



# Chemical Bond

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November 2004

St. Louis Section, American Chemical Society

## COOL FACTS

from National Chemistry Week

**Did you know...that the man who invented aspirin did not think it would be widely used?**

The French chemist Charles Gerhardt first made aspirin in 1853. He put it aside for about forty years and it wasn't until 1893 when a young chemist named Felix Hoffman at the Bayer Drug Company in Germany rediscovered it. It helped to reduce the pain his father felt from arthritis. Aspirin was first sold as a loose powder starting in 1899 and in 1915 the tablet form we are most familiar with today was introduced.

**Did you know...that radish anthocyanin extract is being studied for use as natural red colorant for Marashino cherries?**

Researchers at Oregon State University have begun testing scarlet pigments isolated from the skins of radishes. These anthocyanin pigments not only impart an intense red color, they resist fading. Maraschinos stained with cherry pigments begin losing their color within a month of bottling.

# *Special Thanks to...*

The St. Louis Section of the American Chemical Society every year recognizes a local scientist in academia or industry for his/her contributions to the profession of chemistry. This talent provides a platform for St. Louis to showcase the research that ultimately supports the creation of new products and services. These products and services contribute to the local and national economic growth. Past St. Louis award recipients have also been recognized by national and international awards including the Nobel Prize in chemistry. Over the years Monsanto company has generously supported this award, and the St. Louis section sincerely appreciates this support. For a sustained financial support for this award in the future, the St. Louis section of the American Chemical Society has started a campaign to raise additional funding for the St. Louis award.

The St. Louis section is delighted to recognize **Sigma-Aldrich** and express our sincere appreciation for Sigma-Aldrich's generous support towards this fund in response to our campaign. It is such commitment by local industry that helps the St. Louis section recognize the local talent for their contributions to the profession and the society at large. We welcome support from the local industry to further strengthen the St. Louis award program. If your company is interested in supporting this award program, you may contact the committee members at your convenience.

Campaign Committee:

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## **2005 Annual Career Awareness Fair May 10-11**

**Mark your calendars now!**

The 22nd Annual CAREER AWARENESS FAIR for City & County Public Schools 8th grade students will be on Tuesday & Wednesday, May 10-11, 2005 in Halls 1 & 2 - America Center. Invest in a world-class workforce. Come join me and other section members as we continue our participation in this program sponsored by the St. Louis Public Schools Career & Technical Education Office and the Career Awareness Fair Business Advisory Committee. For more information or to volunteer (never too early), contact Greg Wall at 1-800-325-5832 ext. 3139 or e-mail: gwall@sial.com.

# Chemical Bond

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## In this issue . . .

2	<b>Special Thanks to Sigma-Aldrich</b>
2	<b>2005 Career Awareness Fair</b>
4	<b>Meetings &amp; Seminars</b>
6	<b>Letters, Words &amp; More: The Seven Daughters of Eve</b>
8	<b>Member Needs Survey Results</b>
9	<b>President Nominatees Director of NSF</b>
10	<b>Call for Nominations: St. Louis Award</b>
11	<b>2005 Continuity Dinner Reservation Form</b>

# Meeting & Seminars

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## *Board of Directors*

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St. Louis Section–ACS Board of Directors meets on the second Thursday of each month, at the Alumni Center, University of Missouri–St. Louis. Meetings are open to all members, and all are encouraged to attend. Elected officers and chairs of major committees have the right to vote; others in attendance have voice but no vote. If you want to attend the dinner, please contact Bijan Khazai (bkhazai@sentortech.com or 314/497-8629) at least one week prior to the meeting date. The usual cost of dinner is \$15. Members wishing to become active in section activities are welcomed for their first dinner for free, compliments of the section.

**Date:** Nov. 11

**Social hour:** 5:30 pm

**Dinner:** 6:30 pm

**Business meeting:** 7:15 pm

**Future meetings:** Dec. 9

Jan. 13

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## *Washington University*

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Seminars are in McMillen 311 at 4 pm unless otherwise noted. Coffee is available 20 minutes prior to the talk, and refreshments follow. For information, contact:

Amy Walker

walker@wuchem.wustl.edu

An up-to-date list of seminars is available at:

[www.chemistry.wustl.edu/  
~seminars/seminars.html](http://www.chemistry.wustl.edu/~seminars/seminars.html)

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## *University of Missouri- St. Louis*

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Seminars are held on Mondays at 4:00 pm in Room 451 Benton Hall unless otherwise specified. Refreshments 15 minutes prior to seminar time.

November 8

**Tom Alber**

University of CA-Berkeley  
*Structural Basis for Ser/Thr  
Protein Kinase Signaling and  
Inhibition in M. Tuberculosis*

November 15

**Michael Duncan**

University of Georgia  
*IR Spectroscopy of Transition  
Metal Carbide and Oxide  
Clusters: Discovering Stardust  
in the Lab*

November 22

**Robert F. Field**

Massachusetts Institute of Tech.  
*The Rydberg Spectrum and  
Dynamics of CaF*

November 29

**James K. Coward**

University of Michigan  
*The Design of Potent Inhibitors  
of ATP-Dependent Ligases*

December 6

**James Reilly**

Indiana University  
*In Pursuit of "Relentless"  
Proteomics*

*Pick up*

*rotating*

*Mass-Vac ad*

*from p. 5 of May 2004*

## The Seven Daughters of Eve

by Jack Bornmann

A mitochondrion (plural is mitochondria) is an interesting little critter. Actually it is an organelle, but I will explain later why I like to think of it as a critter. It exists in the cytoplasm, which is the jelly-like stuff holding all of the cell's content.

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## Letters & More Words

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The function of the mitochondria is to produce energy for the cell. It converts food into the energy molecule, adenosine triphosphate or ATP. Adenosine is adenine + ribose and, as you guessed, ATP is an adenosine + three phosphate groups. ATP delivers energy to the cell by the reaction  $ATP \rightarrow ADP + \text{energy}$  where ADP is adenosine diphosphate. The ADP returns to the mitochondria to be pumped back up to ATP.

The mitochondrion is an interesting organelle. It is surrounded by a membrane similar to a cell wall and it has its own genetic code in a circular DNA. The reproduction of the mitochondrial DNA is independent of the cellular DNA reproduction. Some scientists have postulated that eons ago the mitochondrion was an independent cell, which was gobbled up by a larger cell. Wisely, the larger cell did not consume the mitochondrion as food, but established a symbiotic relationship in which the larger cell provided food and lodging for the mitochondrion and the mitochondrion provided the ATP for energy. That is why I imagine the mitochondrion to be a "critter".

There are many mitochondria in our cells, and over a thousand mitochondria in an active muscle cell, such as the heart muscle. Some cells have none, such as a red blood cell. Some cells have only one mitochondrion, such as a sperm cell. The sperm cell mitochondrion is located near the tail of the sperm and provides motive power to the tail. The egg cell has a full complement of mitochondria. At the moment of fertilization the head of the sperm penetrates the cell wall of the egg and the tail with its mitochondrion breaks off and departs. Thus the mitochondrial DNA of the sperm does not become part of the fertilized egg. All of the mitochondria of the fertilized egg come from the original egg cell (i.e. from the mother).

Mitochondrial DNA is passed from mother to children, both male and female. But the mitochondria of the male child never penetrates an egg and therefore is not passed on to the next generation or any thereafter. The mother's mitochondria is in the female child, who later will pass them on to her children. A woman's mitochondrial DNA is the same as her mother's, her grandmother's, her great-grandmother's, etc. The mitochondrial DNA would be the same as the original woman, if it were not for the occasional mutation.

In the January 2004 issue of the *CHEMICAL BOND* I wrote about the search for the original language(s). In a process somewhat akin to that language search, some scientists have searched through the mutation laden mitochondrial DNA in an effort to find the original mitochondrial DNA of the original mother. They have been able to postulate the early existence of seven different mitochondrial DNAs. They have hypothesized what they call "The Seven Daughters of EVE."

Wouldn't it be interesting if the Daughters of Eve could be related to the protolanguages? That might explain why women, in general, are more adept at the use of the spoken word. We men, on the other hand, were originally the hunters. Any hunter back then who spooked the prey by talking out loud, would be sent back to the camp in shame and forced to remain with the women. The men used other signals to communicate. This difference between males and females has become the butt of many jokes. For example:

Recently, the nursery for newborns at a large hospital attempted to calm the babies by letting them hold plastic toys. The little plastic toy telephone was an almost instant hit. Half of the babies slept with the toy telephone pressed against their cheek as they slept quietly. Strangely, the toy telephone had no effect on the boy babies. One nurse had a brilliant idea and acquired a toy

remote TV controller. It worked with the first boy baby that she gave it to. Soon all of the babies were so quiet that they seemed to be medicated. The little girl babies clutched the toy telephones to their cheeks and if they were awake they "goo-gooed" incessantly. The little boy babies clutched their toy remotes and extended their arms outward and made little clicking noises. But you should have heard the uproar as the nurses attempted to take away the toy telephones and remote controllers. There was also trouble when it was time to leave the hospital and go to their new home. When the nurses tried to extract the toys from the baby's grip, the babies began to cry and refused to leave the hospital. The nursery started to get crowded with babies and the hospital decided to let the babies take the toys with them. Now the hospital is trying to get the health insurance companies to cover the cost of the toys.



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# “Member Needs” Survey Results Are In !


Thank you for participating in our Member Needs Survey. We take it for granted that our members have a certain level of intelligence. We have not been disappointed. The following is some interesting feedback from the Member Survey.


1. 14% of Section have never attended an activity of the section because they are too busy.
2. 32% of respondents (highest) get information about section activities from the Chemical Bond.  
14% get information from colleagues.  
3% get information by e-mail.
3. 11% are inactive because they are unaware of the activities.
4. The top 3 activities which members are currently participating in or are interested in participating in are:  
Organic, Chromatography, St. Louis Award
5. The top 3 outreach programs which members are currently participating in or are interested in participating in are:  
Science Fair, Science Center, Career Awareness
6. The following are some of the suggestions received:  
“Seek more involvement from High School Teachers.”  
“Improve networking opportunities.”  
“Get out the Bond on time.”  
“Hold Career Development Seminars.”  
Also, several members expresses an interest in holding a General Meeting such as was done in the 1940s and later.

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7. Opinions about holding an annual picnic was:
  - 39% yes
  - 24% no
  - 37% no opinion/don't know
  
8. Topics of interest to members were:
  - Pharmaceutical, Organic, History, Analytical, Biochemistry, and Environmental
  
9. The top 3 non-traditional topics of interest included:
  - spices with 27 votes
  - magic with 19 votes
  - videos with 15 votes

If you wish to volunteer for:

Kid's N Chemistry, contact Bijan Khazai, [bkhazai@sentortech.com](mailto:bkhazai@sentortech.com)  
Science Fair, contact David Haselbauer, [djhase@swbell.net](mailto:djhase@swbell.net)

<p>POLYMER STANDARDS FOR GPC/SEC MOLECULAR WEIGHT ANALYSIS GPC/SEC COLUMN REPACKING American Polymer Standards Corporation 8680 Tyler Boulevard, Mentor, OH 44060 Phone: 440-255-2211 Fax: 440-255-8397</p>
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Ted Gast, Chair-Elect 2004  
St. Louis Local Section  
American Chemical Society

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## **President Formally Nominates Director of NSF**

President Bush announced his nomination of Dr. Arden Bement to be the director of the National Science Foundation on September 15. Dr. Bement will serve as NSF director for the remainder of the 6-year term ending August 2, 2010. It is expected that his nomination will be easy and expedited.

Dr. Bement has served as both acting director of NSF and director of the National Institute of Standards and Technology (NIST) since February 21. He became NIST's director in 2001. Prior to that he served as the David A. Ross Distinguished Professor of Nuclear Engineering and head of the School of Nuclear Engineering at Purdue University. Additional information about Dr. Bement can be found at [http://www.nsf.gov/od/lpa/forum/bement/bement\\_bio.htm](http://www.nsf.gov/od/lpa/forum/bement/bement_bio.htm).

# Nominate a Colleague for the St. Louis Award

The St. Louis Award, sponsored by the Monsanto Company, is presented to an individual who had made outstanding contributions to the profession of chemistry and demonstrated potential to further the advancement of the chemical profession. The award, consisting of a \$1,500 honorarium and a plaque, is presented at the St. Louis Award Banquet, the final event of Chemical Progress Week in April.

Please help the Awards Committee identify outstanding chemists in the St. Louis Section by submitting your nominations to the St. Louis Award Chair. The nominations should include a nominating letter, two or more seconding letters from individuals who have had a close professional affiliation with the nominee, a brief biography, a description of the nominee's accomplishments, and a list of publication and patents.

At the time of the nomination, the nominee must not have previously received the Midwest Award or any national ACS-sponsored award. The nominee must be a member or affiliate of the St. Louis Section of the ACS. The deadline for nomination packets to be received is December 10, 2004. Please send nominations and inquire to:

Dr. Joseph Ackerman  
St. Louis Award Chariman  
Department of Chemistry  
Campus Box 1134  
Washinton University  
1 Brookings Drive  
St. Louis, MO 63130-4899  
Phone: 1-314-935-6593  
FAX: 1-314-935-4481  
ackerman@wuchem.wustl.edu

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# Continuity Dinner 2004

Thursday, December 9, 2004

at Chris' Dining

5980 Southwest Blvd.

(314) 645-2088

Every December the St. Louis Section of the ACS holds a fancier than average board meeting celebrating the year's achievements, recognizing certain members, and the passing of the gavel to the new slate of section officers. There is also the Henry Godt Memorial Lecture (recapping the past year) which is always a surprise.

Please join us to celebrate. The evening will begin with a social hour and open bar (beer, wine, and soft drinks) at 5:30 pm. Dinner will be served at 6:30, and the business meeting will begin at 7:15. Cost is \$20.00 per person.

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## Continuity Dinner Reservation Form

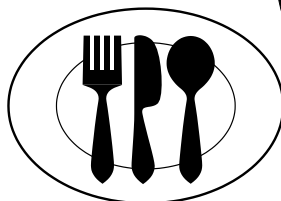
Member name \_\_\_\_\_

Number attending \_\_\_\_\_ X \$20 = Amount remitted \_\_\_\_\_

Reservations must be received by December 3, 2004.

Please make check payable to the St. Louis Section-ACS  
and mail to:

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St. Louis, MO 63105



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