DEPARTAMENTO DE
BIOQUÍMICA
B-HIVE

Bio-MakerSpace

6 de septiembre de 2019

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B-HIVE

# ¿Qué es un HIVE?

- Un espacio colaborativo para crear de forma interdisciplinaria:
- **H**aciendo
- **I**nnovando
- **V**isualizando
- **E**mprendiendo

# ¿Porqué **B**-HIVE?

- Este mes se celebra la creación (hace 40 años) del primer producto **b**iofarmacéutico recombinante mercadeable , la insulina
- Muestra el potencial de la **b**iotecnología para mejorar la calidad de vida

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# Problema:

- Muchas ideas buenas se quedan en proyectos sin pasar al siguiente paso
- Los proyectos de impacto requieren consistencia y colaboración entre  disciplinas

- Linus Pauling-
- “Para tener una buena idea, es necesario tener muchas ideas y descartar las malas”

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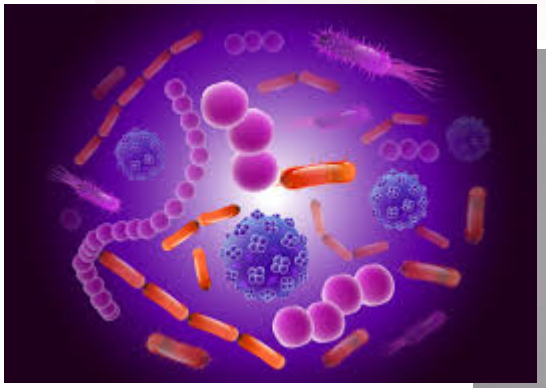
# Solución:

- Un espacio para co-working
- Estudiantes y profesores de distintas disciplinas colaboran para resolver un problema y emprender
- Convocatorias anuales para proyectos innovadores con potencial para emprendimientos

# Bio-remediación

- Estudiante s de física, bioquímica y microbiología , y biotecnología molecular
- Bacterias que degradan poliestireno



# Bio-productos sostenibles

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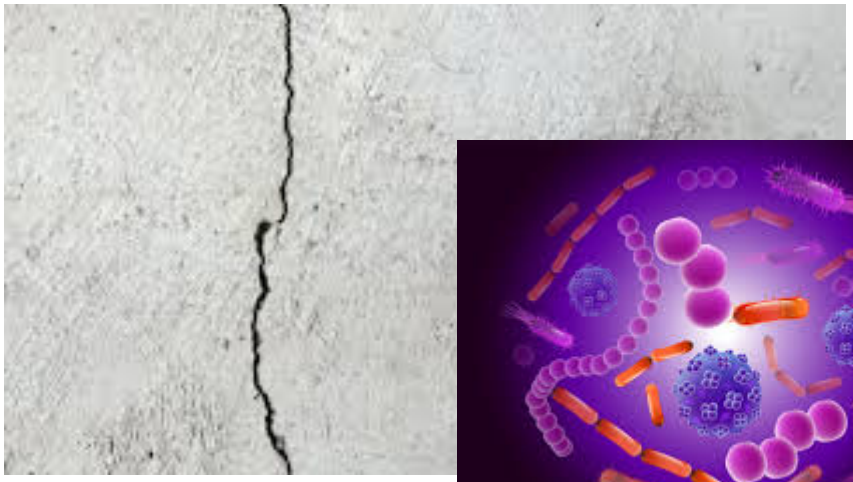
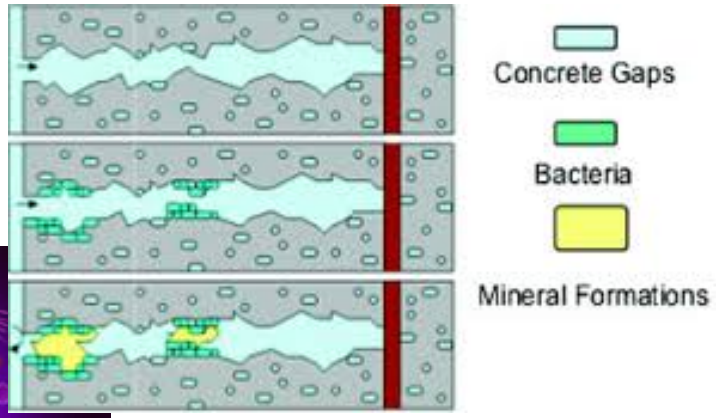
- Bacterias que producen bioconcreto
- Reparación de grietas
- Uso de desechos de industria para producir medios de  cultivo



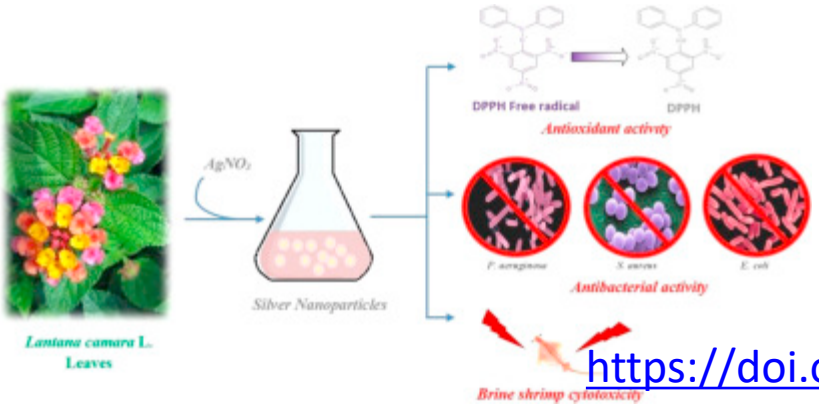




# Productos antimicrobianos

- Virus para tratamiento de superficies contaminadas con bacterias en industria

- Extractos de plantas




https://doi.org/10.1016/j.bbrep.2017.03.002

# Insecticidas inteligentes

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- Bacterias transgénicas producen moléculas que esterilizan mosquitos

UVG UNIVERSIDAD DEL VALLE DE GUATEMALA

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# SPACE BIOFILM

**Microscopy images of suspended P. aeruginosa, characterizing cell zice and morphology differences between bacteria cultured in space and their Earth controls.**

BioServe Space Technologies · DLR · Massachusetts Institute of Technology · Universität des Saarlandes

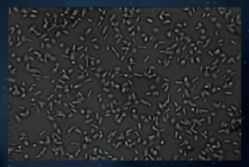
Biofilm growth has been observed in Soviet/Russian (Salyuts and Mir), American (Skylab), and International (ISS) Space Stations, sometimes jeopardizing key equipment like spacesuits, water recycling units, radiators, and navigation windows. Biofilm formation also increases the risk of human illnesses and therefore needs to be well understood to enable safe, long-duration, human space missions.

The Space Biofilms project aims to characterize biofilm inside the International Space Station in a controlled fashion, assessing changes in mass, thickness, and morphology. The space-based experiment also aims at elucidating the biomechanical and transcriptomic mechanisms involved in biofilm formation in space. To search for potential solutions, different materials and surface topologies will be used as the subtrata for microbial growth.

## ABOUT THE PROJECT

## OBJETIVO

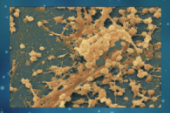
This project aims to characterize biofilm mass, thickness, morphology, and the associated gene expression using various spaceflight-relevant microbial species (one bacterial and one fugal) and different substrata materials.

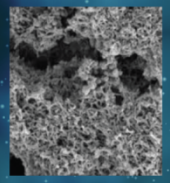


## HOW?

### Flying Hardware

Bacterial biofilms will be grown in BioServe's Fluid Processing Appartus (FPA) contained in Group Activation Packs (GAP).





### The team

The Space Biofilms team is composed of scientists, engineers, and undergraduate and graduate students from two national space agencies (NASA, German Aerospace Center (DLR), four universities (University of Colorado, Boulder, Saarland University, the Massachusetts Institute of Technology (MIT), and Universidad del Valle de Guatemala (UVG)), and one research center (BioServe Space Technologies).

**Information:**
www.colorado.edu/faculty/zea-luis/projects/space-biofilms

SPACE BIOFILMS · NASA

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Impossible