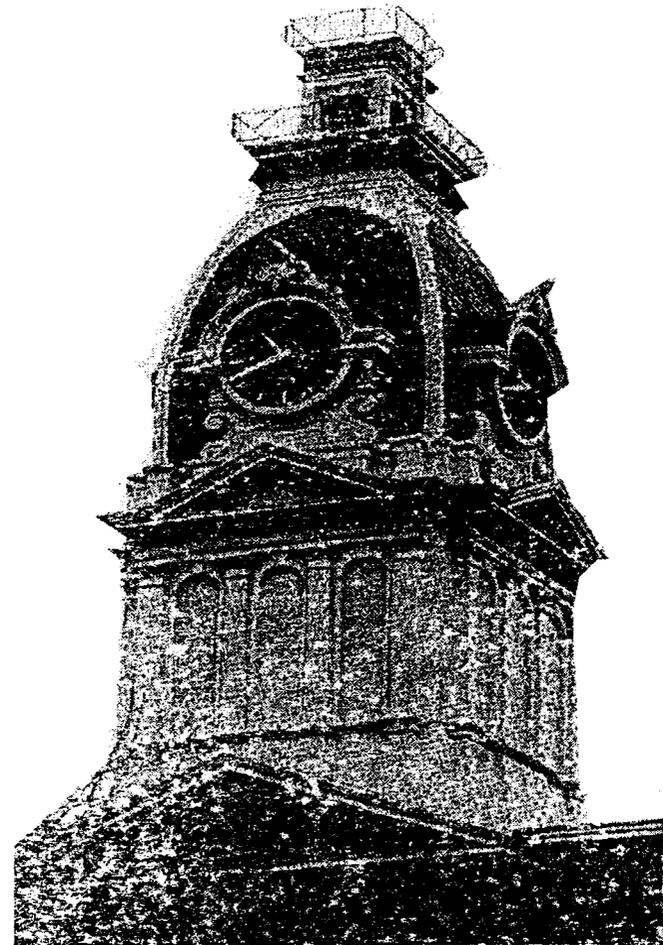


# The Sigma Zetan

Volume LXV

1999

Proceedings of the National Convention



Hillsdale College  
March 4-6, 1999

**The Sigma Zetan**  
The Official Publication of Sigma Zeta

Volume LXV

Angela Hare, National Editor  
Messiah College, Grantham, PA

## Table of Contents

Roll Call of Chapters at National Meeting ...	3
Abstracts of Student Papers .....	4
National Council Meeting .....	12
Committee Assignments .....	13
Proceedings of the General Meeting .....	14
Founder's Cup Award .....	15
Rules for Publishing Students Papers .....	17
Founder's Cup Competition Rules .....	18
School/Chapter Reference .....	19
Chapter/School Reference .....	20

## Roll Call of Chapters 1999 National Convention

### **Alpha Beta**

Campbellsville University; Campbellsville, KY  
Brian Esters, President

### **Alpha Psi**

Hillsdale College; Hillsdale, MI  
Jonathan Low, President

### **Beta Iota**

Bethel College; St. Paul, MN  
Amanda Bristow, President

### **Beta Lambda**

Messiah College; Grantham, PA  
Daniel Cotton, President

### **Beta Nu**

Houghton College; Houghton, NY

### **Pi**

Millikin University; Decatur, IL  
Candace McGregor, President

### **Sigma**

Our Lady of the Lake University; San Antonio, TX  
Mariana Rendon, President

### **Xi**

Ball State University; Muncie, IN  
Erica Sallee, President

## Abstracts of Student Papers

### A Classroom Demonstration of Rayleigh Light Scattering in Optically Active and Inactive Systems

Monica Avalos  
Sigma  
Our Lady of the Lake University

Optical activity is the rotation of light as it travels through an optically active medium. This concept often remains vague to students because it is difficult for instructors to demonstrate this phenomenon in the classroom. This demonstration has been developed to allow students to observe and manipulate the optical path of polarized light through optically active and inactive solutions. In the first part of the demonstration students observe the optical path of a laser beam through an optically inactive medium. Once the scattered light intensity pattern is understood, students observe a spiral pattern of bright and dark areas. The light observed in these demonstrations is due to Rayleigh scattering. Therefore, basic principles of Rayleigh scattering and the spatial distribution pattern from an oscillating dipole are present to explain the observed phenomena.

### The Development of an Inexpensive Gas Viscometer

James B. Bendele and Charles A. Smith  
Sigma  
Our Lady of the Lake University

Many researchers use gas viscometers to study the characteristics of gases. Often, gas viscometers are custom-built and, consequently, are relatively expensive. An inexpensive gas viscometer has been constructed from items that are commonly found in a general chemistry laboratory setting. The developed viscometer is also safer than other custom-built gas viscometers because it relies on gravitational force and not pressurized gas to fill the viscometer with gas.

The operation for the viscometer is similar to that of other gas viscometers. The viscometer is first calibrated with a gas of known viscosity. Measuring the viscosities of other gases is then straightforward using the equation  $(1/2=t_1/t_2)$ . In this formula,  $t_1$  is the theoretical viscosity for nitrogen gas, which can be obtained from a mathematical equation.  $t_1$  is the time it takes for the liquid in the viscometer to reach a marked position when the system is filled with nitrogen.  $t_2$  is the time it takes for the liquid in the viscometer to reach the same position when the system is filled with a second gas. From these three variables, the experimental viscosity, or  $t_2$ , for the second gas be solved algebraically.

By using this viscometer, typical relative percent errors from literature values for the viscosities of He, CO<sub>2</sub>, and air are found to be 2.0%, 1.5%, and 0.5%, respectively.

### Initial Elucidation of the primary structure of Ovine Sumaxillary Mucin (OSM)

Michelle Benson  
Beta Lambda  
Messiah College

OSM has the simplest carbohydrate structure of the mucins. The purpose of this project is to determine its amino acid sequence, focusing on the tandem repeated region believed to contain the determinants for carbohydrate attachments. Based on the information on the bovine counterpart (BSM), primers are used in PCR to amplify the sheep genomic DNA. The resulting fragments are cloned, sequenced, and assembled to deduce the amino acid sequence. Thus far, several genomic segments of OSM have been found to contain exons that are highly similar to those of BSM. The results further indicate that OSM is similar to BSM in both amino acid sequence and domain structure. Interestingly, the tandem repeated region which has been cloned shows only a 77% identity to BSM. Future studies will continue to characterize the OSM primary structure, which will provide a basis for elucidating the carbohydrate structure of the mucins.

### Evaluation of Alu versus Microsatellite and VNTR Frequencies in Determining Human Lineages

Vincent Blum and Jonathan Low  
Alpha Psi  
Hillsdale College

Due to the recent emergence of molecular techniques for the analysis of DNA, there have been efforts to look at many different parts of the genome. Variable Number Tandem Repeats (VNTRs), Microsatellites, and Alu insertions have all seen much recent use as genetic markers in the field of phylogenetics. When conflicting trees are produced from different forms of data, one must ask which form of data is the best. DNA samples were taken from 12 populations around the world. These samples were each analyzed with PCR for 5 Alu sites and 5 Microsatellite/VNTR (non-Alu) sites. Three trees were created with maximum-likelihood algorithm: one from Alu data, one from non-Alu data, and one from a combination of Alu and non-Alu data. These trees were supported by bootstrap analysis. A significant increase in accuracy was shown in the Alu tree in comparison to the non-Alu tree.

### Rate Determination for Fe<sup>3+</sup> Reduction to Fe<sup>2+</sup> in 1-Ethyl-3-methylimidazolium Chloride/Aluminum Chloride Ambient Temperature Ionic Liquids

Bethany Cooke  
Beta Nu  
Houghton College

Ambient temperature ionic liquids, also known as room temperature molten salts, have found uses as catalysts, as solvents for both organic and inorganic compounds, and as electrolytes. 1-Ethyl-3-methylimidazolium chloride/aluminum chloride is one room temperature molten salt that has found potential application as a high-energy density battery electrolyte. It has a wide electrochemical window, good conductivity, wide liquid range, and low molecular weight. The composition of the EMIC-AlCl<sub>3</sub> melts may be varied by using different ratios of EMIC to AlCl<sub>3</sub>, giving rise to Lewis acidic, neutral, and basic melts. The Lewis neutral melts must be buffered, and this was accomplished by the addition of NaCl. The Lewis neutral melt has the widest electrochemical window and is therefore of the most interest for use in batteries. Iron has been identified as a possible cathode in EMIC-AlCl<sub>3</sub> based systems. The Fe<sup>3+</sup> to Fe<sup>2+</sup> reduction was studied using cyclic voltammetry and potential step voltammetry in Lewis acidic, basic, and neutral buffered EMIC-AlCl<sub>3</sub> melts. Tafel slopes were plotted from the potential step data to obtain information about the rate determining step in the electron transfer from Fe<sup>3+</sup> to Fe<sup>2+</sup>. Based on this kinetic information, mechanisms for the electron transfer in the acidic and basic melts were proposed. The Fe<sup>3+</sup> to Fe<sup>2+</sup> reduction peak was not observed within the electrochemical window of the neutral melt.

### The Conservation of Eden

Dan Cotton and Helena Yeatts  
Beta Lambda  
Messiah College

During January 1999, a research team from Messiah College traveled to Belize to conduct a biological survey of the Eden Conservancy. Target Earth International, a non-governmental organization, is buying this tract of land, and it will be added onto the Blue Hole National Park. This will enlarge the park by sixteen times. The inventory included the terrestrial vertebrates and the insects present. This project became secondary when an illegal logging operation on the land was uncovered. An environmental assessment of the damages rendered became necessary. The terrestrial damage was concentrated along the road that was constructed to enter the area and in the canopy destruction when the trees were removed. The total area clear-cut by the operation is approximately 23 acres. The tree falls also created gaps in the forest canopy of varying sizes. Additional harm was done to the aquatic systems; 1690 feet of wet creek beds, 1521 ft. of dry creek beds, and 1453 ft. of riparian zone was damaged by this logging operation. The survey of the area was continued while the assessment was performed. Four species of amphibians, 12 species of reptiles, 140 species of birds, 16 species of mammals and a large collection of insects (mainly Orthoptera and Tipulidae) were sited. The information gathered by the team is currently being used by Target Earth International in their case against the logging company and the Forestry Department.

### Effects of *Panax ginseng* C.A. Meyer on the Immune System in Unstressed and Stressed Rats

Anna Kim Dao  
Beta Lambda  
Messiah College

The use of alternative medicines like ginseng has increased dramatically in the United States over the past few years. In general, ginseng has a reputation for bolstering productivity, enhancing physical performance, enhancing memory and learning, and increasing immune system function. A group of ginseng treated rats received water dissolved with an aqueous extract of *Panax ginseng* C.A. Meyer. The controlled group did not receive any ginseng. Researching ginseng's heavy claim of bolstering the immune system, leukocytic cells were investigated in ginseng treated and untreated rats. Ginseng also claims to enhance the immune system under the stress of an infectious agent. Both groups of rats were put under ether stress treatments to determine if their white blood cell production under the influence of ginseng would increase with the presence of a stressor. Blood samples were taken and slides were made to count the lymphocyte and neutrophil ratios, and then comparisons were made from the ratios. The results obtained in this preliminary study were in agreement with the general claim that ginseng increases the immune system under the presence of a stressor agent. Overall, the white blood cell ratios were increased in the ginseng treated rats.

### The Removal of Organic Dyes from Aqueous Solutions

Brian D. Esters and Neil P. Mills  
Alpha Beta  
Campbellsville University

Textile industries utilize dye processes that use salt as a mordant. Both the dye and the salt are released into streams and considered pollutants. Thus, treatment is needed to remove the pollutants. Organic dyes can be removed from solution by binding with polyelectrolytes, long carbon-chains with charged bonding sites. This creates a larger molecule that can then be filtered. One such polyelectrolyte is Polydiallyldimethylammonium chloride (PDADMAC). PDADMAC has positively charged bonding sites that can bind the negatively charged, aqueous ions. Since molecular weight-specific membranes can filter large molecules, the dye-substituted polyelectrolyte can be removed by filtration. However, under most environmental conditions, other ions exist in solution. The problem is that the salt's ions interfere with the removal of the dye. These ions may compete with the dye for polyelectrolyte bonding sites. Therefore, this renders the polyelectrolyte somewhat ineffective. This presentation depicts the situation of a stream contaminated with an organic dye (metanil yellow). In our experiment, the effect of fixed concentrations of another ion (Cl<sup>-</sup>) on filtration was measured. Plastic cells and a Spectrophotometer 20 were used to measure the amount of dye filtered. Our evidence supports that there is an inverse relationship between the salinity of the dye-contaminated water and the effectiveness of the polyelectrolyte. By understanding the effect of other ions on the amount of dye filtered, perhaps a better filtration process can be developed.

### A Survey of Seasonal and Spatial Distributions of Acrididae in the Goat Hill and Nottingham Serpentine Barrens in Chester County, PA

Curtis Harrington  
Beta Lambda  
Messiah College

A survey was conducted on the spatial and seasonal distributions of the Orthoptera: Acrididae in the Nottingham and Goat Hill Serpentine Barrens in Chester County, Pennsylvania. Serpentine barrens provide a unique soil composition unlike any other habitat. This soil, in turn, forms an environment suitable for a wide diversity of rare or disjunct organisms. In our survey, species of Acrididae were collected from both the Nottingham and Goat Hill Serpentine Barrens over a period of three years. A total of twenty species, representing three sub-families, of acridids were collected at these two sites; including, nine species of Melanoplinae, six species of Oedipodinae, and five species of Gomphocerinae. The oedipodines were the most abundant subfamily in the barrens. In contrast, the gomphocerines were recorded in the lowest numbers. The melanoplinae were present in greater numbers than the gomphocerines but were less common than the oedipodines. *Trachyrhachys kiowa* and *Dissosteira carolina* were the most abundant species of oedipodines in the Nottingham and Goat Hill open area. *Syrbula admirabilis* and *Eritettix simplex* were the dominant species of gomphocerines in this habitat. In the open regions, *Melanoplus femur-rubrum* occurred in greater numbers than any other species of Melanoplinae. *Melanoplus gracilis* was the most dominant acridid species within the riparian zone. *Melanoplus confusus* may be a rare species to Pennsylvania. It has only been reported from serpentine barren habitats.

### Opioid Receptors and CSPG Inhibition in Sensory Neurons

Jessica McFarlin  
Alpha Beta  
Campbellsville University

According to the National Spinal Cord Injury Association there are over 400,000 persons living with spinal cord injury in the US alone. This nerve damage can result in paralysis and loss of sensory neurite function. This loss of function often occurs because of the inability of some damaged neurites to regenerate back to their original targets. One factor that hinders regeneration is the upregulation of chondroitin sulfate proteoglycan (CSPG) after nervous system injury. During development CSPG is found in regions where axons do not grow, and in vitro CSPG inhibits neurite growth. The presence of CSPG after injury also acts as a barrier between the axon and its target. In vitro research has shown that while some neurons are completely inhibited by CSPG, others can completely ignore its presence and continue to grow to their target. This information leads to the question of what is the mechanism in which neuronal growth cones, the navigator of the axon, are inhibited by CSPG. In order to understand how this inhibition occurs, this paper investigates what is different about the neurite that is able to cross the CSPG border versus the neurite that cannot. This research specifically investigates the presence of opioid receptors in neurites in relationship to CSPG inhibition.

### Web Page Development with HTML and JAVA

Ron McGarry  
Alpha Psi  
Hillsdale College

The internet is one of today's fastest growing businesses. Corporations are discovering the advertising potential of web pages and individuals are using them for fun and profit. Space for personal web pages is available for free from several suppliers. A search of the internet on nearly any topic will produce several web pages, usually complete with text, photos, and links to other pages. Companies based on web pages and email services have experienced massive growth, and they continue to grow today, providing jobs for programmers and services for consumers.

This paper will explore methods for designing and implementing web pages. It includes comments on HTML, which is the basis for nearly all web pages, and Java, a relatively new programming language. Included is a discussion of some of the tools and languages available for web page programming, and an in depth look at two of these tools, HTML and Java. Examples will be provided from the Computer Science home page.

The Java language is particularly interesting. It attempts to combine the power and flexibility of C++ with the ease and simplicity of other languages. Because they are designed to work with and on the World Wide Web, Java programs are both compiled and interpreted. This allows them to run on both Macintosh and IBM platforms, as long as the correct interpreter is present on that machine. Also, Java was designed to be a secure language, restricting access to the host computer carefully, thus making it more difficult for a program to damage the system it is running on.

### Functional Role of the Insulin Receptor Substrate Proteins in Insulin Receptor-Mediated Signal Transduction

David M. Nelson  
Beta Lambda  
Messiah College

Insulin binds to the tetrameric insulin receptor (IR) which initiates a series of signal transduction events through autophosphorylation of the receptor's intrinsic tyrosine kinase. Located on the cytoplasmic region of the IR b-subunit, the active tyrosine kinase phosphorylates a number of subsequent substrate molecules which contain Src homology 2 domains (SH2 proteins). Of particular importance to the propagation of the signal is the insulin receptor substrate (IRS) family of proteins. Member of the IRS family of proteins contain numerous sites of tyrosine phosphorylation, many of which are conserved among the members of the family. In turn, the phosphotyrosine residues of the IRS proteins serve as docking sites for several significant signaling molecules including PI-3 kinase, Grb-2 and SHP-2. Initial investigations of two insulin resistant models, the ob/ob mouse and Zucker fa/fa rat, seem to indicate that IRS-2 is present more abundantly in hepatocytes and epididymal adipocytes than IRS-1. In addition, experiments were designed to examine the role of serine phosphorylation in insulin receptor substrate function. In fact, the phosphorylation of several key serine residues on the IRS-2 molecule may be partially responsible for insulin resistance.

### Molecular and genetic analyses of the slinky mutation in D. melanogaster.

J. Pessin and S. Galewsky  
Pi  
Millikin University

The slinky locus is a gene expression pattern of Drosophila melanogaster that has been identified by the P-lacW enhancer trap, a transposable element. When this transposon is inserted into the fly's genome near an appropriate enhancer, the lacZ gene is turned on and the resulting beta-galactosidase production can be detected. The slinky gene expression pattern shows localization in muscle attachment sites and in the peripheral nervous system during embryogenesis. This genomic region, containing approximately 15-kb of DNA has been previously cloned into bacterial plasmids. We used the plasmids to screen a cDNA library made from 6-18 hour Drosophila embryos looking for novel genes located in the 71B region. Using non-radioactive DNA labeling techniques, we have isolated one positive clone and have analyzed it via restriction enzyme digest and automated DNA sequencing methods. Further research will include a gene expression pattern analysis.

### Penetration Depth Studies on Superconducting Niobium Thin Films

Nicholas Peters  
Alpha Psi  
Hillsdale College

We studied the depth a magnetic field penetrates in a thin film superconductor. We show that it is possible to measure the magnetic penetration depth of a thin Nb film using a two-coil mutual inductance apparatus. The first goal is to produce higher quality Nb thin films using planar magnetron sputtering. The quality of Nb films can be measured via the penetration depth and the transition temperature. It is necessary that an increase in quality be achieved to maximize the use of our experiment's temperature range sensitivity. The film quality is increased by the design, construction, and implementation of a liquid nitrogen coldtrap in the sputtering chamber near the substrate stage. The second goal, and the real technical challenge, is to measure the penetration depth when the diameter of the sample film is nearly the diameter of the coils. This is a challenge as the coupling between the coils through air increases with a decreasing film diameter (with respect to the coil diameter) causing the film's mutual inductance contribution to be lost in the background. While winding smaller coils seems like a logical step to measure smaller diameter films, it proves impractical to wind coils smaller than about two by two millimeters. The measurement for the coil-sized films uses a larger diameter superconducting screen to block excess coupling between the drive and pickup coils. The measurement of the mutual inductance can then be used to calculate the penetration depth of the smaller sample. While the numerical method to make the final calculation of the penetration depth in the 15 mm diameter film case is well known, the method for the 2 mm diameter film is still under development.

### Expression patterns of IGF-I and IGFBP's-2, -3, and -5 in adult mouse brains following mild and severe hypoxic-ischemic insult

Debra Thiel  
Beta Lambda  
Messiah College

IGF-I is a known neurotrophic factor *in vitro* and several studies suggest that endogenous IGF-I is neuroprotective following insult to the CNS *in vivo*. IGF-I action in the CNS may be modulated by association with one or more members of the family of IGF-binding proteins (IGFBPs). However, the role of the IGFBP's in directing the neuroprotective actions of IGF-I is still under investigation. In order to determine whether the expression of IGF-I and the IGFBP's are regulated following CNS insult, we have measured changes in mRNA and protein expression for these genes in mouse brains following both mild and severe hypoxic-ischemic insult. Our results demonstrate that IGF-I and IGFBP-2 and -5 are induced in the CNS following hypoxic-ischemic insult. Moreover, the patterns of IGFBP induction suggest that these IGFBP's are coordinately regulated with IGF-I and, thus, are likely candidates for mediating IGF-I neuroprotective actions.

### Analysis of Cell Cycle Protein Expression in Early Preimplantation Mouse Embryos using Indirect Immunofluorescence

Ronald R. Waclaw

The cell cycle is a highly regulated process in the cell. There are many endogenous factors that have regulatory functions in the reproductive process. Certain proteins such as cyclins and cyclin-dependent kinases (CDK's) are needed to progress through the four phases of the cell cycle. The changes in expression of cell cycle regulatory proteins have not been characterized in early cleavage stage mouse embryos. Therefore, the presence of cell cycle regulatory proteins cyclin B1, E, and CDK-2 are being detected in early preimplantation mouse embryos grown *in vivo* using immunofluorescence microscopy. Preliminary results suggest unique and specific patterns of expression for cyclin B1 and CDK-2 at different stages of life cycle.

**Proceedings of the National Convention**  
**March 4-6, 1999**  
**Hillsdale College**  
**Hillsdale, Michigan**

**Thursday, March 4: National Council Meeting**

The meeting was brought to order by President Jim Peters. Officers present were Executive Director Harold Wilkinson, President Jim Peters, Past President James Hall, President Elect Richard Kessler, Treasurer David Foster, Publicist Terry Cianci, and Historian Kemuel Badger. The following chapter representatives were also present:

Cary Guffy (Sigma), Gordon Weddle (Alpha Beta), James Reynhout (Beta Iota), Joseph Sheldon (Beta Lambda), Angela Hare (Beta Lambda)

Reports from National Officers

**Executive Director Harold Wilkinson** reported on the activity of the National Office by distributing a handout. To date, the number of new student initiates joining the society is 99. Faculty initiates total 12. No up to date record of jewelry and literature dispersal was available. 13 of 50 chapters had submitted Officer report forms. A question was raised about report forms that chapters are required to submit each year. It was proposed that Publicist Cianci put copies of these forms on the web site so chapters could have them when needed.

**Treasurer David Foster** reported that he is in the process of computerizing all finances on a spreadsheet. A one-page report was submitted to the group. Currently Sigma Zeta funds are in two accounts. The Development Fund Account is being kept in a credit union savings account with the plan to transfer it into a mutual fund or other investment to build the base. The operating fund of the organization is in a checking account. Dr. Foster reminded us that as a non-profit organization we need to spend the annual income each year. A discussion of use of funds to reward student presenters followed. Many good ideas surfaced including monetary awards for best papers in each session, awards for all presenters, and awards for first time chapter presentations. It was recommended that this topic be placed on the agenda for the fall meeting. Dr. Reynhout agreed to see what Tri-Beta does for their presenters.

**Historian Kemuel Badger** gave his report. He suggested that a former policy of publishing a description of newly inducted chapters in the Sigma Zetan be reestablished. He would also like to see a historical sketch entitled 'Looking Back' be a regular article in the Sigma Zetan. Examples of this were shown to the group. Dr. Badger sees a major role of the historian being, making members aware of our fine heritage. The Internet and web site seems to be the best place for doing this. He is working on making historical records available either on the web or on a CD. Dr. Badger agreed to contact Publicist Cianci to coordinate this activity.

**President Elect Richard Kessler** reported that he was uncertain about continuing in his position due to his appointment to the Nature Conservancy. He felt that since his affiliation with Campbellsville University was only part time, he might not be justified to serve. He was assured by those present that there was a precedence of service to the organization without close affiliation with the local chapter. He was given a unanimous vote of support.

**President Jim Peters** reported that he had had contact with Dr. Mike Powers of the Chi chapter (Missouri Valley College), and that they have declared their chapter inactive until further notice. Also Dr. Wayne Edwards, advisor at Cinch Valley, indicated that they had been left off the mailing list. Director Wilkinson will make the change to the database. Correspondence from Madonna University in Lavonia MI was circulated to the national officers for approval of installing a new chapter there. Dr. Peters gave his President's report to the group. He felt a key thing that needs constant effort is the maintaining an up-to-date database file.

**Past President Jim Hall** reviewed the decision regarding disallowing Education Majors whose emphasis is a natural science, computer science or math to become members. The group decided that the major must be one of those stated in the constitution. Dr. Hall reported that Pikeville chapter would be installed in April. Regarding chapter recruitment, Dr. Hall had a goal to add more chapters to the organization, in particular west of the Mississippi. He contacted faculty he knows in science department at several smaller schools in and around San Antonio. Most had separate biological (ex. Beta Beta Beta), chemistry (American Chemical Society), mathematics, etc. organizations. Others simply used Alpha Chi, a general honor society for juniors and seniors. Dr. Hall will follow up on these promises. Plans are to continue these efforts next year. Some ideas for promoting the organization included inviting organizations from other schools to participate with the local chapter on service projects, or visit nearby schools and give them copies of the Sigma Zetan, National Constitution and other literature from the National Convention. Conversation on this issue generated the idea of developing a promotional message for the web page and reviewing the pamphlet 'Introduction to Sigma Zeta' for needed changes. These topics could be included on the agenda for the fall meeting.

**Publicist Terry Cianci** reported that the web page is located at Houghton College, email address is <http://www.houghton.edu/academics/sigmazeta/sigmazeta.html>. Dr. Weddle suggested that we purchase a permanent web site so that the address will always be the same. This proposal will be discussed at the Fall Meeting. The Sigma Zetan will be published using university printing services and should cost about \$300 for 500 issues.

Committee assignments

**Founders cup:** Jim Hall (Sigma) and Jim Reynhout (Beta Iota), Co-Chairs  
Amanda Bristow (Beta Iota)  
Niel Mills (Alpha Beta)  
Rudy Longoria (Sigma)

**Honor Award:** Richard Kessler (Alpha Beta) and Jim Peters (Alpha Psi), Co-Chairs

**Nominations:** Gordon Weddle (Alpha Beta), Chair  
Jessica McFarlin (Alpha Beta)  
Angela Marcum (Alpha Beta)  
Helena Yeatts (Beta Lambda)  
Bethany Cooke (Beta Nu)  
Mariana Rendon (Sigma)  
John Jarosh (Xi)  
Neil Mills (Alpha Beta)

**Auditing:** Joe Sheldon (Beta Lambda) and Cary Guffey (Sigma), Co-Chairs  
Julie Jeffries (Alpha Beta)  
Angela Newcomb (Alpha Beta)  
David Nelson (Beta Lambda)  
James Bendele (Sigma)

Resolutions: Angela Hare (Beta Lambda), Chair  
Paul Ulrich (Beta Nu)  
Brian Esters (Alpha Beta)  
Leanne Whitesell (Beta Lambda)  
Josh Magnuson (Beta Iota)  
Naaman Garza (Sigma)  
Monica Avalos (Sigma)  
Amy Ferchak (Xi)  
Guy Melvin (Alpha Beta)

#### New Business

Fall Meeting Plans The fall meeting will be on October 30th at the site of host chapter. Meetings will begin at 8:00 a.m. All National Officers are to attend. Advisors from any chapter may also attend at their own expense.

Future Convention Sites - Year 2000: (75th anniversary) Bethel College.  
Year 2001: Campbellsville College. Year 2002: Messiah College

Seventy-fifth Anniversary: Plans for this will be made at the Fall Meeting

The meeting was adjourned.

#### **Friday, March 5**

##### Opening Session

National President Jim Peters welcomed the group to Hillsdale and introduced the University President Dr. Robert Blackstern. Dr. Blackstern explained some history of Hillsdale and how it is free of National restrictions by being fully supported by private contributions. He gave a warm greeting to the members of the attending chapters.

Executive Director Wilkinson presented information on the outcome of the Executive Council meeting. Key points are summarized in the council minutes.

Treasurer David Foster gave an accounting of the financial activity of the organization over the past year. The organization is in good shape financially. He informed the group that travel checks could be picked up from him at anytime after the meeting had adjourned. President Peters announced that these checks could be cashed if necessary at the business office.

Historian Kem Badger encouraged members to use the web site for historical information. He is working on getting the complete history stored electronically. His report included some interesting historical events 25 and 50 years ago.

Past President Jim Hall gave a brief report of new chapter recruitment. He indicated a desire to continue to help in this and chapter reactivation activities.

President Elect Richard Kessler is looking forward to service as next year's President.

Dr. Wilkinson announced the members of the various committees and the meeting was adjourned to allow the committees to get organized and plan their agendas.

Friday afternoon was spent attending field trips. Destinations included the Botanical Garden, Cyclotron, and the regional Zoo.

##### Evening Banquet

At 8 p.m. President Peters welcomed the members and guests. Dan Blair, Vice President of the Alpha Psi chapter, gave the invocation and blessing on the food. After an enjoyable buffet dinner the guest speaker was introduced. M. Coleman Miller, Hillsdale College alumnus, internationally known astrophysics research scientist at U. of Chicago, and public educator at Adler Planetarium, spoke on Science and Technology. He entertained the group with magic and juggling to make his points about how science provides us with an organized way of thinking. Science is self correcting and a better way of knowing because it is more reliable and predictive than the other models of humanity which make use of qualitative reasoning.

An honor award key was then presented to Dr. Miller whose accomplishments went unrecognized while a member of Sigma Zeta at Hillsdale. In addition, Nick Peters of the Alpha Psi chapter was an honor award key recipient.

#### **Saturday, March 6**

The closing business meeting was called to order by President Jim Peters. He extended thanks to all the participants in attendance at this convention. There was a special thanks for the work of the National Officers, to Jim Hall for his enthusiasm, to students of the host chapter for their efforts, and to all students who presented papers. After this brief welcome, Dr. Peters introduced Dr. Wilkinson who gave a brief report on things that had been overlooked for Friday's meeting. He presented a plaque to the officers of the Alpha Psi chapter recognizing their service as the host of the 1999 convention.

A roll call of chapters was conducted by Dr. Wilkinson with the following results:

<u>Chapter</u>	<u>Number of Attendees</u>
Alpha Psi	1 faculty, 4 students
Beta Lambda	2 faculty, 9 students
Pi	1 faculty, 2 students
Alpha Beta	2 faculty, 7 students
Xi	1 faculty, 3 students
Sigma	2 faculty, 12 students
Beta Iota	1 faculty, 6 students
Beta Nu	1 faculty, 3 students

##### Treasurer's Report:

Dr. Foster reviewed the budget for the past year. He indicated that numbers were not complete and that the transactions of the organization would be summarized in a later report.

##### Committee Reports:

Founders Cup: The Founders cup was presented to the Alpha Beta Chapter for the 1999-2000 year. There was only one annual report submitted to the committee for consideration. Dr. Jim Reynhout read the list of activities carried out by the Alpha Beta Chapter. He then awarded the founders cup to the chapter officers. The cup will be retained at the chapter location for a full year. Dr. Wilkinson then presented a plaque of recognition to Pi chapter representatives for having received the founders cup at the 1998 convention.

Nominations Committee:

The Nominations Committee is pleased to announce the following slate of National Officers for 1999-2000.

Executive Director - Harold Wilkinson, Pi  
Treasurer - David Foster, Beta Lambda  
Publicists - Terry Cianci, Beta Nu  
Historian - Kemuel Badger, Xi  
President Elect - Angela Hare, Beta Lambda  
President - Richard Kessler, Alpha Beta  
Past President - James Peters, Alpha Psi.

It was moved, seconded and voted to approve this slate of officers for the next year.

Announcements:

Jim Reynhout announced the site of next year's convention to be Beta Iota Chapter, Bethel College, in St. Paul, Minnesota.

Terry Cianci reminded presenters and committee chairmen to get their materials to him before they leave. Chapters should also be reminded that students could publish their paper in the Sigma Zetan.

The gavel was passed by President Peters to Dr. Richard Kessler who gave a short speech of appreciation to Dr. Peters and his chapter for their service. Dr. Kessler expressed a commitment to do his best as next year's president. The meeting adjourned at 12:10 p.m.

## Rules for Presentation of Student Papers

The following recommendations concerning the presentation of student papers at national conventions of Sigma Zeta were passed by the thirtieth annual Convention in Decatur, Illinois.

1. The title and a brief description, signed by the author and a faculty member, must be sent in when called for by the host chapter. This is likely to be at least 30 days before the national meeting.
  2. Each student must present his/her own paper unless handicapped by illness or disaster. In such instances the paper will be read by title and the abstract will be published. If the paper is a joint paper either author may present the paper.
  3. The paper should show some degree of originality and preferably should involve experimentation, or it should be creative in nature or involve a new approach.
  4. The first abstract must be presented to the editor at the national meeting before the paper is presented. Such an abstract must be signed by the student and a faculty member.
  - \*5. Each person may present only one paper at a meeting.
  6. Publication of the abstract in the Sigma Zetan will depend on:
    - a. Length of abstract (250-300 words)
    - b. Originality
    - c. Cooperation with the editor
  7. A list of these recommendations should be sent to chapters both in the spring and in the fall along with the other materials which go to chapters.
  8. The permanent address of the author should be attached to the abstract. The editor will send a copy of the Sigma Zetan to each author.
  9. Details such as grammar, other aspects of writing, and selection of suitable papers are the responsibility of the local chapter. Previous presentation before the local chapter is recommended.
  - \*10. Papers should be limited to a maximum of 20 minutes.
- \* Exceptions may be authorized by the host chapter.

## Founders Cup Competition

Each chapter submitting an annual report to the convention for the purpose of competing for the Founder's Cup will be judged on a scale of one to ten in areas one and two. The chapter with the highest total score will be the winner.

To be eligible for consideration for the Founder's Cup, a chapter must have activities in both area one and area two.

### Area One: Local Activity

- 1) Local meetings - number, quality, originality.
- 2) Local activities - sponsorship or assistance with science fairs, competitions, service to community, social activities promoting local chapter.
- 3) Recognition from outside groups.
- 4) Utilizing outside resources such as speakers, field trips, etc.
- 5) Innovative ideas useable by other chapters.

### Area Two: National Activity

- 1) Attendance at National Convention.
- 2) Paper presentation at National Convention - quality and quantity.
- 3) Cooperation with National Chapter - answering mail, sending in reports, etc.
- 4) Recruitment of new chapters.
- 5) Promotion of inter-chapter activities.
- 6) Cooperation with other chapters.

Any chapter wishing to compete for the Founder's Cup must submit to the Founder's Cup Committee at the Annual Meeting, an evaluation of their activities organized in outline form and using the above criteria as outline headings. This document will be in addition to a chapter report for the Sigma Zetan.

## School/Chapter Cross Reference Alphabetical by School Name

Anderson University .....	Upsilon
Asbury College .....	Alpha Theta
Ball State University .....	Xi
Beaver College .....	Beta Epsilon
Belhaven College .....	Beta Theta
Bethel College .....	Beta Iota
Cabrini College .....	Beta Zeta
Campbellsville College .....	Alpha Beta
Central Missouri State University .....	Psi
Clinch Valley College .....	Alpha Xi
Coastal Carolina University .....	Beta Mu
Columbia College .....	Beta Gamma
Dakota Wesleyan University .....	Alpha Sigma
Eastern College .....	Alpha Chi
Eureka College .....	Phi
Evangel College .....	Beta Eta
George Fox College .....	Beta Beta
Gwynedd-Mercy College .....	Beta Delta
Hillsdale College .....	Alpha Psi
Houghton College .....	Beta Nu
Immaculata College .....	Alpha Mu
Indiana Wesleyan University .....	Alpha Epsilon
Kansas Newman College .....	Alpha Delta
Kentucky Wesleyan College .....	Beta Kappa
Lyndon State College .....	Beta Alpha
Malone College .....	Alpha Gamma
Mansfield University .....	Lambda
Marist College .....	Alpha Phi
McKendree College .....	Beta
Messiah College .....	Beta Lambda
Millikin University .....	Pi
Missouri Valley College .....	Chi
Oglethorpe University .....	Alpha Nu
Otterbein College .....	Epsilon
Our Lady of the Lake University .....	Sigma
St. Mary of the Woods College .....	Alpha Omega
Somerset Community College .....	Associate
Stonehill College .....	Alpha Rho
Suffolk University .....	Alpha Lambda
Trevecca Nazarene College .....	Alpha Pi
Union University .....	Alpha Upsilon
University of Indianapolis .....	Rho
University of So. Indiana .....	Alpha Kappa
VCUMCV School of Pharmacy .....	Gamma

## Chapter/School Cross Reference Alphabetical by Chapter

Alpha Beta .....	Campbellsville College
Alpha Chi .....	Eastern College
Alpha Delta .....	Kansas Newman College
Alpha Epsilon .....	Indiana Wesleyan University
Alpha Gamma .....	Malone College
Alpha Kappa .....	University of So. Indiana
Alpha Lambda .....	Suffolk University
Alpha Mu .....	Immaculata College
Alpha Nu .....	Oglethorpe University
Alpha Omega .....	St. Mary of the Woods College
Alpha Phi .....	Marist College
Alpha Pi .....	Trevecca Nazarene College
Alpha Psi .....	Hillsdale College
Alpha Rho .....	Stonehill College
Alpha Sigma .....	Dakota Wesleyan University
Alpha Theta .....	Asbury College
Alpha Upsilon .....	Union University
Alpha Xi .....	Clinch Valley College
Associate .....	Somerset Community College
Beta .....	McKendree College
Beta Alpha .....	Lyndon State College
Beta Beta .....	George Fox College
Beta Delta .....	Gwynedd-Mercy College
Beta Epsilon .....	Beaver College
Beta Eta .....	Evangel College
Beta Gamma .....	Columbia College
Beta Iota .....	Bethel College
Beta Kappa .....	Kentucky Wesleyan College
Beta Lambda .....	Beta Lambda
Beta Mu .....	Coastal Carolina University
Beta Nu .....	Houghton College
Beta Theta .....	Belhaven College
Beta Zeta .....	Cabrini College
Chi .....	Missouri Valley College
Epsilon .....	Otterbein College
Gamma .....	VCUMCV School of Pharmacy
Lambda .....	Mansfield University
Phi .....	Eureka College
Pi .....	Millikin University
Psi .....	Central Missouri State University
Rho .....	University of Indianapolis
Sigma .....	Our Lady of the Lake University
Upsilon .....	Anderson University
Xi .....	Ball State University