İNTESTİNAL MİKROBİYOTA

Prof. Dr. Ener Çağrı DİNLEYİCİ
Eskişehir Osmangazi Üniversitesi Tıp Fakültesi
Çocuk Sağlığı ve Hastalıkları Anabilim Dalı

KLİMİK-2015


BASE
MILE
WED
MAR
PATEK PHILIPPE
GENEVE


ตาบอด
คลำช้าง

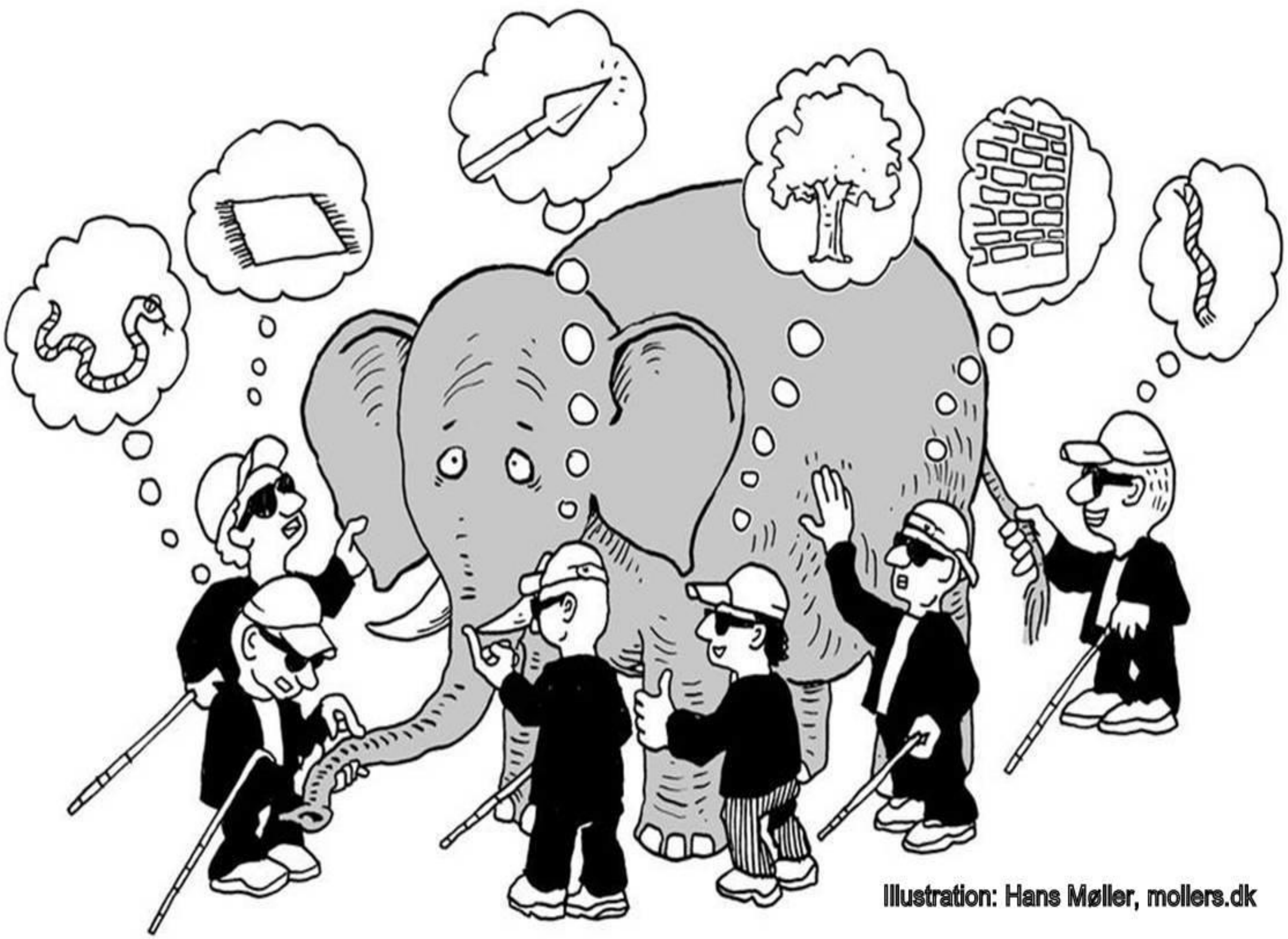
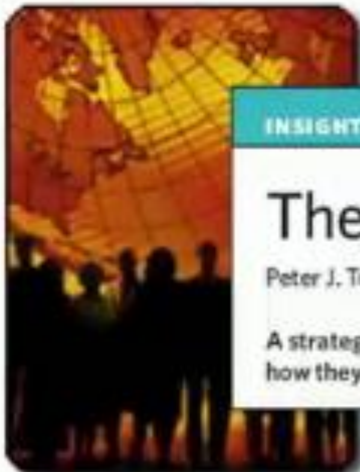


Illustration: Hans Møller, mollers.dk

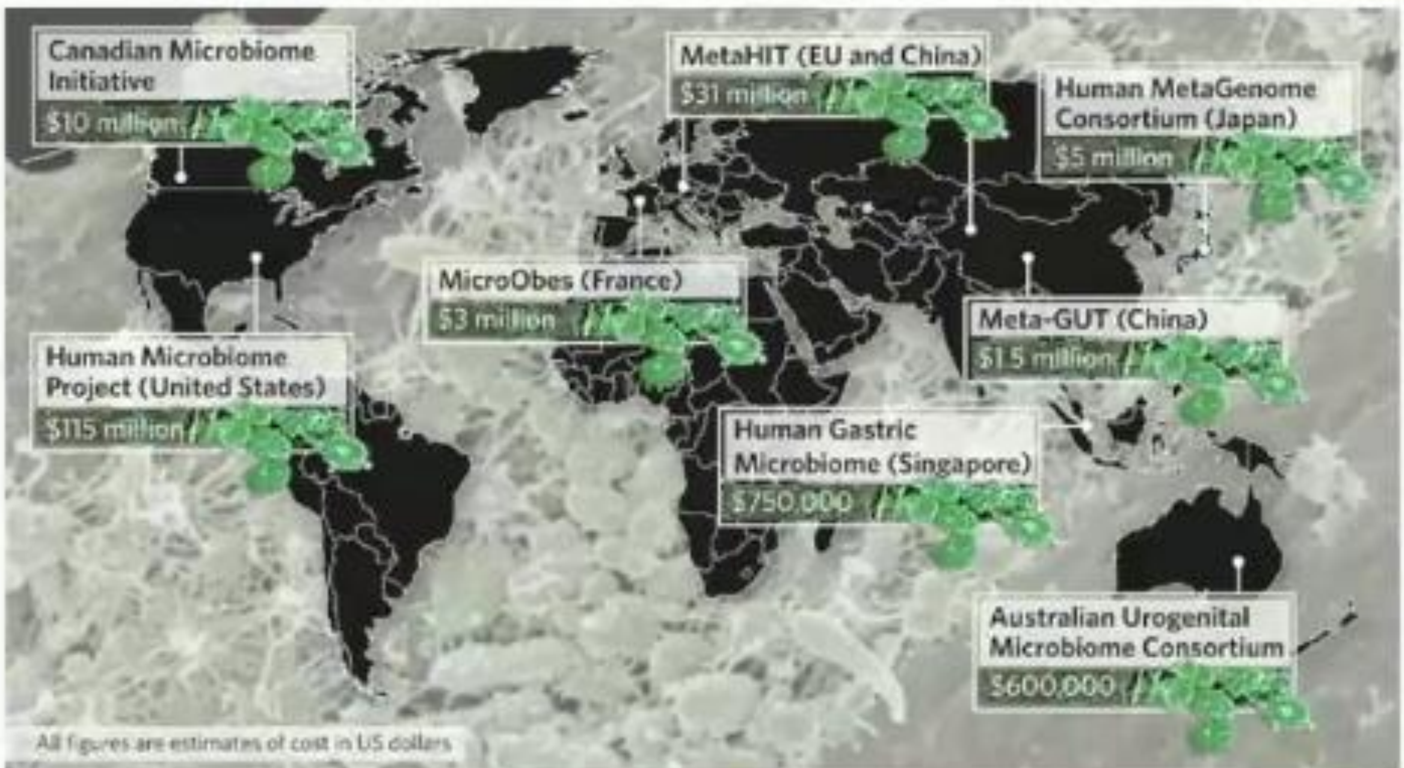


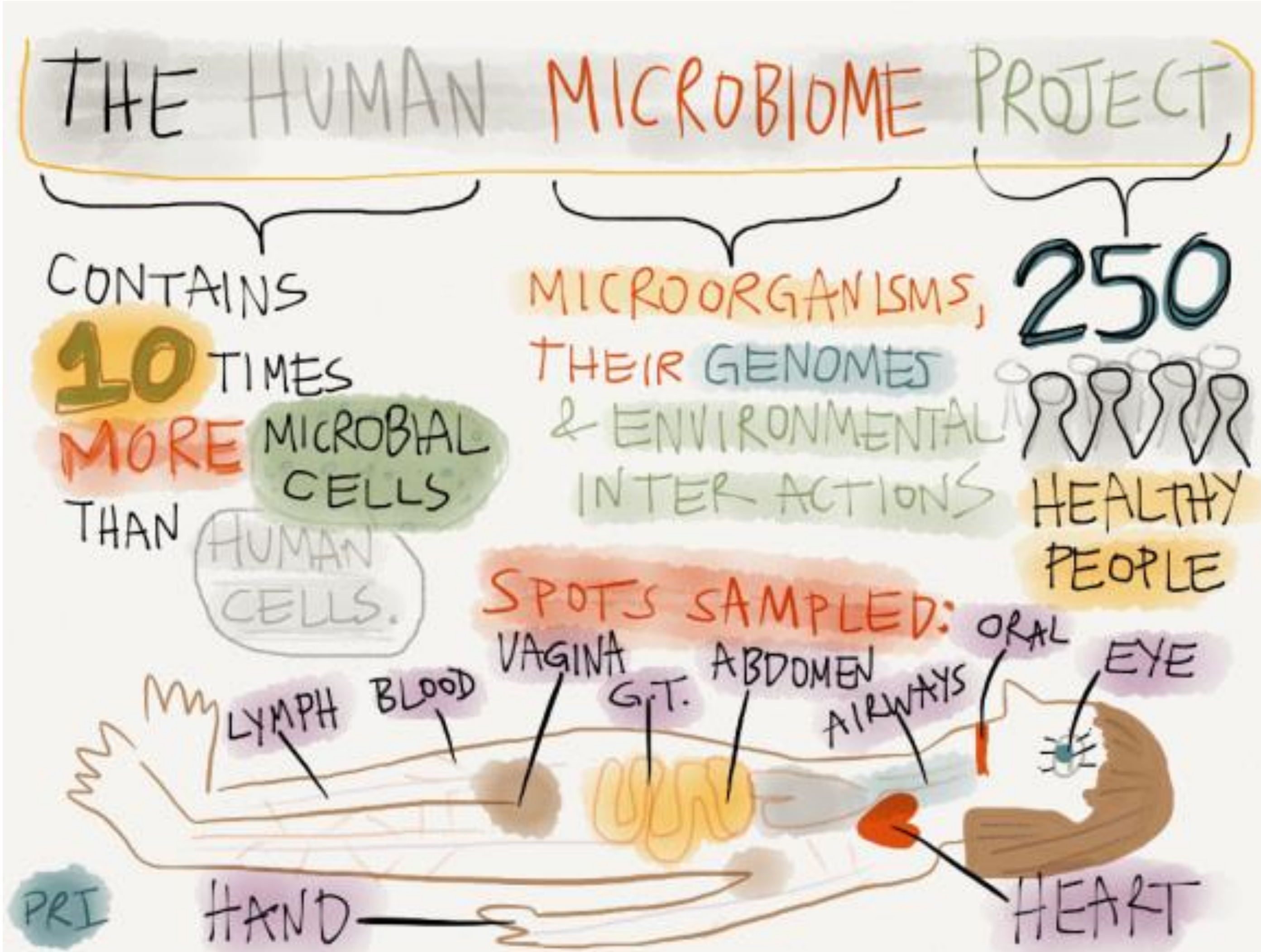
INSIGHT FEATURE

The Human Microbiome Project

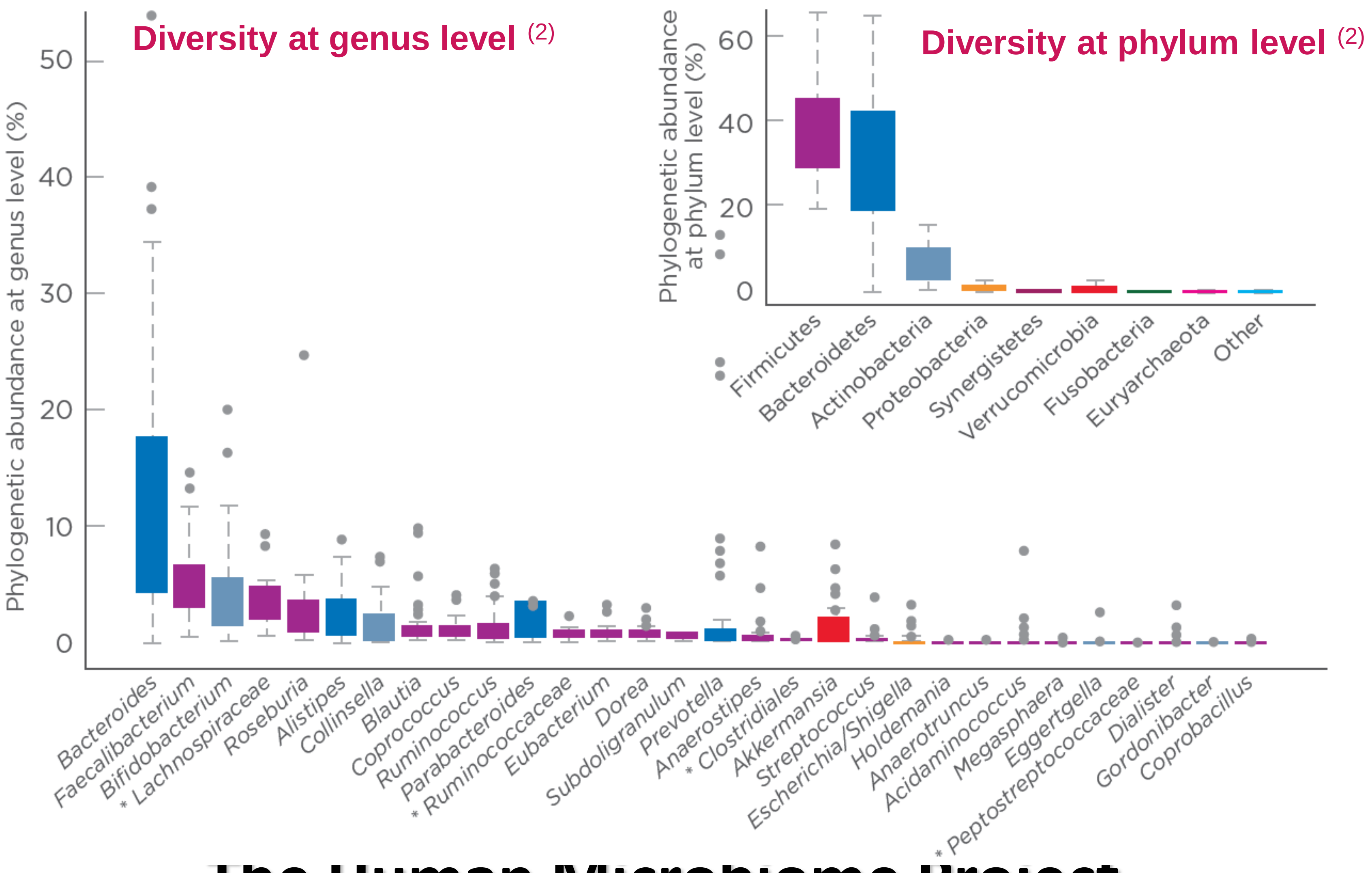
Peter J. Turnbaugh, Ruth E. Ley, Micah Hamady, Claire M. Fraser-Liggett, Rob Knight & Jeffrey I. Gordon

A strategy to understand the microbial components of the human genetic and metabolic landscape and how they contribute to normal physiology and predisposition to disease.

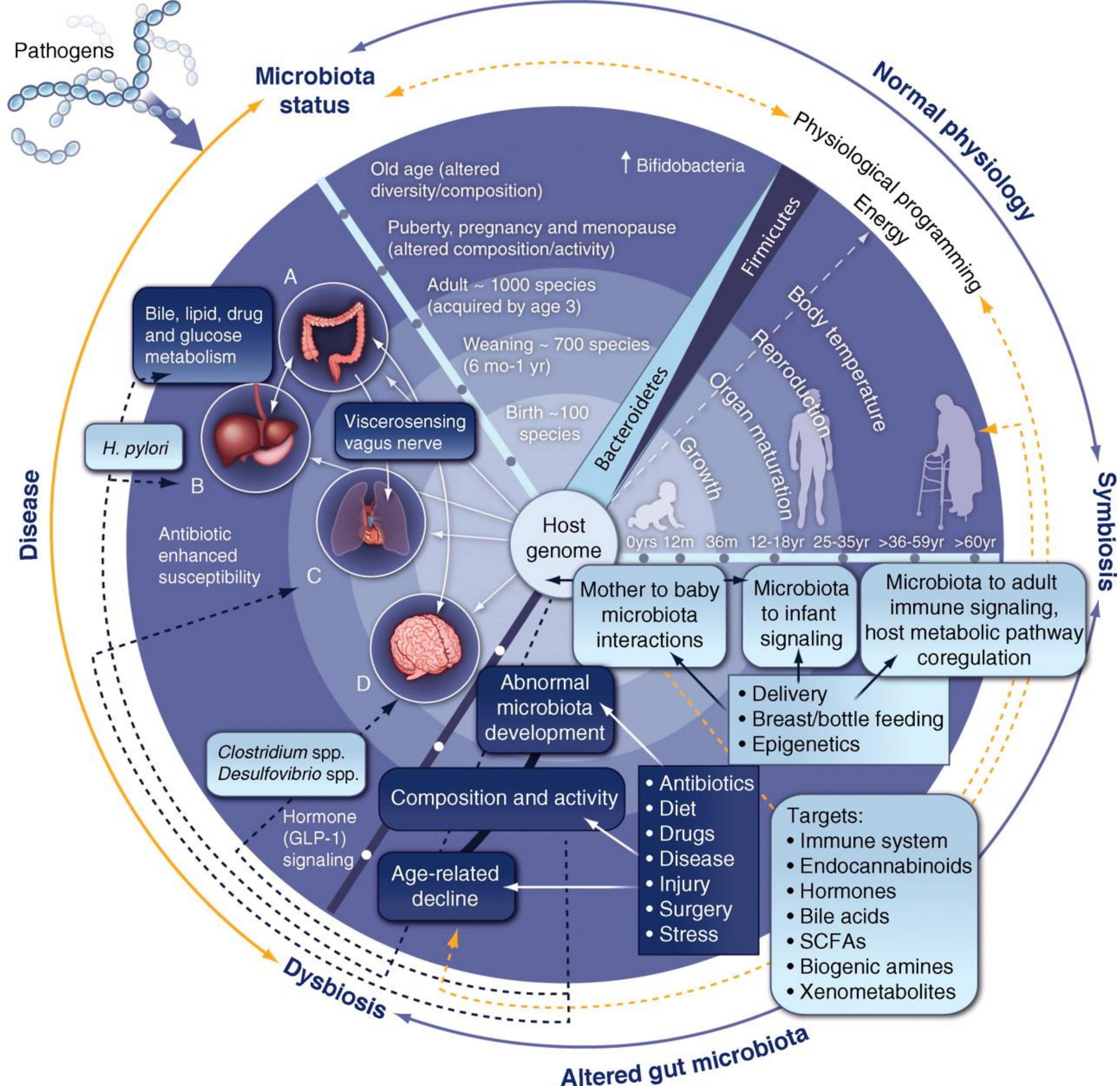




The Human Microbiome Project

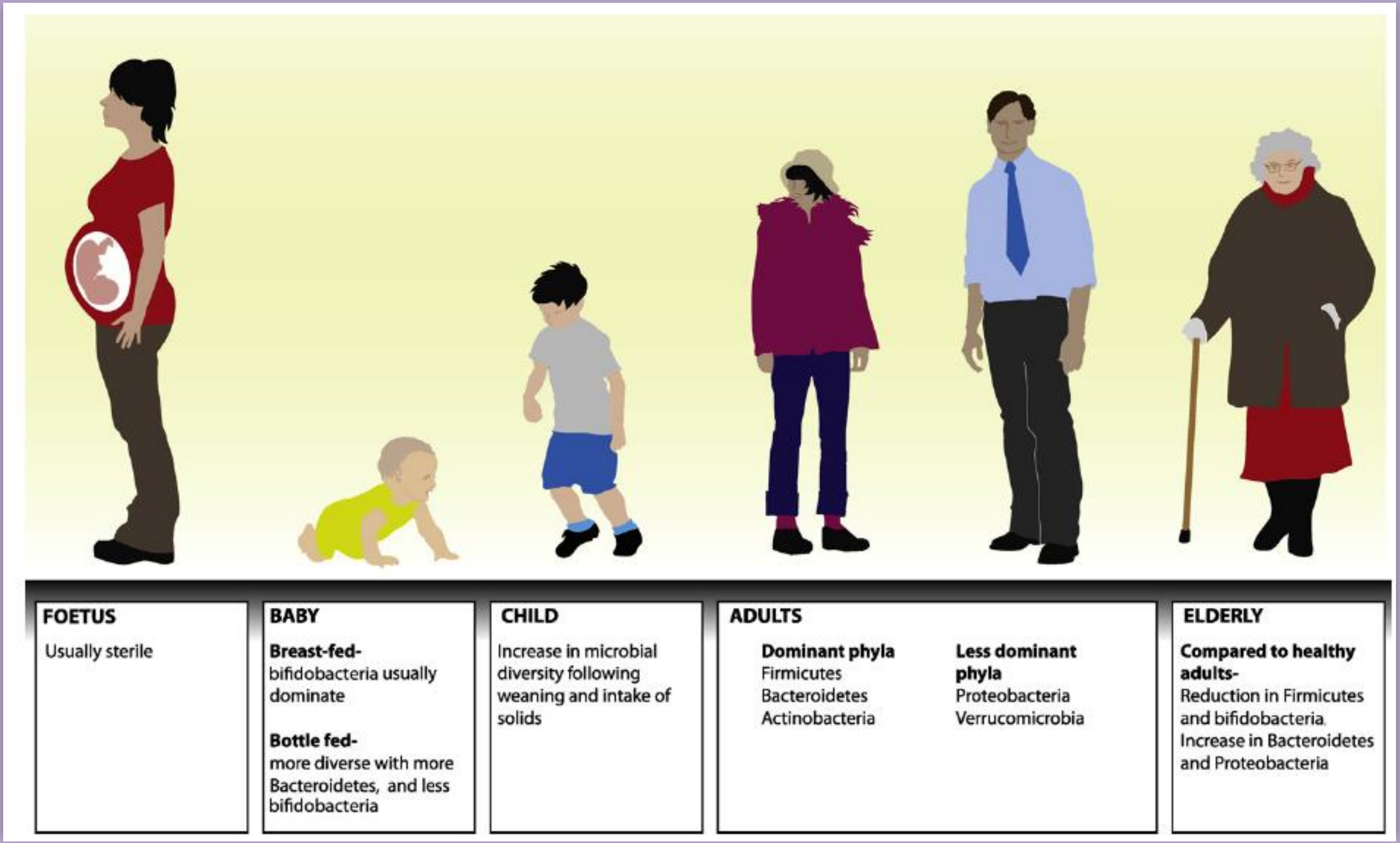


The Human Microbiome Project



Pathogens
Microbiota status
Normal physiology
Physiological programming
Energy
Body temperature
Reproduction
Organ maturation
Growth
Symbiosis
Disease
Dysbiosis
Altered gut microbiota
Old age (altered diversity/composition)
Bifidobacteria
Puberty, pregnancy and menopause (altered composition/activity)
Adult ~ 1000 species (acquired by age 3)
Weaning ~ 700 species (6 mo-1 yr)
Birth ~100 species
Firmicutes
Bacteroidetes
Host genome
0yrs 12m 36m 12-18yr 25-35yr >36-59yr >60yr
A
B
C
D
Bile, lipid, drug and glucose metabolism
H. pylori
Viscerosensing vagus nerve
Antibiotic enhanced susceptibility
Clostridium spp. Desulfovibrio spp.
Hormone (GLP-1) signaling
Mother to baby microbiota interactions
Microbiota to infant signaling
Microbiota to adult immune signaling, host metabolic pathway coregulation
• Delivery
• Breast/bottle feeding
• Epigenetics
Abnormal microbiota development
Composition and activity
Age-related decline
• Antibiotics
• Diet
• Drugs
• Disease
• Injury
• Surgery
• Stress
Targets:
• Immune system
• Endocannabinoids
• Hormones
• Bile acids
• SCFAs
• Biogenic amines
• Xenometabolites

İNTESTINAL MİKROBİYOTA



Duncan SH, Flint HJ. Maturitas (2013), http://dx.doi.org/10.1016/j.maturitas.2013.02.004

Erdil Yaşaroğlu © www.komikaze.net

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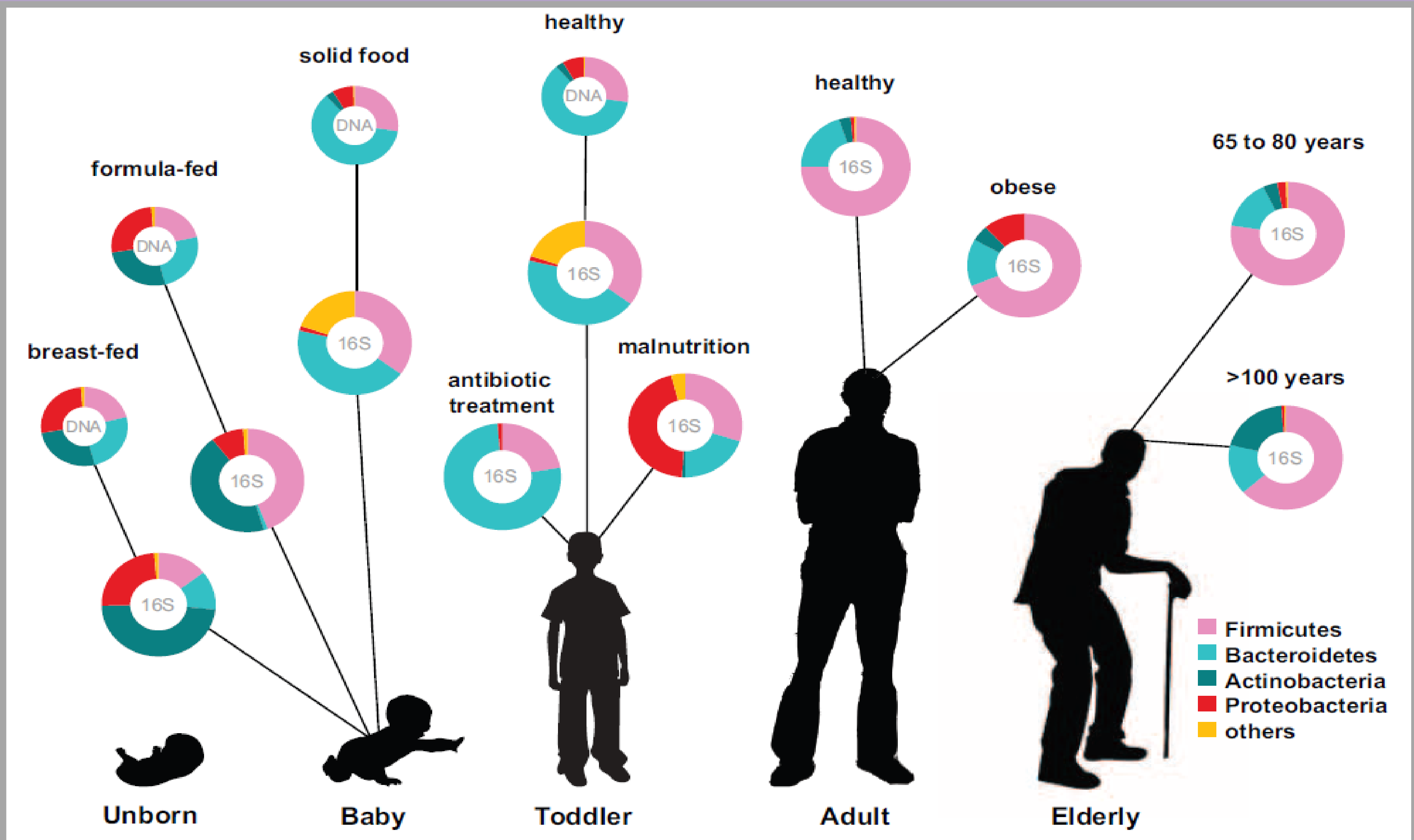
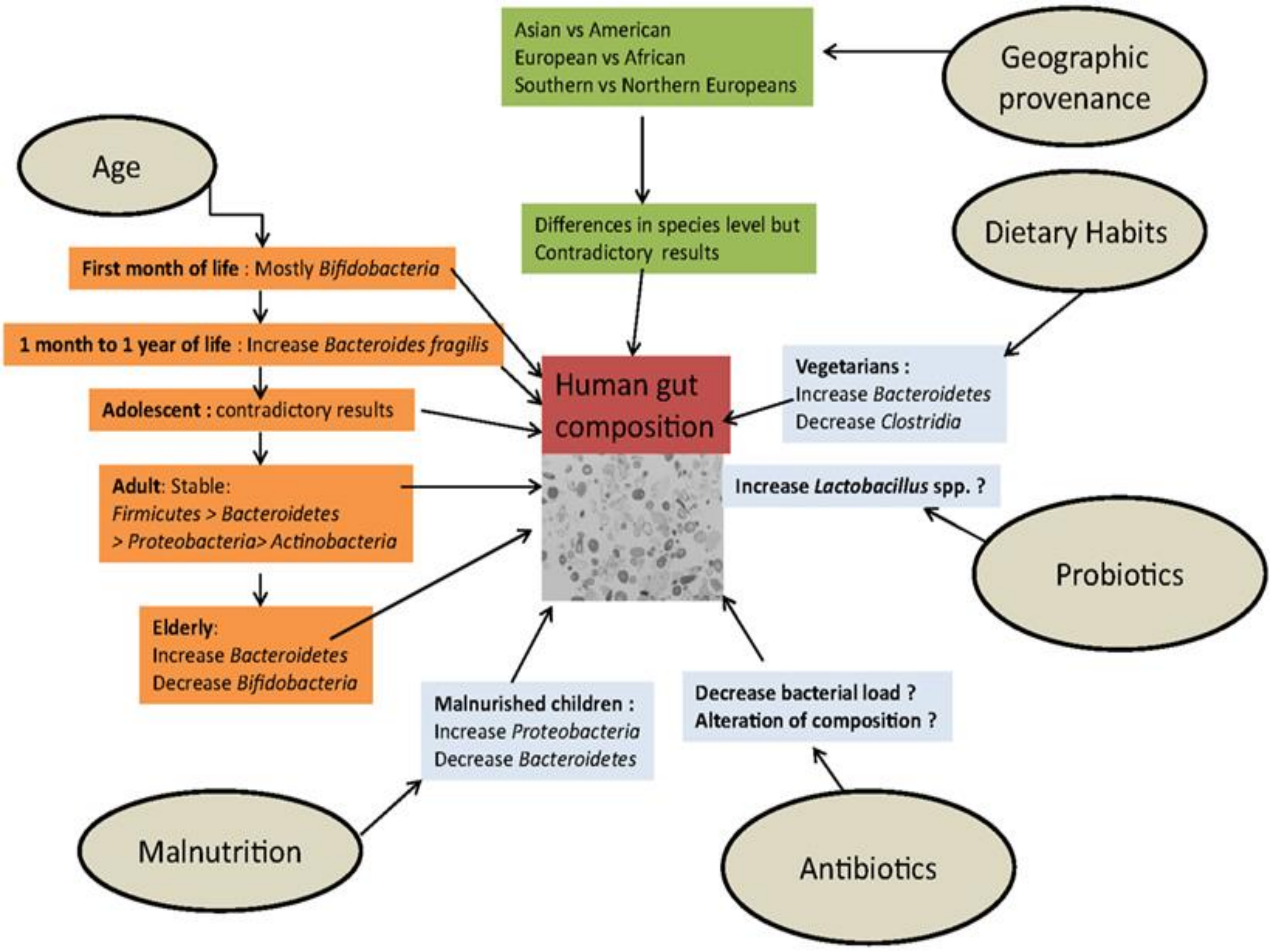


Front Cell Infect Microbiol 2012;2: 104


Asian vs American
European vs African
Southern vs Northern Europeans
Geographic provenance
Differences in species level but
Contradictory results
Age
First month of life : Mostly Bifidobacteria
1 month to 1 year of life : Increase Bacteroides fragilis
Adolescent : contradictory results
Adult: Stable:
Firmicutes > Bacteroidetes
> Proteobacteria> Actinobacteria
Elderly:
Increase Bacteroidetes
Decrease Bifidobacteria
Human gut composition
Dietary Habits
Vegetarians :
Increase Bacteroidetes
Decrease Clostridia
Increase Lactobacillus spp. ?
Probiotics
Malnurished children :
Increase Proteobacteria
Decrease Bacteroidetes
Malnutrition
Decrease bacterial load ?
Alteration of composition ?
Antibiotics

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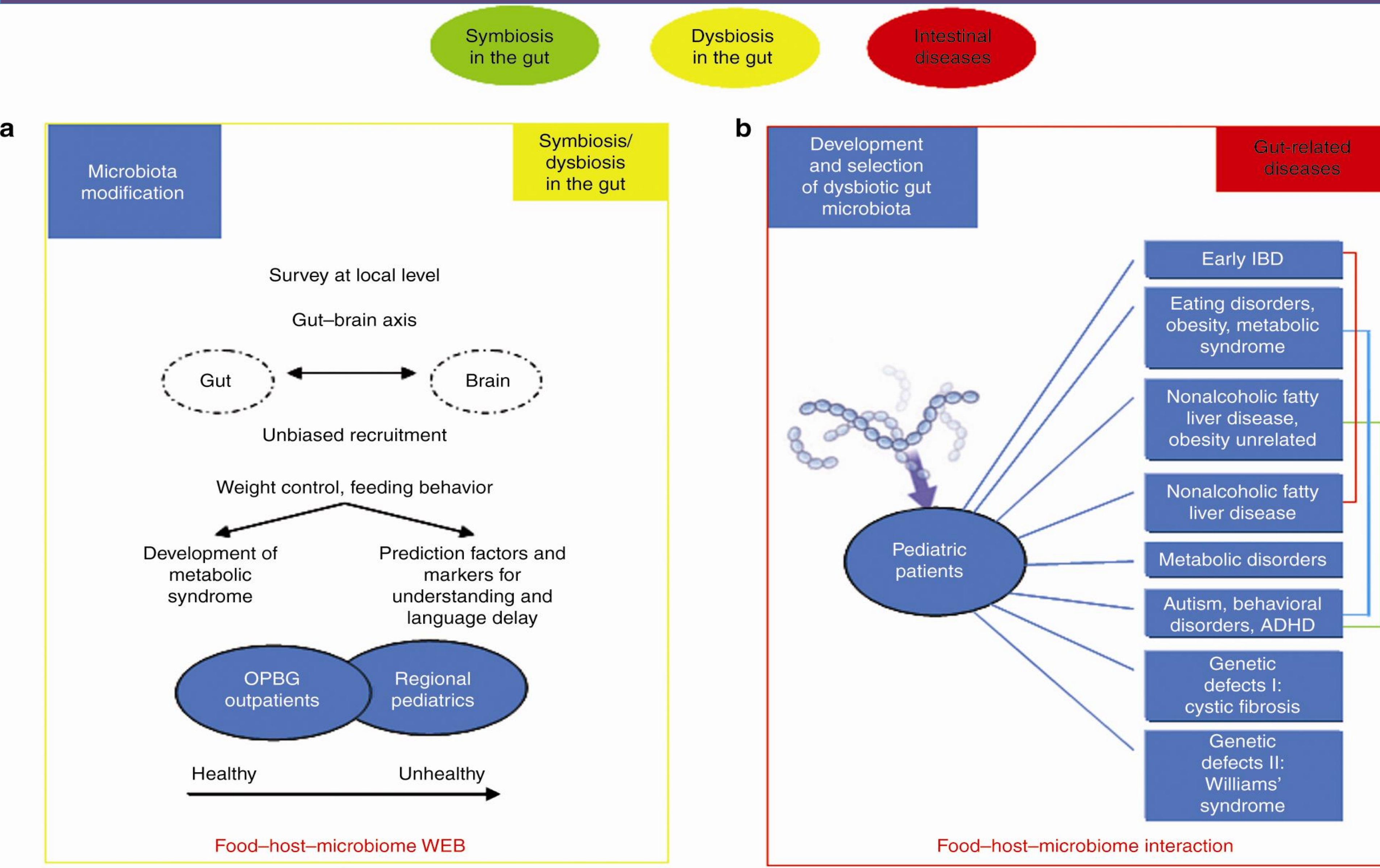

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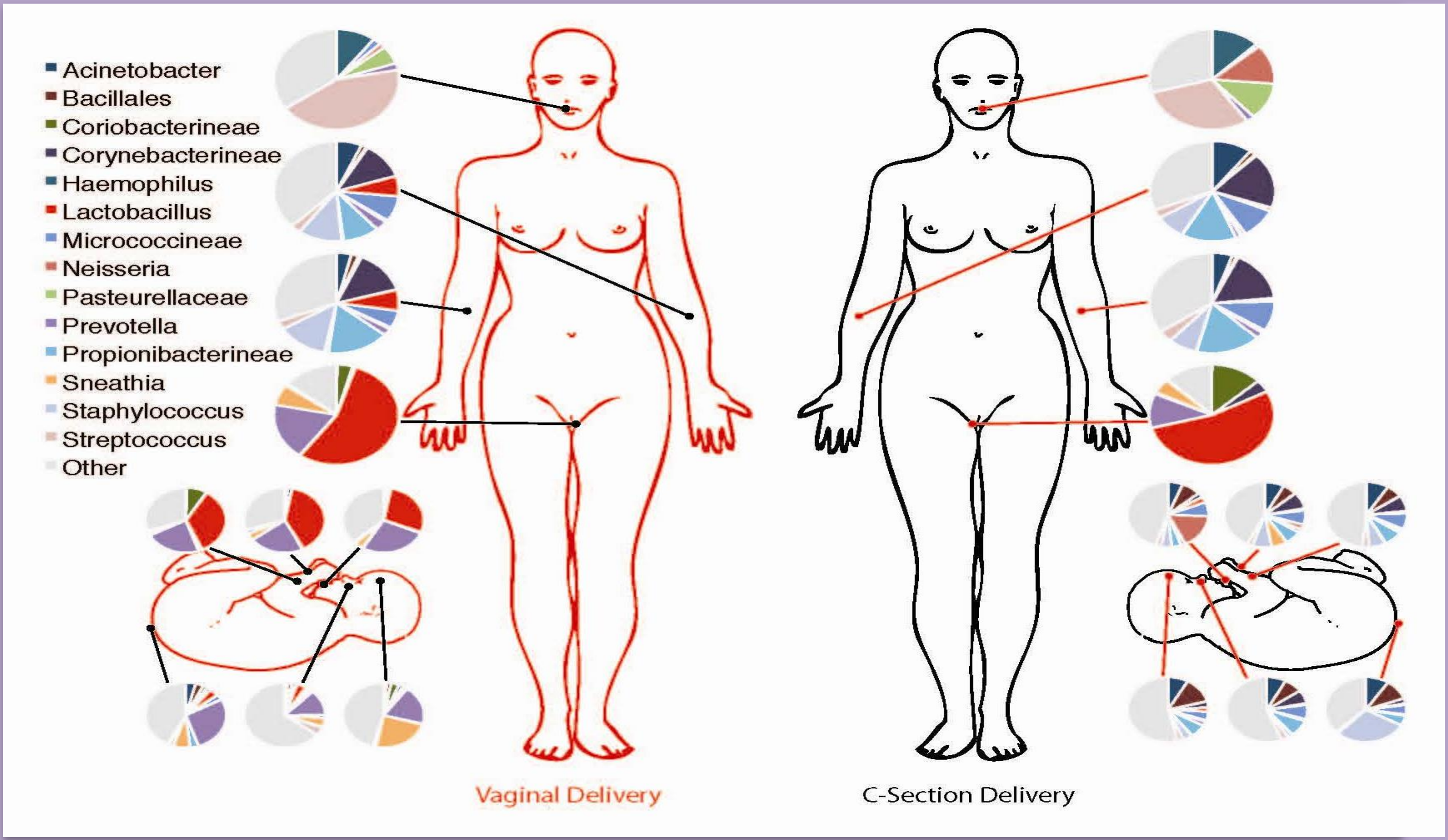

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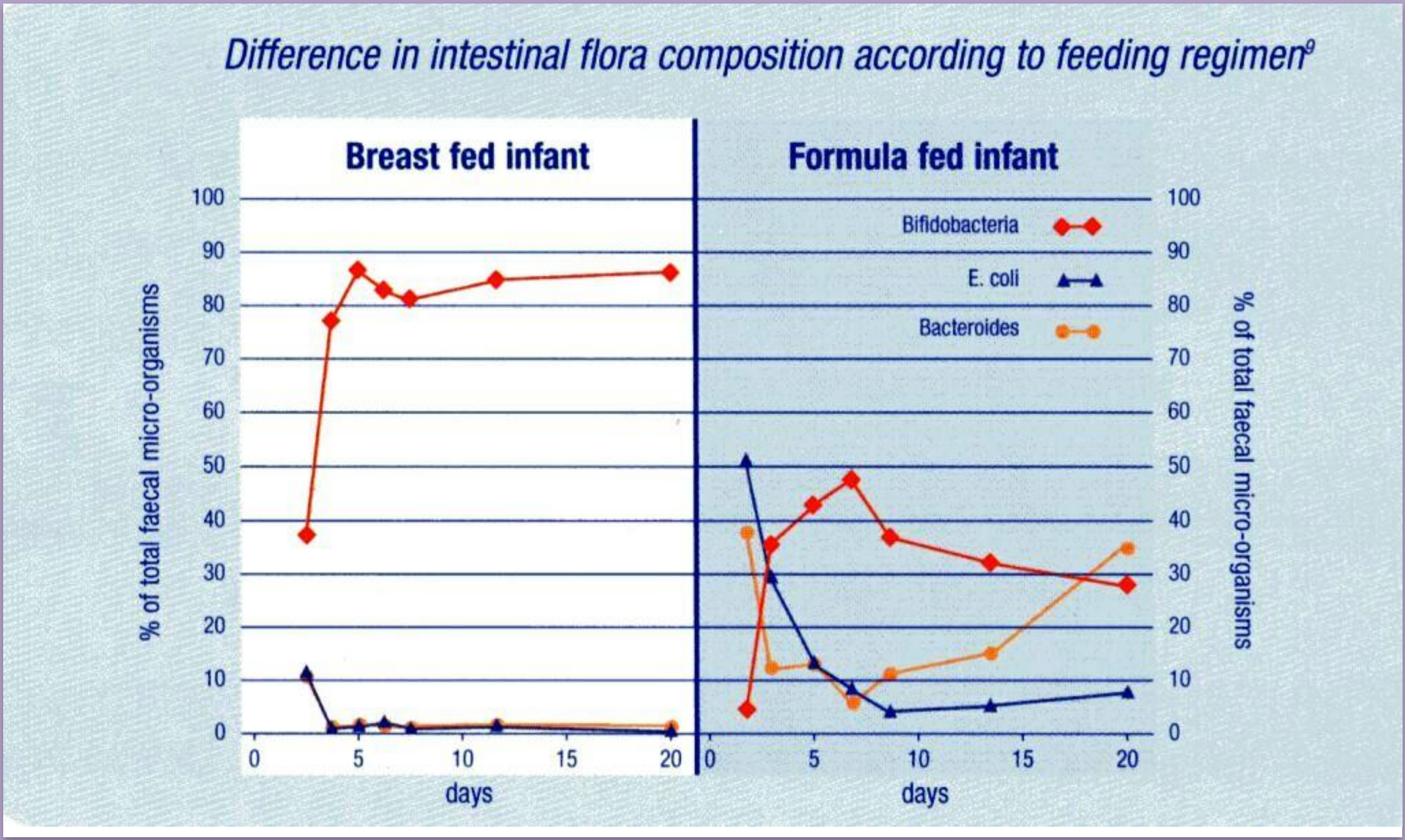

İNTESTİNAL MİKROBİYOTA

ARTICLE IN PRESS

THE JOURNAL OF PEDIATRICS • www.jpeds.com

ORIGINAL ARTICLES

Intestinal Microbiota Development in Preterm Neonates and Effect of Perinatal Antibiotics

Silvia Arboleya, MSc[1], Borja Sánchez, PhD[1,*], Christian Milani, MSc[2], Sabrina Duranti, MSc[2], Gonzalo Solís, PhD[3], Nuria Fernández, PhD[4], Clara G. de los Reyes-Gavilán, PhD[1], Marco Ventura, PhD[2], Abelardo Margolles, PhD[1], and Miguel Gueimonde, PhD[1]

Results Immaturity affects the microbiota as indicated by a reduced percentage of the family *Bacteroidaceae* during the first months of life and by a higher initial percentage of *Lactobacillaceae* in preterm infants compared with full term infants. Perinatal antibiotics, including intrapartum antimicrobial prophylaxis, affects the gut microbiota, as indicated by increased *Enterobacteriaceae* family organisms in the infants.

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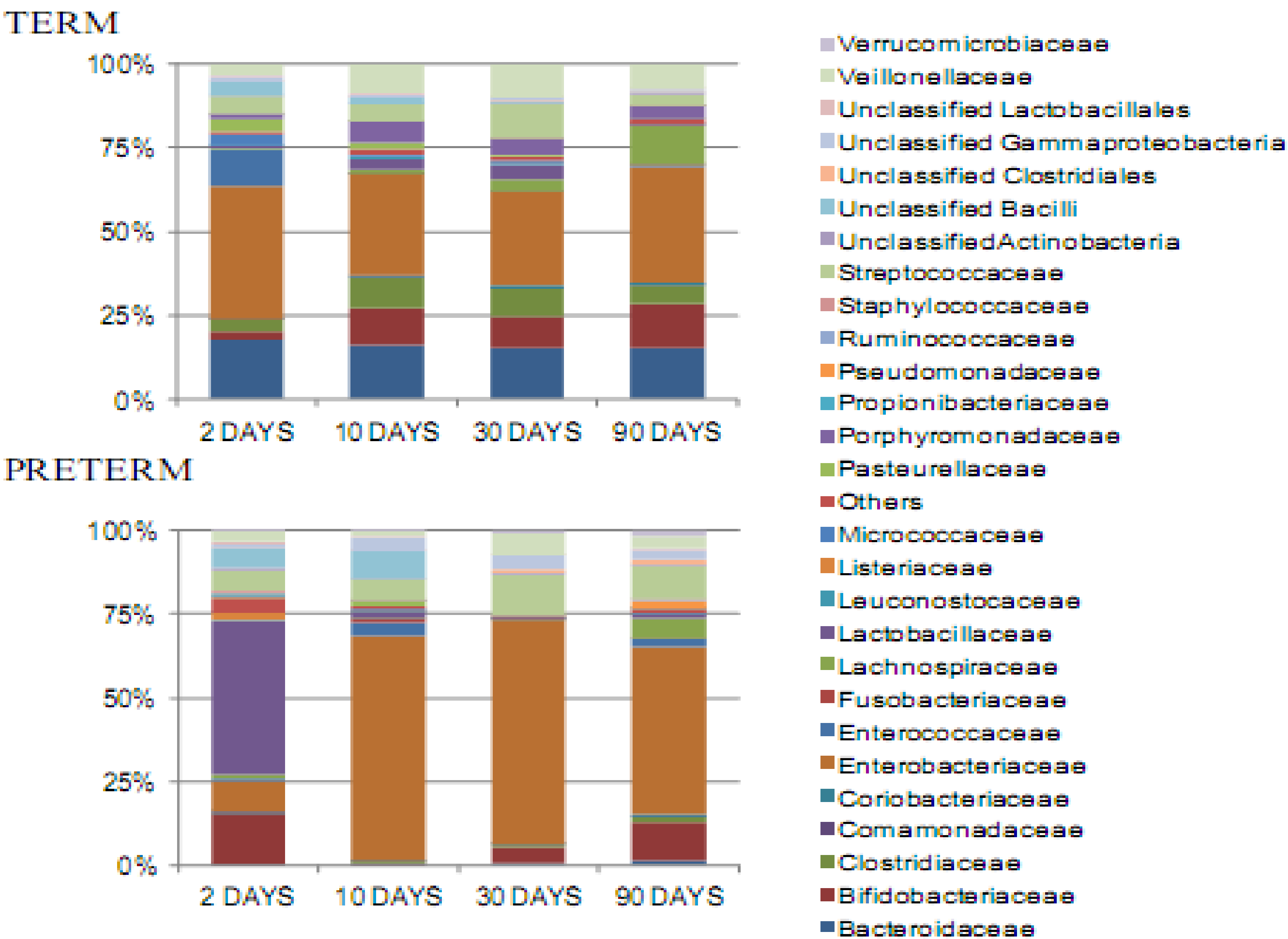
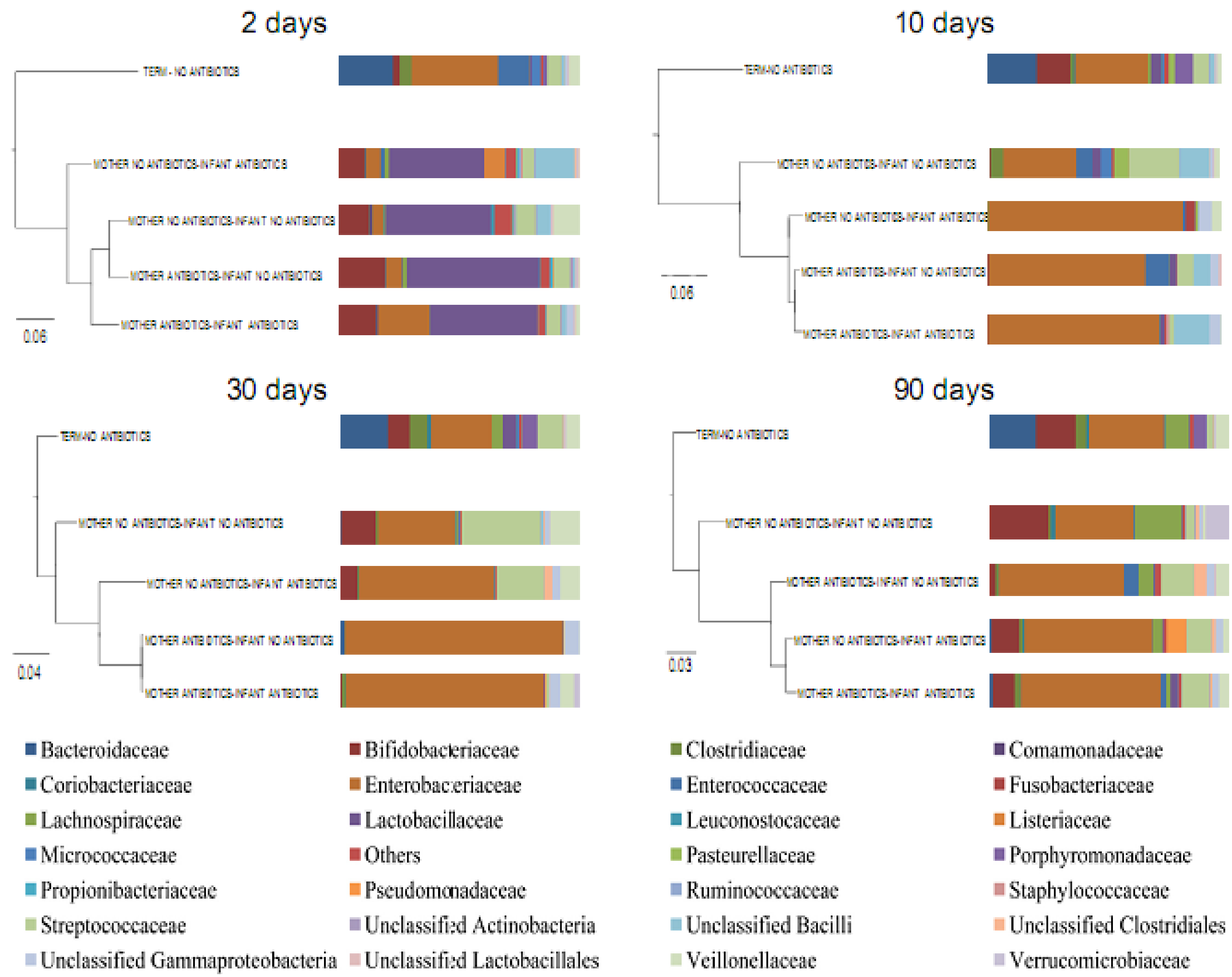




2 days
TERM - NO ANTIBIOTICS
MOTHER NO ANTIBIOTICS-INFANT ANTIBIOTICS
MOTHER NO ANTIBIOTICS-INFANT NO ANTIBIOTICS
MOTHER ANTIBIOTICS-INFANT NO ANTIBIOTICS
MOTHER ANTIBIOTICS-INFANT ANTIBIOTICS
0.06
10 days
TERM-NO ANTIBIOTICS
MOTHER NO ANTIBIOTICS-INFANT NO ANTIBIOTICS
MOTHER NO ANTIBIOTICS-INFANT ANTIBIOTICS
MOTHER ANTIBIOTICS-INFANT NO ANTIBIOTICS
MOTHER ANTIBIOTICS-INFANT ANTIBIOTICS
0.06
30 days
TERM-NO ANTIBIOTICS
MOTHER NO ANTIBIOTICS-INFANT NO ANTIBIOTICS
MOTHER NO ANTIBIOTICS-INFANT ANTIBIOTICS
MOTHER ANTIBIOTICS-INFANT NO ANTIBIOTICS
MOTHER ANTIBIOTICS-INFANT ANTIBIOTICS
0.04
90 days
TERM-NO ANTIBIOTICS
MOTHER NO ANTIBIOTICS-INFANT NO ANTIBIOTICS
MOTHER ANTIBIOTICS-INFANT NO ANTIBIOTICS
MOTHER NO ANTIBIOTICS-INFANT ANTIBIOTICS
MOTHER ANTIBIOTICS-INFANT ANTIBIOTICS
0.03
Bacteroidaceae
Bifidobacteriaceae
Clostridiaceae
Comamonadaceae
Coriobacteriaceae
Enterobacteriaceae
Enterococcaceae
Fusobacteriaceae
Lachnospiraceae
Lactobacillaceae
Leuconostocaceae
Listeriaceae
Micrococcaceae
Others
Pasteurellaceae
Porphyromonadaceae
Propionibacteriaceae
Pseudomonadaceae
Ruminococcaceae
Staphylococcaceae
Streptococcaceae
Unclassified Actinobacteria
Unclassified Bacilli
Unclassified Clostridiales
Unclassified Gammaproteobacteria
Unclassified Lactobacillales
Veillonellaceae
Verrucomicrobiaceae

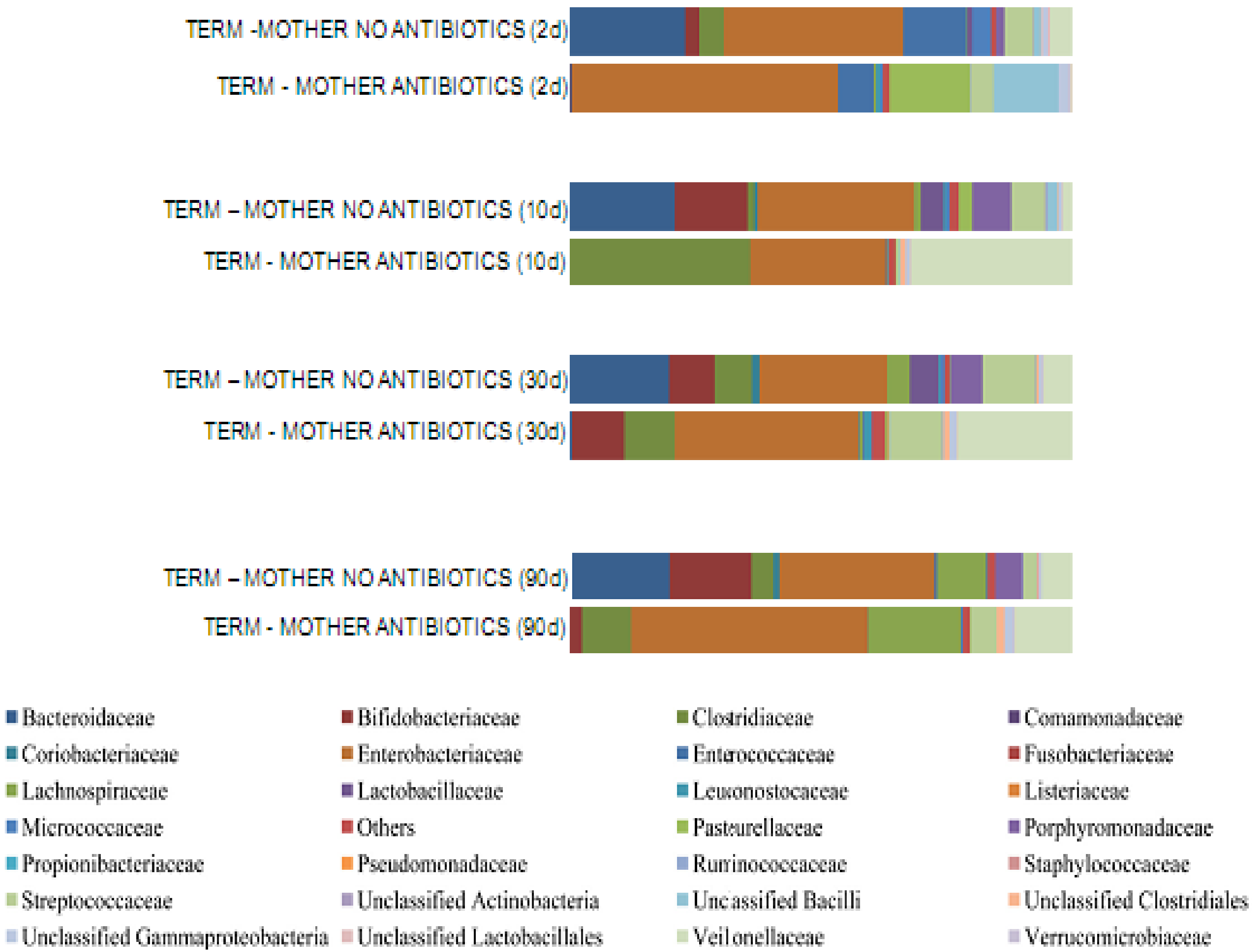
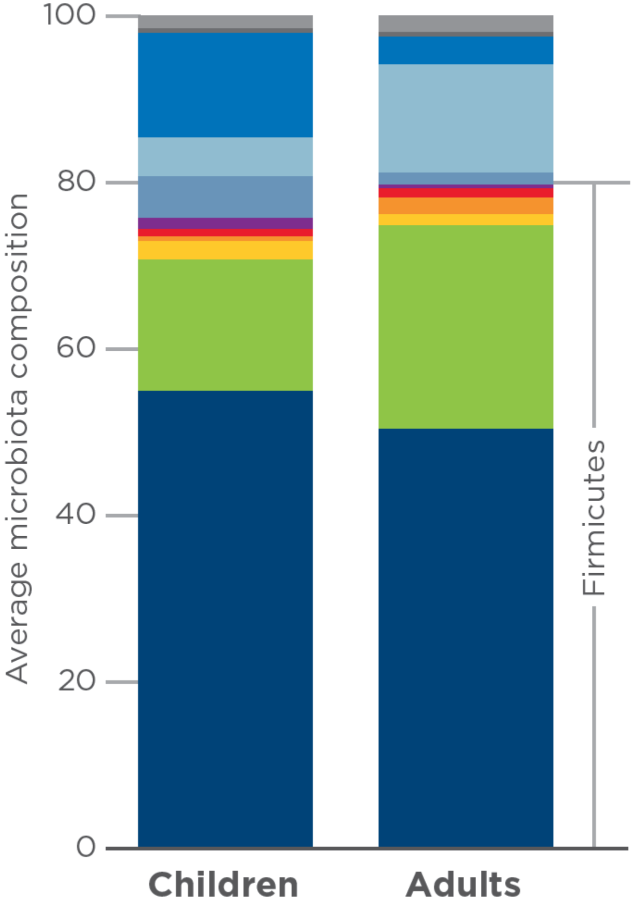


Figure 4. Aggregate microbiota at family level, of samples collected at the different time points from term infants whose mother received a single dose of IAP with ampicillin (n = 3) and those whose mothers did not receive IAP (n = 10).

Colonization by the microbiota

- Colonization of the intestinal tract starts at birth, from the birth canal and from the body surface of the mother
- During the neonatal period and infancy, the microbiota is different from the adult one



	Children	Adults	p-value
Other	1.58 (±1.33)	1.96 (±1.54)	0.36
Proteobacteria	0.56 (±0.18)	0.55 (±0.31)	0.92
Actinobacteria	12.47 (±6.37)	3.36 (±3.38)	4E-06*
Bacteroidetes	4.72 (±6.91)	13.01 (±12.98)	0.02*
Bacilli	4.99 (±4.57)	1.42 (±1.05)	0.01*
Clostridium cluster I	1.28 (±2.21)	0.40 (±0.65)	0.17
Uncultured Clostridiales	0.91 (±1.43)	1.18 (±1.62)	0.62
Clostridium cluster III	0.52 (±0.64)	1.97 (±2.77)	0.03*
Clostridium cluster XI	2.27 (±3.21)	1.39 (±2.15)	0.38
Clostridium cluster IV	15.78 (±9.86)	24.35 (±10.92)	0.02*
Clostridium cluster XIVa	54.92 (±12.61)	50.41 (±13.53)	0.37

Ringel-Kulka T *et al*. Intestinal microbiota in healthy U.S. young children and adults-a high throughput microarray analysis. PLoS One 2013;8:e64315.

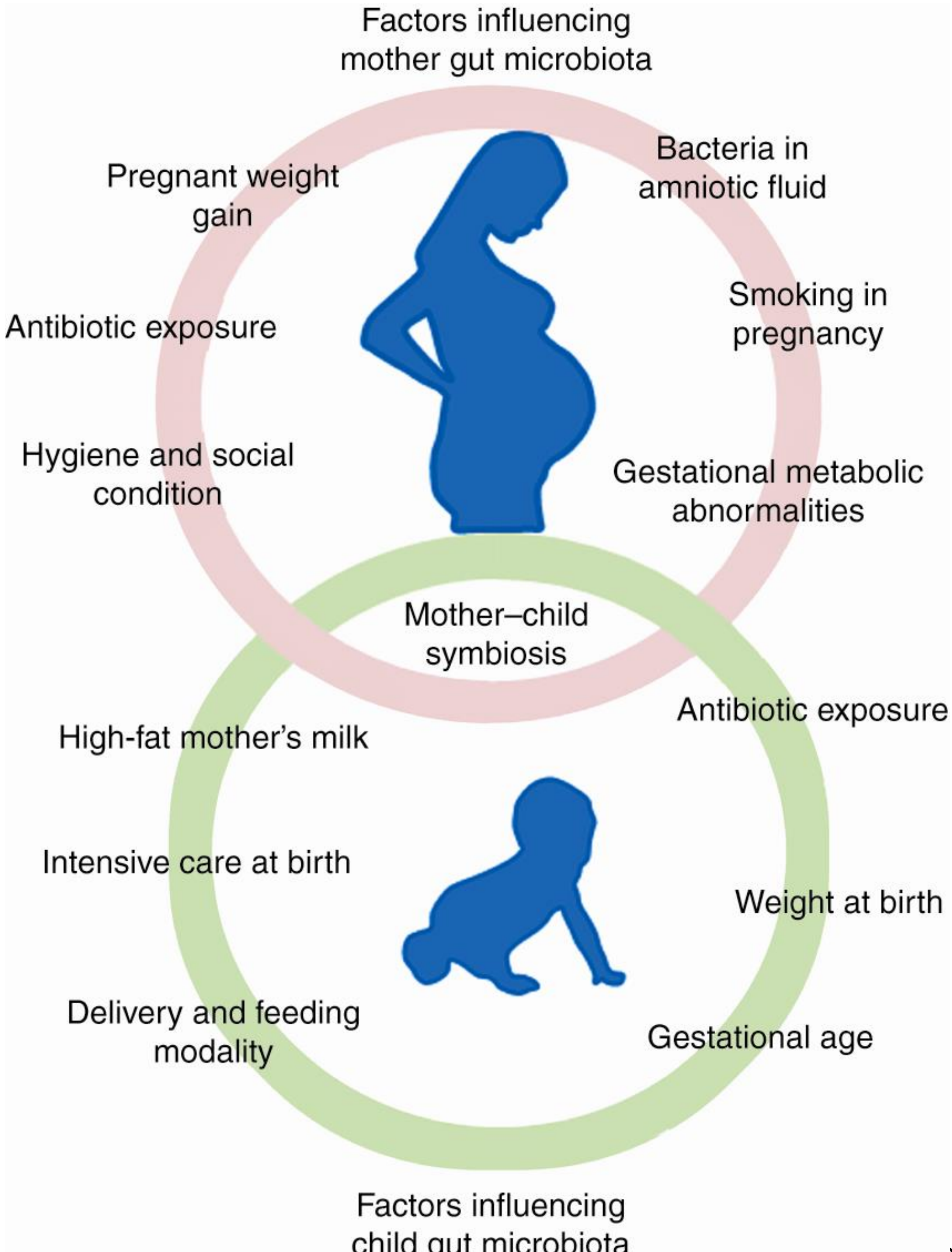
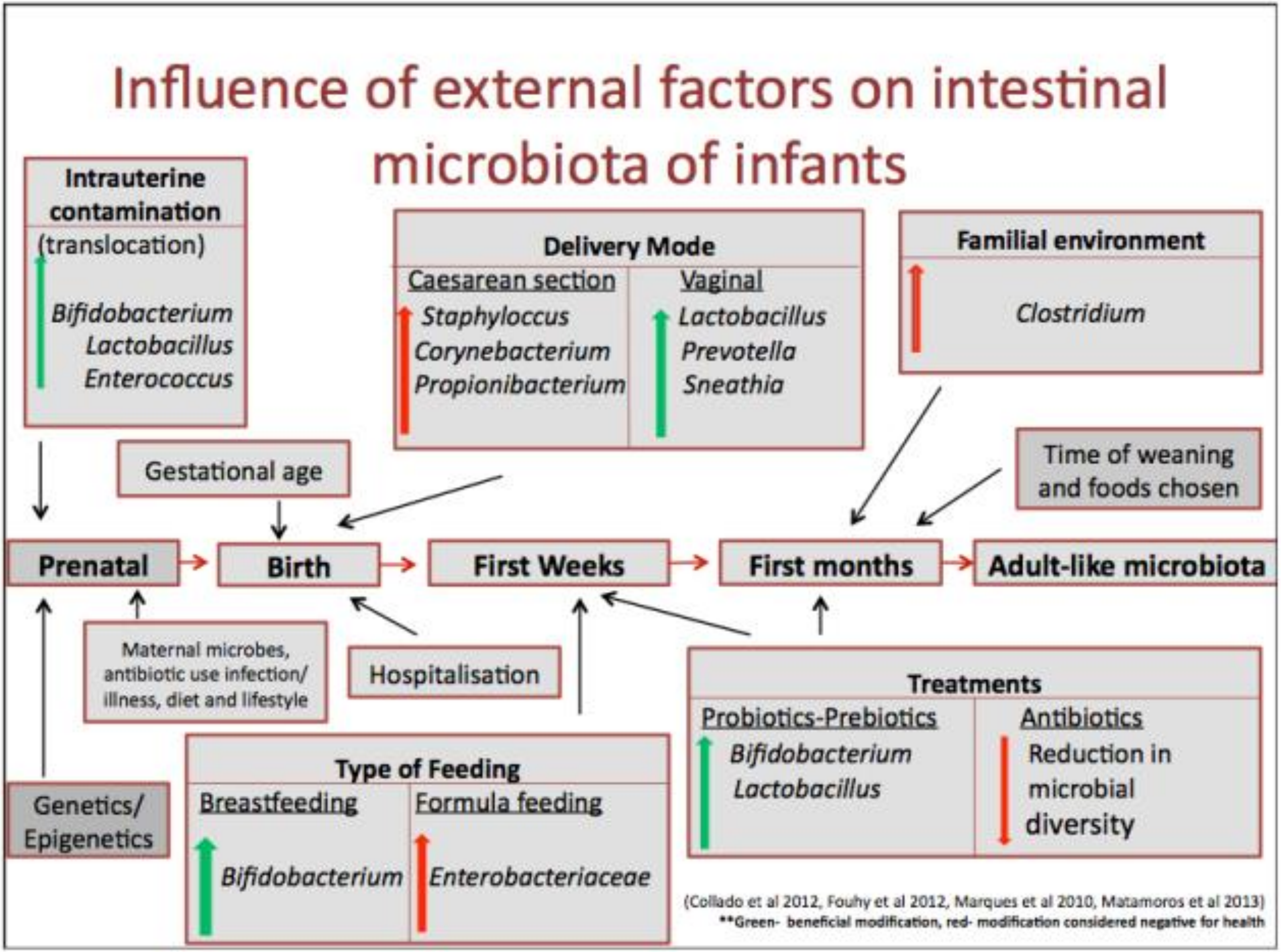


Figure 5

Lorenza Putignani
doi:10.1038/pr.2014.49



Influence of external factors on intestinal microbiota of infants
Intrauterine contamination
(translocation)
Bifidobacterium
Lactobacillus
Enterococcus
Delivery Mode
Caesarean section
Staphyloccus
Corynebacterium
Propionibacterium
Vaginal
Lactobacillus
Prevotella
Sneathia
Familial environment
Clostridium
Gestational age
Time of weaning and foods chosen
Prenatal
Birth
First Weeks
First months
Adult-like microbiota
Maternal microbes, antibiotic use infection/ illness, diet and lifestyle
Hospitalisation
Genetics/ Epigenetics
Type of Feeding
Breastfeeding
Bifidobacterium
Formula feeding
Enterobacteriaceae
Treatments
Probiotics-Prebiotics
Bifidobacterium
Lactobacillus
Antibiotics
Reduction in microbial diversity
(Collado et al 2012, Fouhy et al 2012, Marques et al 2010, Matamoros et al 2013)
**Green- beneficial modification, red- modification considered negative for health

İNTESTİNAL MİKROBİYOTA

TRMOME-1005; No. of Pages 9 ARTICLE IN PRESS

Review

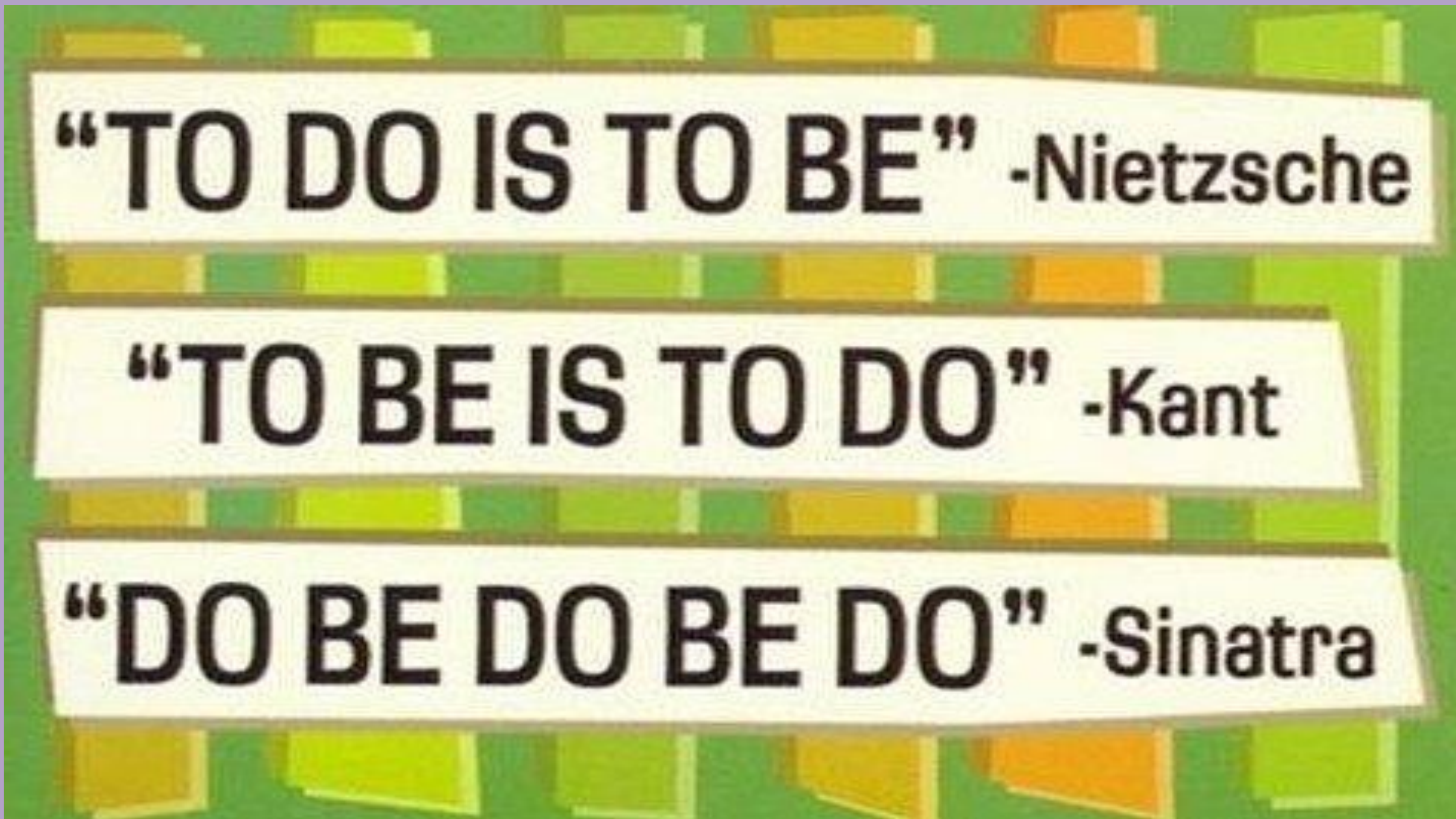
CellPress

Special Issue: Nurturing the Next Generation

The infant microbiome development: mom matters

Noel T. Mueller[1,2], Elizabeth Bakacs[3], Joan Combellick[4], Zoya Grigoryan[3], and Maria G. Dominguez-Bello[3]

[1] Department of Epidemiology, Mailman School of Public Health, Columbia University Medical Center, New York, NY, USA
[2] Institute of Human Nutrition and Department of Medicine, College of Physicians and Surgeons, Columbia University Medical Center, New York, NY, USA
[3] Division of Translational Medicine, New York University School of Medicine, New York, NY, USA
[4] School of Nursing, New York University, New York, NY, USA


"TO DO IS TO BE" -Nietzsche
"TO BE IS TO DO" -Kant
"DO BE DO BE DO" -Sinatra

Clinical reviews in allergy and immunology

Series editors: Donald Y. M. Leung, MD, PhD, and Dennis K. Ledford, MD

The gut microbiota and inflammatory noncommunicable diseases: Associations and potentials for gut microbiota therapies

Christina E. West, MD, PhD,[a,b] Harald Renz, MD,[a,c] Maria C. Jenmalm, PhD,[a,d] Anita L. Kozyrskyj, PhD,[a,e] Katrina J. Allen, MD, PhD,[a,f] Peter Vuillermin, MD, PhD,[a,g] and Susan L. Prescott, MD, PhD,[a,h] on behalf of the in-FLAME Microbiome Interest Group: Charles MacKay, PhD,[a,i] Seppo Salminen, PhD,[a,j] Gary Wong, MD,[a,k] John Sinn, MD,[a,l] Jakob Stokholm, MD, PhD,[a,m] Hans Bisgaard, MD, DMSci,[a,m] Ruby Pawankar, MD, PhD,[a,n] Paul Noakes, PhD,[a,h] Dörthe Kesper, PhD,[a,c] and Meri Tulic, PhD[a,o] *Umeå and Linköping, Sweden, Marburg, Germany, Edmonton, Alberta, Canada, Melbourne, Geelong, Perth, Clayton, and Sydney, Australia, Turku, Finland, Hong Kong, China, Copenhagen, Denmark, Tokyo, Japan, and Nice, France*

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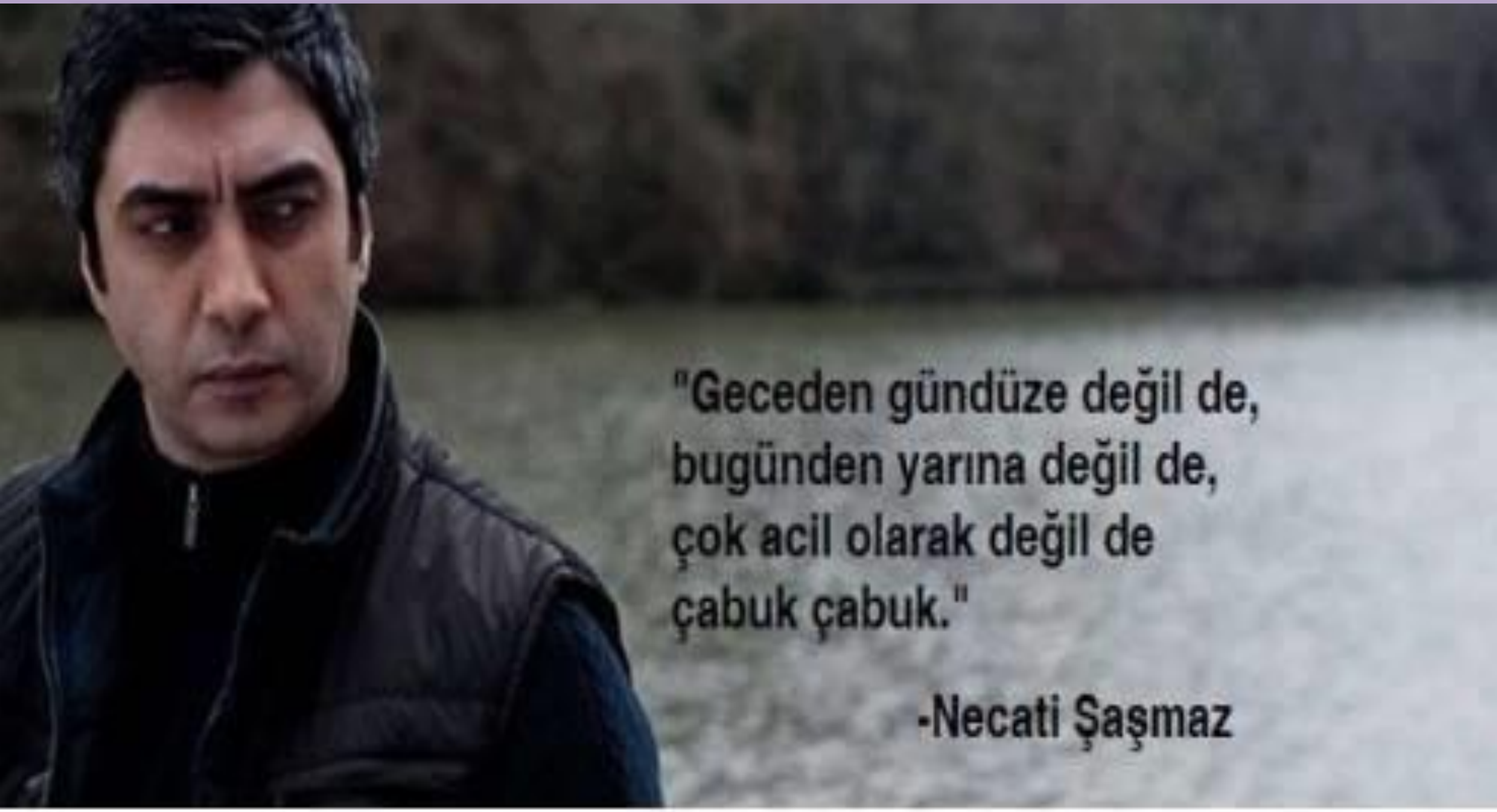

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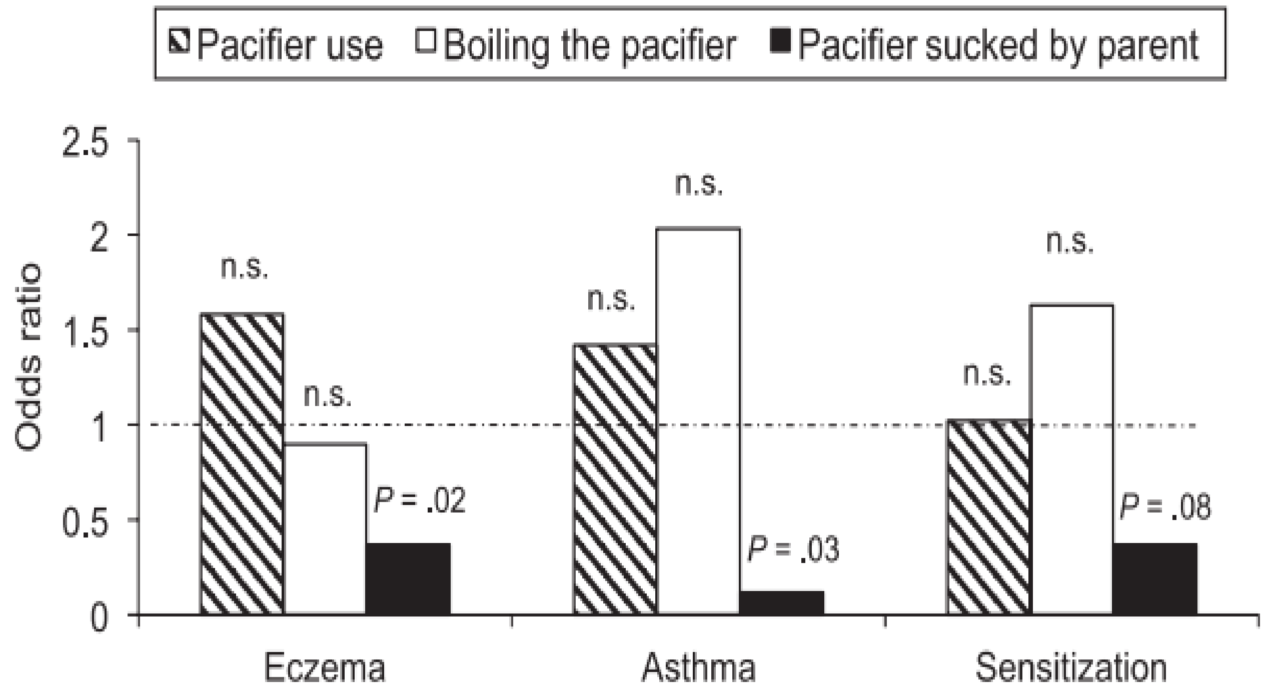
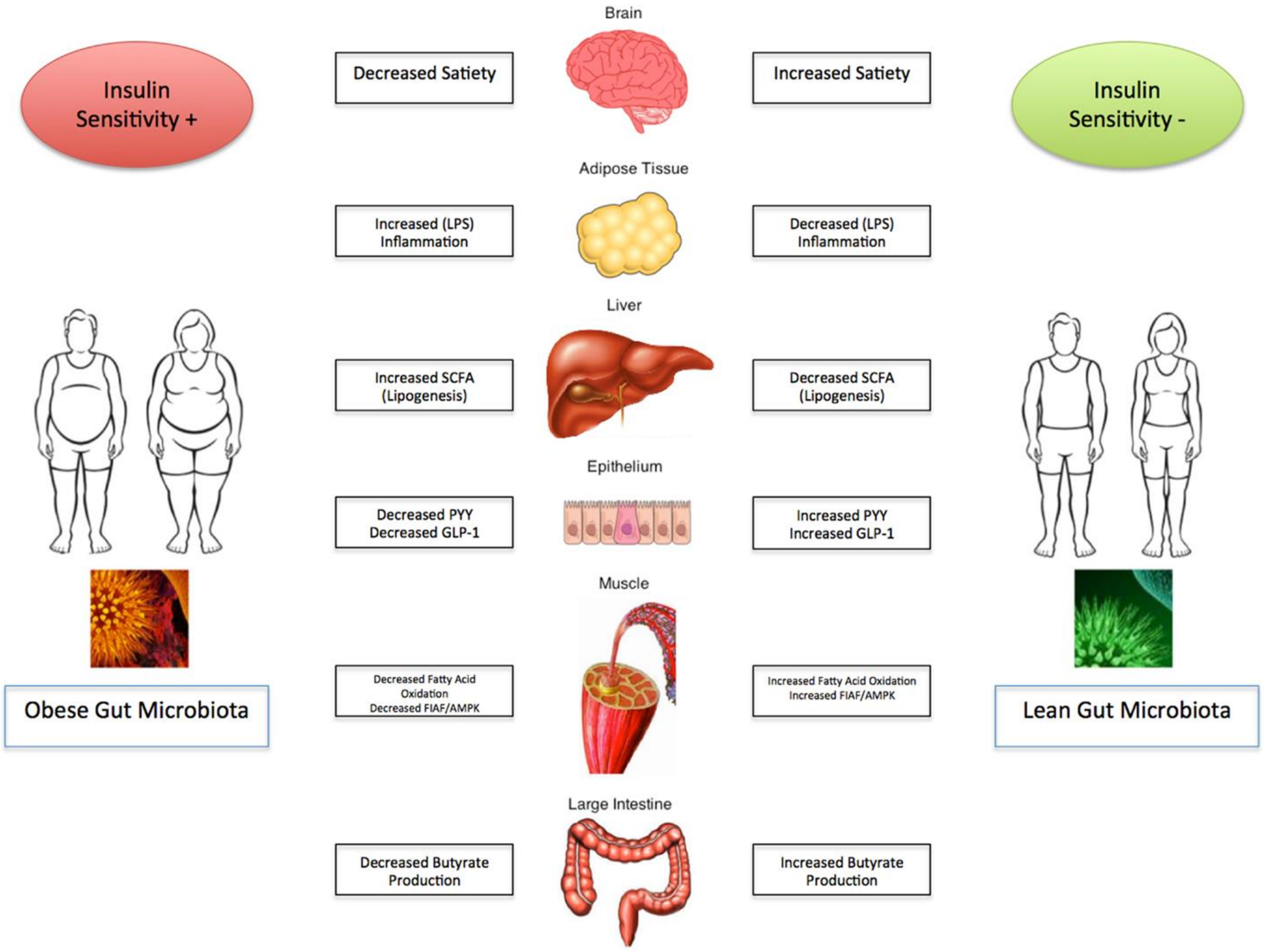


FIGURE 1

The relationship between atopy or allergy in children at 18 months of age and in relation to pacifier use and different pacifier cleaning practices. ORs are given for pacifier versus no pacifier use. For children using a pacifier, the way of cleaning the pacifier was compared with those not using that specific cleaning method. Ns, not significant.

Tanrım
eğer beni
zayıflatamıyorsan
lütfen
arkadaşlarımı
şişmanlat



Brain
Insulin Sensitivity +
Decreased Satiety
Increased Satiety
Insulin Sensitivity -
Adipose Tissue
Increased (LPS) Inflammation
Decreased (LPS) Inflammation
Liver
Increased SCFA (Lipogenesis)
Decreased SCFA (Lipogenesis)
Epithelium
Decreased PYY Decreased GLP-1
Increased PYY Increased GLP-1
Muscle
Decreased Fatty Acid Oxidation Decreased FIAF/AMPK
Increased Fatty Acid Oxidation Increased FIAF/AMPK
Obese Gut Microbiota
Lean Gut Microbiota
Large Intestine
Decreased Butyrate Production
Increased Butyrate Production

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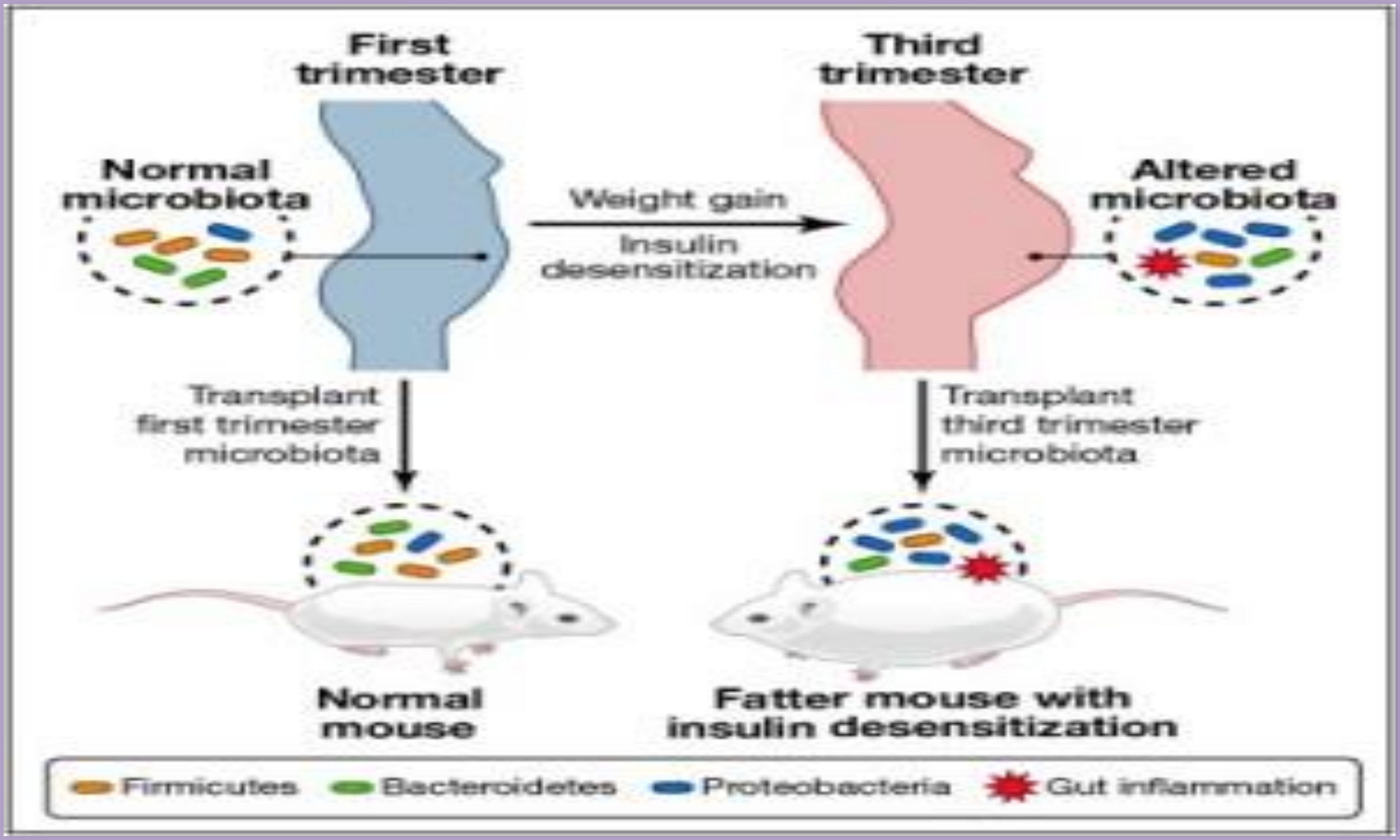


Intestinal microbiota and type 2 diabetes: From mechanism insights to therapeutic perspective

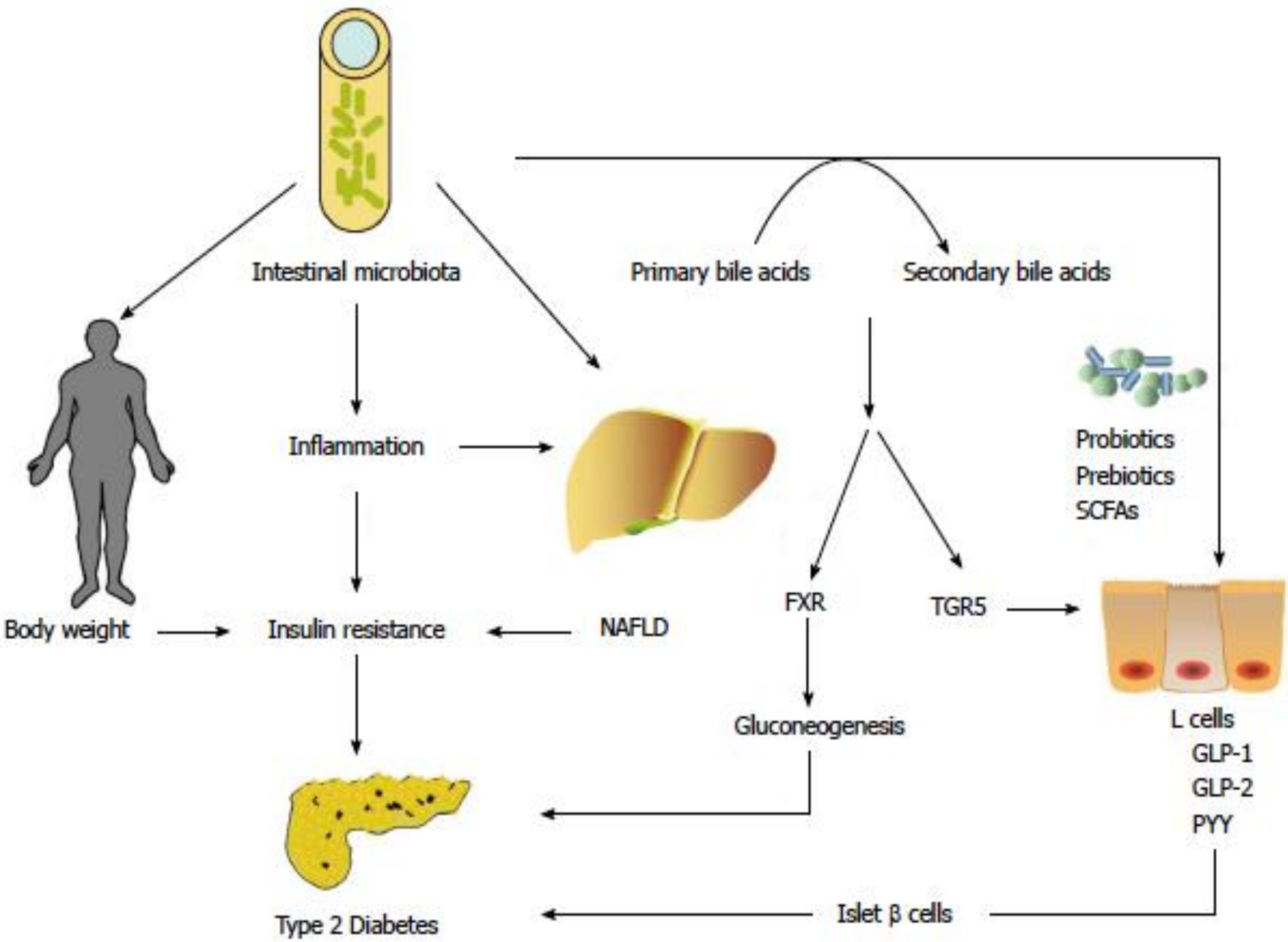


Figure 2 Role of the intestinal microbiota in the pathogenesis of type 2 diabetes. The intestinal microbiota may play an important role in the onset of type 2 diabetes by influencing body weight, bile acid metabolism, proinflammatory activity, NAFLD and insulin resistance, and modulating gut hormones. NAFLD: Non-alcoholic fatty liver disease; SCFAs: Short-chain fatty acids; FXR: Farnesoid X receptor; GLP: Glucagon-like peptide; PYY: Peptide YY.

1- İntesitinal mikrobiyota ile hastalıklar arasında neden-sonuç ilişkisi net

2- Bakterilerin ya da bakteri son ürünlerinin (bütirat) tedavide etkinliği

3- İzole edilen bazı anaerob bakteriler yeni probiyotikler olarak kullanılabilir mi?

Mezenterik viseral yağ dokuda bakteri DNA örnekleri saptanmış

(omentum ve diğer viseral adipoz doku örneklerinde yok)

RALSTONİA PICKETTI

Gram negatif çomak, proteobakter

RALSTONİA PICKETTI

1- Viseral dokuda *R. picektti* yükü ile sistemik inflamasyon arasında pozitif korelasyon mevcut

2- Fecal *R. picketti* düzeyi ile insülin rezistansı olduğu gösterilmiş.

3- Deneysel çalışmada 4 hafta süre ile oral *R. picketti* içeren gavaj alan ratlarda kilo alımının olduğu, OGTT'nin bozulduğu gösterilmiş.

4- *R. picektti* için geliştirilmiş AŞI uygulanan ratlarda insülin rezistansı gelişiminde azalma!!

BÜTİRAT

1- Bütiratın deneysel çalışmalarda insülin sensitivitesinde ve kahverengi yağ dokusu birikiminde düzelme sağladığı gösterilmiştir.

2- Erişkin erkeklerde 1 ay süre ile oral bütirat tedavisinin deneysel çalışmalardakine benzer etkisi gösterilmiştir.

Fecal mikrobiyota analizleri devam ediyor.

ener çağrı dinleyici

EUBACTERIUM HALLİİ

1- Bağırsak mikrobiyotasından elde edilmiş yeni bir porbiyotik ?

2- Deneysel çalışmada 8 hafta süre ile E. hallii verilmesinin insülin sensitivitesi üzerine olumlu etkisinin olduğu gösterilmiş.

3- Kısa zincirli yağ asitleri ve fekal mikrobiyota üzerine olumlu etkileri gösterilmiş.

2014'de Faz 1 ve 2 çalışmalarına başlandı

Meşhur Sokak Pilavcısı Mehmet Usta Lezzet Sırrını Açıkla

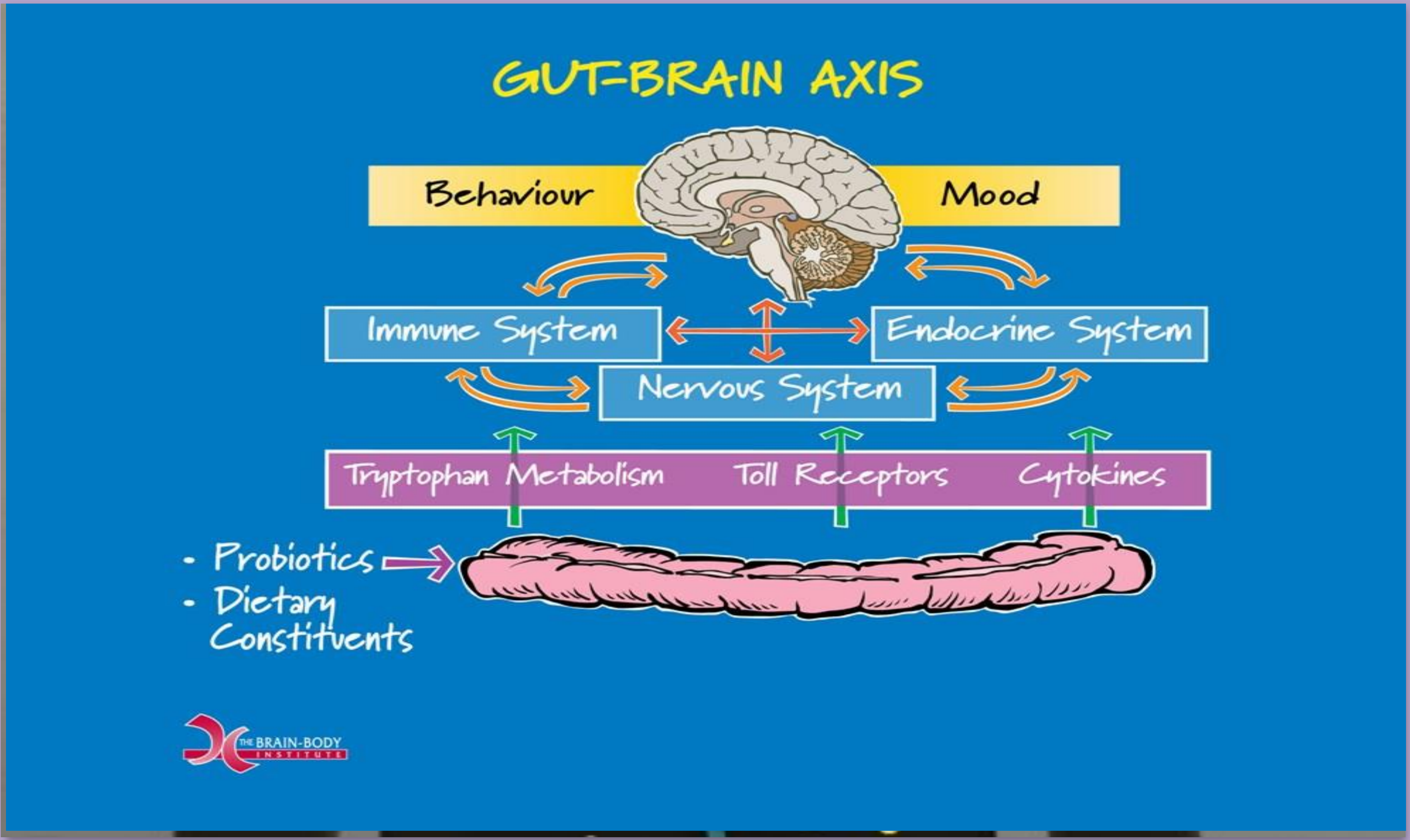
"Pilav normal, bence siz gerizekalısınız"...

30 senedir İstiklal Caddesi'nde seyyar bir tezgahta nohutlu pilav ve ayran satan Mehmet Narenc (56), dillere destan pilavı ve buz gibi ayranı ile İstanbul'da gece hayatı denilince ilk akla gelen isimlerden birisi olmaya devam ediyor. Yıllardır değişmeyen o müthiş tadı nasıl yakaladığı hakkındaki sorular karşısında daha fazla kayıtsız kalamayan Mehmet Usta; başarısının sırrını "Ne değişmeyen tadı, neyin lezzeti? Gerizekalı mısınız arkadaşım siz? Altı üstü pilav lan..." sözleriyle açıkladı.

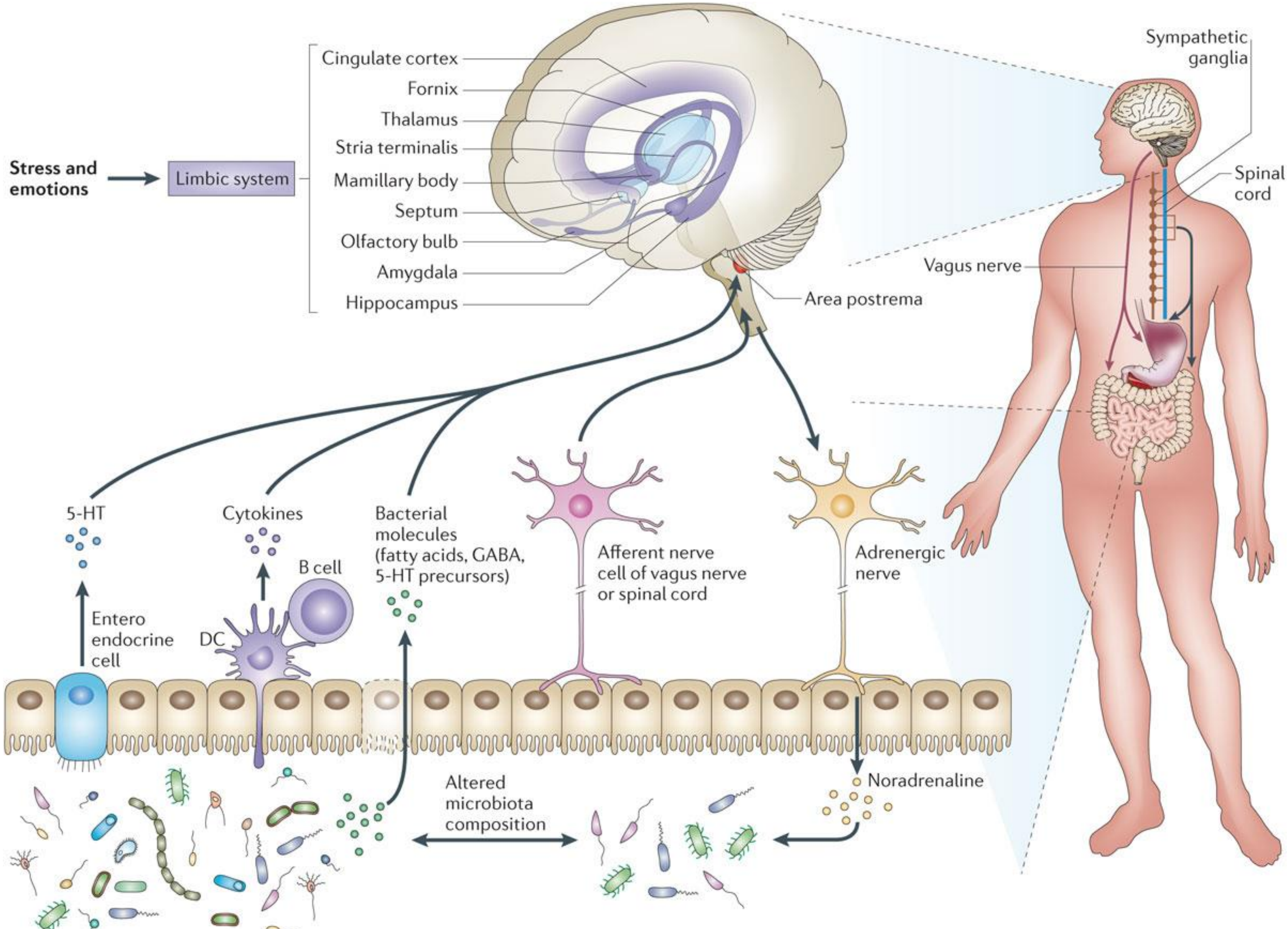
"Açlıktan ölmemek

"Ama tabii çok sürmedi o gaz. 'Vay u
bunun içine ne koyuyosun.', 'Yok yok,
gizli bir tarifi var Mehmet Abi'nin' fala
yince gençler, gittim baktım. Cidden b
hanım bunun içine bilmediğim bir şey m
yuyor diye kontrol ettim. Yok. Bir araba
nasıl yapılırsa, bizim hanım da onu yap
O vakit anladım gece vakti ayyaşın, sarho
dolduruşuna gelmişim. Koca koca adan
yanındaki hatuna 'bak çok
halk insanıyım'

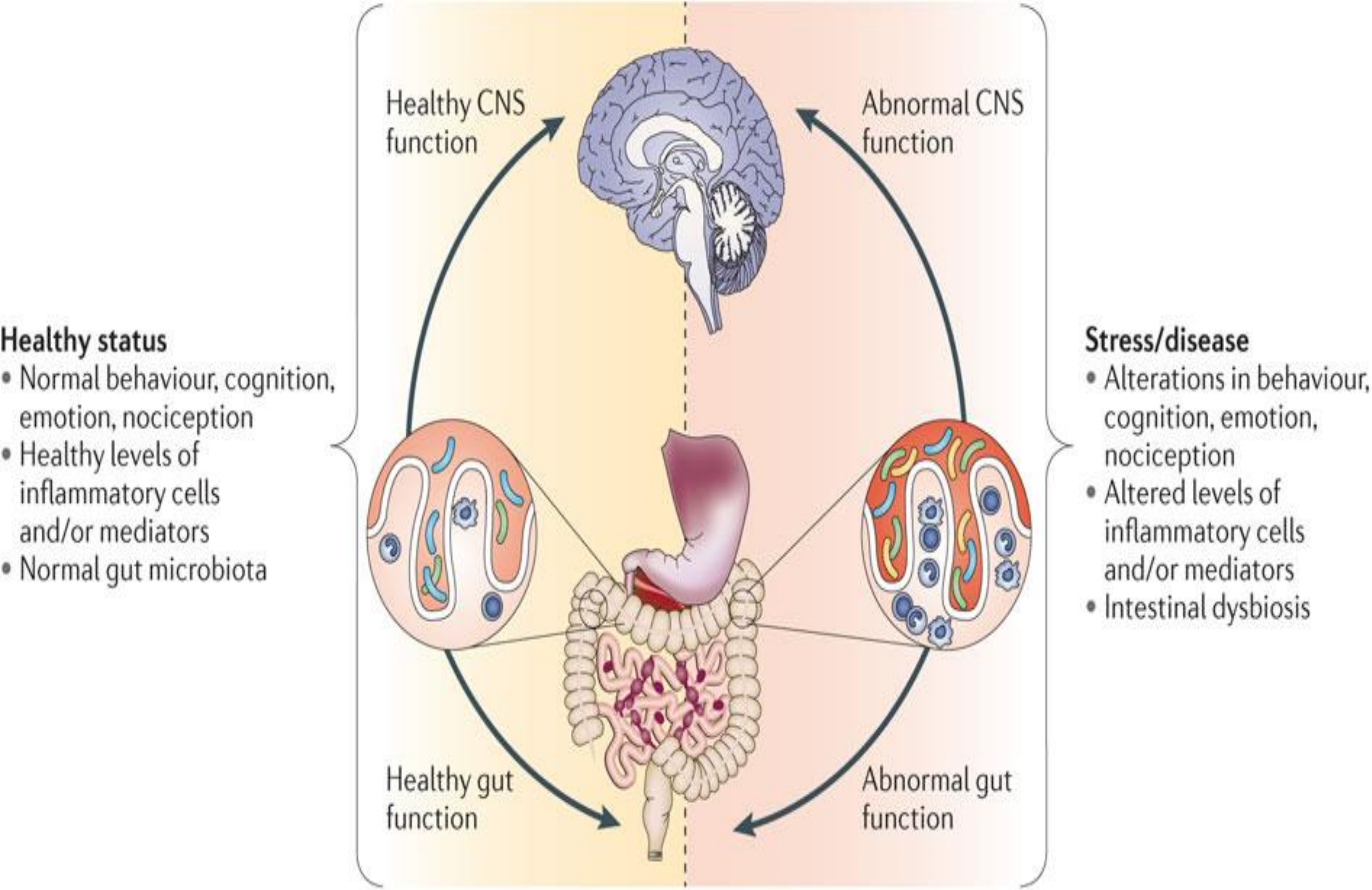
İNTESTİNAL MİKROBİYOTA
GUT BRAIN AXIS



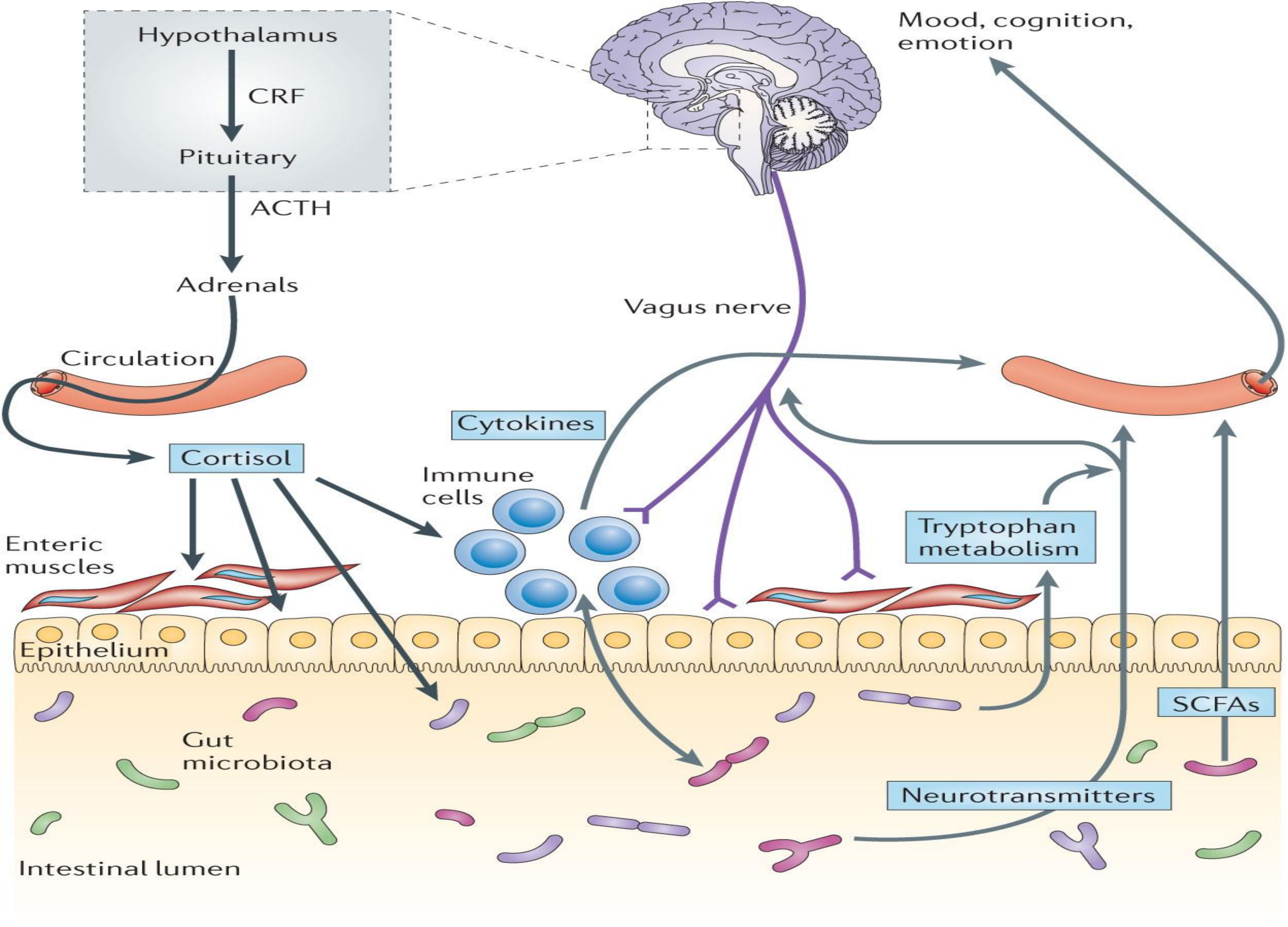

EX HOC PONTE
DEWVNSCHWITZ



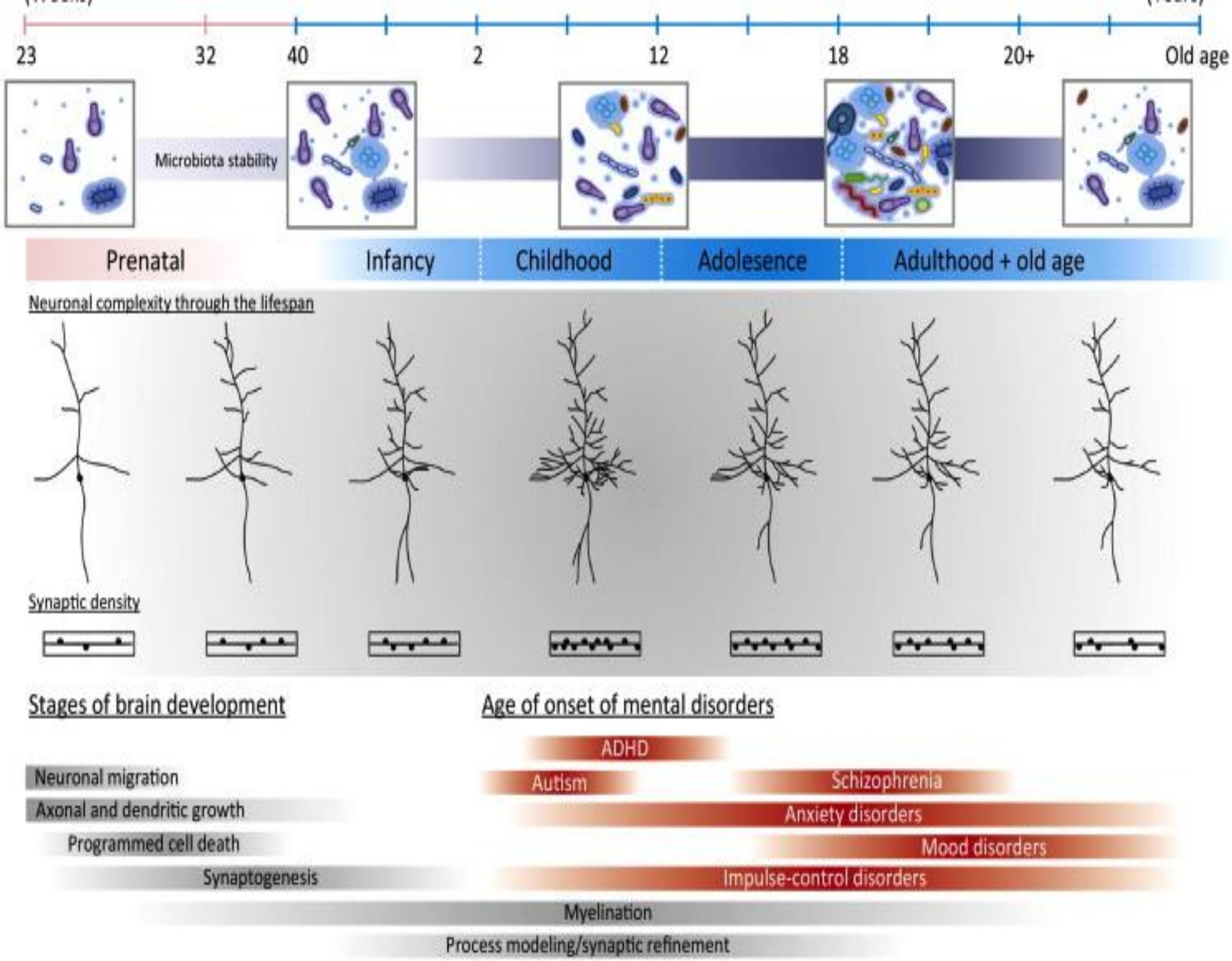
Nature Reviews | Microbiology



Nature Reviews | Neuroscience



Nature Reviews | Neuroscience



23
32
40
2
12
18
20+
Old age
Microbiota stability
Prenatal
Infancy
Childhood
Adolesence
Adulthood + old age
Neuronal complexity through the lifespan
Synaptic density
Stages of brain development
Age of onset of mental disorders
ADHD
Neuronal migration
Autism
Schizophrenia
Axonal and dendritic growth
Anxiety disorders
Programmed cell death
Mood disorders
Synaptogenesis
Impulse-control disorders
Myelination
Process modeling/synaptic refinement

Melancholic microbes or how the microbiota can affect our mood

January 27, 2014, 13:52

- Dinan et al.
- University College Cork
- Deneysel çalışmalarda intestinal mikrobiyota kompozisyonunda değişikliğin depresyon ve anksiyete arasında ilişki olduğu gösterilmiştir.
- Bazı bakterilerin bulunmamasının serotonin bağırsak ve beyinde yeterli düzeyde üretilmediği gösterilmiş (mutluluk?)
- Tedavide probiyotikle

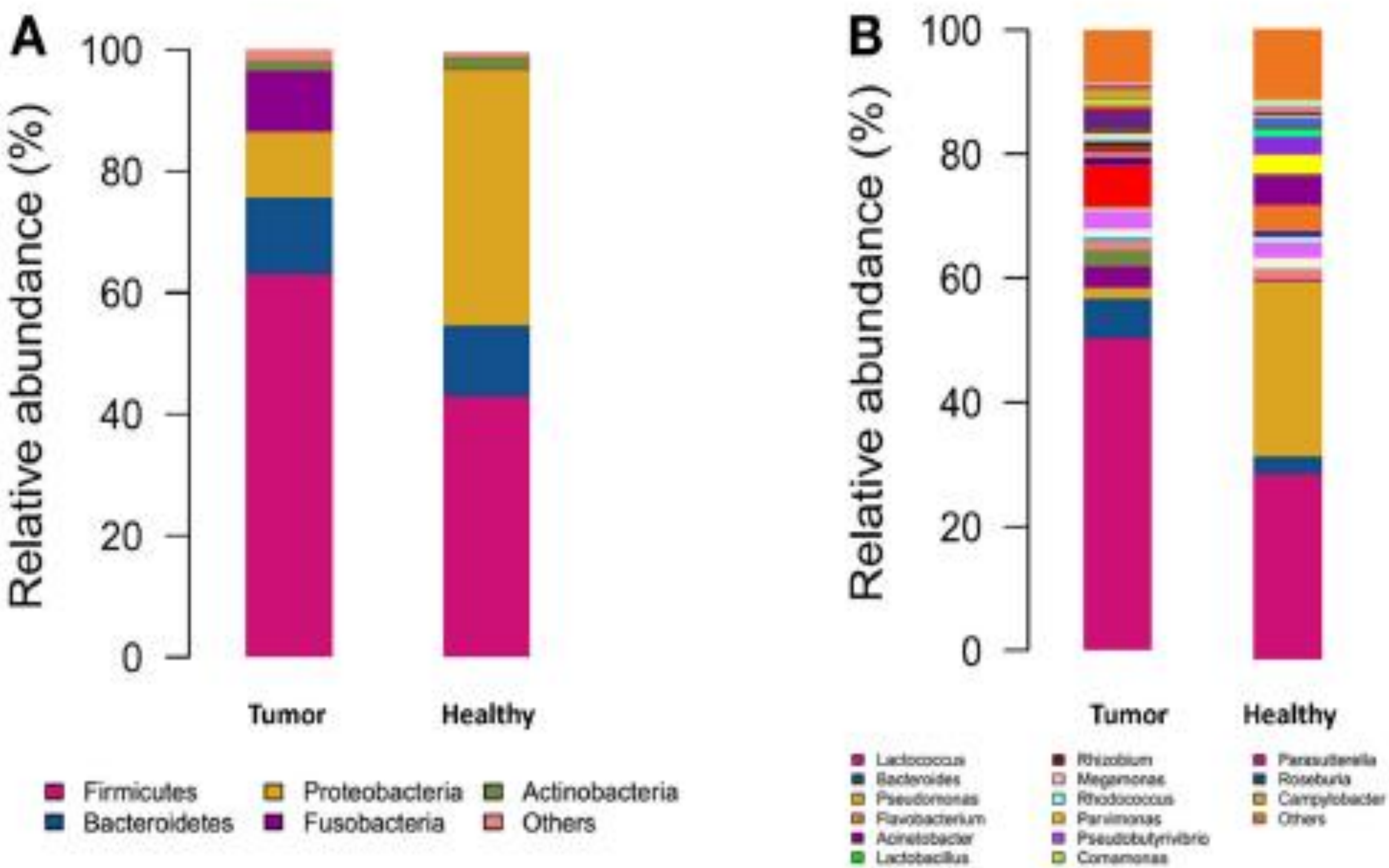
frontiers in
MICROBIOLOGY

ORIGINAL RESEARCH ARTICLE
published: 02 February 2015
doi: 10.3389/fmicb.2015.00020

Microbiota disbiosis is associated with colorectal cancer

Zhiguang Gao†, Bomin Guo†, Renyuan Gao†, Qingchao Zhu and Huanlong Qin*

Department of General Surgery, Shanghai Jiao Tong University Affiliated Sixth People's Hospital, Shanghai, China



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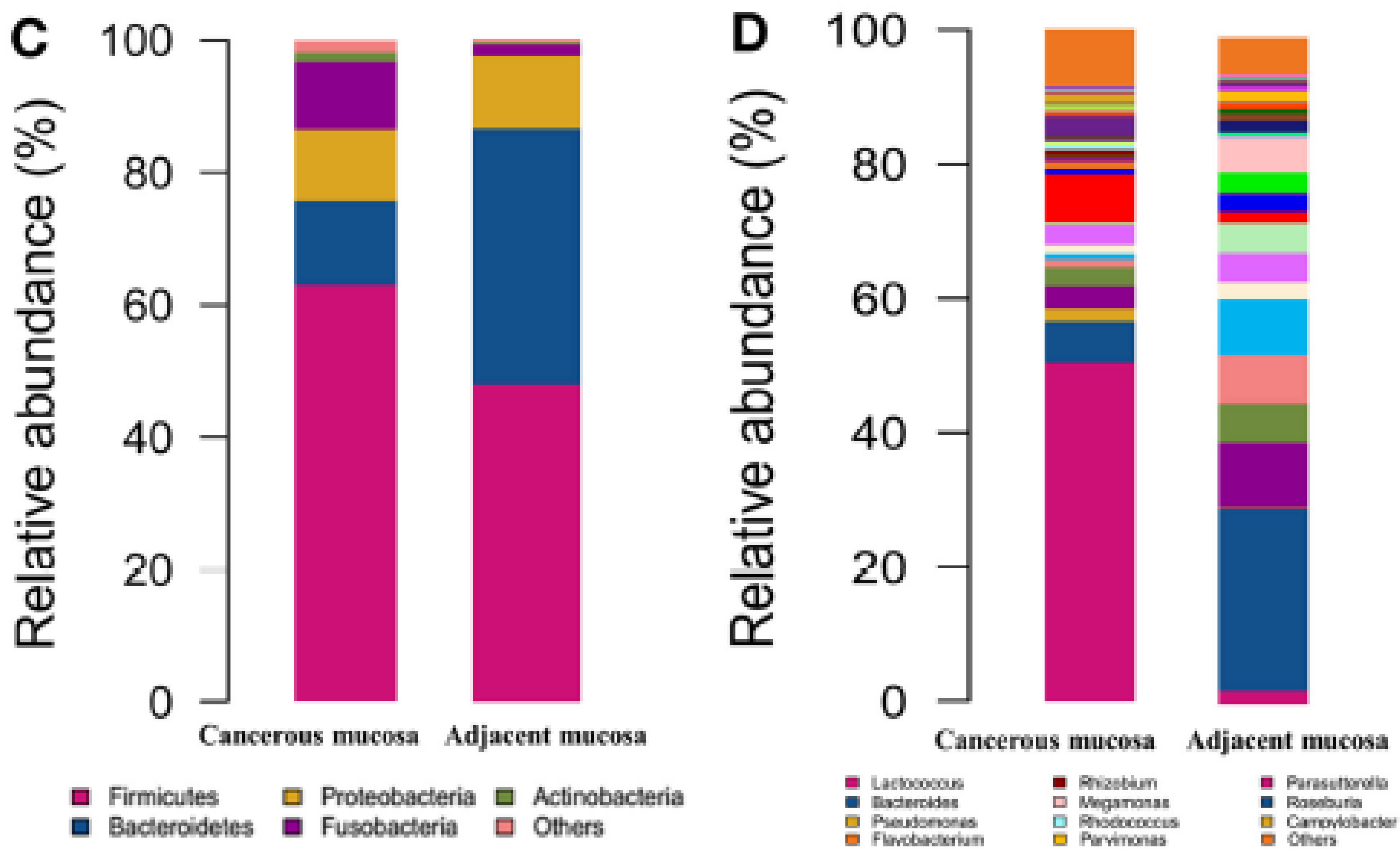


Could gut microbiota help early-stage detection of colorectal cancer?

February 24, 2015, 17:14

- Kolorektal kanser dünyada en sık 3. kanser
  - 2035 yılından sonra her yıl 2.4 milyon vaka
  - Her 20 kişiden birinde görülebilmektedir.
- Erken tanıda kolonoskopi altın standart
  - İnvaziv, özellikle erişkinler katılmak istemiyor
- NON-İNVAZİV TARAMA METODU
  - MetaGeno Polis çalışması
  - Metagenomics çalışma ile intestinla mikrobiyota DNA analizi
  - *Fusobacterium nucleatum*
  - Metagenomics + Faecal occult blood test sensitiviteyi tak başına gaytada kan bakılmasına göre %45 artıyor.

the Rheumatologist
An official publication of the ACR and the ARHP serving rheum

The Microbiome

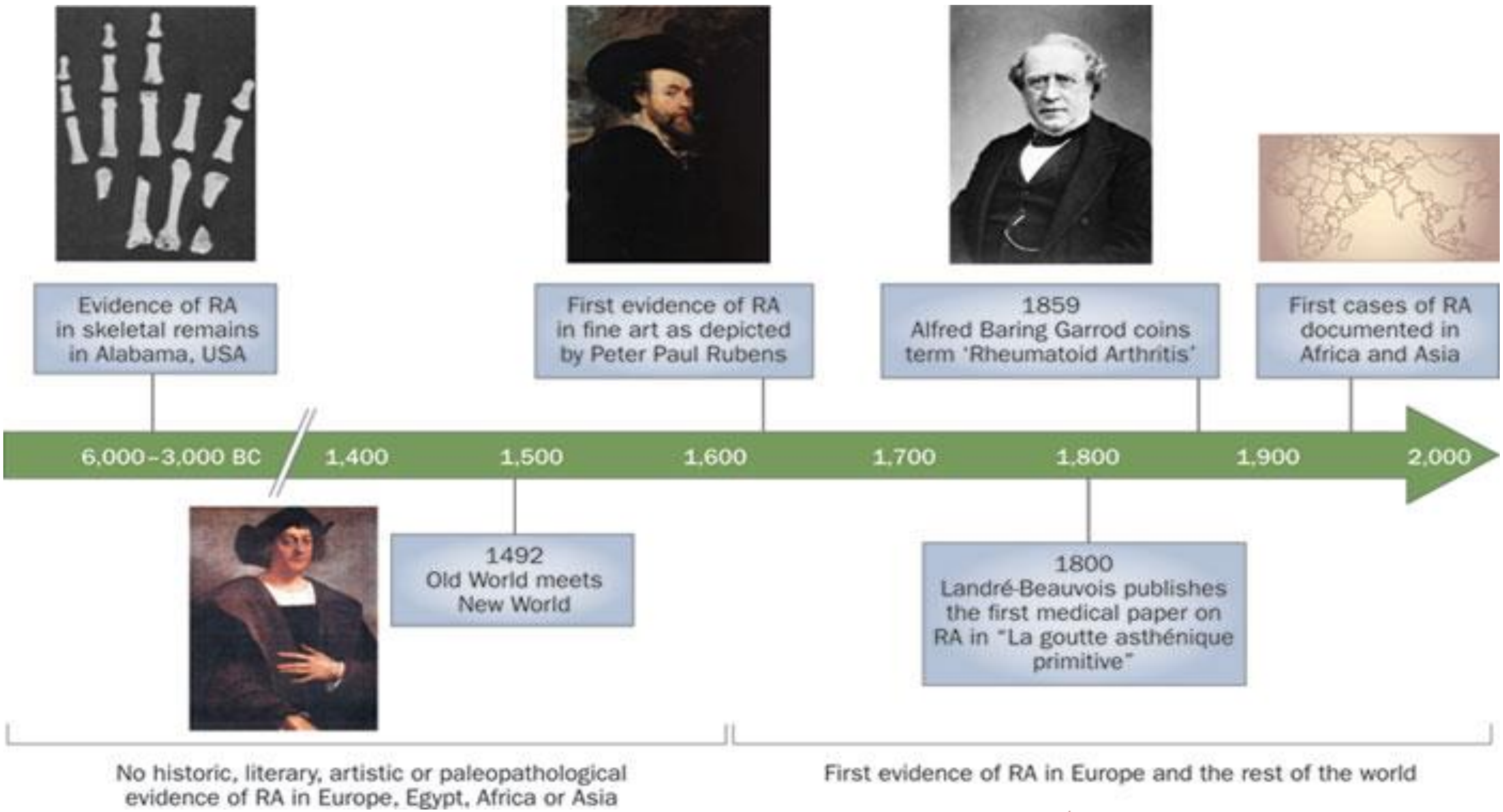
A voyage to (our inner) Lilliput

by Jose U. Scher, MD, Steven B. Abramson, MD

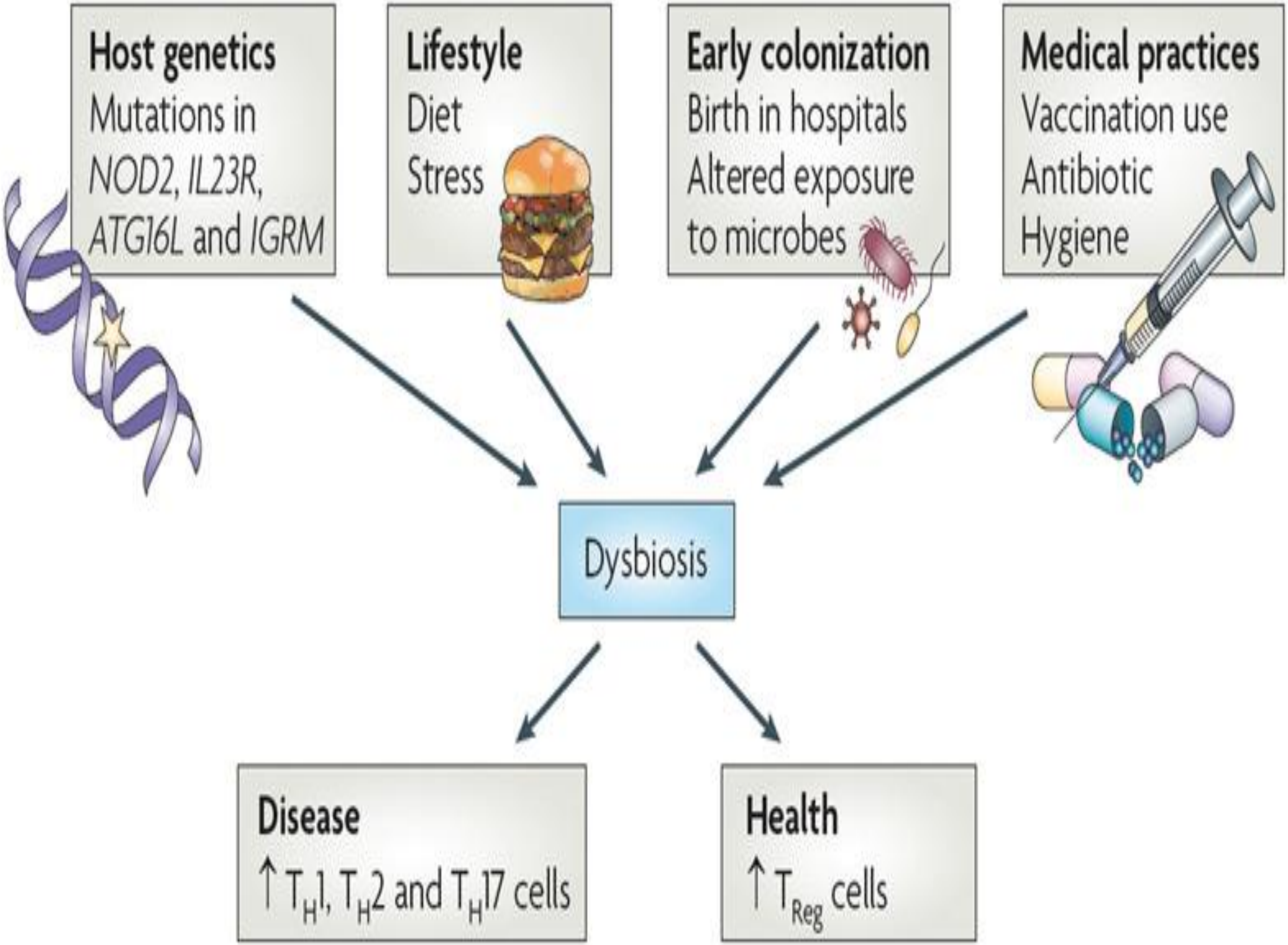
I could not sufficiently wonder at the intrepidity of these diminutive mortals, who durst venture to mount and walk upon my body [...] without trembling at the very sight of so prodigious a creature as I must appear to them.

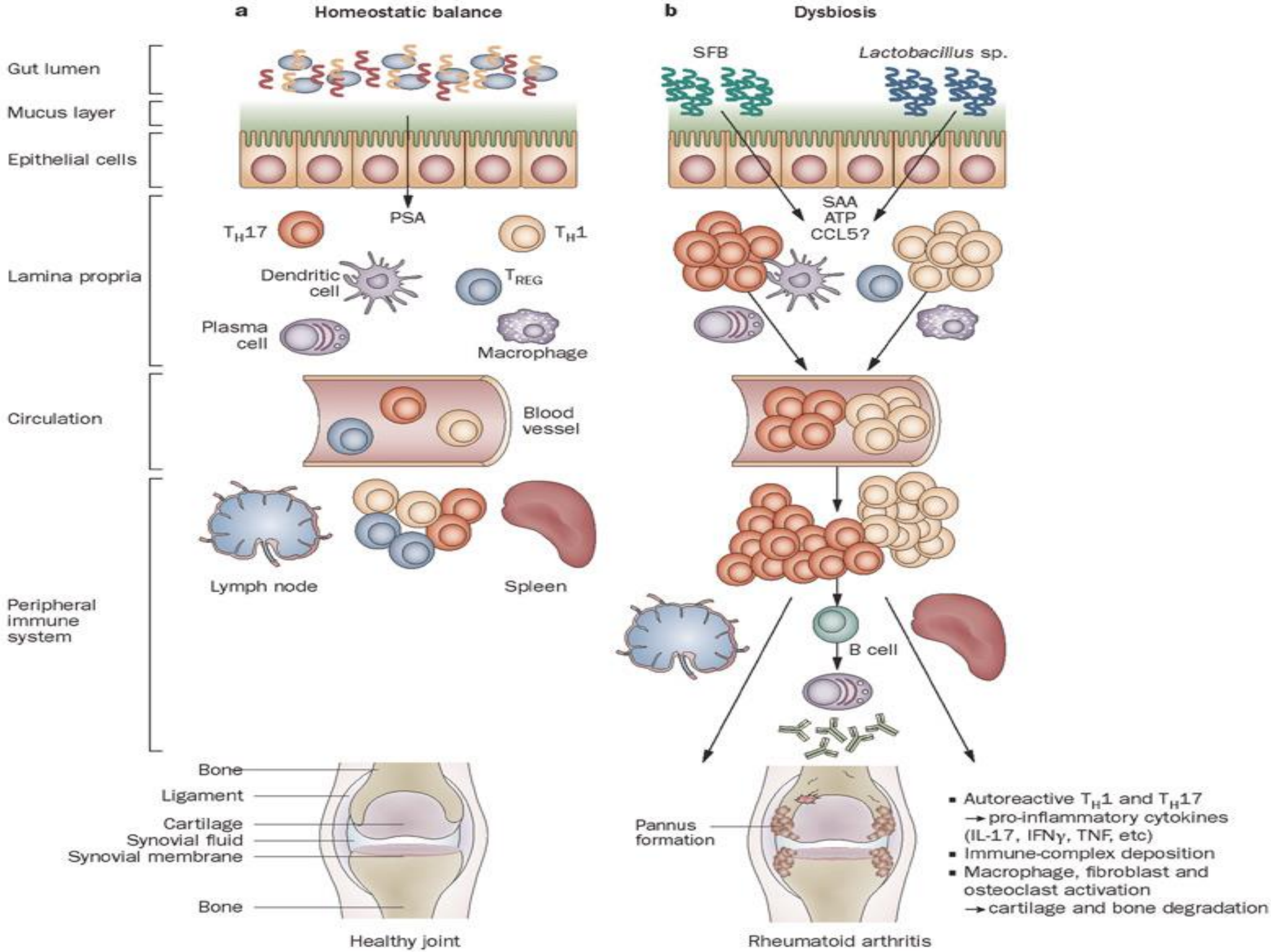
—Jonathan Swift, describing Gulliver's reaction to the Lilliputians, Gulliver's Travels

Figure 1 Historical, literary, artistic and paleopathological evidence of RA as a New World disease that has 'spread' to the rest of the world



Scher, J. U. & Abramson, S. B. (2011) The microbiome and rheumatoid arthritis
Nat. Rev. Rheumatol. doi:10.1038/nrrheum.2011.121


Host genetics
Mutations in
NOD2, *IL23R*,
ATG16L and *IGRM*
Lifestyle
Diet
Stress
Early colonization
Birth in hospitals
Altered exposure
to microbes
Medical practices
Vaccination use
Antibiotic
Hygiene
Dysbiosis
Disease
↑ T_H1, T_H2 and T_H17 cells
Health
↑ T_{Reg} cells



a
Homeostatic balance
b
Dysbiosis
Gut lumen
Mucus layer
Epithelial cells
Lamina propria
Circulation
Peripheral immune system
PSA
T_H17
T_H1
Dendritic cell
T_{REG}
Plasma cell
Macrophage
Blood vessel
Lymph node
Spleen
SFB
Lactobacillus sp.
SAA
ATP
CCL5?
B cell
Bone
Ligament
Cartilage
Synovial fluid
Synovial membrane
Bone
Healthy joint
Pannus formation
Rheumatoid arthritis
▪ Autoreactive T_H1 and T_H17 → pro-inflammatory cytokines (IL-17, IFNγ, TNF, etc)
▪ Immune-complex deposition
▪ Macrophage, fibroblast and osteoclast activation → cartilage and bone degradation

Table 1: Recent Evidence on the Link Between *P. gingivalis* and RA

Study	Evidence
Wegner N, et al. *Arthritis Rheum.* 2010	Peptidyl arginine deiminase, type I from *P. gingivalis* citrullinates human fibrinogen and α-enolase.
Kinloch AJ, et al. *Arthritis Rheum.* 2011	Human α-enolase induces autoimmunity and arthritis in DR4 mice.
Lundberg, et al. *Arthritis Rheum.* 2008; Mikuls TR, et al. *Int Immunopharmacol.* 2009	Antibodies to *P. gingivalis* (CEP-1, PPAD) are significantly higher in RA patients and correlate with the presence of anti-citrullinated protein antibodies.
Mikuls TR, et al. *Arthritis Rheum.* 2012; Hitchon CA, et al. *J Rheum.* 2011	Immune response to *P. gingivalis* is also higher in individuals at risk for RA.
Scher JU, et al. *Arthritis Rheum.* 2012	New-onset DMARD-naive RA present with advanced periodontal disease. Evidence of *P. gingivalis* in new-onset RA by both 16S rRNA and serology, with data showing 55% abundance of P. gingivalis (16S rRNA) in new-onset RA and about 35–60% anti-*P. gingivalis* Abs (serology) in early RA.

More and more diseases linked to disturbed gut flora

ANTİBİYOTİK İLİŞKİLİ İSHAL

ANTİBİYOTİK İLİŞKİLİ İSHAL

Antibiotic side effects

Nausea

Abdominal distension

Headache

Taste disturbance

Abdominal pain

Vomiting

Diarrhea

Antibiotic-Associated Diarrhea (AAD) is defined as otherwise unexplained diarrhea that occurs in association with the administration of antibiotics.

(NEJM 2002; 346:334-9)

ANTİBİYOTİK İLİŞKİLİ İSHAL

scientific report

Antibiotic Exposure and IBD Development Among Children: A Population-Based Cohort Study

Matthew P. Kronman, Theoklis E. Zaoutis, Kevin Haynes, Rui Feng and Susan E. Coffin

Pediatrics; originally published online September 24, 2012;
DOI: 10.1542/peds.2011-3886

Marta Wlodarska[1,2], Navkiran Gill[2], Marie-Renée Blanchet[5], William W. Mohn[1,4], Kelly M. McNagny[3+] & Brett B. Finlay[1,2++]

[1]Department of Microbiology & Immunology, [2]Michael Smith Laboratories, [3]The Biomedical Research Center, and [4]The Life Sciences Institute, University of British Columbia, Vancouver, British Columbia, Canada, and [5]Centre de Recherche, Institut Universitaire de Cardiologie et de Pneumologie de Québec, Quebec City, Quebec, Canada

ANTİBİYOTİK İLİŞKİLİ İSHAL

International Journal of Obesity (2013) **37,** 16–23

www.nature.com/ijo

PEDIATRIC ORIG

Infant antib

L Trasande[1,2,3], J Bluste

Antibiotic Ex

Matthew P. Kronman,

Pediatrics;

ANTİBİYOTİK İLİŞKİLİ İSHAL

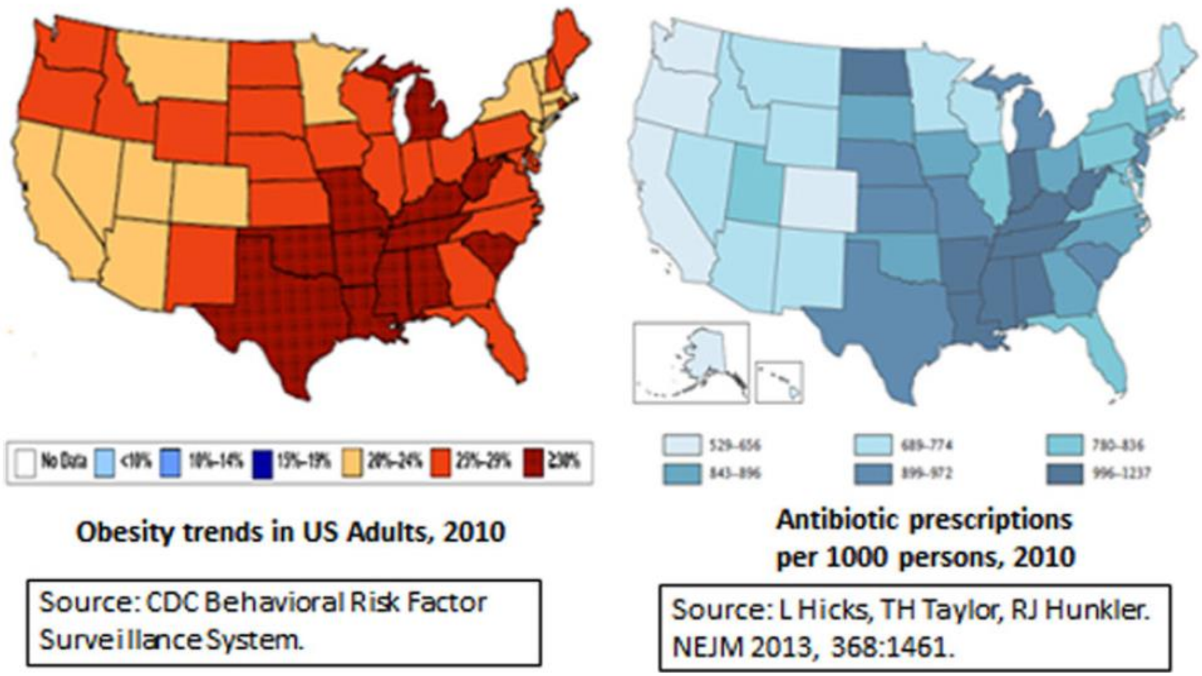
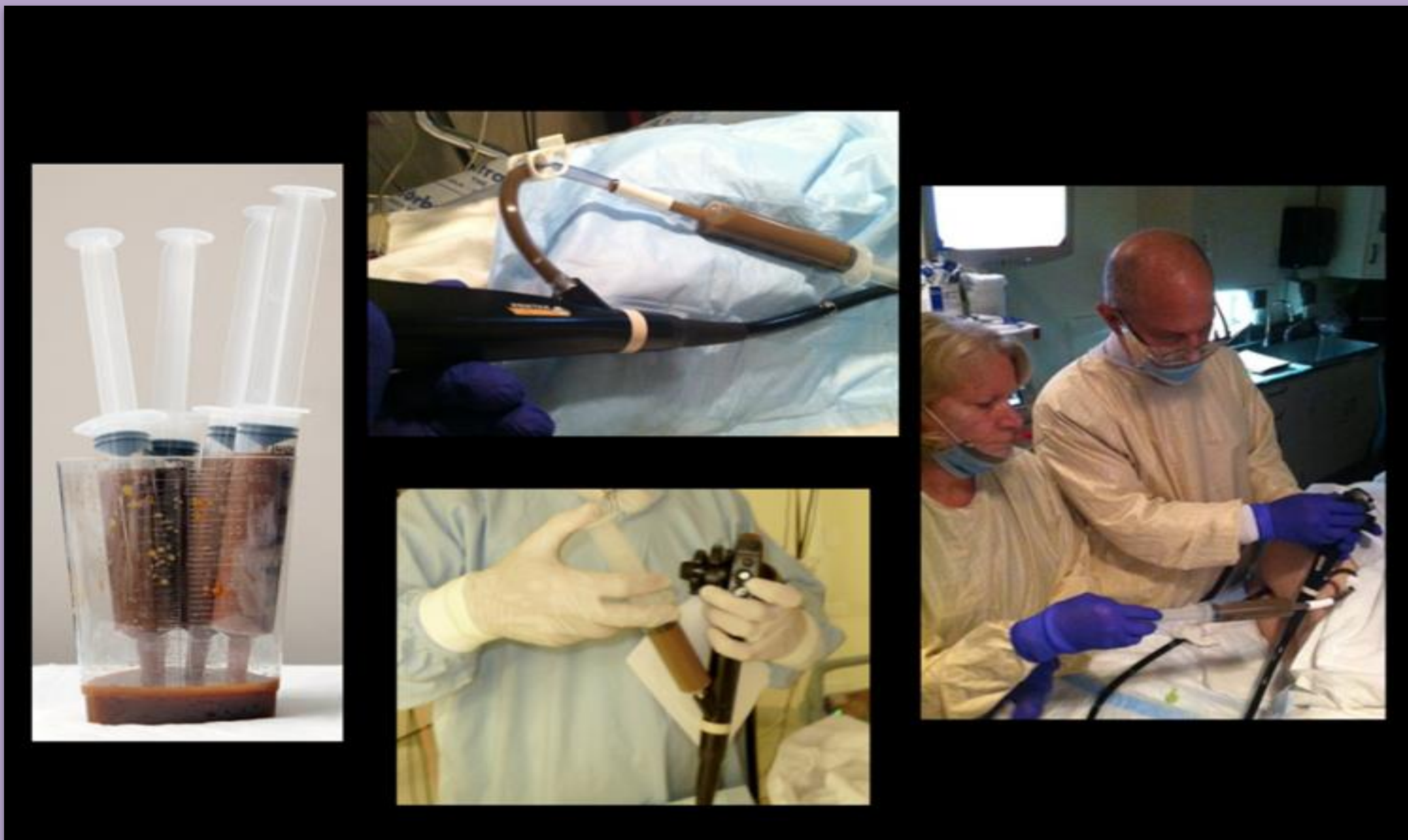


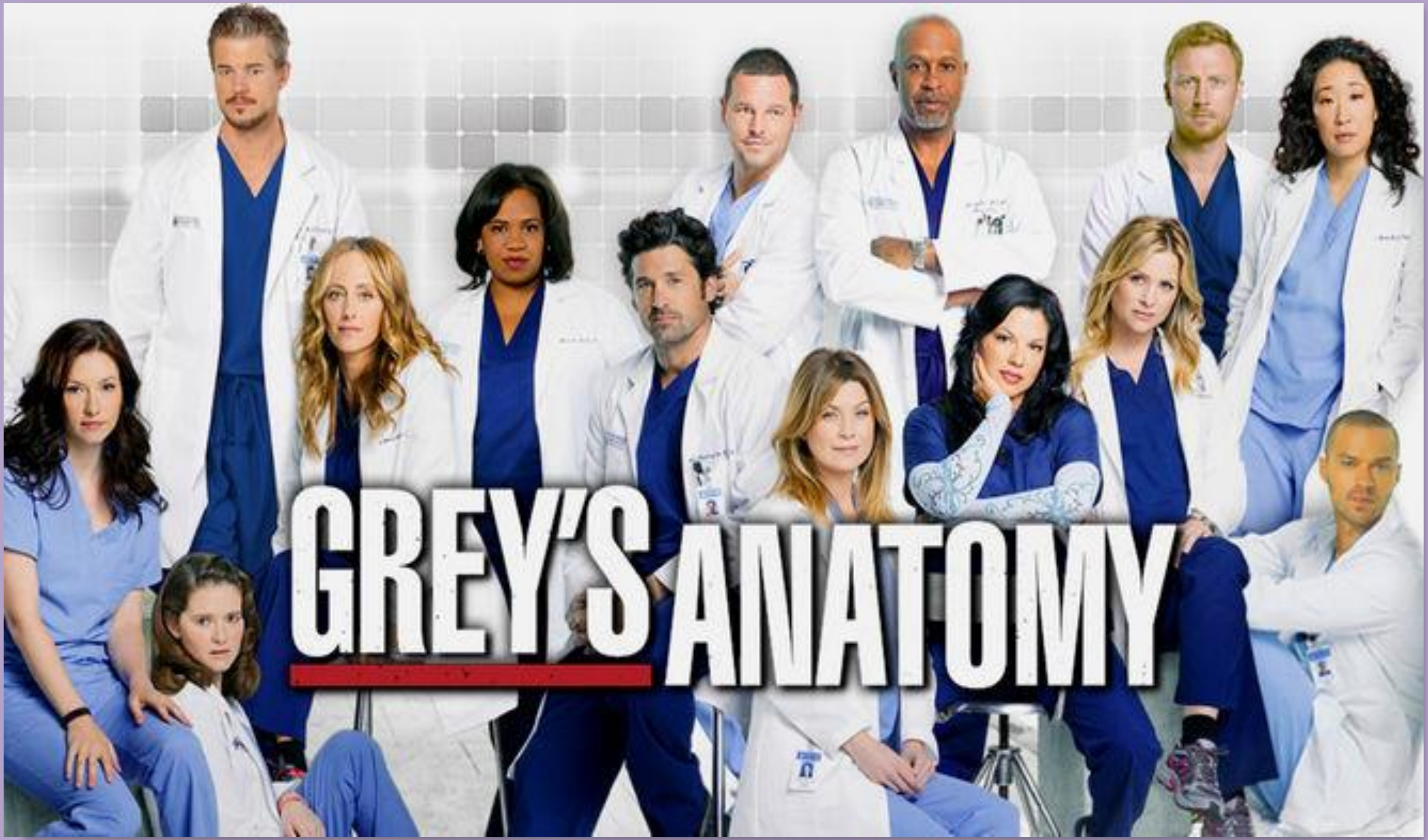
Figure 2. Comparisons between the geographical distribution of obesity (*left*) and antibiotic use in the United States, 2010 (*right*). Obesity trend data were from the CDC Behavioral Risk Factor Surveillance System (http://www.cdc.gov/brfss/). Antibiotic prescriptions were from a national survey of out-patient pharmacy records, as described by Hicks, *et al.*[55]

CLOSTRIDIUM DIFFICILE



Brandt LJ ACG Meeting Oct. 2012

FEKAL TRANSPLANTASYON



FEKAL TRANSPLANTASYON-PROTOKOL

DONÖR SEÇİMİ: Eş ya da birlikte yaşadığı kişi, 1.derece akraba, ev arkadaşı, diğer kişiler, universal donor, gayta bankacılığı

Alınmama kriteri: son 3 ayda antibiyotik kullanımı, ishal-konstipasyon, IBS, IBD, kolorektal kanser, immunosupresif kullanımı, obesite, atopi, riskli davranış profili

Donör testleri: Gayta kültürü (Listeria ve vibrio dahil), C. difficile, H. pylori, Giardia antijeni, Cryptosporidium, Isospora, Norovirus, Kanda Hepatit A, B, C, sifiliz, HIV 1-2

FEKAL TRANSPLANTASYON-PROTOKOL

DONÖR HAZIRLIĞI:

1- İşlemden 1 gece önce laksatif uygulaması

2- İşlemden 6 saat öncesinde gayta örneğinin alınması

3- Gayta örneğinin dondurulması

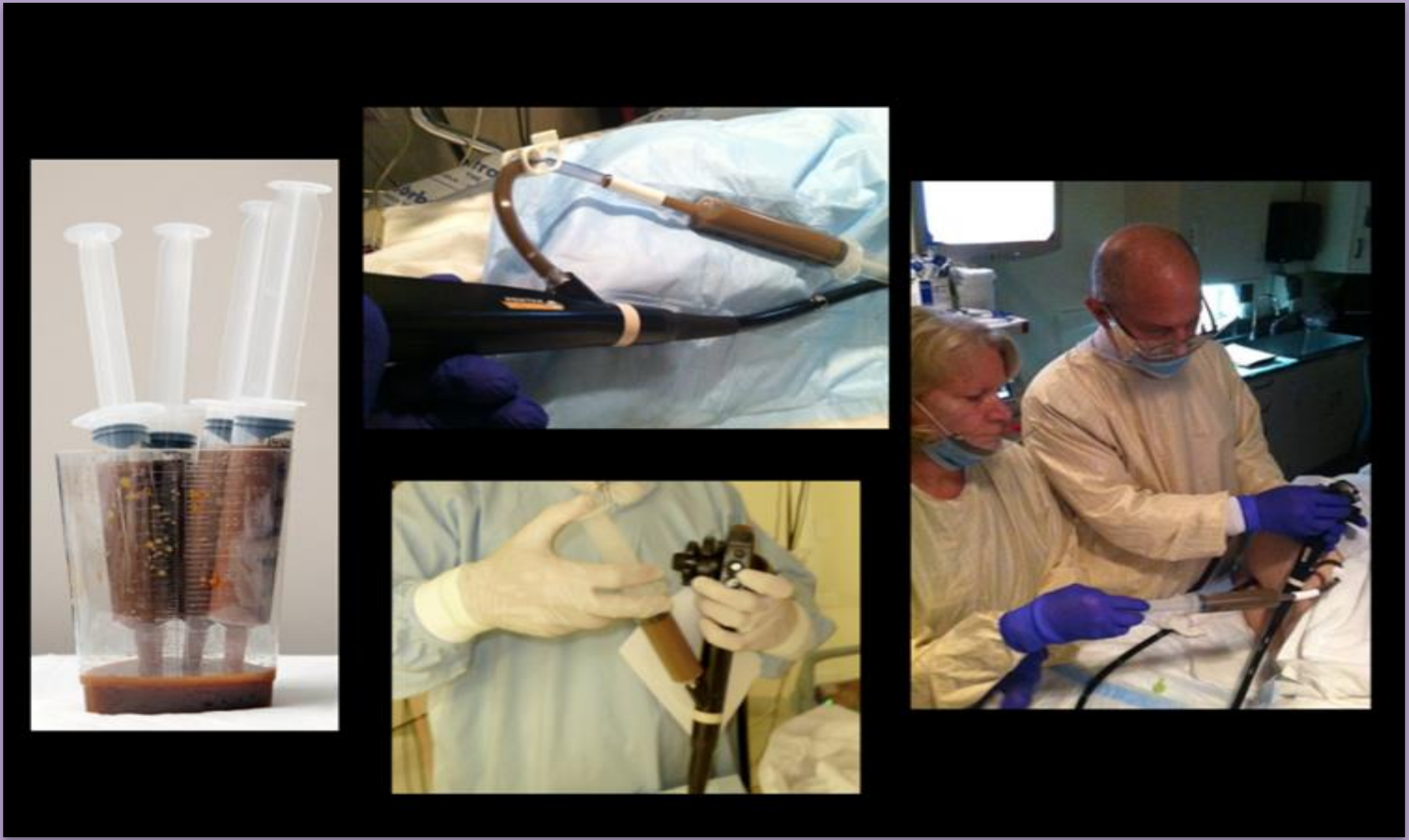
ALICI HAZIRLIĞI

1- İşlemden 2-3 gün öncesinden başlayarak antibiyotik

2- Yüksek volümlü kolonoskopi ile hazırlık

3- İşlem öncesi loperamid

CLOSTRIDIUM DIFFICILE



Brandt LJ ACG Meeting Oct. 2012

Opportunity 2: fecal transplant

- Application of entire microbiome
- *Clostridium difficile* infection *(Elseman et al. Surgery 1958 44: 854)*
- Metabolic syndrome (Vrieze et al. Gastroenterology 2012: 143:913-6)
- Diabetes, Inflammatory bowel disease… ?

However:
- **Badly characterized**
- **Infection transmission**
- **Patient acceptance**

FEKAL TRANSPLANTASYON-SONUÇLAR

GASTROİNTESTİNAL HASTALIKLAR

-TEKRARLAYAN *C. DIFFICILE* ENFEKSİYONLARI

- 273 OLGUDA %90 BAŞARI SAĞLANMIŞ, YAN ETKi YOK.

- İDİYOPATİK KONSTİPASYON

- İRRİTABL BAĞIRSAK SENDROMU

- İNFLAMATUAR BAĞIRSAK HASTALIKLARI

FEKAL TRANSPLANTASYON-SONUÇLAR

NON- GASTROİNTESTİNAL HASTALIKLAR

-OTİZM

- KRONİK YORGUNLUK SENDROMU

- ALKOLİK KARACİĞER HASTALIĞI

- FİBROMYALJI

- ITP

-METABOLİK SENDROM

-MULTİPL SKLEROZ

-PARKİNSON HASTALIĞI

FEKAL TRANSPLANTASYON-GELECEK?

- **EVRENSEL DONÖRLERDEN DONDURULMUŞ GAYTA**
- **SENTETİK GAYTA (REPOOPULATE): 33 bakteri**
- **3 BAKTERİ İÇEREN FORMÜLLER**
  - ***Bacteriodes ovatus, fragilis, thetatoitaomicron)***
- **FT KAPSÜLLERİ (CRAPSULES)**
  - **ICAAC 2014'de C. difficile'de başarı %93-100**
- **GAYTA BANKACILIĞI**

FEKAL TRANSPLANTASYON

EDITORIAL COMMENTARY

Fecal Microbiota Transplant: Benefits and Risks

Ana A. Weil[1,2] **and Elizabeth L. Hohmann**[1,2]

[1]Division of Infectious Diseases, Massachusetts General Hospital, and [2]Harvard Medical School, Boston, Massachusetts

ClinicalTrials.gov

A service of the U.S. National Institutes of Health

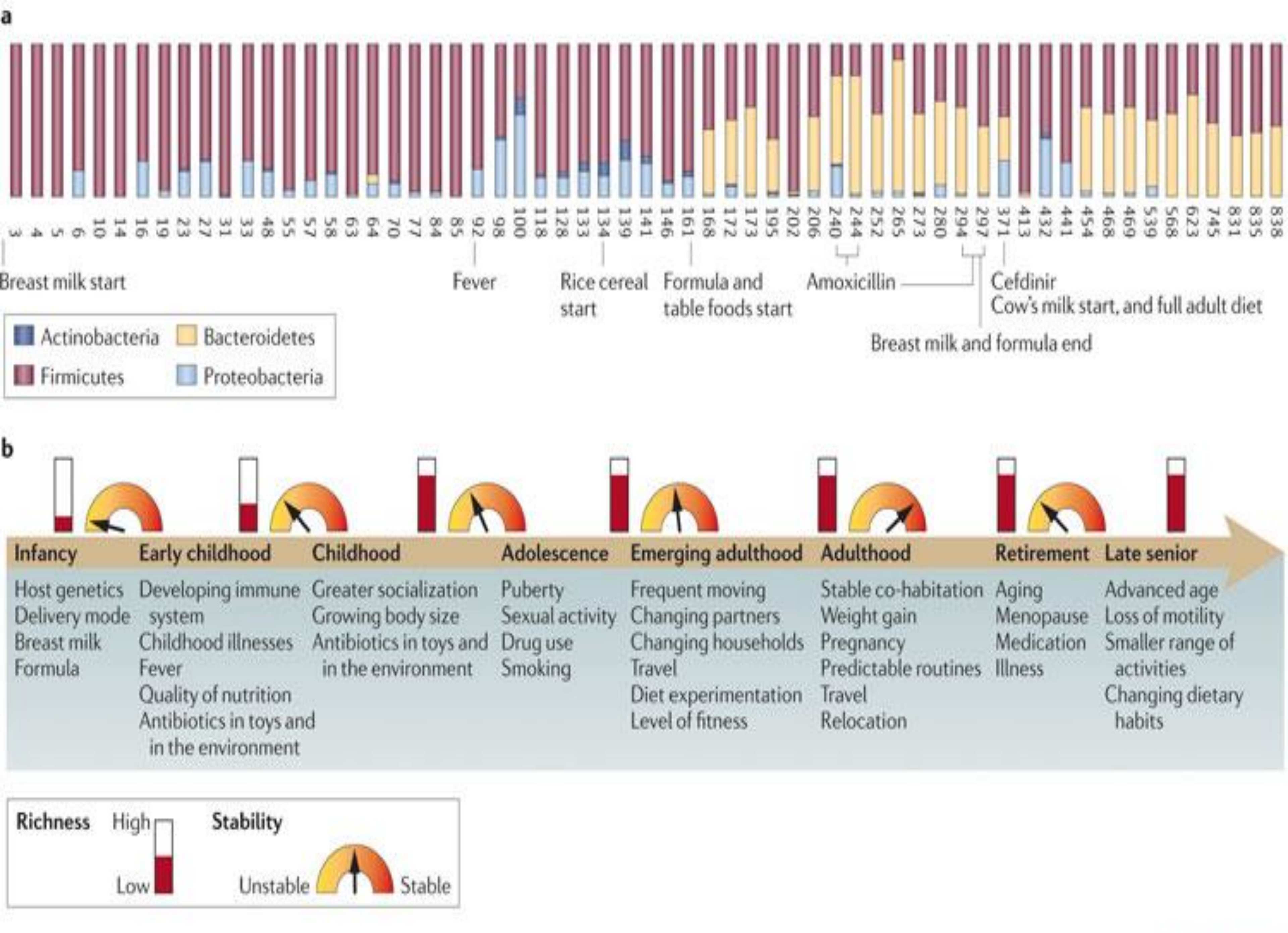
- Fekal transplantasyon ile ilgili 63 çalışma halen devam ediyor.

1	Recruiting	Fecal Microbiota Transplantation in Patients With Irritable Bowel Syndrome **Condition:** Irritable Bowel Syndrome (IBS) **Intervention:** Other: Fecal transplantation
2	Recruiting	Fecal Microbial Transplantation in Treatment of Irritable Bowel Syndrome; a Double Blinded Placebo Controlled Trial. **Condition:** Irritable Bowel Syndrome **Intervention:** Other: Fecal transplantation
3	Recruiting	Impact of the Fecal Flora Transplantation on Crohn's Disease **Condition:** Crohn's Disease **Interventions:** Other: Fecal Transplantation; Other: Sham Transplantation
4	Recruiting	Proposal to Examine the Effect of Fecal Transplantation on Obesity **Condition:** Disorientation as to People, Time and Place **Interventions:** Other: fecal material; Other: normal saline
5	Recruiting	Effects of Pectin on Flora Intestinal Colonization and Maintenance After Fecal Transplantation **Condition:** Inflammatory Bowel Disease **Interventions:** Other: co-transplantation of FMT and pectin; Other: single fecal microbiota transplantation; Dietary Supplement: pure give pectin 20g/d for five days

FEKAL TRANSPLANTASYON-GELECEK?

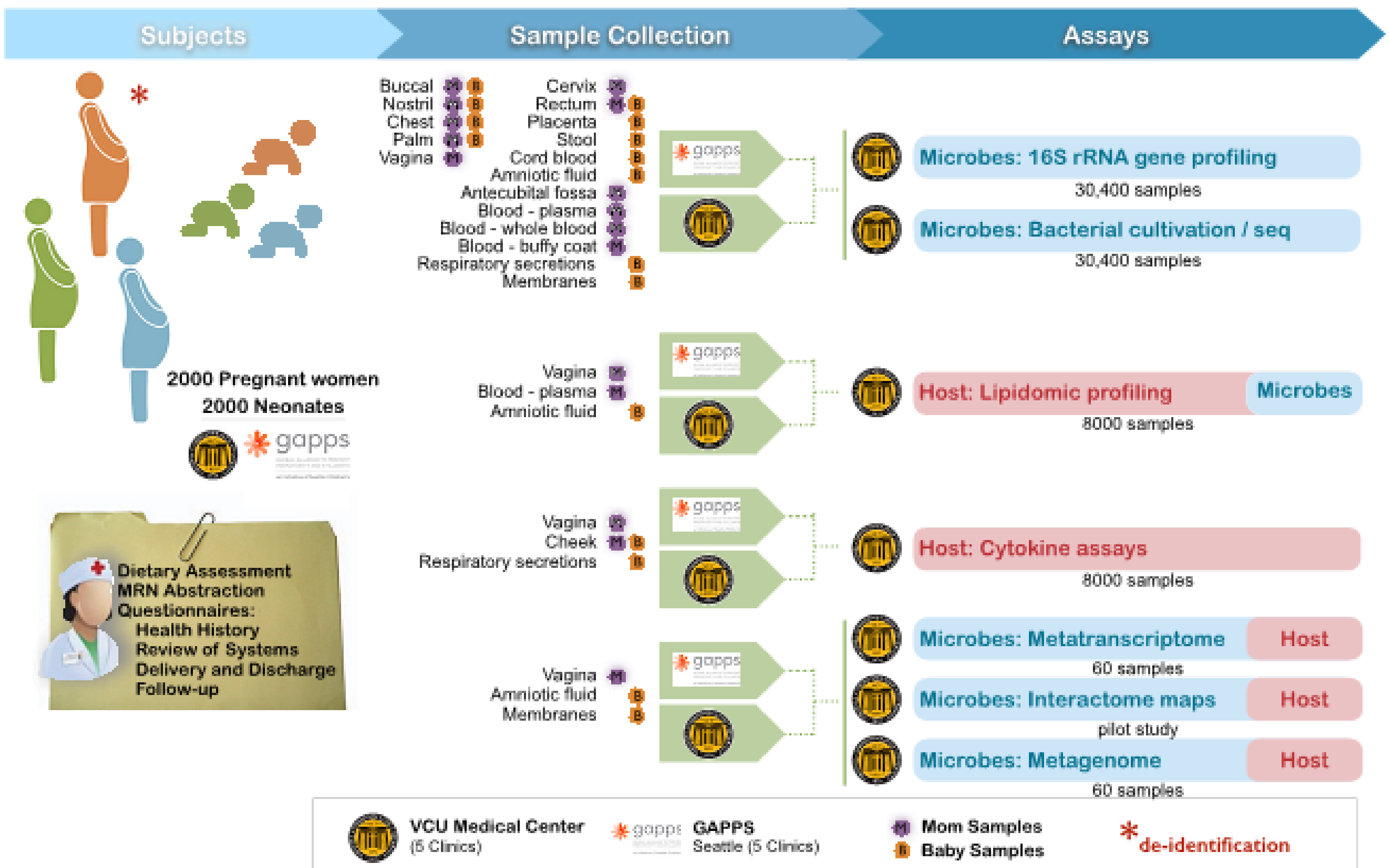
ener çağrı dinleyici

- Uygun bakterinin saptanması için çalışmalar devam ediyor
  - Uygun bakteri ile bioaktif komponentin verilmesi
- Veriliş yolu ve şekli ile ilgili çalışmalar
- Yan etki ve etik koşullar
  - Kısa dönemde enfeksiyon ve alerji
  - Donörün risk altında olduğu hastalıkların nakli??
  - Dönör mikrobiyotası ne kadar süre ile alıcının mikrobiyotasını taşır??



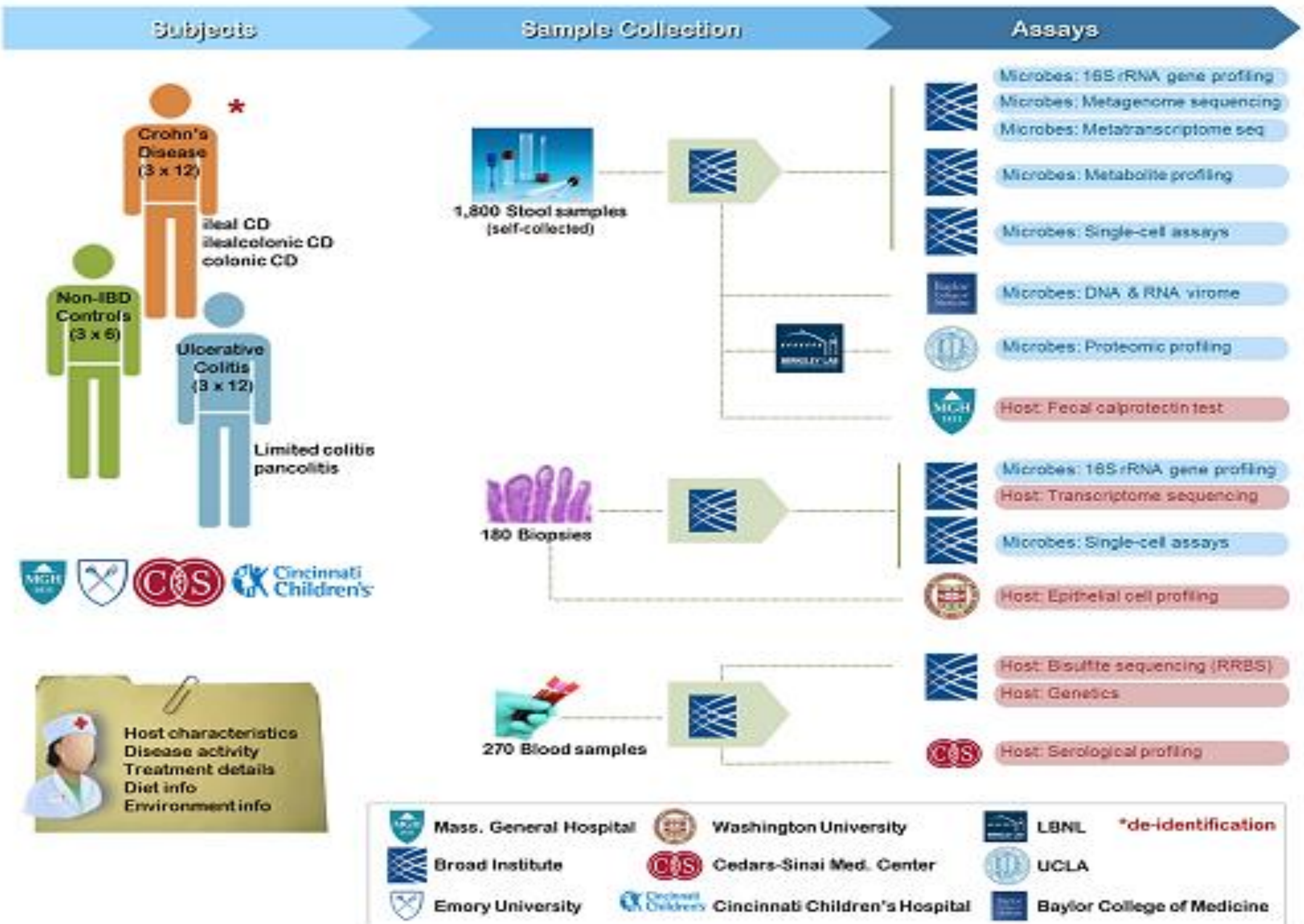
Nature Reviews | Microbiology

Human Microbiome Project (2nd Step)



The Integrative HMP (iHMP) Research Network Consortium. Cell Host Microbe 2014.

Human Microbiome Project (2nd Step)



The Integrative HMP (iHMP) Research Network Consortium. Cell Host Microbe 2014.

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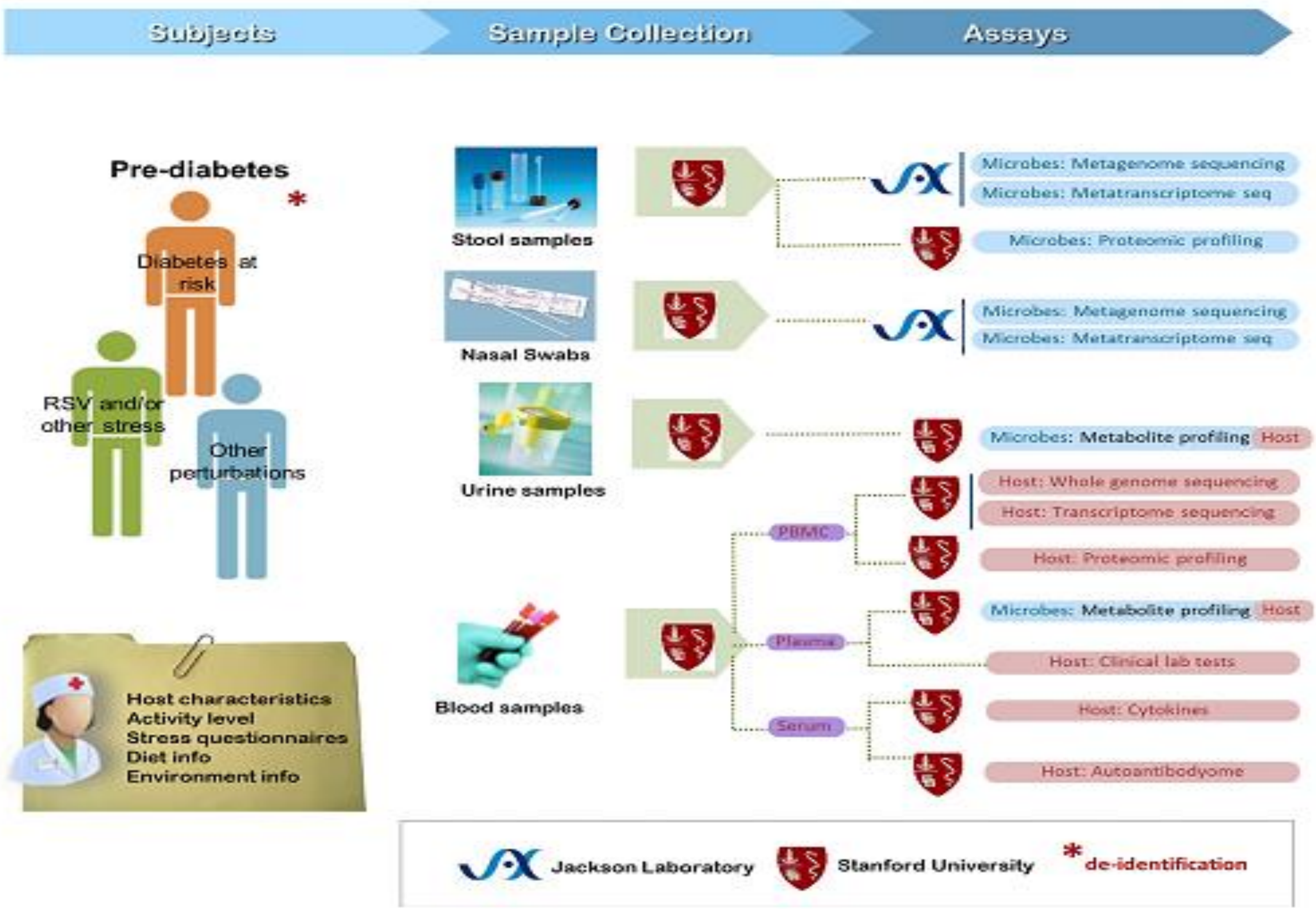
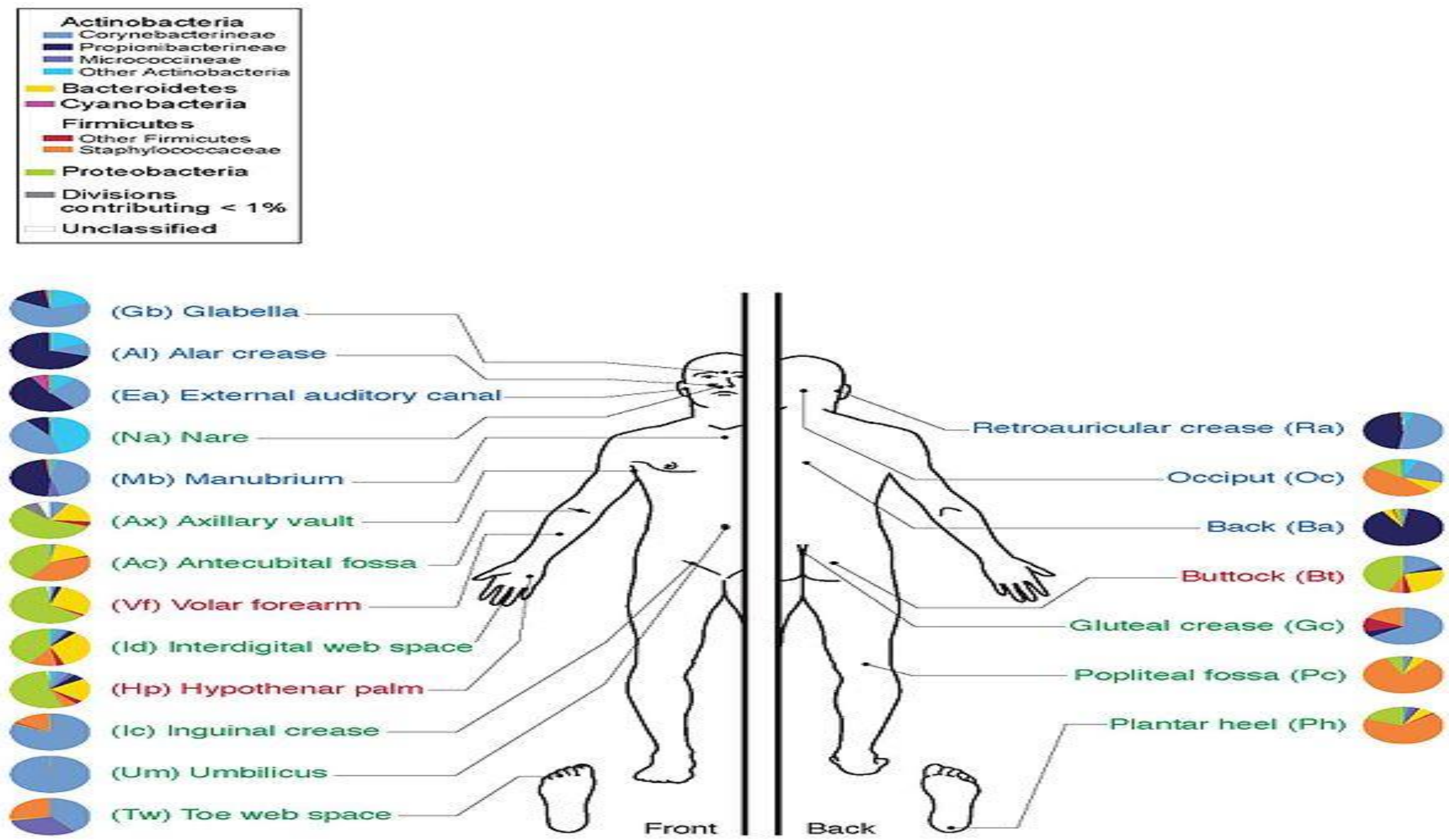
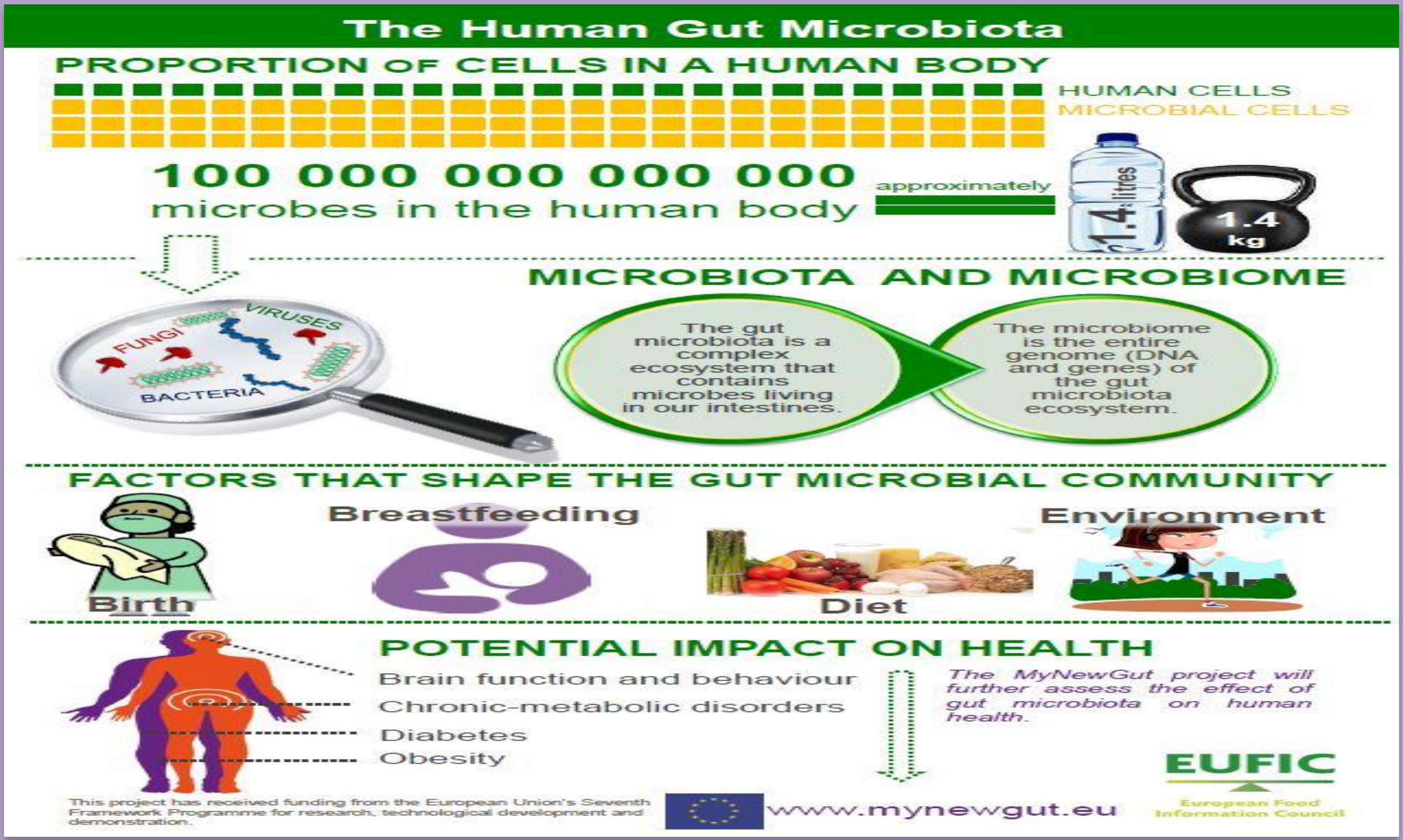


The Integrative HMP (iHMP) Research Network Consortium. Cell Host Microbe 2014.

µBIOME

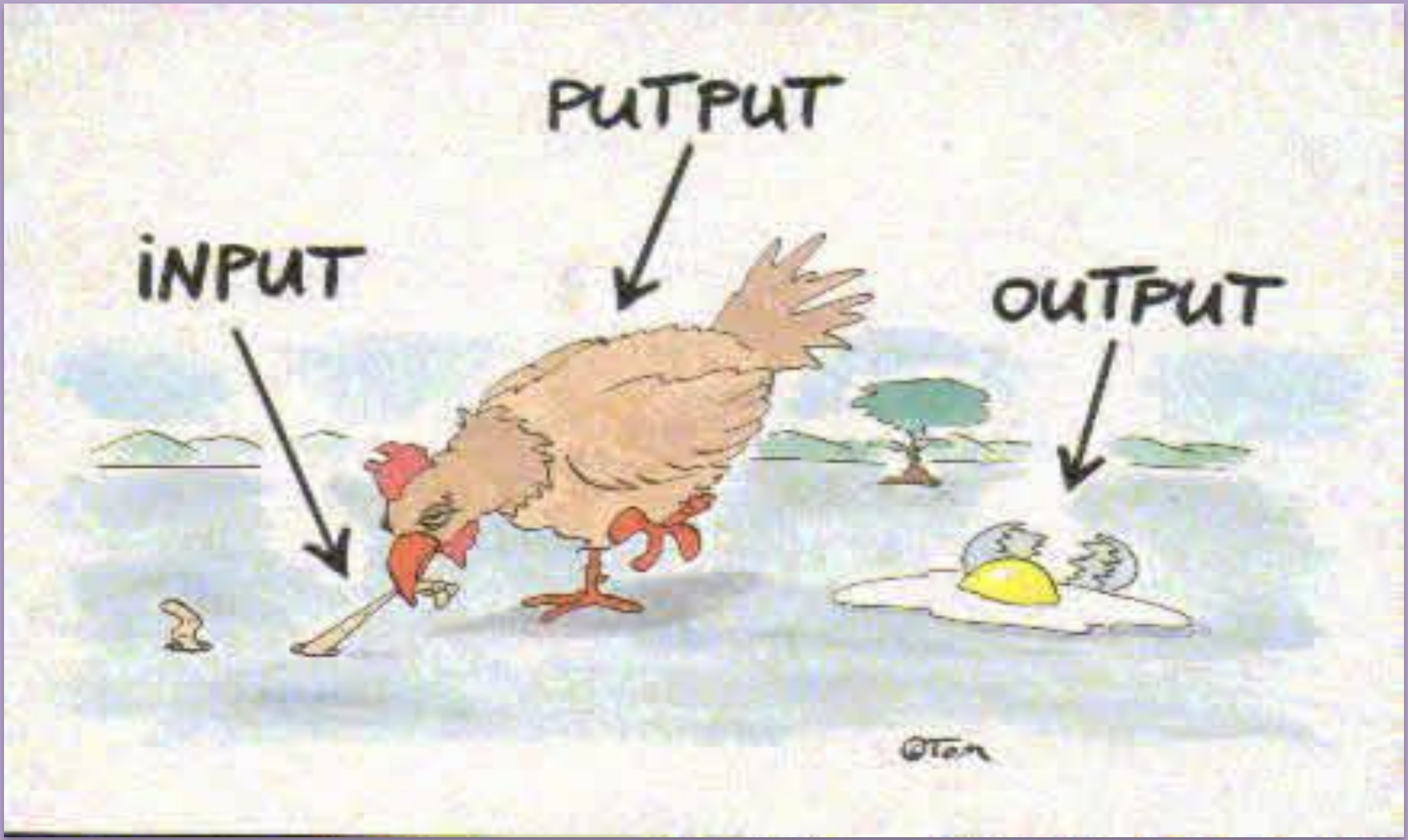

Actinobacteria
Corynebacterineae
Propionibacterineae
Micrococcineae
Other Actinobacteria
Bacteroidetes
Cyanobacteria
Firmicutes
Other Firmicutes
Staphylococcaceae
Proteobacteria
Divisions contributing < 1%
Unclassified
(Gb) Glabella
(Al) Alar crease
(Ea) External auditory canal
(Na) Nare
(Mb) Manubrium
(Ax) Axillary vault
(Ac) Antecubital fossa
(Vf) Volar forearm
(Id) Interdigital web space
(Hp) Hypothenar palm
(Ic) Inguinal crease
(Um) Umbilicus
(Tw) Toe web space
Front
Back
Retroauricular crease (Ra)
Occiput (Oc)
Back (Ba)
Buttock (Bt)
Gluteal crease (Gc)
Popliteal fossa (Pc)
Plantar heel (Ph)

µBIOME

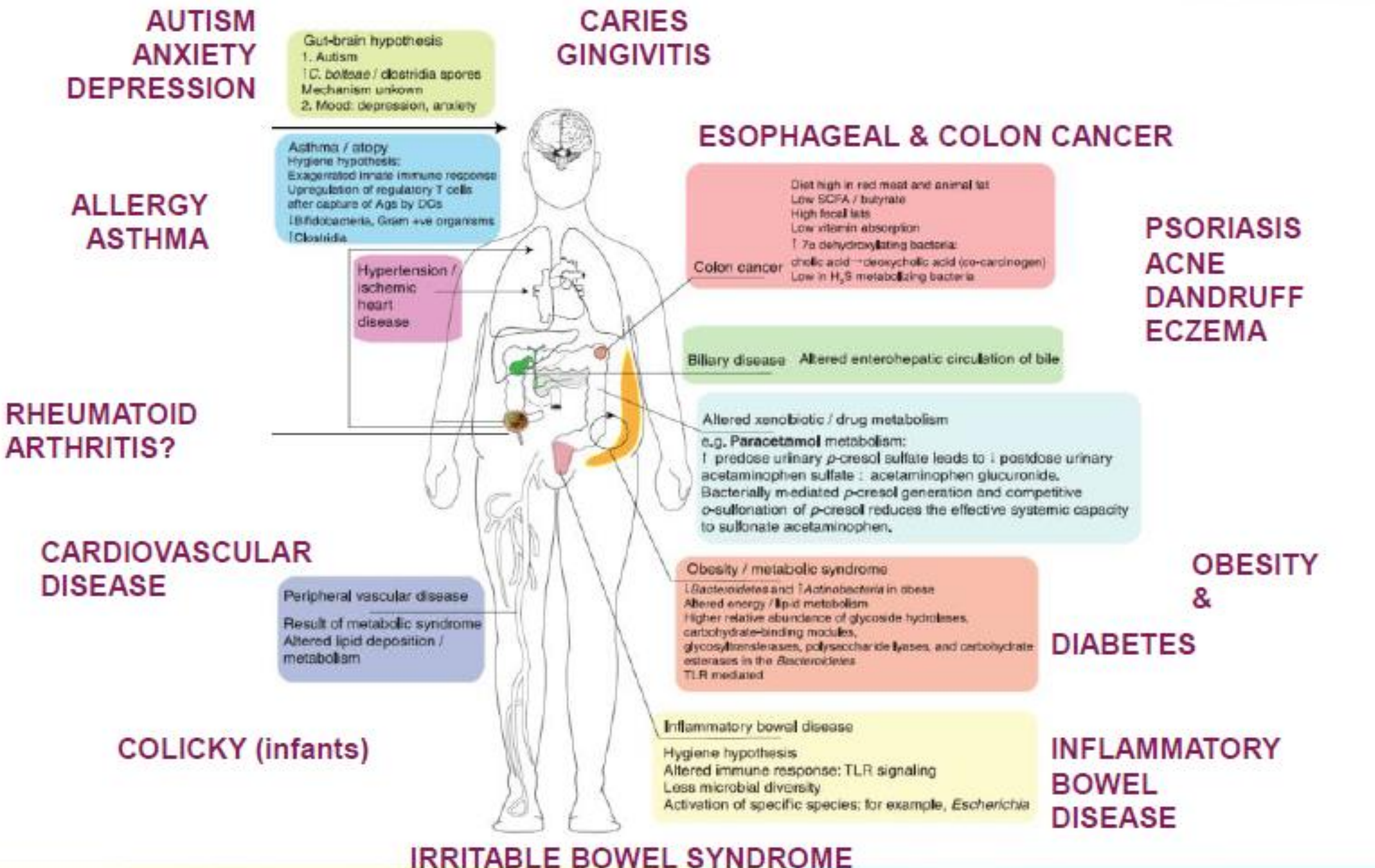


The Human Gut Microbiota
PROPORTION OF CELLS IN A HUMAN BODY
HUMAN CELLS
MICROBIAL CELLS
100 000 000 000 000
microbes in the human body
approximately
1.4 litres
1.4 kg
MICROBIOTA AND MICROBIOME
VIRUSES
FUNGI
BACTERIA
The gut microbiota is a complex ecosystem that contains microbes living in our intestines.
The microbiome is the entire genome (DNA and genes) of the gut microbiota ecosystem.
FACTORS THAT SHAPE THE GUT MICROBIAL COMMUNITY
Birth
Breastfeeding
Diet
Environment
POTENTIAL IMPACT ON HEALTH
Brain function and behaviour
Chronic-metabolic disorders
Diabetes
Obesity
The MyNewGut project will further assess the effect of gut microbiota on human health.
EUFIC
European Food Information Council
This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration.
www.mynewgut.eu

KANITA DAYALI TIP



PROBİYOTİKLER



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NATASHA'S PROBIOTIC FACE CREAM combines centuries-old beauty secrets with the latest skin-care technology for a one-of-a-kind skin-care formula that softens, nourishes and balances the skin.

NATASHA'S PROBIOTIC FACE CREAM can help:

Minimize the appearance of fine lines and wrinkles

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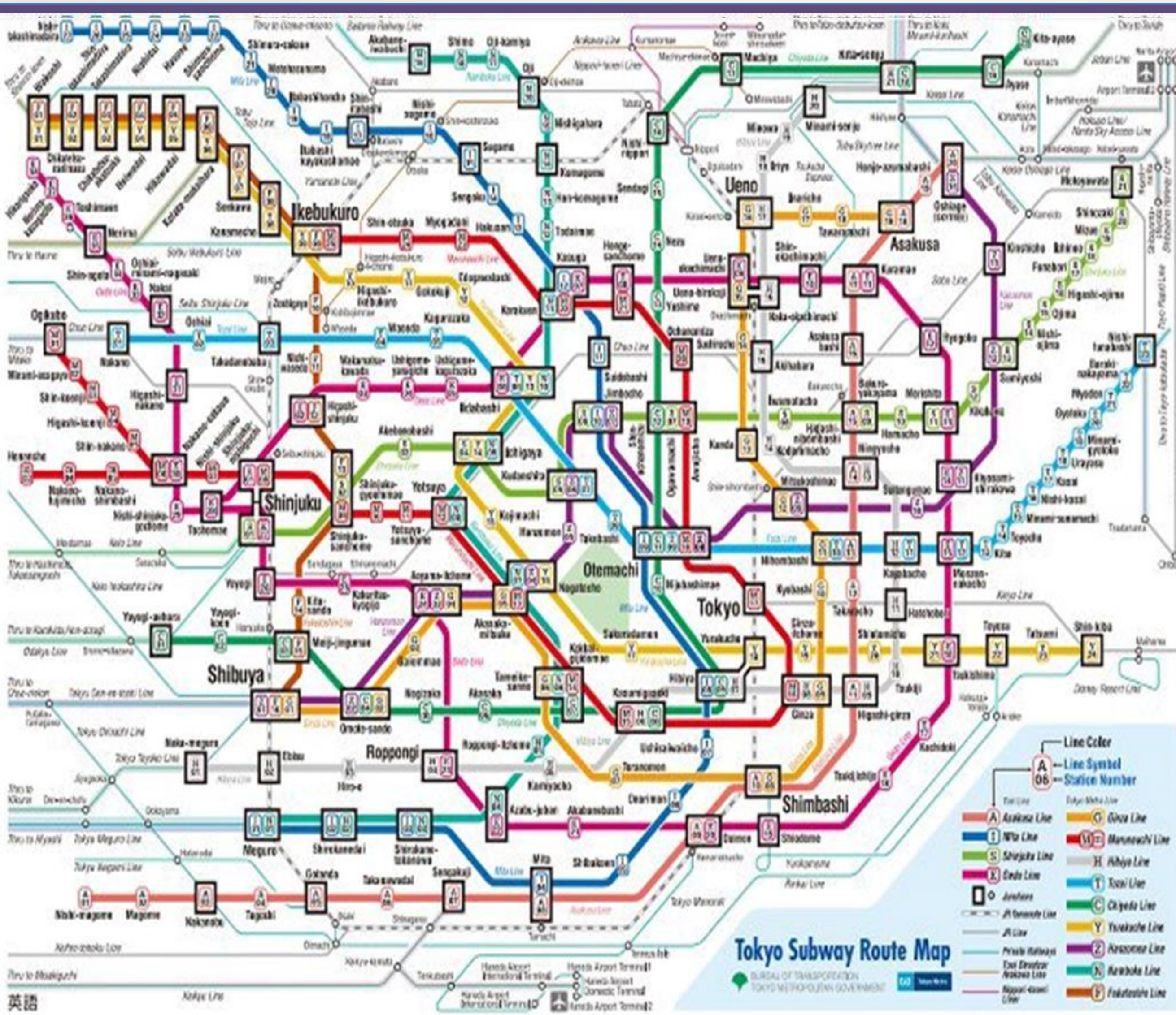
Soothe redness and balance skin tone

Exfoliate and nourish skin to make it appear smooth and supple

NATASHA'S PROBIOTIC FACE CREAM is the optimal support system for most skin types. Skin that may be oily or dry, sensitive or mature. **NATASHA'S PROBIOTIC FACE CREAM** can give you the beautiful, healthy, radiant looking skin that lets you put your best face forward.

PROBİYOTİKLER



TOKYO METROSU

ANKARA METROSU

Ebola virüsü kötü bir şey
değil, bulaşınca öldürüyor


the world before social media...
LinkedIn
Pinterest
YouTube
foursquare
Instagram
Imgur
reddit
WordPress
Skype
Twitter
Tumblr
Facebook

SABAH

Üye Girişi Üye Ol E-Gazete DAILY S

14 Mayıs 2012 Pazartesi

Takip et: @sabah Like 377k g+1

ANA SAYFA SPOR GÜNAYDIN GÜNDEM EKONOMİ YAŞAM DÜNYA PİYASA SA

HABER + Sağlık Teknoloji Eğitim Kültür Sanat Sinema Galeri Sarı Sayfalar Emlak T

Yaşam

Haberler > Yaşam Haberleri > Yoğurtta afrodizyak etkisi

Yoğurtta afrodizyak etkisi

Yeni Haber Giriş Saati: 14.05.2012 15:48
Güncelleme : 14.05.2012 15:48

Probiyotik yoğurdun "afrodizyak etkisi" yapabileceği belirlendi.

Massachussetts Institute of Technology (MIT) Üniversitesi'nden bilim adamları yoğurt ve obezite arasındaki bağlantıyı araştırmak üzere kolları sıvadı, ancak yoğurdun çok farklı bir etkisiyle karşılaştı.

Bilim adamlarının, fareler üzerinde yaptığı araştırma, vanilya aromalı probiyotik yoğurdun hayvanların libodusunu artırabileceğini gösterdi. İlk olarak yoğurtla beslenen farelerin tüylerinin daha parlak ve 10 kat daha gür olduğunu fark eden

Yorum Yap Editöre e-posta
Yazıyı Gönder Çıktı Al


THIS IS
A WHITE
AREA

PROBAGE STUDY GROUP

Ener Cagri DINLEYICI

Makbule EREN   Ates KARA   Metehan OZEN

Zafer KURUGOL

Nazan DALGIÇ   Mesut SANCAR

Şirin GÜVEN

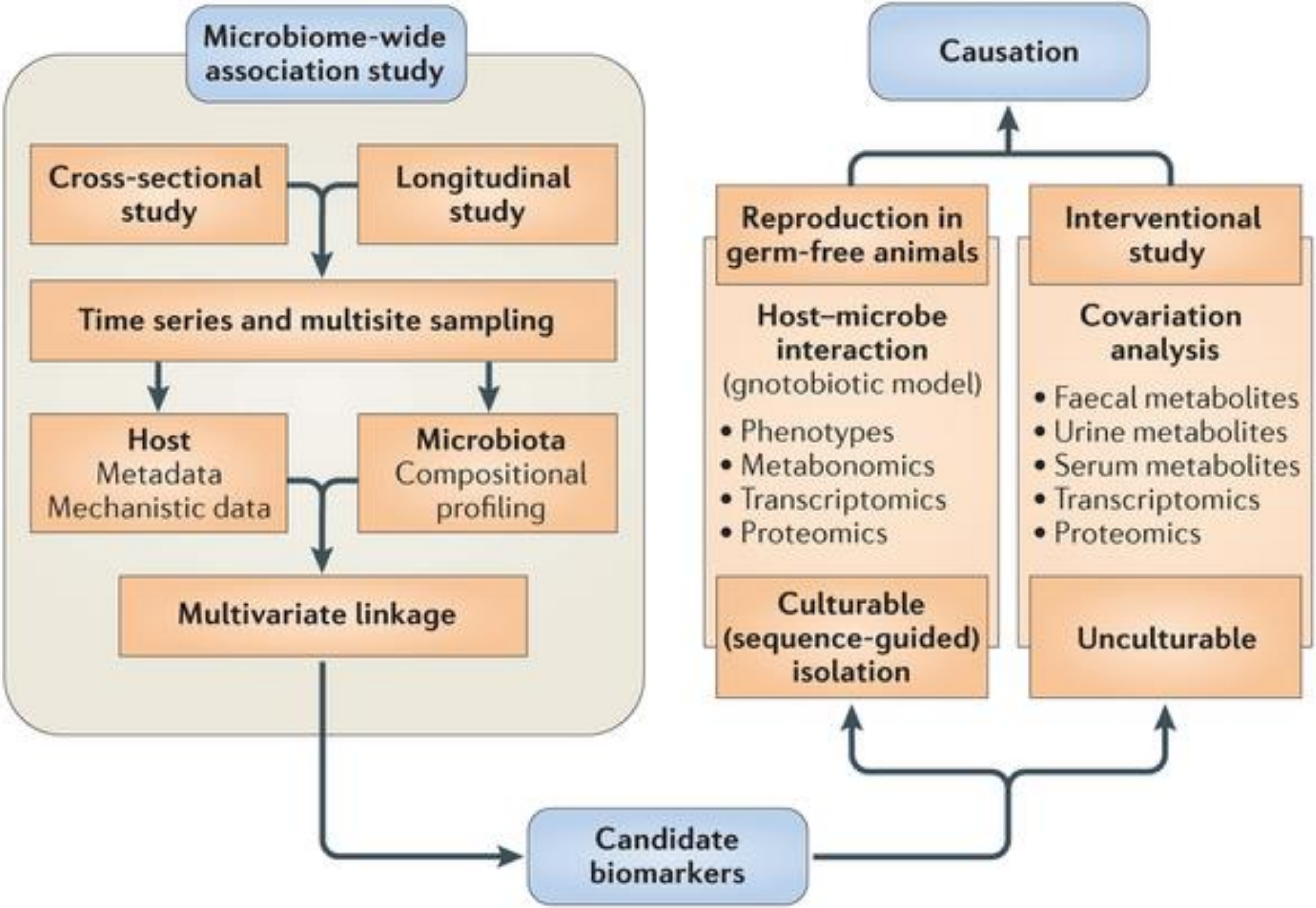
Özge METİN   Gönül TANIR

Olcay YAŞA   Müferet ERGÜVEN

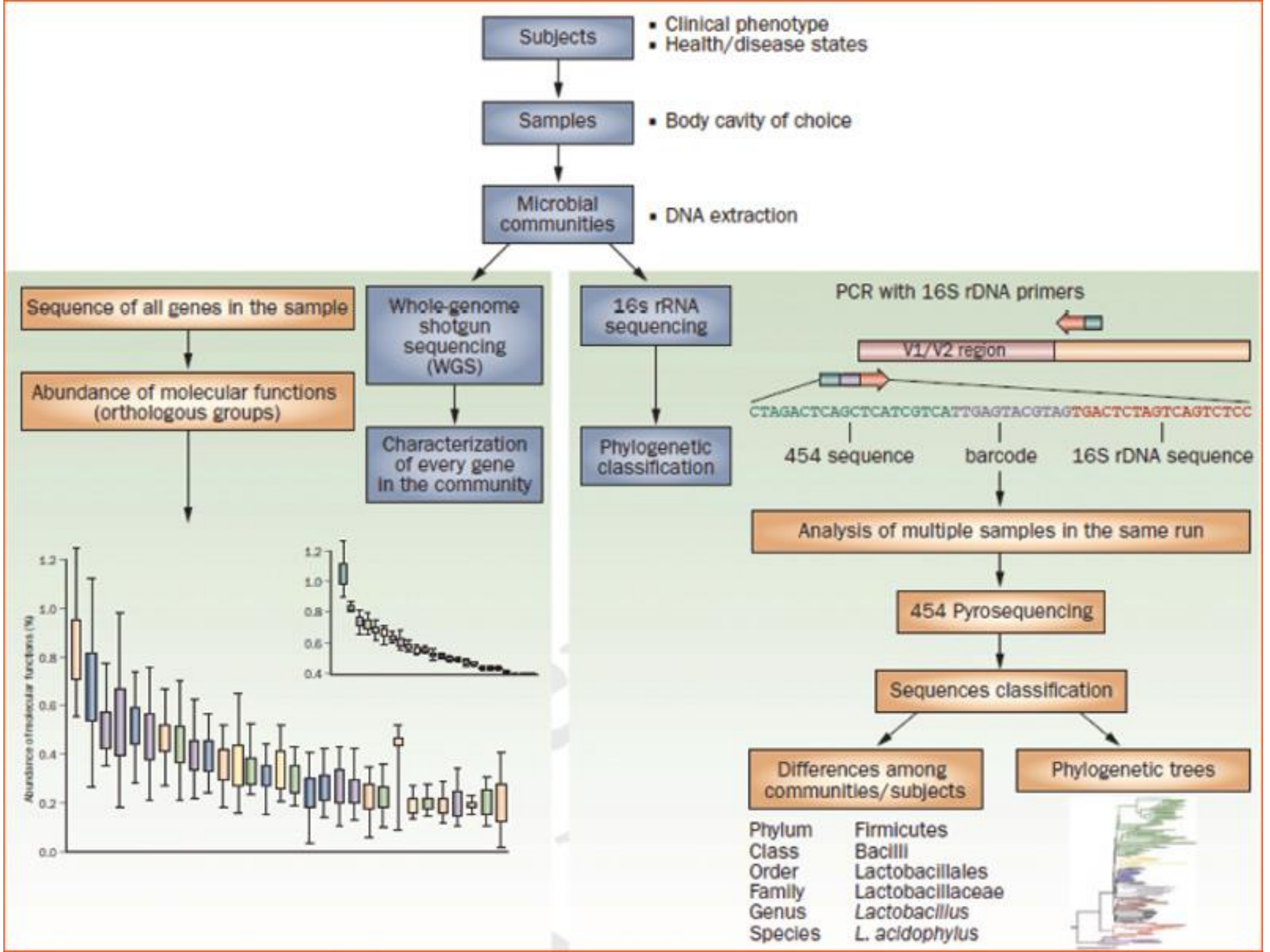
Vefik ARICA   Adem KARBUZ

Emre TEMUR

Yvan VANDENPLAS



Nature Reviews | Microbiology



Subjects
• Clinical phenotype
• Health/disease states
Samples
• Body cavity of choice
Microbial communities
• DNA extraction
Sequence of all genes in the sample
Whole-genome shotgun sequencing (WGS)
Abundance of molecular functions (orthologous groups)
Characterization of every gene in the community
16s rRNA sequencing
Phylogenetic classification
PCR with 16S rDNA primers
V1/V2 region
CTAGACTCAGCTCATCGTCATTGAGTACGTAGTGACTCTAGTCAGTCTCC
454 sequence
barcode
16S rDNA sequence
Analysis of multiple samples in the same run
454 Pyrosequencing
Sequences classification
Differences among communities/subjects
Phylogenetic trees
Phylum Firmicutes
Class Bacilli
Order Lactobacillales
Family Lactobacillaceae
Genus *Lactobacillus*
Species *L. acidophylus*
Abundance of molecular functions (%)

Türk Çocuklarında İntestinal Mikrobiyota Analizi

Dinleyici EC et al.

Sağlıklı Çocuklarda

İshal öncesi ve sonrasında

PROBAGE STUDY GROUP

ener çağrı dinleyici

Beneficial Microbes, 2015 online

ARTICLE IN PRESS

Wageningen Academic Publishers

Saccharomyces boulardii CNCM I-745 reduces the duration of diarrhoea, length of emergency care and hospital stay in children with acute diarrhoea

E.C. Dinleyici[1*], A. Kara[2], N. Dalgic[3], Z. Kurugol[4], V. Arica[5], O. Metin[6], E. Temur[7], O. Turel[8], S. Guven[9], O. Yasa[10], S. Bulut[4], G. Tanir[6], A.S. Yazar[9], A. Karbuz [5], M. Sancar[11], M. Erguven[10], G. Akca[3], M. Eren[12], M. Ozen[13] and Y. Vandenplas[14]

PROBAGE STUDY GROUP

Eur J Pediatr
DOI 10.1007/s00431-012-1903-5

ORIGINAL ARTICLE

The effect of a multispecies synbiotic mixture on the duration of diarrhea and length of hospital stay in children with acute diarrhea in Turkey: Single blinded randomized study

Ener Cagri Dinleyici · Nazan Dalgic · Sirin Guven · Metehan Ozen · Ates Kara · Vefik Arica · Özge Metin · Mesut Sancar · Zafer Kurugol · Gonul Tanir · Didem Ozturk · Selime Aydogdu · Murat Tutanc · Makbule Eren · Yvan Vandenplas

Rehydration and electrolyte replacement were done using standard oral rehydration salts (ORS) (only available form in Turkey; glucose 20 g; sodium 90 mmol/L, potassium 20 mmol/L; bicarbonate 30 mmol/L). NBL Probiotic Gold® (Nobel, Turkey) includes 2.5×10^9 CFU live bacteria per single sachet including *L. acidophilus*, *L. rhamnosus*, *B. bifidum*, *B. longum*, *E. faecium*, 625 mg fructooligosaccharide, and vitamins A, B_1, B_2, B_6, E, and C. On admission, children were

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Review

EXPERT OPINION

Saccharomyces boulardii CNCM I-745 in different clinical conditions

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Introduction: *Saccharomyces boulardii* is a well-known probiotic worldwide, and there are numerous studies including experimental and clinical trials in children and adults by the use of *S. boulardii*.

Areas covered: The objective of the present report is to provide an update on the evidence for the efficacy of *S. boulardii* CNCM I-745 *in* different clinical conditions. *Saccharomyces boulardii* is one of the best-studied probiotics in acute gastroenteritis (AGE) and is shown to be safe and to reduce the duration of diarrhea and hospitalization by about 1 day. *Saccharomyces boulardii* is one of the recommended probiotics for AGE in children by European Society of Paediatric Infectious Diseases and European Society for Paediatric

PROBAGE STUDY

ACTA PÆDIATRICA
NURTURING THE CHILD

ener çağrı dinleyici

The effect of a *Lactobacillus reuterii* on the duration of diarrhea and length of hospital stay in children with acute diarrhea in Turkey: prospective, single blind, randomized controlled trial

Ener Cagri Dinleyici, Nazan Dalgic, Sirin Guven, Özge Metin, Makbule Eren, Metehan Ozen, Ates Kara, Gonul Tanir, Vefik Arica, Mesut Sancar, Emre Temur, Ozden Turel, Zafer Kurugol, Gizem Akca, Olcay Yasa, Muferret Erguven, Yvan Vandenplas

Dinleyici EC et al. Acta Paediatrica 2014

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Am. J. Trop. Med. Hyg., 80(6), 2009, pp. 953–955

Clinical Efficacy of *Saccharomyces boulardii* and Metronidazole Compared to Metronidazole Alone in Children with Acute Bloody Diarrhea Caused by Amebiasis: A Prospective, Randomized, Open Label Study

Ener C. Dinleyici,* Makbule Eren, Zeynel A. Yargic, Nihal Dogan, and Yvan Vandenplas

PROBAGE STUDY GROUP

Am. J. Trop. Med. Hyg., 82(3), 2010, pp. 488–491
doi:10.4269/ajtmh.2010.09-0529

Clinical Efficacy Comparison of *Saccharomyces boulardii* and Yogurt Fluid in Acute Non-Bloody Diarrhea in Children: A Randomized, Controlled, Open Label Study

Makbule Eren,* Ener C. Dinleyici, and Yvan Vandenplas

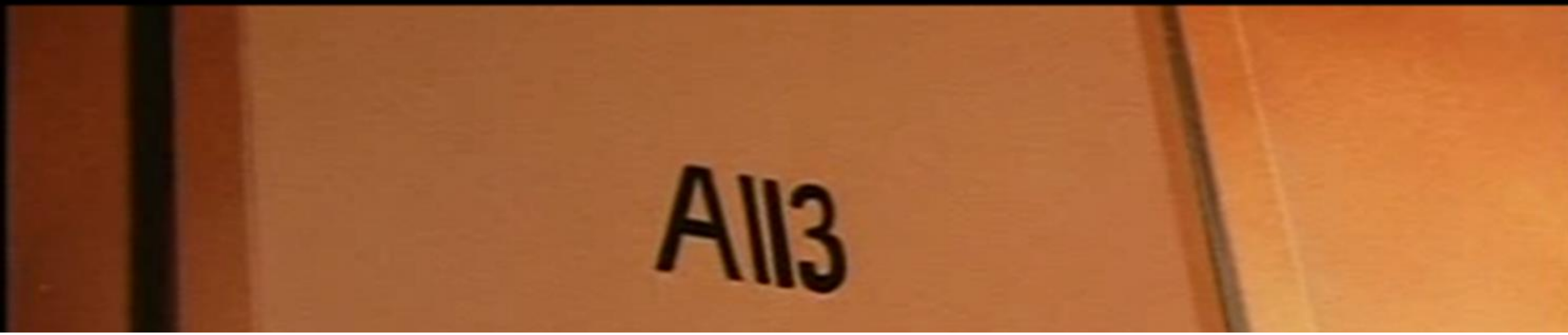
PROBİYOTİKLER-BLASTOCYSTİS HOMİNİS

Parasitol Res
DOI 10.1007/s00436-010-2095-4

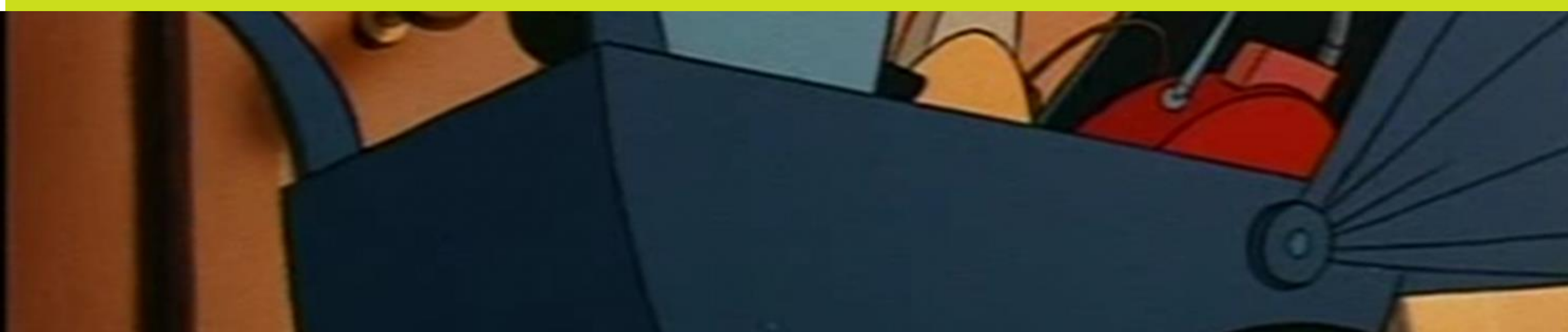
ORIGINAL PAPER

Clinical efficacy of *Saccharomyces boulardii* or metronidazole in symptomatic children with *Blastocystis hominis* infection

Ener Cagri Dinleyici · Makbule Eren · Nihal Dogan · Serap Reyhanioglu · Zeynel Abidin Yargic · Yvan Vandenplas



THIRD CONGRESS OF PREBIOTICS AND PROBIOTICS IN PAEDIATRICS
GHENT 28-30 APRIL 2016

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40
VENUE 40
THE CHRISTMAS SHOP
Excellence is a road, not a destination
Cont'd, 2015, Ener Cagri Dinleyici