



National News Letter

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MESSAGE FROM THE NATIONAL PRESIDENT

I am honored to have been elected National President of the Alpha Eta Mu Beta Biomedical Honor Society. It is particularly fitting since I received my PhD in Biomedical Engineering from Louisiana Tech University, the birthplace of AEMB. I was also honored to have been selected for the Outstanding Chapter Advisor Award in 2010, and am proud that the Florida International University chapter won the Outstanding Chapter Award two years in a row. The FIU AEMB chapter is the most active student organization on the FIU campus.

The two immediate past National Presidents, Herbert Voigt and Brent Vernon have left me with a vibrant and growing society. The current and immediate past National Executive Council of student officers have worked hard to put the society in a position to become one of the leading honor societies in the country. Of course, none of it would have been possible without the selfless and tireless efforts of Patricia Horner who served as the Executive Director (and soul) of the society from its earliest years till shortly before her death in 2009. We all owe her a great debt of gratitude. We are also indebted to her and her husband Ken for their generous gift of \$10,000 to be used to support student travel to our annual national meeting held in October of each year in conjunction with the BMES conference. This will allow us to assist one member from each chapter to attend the meeting each year. Last year's sessions in Austin TX were a great success and we expect that this year's will be even better. Please see the Events link on the website to learn more. We hope to see you there.

I also want to take this opportunity to encourage more active participation in individual chapter events, as well as events sponsored by the National Executive Council. This year's goal is to improve the visibility and prestige of the society to the biomedical engineering/bioengineering academic and industrial community and therefore its value to the members. Promoting the sponsored sessions at the annual national meeting is one way to improve our visibility. Another way is to develop and maintain individual chapter websites and to encourage department websites to conspicuously display the link to the AEMB chapter websites. However, we all know that financial stability is critical for the success of any organization and over the next year we will be working on plans to ensure the financial and management stability of AEMB. Since AEMB is a 501(c)3 non-profit organization contributions to the society are tax deductible. Some of the new initiatives are to reach out for financial assistance from our many alumni as well as standardize the ceremonials of the induction ceremony and improve methods for submitting annual chapter reports and updates. We will reach out to other professional societies and provide tools to help prepare students for professional school, graduate school or careers in industry. This is a largely student run organization which requires consistent quality effort from one year to the next. We welcome suggestions and comments. I hope that everyone joins me and the rest of the National Executive Council in making the AEMB the best honor society in academics.

Anthony J. Mcgoron, PhD
AEMB National President
Florida International University



2010 AEMB MEETING IN AUSTIN



What does a full grown bull and riding gear have in common with a biomedical engineer ? This year the BMES conference was held at the Austin Convention Center, in Texas. This conference is one of the most exciting and highly awaited events by Alpha Eta Mu Beta (AEMB). It has been a long tradition for AEMB to host sessions several sessions during the conference. This year, the ethics session focused upon the topic of ethical considerations of animal use in biomedical engineering research. This is an important topic as animal research provides a robust platform to biomedical engineers for understanding normal function and disease in living organisms. Although animals are used extensively in biomedical research, however ethical considerations are often not adequately addressed in education and training curriculums. It was a great honor to have Ms. Cath Polito, the executive director of the Center for Lifelong Engineering Education at the Cockrell School of Engineering at the University of Texas at Austin as the key speaker this year. The session was very engaging through the use of key examples, insightful discussion and stimulating reflection on the topic of animal research. There was very good attendance from students and faculty, with the room being completely filled. A digital copy of Cath Polito's presentation is available on the National AEMB website.



Terri Murray, Melodie Benford, Jerry Collins, Cath Polito and Stan Napper, at the AEMB Ethics session

The Annual Grand meeting was very well attended, with over 10 chapters present. During the meeting, Dr. Stan Napper, an AEMB Advisory Board member presented the 2010 AEMB National awards together with the National President, Dr. Brent Vernon and National Student President, Ms. Melodie Benford. The following are the AEMB National Award Recipients :

Patricia I. Horner Outstanding Chapter Advisor Award
Anthony McGoron, PhD (Florida International University)

Outstanding Chapter Officer Award
Alicia Fernandez (Florida Internation Univeristy)

Outstanding Chapter Member Award
Timothy Gunder (Marquette University)

Most Improved Chapter Award
University of Miami

Most Active Chapter Award
Florida International University

Best Chapter Website
Texas A & M



Dr. Anthony McGoron (FIU) accepting the Patricia I. Horner Outstanding Chapter Advisor Award.



Karolyn Roach receiving Most Improved Chapter award on behalf of University of Miami

The Patricia I. Horner Award was established in 2009 as a way to honor our late executive director Mrs. Patricia Horner for her selfless dedication toward the success of the National AEMB organization. This year, the Patricia I. Horner award was presented to Dr. Anthony McGoron, from the Florida International University. In addition to the AEMB national awards, charters were granted to Purdue University, Pennsylvania State University, New Jersey Institute of Technology (NJIT), and the University of North Carolina Chapel Hill.

Following the presentation of the awards and charters, Dr. Jerry Collins, an AEMB advisory board members presented information on his recently awarded grant. The grant is focused on providing ethics education for the life sciences and bioengineering students. The long term goal of this grant is to develop ethics modules that can be woven into undergraduate curriculums.

This year marked the end of the term for the National Executive Board and elections were held. The new officers that were elected for the 2010 – 2012 term are Dr. Anthony McGoron as the National President, Dominic E. Nathan as the national student president, Stephanie Naufel as national vice president, Stefanie Gonzalez as national secretary and Alicia Fernandez-Fernandez as national treasurer. The position of Executive Director is open to nominations via email to the National Executive Board. The elections proceeded with a discussion on future improvements to AEMB and potential mergers with other organizations such as AIMBE.

This year, AEMB together with AIMBE hosted a session on public policy. This session was aimed at bringing awareness regarding the importance of public policy and how it impacts public health and the field of biomedical engineering. AIMBE represents the top 2% of medical and biological engineers in the field, biomedical and bioengineering university programs through the US, industry and 18 professional societies. AIMBE is the leading voice for public policy supporting medical and biological engineering innovation to improve public health. It plays a critical role in advancing public policy for medical and biological engineering by meeting regularly with key administration officials. The public policy session was very well attended and the panel of speakers who were present were very engaging and knowledgeable.

Overall the 2010 BMES conference in Austin was a great experience and AEMB is looking forward to host its next set of national activities at the 2011 BMES conference in Hartford, Connecticut. *Please check our website for the list of events and event information.*



Maeve Drummond accepting Purdue University's charter.



AEMB AGM attendees listening intently as Dr. Jerry Collins (Alabama A&M) explains about the NSF grant he was awarded in conjunction with AEMB entitled "HLP-Based Ethics Education for Life Sciences and Bioengineering Students".



MESSAGE FROM THE NATIONAL STUDENT PRESIDENT

The field of biomedical and bioengineering is a dynamic one, that is constantly evolving with new innovations in technology fueled by cutting edge research. In the same way, AEMB is a living body and is continuously striving to face new demands and better serve its members.

This is indeed an exciting time for AEMB and we have set forth on a journey, one that is not travelled alone. I am very blessed to be working with the National Executive Board: Dr. Anthony McGoron (National President), Stefanie Naufel (Vice President), Alicia Fernandez-Fernandez (Treasurer), Stefanie Gonzalez (Secretary) and Charla Triplett (Executive director). I am very privileged to have the advice and guidance of a highly distinguished advisory board, who have been with AEMB since the very beginning. Most of all, it is a tremendous honor to be given the opportunity to be able to serve the most important treasure that AEMB has, our members.

There is much to be done, and I am confident that together as a team, as a national family of AEMB, we can make dreams come true. Our major goals for the 2010 – 2012 term are to focus on

- **National management**
- **Increase visibility and communications.**
- **Promote education, awareness and responsibility**
- **Enhance personal and professional growth**

To address these goals, we will ensure that there is strong and timely communications and the appropriate dispersion of information. We have set up an annual news letter schedule of May, August and December and are actively exploring other multimedia avenues for dissemination of information and increased visibility of AEMB, both on a national and international level. We will continue to work on hosting top-quality sessions at the national convention to address key topics in the field of biomedical and bioengineering. Lastly, we will work on developing strong and meaningful collaborations with sister organizations such as BMES, IEEE, AIMBE, BMECA, AAPM, etc. to expand on our activities, networks and efforts as leaders within the field.

Together we can, together WE ARE AEMB.

Dominic E. Nathan, PhD
National Student President
2010 - 2012

Thank You



Alpha Eta Mu Beta

is very grateful for the kind generosity of **Patricia and Kenneth Horner** for remembering us. With Pat and Ken's generous donation, AEMB has established the Pat Horner Memorial Fund. This fund will provide travel support to enable students from AEMB chapters nationwide to attend the AEMB Annual Grand Meeting and Events held annually in conjunction with the BMES conference.

We are also sincerely thankful to **Jerry Collins, PhD** for providing us with the student travel support for the 2010 AEMB sessions. His generosity made possible the funding for 10 students to attend the AEMB AGM and other sessions in conjunction with the 2010 BMES conference.



*Recently Published Model on
the Development Process for Medical Devices*

Patients benefit very much from medical devices. Engineering is very essential to the medical device innovation process. The medical device development process has become increasingly complex in recent years. The advent of new technology concepts, stricter regulatory requirements, and the ever increasing importance of reimbursement decisions for successful device commercialization require careful planning and strategy-setting, coordinated decisions, and consistent, rigorous business processes.

The design and implementation of such processes, often captured in development models and accompanying standard operating procedures (SOPs), have become a key determinant of the success of device commercialization. While various models may exist in the device industry, no comprehensive development model has been published.

For students interested in learning about the details of the medical device development process, I would like to draw your attention to a comprehensive report I recently wrote (along with my colleagues from Stanford). The report sponsored by the Institute for Health Technology Studies (InHealth), which includes six case studies, is available on a CD by writing to InHealth @inhealth.org.

The report is summarized in a recently published article, titled “Stage-Gate Process for the Development of Medical Devices”, in the Journal of Medical Devices ([June 2009 issue](#)). The article reviews existing model representations, and presents a new comprehensive medical device development model that captures all aspects of device development and commercialization from early-concept selection to post-market surveillance. This model was constructed based on best-practice analysis and in-depth interviews with more than 80 seasoned experts actively involved in the development, commercialization, and regulation of medical devices.

The stage-gate process includes the following five phases: (1) Initiation/Opportunity and Risk Analysis; (2) Formulation/Concept and Feasibility; (3) Design and Development/Verification and Validation; (4) Final Validation/Product Launch Preparation; and (5) Product Launch and Post-Launch Assessment.

The study results suggest that stage-gate processes are the predominant development model used in the medical device industry, and regulatory requirements, such as the FDA’s Quality Systems Regulation (QSR), play a substantive role in shaping activities and decisions in the process. The results also underline the significant differences between medical device innovation and drug discovery and development, and underscore current challenges associated with the successful development of the increasing number of combination products.

John H. Linehan
Professor of Biomedical Engineering and Medicine, Northwestern University

Eating Right: Why is Good Nutrition Important?

by Stephanie Navarre, BS

*N*utrition is defined as the study of the nutrients in food and how the body uses them. It is one of the components of good health. The first step to achieving good health is learning about proper nutrition and incorporating this information into our lives.

As in all things, balance and moderation are key components. Good health is a result of a balanced diet composed of a variety of foods which supply the body with necessary nutrients. When the body digests food it receives nutrients that the body then uses for growth, repair and maintenance.

Eating the right foods in the appropriate amounts is not always easy in our busy lives. Whenever we decide to eat, we are faced with many choices from the thousands of foods displayed in the grocery store to the seemingly endless items on a restaurant menu. Knowing how to make better food choices is a challenge we all face daily and it is a key component of this packet. Remember that the ingredients to good nutrition are: balance, variety, and moderation.

How does nutrition affect our health? Good nutrition helps maintain health by: providing energy for the body; promoting growth, repair and functioning of the body; and regulating the body's processes. Additionally, proper nutrition plays a role in: fighting infection and preventing disease; reducing risk of heart disease and some cancers; and enhancing overall appearance and emotional well-being.

In order for the body to run properly, essential nutrients are required. These nutrients are: carbohydrates, fats, proteins, minerals, vitamins, and water. They are considered essential because the body cannot make them in sufficient quantities and they must be obtained from the foods we eat. A balanced diet should include all of these nutrients in the recommended amounts: Carbohydrates 55-60% of diet; Total fats should make up less than 25-30% of the diet; and proteins should make up 15% of the diet.



Energy Needs of the Body: There are some ballpark calorie estimates for college-age men (2,500-3,300) and women (2,200-2,500) although we all vary on our specific energy needs. These needs are based on two factors: 1. the activity level of the individual, and 2. the individual's basal metabolic rate. Each person's caloric activity requirements vary directly according to the amount of daily physical work completed. Physical activity uses between 20 and 40 percent of caloric intake. The second factor, basal metabolic rate, uses the highest proportion (50%-70%) of the totally calories required by each person. Basal metabolism reflects the minimum amount of energy the body requires to carry on all vital functions. Many things can change your basal metabolic rate: age, body composition (muscle mass), physical condition, sex, hormone secretions, and even environmental temperature.

Food Guide Pyramid: Most of us remember the four food groups we were taught in grade school. But times have changed and the United States Department of Agriculture (USDA) has developed the Food Guide Pyramid because it is a better way to represent the amount of food that should be consumed daily. It is a visual representation of what food groups need to be eaten the most, promotes eating a variety of different fruits and vegetables, takes a look at portion size, and includes physical activity. A well balanced diet is composed of a good selection of food. The concept of dietary balance suggests eating enough of a particular food that contains an essential nutrient, but also maintains a variety of food choices. This provides flexibility for other foods which contain other needed nutrients. The Food Guide Pyramid is an outline of what to eat each day. It's not a rigid prescription, rather a general guide that lets you choose a healthy diet that's right for you.

Don't forget about the importance of breakfast! We all remember our grade school teachers telling us not to skip breakfast and for some reason we didn't always listen. Breakfast can be considered the most important meal of the day if eaten properly because it's the meal that jump starts our metabolism. We need to remember to eat both protein and a little fat because those are the two nutrients that will make us feel full (satiety) and keep our stomach from growling before the noon hour.

Smart Snacking 101: Snacking is an easy way to help accomplish the goal of eating healthy. Use snacking to get in your appropriate amount of each category. Snacking is also a way to keep your energy up throughout the day. Great snacking options throughout out the day include, but are not limited to: Low-fat microwavable popcorn, Low-fat cheese, Applesauce, Fresh Veggies (broccoli, carrots, celery, cucumbers), Fresh Fruit, Low sodium crackers (Wheat Thins, Ritz, Wheatables), Low sodium pretzels, Sherbet, Bagel with fruit jelly, and Unsweetened dry cereal (Cheerios).

"A Rule of Thumb for Serving Sizes" (a visual aid carried with You at all times!)

- 1 Thumb = 1 ounce of cheese
- 1 Thumb tip = 1 teaspoon of foods such as mayonnaise, peanut butter, and sugar
- 3 Thumb tips = 1 tablespoon
- 1 fist = 1 cup of cooked pasta, rice, or vegetables
- 1 handful = 1 ounce of small snack food such as nuts
- 2 handfuls = 1 ounce of large snack food such as chips or pretzels
- 1 palm (minus the fingers) = 3 ounces of meat



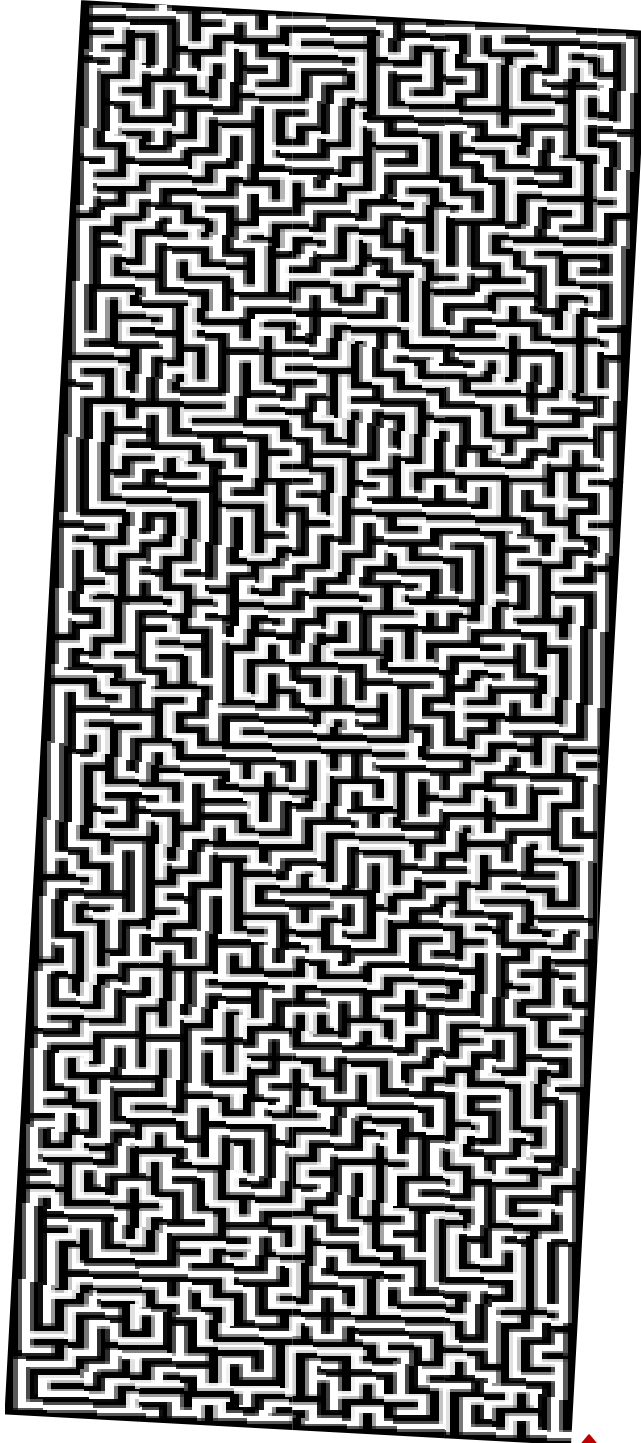
Resources: There are so many good resources available at your individual campuses. Oftentimes there is a registered dietitian or student health service that can help to guide you. Often the food service company will provide a point of contact who can provide you with the nutritional values of food and locate healthy choices for meals (<http://www.balancemindbodysoul.com>). In addition, there are various interactive and informative websites that cover a wide variety of nutrition information. Explore any number of the following:

- <http://www.nutrition.gov>
- <http://www.fruitsandveggiesmatter.gov/>
- <http://www.mypyramid.gov/>
- <http://www.healthierus.gov/>

Stephanie Navarre is a certified Health Education Specialist and served as a Health Education Preceptee at the Center for Health Education & Promotion, Marquette University. Ms. Navarre is currently the Area Director of Healthy Lifestyles for the YMCA of Metropolitan Milwaukee

Just for Fun

START →



END ↗



Would you like to contribute an article to any of our sections ?

Please feel free to contact the editor
Mr. Dominic E. Nathan via email
dominic.nathan@mu.edu
We are always looking for articles for each of the
focus columns and also the main content.



Do you have a question or concern about AEMB ?

Please feel free to contact the National Student President Mr. Dominic E. Nathan via email
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