Abstracts of Poster/Workshop Sessions

Included here are previously unpublished abstracts for 8 poster sessions and one workshop session presented at the AMCGBT meeting in Henderson, KY, September 22-24, 1994.

P1. TESTOSTERONE RELEASE AND HEAVY RESISTANCE EXERCISE
Cameron Tremain, Park College, Parkville, MO
The human body's response to exercise is directly linked to the type of stress placed upon it. The endocrine system plays an important part in the way we adapt to heavy resistance exercise. Hormonal responses, primarily testosterone, can be dramatically increased utilizing high intensity training targeting large muscle groups. Programs using large muscle masses and enough stimulation will cause the release of testosterone into the bloodstream. Testosterone will directly target the muscle tissues that are being worked. The results are size and functional adaptations: growth and performance enhancement.

P2. EVOLUTION AND FUNCTIONAL ANATOMY OF THE STAY-APPARATUS OF THE HORSE
Lesly Taherzadeh, Park College, Parkville, MO
The limbs of the domestic horse, *Equus caballus*, are automatically unique. Members of the equine family control their resting posture by locking their limbs in a stance using a system of muscles, ligaments and tendons known as the passive stay-apparatus. The stay-apparatus is an energy saving adaptation that first appeared in *Dinohippus* between 2 and 5 million years ago. In fossil horses, the stay-apparatus is identified by the presence of an intermediate tubercle on the proximal end of the humerus.

P3. A COMPARATIVE STUDY OF THE DIGESTIVE SYSTEM OF OPISTHOCARNUS HOAZIN, THE HOAZIN, A "FLYING COW"
Rebecca Potter, Park College, Parkville, MO
In form and function, the digestive system of the hoatzin resembles that of a mammalian ruminant more than that of a bird. The hoatzin is unique as the only bird with foregut fermentation.

The microbial action in the hoatzin's crop and caudal esophagus not only physiologically resembles that of a cow, but it also produces the odor usually associated with cows. Because of this odor, the hoatzin has variously been referred to as a stink bird, stinking pheasant, avian cattle, cow bird, and flying cow.

P4. POSSIBLE ANCESTORS OF THE MODERN WHALE
Michelle Affolter, Park College, Parkville, MO
Modern whales are thought to have evolved from four-legged terrestrial animals. Fossil evidence to support this theory is provided by three major fossil findings. *Mesonychid* is thought to be the first ancestor to the modern whale. It lived completely on land and only ventured into the water to eat. The *Abulocetus* lived its life half in and half out of the water. It probably came back to land to breed, but spent most of its time in the water. The *Basilosaurus* is by far the most important fossil found because it has remnants of hind limbs present with the fossil. These very small hind limbs were thought to be used as copulatory guides for the animal. From the pattern of the digits, it has been inferred that *Basilosaurus* and modern whales, descended from even-toed ungulates.

P5. THE FAMILY CROCODYLIDAЕ
Robby Gardner, Park College, Parkville, MO
Today's crocodiles all belong to the order Eusuchia. Out of the twenty species, they can be grouped into a single family, the Crocodylidae. This family is then subdivided into three subfamilies according to the appearance of the snout. The snout sets up a unique breathing apparatus that separates the oral cavity from the nasal passage. This allows the animal to breathe while its mouth is open under water.

P6. PACK BEHAVIOR IN WOLVES
Bonna Holladay, Park College, Parkville, MO
Pack structure and dominance order are probably the most significant aspects of wolf behavior and survival. The mainte-
nance of social order governs essentially all aspects of a wolf's life from when and how much it will eat, to with whom and if, it will reproduce. From the beginning of their lives, the wolf's behavior is geared toward teaching the social signals needed to communicate status and rank with the least amount of dissension and energy expenditure by the group.

P7. AN EFFECTIVE WAY TO LEARN/TEACH ABOUT DNA FINGERPRINTING
Ruth A. Dyure, Edgewood College, Madison, WI
Instructors of genetics often find that many concepts do not lend themselves to a simple lecture explanation. Audio-visual aids help of course, but I have found that well-designed interactive exercises can greatly help in engaging students in really trying to understand a difficult concept. Here I present an example of an exercise I designed to help students learn about DNA fingerprinting. While DNA fingerprinting is something that is talked about in the media all the time, few people really understand it. Therefore, I felt that a good classroom explanation of it was essential for any genetics course. I believe there are three basic elements of the exercise which make it successful: 1) it builds upon simple concepts that students should feel confident about (simple Mendelian inheritance, chromosomal recombination, and the technique of gel electrophoresis); 2) the exercise is very interactive, not a lecture at all, and as such the class moves very quickly (there is some class discussions to fill in worksheets); and 3) the exercise is "fun" and involves measuring, counting, and coloring, and is a bit like puzzlesolving. After doing this exercise, I suggest that the next topic discussed should be PCR as a technique for increasing the quantity of a minute DNA sample...but that's the subject for another poster!

P8. RAPID ISOLATION AND PURIFICATION OF PLANT DNA FROM ROOTS
Zeung K. Cho & Timothy J. Mulkey, Life Science Dept., Indiana State University, Terre Haute, IN
Isolation of plant DNA is known to be difficult because of the presence of high concentration of polysaccharide. DNA isolation from roots is especially difficult due to high concentrations of nuclease as well as polysaccharides; roots typically have less DNA when compared to other plant parts. There are various standard methods of preparations of plant DNA which include the CTAB (hexadecyltrimethyl ammonium bromide) procedure, Polyethylene Glycol procedure, and Phenol/SDS (sodium dodecyl sulfate) procedure. These procedures are time-consuming, expensive, and even dangerous due to the use liquid nitrogen. We have modified the procedures of several protocols in which plant DNA isolation and purification are performed through grinding plant cells without liquid nitrogen. We have compared our new procedure of plant DNA preparation with traditional methods. We have found that this modified procedure is more rapid, less expensive, and results in purity and yield of DNA which compare favorably to other traditional methods. The advantages of this procedure over other standard methods include: (1) increased speed of isolation, (2) use of a microcentrifuge instead of an ultracentrifuge, (3) use of inexpensive chemicals, and (4) high yield of large fragments of high purity DNA. We have isolated DNA from maize and soybean roots by this method; we will report on the size and quality of the DNA isolated by this method as analyzed by various restriction enzyme digestions.

W1. ROLE PLAYING AND CLASSROOM THEATER IN TEACHING BIOLOGY
Pat Bowne and David Ferris, Alverno College, Milwaukee, WI
Role-playing and classroom theater are teaching methods in which students play the parts of molecules, cells, or tissues and re-enact a physiological process. They are particularly useful strategies for reviewing processes in which different parts of the body must cooperate and communicate. Topics especially suited to role-playing include Hydrogen Bonding, Oxygen Dissociation Curve, Digestion, and Blood Glucose Regulation. Role-playing is also useful for students who have learning differences or experiential learning styles.

Workshop participants will run through classroom theater exercises suited for small-group, laboratory, and whole-class formats.