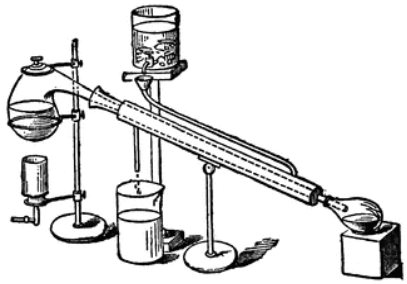
# SOUTHWEST RETORT



**SEVENTIETH YEAR** **OCTOBER 2017**

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*Chemists, Chemical Engineers*
*and Chemistry in this area*

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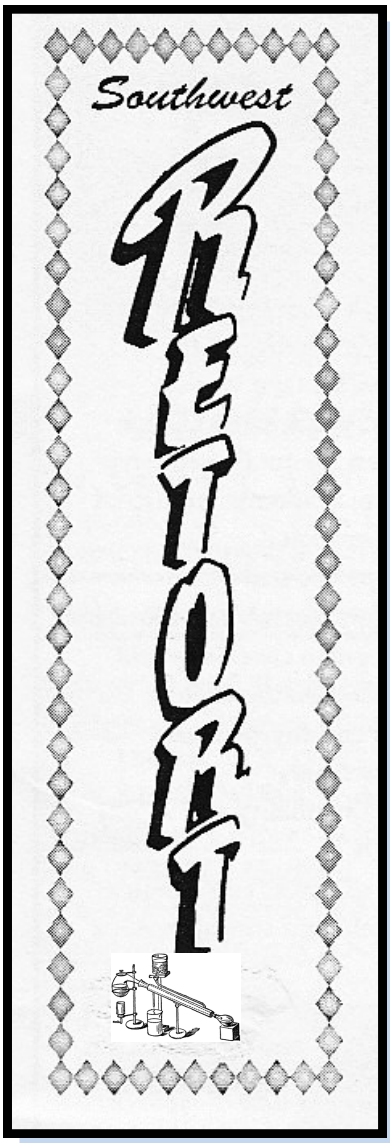


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*Contact the DFW Section*

**General: info@acsdfw.org**
**Education: ncw@acsdfw.org**
**Elections: candidates@acsdfw.org**
**Facebook: DFWACS**
**Twitter: acsdfw**


# *EMPLOYMENT CLEARING HOUSE*

**Job applicants should send name, email, and phone, along with type of position and geographical area desired; employers may contact job applicants directly. If you have an opening, send your listing, including contact info for your company, to retort@acsdfw.org. Deadlines are the 7th of each month.**

## JENKEM TECHNOLOGY

### The PEG and PEGylation Technology People

Position Available:
***Sales and Marketing Assistant***

Job Type: Full-time
Location: United States, Texas, Plano
Additional notes: Must be legally authorized to work in the United States. Local candidates preferred, as no relocation benefits are provided for the position.

Responsibilities:
Sales and marketing for PEGylation products and services: provides quotations and information on product availability, and provides answers to technical questions to customers, by phone or email; processes orders, shipping, and payments; develops and maintains customer relationships; identifies and develops new customers and new markets for PEGylation products and services; and performs other tasks as assigned by the manager.

Requirements:
Bachelor's degree or higher (Chemistry/Biology/Biochemistry or similar background preferred); Excellent interpersonal and communication skills; Excellent reading, speaking, and writing skills in business English; Good arithmetic skills and attention to details required; Proficiency in the use of Microsoft Word, Excel, PowerPoint, and Outlook required; English/Chinese bilingual preferred; Ability to work independently required. Prior sales, marketing, or accounting experience are considered a plus.

**hr@jenkemusa.com.**

# SERVICES and ANNOUNCEMENTS



**EDITING AND PROOF-READING SERVICES**

**Need someone to proof or edit your next paper, grant, or presentation? Let an experienced proofreader and PhD chemist do it for you! I have a strong grasp of English grammar and scientific writing and can condense text without losing the underlying meaning. Competitive rates! Contact Mike Vance:**

**vance2276@gmail.com**

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# *FIFTY YEARS AGO IN THE SOUTHWEST RETORT*

The ACS Tour Speakers in this area for October are **Dr. W. E. Tatum** of Circleville Research and Development Laboratory speaking on "Polymers That Like It Hot" and **Dr. E. S. Amis** of the University of Arkansas whose topic is "Some Chemical Phenomena in Solution."

At this year's ACS Southwest Regional Meeting being held in December in Little Rock, the plenary lecture will be given by **Dr. Henry Eyring**. A one-day short course on "Modern Theory of Acids and Bases" will be presented by **Dr. Ralph Pearson**. A new meeting symposium has been announced. It is "Nuclear, Cosmo-, and Geo-Chemistry." The Chairman of the symposium is **Dr. Paul Kuroda** of the University of Arkansas.

**Dr. Rayford L. Hoyle**, acting head of the chemistry department at the University of Texas at Arlington since July, died of a heart attack Sept. 12 in Arlington. He was 41 years old. Dr. Hoyle had joined the UT-Arlington faculty in 1959 after receiving his Ph.D. from Baylor University. He had served with the US Marines during both World War II and the Korean War. Before coming to Arlington he had taught at Hillsboro Jr. College and at Howard Payne College. He is survived by his wife and two children.

A new faculty member at TCU is **Dr. Clifford G. Venier**. Rejoining the TCU staff after a year with the ACS Division of Grants and Fellowships in Washington, D.C. is **Dr. Joe E. Hodgkin**. **Dr. William H. Watson** has been awarded an ACS-PRF International Faculty Award at the University of Southampton in England beginning in Jan. 1968. **Dr. H. B. Hardt** retired in June after 21 years of teaching. **Dr. Manfred G. Reinecke** attended the Organic Symposium at Burlington, Vermont in June. **Dr. H. C. Kelly** attended the Gordon Research Conference on "The Chemistry and Physics of Isotopes" at Crystal Mountain, Washington in July. The first four doctoral students in chemistry at TCU have completed their studies, and all have taken academic positions. **James Woodward** is an Assistant Professor at West Texas State College in Canyon. **Carlos Gonzalez** is Head of the Science Department at El Centro Community College in Dallas. **Robert Francis** has returned to UT-Arlington as Associate Professor. **Jesse Rogers** is Assistant Professor at Midwestern University in Wichita Falls.

The Chemistry Department of the University of Arkansas has five new faculty: **John T. Donoghue, T. D. Roberts, Leslie B. Sims, James F. Hinton,** and **M. N. Rao**. At Texas Tech **Dr. Henry J. Shine** attended the Gordon Conference on Organic Reactions and gave a short paper on the *p*-semidine rearrangement. He has received an Air Force Office of Scientific Research Grant to continue work on radical ion chemistry. His book on "Aromatic Rearrangements" was published by Elsevier Press this month. Also from Texas Tech, **Dr. William C. Herndon** was a visiting scientist over the summer at Bell Labs.

*Contributed by E. Thomas Strom*

# And Another Thing...

**Persuadable**

**Denise Merkle, PhD**

Dictionary.com lists synonyms of *Persuade* as urge, influence, move, entice, and impel, and its antonym as dissuade. Interesting. It is interesting because, as the topic of this month's column shifted from a lighthearted survey of 'What lab equipment would you really like to have at home?' to 'How in the world is the earth still flat?', the word that came to mind was *Un*persuadable. Again this week, in the news are a number of stories focused on information that is obsolete, or decisions that were made with complete disregard for information that has been painstakingly gathered and verified. The negative impacts of mining on environments and the human body—ignored; Hundreds of years of data—including relatively recent photographic documentation- showing that the earth is not a rectangle and people have, in fact, not fallen off the edge of it—ignored; Clear epidemiological indications that vaccinating most of a group is immunoprotective—ignored.

Surely, there must be, somewhere, a giant body of psychological research to explain the need to disregard facts. Perhaps, if one considers that the earth used to be flat, coal was a great energy source that spurred industrial development and wealth generation, and illness resulted from bad humours—or evil, one can understand the reluctance to accept modern science. What is modern, after all? Add to this the facts that not all coal miners died of black lung, lung disease -and even most pollutants- are slower killers than starvation, and vaccination isn't the best plan for everyone, and it's also not too difficult to pick economic benefits—or fear—over health.

Before a mob brandishing pitchforks, wielding torches, and waving electron micrographs of viruses or photos of earth snapped from space appears at the door of my office, it's crucially important to acknowledge the need to assess the reasons we hold to things we know (or could know) are not true. Is it a lack of planning that forces a way of life to disappear without replacing it with another source of income? Is it such concern for the perils of the present that historical reports of lethal epidemics are irrelevant? Or is it just that it's much, much easier for humans to cling to—and pontificate on—what they think they know is true, without actually finding out that it actually *is*?

And the point of all of this is: Those who are horrified to know that legitimately debunked *anything* still has champions might want to stop trying to persuade those champions that they are incorrect. The *Un*persuadable are just that. No data, no talking, no photos, no charts, no graphs, no hurricanes—Nothing will change the mind of someone who does not want to be convinced. Consistently, clearly, constantly and non-confrontationally bringing facts to the Forefront will, eventually, sway those who are willing to think. Nothing will sway those who aren't. Let's stop giving Airtime to the *Un*persuadables—and give the limelight to the facts, instead.

ACS Chemistry for Life®

NATIONAL CHEMISTRY WEEK 30 YEARS

# 2017 NCW Illustrated Poem Contest

# CHEMISTRY ROCKS!

**The American Chemical Society (ACS) is sponsoring an illustrated poem contest for K-12th grade students.**

**Local Section:** Dallas-Fort Worth
**Contest Deadline:** Friday, October 27th 2017
**Prizes:** $10 gift card and chemsitry goodie bag
**Contact:** Dr. Stephanie Taylor, ChemistryPoetryDFW@gmail.com

**Winners of the ACS Local Section Illustrated Poem Contest will advance to the National Illustrated Poem Contest for a chance to be featured on the ACS website and to win $300 or $150 in cash prizes!**

## INSTRUCTIONS

Write and illustrate a poem using the NCW theme, "Chemistry Rocks!"
Your poem must be no more than 40 words and in the following styles to be considered:
HAIKU - LIMERICK - ODE - ABC POEM - FREE VERSE - END RHYME - BLANK VERSE

Possible topics include rocks, minerals, gemstones, salts, crystals, magma, mantle, sediment, stalactites, and stalagmites. Entries will be judged based upon relevance to and incorporation of the theme, word choice and imagery, and colorful, creative artwork

## CONTEST RULES

- Poems must conform to a particular style. No poem may be longer than 40 words.
- The topic of the poem and the illustration must be related to the NCW 2017 theme.
- All entries must be original works without aid from others.
- Each poem must be illustrated on an unlined sheet of paper (of any type) not larger than 11" x 14". The illustration must be created by hand using crayons, watercolors, other types of paint, colored pencils, or markers. The text of the poem should be easy to read and may be printed with a computer before the hand-drawn illustration is added, or the poem may be written on lined paper which is cut out and pasted onto the unlined paper with the illustration.
- Only one entry per student will be accepted.
- All entries must include an entry form.
- All illustrated poems and/or digital representations of the poems become the property of the American Chemical Society.
- Acceptance of prizes constitutes consent to use winners' names, likenesses, and entries for editorial, advertising, and publicity purposes.

**www.acs.org/NCW**

# ACS DFW Local Section Senior Chemists Program

## Mark your calendars October 21, 2017

## University of Dallas 11am-2 pm

***SENIOR CHEMISTS Section members age 60 and over!***

This is event is especially for you!

Join the Dallas-Fort Worth Local Section of the American Chemical Society for an event developed specifically for our most experienced members of the DFW Local ACS Section. It is sponsored by a grant from the National ACS, which will make it possible to subsidize luncheon meal costs for Senior Chemists ($5, reduced from $20). The primary purpose of this event will be to provide our Senior Chemists with an enjoyable social occasion and the opportunity to provide input regarding future activities of interest for our senior members.

Register using this link: **https://www.eventbrite.com/e/acs-dfw-local-section-senior-chemists-program-tickets-38523586083**

(If you have trouble registering, please contact Kirby Drake at irby.drake@klemchuk.com).

***Registration deadline: Tuesday, October 17, 2017 at 5 pm.***

*Schedule:*

11 am-11:45 am Networking

11:45 am-2 pm Lunch and Program

Program will include a panel discussion with Kirby Drake, the current Local Section's Chair Elect, Connie Hendrickson, the Southwest Retort Editor, and Jim Marshall, Professor and Author, UNT. Each panelist will present a short talk and will interact with the audience in a question/answer session. For the second half of the program, we are asking our Senior Chemists (but only if they wish) to come prepared to share a personal experience as a chemist, which might include a "memory of your most impressive personal professional event." This may consist perhaps of something humorous (the funnier the better) or about something of a technical experience.

*Menu:*

Italian House Salad, Home-style Lasagna with Parmesan Cheese and Vegetable Alfredo Lasagna, Garlic Breadsticks, Chocolate Dipped Biscotti and choice of Beverage

Questions? Contact 2017 Chair-Elect Kirby Drake, kirby.drake@klemchuk.com, and cc DFWchemists@gmail.com.


## OCTOBER 24-28

**The Innovation Studios will be filled with hands-on chemistry experiments exploring the fascinating connections between chemistry and geology. Investigate the interesting world of rocks and minerals and try out classic chemistry experiments that deepen your understanding of the intriguing field of geochemistry. Museum staff, American Chemical Society Student Groups from area universities and high school students will lead these engaging experiences.**

### CHEMISTRY CONNECTIONS HOURS

OCTOBER 24-27, 10:00 AM - 2:00 PM
OCTOBER 28, 10:00 AM - 4:00 PM

### SCHOOL FIELD TRIPS

*2nd grade and above*

School groups of 15 or more can book field trips in advance by calling 817-255-9440 or visiting http://www.fwmsh.org/planning-your-visit.

### HOMESCHOOL AFTERNOON

*2nd grade and above*

Special extended hours for homeschool educators and children will be offered on Thursday, October 26 from 1:30-4:00 pm. Come explore geochemistry through hands-on experiments with local university students and museum staff.

FORT WORTH MUSEUM
SCIENCE AND HISTORY

*Chemistry Connections is sponsored locally by* Alcon FOUNDATION

*Additional support provided by ZS Pharma and American Chemical Society.*

*Volunteer support is provided by Texas Christian University, Southern Methodist University, Texas Wesleyan University, Texas Woman's University, University of Dallas, University of North Texas, University of North Texas-Health Science Center HSCSO., University of Texas at Arlington, Collin College, Tarrant County College-Northwest Campus, Birdville High School, Fort Worth Country Day, Hebron High School, Southwest Christian School, Trinity Valley School, and STEAM Middle School*

**VISIT FORTWORTHMUSEUM.ORG/CHEMISTRY-CONNECTIONS**

# 2017 Environmental Engineering Symposium

Join AIChE-Dallas for our First Annual Engineering Symposium. We have a great slate of speakers and this is a great opportunity to get several PDHs. This year's topic is Environmental Engineering. Email jason.ballengee@gmail.com for more details!

October, 27th 2017

Richardson Civic Center, 11:00-4:00pm

Sponsored by the Dallas Section of the American Institute of Chemical Engineers

Cost: $20 in advance ($30 at the door). A light lunch will be provided

| | |
|---|---|
| 11:00 – 12:00pm | Arrival, Registration, and Lunch pick-up |
| 12:00 – 12:10pm | Opening Remarks, Jason Ballengee, Dallas AIChE Chair |
| 12:10 - 12:50pm | Regulatory Pipeline, Brian Burdorf, Director, Trinity Consultant |
| 12:50 – 1:40pm | Sustainability in Process Engineering, Dr. Debalina Sengupta, Texas A&M |
| 1:40 – 2:10pm | Coffee and Networking Break |
| 2:10 - 2:50pm | Municipal Solid Waste Gasification, John Kiser, SDL Citadel |
| 2:50 – 3:30pm | Corrosion of glasses for nuclear waste disposal, Dr. Jincheng Du, U. of N. Texas |
| 3:30 – 3:40pm | Concluding Remarks, Jason Ballengee, Dallas AIChE Chair |
| 3:40 – 4:00pm | Networking and Departure |

## *From the ACS Press Room*

# Lipid vesicles replace blood in new bacteria test

***Beta-hemolytic bacteria selectively trigger liposome lysis, enabling rapid and accurate pathogen detection***

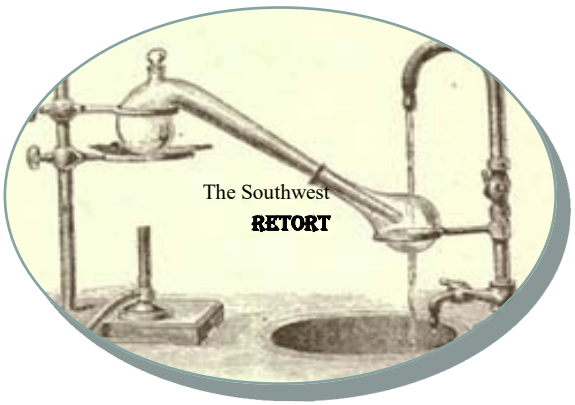
***ACS Sensors***

As schools around the U.S. start back up, so do trips to the doctor's office. But is that raw sore throat due to bacteria, which can be fought off with antibiotics, or a virus? Getting a definitive diagnosis of bacterial infections like Strep throat can take days. Now, one group reports in ACS Sensors that they have developed a new test that will provide results in just hours.

Beta-hemolytic bacteria are those pathogens that are frequently to blame for illnesses that are spread among school children like Streptococcus, or those like Listeria that cause many foodborne illnesses. The current test was developed back in 1903 and involves streaking a patient sample onto blood agar plates. It works well, but it can take days to obtain results. The bacteria are placed on a "blood agar" plate. If they are beta-hemolytic bacteria, they will produce an enzyme that breaks down red blood cells. Clear zones form, which allows doctors to identify the type of bacteria. Some existing tests can detect a single type of beta-hemolytic bacteria but one has to know exactly what microbe to test for ahead of time. In an effort to monitor food safety and provide rapid diagnoses for patients, Ian Cheong and colleagues sought to develop a test that would provide results in hours.

The researchers used the original blood agar test as inspiration for their new one. In the new assay, they placed fluorophores inside liposomes, which are lipid vesicles that have been used for controlled drug release. While in the liposome, the fluorescent molecules are packed together and are quenched, or dark. But when in the presence of beta-hemolytic bacteria, the liposome is broken open, the molecules are released, and they fluoresce. The test, called BETA, distinguished beta-hemolytic bacteria from control bacteria with 100 percent accuracy in 6 hours on plates, and with 99 percent accuracy in liquid broth in an hour. The researchers say the method is rapid and cost-effective, which makes it ideal for diagnostics in developing countries.

The authors acknowledge funding from the Temasek Life Science Laboratories.



# SCHULZ AWARD WINNER JO KING

Mrs. Jo King has taught chemistry for almost 30 years and currently teaches Pre-AP and AP courses for Heritage High School in Frisco. As a team member with Jeff Hepburn, 2010 James Bryant Conant Award winner, she has traveled across the US promoting and exciting audiences (young and old) about the wonders of chemistry. She is the current ACS Co-Chair of the High School Committee for the Division of Chemical Education. Jo has also served as the Panhandle Plains Local Section Chair (2011-2012) and Alternate Councilor. On the national level, she is one of the College Board's elite AP Chemistry Readers for ETS.

## SAVE THE DATE!

Tuesday, November 7, 2017
Piola Italian Restaurant, 3700 Mattison Avenue, Fort Worth, TX 76107
6 pm – 9 pm

**Doherty Award Dinner and Presentation**

Honoring Laszlo Prokai, endowed chair in biochemistry and professor of pharmacology/neuroscience at the University of North Texas Health Science Center. Prokai's research focuses on central nervous system drug discovery, analytical biochemistry, neurochemistry and proteomics.

# Around the Area

## DFW SECTION

**DFW SENIOR CHEMISTS**
**ACS Local Section Kick-Off Event**
**Luncheon at the**
**University of Dallas in Irving**
**Supported by Funding from**
**the National ACS**
**MARK YOUR CALENDARS!**
**Saturday, October 21, 2017**
**Watch for Details in the October Retort**
**And Special Invitations from**
**Bob Landolt (rlandolt@txwes.edu)**

## UTA

**Dr. E. Thomas Strom** was the co-organizer of the symposium "Ladies in Waiting for Nobel Prizes. Overlooked Accomplishments of Women Chemists" held at the August National Meeting of the ACS in Washington, D.C. The symposium featured Magdolna Hargittai as keynote speaker, while other speakers described the careers of fifteen women chemists overlooked for recognition. The symposium was topped off by a presentation of the theatre piece "No Belles," presented by the Portal Theatre Group from Oregon. This theatre piece covered the lives of a number of women scientists, some of whom were honored with the Nobel Prize, while others, also deserving, were not. The symposium was featured in a three page article in a September issue of *C&EN*. Tom's most recent co-edited book, "The Posthumous Nobel Prize in Chemistry. Volume 1. Correcting the Errors and Oversights of the Nobel Prize Committee," was published online on Oct. 5, with hard copies published by Oxford University Press to follow in early 2018. This August symposium described above will be Volume 2 in the series.

**Dr. Brad Pierce** recently received a $419,400 grant from NSF to study "Mono oxygenase/arylamine N-oxygenase Activity Within a Single Non-heme Diiron Enzyme." The grant runs from Aug. 1, 2017 until July 31, 2020 and is renewable.

**Dr. Kwangho Nam** recently joined the faculty as an assistant professor. Dr. Nam received his B.Sc. degree from Korea University in Seoul in 1995 and his M.S. in Biochemistry and Fermentation Chemistry from Korea University in 1998. After completing his military service, he entered the Ph.D. program at the University of Minnesota in 2001. After he received his Ph.D. in 2006, he did post-doctoral work at Harvard with Martin Karplus and Gregory Verdine. In 2011 he became a faculty member at the University of Umeå in Sweden, after which he came to UT-Arlington. Among his interests are novel multiscale quantum mechanics and molecular mechanics methods, free energy simulation methods, and the study of biomolecular systems. His significant interest is in the details of how enzymes work. He also enjoys playing tennis and hopes to do so here when the weather cools down.

**Dr. Kevin Schug** was part of the ACS Division of Analytical Chemistry Awards Session at the August ACS National Meeting in Washington, D.C. in connection with his receiving the Giddings Award for Excellence in Education. Schug student **Allegra Leghissa** presented her gas chromatography research at the Cannabis Science Conference in Portland, OR at the end of August.

**Dr. Krishnan (Raj) Rajeshwar** presented a keynote talk on "Oxide Semiconductors, Solid-State Chemistry and Photoelectrochemistry: A Nexus?" at the 232nd meeting of the Electrochemical Society in National Harbor, MD in October. He also chaired a couple of technical sessions at this meeting.

## University of Arkansas

### On the Go

**Perry Caviness** attended the Gordon Research Conference and GRS, July 14 to July 21, Colby Sawyer College, New London, NH, and presented "Using Small Angle X-ray Scattering to Identify the Collagen Binding Surface of Polycystic Kidney Disease-like Domains in Clostridium histolyticum." He is a student in the Sakon lab.

The 254th ACS National Meeting & Exposition was held August 20-24, 2017 in Washington, D.C. The following presentations were made:

**Z.-J. Hu** presented a poster "New Insights into Structure-Activity Relationship of Ipomoeassin F from its Bioisoteric 5-Oxa/Aza Analogues." Authors include G.-H. Zong, X. Sun, E. Barber, L. Whisenhunt, M. Hirsch, May, F. Wang, W.Q. Shi.

**Lucas Whisenhunt** presented a poster "Late-Stage Modification of the Tigloyl Moiety in Ipomoeassin F to Enable New SAR Studies." Other authors include G.-H. Zong, Z.-J. Hu, W.Q. Shi.

**Alexa May** presented a poster "Synthesis of Ipomoeassin F Analogs with a Tail-Modified Aglycone." Other authors are G.-H. Zong, E. Barber, W.Q. Shi.

**Melissa Hirsch** presented a poster "Design, Synthesis and Biological Evaluation of Fucose-truncated Monosaccharide Analogues of Ipomoeassin F." Other authors include G. Zong, C. Mondrik, Z. Hu, W.Q. Shi.

**Peter Pulay** gave a talk at the ACS meeting at the "Pulay Symposium," organized by So Hirata (University of Illinois, Urbana-Champaign) and Feng Wang (UAF). He also took part in the Editorial Board Meeting of *Journal of Computational and Theoretical Chemistry (JCTC),* an ACS journal.

**Peter Pulay** also gave a talk at the 11th triennial congress of the World Association of Theoretical and Computational Chemists (WATOC) in Munich (Aug. 27-Sept. 1) and participated in the WATOC Board Meeting which determined that the next (12th) WATOC Congress will take place in Vancouver, Canada. He then gave an invited talk "Gesellschaft Deutscher Chemiker" (GDCH) at the University of Ulm, Germany. After this, he visited the Eotvos University and the Technical University in Budapest.

**Paul Adams** gave a talk, "Biochemical and Biophysical Characterization of Ras-Related Proteins: Towards and Understanding of Ras Oncogenes in Oral Cancer," September 25, 2017, at the OHSU School of Dentistry in Portland, Oregon.

**Jingyi Chen** will be giving two departmental seminars: Dept. of Chemistry, Wesleyan University, November 3, 2017, and Dept. of Physics and Energy Sci., Univ. of CO at Colorado Springs, October 13, 2017.

**Frank Millett** gave an invited talk at the Structural Biology Conference in Zurich, Switzerland, Sept. 17-20. "Photoinduced

Electron Transfer in Cytochrome bc1: Kinetics of Ubiquinone Transfer from the Qo site to the Qi site, and Evidence for Communication between the Monomers in the Dimer."

**Publications**

**Zong, G.; Hirsch, M.; Mondrik, C.; Hu, Z; Shi, W.Q.** Design, synthesis and biological evaluation of fucose-truncated monosaccharide analogues of ipomoeassin F. *Bioorg. Med. Chem. Lett.* 2017, 27, 2752-2756.

**Cai, Y.; Jiang Wang; Yuexiang Zhang, Zhi Li, David Hu, Nan Zheng, and Hao Chen**. Detection of fleeting amine radical cations and elucidation of chain processes in visible-light-mediated [3+2] annulation by online mass spectrometric techniques. *J. Am. Chem. Soc.,* 2017, 139(35), 12259-12266.

**Ploscariu, NT; AI Herrera; S Jayanthi; TKS Kumar; BV Geisbrecht and O Prakash**. Back-bone and side-chain 1H, 15N, and 13C resonance assignments of a novel Staohylococcal inhibitor myeloperoxidase. *Biomolecular NMR Assign*., (accepted for publication) 2017 doi 10.1007/s12104-017-9764-5.

**Kumar, TKS; RK Gundampati; and S Jayanthi.** HB-tag as novel affinity tag for the purification of recombinant proteins. *Current Protocols in Protein Science, 2017,* 6, 16.1-16.4.

**Jayanthi, S; BP Koppolu; KG Nguyen; SG Smith; BK Felber; TKS Kumar; DA Zaharoff.** Modulation of Interleukin-12 activity in the presence of heparin. *Scientific Reports* 2017, 7, 5360-5371.

**Kumar, TKS; Y. Akkam, D. Nguyen, and D. McNabb**. Peptides with Antifungal Activity and Methods of using the Peptides. *US Patent 9,556.226 B2, 2017*. This invention deals with design and development of a new class of antifungal derivatives which are found to be significantly more efficient than the best antifungal drug(s) (Fluconazoles) currently available in the market.

**Kumar, TKS; S. Jayanthi, J. Morris, A. Kight, D. McNabb, and R. Henry.** Heparin Affinity Tag and Applications Thereof. International Patent and US Patent (US 9,676,816 B2) & World Patent (WO201511212A1), 2017. This invention deals with the design of an overexpression vector (containing a heparin-based protein purification tag-HB) which would facilitate a simple, cost-effective purification of recombinant proteins. The HB-tag can also be used for purification of glycosaminoglycans. In addition, the HB-tag has also been shown to have potent antitumor and antimicrobial activity.

**Tao, J.; Chen, J.; Li, J.; Mathurin, l.; Zheng, J.-C.; Li, Y.; Lu, D.; Cao, Y.; Wu, L.; Cava, R.J.; Zhu, Y.** Reversible Structure Manipulation by Tuning Carrier Concentration in Metastable CusS, *Proc. Natl. Acad. Sci. USA* 2017, 114, 9832-9837.

**Honors and Awards**

**Paul Adams'** project "Characterizing the Direct Influence of a Small Molecule on a Ras-Related Protein Interaction: A Step Towards Altering Ras Hyper-Activity in Breast Cancer" was funded by the Oversight Committee of the Arkansas Breast Cancer Research Program (ABCRP) for $71,443 for a period of one year.

*From the ACS Press Room*

# LIGHTS, CAMERA, ACTION!

## *BETTER PANCAKES*

*https://www.acs.org/content/acs/en/pressroom/newsreleases/2017/september/better-pancakes-through-chemistry.html*

## *SUSHI'S SUBLIME SECRETS*

*https://www.acs.org/content/acs/en/pressroom/newsreleases/2017/september/sushis-sublime-secrets-video.html*

## *WHY DO CELL PHONE BATTERIES EXPLODE?*

*https://www.acs.org/content/acs/en/pressroom/newsreleases/2017/september/why-do-phone-batteries-sometimes-explode-video.html*

## *THE CHEMICALS WE LEAVE BEHIND*

*https://www.acs.org/content/acs/en/pressroom/newsreleases/2017/september/the-chemicals-we-leave-behind-video.html*

*From the ACS Press Room*

# Paper-based tuberculosis test could boost diagnoses in developing countries

**Diagnosis of Tuberculosis Using Colorimetric Gold Nanoparticles on a Paper-Based Analytical Device**
**ACS Sensors**

Diagnosing tuberculosis (TB) early can allow patients to receive the medicine they need and also help prevent the disease from spreading. But in resource-limited areas, equipment requirements and long wait times for results are obstacles to diagnosis and treatment. To tackle this problem, scientists report in *ACS Sensors* the development of a fast, paper-based tuberculosis test that can be read with a smartphone.

The World Health Organization estimates that in 2015, 1.4 million people died from TB, with most of these deaths occurring in low- and middle-income countries. Early diagnosis could help curb these numbers. But conventional methods such as sputum smear microscopy, chest X-rays and molecular-based tests require equipment, electricity and specialized personnel that are not always available in remote or developing areas. So Chien-Fu Chen and colleagues set out to come up with a more practical diagnostic test that can be read with a smartphone, a technology that is increasingly available in emerging economies.

The researchers combined gold nanoparticles with single-stranded DNA sequences that bind to the genetic material of *Mycobacterium tuberculosis,* the bacteria that cause TB. These nanoparticles were then incorporated into a paper-based device. Adding even a minute amount of lab-derived, double-stranded DNA from *M. tuberculosis* changed the color of the test spots within an hour. A smartphone camera was used to analyze the color change to determine the bacterial concentration. The researchers also tested a tissue sample from an infected patient to further demonstrate that the device could be used in the field.

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**1919 Red Cross Annual Campaign**

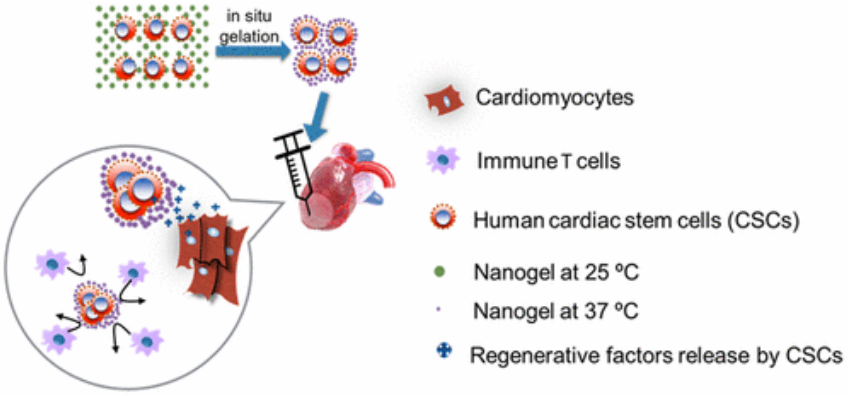
*From the ACS Press Room*

# Nanogels for heart attack patients

## Heart Repair Using Nanogel-Encapsulated Human Cardiac Stem Cells in Mice and Pigs with Myocardial Infarction

**ACS Nano**

Heart disease and heart-related illnesses are a leading cause of death around the world, but treatment options are limited. Now, one group reports in *ACS Nano* that encapsulating stem cells in a nanogel could help repair damage to the heart.




Myocardial infarction, also known as a heart attack, causes damage to the muscular walls of the heart. Scientists have tried different methods to repair this damage. For example, one method involves directly implanting stem cells in the heart wall, but the cells often don't take hold, and sometimes they trigger an immune reaction. Another treatment option being explored is injectable hydrogels, substances that are composed of water and a polymer. Naturally occurring polymers such as keratin and collagen have been used but they are expensive, and their composition can vary between batches. So Ke Cheng, Hu Zhang, Jinying Zhang and colleagues wanted to see whether placing stem cells in inexpensive hydrogels with tiny pores that are made in the laboratory would work.

The team encapsulated stem cells in nanogels, which are initially liquid but then turn into a soft gel when at body temperature. The nanogel didn't adversely affect stem cell growth or function, and the encased stem cells didn't trigger a rejection response. When these enveloped cells were injected into mouse and pig hearts, the researchers observed increased cell retention and regeneration compared to directly injecting just the stem cells. In addition, the heart walls were strengthened. Finally, the group successfully tested the encapsulated stem cells in mouse and pig models of myocardial infarction.

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# *From the editor*

One of the more significant articles from the ACS press room describes a a paper test for tuberculosis; single-stranded DNA sequences which will bind to the genetic material of *M. tuberculosis* are combined with gold nanoparticles and placed in a paper matrix. Contact of any material bearing double-stranded DNA from the *M. tuberculosis* changes the color of the spot AND it can be read with a smartphone.

Ending the TB epidemic by 2030 is among the health targets of the newly adopted Sustainable Development Goals of the World Health Organization. The following facts are from their website (http://www.who.int/mediacentre/factsheets/fs104/en/):

> Tuberculosis (TB) is one of the top 10 causes of death worldwide.
>
> In 2015, 10.4 million people fell ill with TB and 1.8 million died from the disease.
>
> Six countries account for 60% of the total, with India leading the count, followed by Indonesia, China, Nigeria, Pakistan and South Africa.

That would be why it's important.