



Tennessee Academy of Science 2009 West Tennessee Regional Collegiate Meeting

Registration	8:00-10:30 AM	Frazier Jelke Lobby
Welcome and Introduction	8:00 AM	Frazier Jelke Room
Keynote Address	8:05 – 8:45 AM	Frazier Jelke Room

Dr. Laura Luque de Johnson
Rhodes College Biology Department

“Traveling germs: infectious diseases in an era of globalization.” The talk will discuss how infectious diseases that are currently confined to certain regions of the world have the potential to spread around the world given the right conditions. History can tell us that this has happened before, during the Flu Pandemic of 1918. The question is what have we learned from past experiences, and are we prepared?

Session 1 – Moderating: ??? **Frazier Jelke Room A**

9:00 INFLUENCE OF LUMINANCE CONTRAST IN THE AMPLITUDE OF MULTIFOCAL VEP. **Hope B. Shackelford***, **Givago S. Souza**, **Bruno D. Gomes**, **Malinda E.C. Fitzgerald** and **Luiz Carlos de Lima Silveira**, *Department of Biology, Christian Brothers University, Memphis, Tennessee, and Universidade Federal do Pará, Núcleo de Medicina Tropical, Belém, Brasil.*

9:15 REAL-TIME REVERSE TRANSCRIPTASE PCR USED FOR MRNA GENE EXPRESSION IN FILAMENTOUS FUNGUS *ASPERGILLUS NIDULANS*. **Chassidy Groover***, **Loretta Jackson-Hayes**, **Terry W. Hill**, **Darlene M. Loprete**, *Rhodes College, Memphis, Tennessee.*

9:30 INSULIN TREATMENT OF SERUM STARVED HUMAN RETINAL MICROVASCULAR ENDOTHELIAL CELLS AND THE EFFECTS ON THE APOPTOSIS PATHWAY. **Stephanie Parker*** and **Jena Steinle**, *Department of Biology, Christian Brothers University, Memphis, Tennessee, and Department of Ophthalmology, University of Tennessee Health Science Center, Memphis, Tennessee.*

9:45 MAPPING OF THE 5-HT_{2A} RECEPTOR IN THE EDINGER-WESTPHAL REGION OF THE PIGEON (*Columbia livia*): AN IMMUNOHISTOCHEMICAL STUDY. **Adam Luka***, **Jeremy Armstrong**, **Malinda E.C. Fitzgerald** and **Claudio Toledo**, Department of Biology, Christian Brothers University, Memphis, Tennessee, and Universidade Cidade de Sao Paulo, Sao Paulo, Brazil.

10:00 DEVELOPMENT AND VALIDATION OF AN ONLINE EXTRACTION-LIQUID CHROMATOGRAPHY-MASS SPECTROMETRY METHOD FOR MEASUREMENT OF MK-752 IN HUMAN PLASMA. **Courtney Colotta***, **Feng Bai**, and **Clinton F. Stewart**, Department of Pharmaceutical Sciences, St. Jude Children's Research Hospital, Memphis, Tennessee, and Department of Biology, Christian Brothers University, Memphis, Tennessee.

10:15-10:45 BREAK – POSTER SESSION

10:45 EVALUATION OF *IN VITRO* VASOACTIVE PROPERTIES OF NEWLY DISCOVERED BK CHANNEL ACTIVATORS. **Erica C. McMorise***, **Anna N. Bukiya** and **Alex Dopico**, Department of Biology, Christian Brothers University, Memphis, Tennessee (EM), and Department of Pharmacology, The University of Tennessee Health and Science Center, Memphis, Tennessee (AB, AD).

11:00 OBESITY AMONG CHILDHOOD HODGKIN LYMPHOMA SURVIVORS. **Amanda S. Hoeffken*** and **Monika Metzger**, Rhodes College, Memphis, Tennessee, and St. Jude Children's Research Hospital, Memphis, Tennessee.

11:15 OVER-EXPRESSION OF CKAP2 REDUCES COLONY FORMATION IN HELA CELLS. **Benjamin Jackson***, **Lauren Keith***, and **William S. Brooks**, Freed-Hardeman University, Henderson, Tennessee.

11:30 A PREVALENCE SURVEY OF DOMESTIC VIOLENCE IN AN URBAN OBSTETRICAL EVALUATION UNIT. **Nakia Chambliss***, **Jay Bringman**, **Romero Midgett**, **Risa Ramsey**, **Robert Egerman**, and **Charles Gibbs**. Christian Brothers University, Memphis, Tennessee, and The University of Tennessee Health Sciences Center, Maternal and Fetal Medicine, Memphis, Tennessee.

12:00 – Luncheon in Hyde Dining Hall, Rhodes Refectory

Session 2 – Moderator: Dr. Jonathan Davis Frazier Jelke Room B

9:00 EFFECTS OF SITTING TAI CHI ON MOBILITY OF FRAIL OLDER ADULTS. **Alan R. Fredericks***, **Lawrence Faulkner**, and **Veronica Engle**, Department of Biology, Christian Brothers University, Memphis, Tennessee (ARF), and Primary Care and Public Health, University of Tennessee Health Science Center, Memphis, Tennessee (LF, VE).

9:15 IMMUNE DEVELOPMENT OF *DROSOPHILA MELANOGASTER* AT 1 AND 5 DAYS POST ECLOSION. **Kelly Towns***, **Jodell Linder**, and **Daniel Promislow**, *Christian Brothers University, Department of Biology, Memphis, Tennessee, and University of Georgia, Department of Genetics, Athens, Georgia.*

9:30 GENETIC EFFECTS ON ETHANOL AND OTHER BEHAVIORAL RESPONSES IN ADOLESCENTS: ANALYSIS OF ATAXIA, LOCOMOTOR ACTIVATION, AND ANXIOLYSIS IN MICE. **Michael Antone***, **Kiedra Kincaide**, and **Kristin M. Hamre**, *Department of Biology, Christian Brothers University, Memphis, Tennessee, and Department of Anatomy and Neurobiology, University of Tennessee Health Science Center, Memphis, Tennessee.*

9:45 COMPARISON OF FLIGHT PATTERNS AND HABITAT PREFERENCES AMONG THE *AE. VEXANS*, *CX. ERRATICUS*, AND *AN. SMARAGDINUS* MOSQUITO POPULATIONS. **Blake A. Jackson*** and **Jack Grubaugh**, *Christian Brothers University, Department of Biology, Memphis, Tennessee, and The University of Memphis, Department of Biology, Memphis, Tennessee.*

10:00 ASSESSING AMPHIBIAN MARKING TECHNIQUES IN RECENT TOAD METAMORPHS: RELIABILITY, EFFECTS ON SURVIVORSHIP AND PHYSIOLOGY, AND CONSERVATION IMPLICATIONS. **Stephanie N. Cassel***, **Andy Kouba** and **Jon R. Davis**, *Rhodes College, Memphis, Tennessee (SC, JD), and Memphis Zoo, Memphis, Tennessee (AK, JD).*

10:15-10:45 BREAK – POSTER SESSION

10:45 CARBOHYDRATE DISTRIBUTION IN BAMBOO. **Emily Wong**, and **Carolyn Apanavicius**, *Department of Biology, Christian Brothers University, Memphis, Tennessee, and The Memphis Zoo, Memphis, Tennessee.*

11:00 TEMPERATURE AND OSMOTIC STRESS EFFECTS ON AMPHIBIAN SPERM FUNCTION. **Marian G. Moore***, **Erin L. Willis** and **Carrie K Vance**, *Memphis Zoological Society, Memphis, Tennessee.*

11:15 USING FECAL PARTICLE SIZE AND MICROBIAL PLATING TO GAIN A GREATER UNDERSTANDING OF THE GIANT PANDA'S DIGESTIVE MECHANISMS. **Heather Gosnell***, **Carolyn Apanavicius**, and **Rachel Hanson**, *Christian Brothers University, Department of Biology, Memphis, Tennessee and The Memphis Zoo, Memphis, Tennessee.*

11:30 A COMPARATIVE ANALYSIS OF NONINVASIVE TECHNIQUES USED IN MONITORING JAGUAR (*PANTHERA ONCA*) POPULATIONS. **Svetlana Lapova**, **Rachel Savoy**, and **Leandro DeSilveria**. *The Department of Biology, Christian Brothers University, Memphis, Tennessee and Jaguar Conservation, Emas, Brazil.*

11:45 URBAN MEMPHIS PARKS AS CARBON SINKS. **Jacqueline Gentry*** and **Rosanna Cappellato**, *Rhodes College, Memphis, Tennessee.*

12:00 – Luncheon in Hyde Dining Hall, Rhodes Refectory

Session 3 – Moderating: Dr. Jonathan Fitz Gerald **Frazier Jelke Room C**

9:00 GDP-MANNOSE TRANSPORTERS IN THE FILAMENTOUS FUNGUS *ASPERGILLUS NIDULANS*. **Laura R. Johnson***, **Chassidy Groover***, **Loretta Jackson-Hayes**, **Terry W. Hill**, **Darlene Loprete**, Rhodes College, Memphis, Tennessee.

9:15 CASE STUDY OF *DEMATIACEOUS* FUNGAL INFECTIONS IN THE IMMUNO-SUPPRESSED. **Alicia Scarborough***, **Randall Hayden** and **Gabriella Maron**, *Christian Brothers University, Department of Biology, Memphis, Tennessee, and St. Jude Children's Research Hospital, Department of Pathology, Memphis, Tennessee.*

9:30 EFFICACY OF PRAZOSIN IN THE EXTINCTION AND RECONSOLIDATION OF CONTEXTUAL FEAR CONDITIONING IN RATS. **Melody Allensworth***, **Fabricio De Monte**, and **Antonio P. Carobrez**, *Department of Biology, Christian Brothers University, Memphis, Tennessee, and Department of Pharmacology, Universidade de Santa Catarina, Florianopolis, SC Brazil.*

9:45 THE ROLE OF *BRO1* IN *CLN3*-DEPENDENT CELL DIVISION IN *S. CEREVISIAE*. **Brett Dagen*** and **Mary E. Miller**, Rhodes College, Memphis, Tennessee.

10:00 *ROP2* GTPASE IS REQUIRED FOR PROPER ATFH5 LOCALIZATION IN *ARABIDOPSIS THALIANA* **Jenkin Chan***, **Jonathan Fitz Gerald**, Rhodes College, Memphis, Tennessee.

10:15-10:45 BREAK – POSTER SESSION

10:45 GENERATING ESCAPE MUTANTS TO MONOCLONAL ANTIBODIES DIRECTED AGAINST H5N1 INFLUENZA VIRUSES. **Daniel Darnell*** and **Richard Webby**, *Christian Brothers University, Department Of Biology, Memphis, Tennessee, Saint Jude Children's Research Hospital, Department Of Infectious Diseases, Virology Division, Memphis, Tennessee.*

11:00 IDENTIFICATION OF SYNERGISTIC ANTIMALARIAL THERAPEUTICS FROM A COLLECTION OF BIOACTIVE COMPOUNDS. **Michelle Paul***, **Rodney K. Guy**, **Wendyam A. Guiguemde**, *Department of Biology, Christian Brothers University, Memphis, Tennessee (MP), Department of Chemical Biology and Therapeutics, St. Jude Children's Research Hospital, Memphis, Tennessee (RKG, WAG).*

11:15 CHROMATIC DISCRIMINATION MEASURED WITH MFVEPS. **Stephanie Johnson***, **Bruno D. Gomes**, **Givago da Silva Souza**, **Malinda E.C. Fitzgerald** and **Luiz Carlos de Lima Silveira**, *Christian Brothers University, Department of Biology, Memphis, Tennessee, and Universidade Federal do Pará, Núcleo de Medicina Tropical, Belém, Brasil.*

11:30 EFFECTS OF PLATELET-RICH PLASMA ON PIG DERIVED ANNULUS FIBROSUS CHONDROCYTE PROLIFERATION. **Scott C. Berry***, and **Richard Smith**. *Christian Brothers University, Department of Biology, Memphis, Tennessee, and University of*

Tennessee, Campbell Clinic Department of Orthopaedic Surgery, University of Tennessee Health Science Center, Memphis, Tennessee.

11:45 DIRECT DELIVERY OF EPO IS NEUROPROTECTIVE TO PHOTORECEPTORS INDEPENDENT OF GLYCOSYLATION. **Ying Y. Wong***, **Shayla Merry**, **Kishore Kodali**, and **Tonia S. Rex**, Department of Biology, Christian Brothers University, Memphis, Tennessee (YYW), and Department of Ophthalmology, University of Tennessee Health Science Center, Memphis, Tennessee (SM, KK, TSR).

12:00 – Luncheon in Hyde Dining Hall, Rhodes Refectory

Poster Session Abstracts

1) INTERACTION OF MOLYBDENUM(VI)-CITRIC ACID IN AQUEOUS SOLUTIONS TO MIMIC THE NITROGENASE COFACTOR. **Troy Greer*** and **Yahia Z. Hamada**, *LeMoyne-Owen College, Memphis, Tennessee*. The chemistry of molybdenum(VI) (Mo^{6+}) encounters very complex pathways even when reacting with the simplest of ligands (the aqua ligand). Citric acid (Cit) is considered to be a simple organic ligand. A di-hydrolytic complex of the Mo^{6+} :Cit system has been detected using both a speciation computer program and the potentiometric titrations in aqueous solutions at 25 °C. The speciation diagrams showed that the percent of formation of this di-hydrolytic complex species overshadows the percent of formation of the free citric acid species. The speciation program has taken into account these species: the mononuclear species $\text{Mo}(\text{H}_1\text{Cit})$, $\text{Mo}(\text{H}_1\text{Cit})(\text{OH})$, and $\text{Mo}(\text{H}_1\text{Cit})(\text{OH})_2$, also we have considered the di-nuclear $\text{Mo}_2(\text{H}-1\text{Cit})(\text{OH})_2$ complex. Among all complexes taken into account, only the di-hydrolytic complex $\text{Mo}(\text{H}_1\text{Cit})(\text{OH})_2$ has been detected in appreciable percentage. The UV-Vis titrations performed at different pH values are in a good agreement with the chemistry literature. Further experimental and theoretical studies are needed in this area.

2) CORRELATION OF SEED SIZE WITH FITNESS TRAITS IN *ARABIDOPSIS THALIANA*: AN ANALYSIS OF COLUMBIA AND LANDSBERG ECOTYPES. **Nadia C. Winston*** and **Jonathan N. Fitz Gerald**, *Rhodes College, Memphis, Tennessee*. Seed size variation is common both within and among plant species and is often a predictor of plant fitness. However, genetic variation for seed size may be reduced or eliminated by the roles of natural selection on other plant traits. In this trial, seed size and plant fitness data were correlated between Columbia (Col) and Landsberg (Ler) wild-type strains and their recombinant offspring. Col seeds are typically larger than Ler seeds, and this correlates with a larger plant size in the Col lines. In the recombinant offspring, data suggested initial seed size correlated with the time of germination and seedling growth rate, but not other fitness traits including seeds per fruit, height, branching, shoots, and number of fruits. We can conclude that seed size can be genetically separated from final plant size and other fitness traits. These results may have bearing on breeding strategies in agriculture.

3) SPECIATION AND EQUILIBRIA OF Cr^{3+} WITH ASPARTATE IN AQUEOUS SOLUTIONS. **Jasmine T. Greene*** and **Yahia Z. Hamada**, *LeMoyne-Owen College, Memphis, Tennessee*. Interaction of Asp with chromium Cr^{3+} in aqueous solutions is presented. The potentiometric titrations demonstrate strong Cr^{3+} -Asp interaction. The acidic ion exchange resin confirmed the Cr^{3+} concentrations of all stock solutions. At pH-value of 1.55 the UV-Vis of the Cr^{3+} -Asp titration system reflected molar absorptivities with the values of $(\epsilon_{\lambda_{\text{nm}}}) \epsilon_{405} \approx 29 \text{ M}^{-1}\text{cm}^{-1}$ and $\epsilon_{550} \approx 42 \text{ M}^{-1}\text{cm}^{-1}$ due to the ${}^4\text{A}_{2g} \rightarrow {}^4\text{T}_{1g}$ and ${}^4\text{A}_{2g} \rightarrow {}^4\text{T}_{2g}$ $\text{Cr}^{3+} d \rightarrow d$ electronic transitions respectively. At the pH-value of 4.10 the molar absorptivities have the values of $\epsilon_{405} \approx 22 \text{ M}^{-1}\text{cm}^{-1}$ and $\epsilon_{550} \approx 32 \text{ M}^{-1}\text{cm}^{-1}$ due to same $d \rightarrow d$ transitions. The corresponding values of the energies at these two wavelengths are $\approx 24,691 \text{ cm}^{-1}$ and $\approx 18,182 \text{ cm}^{-1}$ which are in a good agreement with the Tanabe-Sugano diagrams. These data have been collected from a system that reached a higher level of equilibrium state.

4) INTERACTION OF ADENINE WITH GROUP 12 METAL IONS. *Shandera Gardiner* and Yahia Z. Hamada, LeMoyne-Owen College, Memphis, Tennessee.* Adenine is one of the five nitrogenous bases (cytosine, guanine, adenine, thymine and uracil) that helps make up the code in DNA and RNA. These nitrogenous bases pair with one another to make the "step" of the DNA double-helix molecule. Many researchers reacted Adenosine mono-, di- and tri-phosphates (AMP, ADP and ATP) with almost all metal ions, but not with free Adenine. This was one of the reasons we are conducting this study. It appeared that Adenine is bound to these metal ions in a way that is yet to be confirmed with crystallizations or any other tool. Thus far, we have collected the potentiometric titration graphs and have strong evidence that Adenine is bound to these metal ions individually. NMR and Potentiometric data are confirming the binding nature of this ligand to these metal ions.

5) CHANGES IN SOIL CHARACTERISTICS BY ENGLISH IVY (*HEDERA HELIX*) IN OVERTON PARK. *Lauren Lambeth* and Rosanna Cappellato, Rhodes College, Memphis, Tennessee.* The incidence of the invasive species English ivy in Overton Park (Memphis, TN) and the environmental conditions of invaded areas were studied. Total English ivy cover was estimated to be 2.48% of the old growth forest. To identify the conditions sustaining English ivy growth, soil pH, temperature, and anion and cation levels as well as light levels were compared between plots with ivy (PWI) and without ivy (PNI). Soil temperatures and light levels were significantly ($p < 0.05$) lower in PWI. Lower light levels in PWI suggest that English ivy prefers to grow in shaded areas, and lower soil temperatures in PWI are likely due to the dense ivy ground cover that reduces soil exposure. Preliminary analysis of soil anions and cations showed significantly ($p < 0.05$) lower levels of phosphorus, potassium, and soil pH present in PWI. Low soil nutrient levels in PWI may indicate significant nutrient uptake by English ivy.

6) POTENTIOMETRIC TITRATIONS OF MALIC AND CITRAMALIC ACIDS WITH ALUMINUM IN AQUEOUS SOLUTIONS. *Marcus Harris* and Yahia Z. Hamada, LeMoyne-Owen College, Memphis, Tennessee.* Malic and citramalic acids are among essential hydroxy carboxylates similar to the famous citric acid. From our ongoing efforts to study the interaction of various hydroxycarboxylates with variety of essential and non-essential metal ions we are presenting accurate potentiometric work in aqueous solutions at 25°C for the interaction of Al(III) with malic acid and Al(III) with citramalic acid independently. Although malic acid and citramalic acid have a slight structure difference, (the former has a hydrogen on its chiral center while the latter has a methyl on its chiral center); there are great differences in their behavior in solutions independently and when reacting with the Al(III) ion. Our data presented are in good agreement with what have been reported in the literature. The proper speciation and simulation diagrams of these reaction systems will be presented and discussed.

Oral Session 1 Abstracts

9:00 INFLUENCE OF LUMINANCE CONTRAST IN THE AMPLITUDE OF MULTIFOCAL VEP. **Hope B. Shackelford*, Givago S. Souza, Bruno D. Gomes, Malinda E.C. Fitzgerald and Luiz Carlos de Lima Silveira,** *Department of Biology, Christian Brothers University, Memphis, Tennessee, and Universidade Federal do Pará, Núcleo de Medicina Tropical, Belém, Brasil.* The purpose of this study was to compare pattern-reversal multifocal visual evoked potentials (mfVEP) at different stimulus contrast levels and eccentricities to see if mfVEP would allow distinction between the Magnocellular and Parvocellular pathways. Four subjects with normal or corrected to normal visual acuity were tested. Four achromatic stimuli with spatial Michelson contrasts of 100, 50, 25, and 12.5% were designed to test the influence of luminance contrast on response amplitude. mfVEPs were extracted and analyzed to provide signal to noise ratio (SNR) for the first order kernel (1K) and first slice of the second order kernel (2.1K). For pattern-reversal mfVEP, 1K was absent and 2.1K had 75% of reliable responses at 100% of contrast. The SNR of 2.1K was best at 25-50% contrast. Further study compared pattern-reversal with pattern-pulse mfVEP, and concluded that pattern-pulse can provide better stimulation for clinical application due to valid, above noise level responses with higher SNR. Supported by NIH-MHIRT5737MD001378-08.

9:15 REAL-TIME REVERSE TRANSCRIPTASE PCR USED FOR MRNA GENE EXPRESSION IN FILAMENTOUS FUNGUS *ASPERGILLUS NIDULANS*. *Chassidy Groover**, *Loretta Jackson-Hayes*, *Terry W. Hill*, *Darlene M. Loprete*, *Rhodes College, Memphis, Tennessee*. The goal of our laboratory is to understand the mechanisms involved in cell wall metabolism in filamentous fungi. Currently, the lab is examining by Real-time reverse transcriptase PCR the differential mRNA expression of two putative *Aspergillus nidulans* mannose transporter genes that we have shown to complement Calcofluor White hypersensitivity and hyperbranching in a mutant *A. nidulans* strain. This technique combines reverse transcription and DNA amplification by polymerase chain reaction (PCR) creating fluorescent products whose production is monitored in real time. Here we show the differences in GmtA and GmtB mRNA expression during hyphal development.

9:30 INSULIN TREATMENT OF SERUM STARVED HUMAN RETINAL MICROVASCULAR ENDOTHELIAL CELLS AND THE EFFECTS ON THE APOPTOSIS PATHWAY. *Stephanie Parker** and *Jena Steinle*, *Department of Biology, Christian Brothers University, Memphis, Tennessee, and Department of Ophthalmology, University of Tennessee Health Science Center, Memphis, Tennessee*. This study investigated whether insulin had an effect on the induction of apoptosis in retinal endothelial cells. Cells were cultured in either high (HG) or low glucose (LG) to determine whether the glucose conditions made a difference in the effect of insulin on the signal transduction pathway of apoptosis in these cells. Human retinal microvascular endothelial cells (HRMEC) were serum starved followed by treatment with 10nM insulin. Cell culture lysates were collected at 15, 30, and 45 minute intervals, along with non-treated controls. Immunoblotting was performed as well as a caspase-3 ELISA. HRMEC cultured in HG and treated for 15 minutes with insulin showed a significant increase in the phosphorylation of Akt, which is an anti-apoptotic protein. Insulin treatment for 45 minutes significantly decreased cleaved caspase-3 levels in HRMEC cultured in LG. When compared to LG, HRMEC cultured in HG showed a significant decrease in cleaved caspase-3 activity at all time points. This study suggests that insulin receptor signaling interacts to decrease the protein caspase-3, and increase the anti-apoptotic protein Akt. These changes occur through modulation of the Akt signaling pathway and the caspase cascade. Further research could suggest that maintenance of insulin receptor signaling during diabetes may help protect the retina from damage. Supported by: Ophthalmology Fellowship / UTHSC; JDRF 2-2006-114, Research to Prevent Blindness (Dr. Haik, chair)

9:45 MAPPING OF THE 5-HT_{2A} RECEPTOR IN THE EDINGER-WESTPHAL REGION OF THE PIGEON (*Columba livia*): AN IMMUNOHISTOCHEMICAL STUDY. *Adam Luka**, *Jeremy Armstrong*, *Malinda E.C. Fitzgerald* and *Claudio Toledo*, *Department of Biology, Christian Brothers University, Memphis, Tennessee, and Universidade Cidade de Sao Paulo, Sao Paulo, Brazil*. The Edinger-Westphal nucleus (EW) is the autonomic, parasympathetic component of the oculomotor complex. It is divided into two main regions. The medial (EWM) controls choroidal blood flow, which is important for ocular health, while the lateral (EWL) controls both accommodation and the pupillary light reflex. Serotonergic nerve fibers heavily innervate EWM, and to a lesser degree EWL. In order to have a better understanding of the function of serotonin in the system, we sought to determine what receptor subtype was located on EW neurons using immunohistochemistry. It was determined that an 80% of EWM neurons contained 5-HT_{2A} receptors, while only 54% of the EWL neurons were immunopositive. These results demonstrate that the excitatory serotonergic receptor 5HT_{2A} was in EW. This suggests that this neurotransmitter is a major contributor to the regulation of choroidal blood flow by increasing blood flow to the eye. It would also affect accommodation and pupillary functions. These results suggest a role for serotonin in ocular health. Supported by 2T37MD001378-08, and FAPESP (08/51110-2)

10:00 DEVELOPMENT AND VALIDATION OF AN ONLINE EXTRACTION-LIQUID CHROMATOGRAPHY-MASS SPECTROMETRY METHOD FOR MEASUREMENT OF MK-752 IN HUMAN PLASMA. *Courtney Colotta**, *Feng Bai*, and *Clinton F. Stewart*, *Department of Pharmaceutical Sciences, St. Jude Children's Research Hospital, Memphis, Tennessee, and Department of Biology, Christian Brothers University, Memphis, Tennessee*. A sensitive HPLC-MS/MS method for determination of the novel NOTCH inhibitor MK-752 in human plasma was developed using an advanced online sample preparation. Dilute plasma samples were directly injected onto an online extraction column. The sample matrix was washed, and then retained analytes were eluted out and

directly transferred to another analytical column for separation using a gradient mobile phase. The analyte was detected in an API-3000 LC-MS/MS System with a negative multiple reaction monitoring mode (m/z 441.1/174.8). The assay sensitivity was 5.0ng/mL ($S/N \leq 10.5$, $\%CV=13.4$, $n=3$). The method was validated over a linear range of 0.05–50 μ g/mL with a R^2 value of 0.9979. Results from the assay within-day and between-day study demonstrated the precision ($\%CV$) and accuracy ($\%Error$) were ≤ 11.38 and ≤ 8.34 , and ≤ 8.16 and ≤ 6.23 , respectively. This method will be used to measure MK-752 in a Phase I study in pediatric patients with recurrent or refractory central nervous system malignancies.

10:45 EVALUATION OF *IN VITRO* VASOACTIVE PROPERTIES OF NEWLY DISCOVERED BK CHANNEL ACTIVATORS. **Erica C. McMorise***, **Anna N. Bukiya** and **Alex Dopico**, Department of Biology, Christian Brothers University, Memphis, Tennessee (EM), and Department of Pharmacology, The University of Tennessee Health and Science Center, Memphis, Tennessee (AB, AD). Impaired artery dilation is involved in prevalent diseases, such as stroke and hypertension. Treatment of these conditions might include activation of voltage- and calcium-gated potassium channels of big conductance (BK) in arterial myocytes, which causes membrane hyperpolarization, myocyte relaxation and, subsequently, arterial dilation. In the present study, newly discovered BK channel activators, such as *C-10 hydroxy-alkynoic acid methyl ester (10-HAME)*, *11-hydroxy-undec-7-ynoic acid (11-HOYA)*, and *methyl-3-hydroxyolean-12-en-30-oate (3-HENA)* were tested for their effects on resistance-size, pressurized, de-endothelized rat cerebral arteries. The well-known BK-targeting vasodilator lithocholic acid (45 μ M) was used as positive control. Among the three compounds tested, *3-HENA* (2-45 μ M) showed the highest efficacy. By testing myogenic tone responses to BK channel activators we are opening new ground for developing novel and effective arterial dilators. Supported by R01 HL077424 (A.M.D.)

11:00 OBESITY AMONG CHILDHOOD HODGKIN LYMPHOMA SURVIVORS. **Amanda S. Hoeffken*** and **Monika Metzger**, Rhodes College, Memphis, Tennessee, and St. Jude Children's Research Hospital, Memphis, Tennessee. PURPOSE: Hodgkin lymphoma (HL) survivors are at increased risk of therapy-related long-term complications that can be further intensified by obesity. With the increased risk of obesity in the United States, it is important to characterize if Hodgkin Lymphoma survivors are at increased risk of obesity. OBJECTIVES: Identify risk factors at diagnosis that predispose the obesity in HL patients treated at St. Jude Children's Research Hospital between 1990 and 2007. METHODS: Body mass indices of 341 patients with HL were compared to NHANES data at diagnosis and last assessment. Odds ratio for obesity at last assessment was calculated. RESULTS: Obesity rate among HL survivors is comparable to that of the general population. Age at last assessment, being overweight or obese and hypothyroidism were all associated with obesity. CONCLUSIONS: Adult survivors of pediatric HL have an increased risk for obesity. Early intervention for weight control should be implemented at diagnosis.

11:15 OVER-EXPRESSION OF CKAP2 REDUCES COLONY FORMATION IN HELA CELLS. **Benjamin Jackson***, **Lauren Keith***, and **William S. Brooks**, Freed-Hardeman University, Henderson, Tennessee. Cytoskeleton associated protein 2 (CKAP2) is a microtubule associated protein that is expressed during the G₂/M phase of the cell cycle. Previous publications have shown that CKAP2 plays a role in mitotic spindle functioning, although the exact nature of its function is unclear. The *CKAP2* gene is frequently upregulated in human malignancies indicating that it may be involved in the oncogenic process. In this study, CKAP2 cDNA was subcloned into an expression vector system and transfected into HeLa cells. Western blotting indicated that elevated levels of exogenous protein were expressed. Using this system, a colony forming assay was conducted to determine the effects of CKAP2 over-expression on tumor cell growth. Our data indicates that in the p53-null HeLa cell line, over-expression results in a decreased number of colonies as compared with control cells. It is unclear whether this decrease in colony formation is due to cell cycle arrest or apoptosis.

11:30 A PREVALENCE SURVEY OF DOMESTIC VIOLENCE IN AN URBAN OBSTETRICAL EVALUATION UNIT. **Nakia Chambliss***, **Jay Bringman**, **Romero Midgett**, **Risa Ramsey**, **Robert Egerman**, and **Charles Gibbs**. Christian Brothers University, Memphis, Tennessee, and The University of Tennessee Health Sciences Center, Maternal and Fetal Medicine, Memphis, Tennessee. Domestic

violence against women is recognized as a major health concern, especially during pregnancy. The purpose of this study was to determine the occurrence of physical abuse among pregnant patients of an urban obstetrical evaluation unit in Memphis, Tennessee. The Abuse Assessment Screen (AAS), an anonymous survey developed by McFarlane and associates was used to measure the significance of abuse during pregnancy. The population consisted of 100 pregnant patients, 18 years of age and up. As a result an exploratory t-test on the sample suggested that the proportion of abuse in the African-American subpopulation was greater than zero as African Americans reported a higher percentage of abuse during pregnancy than Hispanics and Caucasians. Such results may allow physicians to better recognize pregnant patients who are at risk for domestic violence. By detecting physical abuse earlier psychological, physical problems and death to both mother and unborn child may be avoided.

Oral Session 2 Abstracts

9:00 EFFECTS OF SITTING TAI CHI ON MOBILITY OF FRAIL OLDER ADULTS. *Alan R. Fredericks**, *Lawrence Faulkner*, and *Veronica Engle*, *Department of Biology, Christian Brothers University, Memphis, Tennessee (ARF)*, and *Primary Care and Public Health, University of Tennessee Health Science Center, Memphis, Tennessee (LFVE)*. We sought to evaluate the effects of sitting Tai Chi, when performed for an hour, two to three times a week over a period of six months, on mobility of frail older adult residents (N = 40) in two assisted living facilities. Residents were assessed at baseline, three-months, and six-months over six months during the intervention. Mobility was measured by the Timed Up and Go (TUG) test and its components. Sitting Tai Chi did not show significant effect on the overall TUG scores or the individual TUG component scores. It is possible that frail older adults may need more than three to six months or more sessions per week of sitting Tai Chi, compared to older adults in the community performing standing Tai Chi, to have significant improvements in mobility. The study may have been under-powered. Sitting Tai Chi was enjoyable and safe for residents; with residents continuing sitting Tai Chi after the study ended. Support by HW Durham Foundation

9:15 IMMUNE DEVELOPMENT OF *DROSOPHILA MELANOGASTER* AT 1 AND 5 DAYS POST ECLOSION. *Kelly Towns**, *Jodell Linder*, and *Daniel Promislow*, *Christian Brothers University, Department of Biology, Memphis, Tennessee*, and *University of Georgia, Department of Genetics, Athens, Georgia*. Current research has focused primarily on the aging immune system in *Drosophila* and has not focused on the development of such an immune system. It is not understood how the innate immune system develops in *Drosophila*, if it develops at all in an adult fly. In this study, we investigated the average time a 5 day old and a 1 day old fly survived a bacterial infection. Our study suggests that there is a difference in survivor rate between flies that are 5 days old and flies that are 1 day old, with 5 day old flies surviving longer after infection. Our study shows that the immune system of *Drosophila melanogaster* is not fully developed at the time of eclosion.

9:30 GENETIC EFFECTS ON ETHANOL AND OTHER BEHAVIORAL RESPONSES IN ADOLESCENTS: ANALYSIS OF ATAXIA, LOCOMOTOR ACTIVATION, AND ANXIOLYSIS IN MICE. *Michael Antone**, *Kiedra Kincaide*, and *Kristin M. Hamre*, *Department of Biology, Christian Brothers University, Memphis, Tennessee*, and *Department of Anatomy and Neurobiology, University of Tennessee Health Science Center, Memphis, Tennessee*. Adolescents have been shown to differ from adults on a number of behavioral responses, and many differential responses are genetically mediated. We are examining the relationship between age and genetics in behavioral responses. Responses were examined in adolescent and adult mice of the C57BL/6J (B6), Balb/c, and DBA/2J (D2) mouse strains. Mice were tested following an IP injection of either saline or 2.25 g/kg of ethanol or at baseline (without injection). The behaviors tested included motor incoordination as measured on an accelerating rotarod, anxiolysis measured in the elevated plus maze, locomotor activation measured in an activity chamber and learned helplessness as measured in the Porsolt forced swim test. Strain differences were observed on most of the tests. However, age differences were found on only a subset of the tests. Thus, genetic effects

on ethanol-related and baseline responses in adolescents occur in a test-specific manner. Supported by: UTHSC Neuroscience Center of Excellence.

9:45 COMPARISON OF FLIGHT PATTERNS AND HABITAT PREFERENCES AMONG THE *AE. VEXANS*, *CX. ERRATICUS*, AND *AN. SMARAGDINUS* MOSQUITO POPULATIONS. **Blake A. Jackson*** and **Jack Grubaugh**, *Christian Brothers University, Department of Biology, Memphis, Tennessee, and The University of Memphis, Department of Biology, Memphis, Tennessee.* To characterize mosquito (Diptera: Culicidae) host-seeking patterns, collections were made at discrete evening intervals from May to October 2008 at six locations representing three habitats in Shelby County, Tennessee. Abundance and flight periods were determined for *Aedes vexans*, *Culex erraticus* and *Anopheles smaragdinus* as representative species of the major culicid genera encountered during the study. *Ae. vexans*, the most widespread and abundant of the three species, was collected in the greatest numbers in late spring with peak flight periods occurring late at night. Second most abundant, *Cx. erraticus*, was prevalent in mid-summer and exhibited both a late-night and a pre-dawn activity peak. *An. smaragdinus*, which was not encountered until summer, was the least common and exhibited a primary foraging period in the early-morning hours. While the greatest numbers of culicids were collected at rural sites, no clear association was evident for any of these species to a specific habitat-type (Support: Division of Vector Borne Infectious Diseases, Centers for Disease Control).

10:00 ASSESSING AMPHIBIAN MARKING TECHNIQUES IN RECENT TOAD METAMORPHS: RELIABILITY, EFFECTS ON SURVIVORSHIP AND PHYSIOLOGY, AND CONSERVATION IMPLICATIONS. **Stephanie N. Cassel***, **Andy Kouba** and **Jon R. Davis**, *Rhodes College, Memphis, Tennessee (SC, JD), and Memphis Zoo, Memphis, Tennessee (AK, JD).* Global amphibian decline is a rapidly escalating and widespread problem resulting in significant reductions of amphibian populations. Reintroduction of captive-bred individuals has key implications for the conservation of imperiled species. We empirically evaluated the effectiveness of four marking techniques: Toe Clips, Visual Implant Elastomers, Passive Integrated Transponders, and Alpha-Numeric Fluorescent Tags, in identifying individual recently metamorphosed Fowler's toads (*Anaxyrus fowleri*). Additionally, we compared survival, growth rate, and physiological performance of marked toads to unmarked controls for 180 days to determine whether marks affect the measures. We anticipate marking techniques with added mass (PIT) or that affect morphology (TC) will likely have greater deleterious effects on growth, survival, and physiology. This study will identify the most reliable and least-invasive marking technique for small amphibians, which can aid population monitoring programs and improve assessment of reintroduction programs' success.

10:45 CARBOHYDRATE DISTRIBUTION IN BAMBOO. **Emily Wong**, and **Carolyn Apanavicius**, *Department of Biology, Christian Brothers University, Memphis, Tennessee, and The Memphis Zoo, Memphis, Tennessee.* The Giant Panda is a unique animal whose diet is bamboo, a nutrient poor food. We speculated that dietary carbohydrates, such as starch and glucose, are a significant nutrient. We analyzed these dietary carbohydrates in the leaves and culm (stalk) of *Phyllostachys auroesulcata* quantitatively, with an enzymatic coupling method, and qualitatively, with an independent thin-layer chromatography analysis. We found that there was a significantly higher amount of dietary carbohydrates in the upper leaves than in other parts of the plant. The enzymatic assay suggested that starch concentration was low; this was confirmed by TLC results. An average kilogram of bamboo contains about 18 g of dietary carbohydrates. A Panda's consumption of bamboo averages 12 Kg/day, from which the estimated nutrient contribution by dietary carbohydrates was about 200 g/day. Supported by The Memphis Zoo

11:00 TEMPERATURE AND OSMOTIC STRESS EFFECTS ON AMPHIBIAN SPERM FUNCTION. **Marian G. Moore***, **Erin L. Willis** and **Carrie K. Vance**, *Memphis Zoological Society, Memphis, Tennessee.* Captive breeding programs for threatened amphibians would benefit from shipping sperm between institutions for genetic management, but challenges exist relative to storage conditions and temperature. The primary measure of amphibian sperm function is motility, which is directly related to its energy output from the mitochondrial vesicle (MV) loosely associated with the plasma membrane. Using the Fowler toad (*Bufo fowleri*) as a model, we proposed to: 1) test the effects of temperature on MV stability during storage, and 2) evaluate the influence of changing osmotic environments on membrane

integrity. Results from our study showed that 4°C significantly preserved the integrity of the MV, sperm motility and forward progression over time compared to 22°C. The loss of MV association and membrane integrity was a direct function of increasing temperature and decreasing osmolality. Stabilizing membrane function in amphibian sperm by manipulating temperature and osmolality contribute to long-term sperm storage.

11:15 USING FECAL PARTICLE SIZE AND MICROBIAL PLATING TO GAIN A GREATER UNDERSTANDING OF THE GIANT PANDA'S DIGESTIVE MECHANISMS. *Heather Gosnell*, Carolyn Apanavicius, and Rachel Hanson, Christian Brothers University, Department of Biology, Memphis, Tennessee and The Memphis Zoo, Memphis, Tennessee.* A method for separating Giant Pandas' fecal particles by size was developed. Fecal matter was collected from two pandas, one male and one female, at the Memphis zoo from May until July. The percentage of each particle size classification {large (>0.75in), medium (< 0.75 in and > 0.31 in), and small (<0.31 in)} was determined after separation, and a greater percentage of medium particle sizes was observed in both pandas. The female had a greater percentage of small particle sizes. A second study researched the number of microbial colonies present in one milliliter of a panda's fecal slurry using a ten series dilution. Female slurry platings had greater amounts of microbes present. Combined, these studies can help determine how well bamboo is broken down (indicated by size), and give a numerical insight to the microbes present in their fecal matter. Support by The Memphis Zoo

11:30 A COMPARATIVE ANALYSIS OF NONINVASIVE TECHNIQUES USED IN MONITORING JAGUAR (*PANTHERA ONCA*) POPULATIONS. *Svetlana Lapova, Rachel Savoy, and Leandro DeSilveria. The Department of Biology, Christian Brothers University, Memphis, Tennessee and Jaguar Conservation, Emas, Brazil.* Various non-invasive techniques have been developed to assess jaguar populations and to monitor general condition of the species. Non-invasive methods are key to simultaneously tracking multiple animals and protecting target species from disruptive procedures like surgeries, biopsies, and anesthesia. Our study compares two popular non-invasive techniques: camera-trapping and scat-detection. Camera-trapping involves automated cameras set up across Emas National Park (ENP), Central Brazil. Canine-assisted scat-detection is systemized collection and analysis of jaguar scats; the study was conducted in the Pantanal (Caiman Ranch), Western Brazil. The goal of the study was to compare efficiency and goals of the two techniques. Taking into account environmental conditions, population assessment capability, quality and scope of analysis (including diet analysis), and cost management, we concluded that camera-trapping was best for population monitoring while scat-detection provided a wider scope of information about sampled species. The study is ongoing; this portion was completed during the 2008 dry season. Supported by: NIH 2T37MD001378-08 and Jaguar Conservation Fund.

11:45 URBAN MEMPHIS PARKS AS CARBON SINKS. *Jacqueline Gentry* and Rosanna Cappellato, Rhodes College, Memphis, Tennessee.* Based on Earth Day Network data from 2002, the city of Memphis, TN, releases an estimated 64 million tons of anthropogenic CO₂. This study aimed to assess how much of the total CO₂ is sequestered and stored by the Memphis parks. To measure the canopy coverage of each park, the amount of carbon stored and sequestered, the amount pollution removed, we used the software program CITYgreen produced by American Forests. Results showed that the 35 parks (1.5%, or 690 ha, of the total urban area) store 82,920 tons carbon and sequester 645 tons carbon. Parks remove 93.8 tons (metric) of pollution including carbon monoxide, ozone, nitrogen dioxide, particulate matter, and sulfur dioxide, a service valued at \$51,7341. These values are significant considering that only 35 out of 166 of the Memphis parks were included in this study.

Oral Session 3 Abstracts

9:00 GDP-MANNOSE TRANSPORTERS IN THE FILAMENTOUS FUNGUS *ASPERGILLUS NIDULANS*. **Laura R. Johnson***, **Chassidy Groover***, **Loretta Jackson-Hayes**, **Terry W. Hill**, **Darlene Loprete**, *Rhodes College, Memphis, Tennessee*. GDP-mannose transporters (Gmt) carry nucleotide sugars from the cytosol across the Golgi apparatus membrane in various eukaryotic organisms including plants and a variety of fungi. Some fungal species including *Saccharomyces cerevisiae* express a single Gmt, while others including *A. nidulans* express two (GmtA and GmtB) whose individual roles have not been revealed. GmtA displays a punctate pattern of distribution indicative of localization within the Golgi apparatus. Here we show that GmtB localization is congruent with GmtA in mature hyphae. Also, in the lab created mutant, R205, there is a mutation in the coding region for the GmtA gene. Separate plasmids containing GmtA and GmtB as well as plasmids that encode for GmtA-GFP and GmtB-RFP chimeras complement the mutant phenotype of R205. However, GmtA and GmtB constructs complement the mutant with differing potencies. Therefore GmtA and GmtB appear to perform closely related, but distinct tasks in cell wall integrity of *A. nidulans*.

9:15 CASE STUDY OF *DEMATIACEOUS* FUNGAL INFECTIONS IN THE IMMUNO-SUPPRESSED. **Alicia Scarborough***, **Randall Hayden** and **Gabriella Maron**, *Christian Brothers University, Department of Biology, Memphis, Tennessee, and St. Jude Children's Research Hospital, Department of Pathology, Memphis, Tennessee*. This study focused on *dematiaceous* fungal infections found in immunosuppressed patients at St. Jude Children's Research Hospital. This case study was focused on a small sect of a large pool of fungal infections observed from the years 1962, the opening of St. Jude, to 2006. Twelve *dematiaceous* fungal infections were identified. The majority of these patients were white females. Forty-two of the cases were a new diagnosis. Most of the *dematiaceous* fungal infections were seen between the years of 2002 and 2006. The average length of the fungal infections was ten years. Of the twelve patients with *dematiaceous* fungal infections, 33.3% had previously received bone marrow transplants. This study provides a basis for susceptibility and duration of infection and will help provide information for further studies concerning *dematiaceous* fungal infections.

9:30 EFFICACY OF PRAZOSIN IN THE EXTINCTION AND RECONSOLIDATION OF CONTEXTUAL FEAR CONDITIONING IN RATS. **Melody Allensworth***, **Fabricio De Monte**, and **Antonio P. Carobrez**, *Department of Biology, Christian Brothers University, Memphis, Tennessee, and Department of Pharmacology, Universidade de Santa Catarina, Florianopolis, SC Brazil*. In previous clinical studies, there has been evidence showing the effectiveness of Prazosin in the treatment of Post Traumatic Stress Disorder (PTSD), a debilitating psychological disorder associated with exposure to traumatic stress. However, there is much less evidence using animal models to support the mechanisms of effectiveness for this alpha-1 –adrenergic antagonist. The aim of this current work was to investigate the blocking of an adverse memory (extinction) when Prazosin 0.1 and 0.5 mg/kg were administered in a contextual fear conditioning paradigm. Prazosin 0.5 mg/kg administered 30 minutes prior to extinction sessions on 3 consecutive days decreased the freezing behavior in comparison to the control and Prazosin 0.1 mg/kg. Our results suggested that Prazosin impedes acquisition of new learning. Supported by NIH-MHIRT 5-737-MD001378-08.

9:45 THE ROLE OF *BRO1* IN *CLN3*-DEPENDENT CELL DIVISION IN *S. CEREVISIAE*. **Brett Dagen*** and **Mary E. Miller**, *Rhodes College, Memphis, Tennessee*. The cell division cycle is a highly regulated process that is essential for proper replication of a cell. The cyclin Cln3 regulates passage from G1 to S phase by binding to and activating Cdc28. Proper Cln3 function requires nuclear localization which depends on a bipartite type nuclear localization signal (NLS). Previously, Dr. Mary Miller, in collaboration with Dr. Brenda Andrews (University of Toronto, Canada), identified 19 genes involved in Cln3 NLS activity. Of these, eight were found to be important for Cln3 dependent viability. In these experiments, we have identified *BRO1* as important for both Cln3 NLS activity and G1 cyclin function. Bro1 functions within the endosomal pathway. However, the complete cellular role of Bro1 is unclear, and it has been shown to have other genetic interactions. Our data suggest a role of Bro1 in regulated cell division.

10:00 *ROP2* GTPASE IS REQUIRED FOR PROPER *ATFH5* LOCALIZATION IN *ARABIDOPSIS THALIANA* **Jenkin Chan*** and **Jonathan Fitz Gerald**, *Rhodes College, Memphis, Tennessee*. Formins are conserved actin-nucleating proteins that are involved in cytokinesis and cell polarity. In yeast and animals, formins are activated by the binding of Rho GTPase. However, canonical Rho GTPases and the required formin binding domains are not apparent in plants, so the regulation of plant formin is not well understood. In this study, we examine the genetic interaction between the Arabidopsis formin, *AtFH5*, and candidate regulators. In a wild-type plant, Atfh5-GFP fusion protein is well-packed and is centralized slightly below the end of a growing pollen tube. In the absence of *ROP2*, a plant GTPase protein, Atfh5-GFP fusion protein is diffused at the end of a growing pollen tube. This result suggests that *ROP2* GTPase participates in regulating Atfh5 during the developmental process. Though plant formins lack the conserved GTPase binding domains they may retain association with the same regulators found in animals and yeasts.

10:45 GENERATING ESCAPE MUTANTS TO MONOCLONAL ANTIBODIES DIRECTED AGAINST H5N1 INFLUENZA VIRUSES. **Daniel Darnell*** and **Richard Webby**, *Christian Brothers University, Department Of Biology, Memphis, Tennessee, Saint Jude Children's Research Hospital, Department Of Infectious Diseases, Virology Division, Memphis, Tennessee*. Monoclonal antibodies (MAb) are being evaluated as a possible treatment for H5N1 influenza. The major drawback to this approach is that such treatment can rapidly generate escape mutants. An escape mutant is a virus that has mutated an antigenic epitope so that it is no longer bound by a particular antibody, thus making the virus resistant to treatment. In this study we determined the frequency of escape mutant generation to three lead MAbs; 7H5, 10C3, and 3D10. Although escape mutants were generated to all MAbs, 10C3 had to be diluted 10 fold more before mutants were detected. Correspondingly, sequence analyses showed that the 10C3 mutants mapped to a different antigenic epitope than 7H5 and 3D10, suggesting that this region was less prone to mutation. These data suggest that 10C3 is less likely to produce escape mutants and should therefore be selected for further clinical development. Supported by NIAID grant # U01AI070373-04.

11:00 IDENTIFICATION OF SYNERGISTIC ANTIMALARIAL THERAPEUTICS FROM A COLLECTION OF BIOACTIVE COMPOUNDS. **Michelle Paul***, **Rodney K. Guy**, **Wendyam A. Guiguemde**, *Department of Biology, Christian Brothers University, Memphis, Tennessee (MP), Department of Chemical Biology and Therapeutics, St. Jude Children's Research Hospital, Memphis, Tennessee (RKG, WAG)*. Due to the increasing chemoresistance of *Plasmodium falciparum* against drugs that are currently used for treatment, there is an urgent need for new alternative treatments against malaria. Mortality of malaria, which is currently estimated at one million per year, is at a constant increase as a result of this chemoresistance. In response to this, a library of 5600 bioactive compounds was tested in combination with two known antimalarials to identify possible synergistic antimalarial pairs. From the screening, twelve compounds were identified as synergistic in combination with the antimalarial artemisinin, and thirteen compounds hits with the antimalarial chloroquine. Of these synergistic hits, sixteen have no previously published growth inhibition activity against the parasite. Supported by Grant Number 5R25CA023944, National Cancer Institute

11:15 CHROMATIC DISCRIMINATION MEASURED WITH MFVEPS. *Stephanie Johnson**, *Bruno D. Gomes*, *Givago da Silva Souza*, *Malinda E.C. Fitzgerald* and *Luiz Carlos de Lima Silveira*, *Christian Brothers University, Department of Biology, Memphis, Tennessee, and Universidade Federal do Pará, Núcleo de Medicina Tropical, Belém, Brasil.* The purpose of this study was to investigate asymmetries with respect to sensitivity to chromatic stimulation using multifocal visual evoked potentials (mfVEPs). A stimulus consisting of a dartboard pattern of 120 sectors at 75 Hz frame rate was used. Luminance increments were applied to obtain 100, 50, 25, 12.5, and 0% Michelson contrasts, starting from either the red or green phosphor. Analysis showed that the response energy was concentrated in the second-order kernel in the first and second central rings. The responses increased from the isoluminance condition to reach a peak at 50% contrast in the green side and 12.5% contrast in the red side of the tested range of luminance contrasts. At 100% contrast, red-black darts evoked larger responses than green-black darts. Multifocal VEP responses exhibited an asymmetric behavior when red-green dart stimulus moves from the isoluminance condition towards a pure red or green luminance contrast. Supported by NIH-MHIRT5737MD001378-08.

11:30 EFFECTS OF PLATELET-RICH PLASMA ON PIG DERIVED ANNULUS FIBROSUS CHONDROCYTE PROLIFERATION. *Scott C. Berry**, and *Richard Smith.* *Christian Brothers University, Department of Biology, Memphis, Tennessee, and University of Tennessee, Campbell Clinic Department of Orthopaedic Surgery, University of Tennessee Health Science Center, Memphis, Tennessee.* Intervertebral disc (IVD) degeneration generally begins with damage to the annulus fibrosus (AF). If the damage can be easily treated, then it would be possible to stop the progression of IVD degeneration before the nucleus pulposus (NP) begins to collapse. In this study, platelet-rich plasma (PRP) is tested as a possible treatment for IVD degeneration as it pertains to damage of the AF. AF derived chondrocytes, from the spine of a pig, were cultured with PRP and various platelet concentrations. RNA was extracted and quantitative PCR was performed for the genes *mmp-1*, *col-1*, *col-2*, and *aggrecan*. The samples treated with PRP showed an increase in expression of *col-1* and *col-2*, and a decrease in expression of *mmp-1* and *aggrecan*. This shows that collagen breakdown is minimal and there is an increase in chondrocyte proliferation compared to nontreated controls. These results demonstrate a potential of PRP to promote AF chondrocyte proliferation.

11:45 DIRECT DELIVERY OF EPO IS NEUROPROTECTIVE TO PHOTORECEPTORS INDEPENDENT OF GLYCOSYLATION. *Ying Y. Wong**, *Shayla Merry*, *Kishore Kodali*, and *Tonia S. Rex*, *Department of Biology, Christian Brothers University, Memphis, Tennessee (YYW), and Department of Ophthalmology, University of Tennessee Health Science Center, Memphis, Tennessee (SM, KK, TSR).* We sought to determine if direct delivery of erythropoietin (EPO) or its glycosylated variants, deglycosylated EPO (DEPO) and hyperglycosylated EPO (HEPO) are able to protect the photoreceptors of retinal degeneration slow (*rd*s) mice from dying of apoptosis. On postnatal day 7 *rd*s mice were given a single subretinal injection of EPO, DEPO, HEPO, or phosphate buffered saline. Apoptotic cells were detected by TdT-dUTP nick end labeling (TUNEL) of retinas at postnatal day 20 (the peak of apoptotic cell death). Hematocrit levels were measured by capillary centrifugation. We detected 36±3 TUNEL + cells/mm retina in untreated *rd*s mice. Buffer, EPO, HEPO, and DEPO treated retinas had 16±4, 2±1, 3±2, and 7±1 TUNEL + cells/mm retina, respectively. There was no change in percent hematocrit. EPO is neuroprotective to the photoreceptors in the *rd*s mouse without a concomitant increase in hematocrit. Alteration in glycosylation level of EPO has no statistically significant effect on this protection. Supported by Department of Ophthalmology Fellowship, Hope for Vision Young Investigator Award, and Roche Foundation for Anemia Research