Projeto	1	2	3
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Área Científica	Environmental Engineering and Biotechnology	Mental Health	Digital Health
Área Científica Secundária	Engenharia e Tecnologia	Biomedicina e Ciências da Saúde	Biomedicina e Ciências da Saúde
Título	Bioflocculants for water treatment and resource recovery	Barriers and facilitators for the use of and access to technology by people with severe mental illness	Literacia em saúde digital: os seus determinantes em 4 países Europeus
Data	4 semanas entre 10 de julho e 4 de agosto de 2023	1 de Outubro de 2023 e término a 31 de Março de 2024 (datas flexíveis)	Janeiro 2024 a Junho 2024 (datas flexíveis)
Sumário	Metals are essential in our daily lives and have a finite supply, but are also environmental contaminants. We need to reclaim important resources like metals from wastewater to fully implement a circular economy. Developing low-cost, low-energy, sustainable recycling processes is required more than ever. This project aims to remove and recover metals from industrial wastewater using bioflocculants produced by bacteria, avoiding pollution and retrieving valuable critical materials. Bioflocculants are produced either as attached capsular polysaccharides or as extracellular polysaccharides, forming biofilms (slime) on microbial surfaces. This mechanism protects bacterial cells against dewatering or toxic substances, can enhance hydrophobic substrates' uptake, or may also serve as a carbon and energy source. Bioflocculants have been demonstrated as efficient for coal mine wastewater (doi: 10.3390/polym12071618), sewage (doi: 10.1186/s12896-017-0375-0), clay and dye wastewater (doi:10.3389/fmicb.2019.01288), making these natural products suitable candidates for industrial application. This project aims to demonstrate that bioflocculants can be effectively used to remove metals (Zn, Pb, Ni, Cr, and V) from industrial wastewater and assess potential methods for metal recovery from the flocs produced (small, loosely aggregated mass of flocculent material separated from the wastewater). The objective of this grant is to quantify metal removal from synthetic and industrial wastewater. For this, different dosages of bioflocculants will be tested with synthetic and real wastewater in batch tests to assess their efficacy for removing selected metals at concentrations of 1–30 mg L-1. We will also determine the kinetics and isotherm models for those concentrations. Other experimental conditions will also be explored in batch tests, such as pH (2, 7, 9), and temperature (4, 15, 30 ◦C). Metal analysis in aqueous samples will be performed by ICP-OES (Inductively coupled plasma-optical emission spectrometry). The bioflocculants selectivity will be quantified by measuring the metal removal from the aqueous solutions/wastewater. This will allow us to remove metals from highly polluting wastewater, extracting valuable materials for reuse using low-energy, sustainable, scalable methods.	Digital technology is a core component of mental health care. Whilst its implementation was rapidly accelerated with the pandemic, it increasingly relies on expectations of patients' ability to use digital technology. Many people with severe mental illness experience socio-economically deprived circumstances and face a range of barriers to technology use, including prohibitive costs, lack of skills and knowledge, cognitive difficulties, and reduced access. People with severe mental illness are a diverse group with different individual characteristics, in terms of age, ethnicity, illness severity, education, household composition, etc. Older people may be particularly likely to be digitally excluded and less likely to possess a smart-phone, as compared to the younger patients. There are therefore important barriers preventing patients from effectively using their only digital devices, and limiting their access to clinical services, as well as to research opportunities. Through a systematic review this project will seek to synthesise the evidence on the barriers and facilitators for the use of and access to technology by people with severe mental illness, the context in which they use technology, their training needs in using technology, and how these are linked with individual socio-economic demographic factors (age, illness severity, household composition, education, and ethnicity). The overall aim of this systematic review will be to gain a thorough understanding from the international landscape of 'technology use' as a phenomenon by people with severe mental illness, and its associated concepts, mapping out the barriers and facilitators of technology use, the training needs of these patients, the training resources available, and the extent they have been used and implemented. This review will be conducted based on the methodology recommendations by the Cochrane Reviews Methods Group (Garritty et al. 2021). This will include, as recommended, the involvement of key stakeholders (users, heath professionals and decision-makers) to ensure that it is fit for purpose and to review and approve any post hoc changes as the review progresses.	Nos últimos anos, temos assistido a uma transformação gradual dos serviços dos sistemas de saúde para a realidade digital, com registos de saúde eletrónicos, portais de saúde para acesso dos próprios utentes, cartões de saúde eletrónicos, telemedicina, telemonitorização, entre muitos outros. Reconhecer a necessidade de se estimar o grau de literacia em saúde digital da população é crucial para que se possam definir estratégias e investimentos adequados, a serem implementados de uma forma efetiva. O objetivo geral deste estudo será identificar os determinantes de literacia em saúde digital durante a pandemia por Covid-19 na população acima dos 18 anos residente no Reino Unido, Suécia, Itália e Alemanha. Os objetivos específicos deste estudo são: 1. Estimar o nível de literacia em eHealth na amostra em estudo; 2. Descrever as caraterísticas sociodemográficas e nível de saúde geral da amostra em estudo; Analisar a associação entre os determinantes sociodemográficos e de saúde e o grau de literacia em eHealth na amostra em estudo. Métodos: O presente protocolo terá por base um desenho de estudo epidemiológico observacional, transversal, descritivo, com componente analítica. A população em estudo incluirá os indivíduos com idade superior a 18 anos residentes no Reino Unido, Alemanha, Suécia e Itália (n=6,326), que aceitaram responder ao inquérito. A recolha de dados teve lugar em Dezembro de 2020. A análise estatística iniciar-se-á pela análise descritiva do nível de literacia em saúde digital de acordo com as variáveis independentes, com a apresentação das respetivas frequências relativas e absolutas para as variáveis categóricas e o cálculo de medidas de tendência central para a variável numérica. De seguida, será usada uma regressão logística multivariável, de forma a possibilitar uma análise mais detalhada e integrada da associação entre o nível de literacia em saúde digital e as diversas variáveis independentes em estudo.

Objetivos Bolseiro	• Understand the theory associated with the sorption of metals. • Learn sampling and analytical methods that can be applied to other complex environmental matrices. • Develop abilities and skills that encourage efficient and safe laboratory practice. • Develop self-motivation and the ability to work sustainably, both independently and collaboratively. • Develop attitudes relevant to science, such as integrity, objectivity, concern for accuracy and precision, curiosity, and initiative. • Analyse and discuss results critically. • Use English as a working language and increase proficiency. • Present information appropriately for different audiences and purposes (informal seminar for the research group, poster, results in preparation for publication) and get feedback from experienced researchers. All these objectives will also translate into improving soft skills relevant to increase student employability, such as communication, work ethic, teamwork, networking, decision-making, time management, motivation, flexibility, problem-solving and critical thinking.	The selected applicant will be able to work with academics at the Institute of Psychiatry, Psychology & Neuroscience, King's College London and with expert support conduct a high quality systematic review. A search of peer-reviewed articles will be conducted from bibliographic databases, followed by screening, appraisal, and data extraction. The full texts of potentially eligible studies will be assessed for eligibility. A quality assessment will explore the risk of bias.	- Aquisição de conhecimentos de análise descriptiva e inferencial básica - Contribuição para a escrita de artigos científicos publicados em revistas indexadas - Interpretação dos resultados em contexto internacional, assim como as sua implicações em termos de políticas de saude.