Viruses Produce Electricity by Movement

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Energy-Viruses produce electricity by movement. Khaloud K. Al-Hajri–Usra A.El-Shikh Al-Rayyan Al-Jadeed Independent Secondary School,Doha,QA The aim of our project is to optimize the conditions toharness piezoelectricity from the M13bacteriophage(ATCC® 15669-B1™)togenerate clean energy to powerlights in football stadium. Firstly, we created a high-titer lysate of the phages to ensure we get maximal phage particles to generate piezoelectricity. The bacterial host,E.coli C3000 was grown overnight in an air shaker at 37°C and used to infect with the bacteriophage M13.Using a pipette tip, each M13 plaque was picked and placed into 100µl of 1% tryptone. This was added to 500µl of host and we made 10 tubes of these . After 5 minute incubation, 4ml of top agar (0.5% agar) was added to each of the 10tubes and the phage-host-agar mixture was pour-plated onto LB plates. then we placed it into the incubator at37°C overnight to allow for the maximal host lysis so it has the maximum phages.The next day,5ml of deionized water was added to each plate and incubated for 4h to generate the high-titer lysate. The final titer of the lysate was 1014 plaque forming units/ml which is number of phages per milliliter of solution. To further concentrate the phage, the lysate was subjected to high-speed centrifugation and the phage pellet was dissolved in 1ml of deonized water. Onto two1cm(length)x1cm(width)x0.1mm(thickness)copper electrodes which had 4% gold in it,we added 10 x 10µl drops of the concentrated phage lysate to cover the surface of each electrode.Upon subjecting force, the measured voltage for the set-up was10mV. After testing our cell we discovered that it cannot be used in football stadium but we can used in football stadium but we can use it in camping shoes instead.

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