Big Advancements on the Horizons - Enzyme-coated Nanoparticle Medicines [1]

Enviado por Joseph P Ulbrich [2] el 2 agosto 2015 - 1:46am

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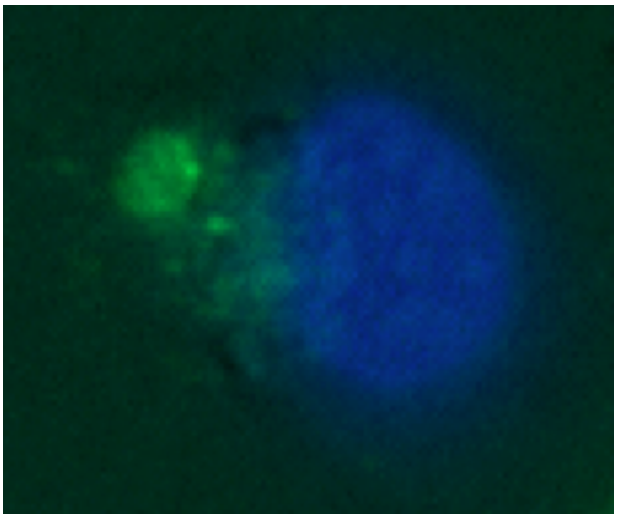

Shows nanoparticles (Green Fluorescence) entering a cell's nucleus (Blue Fluorescence)

Hello all,

This is the final week of the Summer REU here at University of Puerto Rico – Mayagüez, and thus it's the conclusion of my research to be performed here at the university. During this only two-month program, so many advancements have been made for not only my research project, but also myself as a researcher. I'm extremely proud and happy to say that I've been part of one of the prized projects here at UPRM Summer REU with Soft Matter Labs! It's provided me with very valuable research experience that has allowed me to become a much more confident and independent researcher. Through this program, I've had the opportunity to develop my research

from the ground up. This includes planning ahead to purchase my own reagents, design my very own experiments, run my experiments, and evaluate my own experiments. This has certainly been a research opportunity that very few undergraduate students have chance to take advantage of, and I'm happy to say I feel I've taken full advantage of the opportunities presented to me. I am proud to say I feel I've made my project my own.

This summer, I've had the opportunity to develop the study of Urease enzyme-coated polystyrene nanoparticles. We intend to use these nanoparticles to show the enhanced diffusion of the Urease coated particles towards a Urea concentration gradient. One day, these nanoparticles will carry medicines to a specific area of the body for isolated disease treatment. The Urease enzyme coating will show a preferential diffusion towards a specific area of the body, thus delivering the medicine much more efficiently to the intended diseased area. Before these nanoparticles can be used; however, they must first be safe for the human body, and more, we must be able to attach the enzymes to the nanoparticles efficiently so they travel to their target location. Once the Urease enzymes are attached, a microfluidic device has been made to show the nanoparticles preferential diffusion towards a Urea substrate concentration gradient in order to simulate the nanoparticles diffusion towards target areas of the human body.

In conclusion, new hired employees will continue moving forward on this project once my summer REU program has ended. I'm very proud to say I'll be continuing to work with this project once I return to my home university, University of Wisconsin – Madison. I am very excited to collaborate with the University of Puerto Rico – Mayagüez from home, and continue to advance this project.

There are big advancements on the horizons of nanoparticle medicines, stay tuned!

Best regards to all,

Joseph Ulbrich

Tags:

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Links
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