

Construction of cell models for drug-receptor pharmacology activities for schools outreach: Generating awareness and interest in pharmacology in the younger generations

Background and Aims: There is very little awareness of pharmacology among secondary school pupils and even among A level students. In helping sustain pharmacology in the UK, it is important to generate an awareness and interest in pharmacology from a young age. Therefore new outreach activities are needed to help young people appreciate pharmacology in a fun and engaging way.

Summary of work: In collaboration with colleagues from the School of Architecture, Computing and Engineering at the University of East London and through the generous funding by the British Pharmacological Society and UEL's Civic Engagement Fund, we are in the process of constructing 3-dimensional cell models with receptors expressed on the surface. These cells will be used for outreach activities to help generate interest in pharmacology by getting the pupils to find the correct receptor agonist, out of several differently shaped "drug" models, that fits into the receptors perfectly and that activates the receptor; resulting in green light coming on inside of the cell. This will help pupils to understand the importance of drug-receptor selectivity. The model will also include a number of agonists that activate the receptor with different efficacies; resulting in varying intensities of green light coming on. Finally, some weak agonists will be modelled to give high intensity of green light to come on only if more of the same shaped agonist are fitted on other receptors. This will help pupils to understand the concept of drug concentration effects and drug potency.

Outcomes: This model will provide a fun and interactive educational tool for pupils to gain some insights on pharmacology and its application to clinical medicine as each agonist model will be given the name of a well-known medicinal drug with the scenario that the most efficacious and potent receptor agonist will help to treat a particular clinical condition that will be pre-determined.

Discussion and conclusion: This new approach for outreach to high school and further education pupils will also help to highlight the importance of pharmacology to the advancement of clinical medicine and the role that pharmacologists play in shaping medical practices by helping to develop highly selective, efficacious and potent drugs; ultimately helping to generate awareness and interest in pharmacology.