both hydrodynamic radii and optical properties were performed simultaneously. Such a dual-mode technique may prove valuable for elucidating the mechanism of amyloid fibrillization and ultimately for designing possible diagnostic methods.

Biophysics Education

2110-Pos
Strategies for Successful Diversity Participation in Biophysics Research
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In the summers of 2008 and 2009, two individual students from the Michigan Louis Stokes Alliance for Minority Participation (MI-LSAMP) Summer Undergraduate Research Academy (SURA) program joined the Ayres' Electronic and Biological Nanostructures Laboratory for an 8-week 40 hours per week research experience. As their tasks were essentially the same as those of the resident students, an expedited learning curve was essential for productivity. Both students, even in the time-limited circumstances, produced outstanding and viable research contributions. The SURA08 student quickly developed authentic skills in atomic force microscopy that enabled him to produce clear images of growth-factor derivatized nanofibers within a central nervous system prosthetic that are, as far as we know, the first of their kind to be reported. The SURA09 student contributed specialized expertise in Nuclear Magnetic Resonance spectroscopy that has enabled a new series of complementary NMR experiments that enhance the scanning probe investigations. The work contributed by both students has been published or accepted in high impact referred journals. In this presentation, we explore the strategies of the MI-LSAMP Summer Undergraduate Research Academy program that resulted in the observed successes. These include:
- Selection criteria for both students and faculty mentors. The students are screened for evidence of high motivation as well as good academics during the application process. The faculty mentors are screened for evidence of a direct interaction approach as well as an active research program. The importance of biophysics/bioengineering/biomedical research as a motivating force is discussed.
- An immersion experience that includes support at many levels. The SURA program requires 8-week dormitory residence at the research host university. SURA program personnel invest approximately 40 hours per week in providing classroom support for meeting professional research expectations, and evening social support for friendship and teaming.

2111-Pos
Advanced Undergraduate Laboratory in Biological Physics
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We have developed a new one-semester senior laboratory course as part of our undergraduate Biological Physics stream at Simon Fraser University. This course, designed for students with either a Physics or Biology background, comprises two parts. The first half of the course entails modules to give the students hands-on experience with basic molecular and cell biology and leading-edge biophysical techniques: DNA electrophoresis and topology-dependence of mobility; cell growth; light scattering and spectroscopy; microscopy and cell motility; optical tweezers; and fluorescence correlation spectroscopy (FCS). The experimental goals and learning outcomes of these modules will be presented. In the second half of the course, students propose and carry out independent research projects that include biological and quantitative measurement components. The experiences of the students and their feedback will also be presented.

2112-Pos
Disappearance of Tumors by the Action of Sound
Vinicio N. Lanza.
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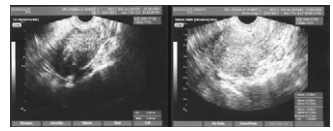
Background: Starting with observations of tumours which had disappeared following treatment with alternative therapies, the main objective of this work was to discover the underlying physical phenomenon that occurs in such instances. **Method**: Patients with tumours were treated with sound therapy. The methods included a newly developed technique using the Tibetan bowl and the Tibetan bell. **Results**: The tumours disappeared totally in the majority of patients. **Conclusions**: The only phenomenon that could explain such tumour disappearances is the *annihilation of pairs.* These results challenge the following: a) The concept of the physical constitution of living matter and, b) the real constitution of the human being.



2113-Pos
Teaching Basic Electrophysiology with the Aid of a Computer Program
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Objective: Understanding the basis of electrophysiology is essential to the formation of a student of biological sciences. A solid base on the fundamental concepts paves the way for a better comprehension of more complex phenomena. We implemented a computer program (LabAXON) that simulates the electrical activity of an axon in a user friendly format. This program helps the student to understand the generation of the action potential and the effects of extracellular ionic concentration and stimuli waveform.
Methods: This program was based on the classical Hodgkin and Huxley formalism. LabAXON allows the students to reproduce the basic experiment these Nobel prize-winning scientists performed on the squid giant axon. Important concepts such as Cronaxia curve, Current-Voltage relationship and Ion Reversal Potential can be explored in an interactive way. A user-friendly interface permits a rapid change of parameters and the ability to see the effects on-line. Also we created a workbook with a list of exercises that covers the essential points of the lecture.
Conclusions: The processes that take place at the membrane set the stage for several concepts that will come out in the following years of the student's education: how drugs interact with channels, effect of ionic imbalance, refractoriness of the membrane, to name a few. Computer simulations help to reinforce those topics in the student in a self paced manner. It constitutes an excellent aid for the medical educator. LabAXON and the companion workbook are freely available on our departmental website.