

Summary of: Genomic and Functional Characterization of *Enterococcus faecalis* Isolates Recovered From the International Space Station and Their Potential for Pathogenicity

Key findings:

- **Genomic Characterization**: The genomes of *Enterococcus faecalis* isolates recovered from the ISS were compared to those of clinical isolates and commensal strains. The ISS isolates were found to be more desiccation tolerant than commensal strains.
- **Desiccation Tolerance**: ISS isolates were more resistant to desiccation than commensal strains, with ISS_1 and ISS_4 surviving for longer periods.
- **Pathogenicity**: ISS isolates were found to be more pathogenic than commensal strains, with ISS_1 and ISS_4 having higher pathogen scores.
- **Antibiotic Resistance**: ISS isolates were resistant to multiple antibiotics, including tetracycline, which was mediated by an acquired gene.
- **Virulence Factors**: ISS isolates were found to carry more virulence factors than commensal strains, but these were also present in commensal strains.
- **Survival in *C. elegans***: ISS isolates were less effective at killing *C. elegans* than commensal strains, with ISS_1 being the least effective.
- **Comparison to Other Microorganisms**: ISS isolates were more resistant to spaceflight conditions than other microorganisms, but not to the extent of extremotolerant strains.
- **Future Research**: The study highlights the need for rapid diagnostic tools to distinguish pathogenic from commensal strains, and suggests incorporating high-level aminoglycosides into routine culturing practices.
- **Limitations**: The study's limitations include the inability to distinguish pathogenic from commensal strains using current tools, the lack of validated computational methods, and the need for more accurate genomic targets for pathogen detection.
- **Implications**: The study underscores the need for more accurate methods to distinguish pathogenic from commensal strains, and highlights the importance of continued monitoring of microbial populations on the ISS.