

# President's Page

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It is hard to believe that nearly six months have passed since the annual scientific meeting in New Orleans. Your Executive Committee has been hard at work behind the scenes tending to AsMA business. I marvel at the volunteer spirit that exists in these individuals, who give of their time to serve the Association. They come from throughout the U.S. and far away countries to attend the annual scientific meeting, the November Council meeting, and two additional Executive Committee meetings each year. I am witness to their deep sense of responsibility in guiding the Association.

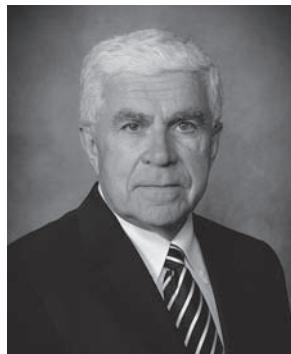
In recent months we have discussed some issues common to nonprofit organizations, leading me to pause and think. As stated in the bylaws, the vision of AsMA is to be the international leader in aviation, space, and environmental medicine. The Association's mission is to apply and advance scientific knowledge to promote and enhance health, safety, and performance of those involved in aerospace and related activities. This is why we are here.

AsMA exists not for profit, but rather as a service organization. The officers, Council, Executive Committee, Executive Director, and Editor of the journal, AsMA staff, Committee Chairs, Deputy Chairs, and committee members all have the vision and mission of AsMA as a common goal. None works in isolation, but rather in a cooperative effort toward that end.

By law, a nonprofit organization must be governed by a board of directors, which in our organization is the Council. The Council (or board of directors) has the responsibility to serve the membership and the mission of the Association. The Executive Committee exists to help the Council do its job. The Executive Director's only job is to help the Council do its job, and the same is true for the staff. The governing Council must serve you, the member.

AsMA, along with its constituent and affiliate organizations, came together to fill a need. The Association's product is not profit, but rather the mission of the Association.

The Association's committees, whatever their nature or title, exist to extend the work of the Council. As such, their work is of prime importance. Committees



**John D. Hastings, M.D.**

have but one purpose, to explore an issue assigned by the Council and make recommendations to the Council regarding that issue. AsMA has 15 standing committees: Aerospace Human Factors, Air Transport Medicine, Aviation Safety, Awards, Bylaws, Communications, Corporate and Sustaining Membership, Education and Training, Finance, History and Archives, International Activities, Membership, Nominating, Resolutions, and Science and Technology. There should be enough variety to attract the interest of every member of the Association.

For those of you who have not considered committee work, I urge you to do so. Position papers, position statements, resolutions, Association policy, and other measures are born and developed in these committees. There is no better way to become involved in the work and perpetuation of an association dedicated to international leadership in aviation, space, and environmental medicine.

Any member can sign up for committee membership at the annual scientific meeting, but there is no need to wait for the meeting. If you have an interest and would like to become engaged in the work of AsMA, let the Home Office know of your committee of interest. I urge each member to give serious thought to committee involvement. Our Association needs you.

I want to wish everyone a happy and peaceful holiday season. I wish everyone a great year in 2008 and look forward to seeing you in Boston.

# Association News

## Executive Director's Column



Rayman

### Aviation Medicine: Advances

During the past decade, we have witnessed enormous strides in the advancement of aviation medicine. I still remember the days over a decade ago when civil aviation medicine received little attention. But now, look at the record. It is truly impressive.

Through our efforts, we have emergency medical kits onboard commercial aircraft far exceeding what was required about a decade ago. In fact, most airlines actually carry more than what is required by today's regulatory authorities. Most common illnesses, whether major or minor, can be cared for by an obliging physician who happens to be aboard that flight. Added to this is the presence of automated external defibrillators (AEDs). When they were first introduced, there were very mixed reactions about the efficacy and safety of these machines onboard aircraft. But after some considerable debate, the advocates won out and we now see AEDs onboard most passenger carrying aircraft worldwide.

There has been a continuous interest in emerging infections (particularly since the SARS scare), including prevention and reporting procedures. We have seen strong advocacy from our aerospace medicine community at all levels, from national regulatory agencies to international ones including the World Health Organization (WHO) and The International Civil Aviation Organization (ICAO).

The Age-60 Rule has received worldwide attention, with most countries allowing pilots to fly well beyond that age. One of the holdouts on this new policy is the United States, although the issue is now under consider-

ation by the FAA and many believe that the prohibition will be relaxed in the near future.

Cabin air quality is another area of great concern, with many study groups and high level national agencies exploring the question. Debate continues to this day, although the civil aviation medicine community must be credited with bringing it forward for open discussion.

With more experience, we have been cautiously liberalizing our medical standards without posing an added threat to flying safety while preserving the careers of qualified pilots. ICAO has formed a Working Group that has been meeting for several years. Medical standards have been and are being reviewed, updated, and modernized, based upon our current knowledge.

All of these advancements and more have been described in our journal, *Aviation, Space, and Environmental Medicine*, as well as others. Further, a large number of presentations have been made at our Annual Scientific Meeting.

This is only a partial accounting of our advances in civil aviation medicine. There is no doubt that AsMA has played a very key role as these challenges have unfolded.

Merry Christmas, Happy Chanukah, Happy Kwanza, and Happy New Year to all!

### 2008 Member Dues

You can always count on the AsMA membership dues going up at the beginning of the year. However, this year there is some good news for our overseas members. For several years we have been offering an expedited air service to our members living abroad. While all journals go via an air service, those paying extra got faster delivery. Due to recent restructuring of the mail rates, we will now be sending the journal by air at no additional cost to all overseas members. Your association officers felt it was important that all members pay the same rate for membership and that the journal is part of that membership, so they are willing to subsidize our overseas colleagues.

The new rates for 2008 are as follows:

Regular Membership	\$245
Student/Resident	\$125
Member & Spouse (1 journal)	\$300
(2nd membership is only \$65)	
3-year Membership	\$550
	(\$200 discount!)
Life Membership	\$3,525*
Technician	\$130

Don't forget that the benefits of membership include reduced registration fees at the meeting, valuable MOC/CME credits at terrific rates, a Members Only section on the website, and of course a subscription to the journal, *Aviation, Space, and Environmental Medicine*!

\*If you are planning to be a member for more than 12 years, this is your best option!

**Members, please visit our website:  
[www.asma.org](http://www.asma.org)**

Log into the Members Only page, where you can:

- Update your address, phone number, and e-mail address
- Access the Blue Journal online
- View Association news
- Renew your membership
- Join the Mentor program
- View the Job Fair and classifieds

### Articles of Aeromedical Interest

Here is the latest listing of journal articles published in other journals that may be of interest to you:

McMullan R, Edwards PJ, et al. Food poisoning and commercial air travel. Travel Medicine and Infectious Disease. 2007; 5(5):276-86

Spencer FA, et al. Venous thromboembolism in the outpatient setting. Arch Intern Med 2007; 167:1471-5

WHO Research Into Global Hazards of Travel. Air Travel and Thromboembolism. [http://www.who.int/cardiovascular\\_diseases/wright\\_project/phase1\\_report/en/index.html](http://www.who.int/cardiovascular_diseases/wright_project/phase1_report/en/index.html) (2007)



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### AsMA Future Meetings

May 11-15, 2008  
Sheraton Hotel  
Boston, MA

May 3-7, 2009  
Westin Bonaventure Hotel  
Los Angeles, CA

May 9-13, 2010  
Sheraton Hotel  
Phoenix, AZ

# This Month in Aerospace Medicine History--December 2007

By Walter Dalitsch III, M.D., M.P.H.

## Seventy-five Years Ago

*Depth perception in monocular aviators (Medical Examiner, Aeronautics Branch, Department of Commerce, Washington, DC):* "Depth perception has long been regarded as one of the most important single factors necessary for the proper handling of a plane, both in taking off and in landing, but especially in landing. The factors essential for the proper judgment of distances are as follows: physiological diplopia, accommodation, convergence, and binocular parallax. Secondary factors aiding in making this estimation are: size of retinal image, motion parallax, terrestrial association, and aerial perspective.

"All of the above factors enter into the performance of judging distance when both eyes are used, but when only one eye is present, some of the most important of these factors are lacking, and the only factors remaining are accommodation and size of the retinal image. Accommodation is only useful in fixing on objects nearer than 20 feet... This leaves the size of the retinal image as the most important factor..."

"But, if an individual with one eye has a degree of depth perception enabling him to fly, it must be because newly acquired factors are brought into use, some of which he may not even be aware of at all. He has consciously or subconsciously learned to do with one eye what he formerly did with two eyes. He has lost the most important of all factors, binocular parallax, because he has only one eye...but, he has, as is most often the case, unconsciously developed a new method as a substitute for his binocular parallax... He simply shifts his head slightly and attains the same result. Instead of using two eyes, once, to obtain the angle, he uses one eye twice. Most flyers do not realize that they do this, but in my opinion this is the secret of their success" (2).

*Nature of the U.S. Army School of Aviation Medicine (Flight Surgeon, U.S. Army, Medical Examiner, Aeronautics Branch, Department of Commerce, Cincinnati, OH):* "The School of Aviation Medicine is a military establishment. It is a physical and functional part of the Air Corps Training Center of the Army, at Randolph Field, Texas...

"The program of the school is divided into didactic instruction and practical exercises... It is best observed when a new class of flying cadets arrives, consisting, perhaps, of two hundred candidates, whose examination must be completed in two weeks. At such times the school is a busy place. One who has been accustomed to the commercial examinations and to sporadic cases, learns to appreciate the value of system. The technical procedure of the examination is practically the same as that prescribed by Department of Commerce regulations. It is conducted under the supervision of the directors of the various departments at the school..."

"Lest we forget that brick and mortar do not make a school, let me conclude my remarks by stating that, what today is the School of Aviation Medicine, is the outgrowth of human endeavor, and it is human effort that sustains it. Intimately associated with its growth and development are the names of WILMER, BAUER and LONGACRE..." (5).

## Fifty Years Ago

*Anxiety and the student pilot (U. S. Air Force School of Aviation Medicine, Randolph AFB, TX):* "A brief battery of anxiety measures was administered on six occasions to 249 students. High anxiety on initial scores, and as reflected by an increase in score after the first flight, was generally associated with preference for multi-engine training and estimate of low class standing on graduation. Low anxiety was related to jet preference and high estimates. Students with high anxiety tended to receive lower buddy ratings from classmates and vice versa.

"However, these relationships tend to mask important patterns related to the differentiation of anxiety associated with fear from anxiety associated with motivation to achieve. Patterns reflecting both aspects were demonstrated in both high and low initial anxiety cases, by reference to the other variables. For example, high initial anxiety which decreases and is associated with jet preference and high estimate of class standing is a positive, motivated pattern, with high success in the program, as contrasted with high initial anxiety which increases and is associated with multi-engine preference and low estimate of class standing. The latter is indicative of a fear pattern and has a high failure rate" (6).

*Visual deterioration in pilots (Pacific-Alaska Division, Pan American World Airways, San Francisco, CA):* "The problem of visual deterioration from acquired myopia has become increasingly significant in military and certain civilian occupations where the long-term maintenance of efficiency of the patient is of paramount importance. In this age of high speed jet transportation it is of even greater importance in the selection of aircraft pilots..."

"Acquired refractive errors can be corrected by glasses, but whether this is of material concern or not in the coming era of rapid commercial flight is as yet unanswered. Sonic and supersonic flight have created visual problems involving extremely short intervals of visual perception and reflex action. Little is known concerning the effect of optical correction and lens aberrations on these factors. There is some evidence that speed of visual perception at the reading distance may be decreased in some individuals after correction of myopia. The wearing of spectacles also becomes a problem in jet flying. It therefore appears sound at this time to have as an objective the maintenance of normal visual acuity without optical aids, at least in the presbyopic years..."

"Vision of 20/20 alone without consideration of the refraction, therefore, appears to be an insufficient ocular criterion for airline pilot selection. For high selectivity of pilot applicants from the long-term viewpoint, 20/20 vision and a manifest or homatropine hyperopic reserve of +0.50 D or more, especially in the early to mid-twenties, would appear to be highly desirable. If this practically eliminated or even substantially reduced the small but significant number of pilots who later acquire myopic defects, it might mean a great deal in this jet age in continued safe visual efficiency, as well as protecting the great monetary and training investment in these pilots, considering their long term of anticipated service." (1).

## Twenty-five Years Ago

*Consideration of vestibular testing in commercial pilots (Univ.-HNO-Klinik, Auenbruggerplatz, Graz, Austria):* "In medical fitness examinations of commercial pilots, extensive vestibular investigations should be conducted. In particular, the pendular test,

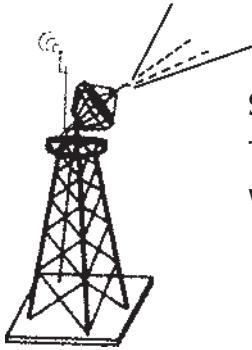
as a week rotational stimulation method, can disclose central vestibular disorders. Thus, the central nystagmus tracing can be considered as a sign of irritation of vestibular centers, most frequently as a consequence of head trauma, a finding that may influence the decision in the enlistment of the pilot. In contrast, a small nystagmus amplitude tracing is observed in cases of insufficient blood supply, occurring mostly in elderly persons. Therefore, this finding helps to demonstrate and treat arteriosclerotic dizziness in elderly pilots. Cervical-nystagmus - elicited by necktorsion while keeping the labyrinth fixed at rest- is an objective demonstration of a cervical-spine-syndrome. Aimed therapy, namely chiropractic manipulation, may help the pilot become fit to fly again. Further processing of the data from the vestibular investigations by means of a computer and plotting can provide the so-called cumulative eye position. This enables one to evaluate the compensation capacity which is a measure of the intensity of the vestibular response, important in the assessment of normal function of the vestibular system" (3).

*Negative transfer of cockpit transition (England AFB, LA):* "Negative transfer is defined in the context of this paper as the transfer from one cockpit to another - of different design or configuration - of habits or responses which were appropriate in the former but are inappropriate in the latter, thereby posing a threat to flying safety. This danger has been demonstrated not only experimentally but also in a number of aircraft accident investigation reports. As new aircraft become available...the phenomenon of negative transfer becomes increasingly significant..."

"The author offers two recommendations to minimize this threat. First and foremost, efforts should be made to standardize as much as possible aircraft cockpits, particularly instruments and controls. Engineers and pilots must consult closely very early in the designing phase of new aircraft to ensure that the well-known principles of man/machine interface are properly applied..."

"The author's second recommendation, although not particularly innovative, has for one reason or another never been formally implemented by flying organizations. It is this: whenever flying organizations are about to undergo conversion or pilots are required to transition to another type of aircraft, an analysis should be made of the two cockpits and operational requirements...to ascertain differences which could cause pilot error due to negative transfer. This task could be accomplished by the unit flight surgeon in consultation with pilots familiar with both aircraft" (4). **REFERENCES**

1. Diamond S. Acquired myopia in airline pilots. *J Aviat Med* 1957; 18(6):559-68.
2. Jarman BL. Monocular vision and other peculiar phases of flying as regards depth perception. *J Aviat Med* 1932; 3(4):194-200.
3. Moser MH, Ranacher GR. Medical fitness examination of commercial pilots: New criteria for evaluation of vestibular tests. *Aviat Space Environ Med* 1982; 53(12):1215-9.
4. Rayman RB. Negative transfer: a threat to flying safety. *Aviat Space Environ Med* 1982; 53(12):1224-6.
5. Schroeder JH. The School of Aviation Medicine. *J Aviat Med* 1932; 3(4):206-8.
6. Sells SB, Trites DK, Parish HS. Correlates of manifest anxiety in beginning pilot trainees. *J Aviat Med* 1957; 18(6):583-8.



## Science & Technology Watch

### Keeping You Informed Of The Latest Advances In Science And Technology

In this month's edition of the Watch we learn about a way to teach an old dog a new trick. Sing and Russo describe a methodology to detect drowsiness in ambulatory individuals using a new interpretation of standard EEG waveforms.

### High Frequency EEG as Source of Alertness/Drowsiness Index and Cognitive Function Capacity

Helen C. Sing, Walter Reed Army Institute of Research, Silver Spring, MD, & Michael B. Russo, U.S. Army Aeromedical Research Laboratory, Ft. Rucker, AL

Disruptions to normal sleep/wake cycles and daily work routines inherently lead to subtle or consequential cognitive performance deficits. For those operations requiring high levels of alertness and cognitive capacity over extended time periods, monitoring personnel is necessary to avoid potential catastrophe if their cognitive abilities critically degrade. The risk is greater in military operations where failure to detect danger and act immediately could result in capture and/or fatalities.

Ambulatory monitoring systems for continuous individual assessment of state are available, but these only determine sleep/wake status. The intermediate state of drowsiness associated with momentary or extended lapses of awareness resulting in diminished cognitive capacity and reduced ability to respond appropriately to environmental stimuli go

undetected. Hence, a methodology to detect reduced alertness, provide a warning, and arouse an individual to maintain wakefulness before sleep intrudes is very desirable.

Recently, we completed a study designed to detect drowsiness and develop a measure for cognitive function capacity (2). Our approach used electroencephalography (EEG) acquired at a relatively high frequency of 1 kHz. In contrast, EEG is usually sampled at 256 Hz and analyzed in the 0-50 Hz range for diagnosis of brain pathology and evaluation of sleep architecture and sleep quantity. When ambulatory monitoring of patients/subjects is conducted, it is typically used to determine sleep/wake states and to identify the various stages of sleep, but does not detect drowsiness.

The basis of our methodology is illustrated in Fig. 1, which shows raw EEG data recorded during a test session in which a subject performed a Choice Visual Perception Task (1). This intentionally boring task was used to assess central and peripheral visual field awareness lasting at least 20 min and was administered in a dimly lit alcove - all conditions which can induce drowsiness and sleep regardless of whether the subject was rested or sleep deprived. The stimuli were randomly lit single or double light emitting diodes (LED) embedded in a semicircular arc in front of the subject, who had to respond by pressing the proper key. If subjects did not react to the stimulus within 3 s, the event was considered a non-response or lapse and the LED was turned off. A digital channel, synchronized in time with the EEG recording, was used to mark the stimulus start and when subject responded. This provided an exact measure of response time and identified the corresponding EEG signals during the stimulus.

In Panel a of Fig. 1, the subject is rested and not sleep deprived and the EEG contains preponderantly high frequencies. Panel b shows the digital channel that records stimulus onset and indicates when the subject responds. Here, subject response time is well under 1 s and the concomitant EEG signature is seen directly above in Panel a.

In contrast to Panel a, the EEG signal in Panel c contains decreased high frequency band (HFFEEG) activity while low frequency band (LFFEEG) content, especially in the 7-14

Hz range, has increased. This lower frequency range is indicative of drowsiness and the initial stages of sleep. The corresponding time period shown in Panel d indicates that the subject did not respond within the 3 s limit.

In Panel e, most of the energy has shifted further into the LFFEEG, 1-6 Hz, which is the hallmark of deep sleep. Accordingly, Panel f shows that the subject did not respond.

Analysis of second-by-second changes in raw EEG signals sampled at 1 kHz similar to Fig. 1 led to the development of an Index of Alertness/Drowsiness and Cognitive Function Capacity (patent pending). Results from Discrete Fourier Transform analyses delineated two characteristic spectral components: 1-15 Hz (LFFEEG) and 201-500 Hz (HFFEEG). For each second, the relative energy (amplitude) contribution by each of these two bands is computed. When the HFFEEG content is greater than LFFEEG, alertness level and cognitive capacity are high. Alternatively, when LFFEEG energy is proportionally greater, then the state will either be drowsiness or sleep, depending on the magnitude.

In conventional EEG interpretation, LFFEEG (1-13 Hz) activity solely indicates sleep and 14-50 Hz content is associated with wakefulness. Using the proposed methodology, an expanded HFFEEG (51-500 Hz) band is assigned to the Cognitive Function Domain where active thought processes reside. Sleep deprivation increases low frequency amplitude and decreases high frequency amplitude with a concomitant decline in alertness and increased drowsiness. The result is an equivalent loss of functional cognition and inability to respond to external stimuli.

The methodology for acquiring and analyzing EEG at 1 kHz and computing the second-by-second index is straightforward and does not require complex data manipulation; consequently efficient algorithms can be easily implemented. Since the index output is a single number on a continuous scale that can be highlighted for ranges of interest, cognitive status is readily available. Software has been developed that is compatible with ambulatory monitoring systems to provide real-time assessment of alertness level and cognitive function capacity.

An audio, visual, or vibrational signal indicating when index values reach a critical range of drowsiness and loss of cognitive function can be used to provide a warning. In military field operations this information can be transmitted remotely from the monitored war-fighter to the commander who can initiate appropriate countermeasures. In the public safety sector, the same monitoring system can be used in occupations such as nuclear plant operators, truck drivers, pilots, and air traffic controllers.

### REFERENCES

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- Sing HC, Kautz MA, Thorne DR, Hall SW, et al. High frequency EEG as potential measure of cognitive function capacity: a preliminary report. Aviat Space Environ Med 2005; 76(7, Suppl.):C114-35.

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Please send your submissions and comments regarding this column via email to: barry.shender@navy.mil. Science and Technology Watch columns are available at [www.asma.org](http://www.asma.org).

**FIG. 1.** EEG data recorded while a subject performed the Choice Visual Perception Task.

## Human Spaceflight Health Systems for the Constellation Project

Richard (Rick) A. Scheuring, DO, MS, FAAFP,  
 Jeffrey (Jeff) A. Jones, MD, MS, FACS, FACPM,  
 and James D. (JD) Polk, DO, MS, FACOEP

The Constellation Program Office has been tasked with developing the exploration vehicular architecture. NASA, with the prime contractor Lockheed-Martin, will build The Crew Exploration Vehicle or CEV (Orion) over the next 5 years. The architecture includes initial flights of the CEV to ISS and allows 3-6 crewmembers to be rotated to the station, beginning in 2013-2015. This is after the Shuttle is retired and construction of the ISS is complete. In the 2017-2019 timeframe, lunar missions will begin and will lead to a rapid build-up of a lunar base. This Lunar Outpost will allow for the validation of power, life support, and resource utilization systems for future long duration exploration missions.

The medical operations division, in conjunction with the exploration medical capabilities (EXMC) team at NASA-JSC, is developing the human spaceflight health systems. The exploration medical support system will be tiered to match the mission profile and duration according to NASA's Standards, as shown in **Table 1**.

The Lunar Outpost will eventually have a dedicated medical support area, which will include a telemedical workstation, imaging, and treatment zone, as well as exercise countermeasures hardware. The medical kits needed to provide for the initial lunar capabilities (level of care III) are summarized in **Table 2**. Note that for CEV to ISS missions,

only the small, mini-medical kit will be flown to handle the usual expected physiological adaptation to microgravity, and any minor contingencies.

Historically, the Apollo medical kit weighed 3.8 pounds. However, the Apollo kits were based on 3 male crewmembers for a total mission duration of less than 2 weeks. Orion is based on mixed-gender crews of 4-6 for much longer missions. Apollo was a "best guess," based on limited space medical knowledge and would be insufficient to meet even Constellation Level 1 Medical Care. The Apollo medical kit was insufficient even during Apollo, as evidenced by the need for the Apollo crewmembers to ration their medications because of insufficient supply. By comparison, Shuttle Medical Kits (SOMS) weigh 40.6 lbs to support 6-7 crewmembers on a 14-day mission.

The CEV and lunar lander (Lunar Surface Access Module or LSAM) will also have radiation monitoring hardware and shielding, to protect crewmembers against possible solar particle events, during mission phases outside of the Earth's protective magnetosphere. For lunar sortie missions, routine ambulatory medical needs will be met with a standard spaceflight medical kit. Additionally, two-way private audio/video is required for performing Private Medical Conferences with the flight surgeon. Trauma management and advanced life support kits will be used to stabilize crewmembers experiencing lunar surface contingencies. Data from medical monitoring devices may be transmitted to the

ground for further diagnostic purposes. Some medical equipment will need interfaces for power, data, and pressurized breathing gas (with or without oxygen concentration) for certain medical conditions or for environmental contingencies (depressurization, fire, toxic release). The crew will don Personal Protective Equipment (PPE) during a toxic spill clean up or a dust-ridden activity. A crewmember with a significant illness or injury will be stabilized using lunar lander-based medical equipment in preparation for ascent and transfer to the CEV.

Extravehicular Activity (EVA) will be a main component of lunar surface activity. The suit team is considering new concepts for suit mass reduction, distribution of load/center of gravity, glove fit and dexterity, life support systems, biomedical telemetry, and information display. This is all designed to reduce crew overhead, minimize injury within the suit, and enhance task performance. These concepts are based in part from the recommendations provided in the Apollo Medical Operations project. Another design objective is providing feedback to the EVA crew for navigation, consumable supply and physiological/thermal parameters. Another design contingency includes up to 144 hours in the spacesuit, in case of loss of vehicular pressure on the Moon, which would require an urgent return to Earth. This will involve provision of a survival atmosphere (oxygen, CO<sub>2</sub> scrubbing), crew hydration, nutrition and waste management. With frequent EVAs, the possibility of decompression sickness (DCS) must

See *SPACE MEDICINE*, p. 1180.

**TABLE 1: LEVELS OF CARE IS MATCHED TO MISSION DURATION AND DESTINATION.**

Level of Care	Mission	Example Capability
I	LEO* < 8 days	SMS, BLS, First Aid
II	LEO <30 day; e.g. STS EDOMP	Level I + Clinical Diagnostics, Ambulatory Care, Private Audio, (+/-Video)
III	LEO > 30 day (ISS or Lunar Sortie)	Level II+ Limited Advanced Life Support, Trauma Care, Telemedicine, Minor Surgical, and Dental Care
IV	Lunar > 30 day (Outpost)	Level III+ Imaging, Sustainable ALS
V	Mars Expedition	Level IV+ Autonomous ALS, Basic Surgical Care

\*Low Earth Orbit; STS = Shuttle Transport System; EDOMP = Extended Duration Orbiter Medical Project; SMS = Space Motion Sickness; BLS = Basic Life Support; ALS = Advanced Life Support

**TABLE 2: EXAMPLE HARDWARE AND MASS/VOLUME ALLOCATION FOR SUPPORT OF LUNAR MISSIONS.**

Item for Lunar Sortie	Mass	Size	Development Concept
Medical Kit	10 lbs	10x7x6 in	COTS*
Medical Contingency Kit	30 lbs	32x12x16 in	Modified COTS
EVA Contingency Response Kit	16 lbs	16x16x8.5 in	Modified COTS
Environmental Health Kit	7.5 lbs	7x7x9 in	Modified COTS
Exercise Equipment	5-20 lbs	TBD	Technology Development Required

\*COTS = Commercial Off-The-Shelf

### SMA JEFF MYERS YOUNG INVESTIGATOR AWARD

The Space Medicine Association's Jeff Myers Young Investigator Award is presented to a young investigator who is the primary author of an outstanding presentation in the area of Aerospace Medicine presented at the current Annual Scientific Meeting of the Aerospace Medical Association. In addition to being the primary author, the work must be original and the young investigator must be presenting at the Annual Scientific Meeting for the first time. The Award is intended to encourage young investigators new to the field of Aerospace Medicine.

The applicant must submit a draft manuscript of their presentation to the chair of the Jeff Myers Young Investigator Award sub-Committee. To be considered for the 2008 award, manuscripts must be submitted by March 15, 2008 to:

K. Jeffrey Myers, M.D.  
 Space Medicine Branch  
 Young Investigator Award Chair  
 P.O. Box 540305  
 Merritt Island, Florida 32954  
 Phone: (321) 867-2026  
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## AsPS Membership Campaign 2008

*LtCol Andrew D. Woodrow, USAF School of Aerospace Medicine, Brooks City-Base, TX; andrew.woodrow@brooks.af.mil*

What's in your wallet? We've all heard that question about a point-bearing 'membership' card. Most of us probably carry a half dozen membership cards that offer a variety of benefits--some tangible, some intangible. Consider the Aerospace Physiology Society within the rubric of membership cards. Just like your library card, membership in the AsPS unlocks a world of resources and opportunities. Although the AsPS membership offers no point-earning scheme, the value of active membership can take you miles along your career path. Picture the physiologist fresh from university who is trying to correlate esophageal pressures from arterial pressure (at the eye level) during application of +Gz. The young scientist struggles to make sense of the data and wonders if there is a more efficient way to seek understanding. Adapting a familiar commercial approach to the value of membership comes in handy here; "Access to the AsMA archival DVD for non-members: \$150; access to the same 73 year concordance of science as a member: \$50; understanding the science through interaction with other members of AsPS: priceless."

Beyond the collegial benefits, membership in the Aerospace Physiology Society places you in a professional society identified throughout industry as an accomplished and recognized organization. Many professions make membership to an associated society practically compulsory. The blending of aviation physiology interests including physiological challenges, performance opti-

mization, accident prevention, and human factors lends to the balance of members--Department of Defense and civilian, university and industry. Since the earliest days of aviation physiology research and operational physiology, professionals recognized the importance of being associated with a group of life scientists with a single mission: protecting the human in extreme environments. Consider the breadth of opportunities outside the annual AsPS meeting. Networking in the discipline on a professional level can open doors for collaborative research and career broadening, too. Multi-disciplinary working groups are formed throughout the year in research, acquisition, test and design; each relies upon the expertise of aerospace physiologists to bring to the table a well-grounded understanding of human physiology in operational environments. The contributions of AsPS members are crucial to the development of systems safety and human performance in all spectrums. Annual recognition of scientific achievement among peers is a central feature of the Aerospace Physiology Society. The AsPS presents three awards each year during the annual Aerospace Medicine Association symposium. The Wiley Post Award is presented for excellence in Operational Aerospace Physiology. The Paul Bert Award is presented for excellence in Aerospace Physiology Research. And, the Fred A. Hitchcock Award is presented for lifetime achievement in the field of Aerospace Physiology. One of the most professionally satisfying awards sponsored by AsPS is the Partnership in Education Award granted to the top secondary school science teacher in the host city. Finally, membership in AsPS provides a clear pathway

for one to participate in a wide variety of activities related to the Aerospace Medicine Annual Symposium. The Education and Training panel session typically draws out the leaders in human performance and physiology and has frequently resulted in spin-offs within other specialty groups seeking solutions to human performance issues. The Society is not limited to DoD physiologists; all who are interested in the development, optimization, and training of aircrew are invited to join. The professional benefits are bracketed by a peer group that genuinely has fun. Each year at the annual meeting, the Society hosts a social event that provides members and other interested individuals an opportunity to interact in a more relaxed atmosphere. So, if you enjoy learning about and contributing to developments in aerospace physiology, and you believe that being part of an international, multi-service group of professionals aligned to the same would provide an incredible network opportunity, then consider investing in a membership to the Aerospace Physiology Society!

### Certification in Aerospace Physiology

Applications for Aerospace Physiology Board Certification are available from the Admissions Committee Chairman:  
CDR Thomas J. Wheaton, MSC USN, MS,CASP  
13529 Osprey Lane, P.O. Box 202  
Dowell, MD 20629  
Email: thomas.wheaton@navy.mil (professional); tjwheaton@comcast.net (personal)  
**Deadline for Application: 07 March 2008.**

### SPACE MEDICINE from p. 1179.

also be anticipated. Operating the habitat at a lower pressure (7.6 psi) with oxygen concentration may help reduce the DCS risk. Having a suit with a variable pressure of operation, up to habitat pressure, is another means of reducing risk. This would also be a means of early onset treatment of DCS symptoms. An airlock that can raise atmospheric pressure above that of the habitat pressure would allow for additional capability to treat DCS, although it is unrealistic to expect a true Table 6 level of treatment to be delivered.

For the Lunar Outpost missions, successive buildup of the habitat infrastructure will occur and will eventually include dedicated medical and fitness areas. The medical area will allow for the periodic health status acquisition via a medical diagnostic station with telemedical transmission capability. The medical station will have improved autonomy for medical contingency response, including sustainable advanced trauma and life support. This will allow for the development of an exploration medical support system with completely autonomous capability to be used for

future exploration missions. Possible technology developments for the medical workstation include: 1) an oxygen concentrator; 2) generation of intravenous fluids; 3) non-invasive or minimal invasive diagnostic and therapeutic modalities; and 4) differential diagnostic and preventive medicine maintenance software.

A very small exercise device will be flown for crew use during the outbound and return mission phases as well as between EVA days. The precise level of activity and type of countermeasures required for maintaining physiological systems in 1/6 G with long duration spaceflights has yet to be defined. However, an exercise countermeasure program that incorporates neurovestibular system maintenance will be built into the medical support system. The equipment for this countermeasure function will be more robust for the Lunar Outpost missions than found on the lunar sortie missions. Exercise will also assist in the behavioral health and performance (BHP) program. Key components of the BHP program will be regular private family conference (PFC), e-mail to family and colleagues, recreational activities (which involve both equipment and time allocation), and episodic psychological support interaction.

Cold food storage in the habitat may expand the types of food available to the crew. The development of systems to effectively grow plants, for food or air revitalization, will make considerable progress towards crew autonomy during Mars missions. The potential biological toxicity of lunar dust is not completely characterized at present, but lunar dust is clearly an irritant to the mucous membranes and respiratory system of humans, and management of lunar dust will be a major design driver for the surface habitat.

In summary, the medical support system for the Constellation Project will be the most efficient and advanced of any flown in space. This system will have as small an overall medical footprint as is possible for the type of mission that will be flown. It will be designed to provide health maintenance, EVA monitoring, contingency response, diagnosis and treatment as defined in the levels of care section of the Spaceflight Health Standards document. This system will increase in capability as destination and duration moves farther away from Earth. The design will allow for an increasingly autonomous crew health care and maintenance as the mission architecture expands.

# AEROSPACE NURSING SOCIETY NEWS

Send information for publication on this page to: **Cathy DiBiase**  
Mail code: BIO-1  
Kennedy Space Center, FL 32899  
email: Catherine.P.Dibiase@nasa.gov

ANS members I have some good news to share with you. Instead of me telling you, I wanted the Awards Committee Chair, Charles Tupper (the person who did all the hard work to make it happen), to share with you the following:

## Impact Instrumentation Sponsors the Mary T. Klinker Award

*Charles R. Tupper, Col, USAFR, NC, CFN Awards Committee Chair*

The Aerospace Nursing Society is proud to announce that Impact Instrumentation of West Caldwell, NJ, is the new corporate sponsor of the Aerospace Medical Association's Mary T. Klinker Flight Nurse of the Year Award. The award has been without corporate sponsorship for over 3 years.

### Mary T. Klinker, Captain, USAF, NC

The Mary T. Klinker Award for significant contribution to, or achievement in, the field



of aeromedical evacuation is presented by AsMA at the annual awards banquet. The award is named for U.S. Air Force Captain Mary T. Klinker, a flight nurse with the 10th Aeromedical Evacuation Squadron at Clark Air Base in the Philippines. Mary was killed on the C-5A Galaxy which crashed on April 4, 1975, outside Saigon while evacuating Vietnamese orphans. A native of

killed on the C-5A Galaxy which crashed on April 4, 1975, outside Saigon while evacuating Vietnamese orphans. A native of

Lafayette, IN, she was only 27 years old. She was posthumously awarded the Airman's Medal for Heroism and the Meritorious Service Medal. Her name can be found on the Vietnam War Memorial ... On the Wall at panel 01W 122.

### Impact Instrumentation

Impact Instrumentation is a medical device developer/manufacturer of respiratory care products and measuring instrumentation. Impact® products include Uni-Vent® Portable Ventilators, AEV® Automatic Emergency Ventilators, vacuum pumps, compressors, aspirators (portable, mobile, in-wall and on-board), Rail Mounting Systems, and Performance Analyzers. In 1993, Impact® acquired the trademark, trade name, manufacturing and distribution rights to Sorenson® Suction Apparatus--a name that dates back nearly 90 years and enjoys the respect and acceptance of the international community it has served for much of this time. The combination of Impact® and Sorenson® Suction Apparatus has created one of the largest and the most diversified selections of suction equipment produced under one roof.

A "no compromise" approach to clinical performance, reliability and versatility has guided Impact® throughout its product development history. Known for its design creativity and product and clinical knowledge, Impact® is a much sought after development partner in areas involving aerospace medicine and hyperbaric medicine. These innovative medical devices can be found in hospitals, home healthcare, ambulances, fire/rescue services, aboard ships, in aircraft, and throughout the military services. In fact, Impact® products have withstood the rigors

of combat - serving in the Gulf War, Balkans, Somalia, Rwanda, Afghanistan, and Iraq.

Flight nurses around the world are very familiar with Impact® equipment and innovation with specially designed equipment for aeromedical evacuation like the S.M.E.E.D. Mounting System and the Uni-Vent ventilators and Impact® suction devices.

The Aerospace Nursing Society extends a hearty welcome to Impact Instrumentation and extends a warm and personal "thank you" to Mr. Les Sherman. His willingness to support our organization and most of all for the work his company has done over the years. They have thought of what we need to work in our environment and then made it available for operational use.

More information on Impact Instrumentation can be found at their website: [www.impacinstrumentation.com](http://www.impacinstrumentation.com)

And Charles, thank you for making the sponsorship a reality and contributing with the above write up.

Please all stay safe until the next time.

Your ANS President,  
**Cathy DiBiase**

## Join the Aerospace Nurses Society!

Dues are just \$10 (\$5 for allied health professionals). For further information, contact:

Diane Fletcher, ANS Treasurer  
4042 Stonewall Lane  
Shiloh, IL 62221  
Home: (618) 206-8467  
Work: (618) 256-8138  
diane.fletcher-02@scott.af.mil  
Fletcher4@charter.net

## Nominations Sought for 2008 AsMA Awards

The Awards Committee of the Aerospace Medical Association, which is responsible for selecting the annual winners of special awards, has set a **December 15** deadline for receiving nominations for awards to be presented at the 2008 Annual Scientific Meeting in Boston, MA. The names of prospective award winners should be submitted as far in advance of the deadline as possible. Lots of time is needed to review all of the names and select the winners.

Nominations can be made by any member of AsMA.

### Rules:

1. The nominee must be a current member of the Association, with the sole exception that the Sidney D. Leverett, Jr., Environmental Science Awards is open to non-members.
2. Employees of a company sponsoring an award are eligible to receive the award. Self nomination is not allowed. Deceased members may be nominated.
3. Nominations for the Tuttle and Environmental Science Awards must cite a specific paper printed in Aviation, Space and Environmental Medicine. The award will be given to the first author only.

4. An individual can only receive one award in any one year.
5. The form is available on the AsMA website. You may either submit the nomination directly from the website or you may download the nomination form into your computer for e-mailing as a Word document attachment. Nomination forms sent via e-mail should be addressed to the Awards Committee Chair, Dwight Holland at [Dwightholl@aol.com](mailto:Dwightholl@aol.com); and Ms Gisselle Vargas at AsMA Headquarters ([gvargas@asma.org](mailto:gvargas@asma.org)). If e-mail is not available, you can send a hard copy of the form via normal mail to:

Dwight Holland  
4874 Glenbrooke Dr.  
Roanoke, VA 24081  
Phone: (540)761-1576  
AsMA FAX: (703)739-9652.

Any auxiliary biographical material in electronic or hard copy attachments **must be limited to 3 typed pages** and will be retained in Association files.

6. Nominations received by Dec. 15 will be considered for awards to be presented at the next annual meeting. Unsuccessful nominations will be retained in the active file through three award cycles.

# WING NEWS & NOTES

Send information for publication on this page to:  
**Jennie Berrick**  
8825 Redwood Blvd  
California City, CA 93505  
760-373-810; butljenn@aol.com

## Message from Our President

By Susanna Bellenkes

Yodluihi, Wing Sisters,

It is a very exciting time to be a part of this wonderful organization, and I am especially honored and delighted to be your President. Although May is still many months from now, plans for the meeting are already in full swing. Our meeting in historic Boston will, I am certain, prove to be both interesting and much fun for all. As you know, Boston is one of the oldest and most historically significant of U.S. cities; indeed, its motto, "Ense petit placidam sub libertate quietem," that is, "By the sword we seek peace, but peace only under liberty" tells us that this city was and remains central to the establishment of the "American spirit." We, too, will explore some of this fascinating history when we take a special bus tour around Boston to discover "350 Years in a Day." Then there is a tour that would include the world renowned Museum of Fine Arts, and we'll delve into the world of fine art during our Thursday tour when we visit the Isabella Stewart Gardner Museum with many famous pieces of art and a lovely environment. All this and our special reception and luncheon/business meeting will make for a full and exciting week. I look so much forward to seeing all of you, my 'WING Sisters' in Boston.

## 55th International Congress of Aviation and Space Medicine (ICASM), Vienna, Austria

By Judy Waring

Our Wing President Susanna Bellenkes is a native of Austria so we were pleased to pay a visit to Austria's capitol for the ICASM meeting. I saw 26 Wing members during our time in Vienna—a wonderful turnout. The meeting location in the Kursalon was a historic site and a familiar place to those who have attended



**FAREWELL BANQUET**--Susi Bellenkes and Helen Lestage. Susi is in her native Austrian costume.

waltz concerts there. It was also the site of both the Academicians and the Farewell Dinners. The opening ceremony with band music and lecture were not to be missed. Many participated in the social programs of tours arranged by the Austrian host committee. There were walking tours and coach tours and an evening Monarchical Dinner and Wine Cellar tour. At Monday night's reception at Vienna's Rathaus, a representative of the mayor greeted us.

Wednesday's technical tours offered four choices: a visit to Diamond Aircraft, Hubi-Fly Helicopter, a visit to life safety rescue, and a tour of the Vienna Airport control tower. All tour groups met for a buffet lunch hosted by Hubi-Fly Helicopter.

Vienna is so packed full of sightseeing possibilities that one must make some difficult decisions. Because we had previously visited palaces in Vienna, we focused on "guide-book in hand" walking tours, seeing sights associated with the Secession Movement: the Secession Building, the exterior of the Wagner Apartments, and exhibits at the Leopold Museum and the Austrian Museum of Applied Art. We toured the Hofmobiliendepot (Imperial Furniture Collection), which is a museum containing some of the furniture that was used to furnish the many Austrian palaces—many palaces were left unfurnished with furniture moved in as needed. We saw the opera "I Puritani" at the Vienna Opera, having purchased tickets on the internet well in advance. Some other ICASM attendees went to the Ballet and other concerts. "The Third Man" walking tour visited the filming sites for the movie, reviewed the story, and told a bit about occupied Vienna after WWII.

Many at the ICASM meeting planned sightseeing before or after the meeting, spending additional days in Vienna, Danube River cruises in Eastern Europe, and visits to other parts of Austria including a tour to Salzburg.



**TOP photo:** Mike and Judy Waring with Chris and Nonja Bisgard at the Farewell Banquet.  
**BOTTOM photo:** Jo Ivan, Susi Bellenkes, Nevonna Schroeder, and Marilyn Brath.



**VIENNA AIRPORT TOUR**--Catherine Hick-man, Jo Ivan, Judy Waring and Kiyoko Kaji.



**BANQUET**--Israel and Eka Glazer with Joan and Larry Marinelli. (Photo by Nonja Bisgard.)



**Join the Wing!**

The Wing of the Aerospace Medical Association was formed in 1952 "to support the specialty of aviation, aerospace, and environmental medicine by facilitating cooperation among its practitioners and by increasing public understanding and appreciation of its importance." A second purpose of the Wing is "to promote sociability among its members and their families." Each year at the scientific meeting, AsMA spouses meet new friends from every corner of the world, sharing in the many cultural experiences and educational opportunities of the host city. Dues are \$20 per year. For further information, contact:

Judy Waring  
4127 Kenyon St.  
Seattle, WA 98136  
(206) 933-0884  
judywaring@comcast.net

# NEWS OF CORPORATE MEMBERS

Send information for publication on this page  
to: **Corporate News**  
**Aerospace Medical Association**  
**320 S. Henry Street**  
**Alexandria, VA 22314-3579**

## ETC's NASTAR Center Officially Opens

Environmental Tectonics Corporation (ETC) recently announced the grand opening of the National Aerospace Training and Research Center (NASTAR Center). The NASTAR Center officially opened for business in October, on the 50th anniversary of the launch of the Soviet satellite Sputnik, which initiated the space age. The NASTAR Center is prepared to become a significant contributor to the next fifty years of the space age, during which private space travel is projected to grow substantially. The NASTAR Center is already the leader in space traveler training, having been named the official space training provider for Virgin Galactic. Virgin Galactic's Founders, the first 100 paid private space travelers, are currently training for their suborbital space flights at the NASTAR Center.

As part of the Grand opening activities, NASTAR Center demonstrated its space launch training capabilities providing their training to their inaugural class attended by Apollo XI astronaut Buzz Aldrin, and private space travelers to the International Space Station, Greg Olsen and Anousheh Ansari. At the completion of their training, which included rides in the NASTAR Center's high performance human centrifuge, the Space training System 400 (STS-400) the class members were recognized as honorary NASTAR Center instructors.

The NASTAR Center, co-located with ETC's corporate headquarters in Southampton, PA, houses state-of-the-art equipment and professional staff to support the training and research needs of the aerospace community, including military aviation (fixed and rotary wing), civil aviation (fixed and rotary wing), space travel (government and private) and research support and data collection. NASTAR Center's equipment and programs are highly modular and flexible and can accommodate a wide range of aerospace training and research requirements. For more information, visit <http://www.etcusa.com/corp/pressreleases/NR100507.htm>

## AOPA's and ALPA's UAV/UAS Concerns Echoed by NTSB

The Aircraft Owners and Pilots Association (AOPA) has repeatedly voiced concerns to the FAA regarding what standards apply to unmanned aerial vehicle (UAV) design and certification; UAV "pilot" training; and integration into the National Airspace System (NAS). The Airline Pilots Association (ALPA) has long advocated that unmanned aerial systems (UASs) should be allowed access to the NAS only if the same level of safety currently in place for other NAS users is ensured. Outstanding concerns for ALPA include the aircraft's capability to maintain continuous contact with the operator, detect weather, avoid collisions with airliners, and operate in congested air traffic areas. In October, the National Transportation Safety Board (NTSB) highlighted similar concerns and issued 22 recommendations after investigating

a 2006 UAV accident involving a turboprop Predator B on a surveillance mission for U.S. Customs and Border Protection. The NTSB attributed the probable cause to the ground-based pilot's failure to use checklist procedures when switching operational control from a console that became inoperable. This resulted in the fuel valve being shut off, which led to a loss of engine power.

Currently, no FAA certification or regulatory standards exist for UAS/UAVs operating in the NAS. The FAA is working with ALPA, AOPA, and other aviation industry groups to develop rules and standards for UAS/UAV operations.

The NTSB's new recommendations on UAS/UAVs make it clear that significant design and operational safety improvements must be made before UAS/UAVs can safely share airspace with airliners carrying passengers, cargo, and crews or fly above populated areas. The recommendations were issued as part of the NTSB Sunshine Meeting regarding the Predator B crash.

To learn more, visit: <http://www.aopa.org/advocacy/articles/2007/071018uav.html> and [http://www.alpa.org/DesktopModules/ALPA\\_Documents/ALPA\\_DocumentsView.aspx?itemid=10572&ModuleId=8300&Tabid=73](http://www.alpa.org/DesktopModules/ALPA_Documents/ALPA_DocumentsView.aspx?itemid=10572&ModuleId=8300&Tabid=73)

## Wyle Achieves 1 Million Hours without Injury at KSC

Wyle's operations at Kennedy Space Center have surpassed the 1 million hour milestone without having a lost time injury. The milestone, which took more than 2 years to achieve for the 250-plus Wyle employees at Kennedy Space Center (KSC), was passed in mid-day on October 10, as many employees were preparing for the launch of the STS-120 Space Shuttle mission scheduled for October 23.

At Kennedy, Wyle is responsible for laboratories, propellants, and life support services as well as for the systems engineering, operation, maintenance, and use of the largest and most diverse fleet of specialized aerospace chemical and personal protective equipment in the world. Wyle is a member of the Space Gateway Support Joint Base Operations Support Contract team at the Cape Canaveral Spaceport, which includes KSC and Cape Canaveral Air Force Station. Wyle's staff handles potentially hazardous cryogenics, hypergolics, high-pressure gases, and special commodities such as Solvent 113, ammonia, Refrigerant 21, and Halon, and manufactures liquid air used by government and contractor personnel. The company manages KSC's more than 35 miles of high-pressure gaseous nitrogen and helium pipelines that support many of the launch and flight hardware complexes.

Wyle's Life Support personnel provide maintenance and repair services for highly specialized aerospace chemical and personal protective equipment. The company maintains approximately 10,000 pieces of personal protective equipment including more than 6,000 emergency escape units and 450 Self-

Contained Atmospheric Protective Ensembles at Kennedy Space Center and Cape Canaveral Air Force Station. Wyle personnel also operate and maintain a wide range of non-destructive engineering and diagnostic equipment used in finding small defects in Shuttle and other rocket systems and components. Other services provided by Wyle employees include the calibration and repair of test equipment and metrology engineering services. This support ensures that measurements made in support of Shuttle, Atlas, and Delta launches are traceable, accurate, and reliable.

For more information, visit <http://www.wylelabs.com/news/2007/10-11.html>

## Sanofi Receives FDA Approval for Meningococcal Vaccine

Sanofi Pasteur, the vaccines division of Sanofi-Aventis Group, announced today that the U.S. Food and Drug Administration (FDA) has granted licensure to expand the indication for its meningococcal conjugate vaccine, Menactra® (Meningococcal [Groups A, C, Y, and W-135] Polysaccharide Diphtheria Toxoid Conjugate Vaccine), to include children 2 years through 10 years of age.

Menactra® vaccine is the first and only quadrivalent conjugate vaccine licensed in the U.S. for the prevention of meningococcal disease. The vaccine first received FDA licensure in 2005 for immunization of adolescents and adults 11 years through 55 years of age. Menactra vaccine offers protection against four of the five most common serogroups of the bacterium that cause meningococcal infection, *Neisseria meningitidis* serogroups A, C, Y, and W-135. No vaccine is available in the United States for protection against infection from serogroup B.

The FDA's decision to license Menactra® vaccine for children 2 years through 10 years of age was based on safety and immunogenicity data from two large clinical studies. Both studies were randomized, multi-center, active-controlled, modified double-blind clinical studies of children 2 years through 10 years of age comparing the safety and immunogenicity of Menactra® vaccine to Menomune®-A/C/Y/W-135, Meningococcal Polysaccharide Vaccine, Groups A, C, Y, and W-135 Combined. A third multi-center, open-label study of children 4 years through 6 years of age evaluated the antibody memory response to the vaccine in children who had been vaccinated previously with Menactra® vaccine approximately 2 years earlier.

For more information, visit [http://en.sanofi-aventis.com/Images/071018\\_Menactra\\_en\\_tcm24-19501.pdf](http://en.sanofi-aventis.com/Images/071018_Menactra_en_tcm24-19501.pdf)

## Mayo Clinic Research Shows Relatives of Parkinson's Patients Face Increased Risk

Immediate relatives of people who have Parkinson's disease are at greater risk of

*See Corporate, p. 1184*

developing cognitive impairment or dementia than people who have no first-degree relatives (brother, sister, mother, father, son, or daughter) with Parkinson's disease, according to a new study by Mayo Clinic. The risk is particularly increased for relatives of patients who developed Parkinson's disease before age 67.

This was one of the first large population-based studies to show that Parkinson's disease and cognitive impairment or dementia may share familial factors that make a person susceptible to developing one or both disorders. In addition, the study is a major methodological departure from previous attempts to study the risk of cognitive impairment or dementia in families with Parkinson's disease. It is based on the "family study" method. Researchers assessed each relative separately for cognitive status instead of using only one family member to provide information for the full family. The Mayo Clinic report appears in the October 2007 issue of the journal *Archives of Neurology*.

Several intriguing leads prompted the researchers to hypothesize the existence of familial shared susceptibility factors for Parkinson's disease and cognitive impairment or dementia. One was that dementia tends to occur in patients who have Parkinson's disease, and there is some suggestion it may be due to shared susceptibility genetic variations such as those in the apolipoprotein E gene. Another lead was that both conditions cause lesions on the brain that disrupt normal brain function. In Alzheimer's disease, these lesions are called plaques and tangles. In Parkinson's disease, the lesions are called Lewy bodies. It is thought that these brain lesions may share common risk factors.

For more information, visit <http://www.mayoclinic.org/news2007-rst/4292.html>

## Lockheed Martin Successfully Launches GPS Satellite

A U.S. Air Force modernized Global Positioning System Block IIR (GPS IIR-M) satellite, designed and built by Lockheed Martin, was recently launched successfully from Cape Canaveral Air Force Station aboard a United Launch Alliance (ULA) Delta II launch vehicle. Designated GPS IIR-17M, the satellite is the fourth in a series of eight Block IIR-M spacecraft that Lockheed Martin Navigation Systems has modernized for its customer, the Global Positioning Systems Wing, Space and Missile Systems Center, Los Angeles Air Force Base, CA. The Block IIR-M series includes new features that enhance operations and navigation signal performance for military and civilian GPS users around the globe.

Each IIR-M satellite includes a modernized antenna panel that provides increased signal power to receivers on the ground, two new military signals for improved accuracy, enhanced encryption and anti-jamming capabilities for the military, and a second civil signal that will provide users with an open access signal on a different frequency. The satellite launched today joins three IIR-M satellites and 12 other operational Block IIR satellites within the current 28-spacecraft constellation.

Lockheed Martin is also leading a team which includes ITT and General Dynamics in the competition to build the U.S. Air Force's next-generation global positioning system, GPS Block III. The next-generation program

will improve position, navigation, and timing services for the warfighter and civil users worldwide and provide advanced anti-jam capabilities yielding improved system security, accuracy, and reliability. A multi-billion dollar development contract is scheduled to be awarded by the Global Positioning Systems Wing, Space and Missile Systems Center, Los Angeles Air Force Base, Calif. in early 2008.

For more information, visit  
[http://www.lockheedmartin.com/news/press\\_releases/2007/1016-4thgpsIrm.html](http://www.lockheedmartin.com/news/press_releases/2007/1016-4thgpsIrm.html)

## Baxter Signs Agreement with Kaketsuken

Baxter International Inc. recently announced it has signed an agreement with Kaketsuken, the Chemo-Sero-Therapeutic Research Institute, based in Kumamoto, Japan, for the worldwide rights to develop, manufacture, and market the recombinant protein ADAMTS13. The development of recombinant ADAMTS13, a bio-engineered version of a naturally occurring enzyme that plays a critical role in blood coagulation, will strengthen Baxter's pre-clinical research and development pipeline for specialty therapeutics targeting rare diseases. In the absence of ADAMTS13 in the blood, patients develop a severe, often life-threatening condition called thrombotic thrombocytopenic purpura (TTP), marked by the formation of platelet-rich blood clots in blood vessels throughout the body. Recombinant ADAMTS13 is being developed for the treatment of TTP and related disorders and will be evaluated for other indications in the future. This agreement provides an opportunity for Baxter to exclusively develop a new recombinant protein and investigate its potential use in treating unmet medical needs.

Under the terms of this agreement, Kaketsuken will provide Baxter with access to Kaketsuken's intellectual property rights concerning the recombinant protein. Baxter has an exclusive license to the recombinant ADAMTS13 intellectual property rights worldwide, except for Japan where Baxter has a co-exclusive license to commercialize recombinant ADAMTS13 with Kaketsuken. In addition to an upfront payment upon signing the agreement, Baxter will pay Kaketsuken milestone payments upon Investigational New Drug filing, initiation of Phase II and Phase III trials, Biologics License Application filings, and U.S. Food and Drug Administration approval of recombinant ADAMTS13.

To learn more, please visit [http://www.baxter.com/about\\_baxter/news\\_room/news\\_releases/2007/10-16-07-kaketsuken.html](http://www.baxter.com/about_baxter/news_room/news_releases/2007/10-16-07-kaketsuken.html)

## FedEx to Launch Hybrid Vans in Europe

FedEx Express (FedEx), a subsidiary of FedEx Corp. and the world's largest express transportation company, recently announced plans to introduce 10 hybrid-electric/diesel vehicles to its European fleet, bringing the worldwide total of hybrid vehicles in revenue service at FedEx to more than 100 in North America, Asia, and now Europe.

The vans, manufactured by Iveco, will initially be tested close to the manufacturer's site in Turin, Italy, and will be the first hybrid-electric/diesel vehicles operated by FedEx in Europe. FedEx currently operates hybrid vehicles in the United States, Canada, and Japan. The van and the hardware that enables

the vehicle to operate on both electric and diesel systems were unveiled at the European Road Transport Show in Amsterdam, Oct. 24 through Nov. 3, 2007.

Iveco is recognized as a leader in the automotive field and a company with a strong history in supporting innovative new technologies. Over the last 2 years, Iveco and FedEx have joined efforts to develop a new diesel-electric hybrid vehicle. FedEx recognizes that effective environmental management is one of its most important corporate priorities, and is committed to implementing and helping develop new cost-effective green technologies that provide a real alternative for businesses and consumers in today's market.

To learn more, visit <http://news.van.fedex.com/node/5417>

## Essilor Acquires KBco

Essilor of America, a subsidiary of Essilor International, has acquired a majority stake in KBco, one of the largest polarized lens distributors in the United States. Created in 1987 and based in Centennial, Colorado, KBco generates sales of around \$31 million. A recognized specialist in polarized lenses for the US ophthalmic optics industry, it supplies retail chains and eye care professionals with a broad offering of innovative high quality products. The acquisition enhances Essilor's portfolio of value-added corrective sun lenses and expands its presence in the fast-growing polarized segment.

Taken from [http://www.essilor.com/InvestorRelations/NewsReleases/Acquisition\\_KBco.htm?from=summary](http://www.essilor.com/InvestorRelations/NewsReleases/Acquisition_KBco.htm?from=summary)

## MedAire Partners with MBAA for Safety Day

Tempe, AZ-based MedAire Inc., medical education, expertise, and equipment provider, partnered with the Minnesota Business Aviation Association (MBAA) for the first-ever MBAA Safety Awareness Forum in October, held at the Country Inn and Suites in Bloomington, MN. The 1-day safety event for corporate aviation professionals focused on the development of an accident-prevention mindset and on hangar safety. The event included classes on hangar safety, crewmember medical training, corporate aviation safety, and best practices applications.

More information can be found at [http://www.medaire.com/nr\\_mbaa\\_safety.html](http://www.medaire.com/nr_mbaa_safety.html)

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For information on becoming a Corporate Member, please call Gloria Carter at (703)739-2240, ext. 106, [gcartier@asma.org](mailto:gcartier@asma.org); or Dr. Marian Sides at [mbsides@sbcglobal.net](mailto:mbsides@sbcglobal.net)

# NEWS OF MEMBERS

Send information for publication on this page  
to: **News of Members**  
**Aerospace Medical Association**  
**320 S. Henry Street**  
**Alexandria, VA 22314-3579**  
**pday@asma.org**

**Brig. Gen. Douglas J. Robb, USAF, MC,** was recently promoted from colonel. After three years as the Command Surgeon, United States Central Command, MacDill AFB, FL, Brig. Gen. Robb assumed command of Keesler Medical Center, Keesler AFB, MS. Responsibilities include directing nine graduate medical education programs and an extensive clinical research program. General Robb is also the Senior Market Manager for TRICARE's Gulf Coast Multiservice Market to ensure coordinated patient care for the Gulf Coast Tri-Service and Veterans Administration health care facilities.

**Col. William A. Pollan, D.O., M.P.H.,** has been promoted and is now serving as Commander, 355th Medical Group at Davis-Monthan AFB in Arizona.

**COL Michael Russo, MC, USA,** has been reassigned as Medical Director for Research at Tripler Army Medical Center, Honolulu, Hawaii. He plans to improve the residency link to research at the facility and continue research and publication.

## Brig. Gen. Dr. Erich Rödig Awarded von Kármán Medal

Brig. Gen. Dr. Erich Rödig, Surgeon General of the German Air Force and an AsMA Fellow, has been awarded one of the most prestigious scientific honors. In a ceremony held at Riga, Lithuania, on September 20th, 2007, Dr. Rödig was presented the von Kármán Medal by Engineer General Jacques Bongrand, Chairman of NATO Research and Technology Board.

This decoration was presented in recognition of Dr. Rödig's achievements in promotion of the international scientific cooperation in NATO. The Research and Technology Organization (RTO) of the NATO has been presenting this decoration on a yearly basis to honourable persons who have earned special merits in the fruitful interaction between NATO partners in various fields of science.

The medal Dr. Rödig has been awarded is a duplicate of the original, which was presented to Prof. Dr. Theodore von Kármán in 1962 for his achievements. Von Kármán (1881-1963) was an engineer and a pioneer in modern aerodynamics. In 1952 he founded the AGARD with the goal of promoting the scientific cooperation in NATO in the field of aviation.

His principle "... scientific results cannot be used efficiently by soldiers who have no understanding of them, and scientists cannot produce results useful for warfare without an understanding of the operations...", has always been General Dr. Rödig's measure of his activities as well.

## New Members

Abraham, Ralph L., M.D., Mangham, LA  
Aldrich, Shelley, Capt., USAF, MC, FS,  
Minot AFB, ND  
Barker, Michael J., Capt., USAF, MC, FS,  
Airway Heights, WA  
Baumgartner, Timothy S., Capt., USAF, MC,  
FS, Norfolk, VA  
Bowden, Thomas W., Capt., USAF, MC, FS,  
Cabot, AR  
Carletti, Michael D., Capt., USAF, MC, FS,  
Universal City, TX  
Clark, Christopher P., Capt., USAF, MC, FS,  
Valdosta, GA  
Cole, Adam J., Capt., USAF, MC, FS,  
Alamogordo, NM  
Crandall, Mark, B.A., Saskatoon, Canada  
DeKorse, Tyson B., M.D., Provo, UT  
Echeverri, Ana P., M.D., Rye Brook, NY  
Espiritu, Jennifer M., LCDR, USN, MC,  
Chapel Hill, NC  
Fillmore, Christopher L., Capt., USAF, MC, FS,  
La Vista, NE  
Gell, Amber S., B.S., Houston, TX  
Govil, Nira J., Maj., USAF, MC, FS,  
Manalapan, NJ  
Green, Layne B., M.D., San Antonio, TX  
Hodges, Michael G., Maj., USAF, MC, FS,  
APO, AE  
Hoyt, Richard E., Capt., USAF, MC,  
Belleville, IL  
Jager, Bert, M.D., Haren, The Netherlands  
Juhasz, Jon J., Capt., USAF, MC, San  
Antonio, TX  
Kabanda, Kurhenga G., M.D., Kinshasa,  
D. R. Congo  
Kittell, Michael T., Capt., USAF, MC, FS,  
Little Rock, AR  
LaPlant, Maria K., Capt., USAF, MC, FS,  
APO, AP  
Lawrence, Rebekah L., DPT, Davenport, IA  
Mark, John J., D.O., Dix Hills, NY  
Martin, Michael L., Lt.Col., USAF, MC,  
Anchorage, AK  
McNiff, Katherine B., LT, USN, MC, FS,  
Sneads Ferry, NC  
Morrell, Rachel A., Capt., CAF, MC, FS,  
Moose Jaw, Canada  
Oettel, David J., Capt., USAF, MC, FS,  
Great Falls, MT  
Phan, Stacey T., Capt., USAF, MC, FS,  
Oklahoma City, OK  
Potocko, Joshua R., ENS, USN, Denver, CO  
Quayle, Charla M., Maj., USAF, MC, FS,  
North Las Vegas, NV  
Richardson, Joann Y., Lt.Col., USAF, MC,  
APO, AP  
Rohrer, Andrew J., Capt., USAF, MC,  
Bellevue, NE  
Sader, John P., M.D., Saint Lambert, PQ,  
Canada

Schar, Trevor J., M.D., Valdosta, GA  
Serkowski, Richard J., Maj., USAF, MC,  
Sacramento, CA  
Smith, Jeremy T., Capt., USAF, MC, FS,  
Wichita, KS  
Standaert, Brynne B., Lt.Col., USAF, MC,  
APO, AE  
Sunkin, Jon A., Capt., USAF, MC, FS,  
Mexico Beach, FL  
Templin, Thomas, Ph.D., Province, RI  
Teodoro, Joseph C., B.S., Pensacola, FL  
Trant, David B., Lt.Col., USAF, MC, Cibolo, TX  
Vanichkachorn, Greg, M.D., Midlothian, VA  
Vojta, Christopher N., Capt., USAF, MC, FS,  
San Antonio, TX

## In Memoriam

### William J. Sears

William John Sears, Col, USAF (ret) passed away in September after a lengthy battle with esophageal cancer. Col. Sears received his B.S. from Iowa State University and his M.S. and Ph.D. in Medical Physiology from the University of Southern California. During his military career he was primarily assigned in a research/management capacity at the School of Aerospace Medicine, Brooks AFB (City-Base), TX. He was instrumental in starting and was the first to volunteer for the Exchange Officer program with the Royal Air Force Institute of Aviation Medicine in England. Following retirement from the Air Force he became Director of Bioengineering at the Southwest Research, Senior Research Scientist at Technology Inc. and subsequently for 22 years was president of Aerospace Associates Inc.

Dr. Sears was an internationally recognized authority in the field of aerospace physiology and the human factors aspects of aircrew and ground life support systems. He was directly involved in the management of test facilities to validate hazardous spacecraft atmospheres in the Manned Orbital Laboratory and other studies exposing man and animals to high levels of oxygen and carbon dioxide as well as defining oxygen requirements for future aircraft. He managed hypobaric, hyperbaric, and thermal test chambers to establish life support and environmental requirements for USAF missions. He consulted with NASA on fire suppression systems, pressure suits, EVA activities, and the Challenger accident. He was directly involved with the development of chemical defense and high altitude protective equipment and procedures for aircrew and medical personnel with two inventions for chemical defense equipment. He authored/co-authored over 50 publications on a variety of life support and chemical defense equipment and procedures.

Following retirement as president of Aerospace Associates, he acted as consultant to over 30 Companies involved in new aircraft and life support programs to include the B2, F-22, Future Compact Fighter, High Altitude Reconnaissance Aircraft, Advanced Pressure Suits, Navy Advanced Tactical Crew Systems,

*See SEARS, p. 1186*



newer aircrew oxygen and chemical defence masks as well as authoring articles for specific military contracts. He was also a consultant to the Air Force Surgeon General on Aerospace Physiology.

He was presented with several military awards including the Meritorious Service Award with Oak Leaf Cluster and The Legion of Merit. He was elected Fellow of the Aerospace Medical Association, received the Fred Hitchcock Award for Excellence in Aerospace Physiology from the Aerospace Physiology Society, and the Annual SAFE Award for Career Achievement.

### Abstracts NOT Presented at the 78th Annual AsMA Scientific Meeting

Every year, there are abstracts that could not be presented at our annual meeting for a variety of reasons. This year (2007) is no exception.

Some abstracts were withdrawn after press time, but prior to the meeting. They are: 35, 36, 57, 98, 130, 132, 133, 134, 135, 136, 137, 196, 197, 256, 401, 419, 452, 490, 493, and 544.

It is important to remember that if an abstract was not presented, it should not be referenced.

The following abstracts were not presented at AsMA's 78th Annual Scientific Meeting, May 13-17, 2007. The fact that they were printed in the March issue of *Aviation, Space, and Environmental Medicine* does not mean that they were presented, only that they were accepted for presentation. To the best of our knowledge, all other abstracts were presented and defended.(Only first author is listed.)

[11] A Case Report of a Diaphragmatic Lesion After Ejection: An Unusual Injury-J. A. Byrne

[37] Vertical Semicircular Canal Function Test and Its Character in Fighter Pilots-Y. Wei-Yan

[38] Unraveling Clinico-Radiological

Incongruity in Aircrew with Musculoskeletal Disabilities-N. Taneja

[39] The Frequency Distribution of APOCIII Gene Polymorphism in Aircrew Members and Its Association with Blood Lipids-W. Chen

[40] The Frequency Distribution of APOE Gene Polymorphism in Aircrew Members and Its Association with Blood Lipids-W. Chen

[45] Spinal Pain in Naval Aviators at Training Ai Wings One and Two: A Cross-Sectional Study-J. S. Brooks

[51] Helicopter Pilots' Signal Detection Performance Assessed in Stress Situation Modelled by Hypobaric Hypoxia-A. Grosz

[52] Entrainment of Heart Rate Variability Power Spectrum with the Task Frequency: Implications for the Measurement of Human Mental Workload-K. K. Tripathi

[53] Expression of C-Fos Induced by Hypergravity in Tongue Striated Muscle of Rhesus Macaque-S. Shenggen

[56] Effects of Simulated Microgravity on Cellular Morphology, Cell Multiplication and Cell Cycleof MG-63 Cells-P. Wang

[95] Assessing the Effect of Psychic Stress on Work Performance-A. Grosz

[116] Gender Differences in Stress and Stress Coping Strategies in Flying Cadets of Indian Air Force-M. Dahiya

[127] Fatigue Assessment of KDC-10

### Maintenance Personnel During the Royal Netherlands Air Force Operational Transportation Flights to Afghanistan-C. Van Nieuwburg

[129] A Comparative Study of the Cardiovascular Responses to Different Positions of LBNP Sealing-N. Goswami

[164] The Golden Hour Between Life and Death - Lesson Learned from 2007 Lebanon War-T. Inbar

[165] Medauv: Medical Resupply & Casualty Evacuation Vertical Take Off and Landing Unmanned Aerial Vehicle-T. Inbar

[166] Readiness of Aeromedical Evacuation During a Major Military Conflict 2006-A. Ammoura

[201] Simulated Microgravity will Distribute P13K-AKT Signal Transduction Pathway During Osteoblastic Differentiation of Human Osteosarcoma Cell Line MG-63- W. Rui

[209] Gender-Related Asymmetry of Cerebral Blood Flow Velocity Response to General Intelligence Tasks During 24 Hour Bed Rest-P.C. Njemanze

[255] You Don't Know What You Don't Know-D. Smith

[256] Effect of Pressure Breathing and Chest Counterpressure Garment Inflation on Apical Lung Expansion During Sustained +Gz Acceleration-A.T. Stevenson

[257] Effects of Chest-Counter Pressure on Transpulmonary Pressure and Work of Breathing During Positive Pressure Breathing at High Gz-Loads-M.J. Gronkvist

[261] Pressureized Upper Body Suit for Protection Against Acceleration-Induced Arm Pain-X. Su

[302] Depression In Flight Attendants: Therapeutic Considerations-V.C. Balcescu

[304] Spine Related Morbidity Pattern in the Military and Commercial Pilots: An Indian Scenario-S. Bhargava

[305] The Gene Expression Pattern in Aircrew Members of Civil Aviation-W. Chen

[327] Would an Influenza Vaccination Campaign be Cost Effective in Reducing Sickness Absence in Air Traffic Control Officers (ATCOS)-A.J. Roberts

[340] Role of Handedness Over Flight Controls in Conventional Cockpits-R. Pipraiya

[393] Evidence Based Medicine in Aviation Medicine - The Military Approach---P. Weber

[396] Antithrombotic Medication for Prevention of Air Travel Thrombosis - What Do We Really Know?-H. Landgraf

[453] Cardiovascular Risk Factors in Flying Personnel: Hypertension in Pilots and Cabin Attendants-M. Biagini

[468] The Incidence of Barotitis After 18000Ft VS. 12000Ft Simulated Flights - A Comparative Study-I.S. Mikhail

[494] Impact o Uncomplicated Obesity on Left Ventricular Function of Healthy Aviators-D.S. Chadha

[505] Changes in Serum Biochemical Markers of Myocardial Damage After Repetitive +Gz Exposure-Z. Jin

[514] Sleep, Circadian Rhythms and Fatigue in Aviation: A Survey of the Awareness and Attitudes of Fighter Pilots-N. Taneja

[535] Aeromedical Decision Making in Diabetes Mellitus-V.R. Ciancio

[537] Disaster Management - A United Nations (UN) Experience at Democratic Republic of Congo-S. Modak

[546] Need for Prospective Study on Cervicalgia Amongst Helicopter Pilots Using Helmet Mounted Devices-S. Sharma

## CLASSIFIED ADS

### POSITION WANTED

I am interested in exploring employment opportunities in the space life-sciences area. I am a science and engineering specialist with a broad and in-depth background in the physical and life sciences, computer programming/simulations, applied math, and data analysis/statistics.

My fields of expertise include neuropsychopharmacology, developmental neurobiology, acoustics, microscopy, stereology, molecular biology, histology, histochemistry, and general psychology / human factors. I also have a background in physics & astronomy, aerospace engineering, materials science, economics, and business administration. This year, I graduated from Brown University (Experimental Psychology Department), where I worked in two labs that specialized in neuroscience, pharmacology, and acoustics.

Some highlights of my educational and professional background are as follows:

- Successfully completed challenging PhD program (research, teaching, coursework; 4.0 GPA), voluntarily took courses at other universities at the same time, and reduced my labs' expenses by securing funding from other sources (fellowships, teaching assistantships; \$114,873 altogether).
- Cut experimental failure rate in half (no shortcuts, no sloppiness, uncompromising quality control).
- Routinely worked on complex projects that required work during non-core business hours.
- Proven written, oral, and graphic communication skills, as demonstrated in laboratory training and classroom teaching settings.

Also: Habit of working across disciplinary boundaries and outside professional comfort zone; acquire new skills rapidly. Great accuracy, attention to detail, continuous quality control, and troubleshooting skills. Strong concern for health and safety. Ability to work independently and in a team and to supervise the work of others. Commitment to excellent work in biomedical science or engineering.

I am happy to discuss job opportunities with any interested employer (academic or non-academic). A résumé/CV is available on request. I am willing to relocate for the position. My contact information is: Thomas Templin, (401) 351-2397, Thomas\_Templin@cox.net.

I would be happy to hear from you!

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