



*8th
meeting on
medicinal
biotechnology*

BOOK OF
ABSTRACTS

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BOOK OF ABSTRACTS OF THE 8TH MEETING ON MEDICINAL BIOTECHNOLOGY

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Sustainable development: an educational laboratory exercise using bacteriophages

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Sustainable development is a model that seeks to balance growth, social inclusion, and environmental protection, ensuring present and future well-being. The United Nations 17 Sustainable Development Goals (SDGs) guide this goal until 2030. Sustainable biotechnology is a branch that refers to the set of techniques and processes that use living organisms, their parts, or derivatives to develop products and solutions that provide economic, social, and environmental benefits. The growing development of the techniques that use living organisms, alongside the multidisciplinary nature of a career in medicinal biotechnology, underscores the need for students in this sector to acquire a robust understanding of sustainable biotechnology as a fundamental component of their education. To this end, we propose a class focused on bacteriophages and their added value, covering five laboratory sessions: (i) design of a strategy for the recovery, enrichment, and isolation of a bacteriophage; (ii) extraction and recovery of bacteriophages from an environ-

mental water sample; (iii) bacteriophage enrichment (*Staphylococcus aureus* ATCC 6538P, *Staphylococcus epidermidis* ATCC 1457, *Escherichia coli* ATCC 25922, and *E. coli* ATCC 8739); (iv) isolation and propagation of bacteriophages; and (v) research on the applicability of bacteriophages in the field of sustainable development. The major goals of the present work were (i) to provide students with the necessary tools to adapt protocols in the context of a laboratory class; (ii) to assess the students' skills to carry out the assays in accordance with the expected results, and (iii) to foster awareness for sustainable development. All assays were performed by students of the B.Sc in Medicinal Biotechnology. The results showed that *Escherichia coli* ATCC 8739 was the only strain that allowed the isolation of bacteriophages. Overall, these laboratory sessions demonstrated the practical implementation of sustainability concepts while also expanding the knowledge of biotechnological laboratory techniques.

KEYWORDS: laboratory exercise, sustainable biotechnology, sustainable development goals (sdgs), bacteriophages

REFERENCES:

- 1Imara, K., & Altinay, F. (2021). Integrating education for sustainable development competencies in teacher education. *Sustainability*, 13(22), 12555. <https://doi.org/10.3390/su132212555>
- 2Abdullahi, A. M., Hussein, H. A., Ahmed, M. Y., Hussein, O. A., & Warsame, A. A. (2024). The impact of education for sustainable development on university students' sustainability behavior: A case study from undergraduate students in Somalia. *Frontiers in Education*, 9, 1413687. <https://doi.org/10.3389/fed-uc.2024.1413687>
- 3Runa, V., Wenk, J., Bengtsson, S., Jones, B. V., & Lanham, A. B. (2021). Bacteriophages in biological wastewater treatment systems: Occurrence, characterization, and function. *Frontiers in Microbiology*, 12, 730071. <https://doi.org/10.3389/fmicb.2021.730071>