THE MICROVERSE

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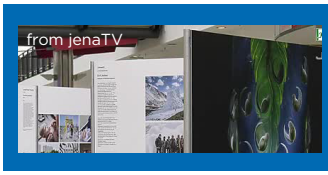
RECRUITMENT CALL

We are advertising open Postdoc and PhD positions in the Microverse Cluster. See our homepage for these and more job opportunities and spread the word to interested colleagues. Application deadline is 21st February.

COMING UP

- **PhD Day 2022** on **January 20** (11:00 - 16:00, online) | Organized by the FSU Jena, the event includes talks and information on different topics for doctoral researchers and those interested in a doctorate, and also for Postdocs. Read more
- First **Jena RNA Club** gathering on **January 28** (12:30 - 13:30, online) | Manja Marz and her team will open the series with their research on RNA Bioinformatics. Contact kathrin.froehlich@uni-jena.de for details.

LIFE GOES GOETHE GALERIE - CALL FOR PICTURES



The profile line LIFE plans an exhibition of photographs, microscopic images and visualizations from the life sciences in Jena's shopping mall for two weeks in summer. Become part of this event and send your contribution (picture + short description, name, affiliation) to franziska.eberl@uni-jena.de.

NEW PUBLICATIONS

Comparative genomic and metabolomic analysis of *Termitomyces* species provides insights into the terpenome of the fungal cultivar and the characteristic odor of the fungus garden of *Macrotermes natalensis* termites
Christine Beemelmanns, Dirk Hoffmeister, Janis Fricke and colleagues | mSystems | Jan 11, 2022
This study provides new insights into the volatilome and biosynthetic capabilities of the evolutionary conserved fungal genus *Termitomyces*, that opens a new source of rare enzymatic transformations. Read more

Biomineralization by extremely halophilic and metal-tolerant community members from a sulfate-dominated metal-rich environment
Erika Kothe, Falko Langenhorst and colleagues | Microorganisms | Dec 31, 2021
Mineral formation of Cs- and Sr-struvite at former uranium mining sites reduces bioavailability and forces microbial community adaptation with major importance for bioremediation of contaminated soils. Read more


from Harpke et al.

Backbone NMR assignment of the nucleotide binding domain of the *Bacillus subtilis* ABC multidrug transporter BmrA in the post-hydrolysis state
Ute Hellmich, Victor Hugo Pérez Carrillo and colleagues | Biomolecular NMR Assignments | Dec 22, 2021
To understand structural and dynamic consequences of nucleotide interactions within the NBD, ^{1}H, ^{13}C and ^{15}N backbone chemical shift assignments of wildtype NBD have been determined. Read more

Ancient metagenomic studies: considerations for the wider scientific community
Alexander Hübner and colleagues | mSystems | Dec 21, 2021
This review bridges the gap between ancient and modern metagenomics by reflecting on common misconceptions, pointing out major challenges and showing useful resources for newcomers to the field. Read more

The economical lifestyle of CPR bacteria in groundwater allows little preference for environmental drivers
Kirsten Küsel, Manja Marz, Martin Taubert and colleagues | Environmental Microbiome | Dec 14, 2021
The authors found little genomic evidence for niche adaption of Patescibacteria to oxic or anoxic groundwaters. Read more

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Dynamic optimization reveals alveolar epithelial cells as key mediators of host defense in invasive aspergillosis

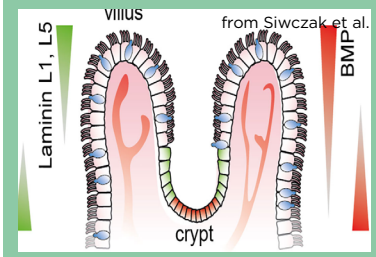
Axel Brakhage, Stefan Schuster, Lukáš Radosa and colleagues | PLoS Computational Biology | Dec 13, 2021

A new model reveals major determinants of infection outcome on the host and pathogen side, and affirms the importance of neutrophils in invasive aspergillosis. Read more

First comparative analysis of *Clostridium septicum* genomes provides insights into the taxonomy, species genetic diversity, and virulence related to gas gangrene

Anne Busch and colleagues | Frontiers in Microbiology | Dec 9, 2021

This study provides first insights into strain relatedness and genomic plasticity of *C. septicum* and contributes to the understanding of the virulence mechanisms of this pathogen. Read more



Intestinal stem cell-on-chip to study human host-microbiota interaction

Alexander Mosig and colleagues | Frontiers in Immunology | Dec 8, 2021

This review describes the use of organ-on-chip technology to control and guide differentiation processes in the gut *in vitro*. Applications and strategies to investigate mechanical processes of intestinal stem cell differentiation, tissue formation and interaction of the intestine with microbiota are discussed in the context of gastrointestinal diseases. Read more

Bolstering fitness via CO_2 fixation and organic carbon uptake: mixotrophs in modern groundwater

Martin Taubert, Jürgen Popp, Kirsten Küsel and colleagues | ISME J | Dec 7, 2021

Stable isotope cluster analysis on the $^{13}CO_2$-derived carbon flow revealed that the most abundant active microorganisms in groundwater, mixotrophs, are the main driver of production and remineralization of organic carbon. Mixotrophs replace 43-80% of total microbial carbon stores with ^{13}C in just 21-70 days. Read more

Metal adaptation and transport in hyphae of the wood-rot fungus *Schizophyllum commune*

Erika Kothe and colleagues | J Hazardous Materials | Dec 3, 2021

A strontium-adapted strain of *S. commune* is able to transport Sr over distances (cm-scale) using split plates, leading to translocation of mobile cations. Its metal transport and specific mechanisms in metal stress avoidance could be of importance for bioremediation of contaminated areas. Read more

Cysteinolic acid is a widely distributed compatible solute of marine microalgae

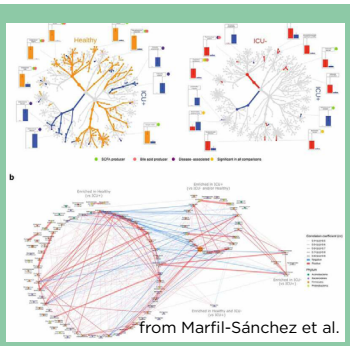
Georg Pohnert and colleagues | Marine Drugs | Nov 30, 2021

The authors describe the identification and quantification of cysteinolic acid, which underline its importance as an algal osmolyte. It is widespread among different phyla of phytoplankton and is an abundant highly polar compatible solute with a high impact on the global sulfur cycle. Read more

An integrative understanding of the large metabolic shifts induced by antibiotics in critical illness

Andrea Marfil-Sánchez, Pol Alonso-Pernas, Anne Busch, Christine Beemelmanns, Maria Ermolaeva, Michael Bauer, Gianni Panagiotou | Gut Microbes | Nov 18, 2021

Treatment of a critical illness with antibiotics could result in a more negative impact on the gut than the illness itself. Over 2000 gut microbiome samples representing 16 different diseases were used to characterize metabolic and compositional changes in the gut microbiome. Read more



Candida albicans elicits protective allergic responses via platelet mediated T helper 2 and 17 cell polarization

Bernhard Hube and colleagues | Immunity | Nov 9, 2021

This study reveals an allergic effector pathway in which *C. albicans* factor signals of the peptide toxin candidalysin through platelet-expressed receptor GP1, which in turn drives Th2 and Th17 responses and allergic airway disease. Read more

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