concomitant increase in hematocrit. Alteration in glycosylation level of EPO has no statistically significant effect on this protection.

POSTER PRESENTATIONS

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 dihydrolytic 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 dihydrolytic 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 $Mo(H_{-1}Cit)$, $Mo(H_{-1}Cit)(OH)$, and $Mo(H_{-1}Cit)(OH)_2$, also we have considered the di-nuclear $Mo_2(H\text{-}1Cit)(OH)_2$ complex. Among all complexes taken into account, only the di-hydrolytic complex $Mo(H_{-1}Cit)(OH)_2$ 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.

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.

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 $(\varepsilon_{\lambda\ nm})\ \varepsilon_{405} \approx 29\ M^{-1}cm^{-1}$ and $\varepsilon_{550} \approx 42\ M^{-1}cm^{-1}$ due to the $^4A_{2g} \rightarrow {}^4T_{1g}$ and $^4A_{2g} \rightarrow {}^4T_{2g}\ Cr^{3+}$ d → d electronic transitions respectively. At the pH-value of 4.10 the molar absorptivities have the values of $\varepsilon_{405} \approx 22\ M^{-1}cm^{-1}$ and $\varepsilon_{550} \approx 32\ M^{-1}cm^{-1}$ due to same d → d transitions. The corresponding values of the energies at these two wavelengths are $\approx$ 24,691 cm^{-1} and $\approx$ 18,182 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.

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 dada are confirming the binding nature of this ligand to these metal ions.

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.

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.

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.

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 CO_2. This study aimed to assess how much of the total CO_2 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 1147 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 $517,341. These values are significant considering that only 35 out of 166 of the Memphis parks were included in this study.