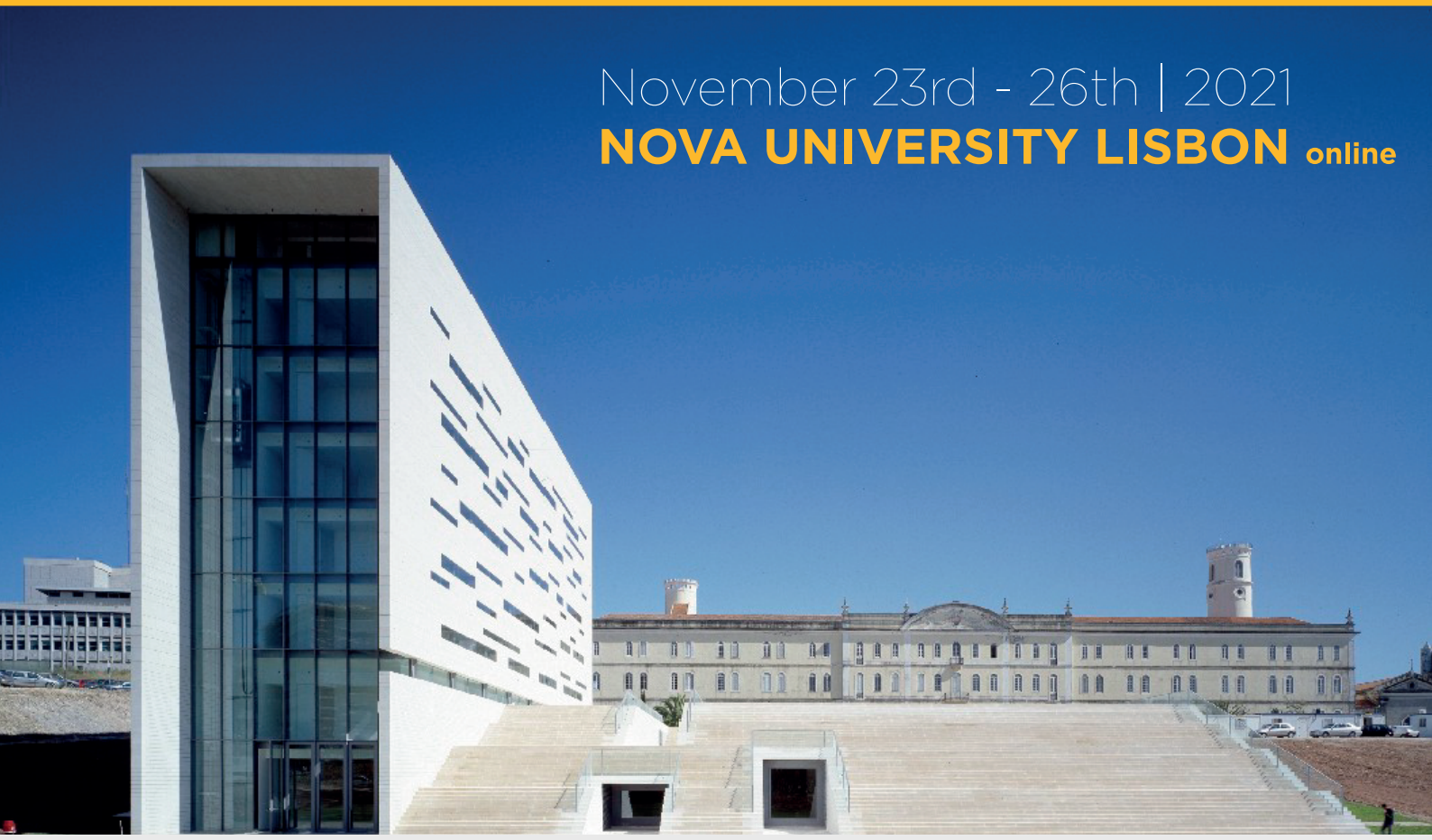
MICRO BIOTEC 21

Webconference

CONGRESS OF **MICROBIOLOGY** AND **BIOTECHNOLOGY 2021**



Abstracts Book

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238. Microalgal biomass production in a raceway system using meat processing water as feedstock

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Meat industry produces large volumes of water streams with a complex and high strength composition. The use of microalgae for reducing the organic and nutrient load of such streams is promising with the plus that the microalgae biomass produced can be collected as an added value product, and further used for a range of applications.

In this study, the microalgae ability to grow in meat processing wastewater, while improving water quality, was assessed. For that, a prototype raceway system was inoculated with a microalgae consortium and was fed with wastewater collected at a meat processing industry. The wastewater consisted of a mixture of streams from the cleaning of cooking drums and the cooling processes. Over 2 months, the raceway was operated in fed-batch mode, under varying wastewater composition. A total of 7 fed-batch cycles were performed, each using a different batch of wastewater collected at the industrial facility.

In the first feeding cycle, an organic carbon reduction of ca. 91% was achieved, with a removal rate of 685 mg l^{-1} d^{-1}. On the subsequent feeding cycles, the organic carbon removal rate increased up to 806 mg l^{-1} d^{-1}. Ammonium concentrations fluctuated over time, probably due to the complex composition of the wastewater. Nevertheless, longer fed-batch cycles seemed to improve ammonium removal. Microalgae biomass productivity increased over time, accompanied by the development of an intense green coloration.

The operation by repeated fed batch seemed feasible for microalgae cultivation in meat processing wastewater, allowing concomitantly its remediation.

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