

Abstracts

University of Louisiana Monroe

Oral Presentations

The IQ Qualm-A Review of Intelligence Quantification Methods and the Impact of Cultural Bias on Testing Results

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Intelligence is a concept that is integral both in the field of psychology and in society as a whole. It is a way of describing a considerable number of ideas, including one's capability for logic, capacity for learning, or the bank of knowledge one has gained. Over the last few centuries, the methods of quantifying intelligence have changed as dramatically as the academic community's views on intelligence as a whole have. This paper seeks to document these methods and provide explorations into the specific researchers that enabled them to grow in such a way. It is important to remember that intelligence is more than simply what modern tests seek to measure; a wealth of items could be classified as part of intelligence, including one's familiarity with their culture, specific skill sets, and logical abilities. To name any one category as making up the totality of intelligence would be serving the entirety of humanity a disgrace; even Alfred Binet, co-father of the Binet-Simon intelligence test, firmly held the view that the simplification of intelligence into a single numeric value was a tragedy (Binet & Simon, 1980, as cited in Michell, 2012). Intelligence quantification has evolved in recent years to reflect these facts, with tests such as the Black Intelligence Test of Cultural Homogeneity (BITCH-100) being developed as examples of how culture can influence intelligence.

Oral session 3E

Poster Presentations

Synthesis of Pyrazolone Molecular Hybrids and their Anticancer Activity Screening Against Skin Cancer Cells
Sabina Dahal, Atchimnaidu Siriki, Samuel Boateng, Jean Christopher Chamcheu, & Siva Murru

Melanoma and non-melanoma skin cancer are the most common skin malignancies with rising incidence all over the world. One in every three cancers diagnosed is a skin cancer and, according to Skin Cancer Foundation Statistics, one in every five Americans will develop skin cancer in their lifetime. Accordingly, there is a need for the development of novel drugs for their treatment. We have developed pyrazole and pyrazolone based small molecule anticancer agents. Based on initial anticancer activity data, we have designed and synthesized several pyrazolone molecular hybrids via Pd-catalyzed cross coupling reactions. Cross-coupling reactions have played a critical role in enabling the rapid expansion of structure-activity relationships (SAR) during the drug discovery phase to identify a potent candidate and facilitate subsequent drug development processes. Despite these attractive synthetic properties, continuous development of these coupling reactions has been the focus of ongoing efforts to improve the selectivity, efficiency, and sustainability. Our focus has been on creating diverse molecular hybrids of pyrazolones via Pd-catalyzed C-C (Suzuki and Heck) and C-N (Buchwald-Hartwig) cross-coupling reactions. The Pd-cross-coupling of halo-aryl pyrazolones with various nucleophiles (boronic acids/esters for Suzuki, sp²-hybridized vinyl substrates for Heck and, primary or secondary amines for Buchwald-Hartwig coupling) creates the new C-C and C-N bond formations. Details of the optimized reaction conditions, purification, and characterization of the synthesized molecular hybrids will be presented. We also discuss the anti-proliferative activity of this synthesized compound library in melanoma and non-melanoma skin cancer cells.

Poster session 3B

Interactions of SA2 and S6E Ribosomal Proteins with EIF4E2 in Giardia lamblia

Kade Malone, Hailey Davis, & Srinivas Garlapati

Giardia lamblia is a flagellated unicellular eukaryotic microbe that is responsible for diarrheal disease across the globe. The illness associated with infection of the organism, Giardiasis, affects over one million people annually. The key to treatment of this organism is better understanding of the organism's intracellular processes. Of these processes, the choice mechanism of study is translation initiation. Better understanding of translation initiation of *Giardia lamblia* will provide insightful information of how organism prepares to produce its proteins, and could be later used to inhibit this function, resulting in a better treatment of Giardiasis. The interaction studied was against Eukaryotic Initiation Factor 4E2 and surrounding proteins that may interact with it. Eukaryotic Initiation Factor 4E2 is part of the 4E family of proteins responsible for binding to the 7-methyl-guanosine cap of eukaryotic mRNAs. Proteins found in close proximity to EIF4E2 would be utilized for in vitro assays. The two selected proteins were SA2 and S6E which were found in very close proximity to EIF4E2. The purpose of these interaction assays that were ran was to identify new interactions in translation initiation and identify any changes to the translation initiation complex that may occur.

Poster session 3B

Evolution of Shear Profiles Preceding Tornadic QLCSs

Isaiah Montgomery, Haniston Holloway, & Todd Murphy

Poster session 3A

Quasi-linear convective system (QLCS) tornadoes are difficult to forecast, are not well understood, go undetected more often than supercellular tornadoes, and warnings that are issued often have lower lead times. Forecasters use the "Three Ingredients Method" (3IM) to nowcast QLCS tornado development, but there is currently not a method to anticipate QLCS tornado development in the hours before tornadogenesis. The Propagation, Evolution, and Rotation in Linear Storms (PERiLS) program seeks to understand how tornadoes form in squall lines, and to determine how the near-storm environment can impact storm-scale evolution. Our project focuses on shear profiles in the near-storm environment, and monitoring the profile evolution as it relates to tornadogenesis. In Southeastern US, a combination of low-cost housing and frequency of QLCS tornadoes makes this an important goal to protect life and property. We use wind profiles derived from NEXRAD Velocity Azimuth Display (VAD) data to examine the low-level wind shear in advance of tornado-producing QLCSs in order to identify environmental precursor signatures for non-tornadic, tornadic, and significantly tornadic QLCSs. Upper-air radiosonde data are spatially and temporally sparse, but VAD wind profiles provide nearly continuous updates on the wind profiles ahead of severe weather. To complement PERiLS field observations, the VAD profiles begin four hours prior to a QLCS passing near a radar site. Preliminary analyses suggest the low-level shear profiles change rapidly and improve in the ~90 minutes prior to tornadic QLCSs passing over a point, with shear and helicity values both increasing in a way that can be detected in real-time and used in the nowcasting process.

Poster session 3A