

# Ürogenital Mikrobiyota

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# Ürogenital Mikrobiyota tartışılacak konular:

Kompozisyonu  
nedir?

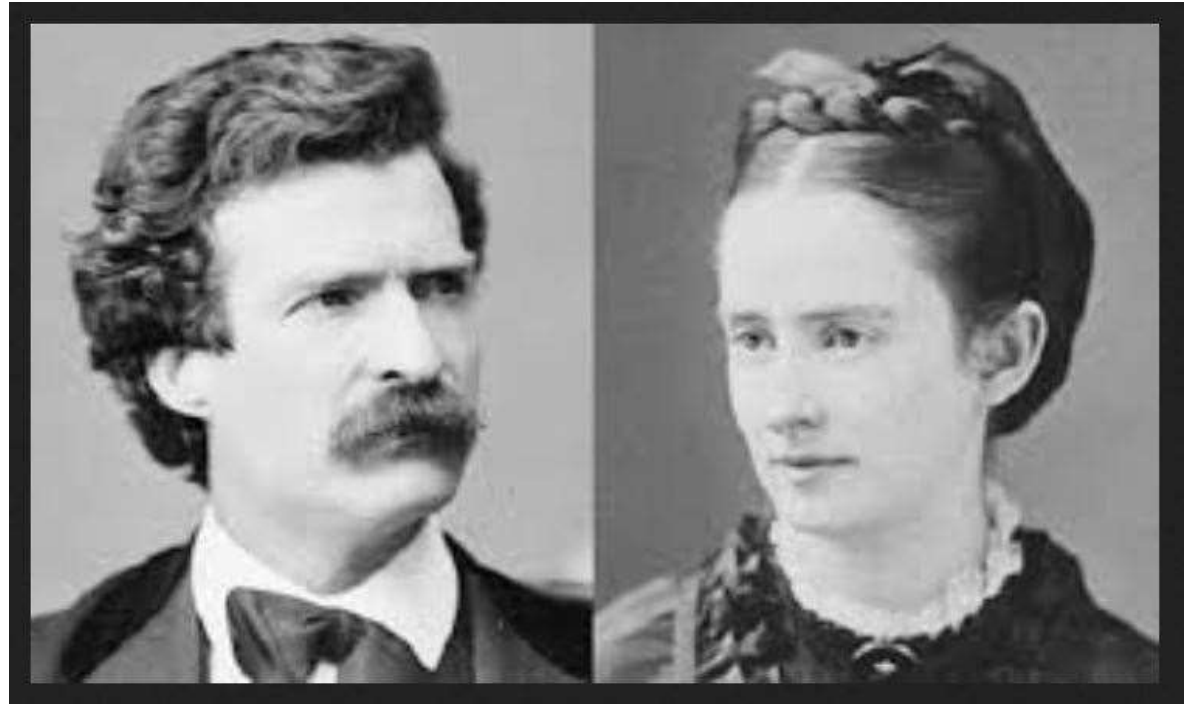
Bu bilgi bizim ne  
işimize yarar?

- Tekrarlayan üriner sistem enfeksiyonları
- İnfertilite
- Gebelikle ilgili komplikasyonlar

Antibiyotik dışı tedavi  
veya korunma  
yaklaşımları olabilir  
mi?



Olivia Langdon Clemens (1845-1904)



Samuel Langhorne Clemens



Letters from the Earth- Mark Twain 1909

# Letters from the Earth- Mark Twain 1909

Letter 777

Noah and his family were saved - if that could be called an advantage. I throw in the if for the reason that there has never been an intelligent person of the age of sixty who would consent to live his life over again. His or anyone else's. The Family were saved, yes, but they were not comfortable, for they were full of microbes. Full to the eyebrows; fat with them, obese with them, distended like balloons. It was a disagreeable condition, but it could not be helped, because enough microbes had to be saved to supply the future races of men with desolating diseases, and there were but eight persons on board to serve as hotels for them. The microbes were by far the most important part of the Ark's cargo, and the part the Creator was most anxious about and most infatuated with. They had to have good nourishment and pleasant accommodations. There were typhoid germs, and cholera germs, and hydrophobia germs, and lockjaw germs, and consumption germs, and black-plague germs, and some hundreds of other aristocrats, specially precious creations, golden bearers of God's love to man, blessed gifts of the infatuated Father to his children - all of which had to be sumptuously housed and richly entertained; these were located in the choicest places the interiors of the Family could furnish: in the lungs, in the heart, in the brain, in the kidneys, in the blood, in the guts. In the guts particularly. The great intestine was the favorite resort. There they gathered, by countless billions, and worked, and fed, and squirmed, and sang hymns of praise and thanksgiving; and at night when it was quiet you could hear the soft murmur of it. The large intestine was in effect their heaven. They stuffed it solid; they made it as rigid as a coil of gaspipe. They took pride in this. Their principal hymn made gratified reference to it.

Constipation, O Constipation,  
The Joyful sound proclaim  
Till man's remotest entrail  
Shall praise its Maker's name

- ❖ Nuh ve ailesi kurtulmuştur – eğer buna bir avantaj denebilirse. 'Eğer' kelimesini kullanmamın nedeni, altmış yaşına gelmiş zeki bir insanın hayatını yeniden yaşamayı kabul etmesinin mümkün olmamasıdır.
- ❖ Aile kurtuldu, evet, ama rahat değildi, çünkü mikrop doluydular. Kaşlarına kadar doluydular; onlarla şişman, onlarla obez, balon gibi şişmişlerdi. Bu nahoş bir durumdu ama elden bir şey gelmezdi, çünkü gelecekteki insan ırklarını hastalıklarla beslemek için yeterince mikrop kurtarılmalıydı ve gemide onlara otel olarak hizmet edecek sadece sekiz kişi vardı.

- ❖ Mikroplar geminin kargosunun açık ara en önemli parçasıydı ve Yaratıcı'nın en çok endişelendiği ve en çok sevdiği kısımdı. İyi beslenmeleri ve hoş bir konaklamaya sahip olmaları gerekiyordu.
- ❖ Tifo mikropları, kolera mikropları, hidrofobi mikropları, kilitli çene mikropları, verem mikropları, kara veba mikropları ve diğer yüzlerce aristokrat, özel olarak değerli yaratıklar, Tanrı'nın insana olan sevgisinin altın taşıyıcıları, aşık Baba'nın çocuklarına kutsanmış armağanları vardı - bunların hepsinin görkemli bir şekilde barındırılması ve zengin bir şekilde ağırlanması gerekiyordu; bunlar Ailenin iç kısımlarının sağlayabileceği en seçkin yerlere yerleştirilmişti: Akciğerlerde, kalpte, beyinde, böbreklerde, kanda, bağırsaklarda. Özellikle de bağırsaklarda. Kalın bağırsak en sevdikleri yerd.

Sayırsız milyarlarcası orada toplanır, alıřır, beslenir, kıvrılır, vg ve řkran ilahileri sylerdi; geceleri sessiz olduėunda yumuřak mırıltısını duyabilirdiniz. Kalın baėırsak aslında onların cennetiidi.

Onu tıka basa doldurmuřlar, bir gaz borusu bobini kadar sert hale getirmiřlerdi. Bununla gurur duyuyorlardı. Bařlıca ilahileri buna memnuniyetle atıfta bulunuyordu:

Kabızlık, ey kabızlık,  
Neřeli ses duyulduėunda  
Barsakların en derinliklerine kadar  
Yaratıcısının adını haykırarak"

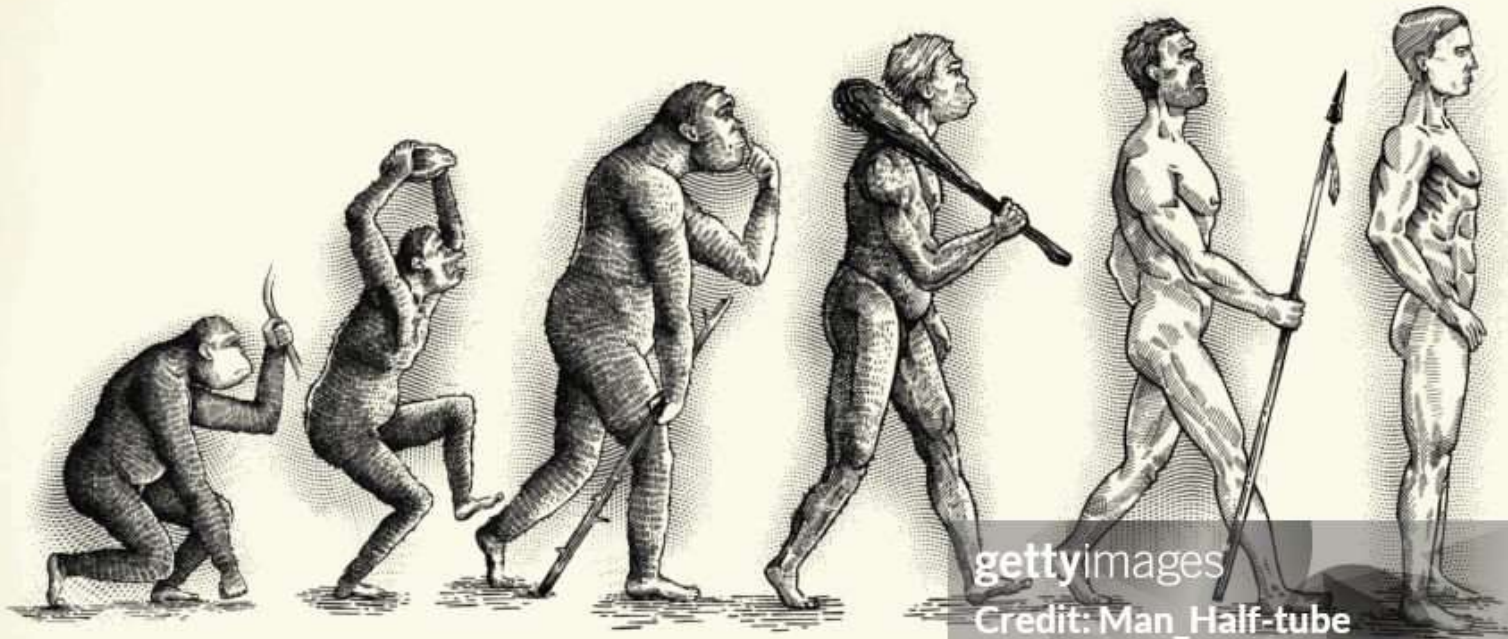
# Hologenome

Teori dört genellemeye dayanmaktadır:

- Tüm hayvanlar ve bitkiler mikroorganizmalarla simbiyotik ilişkiler kurar.
- Simbiyotik mikroorganizmalar nesiller arasında aktarılır.
- Konakçı ve simbiyontlar arasındaki ilişki, holobiyontun çevresel adaptasyonunu etkiler
- Konakçı veya mikrobiyota genomlarındaki değişikliklerle hologenomdaki varyasyon ortaya çıkabilir.

Çeşitli mikrobiyal simbiyontların genetik zenginliği hem kendi adaptasyonlarında hem de yüksek organizmaların evriminde önemli bir rol oynayabilir

• STAGES OF HUMAN EVOLUTION •



**Pliopithecus**

18 million Years

**Australopithecus**

3,5 million Years

**Homo habilis**

2 million Years

**Homo erectus**

500,000 Years

**Homo neanderthalensis**

70,000 Years

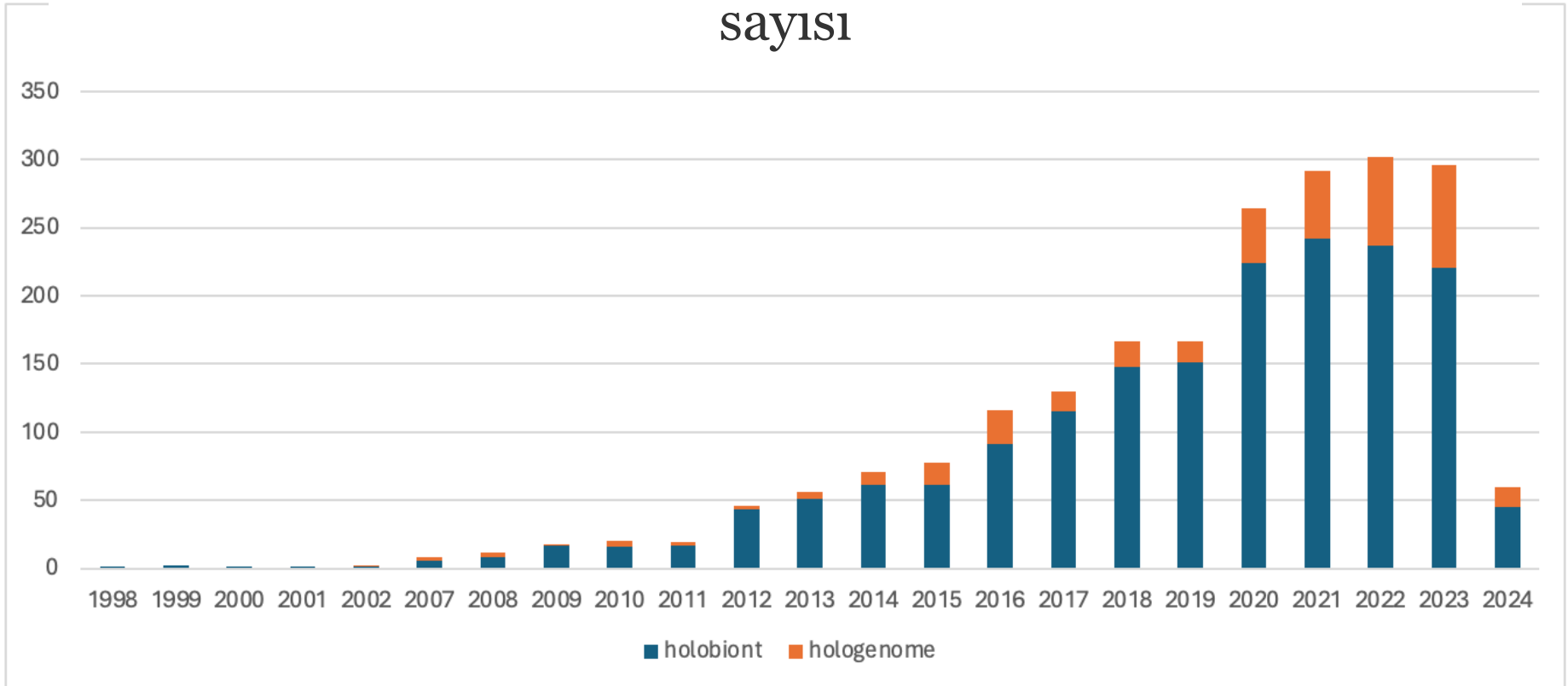
**Homo sapiens sapiens**

35,000 Years

gettyimages  
Credit: Man\_Half-tube

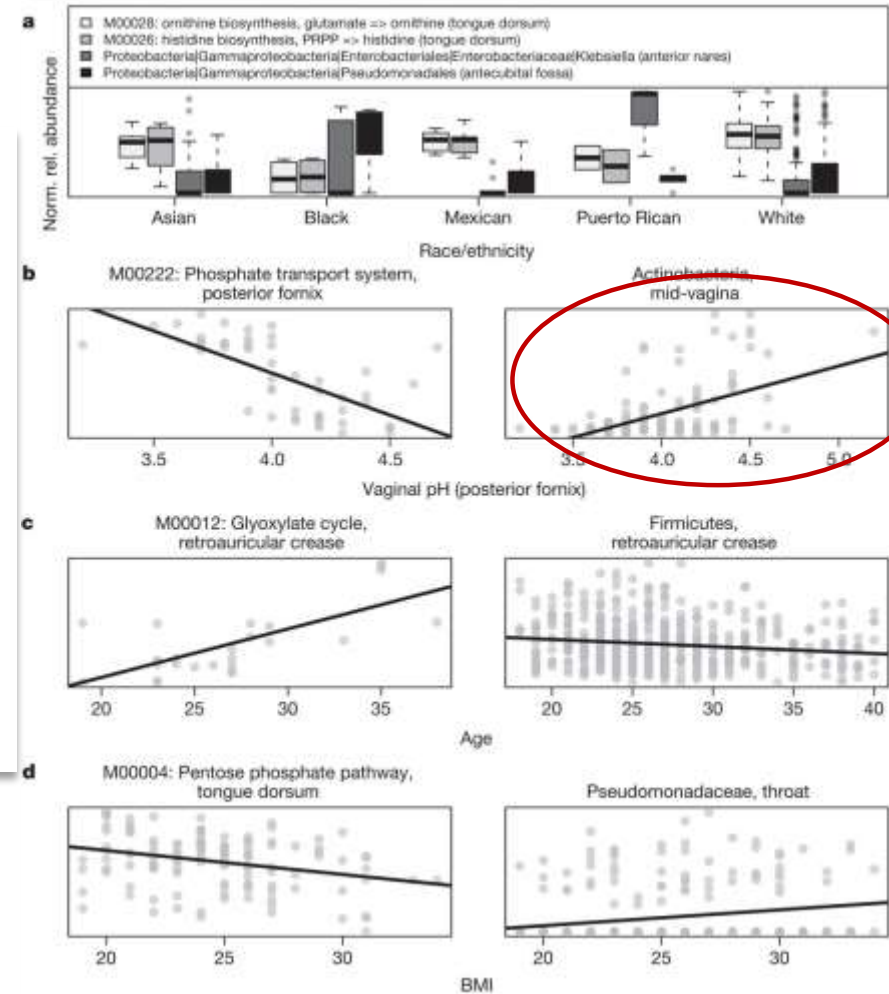
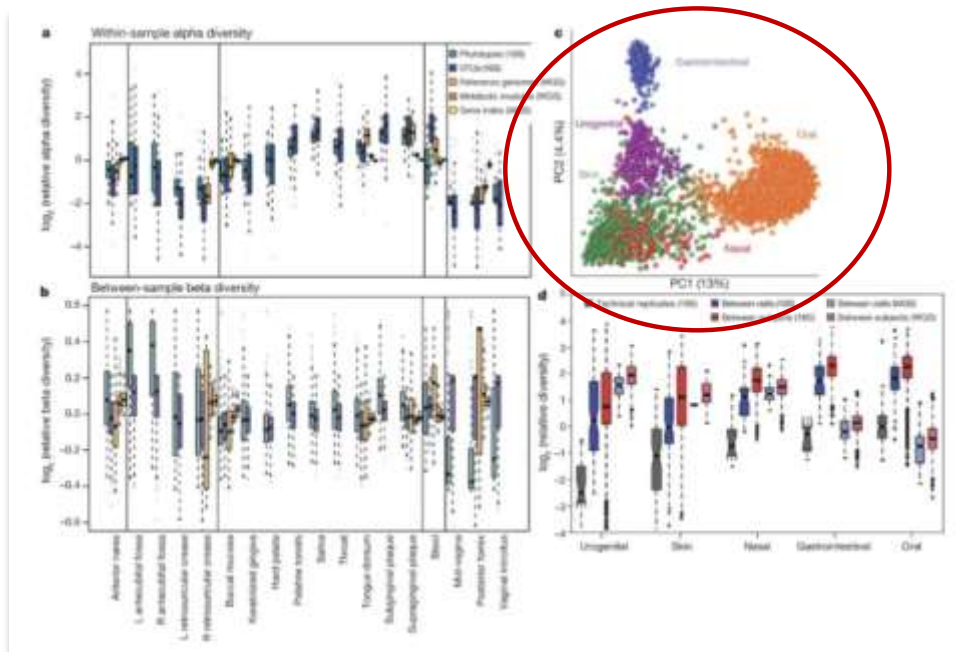


# PubMed veritabanında 1998-2024 yıllarında “Holobiont” ( $N = 1760$ ) ve “Hologenome” ( $N = 102$ ) ile ilgili makale sayısı

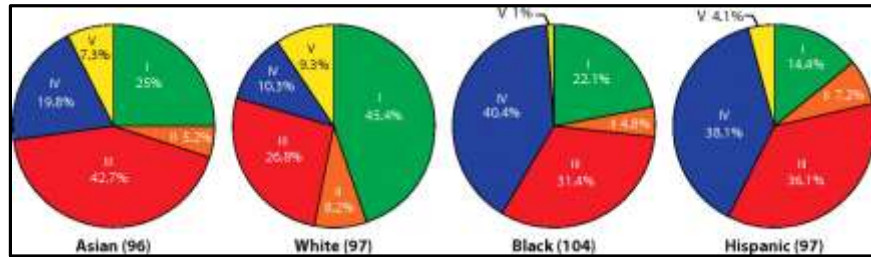


# Hologenome: Mikrobiyota kompozisyonu konak fenotipine bağlı değişim gösterir

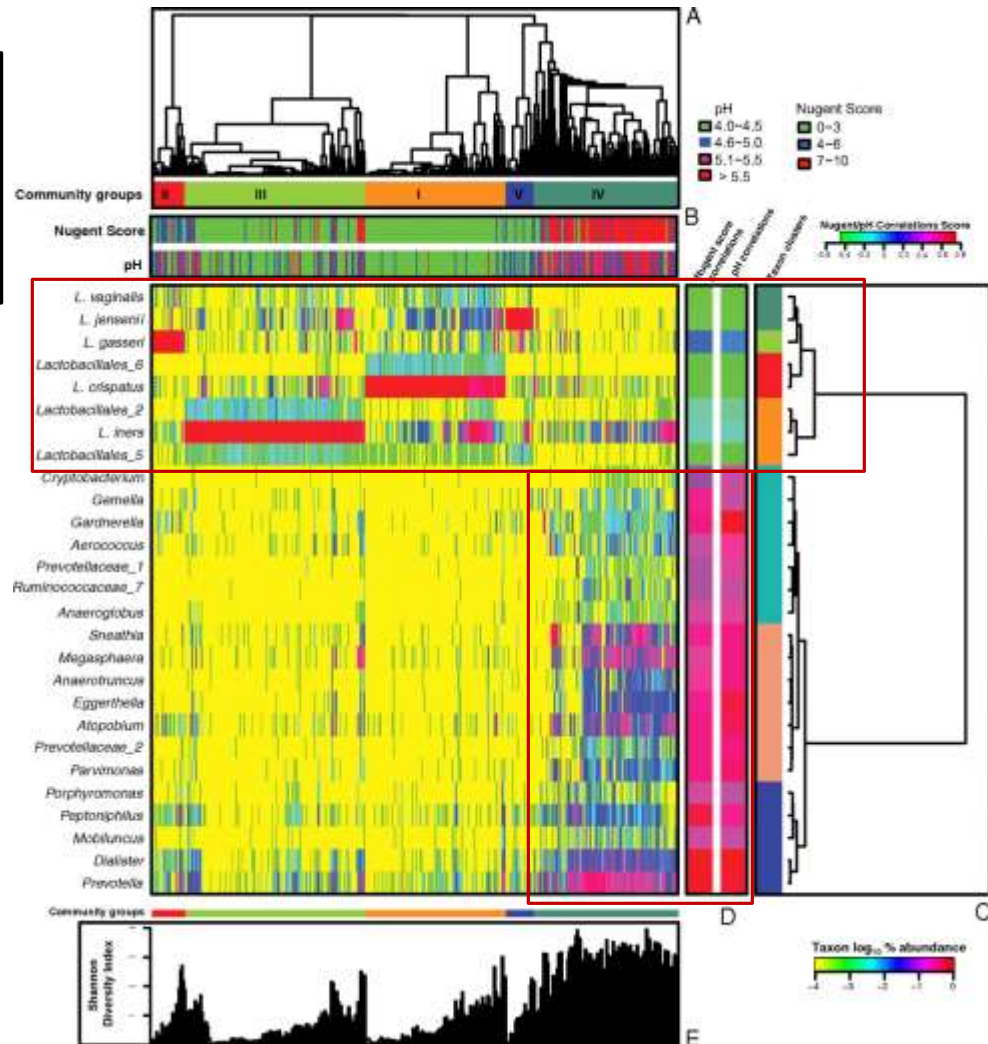
Human Microbiome Project: 4788 örnek



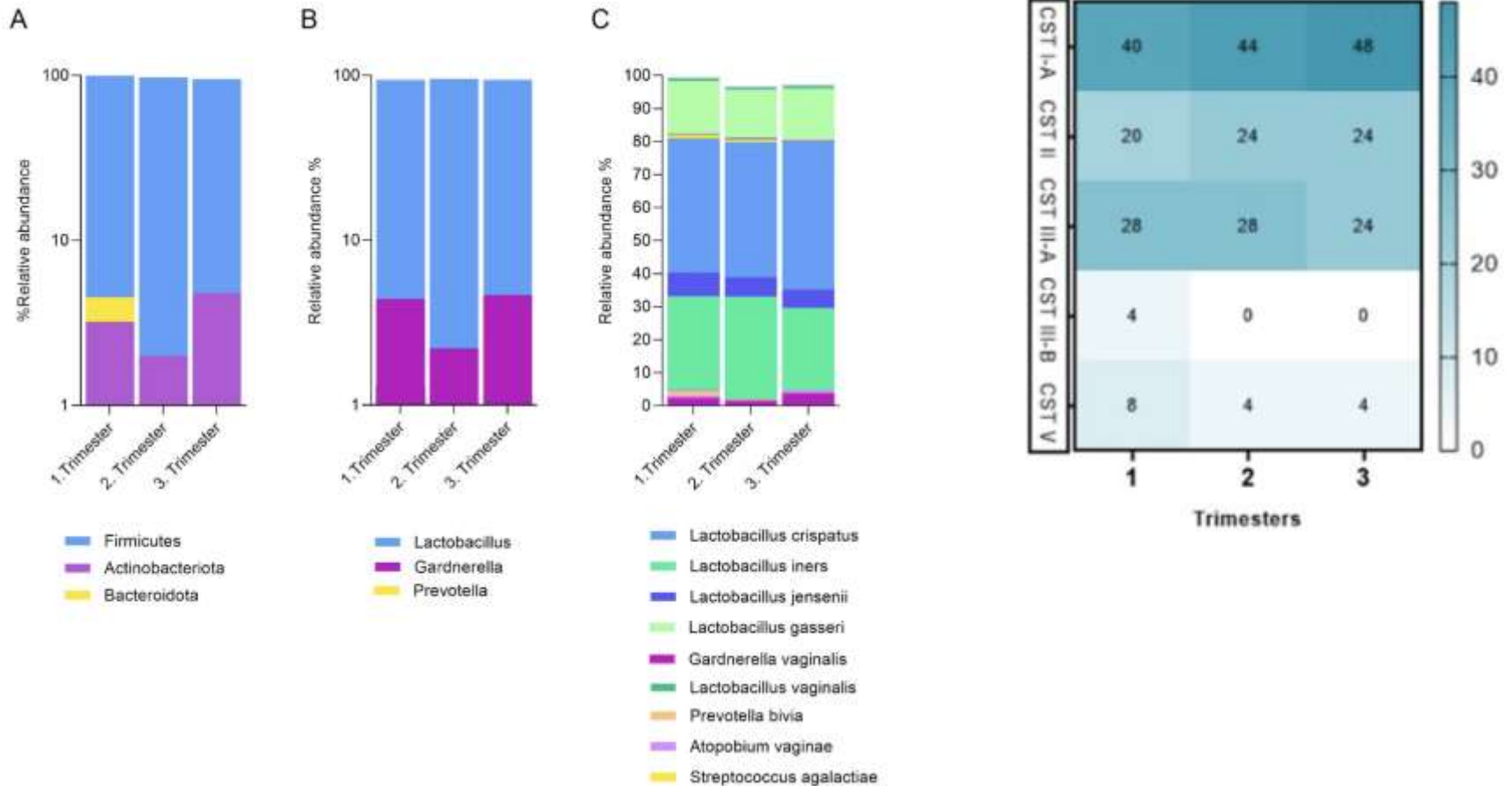
# Vaginal Microbiom



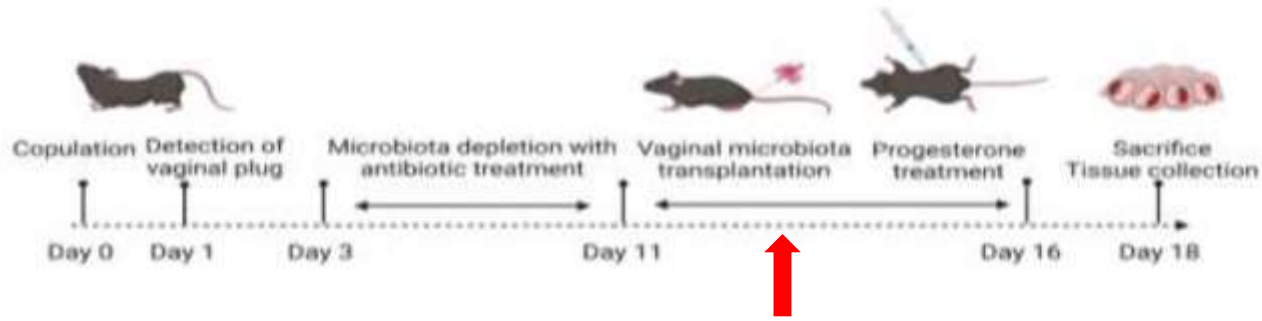
Cluster I: *L.crispatus*  
 Cluster II: *L.gasseri*  
 Cluster III: *L.iners*  
 Cluster IV: *Provetella*  
 Cluster V: *L.jenseni*



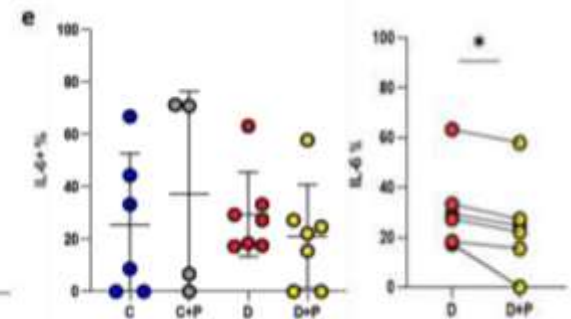
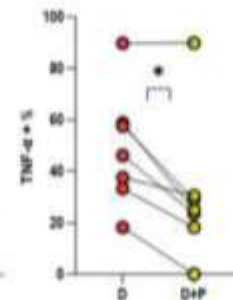
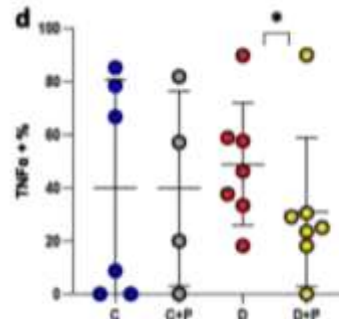
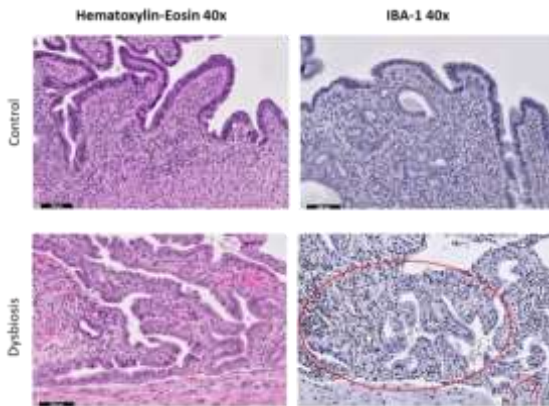
# Türk kadın popülasyonunda vajinal mikrobiyota kompozisyonu



# Gebelerde Vaginal Disbiyosis ve Uterin İnflamasyon ilişkisi

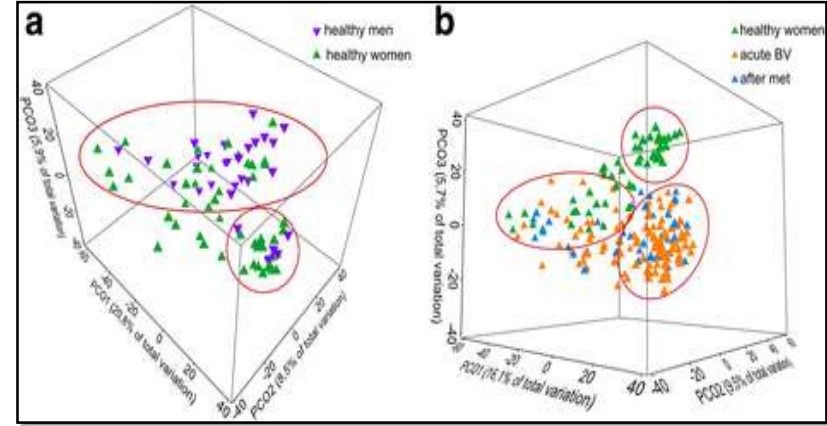
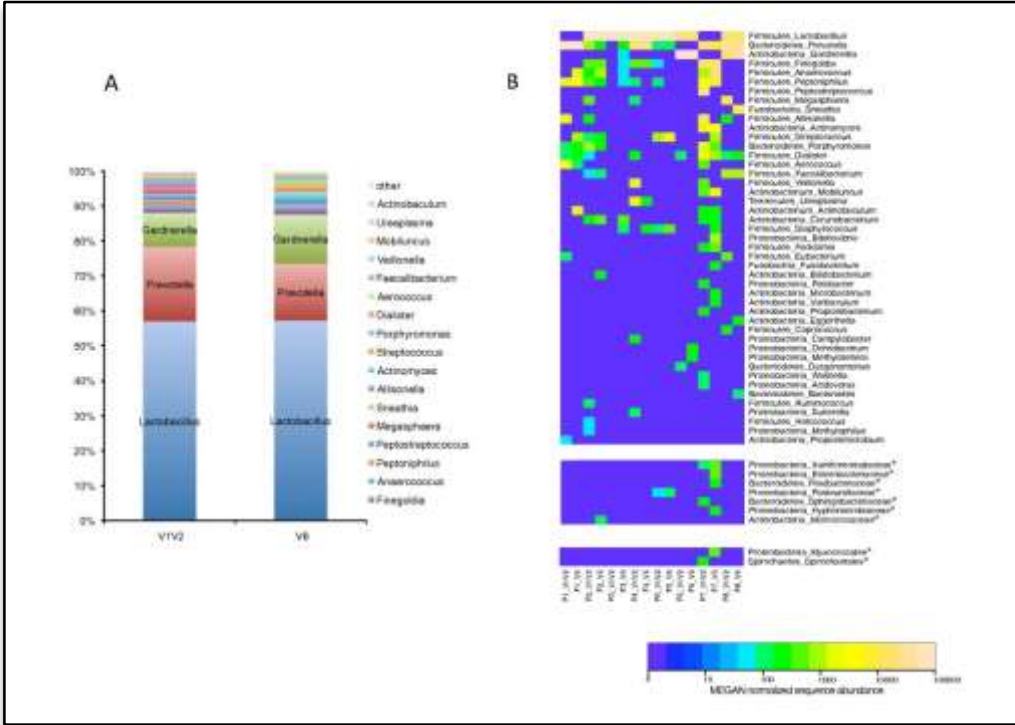
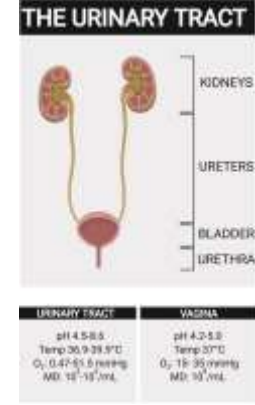


N=6



# İDRAR MİKROBİYOMU YAPISI

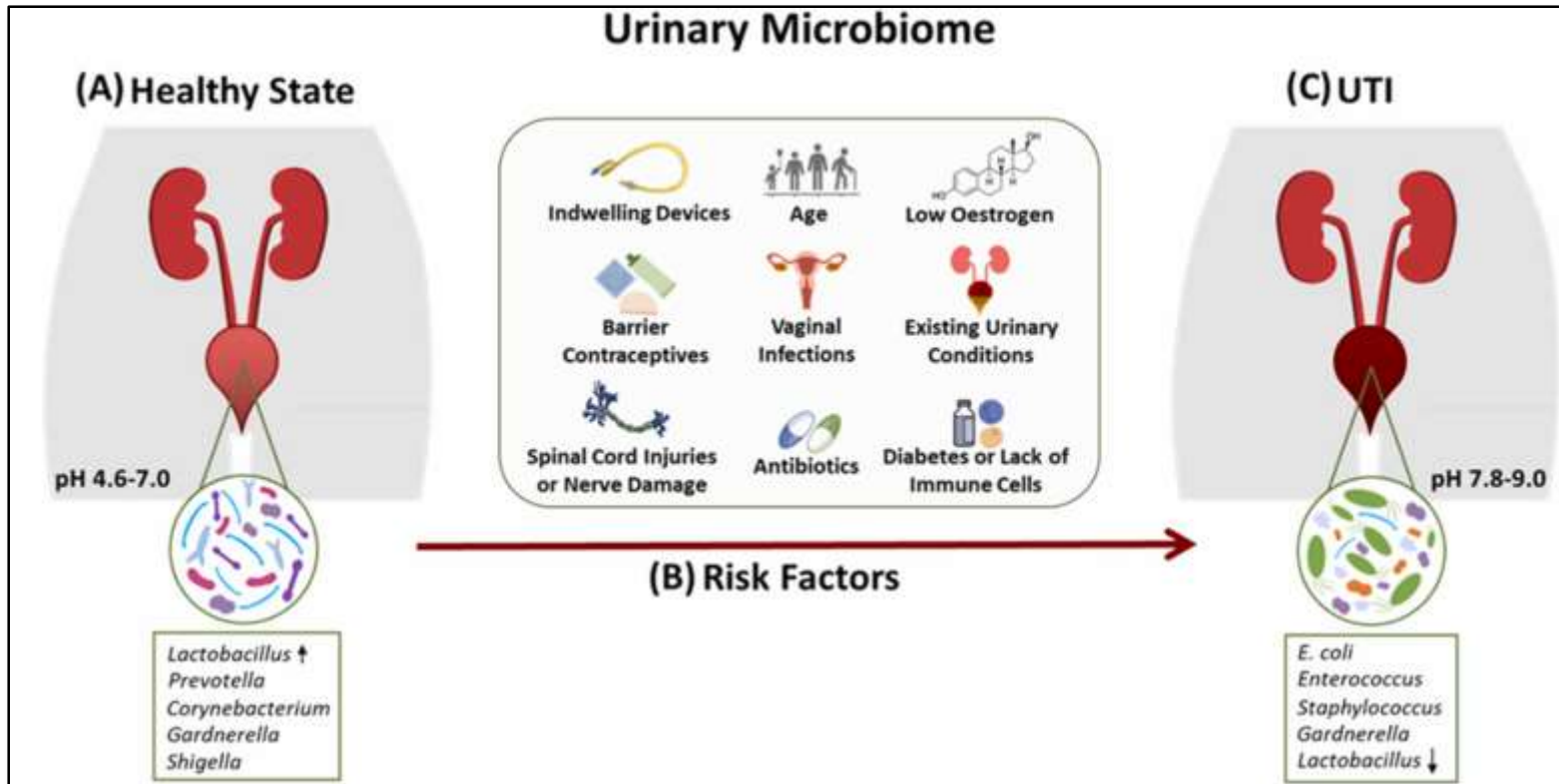
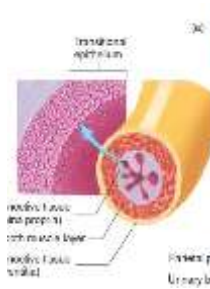
Bacterial genera detected in healthy female urine.



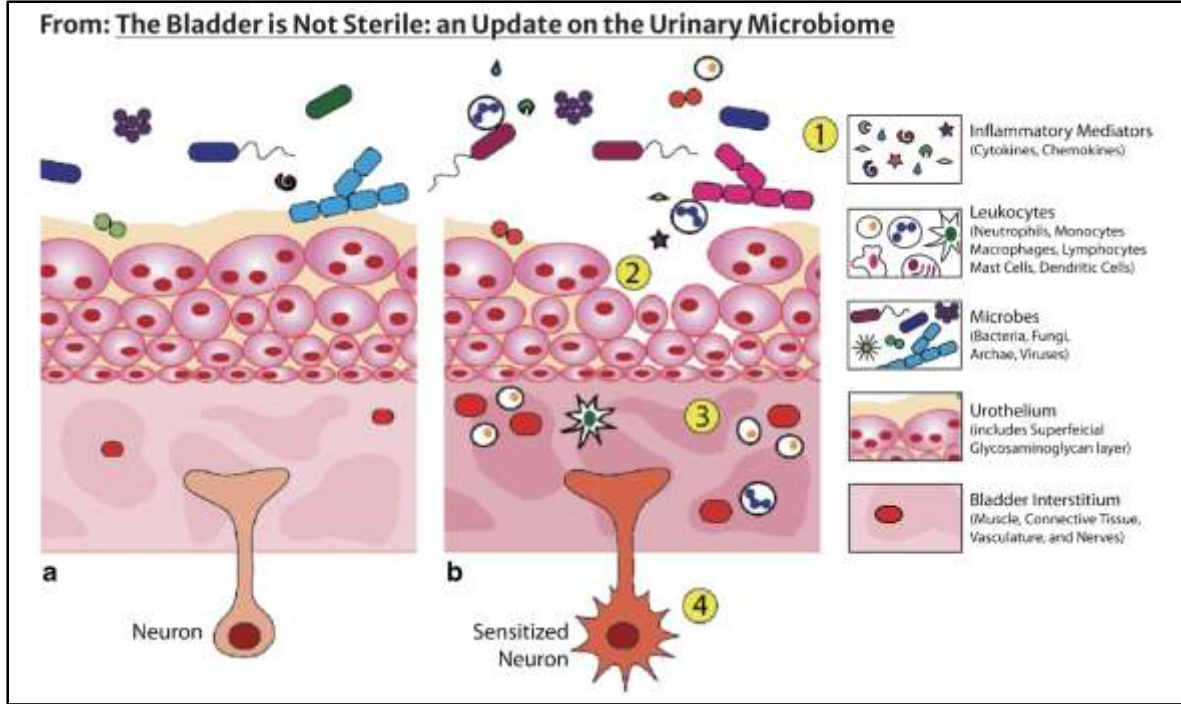
- Kadın erkek üriner mikrobiyota benziyor
- Sadece L.crispatus baskın mikrobiyota kadında var
- BV da üriner mikrobiyota ciddi bozuk
- Metranidazol tedavisi sonrası diveristy azalıyor, ama tam sağlıklı mikrobiyota restore edilemiyor

# Üriner Sistem Fizyolojisi

- Translasyonel epitel yüzeyi GAG ile kaplı
- İdrar akımı
- Ph (5.5)
- Low oksijen (%47)



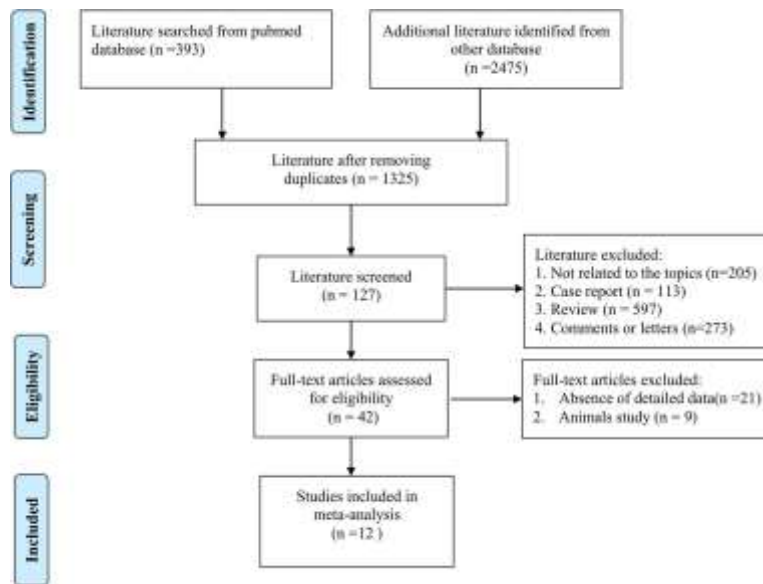
# Üriner Disbiosis Patolojik Etkileri



## İLİŞKİLİ OLDUĞU HASTALIKLAR:

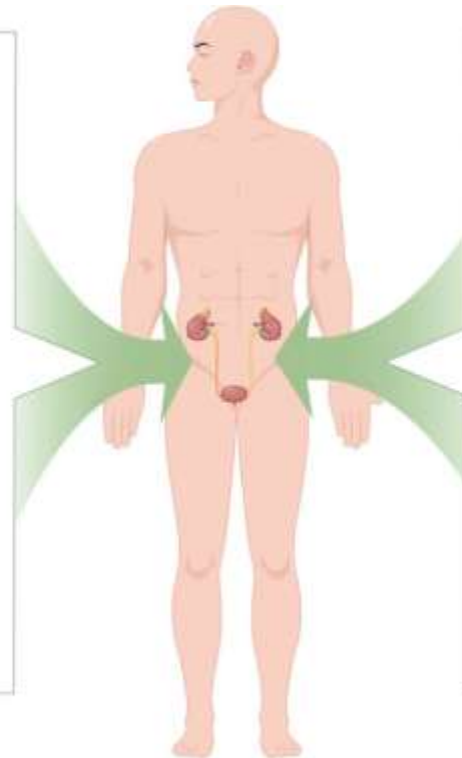
- Recurrent Üriner Enfeksiyonlar
- Cinsel Yolla Bulaşan Hastalıklar
- Üriner malignansiler
- Ürolithiasis





Up-regulation in UTIs

Bacteroidetes  
 Firmicutes  
 Verrucomicrobia  
 Actinobacteria  
 Proteobacteria  
 Bacteroides coagulans  
 Bacteroides fragilis  
 β-Proteobacteria  
 Enterobacteriaceae  
 Escherichia coli  
 Staphylococcus  
 Antimicrobials




Down-regulatin in UTIs

Fusobacteria  
 Peptonlphllus  
 Lactobacillus  
 Aerococcace  
 Peptostreptococcaceae  
 Bifidobacterium spp.

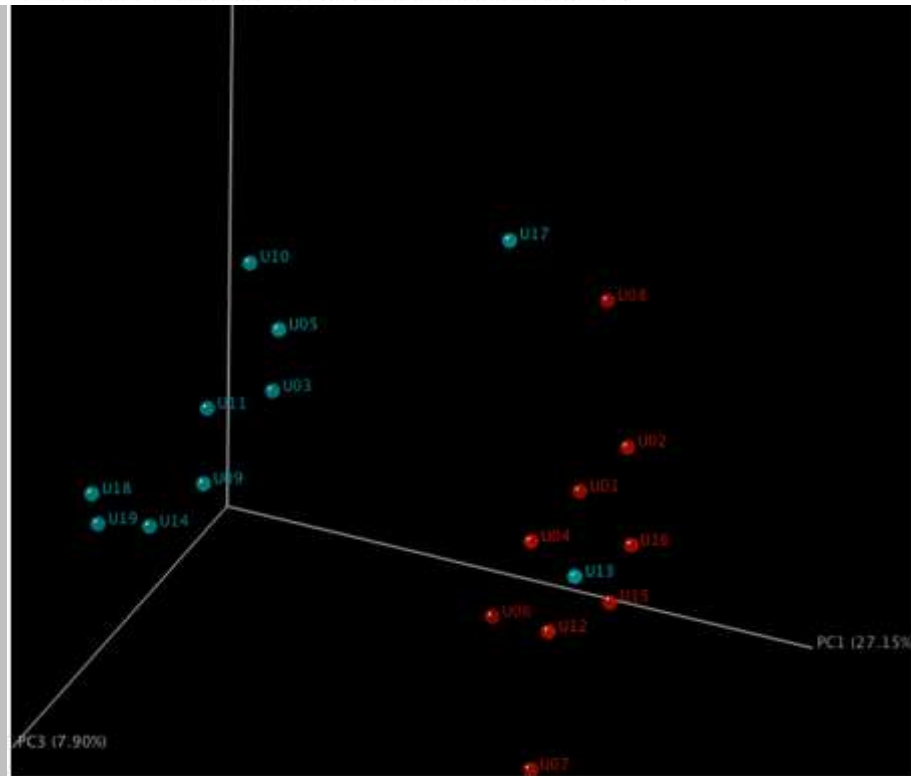
# İnsan idrar mikrobiyomunu nasıl inceliyoruz: Metodlar

Topic	Methods	References <sup>b</sup>
Study design	Cross sectional	<a href="#">10</a> , <a href="#">21</a> , <a href="#">53</a> , <a href="#">137–139</a>
	Longitudinal	<a href="#">2</a> , <a href="#">44</a> , <a href="#">53</a> , <a href="#">103</a> , <a href="#">137</a> , <a href="#">138</a>
Sample collection	Voided/midstream clean catch	<a href="#">5</a> , <a href="#">9</a> , <a href="#">16</a> , <a href="#">17</a> , <a href="#">27–32</a> , <a href="#">67</a>
	Transurethral catheterization	<a href="#">4</a> , <a href="#">9</a> , <a href="#">10</a> , <a href="#">13</a> , <a href="#">16</a> , <a href="#">18</a> , <a href="#">19</a> , <a href="#">22</a> , <a href="#">24</a> , <a href="#">31</a> , <a href="#">67</a>
	Suprapubic aspiration	<a href="#">9</a> , <a href="#">67</a>
Data and metadata acquisition	Culture based	<a href="#">4</a> , <a href="#">13</a> , <a href="#">19</a>
	16S rRNA amplicon sequencing	<a href="#">4</a> , <a href="#">5</a> , <a href="#">9</a> , <a href="#">10</a> , <a href="#">13–18</a> , <a href="#">21</a> , <a href="#">22</a> , <a href="#">24</a> , <a href="#">26–33</a> , <a href="#">67</a>
	Whole-genome metagenomics	<a href="#">11</a> , <a href="#">13</a> , <a href="#">15</a> , <a href="#">25</a> , <a href="#">53</a> , <a href="#">67</a>
Data analysis	Taxonomic profiling	<a href="#">4</a> , <a href="#">5</a> , <a href="#">9</a> , <a href="#">10</a> , <a href="#">13–18</a> , <a href="#">21</a> , <a href="#">22</a> , <a href="#">24</a> , <a href="#">26–33</a> , <a href="#">140</a>
	Functional analysis	<a href="#">11</a> , <a href="#">13</a> , <a href="#">15</a> , <a href="#">25</a> , <a href="#">53</a>
	Meta-analysis	<a href="#">53</a> , <a href="#">134</a> , <a href="#">135</a> , <a href="#">138</a> , <a href="#">141</a> , <a href="#">142</a>
Data democratization	Data curation, structure, public availability and ethics	<a href="#">53</a> , <a href="#">134</a> , <a href="#">142–144</a>

## Characteristic Male Urine Microbiomes Associate with Asymptomatic Sexually Transmitted Infection

David E. Nelson , Barbara Van Der Pol, Qunfeng Dong, Kashi V. Revanna, Baochang Fan, Shraddha Easwaran, Erica Sodergren, George M. Weinstock, Lixia Diao, J. Dennis Fortenberry

Published: November 24, 2010 • <https://doi.org/10.1371/journal.pone.0014116>

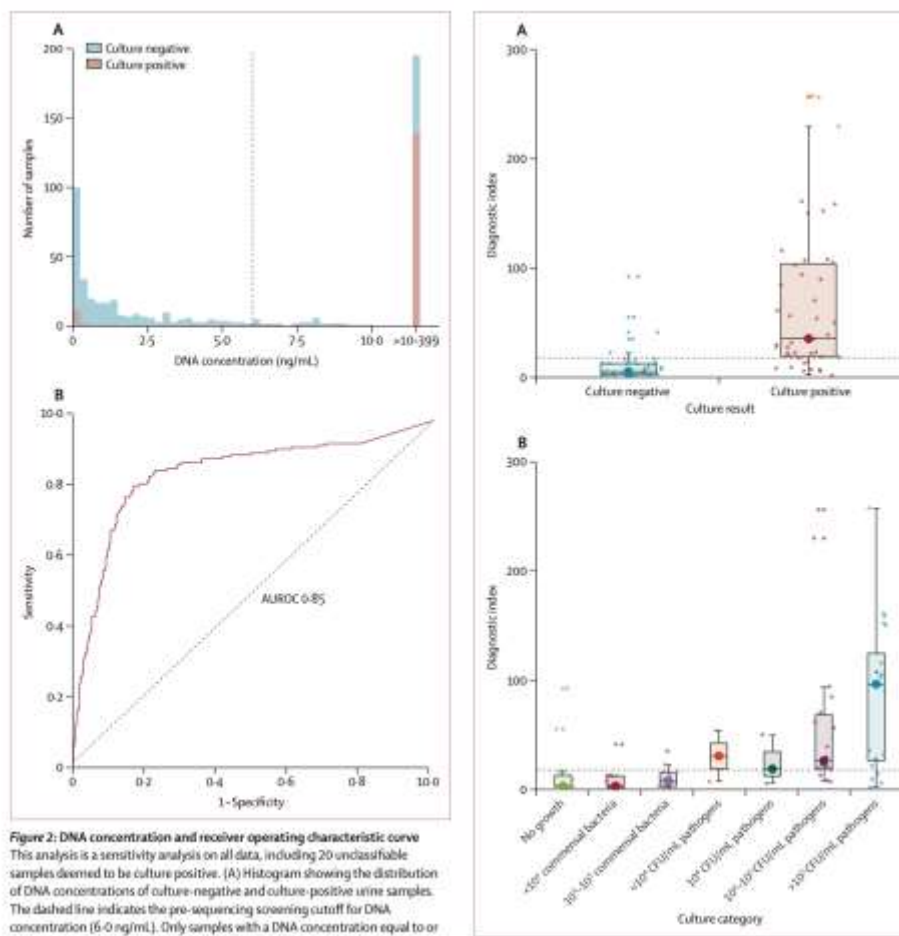


**Figure 3. Unifrac community comparison of urine.**

Clustering of urine microbiomes was performed using un-weighted Unifrac [37]. The percent variations explained by each principle component are indicated on the axis. Blue circles indicate urine from individuals positive for STI; red circles correspond to urine negative for STI.

# Metagenomic DNA sequencing for semi-quantitative pathogen detection from urine: a prospective, laboratory-based, proof-of-concept study

Victoria A Janes, Sébastien Matamoros, Patrick Munk, Philip T L C Clausen, Sylvie M Koekkoek, Linda A M Koster, Marja E Jakobs, Bob de Wever, Caroline E Visser, Frank M Aarestrup, Ole Lund, Menno D de Jong, Patrick M M Bossuyt, Daniel R Mende, Constance Schultsz

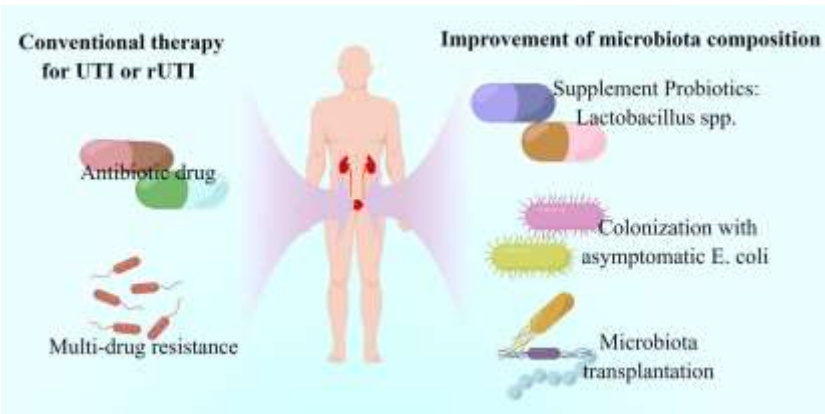


**Figure 2: DNA concentration and receiver operating characteristic curve**  
 This analysis is a sensitivity analysis on all data, including 20 unclassifiable samples deemed to be culture positive. (A) Histogram showing the distribution of DNA concentrations of culture-negative and culture-positive urine samples. The dashed line indicates the pre-sequencing screening cutoff for DNA concentration (6.0 ng/mL). Only samples with a DNA concentration equal to or above this cutoff were randomly selected for sequencing. (B) The ROC curve shows a high diagnostic performance with an AUROC of 0.85.

# Eksiklikler nerede?

- Değişiklikler bilinmiyor
- Genetik özellikler
- Temporal değişiklikler bilinmiyor
- Longitudinal çalışmalar eksik

# Tekrarlayan Üriner Enfeksiyonlarda Alternatif Tedavi Seçenekleri

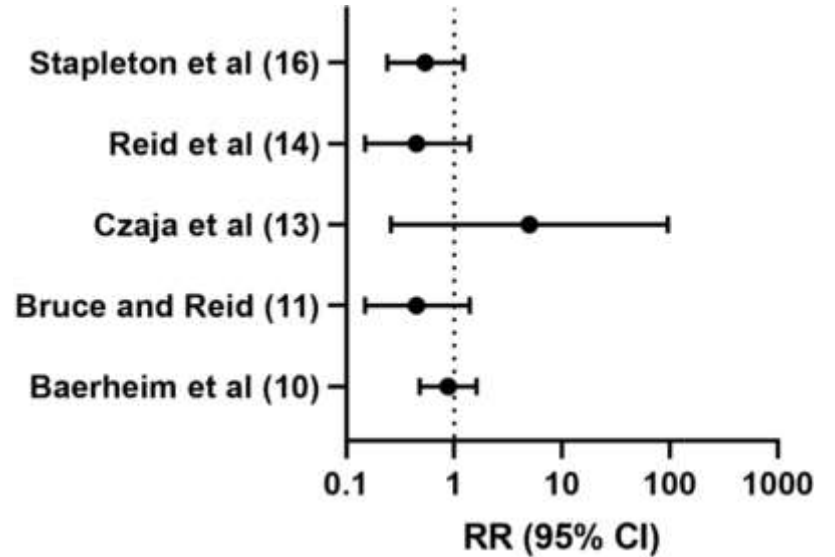


Home > International Urogynecology Journal > Article

## Can vaginal lactobacillus suppositories help reduce urinary tract infections?

Original Article | Open access | Published: 01 July 2023

Volume 34, pages 2713–2718, (2023) | Cite this article



- Pek çok çalışmada Probiotiklerin yararı kanıtlanmadı
- 2 çalışmada 1 yıl kullanımı yararlı bulunmuş

Weng, Xia, Liu, *Open Medicine*, 2023,



Kalbimizdesin  
Sevgili Bilge