animal disease epidemics, forensics analysis, law and criminal justice. Bioinformatics modules were infused in ten traditional Biology courses within three semesters. Students enrolled in Cell Biology, Microbiology, Research, and Topics in Genomics became engaged in course-based undergraduate research experiences as a result of the Bioinformatics infusion. These students also participated in local, and national research conferences, where they presented their Bioinformatics research that was done in a Biology course. In addition, over 200 Biology majors were exposed to Bioinformatics and 140 students answered the survey questions. Our survey results indicated that our student's knowledge of Bioinformatics increased significantly and they saw the relevance of Bioinformatics to everyday life. However, although students recommended learning Bioinformatics to a friend/peer, they preferred to see Bioinformatics as part of a course and not a part of the curriculum. Therefore, we conclude that Bioinformatics can be infused into Biology courses in a variety of ways. However, caution must be exercised in infusing Bioinformatics into the curriculum as a separate course, too quickly.

P29

Board Number: B228

Training Module in Assuring Data Reproducibility.

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Training modules based on case studies can effectively demonstrate the essential nature of well-conceived and detailed materials and methods sections. We use a published article and our attempts to replicate its results as a case study to show the elements essential to effective materials and methods sections and, thus, to reproducible results. The module focuses on our laboratory work in replicating results/data and demonstrates that the article's lack of details about choice, source, and preparation of reagents; source and characterization of antibodies; positive and negative controls; and settings, calibrations, and standards of instruments made it impossible to replicate the reported results. Finally, the module shows how lack of transparency in materials and methods could impact related research and points to the need for precision, thoroughness, and rigor in delineating details essential to data reproducibility.

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Light and Electron Microscopy in New Imaging Technologies

P30

Board Number: B230

Development of cryogenic correlated light electron microscopy methods to study mechanisms of intracellular trafficking and their relationships to the secretory pathway.

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The application of cryogenic electron microscopy (cryo-EM) to the study of cellular ultrastructure provides a resolution several orders of magnitude better than light microscopy. Although this approach is increasingly applied *in situ*, it suffers from limitations in our ability to target imaging to specific intracellular features including the subcellular localization of specific events of interest. Cryogenic correlated light and electron microscopy (cryo-CLEM) helps to overcome this problem by spatially locating areas of interest inside cells using fluorescence from genetically tagged or stained cellular molecules and allows for the visualization of localized fluorescently-tagged proteins down to the level of individual organelles. Here, we attempted to study the secretory pathway in a specialized mammalian cell line, insulin-secreting INS-1E cells, expressing genetically-encoded fluorophores as a model system to develop a cryo-CLEM methodology. We discovered that there are many bright sources of autofluorescence in frozen cells. Based on our initial observations and the current understanding in the field, we hypothesized that autofluorescence from endogenous cellular substrates exhibits a broader spectrum of fluorescence than the fluorescence range of our expressed fluorescent proteins. To test this, we developed a quantitative approach to discriminate between autofluorescence and the fluorescent signal from genetically-encoded fluorophores by measuring fluorescent intensities across different bandwidths. To validate this new methodology, we visualized multiple fluorophore-tagged organelle markers in our experimental cell system. We found that DsRed2-cytochrome c oxidase and chromogranin A-GFP proteins were targeted in INS-1E cells to mitochondria and secretory granules by cryo-CLEM, consistent with their respective well-established intracellular localizations. Moreover, these fluorescent signals were clearly distinguishable from autofluorescence emanating from endogenous structures including insulin crystals and multilamellar bodies. Overall, our novel cryo-CLEM methods open the door to the study of cellular phenomena and structures with a new degree of specificity.

P31

Board Number: B231

Disclosing novel structure-function insights on hepatic microarchitecture through large volume correlative fluorescence and in situ block face scanning electron microscopy.

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To-date, serial block-face scanning electron microscopy (SBF-SEM) is the dominant imaging work-flow for generating 3D data of resin-embedded biological samples at unprecedented depths and volume. Given its infancy, current literature regarding the applicability of SBF-SEM for the ultrastructural investigation on various tissue types are limited. Much of the literature employing SBF-SEM has focused on the investigation of lipid-rich tissues such as the brain. These lipid-rich tissues carry an inherent advantage where heavy metal stains bind readily to phosolipid-rich structures thereby rendering sufficient electron dense contrast. Therefore, we first explored alternative sample preparation protocols in liver tissue with inherently less contrast in order to determine the optimal preservation quality and the degree of contrast achievable over a wide range of hepatic subcellular features. Next, we integrated the experimentally optimised SBF-SEM work-flow for subsequent correlative laser and electron microscopy studies.
Immediately following glutaraldehyde jet-fixation, liver tissue blocks were briefly post-fixed using a combination of osmium tetroxide and potassium ferrocyanide in ice cold sodium cacodylate buffer,