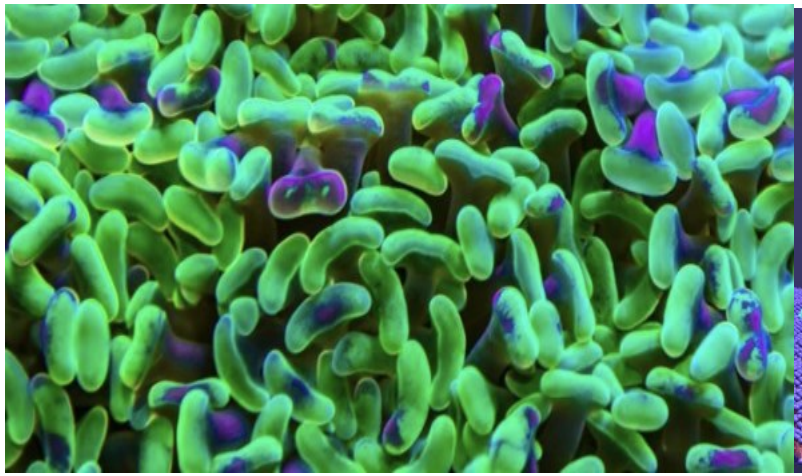
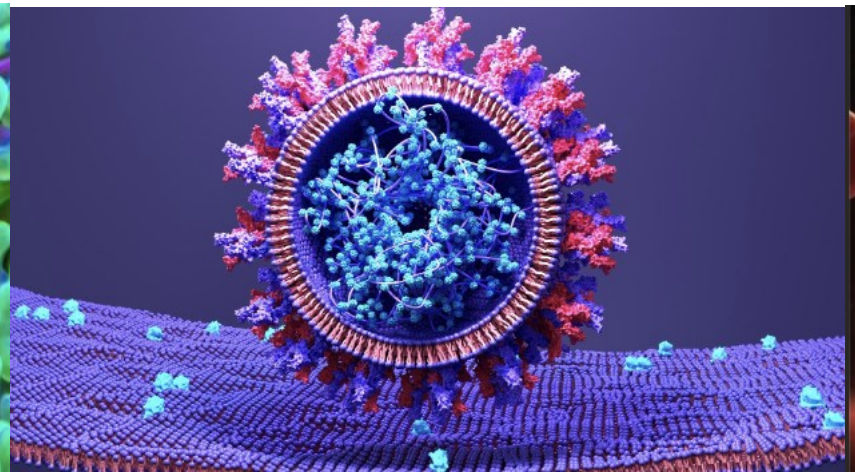
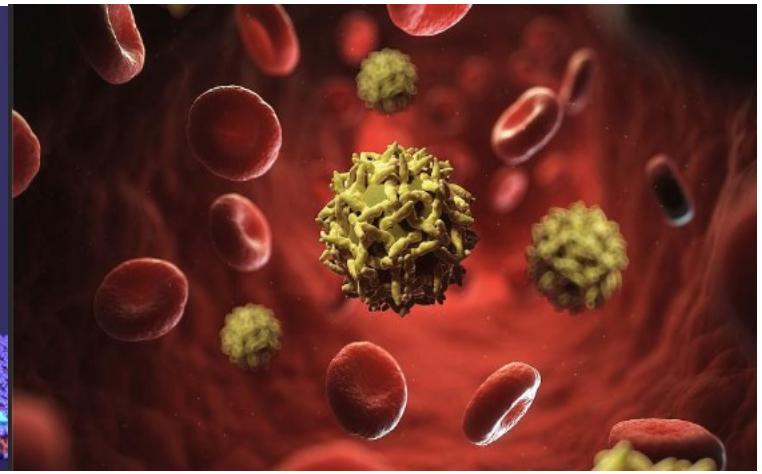




Evaluarea microbiomului și a profilului inflamator la pacienții diabetici postinfecţie acută cu SARS-CoV-2

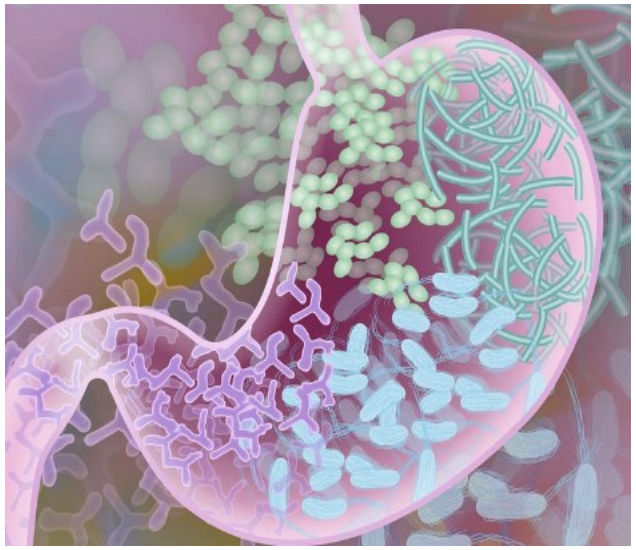
CS II Dr. Gratiela Gradisteanu

Era microbiomului

Sănătate

Comportament

Digestie



Metabolism

Infecție

Imunitate

International Journal of
Molecular Sciences

MDPI

Article

Snapshot into the Type-2-Diabetes-Associated Microbiome of a Romanian Cohort

Gratiela Gradisteanu Pircalabioru [1,2,*], Mariana-Carmen Chifiriuc [1,2,3,4], Ariana Picu [5], Laura Madalina Petcu [5], Maria Trandafir [6] and Octavian Savu [5,6]

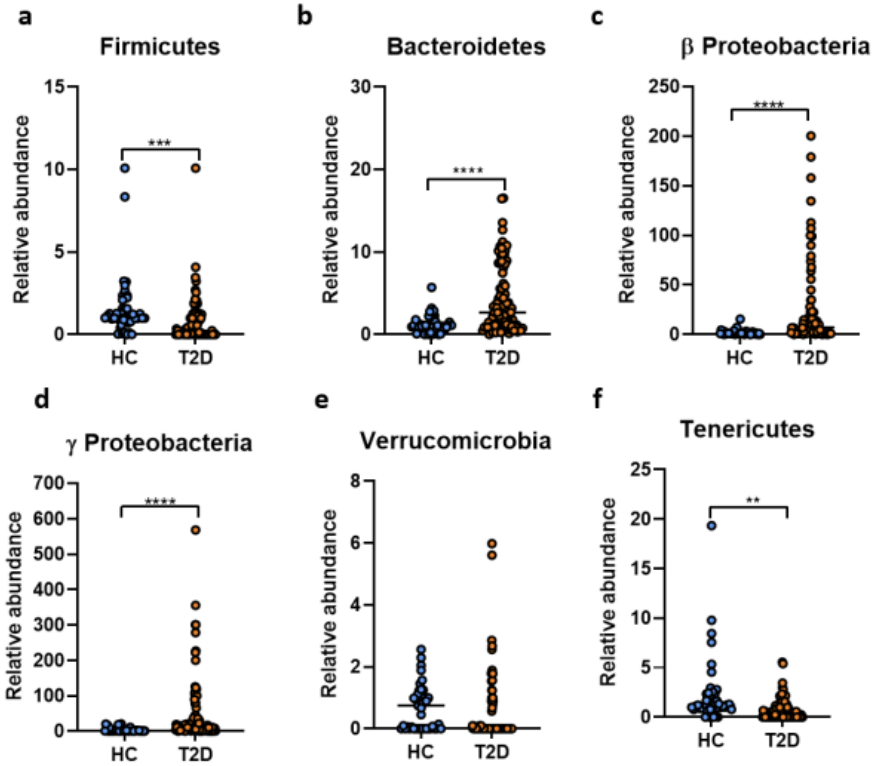


Figure 1. Microbiota analysis in T2D patients (n = 105) versus healthy controls (n = 45). The relative abundance of the Firmicutes (**a**), Bacteroidetes (**b**), Beta Proteobacteria (**c**), Gamma Proteobacteria (**d**), Verrucomicrobia (**e**) and Tenericutes (**f**) bacteria in fecal samples harvested from healthy individuals and T2D patients. **, $p < 0.01$; ***, $p < 0.001$, **** $p < 0.0001$.

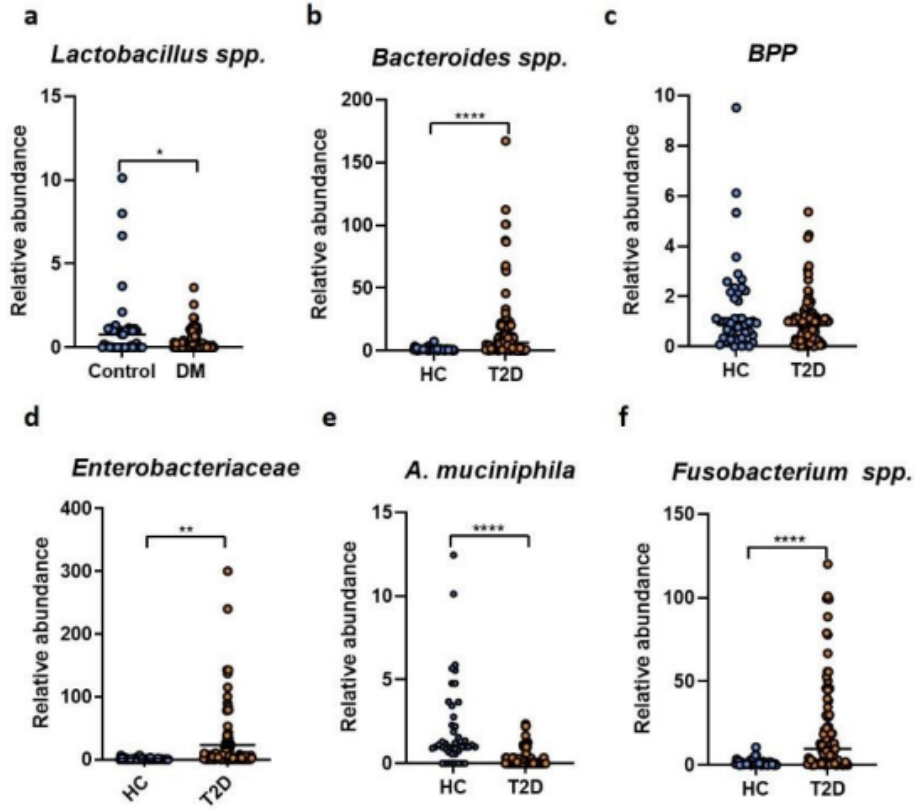


Figure 2. Microbiota analysis in T2D patients (n = 105) versus healthy controls (n = 45). The relative abundance of the *Lactobacillus spp.* (**a**), *Bacteroides spp.* (**b**), *Bacteroides–Porphyromonas–Prevotella* (**c**), *Enterobacteriaceae* (**d**), *A. muciniphila* (**e**) and *Fusobacterium spp.* (**f**) in fecal samples harvested from healthy individuals and T2D patients. *, $p < 0.05$, **, $p < 0.01$, **** $p < 0.0001$.

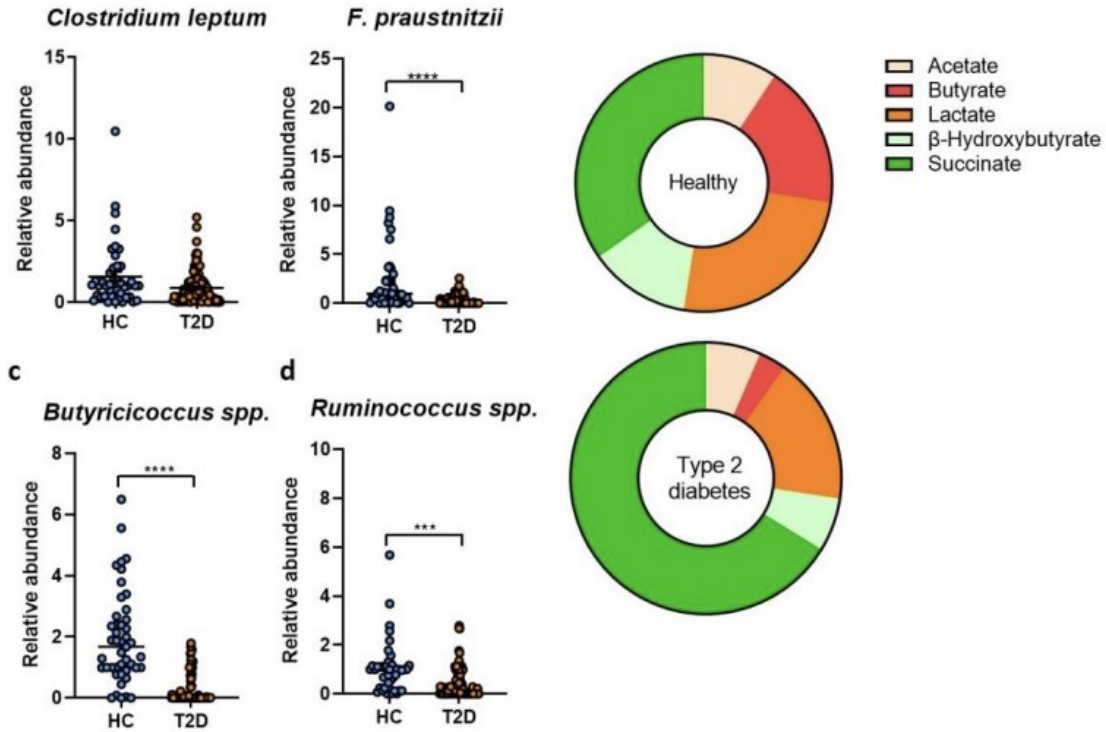


Figure 3. Microbiota and metabolite analysis in T2D patients (n = 105) versus healthy controls (n = 45). The relative abundance of the *Clostridium leptum* (**a**), *F. prausnitzii* (**b**), *Butyricicoccus* (**c**), *Ruminococcus* (**d**) in fecal samples harvested from healthy individuals and T2D patients; (**e**) metabolites quantification in fecal samples harvested from healthy individuals and T2D patients ***, $p < 0.001$, **** $p < 0.0001$.

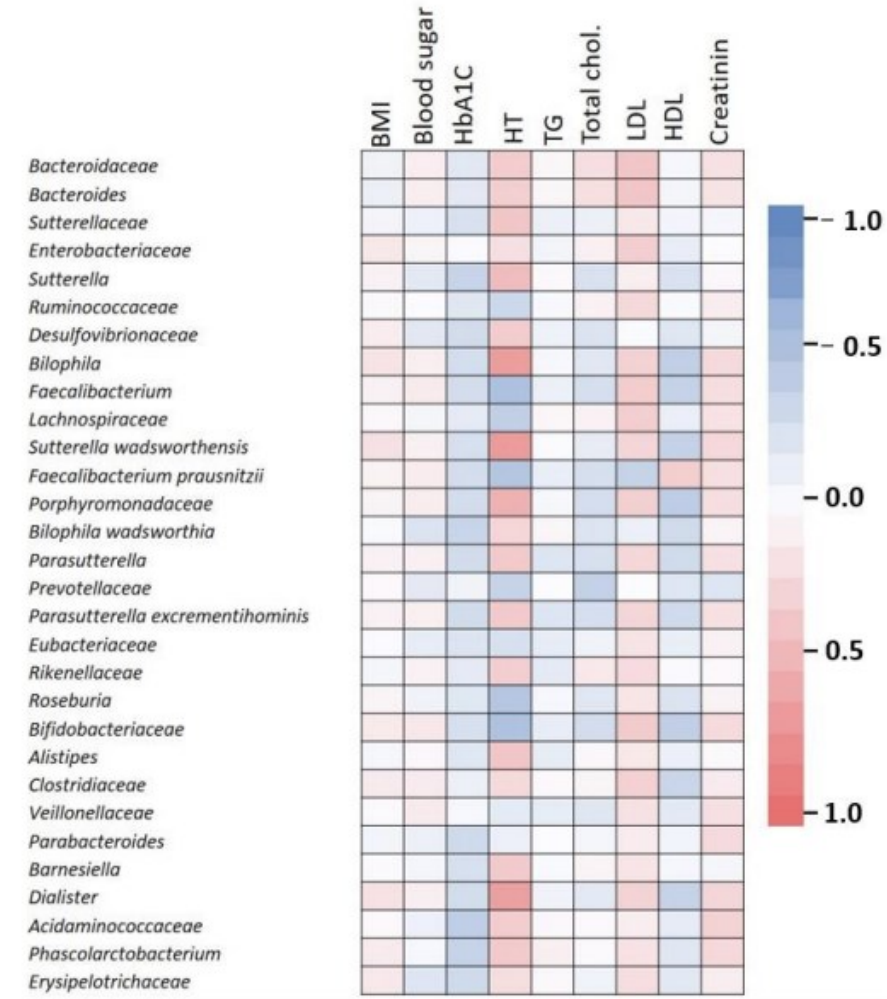


Figure 5. Correlations between clinical parameters and the top 30 OTUs in type 2 diabetes patients. The clinical parameters included BMI, hypertension (HT), hemoglobin A1c (HbA1c), serum cholesterol, triglycerides, HDL, LDL and creatinine. Pink indicates a positive correlation, blue indicates a negative correlation, while white indicates no correlation.

AOȘR teams - Evaluarea microbiomului și a profilului inflamator la pacienții diabetici postinfecţie acută cu SARS-CoV-2

Gratiela Grădișteanu

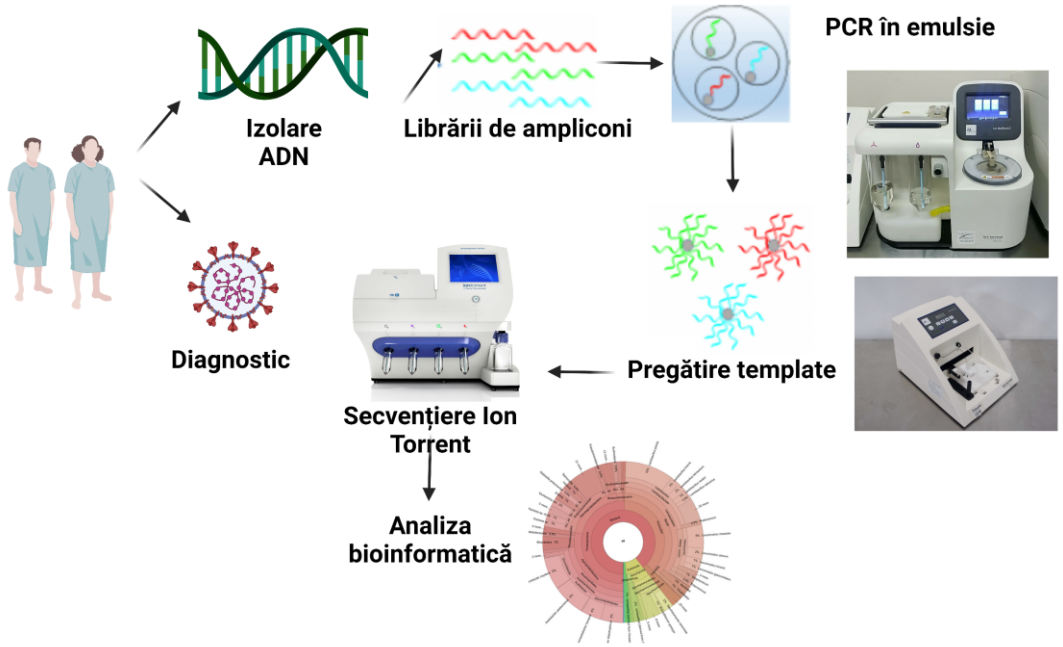
Secvențiere
Analiza statistică

Ilda Barbu

Bioinformatică
Analiza statistică

Georgiana Grigore

Extracție ADN
Profil inflamator



biomedicines

MDPI

Article

Impact of COVID-19 on the Microbiome and Inflammatory Status of Type 2 Diabetes Patients

Gratiela Gradisteanu Pircalabioru [1,2,*], Georgiana Alexandra Grigore [2,3], Ilda Czobor Barbu [2,3], Mariana-Carmen Chifiriuc [1,2,3,4] and Octavian Savu [5,6]

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Table 1. Patient characteristics: age, sex (female/male), body mass index (BMI), blood pressure (millimeters of mercury—mmHg), glycated hemoglobin (HbA1c), high-density lipoprotein (HDL), low-density lipoprotein (LDL), tryglycerides (TG), and medication used—statin, metformin, Dipeptidyl peptidase-4 (DPP4) inhibitors and insulin.

Characteristic	HC	T2D
Age	56 ± 10.30	63 ± 12.25
Sex (F/M)	10/5	9/6
BMI	24.8 ± 2.25	31 ± 4.29
Blood pressure (mmHg): systolic	110 ± 2.10	138.5 ± 2.8
Blood pressure (mmHg): diastolic	62 ± 1.99	88.1 ± 1.3
HbA1c (%)	5.4 ± 0.19	6.5 ± 0.6
HDL (mg/dL)	65 ± 3.99	47 ± 6.55
LDL (mg/dL)	97 ± 15.56	118 ± 27.67
TG (mg/dL)	88 ± 14.27	132 ± 48.47
Statin (number/total)	2/15	3/15
Metformin (number/total)	n/a	15/15
DPP4 inhibitors	n/a	2/15
Insulin	n/a	0/15

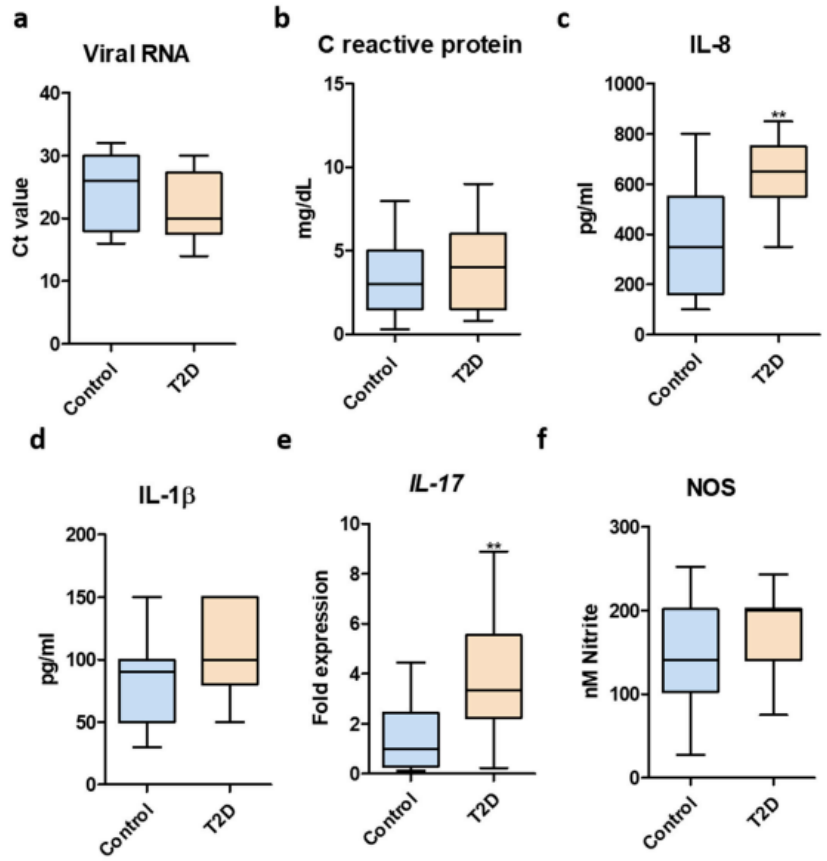

Figure 1. Inflammatory markers in T2D after SARS-CoV-2 infection. (**a**) SARS-CoV-2 RNA levels in healthy controls and T2D patients—determined using RT PCR; (**b**) CRP quantification in serum samples from SARS-CoV-2-infected healthy controls and T2D patients; (**c**) IL-8 quantification in serum samples from SARS-CoV-2-infected healthy controls and T2D patients; (**d**) IL-1β in serum samples from SARS-CoV-2-infected healthy controls and T2D patients; (**e**) IL-17 expression in total blood samples from SARS-CoV-2-infected healthy controls and T2D patients; (**f**) NOS quantification in serum samples from SARS-CoV-2-infected healthy controls and T2D patients. Statistical analyses performed using Unpaired *t*-test with Welch's correction. **, $p < 0.01$.

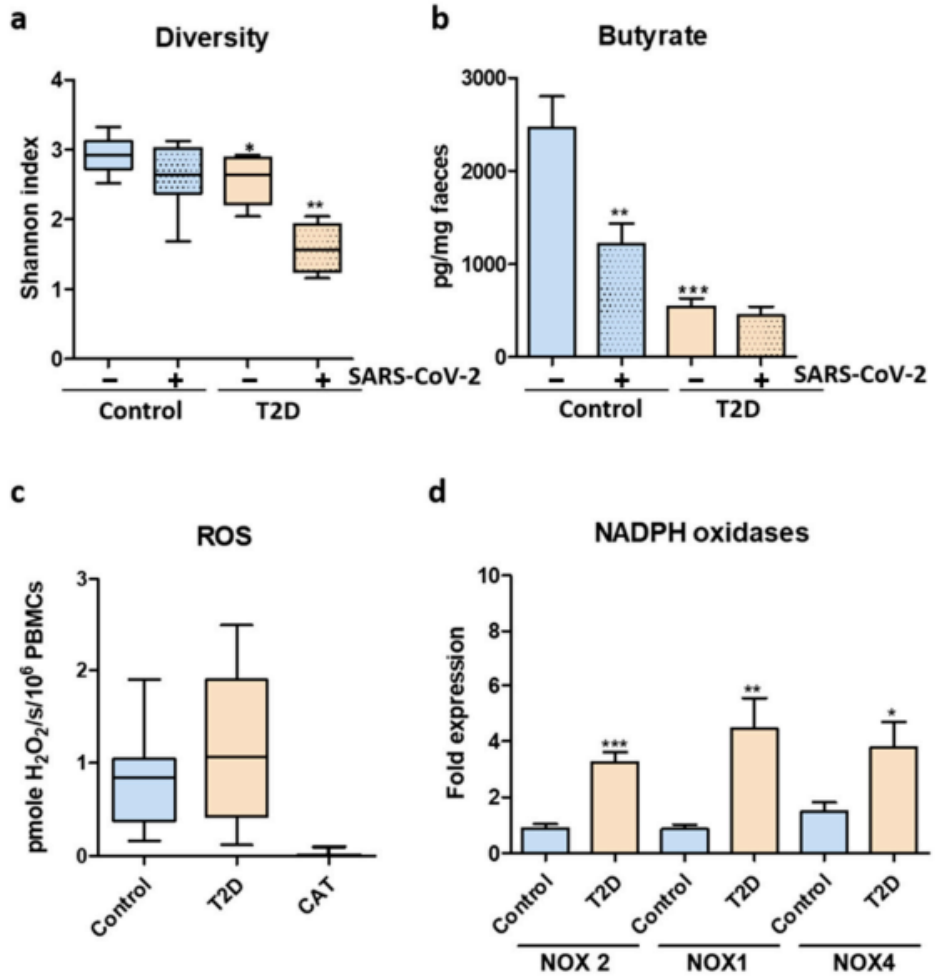

Figure 2. Microbiome dysbiosis and oxidative stress in T2D patients after SARS-CoV-2 infection.

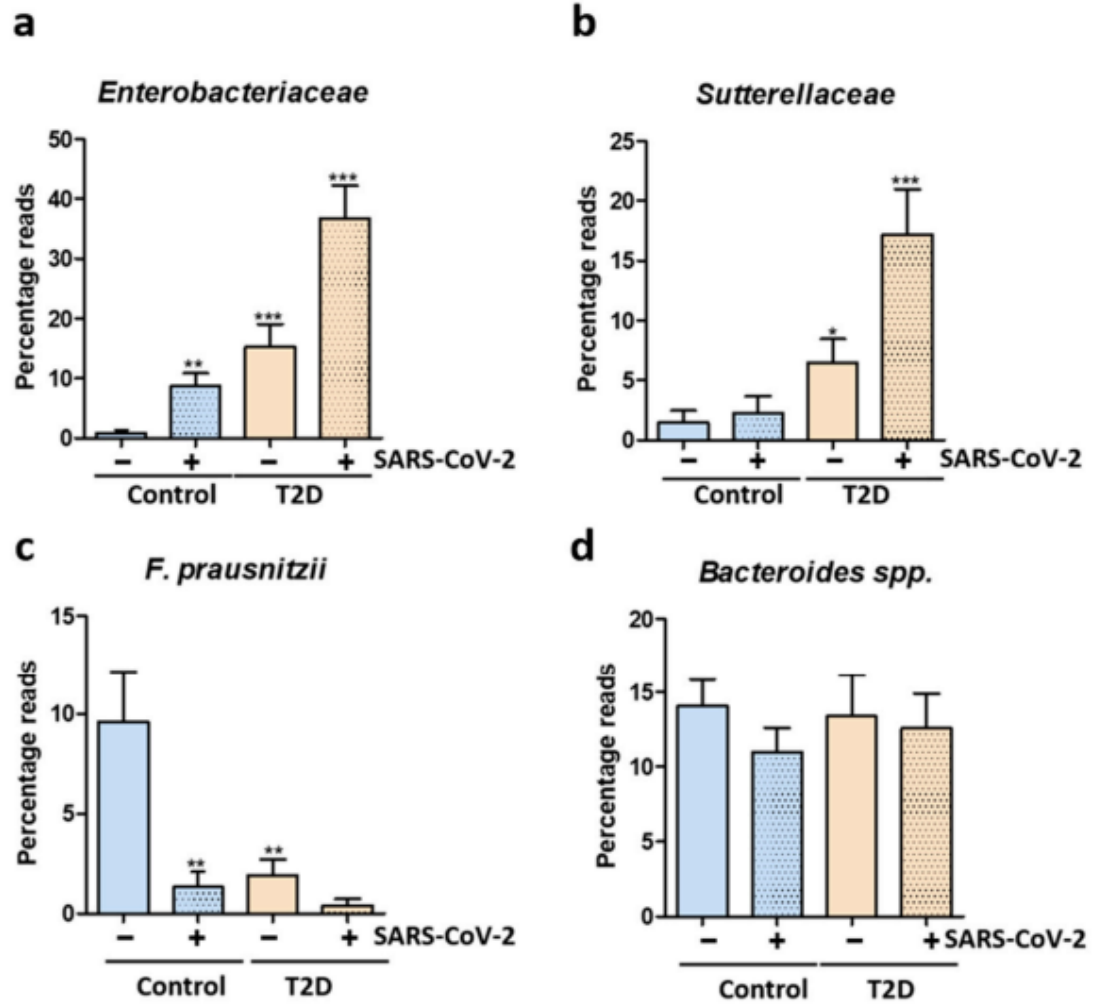

Figure 3. Microbiome alterations after SARS-CoV-2 infection in T2D patients and healthy controls.

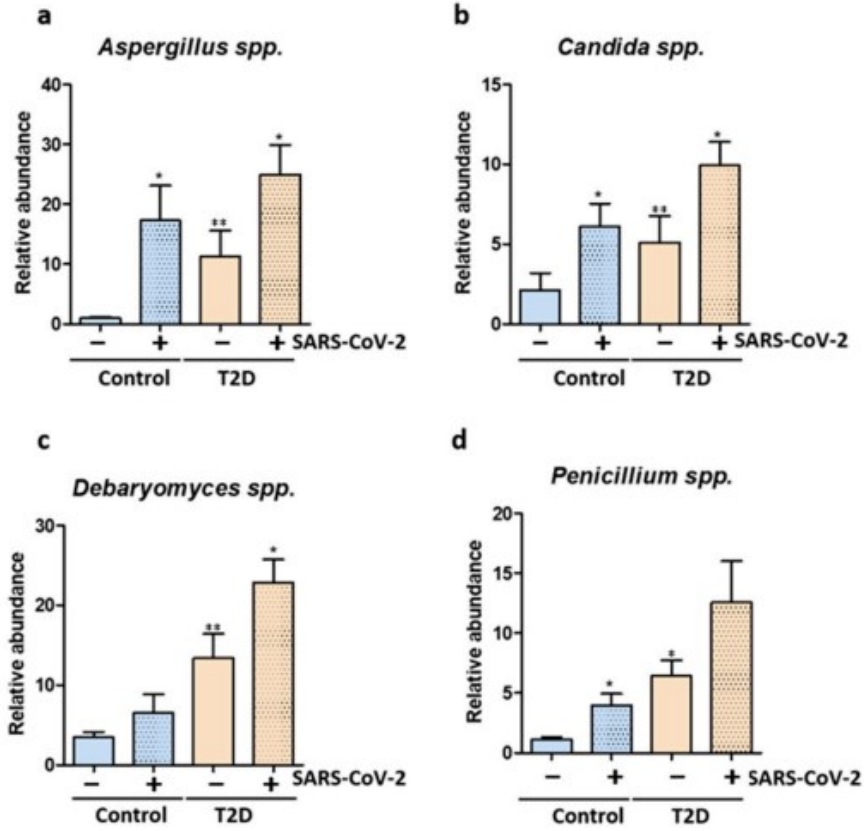

Figure 4. SARS-CoV-2 infection triggers mycobiome changes. (**a**) Relative abundance of *Aspergillus*

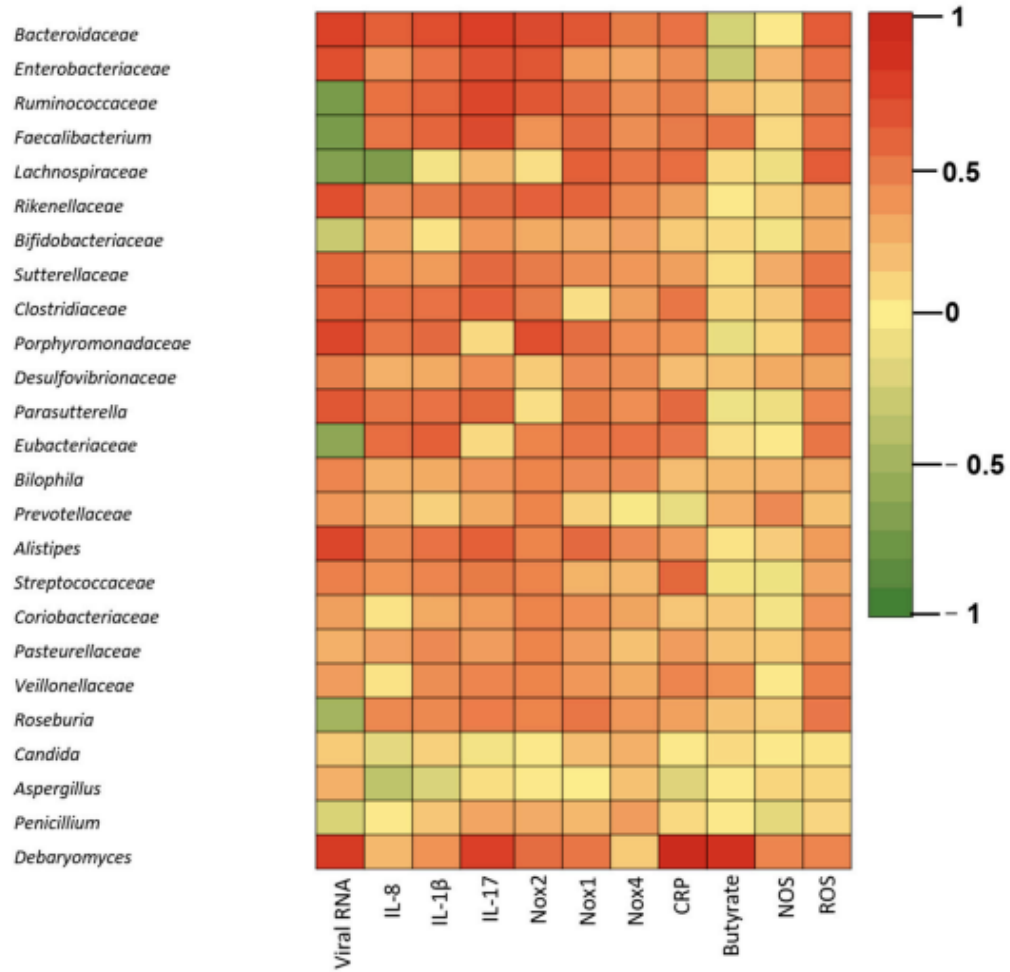

Figure 5. Correlations between clinical parameters and the top OTUs identified in SARS-CoV-2 infected T2D patients and healthy controls. The clinical parameters included viral RNA levels, IL-1β, IL-8, Il-17, oxidative stress (ROS, NOS, Nox1, Nox2, Nox4), CRP. Red indicates a positive correlation, green indicates a negative correlation, while yellow indicates no correlation.

Sustenabilitate

Nature Awards

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Title of Project

Mechanistic insights into the AhR- SARS-CoV-2 – host microbiota interactions

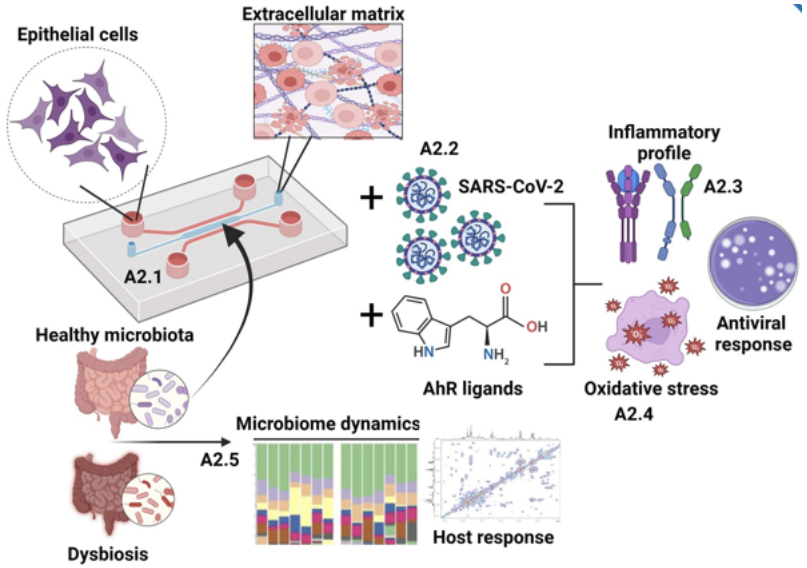
09/10/2023

id. 44016316

by **Gratiela GRADISTEANU** in **Global Grants for Gut Health - Cycle Six - The relationship between the human gut microbiome and long COVID**

gratiela87@gmail.com

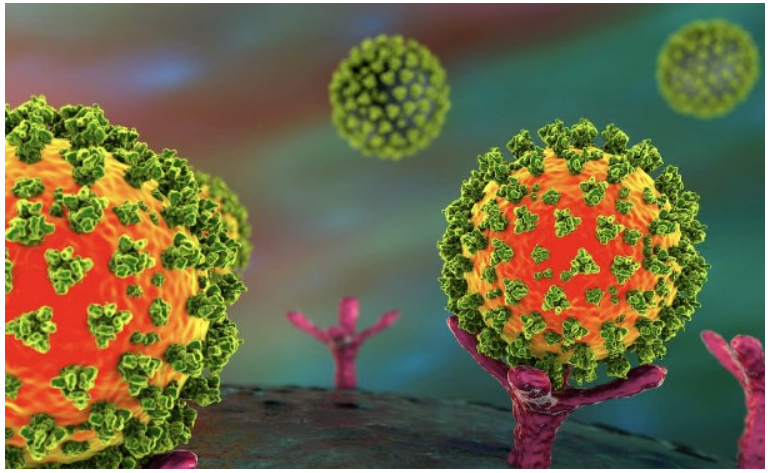
Original Submission 09/10/2023



Public outreach

Diseminarea rezultatelor

1. **Prezentare orală -** ECCMID (European Congress of Clinical Microbiology and Infectious Diseases), Lisabona, Protugalia (23-26 Aprilie 2022) -prezentare orală - Gut microbiome profiles in type 2 diabetes patients after COVID-19 Abstract / Presentation Number: 348/O0194
2. **Prezentare orală -** 41st International Congress of the Society for Microbial Ecology in Health and Disease (SOMED) -14.06.2022 Exploring the gut-lung axis in COVID-19
3. Prezentare orala – AOSR , 25.11.2023; rezultate proiect AOSR
4. Prezentare orala - Sesiuena de comunare a rezultatelor cercetarii –Univ. Bucuresti, 17.11.2023
5. **Poster SESIUNEA DE COMUNICĂRI ȘTIINȚIFICE „D. BRANDZA**”Ediția a XXVIII-a, 4-5.11.2022, Analiza rezistomului asociat diabetului zaharat de tip 2- Grațiela GRĂDIȘTEANU PÎRCĂLĂBIORU, Ilda BARBU, Irina GHEORGHE-BARBU, Georgiana GRIGORE, Octavian SAVU, Mariana-Carmen CHIFIRIUC
6. Articole ISI publicate cu afiliere AOSR : 15 publicate + 3 articole in evaluare, 2 articole in lucru



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