI 22, nullipare, 80% laureate,
etnia caucasica sud europea

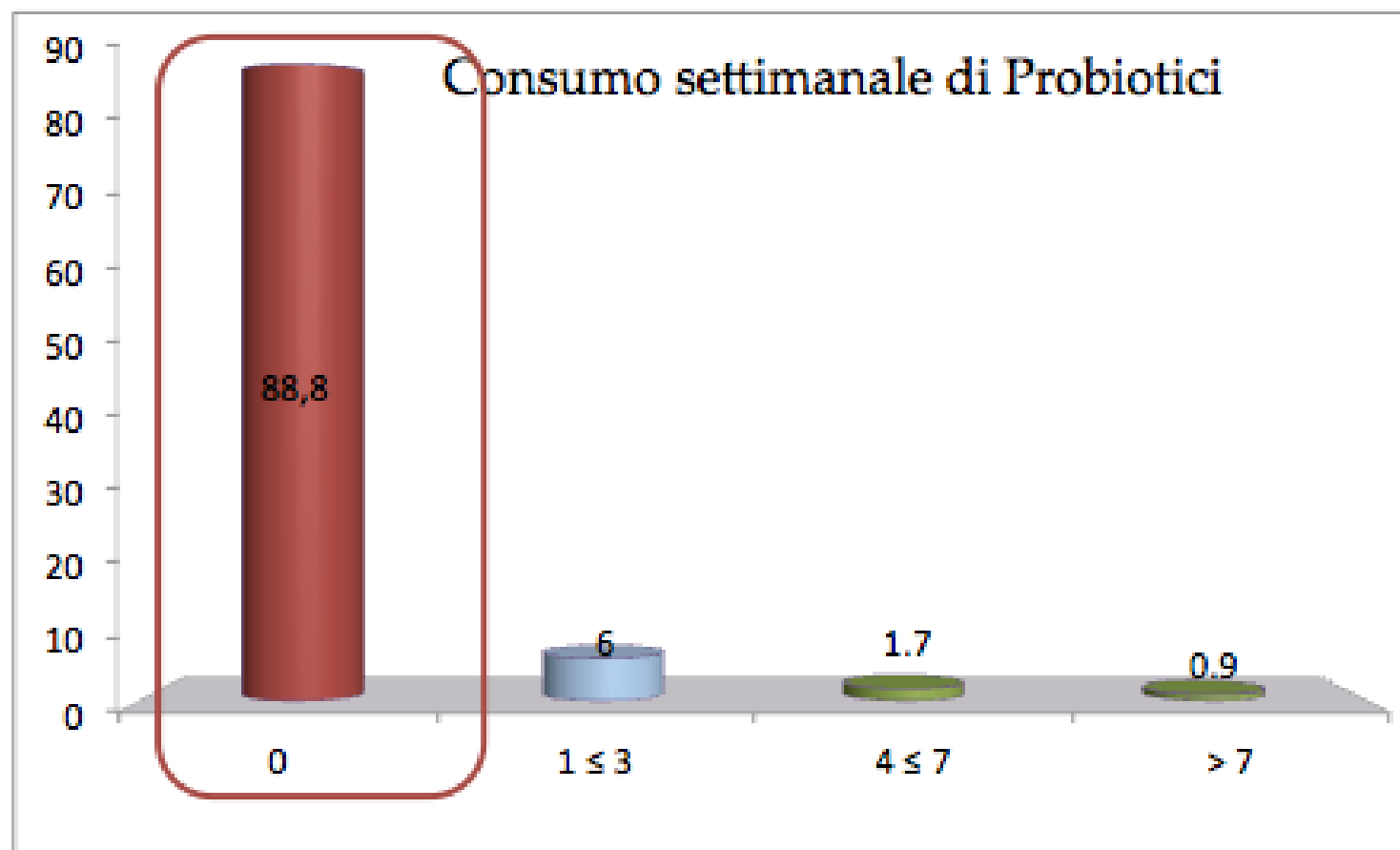


RISULTATI: PROFILO NUTRIZIONALE





RISULTATI: PROFILO NUTRIZIONALE



HEALTH IMPACT OF MEDITERRANEAN DIET



Bioactive compounds

- **Antioxidant** compounds such as **polyphenols** (, fruit, vegetables, extras virgin oil, red wine)
- **Prebiotic** components such as **fiber** (fruit, vegetables and legumes, whole grain cereals)
- **Antinflammatory** compounds such as **salycil acid** and **ferulic acid** (fruit, vegetables, legumes and whole grain cereals), **polyunsaturated fats** such as omega 3 and omega 6 (fish, nuts and dry fruit)

Reduced:
cellular OXIDATIVE STRESS
tissue AGING

Decrease of incidence of chronic degenerative diseases

20% DI SCONTO AGLI ISCRITTI AL CORSO

