

# Biological Treatment Processes - Objectives

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- Understand the background, theories, techniques, and applications of biological approaches for the management of water, soil, and solid waste.
- Obtain in-depth knowledge on the biological approaches applied for wastewater treatment, study current issues of research, and discuss the future direction of research and applications.

# Biological Treatment Processes

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- Email: [ychoi81@snu.ac.kr](mailto:ychoi81@snu.ac.kr)
- Course material/textbook:
  1. Lecture notes
  2. Rittmann & McCarty, Environmental Biotechnology: Principles and Applications

# Student presentation & paper discussion

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- Final only! But...
- One of the student leads the class
- Select a topic (relevant to the class!) a week prior to the class assigned
- Select a relevant paper and post the link to eTL
- Briefly present general background
- Paper discussion

# Application of biological processes

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- Bioreactors: provide a controlled environment for the growth and maintenance of complex, self-assembled microbial communities that perform ecologically critical functions

# Application of biological processes

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- Wastewater treatment – secondary treatment



activated sludge

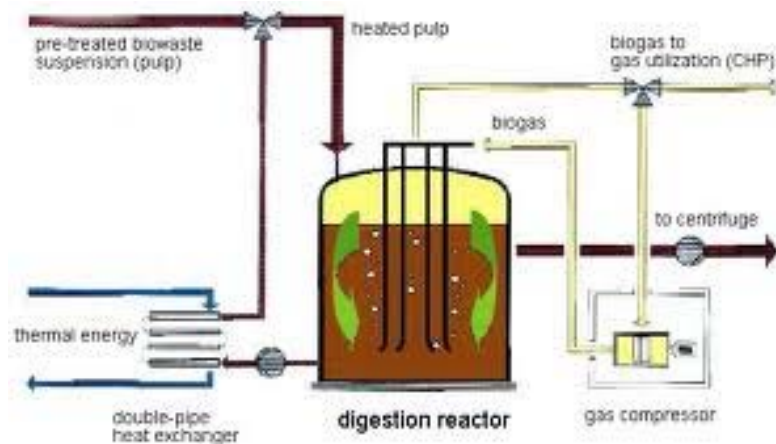


trickling filter

# Application of biological processes

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- Wastewater treatment – sludge treatment

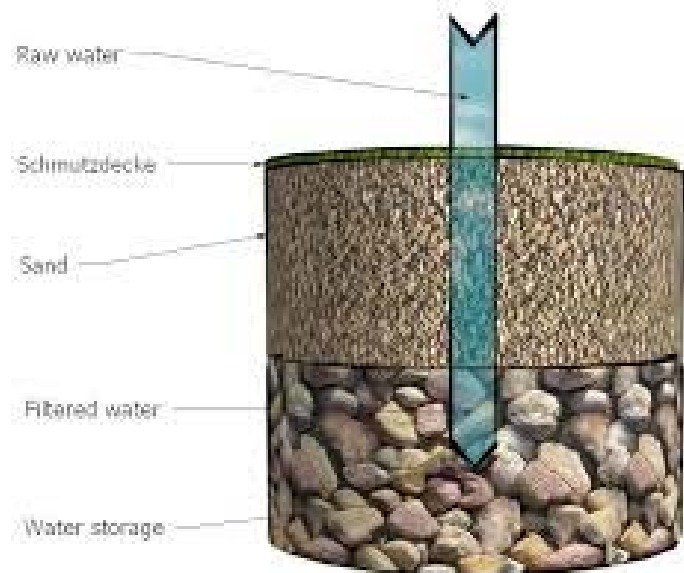


anaerobic digestion

# Application of biological processes

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- Drinking water treatment



slow sand filtration



biological AC treatment

# Application of biological processes

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- Soil and groundwater treatment



landfarming

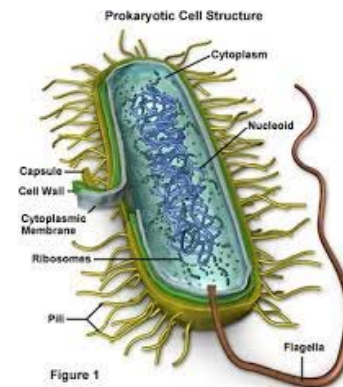
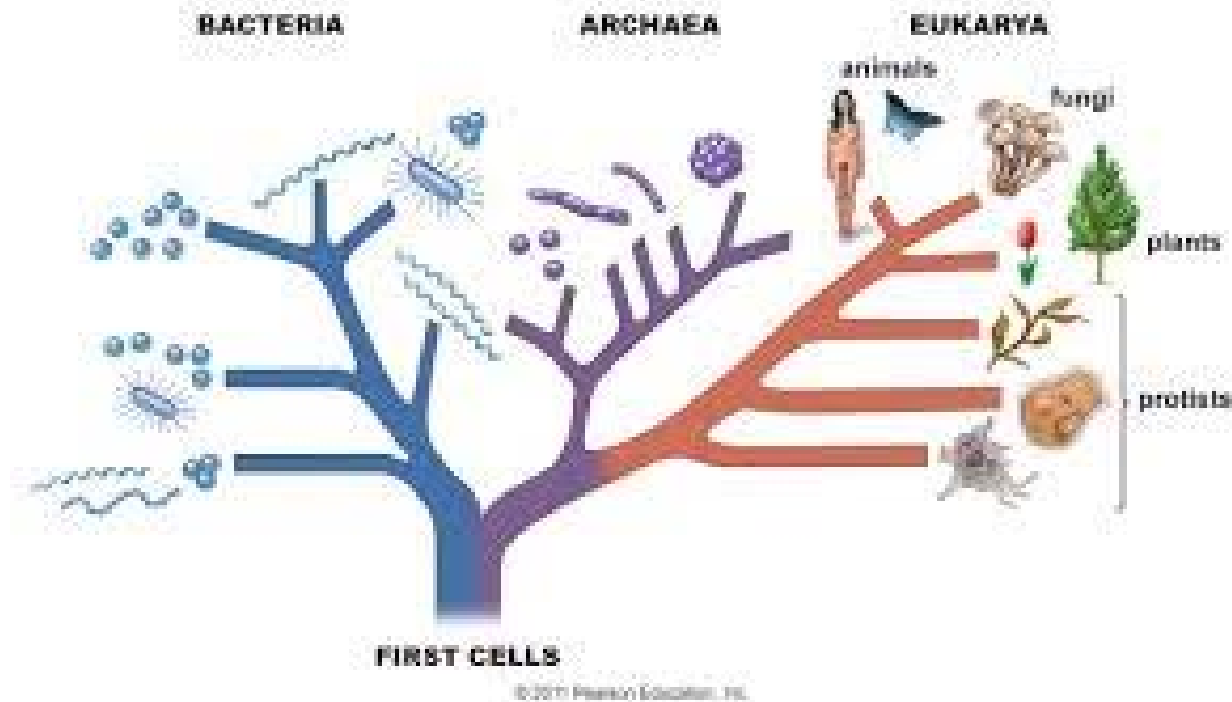


biostimulation



# The main player

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bacteria