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An experimental protocol for molecular biology lab at an Amazonian University

Fernando Valdivieso-Rivera[1], José Rafael Almeida[2], Carolina Proaño-Bolaños[2]
Affiliations expand

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Abstract

Laboratory-based practical classes are an essential component in teaching molecular biology for undergraduate students. Universidad Regional Amazonica Ikiam is a higher education institution located in the Ecuadorian Amazon rainforest, a high biodiversity place, including amphibians. Based on this, we have established a practical molecular biology program with eight sessions that contextualize the biodiverse surroundings of the University. This program stimulates synchronization of information between theory and practice and improves research skills. During these sessions, students are motivated to identify and characterize antimicrobial peptides from Ecuadorian frog skin secretions, using molecular biology techniques and biochemistry and microbiology knowledge. This practical course was held twice with a total of 56 students from the fifth semester of the biotechnology engineering. The evaluation of the practical program was carried out through a questionnaire applied to students using the Likert scale. Overall, this form of teaching had high receptivity and presented benefits for student learning. Interestingly, 80% of respondents strongly agreed that this course provided tools and knowledge for the development of their undergraduate dissertation. Therefore, practical courses tailored to the student's context can stimulate student learning and

interest. Additionally, this experimental methodology is interdisciplinary and can be applied to other research fields and subjects.

Keywords: frog secretions; laboratory exercise; molecular cloning; peptides.

References

REFERENCES

1.
    1. Silva D, Castro-Gamboa I, Bolzani V. Plant Diversity from Brazilian Cerrado and Atlantic Forest as a Tool for Prospecting Potential Therapeutic Drugs. Comprehensive Natural Products II. Chemistry and Biology, 1st ed. United Kingdom: Elsevier; 2010. https://doi.org/10.1016/B978-008045382-8.00061-7
2.
    1. Popov C, Magalhaes B, Goodfellow B, Bocca A, Pereira D, Andrade P, et al. Host-defense peptides AC12, DK16 and RC11 with immunomodulatory activity isolated from Hypsiboas raniceps skin secretion. Peptides. 2019;113:11-21.
3.
    1. Santos M, Mamede R, Rufino Mdo S, de Brito E, Alves R. Amazonian native palm fruits as sources of antioxidant bioactive compounds. Antioxidants (Basel). 2015;4:591-602.
4.
    1. Ron S, Merino-Viteri A, Ortiz D. Anfibios del Ecuador. Version 2021.0. Museo de Zoología, Pontifiia Universidad Católica del Ecuador. Available from <https://bioweb.bio/faunaweb/amphibiaweb/IndiceTaxonomico> Accessed 20 February 2022.
5.
    1. Ladram A, Nicolas P. Antimicrobial peptides from frog skin: biodiversity and therapeutic promises. Front Biosci (Landmark Ed). 2016;21:1341-71