



**Spring 2014**

**Volume 2**

**IN THIS ISSUE**

Officers .....	2
President's Message .....	3
Luncheon Speakers May 22, Shirley Shreshinsky & Patricia Kraus .....	3
Bios of May Speakers.....	4
Membership Reminder .....	4
Retiree Reception – Save the Date .....	4
Andy Sessler (In Memoriam) .....	5-6
Berkeley Lab Volunteer Program.....	6
Ex-Ls Board Openings .....	6
Summary of February Luncheon.....	7
New Luncheon Location .....	7
Retirement Center Update .....	8
Turkeys Inspire Smartphone.....	9-10
Summary of Dr. Hellman's Talk – February Luncheon.....	10
2014 AROHE Conference.....	11
Travel Opportunities.....	12
February Luncheon Guest List .....	13
May Luncheon Registration .....	13

## EX-Ls EXPRESS – Spring 2014

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Editor: Louise Vogelsberg

Deadline for Newsletter submittals is 7 days after the Board meeting.

### EX-Ls BOARD OF DIRECTORS

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Webmaster – <a href="http://www.lbl.gov/EX-Ls">www.lbl.gov/EX-Ls</a>	Richard Baker

### PAST PRESIDENTS

Joe Jaklevic-2012-2013	
Rollie Otto – 2011	Ken Mirk – 1999
Richard Sextro – 2010	Paul Hernandez – 1998
Don Grether – 2009	Clay Sealy – 1996-1998
Jose Alonso – 2008	Igor Blake – 1994-1996
Janis Dairiki – 2007	Conway Peterson – 1992-1994
John Kadyk – 2006	Howard Browne – 1990-1992
Gene Binnall – 2005	Ethel Skyrdlinski - 1989
Sig Rogers – 2004	Al Amon - 1988
Bob Fulton – 2003	Ken Lou – 1987
Bob Birge – 2002	Virginia Cherniak - 1986
Per Dahl - 2001	Bill Bigelow - 1985
Tom Beales – 2000	Ted Bowers – 1981-1984

### WELCOME NEW MEMBERS THIS QUARTER

Carolyn Adams	Stan Klezman
Edward Bubak	William Hassenzahl
Angela Gill	Barbara Atkinson
Cheryl Fragiadakis	Ken Downing
Elsie Martin	Jeffrey Fernandez
James McMahan	Hans Gerog Ritter
Edward Manougian	

### 2014 CALENDAR OF BOARD MEETINGS & LUNCHEONS

<u>Board:</u>	<u>Luncheons:</u>	
July 10	May 22	Hs Lordships
October 9	August 21	BYC
	November 20	Hs Lordships

Board Meetings start at **3:00 p.m.** on the dates listed above, usually in 54-130B (that's in the conference room addition to Perseverance Hall in the Cafeteria) at the Lab, but subject to change at the last minute, so check with a Board member if you plan on attending. We welcome attendance by interested members.

### OFFICE ADDRESS:

**Our mailing address is:**

LBNL EX-Ls  
1925 Walnut Street #1550  
Berkeley, CA 94720

**Photo Site:** <http://picasaweb.google.com/exLpics>

**Photo Czar:** Ned Dairiki

**Website:** [www.lbl.gov/EX-Ls](http://www.lbl.gov/EX-Ls)

**Webmaster:** Richard Baker ([xrobaker@comcast.net](mailto:xrobaker@comcast.net))

### EX-Ls Honorary Life Members

Shirley Ashley	Inge Henle
Esther Colwell	Bud Larsh

### MEMBERS DECEASED IN 2013

Dick A. Mack	Dave Clark
Gertrude Young	Dave Stevens
Gerald Wilson	Fred Goulding

Looking back on the past three months I marvel at all that has transpired with our organization. To start with, we had a very special and fantastic luncheon at the Berkeley Yacht Club in February. Who will ever forget the special occasion of our honoring two distinguished EX-Ls members, Edward (Ed) Lofgren and Andrew (Andy) Sessler. We celebrated Ed's 100 years of life and what a wonderful celebration it was. Ed looked very dapper which belied his years. He had family members join him at the luncheon that made it special indeed. Ed started work at the then "Rad Lab" in 1937, the year I was born. Now that helps put Ed's life into perspective for me! He helped develop the Bevatron and was its first Director and later had the privilege of turning it off for the last time when it became obsolete. We celebrated Andy's reception of the prestigious Fermi Award that was bestowed upon him by President Obama. This award recognizes Andy's many contributions supporting the Department of Energy. He was the Director of the Lab from 1973-1980 and was well known for advancing accelerators as powerful research tools and focused the Lab on energy and environmental problems. At the luncheon Andy showed a brief film clip on the presentation of the Award by the President in the Oval office. Andy was smiling and relaxed; he enjoyed the entire scene. He had a wonderful picture taken with President Obama and John Holdren (President's science advisor) that became the White House "Photo of the Day". What an awesome experience.

The EX-Ls acknowledgement of the contributions of Ed Lofgren and Andy Sessler to science and the Lab lead to several impromptu comments from the membership. These were wonderful vignettes that added to the history of the occasion and delighted the audience. Clearly, the "open microphone" concept has so much to offer. We plan to have the open microphone available at each luncheon and hope you will use it. It is a great way to communicate news and recent activities that are of interest to all of us. Please give it a try.

At the February luncheon we had Peggy Hellweg from the UCB Seismological Lab give an excellent talk on the seismic activity along the California coast and in our back yard. At this luncheon we also invited the Berkeley Fire Department to send a representative who could provide information on how to prepare for the next "big one". Sarah Lana, Emergency Services Coordinator, was the rep and she provided useful hand-outs on earthquake preparedness. What really got me was the realization that the EX-Ls is like a "small village"

pulling people together. As a result of Sarah's joining us for the luncheon she met Patrick Cullinane, Director of the UCB Retirement Center, and established rapport with that group. Importantly, Sarah also had an entrée into the UCB Seismology Lab; as a result the Berkeley Fire Department is now exploring possible partnership opportunities with the Seismology Lab.

It is with great pleasure that I can inform you all that the Director's Office plans to inaugurate an LBNL Retiree Reception. The hosts for this event include the Lab Directorate, the EX-Ls and the UCB Retirement Center. The Reception for recent retirees is planned for July 29, 2014, and will take place in the early evening in the Cafeteria. Members of EX-Ls are invited and this will be a great opportunity to let new retirees know about our organization. To read more about this Reception see the article by Connie Grondona in this Newsletter.

Enjoy our beautiful Spring and be well.  
Trudy Forte

### LUNCHEON SPEAKERS – MAY 22, 2014

**Speakers:** Shirley Streshinsky and Patricia Kraus  
Authors of "*An Atomic Love Story. The Extraordinary Women in Robert Oppenheimer's Life*"

### Topic:

Three women were central to the scientist's life. One was his best friend. One was his great love. One was his wife. And two of them were members of the Communist Party USA. See full abstract in this newsletter

Biographies of the speakers next page



## **BIOGRAPHIES OF SPEAKERS – May 22, 2014**

Shirley Streshinsky is a novelist, biographer, and journalist who has been widely published in the U.S. and abroad.

Her non-fiction books include the biography AUDUBON, LIFE AND ART IN THE AMERICAN WILDERNESS. Her first book was AND I ALONE SURVIVED, based on the experience of the sole survivor of a small plane crash in the Sierra Nevada Mountains, (with Lauren Elder), Literary Guild selection, Reader's Digest condensation, 18 foreign editions, and NBC movie for television; and OATS! A BOOK OF WHIMSY (with Maria Streshinsky).

Her historical novels include: THE SHORES OF PARADISE, GIFT OF THE GOLDEN MOUNTAIN, A TIME BETWEEN, and HERS THE KINGDOM. All were published originally in hardback by Putnam and paperback by Berkley, there were several editions in Europe, and three were best sellers in paperback. These titles along with the Audubon biography are all being reissued by Turner Publishing in 2014.

In a career that spans 40 years, Streshinsky's articles have been published regularly in such magazines as Redbook, the Ladies Home Journal, the Los Angeles Times magazine, and Glamour. Her travel stories have appeared in Travel & Leisure, Conde Nast Traveler, and scores of other publications. She has contributed to American Heritage, Preservation Magazine, AARP The Magazine and The American Scholar.

Her travel essays have been featured on National Public Radio's Savvy Traveler.

She is the recipient of the Society of Magazine Writer's Award for Excellence; the National Council for the Advancement of Education Writing award; she was cited by The Educational Press Association of America for "superlative achievement in features."

Patricia Klaus is an independent scholar who attended the University of California at Santa Barbara, and then Stanford University where she earned a Ph.D. in Modern British History. She taught twentieth-century British history at Yale University, was a visiting lecturer at the University of Virginia and Stanford, and has written a number of historical articles. Her particular interests are women in nineteenth and twentieth century England as well as the study of war and literature, which made working on a book about the remarkable women of the Atomic Age especially appealing.

Her love for history and literature is surpassed only by her love of horses and dogs. She left teaching to devote her time to raising her two sons and, later, to Hawkwood Hill Farm, an equestrian facility she owns with her husband, Robin, a business executive. Her son Ian was a

Rhodes Scholar and has a Ph.D. in history from Harvard University and now serves in the State Department, while Evan has spent the last five years in West Africa working for the Clinton Health Access Initiative. An accomplished equestrian, Patricia has competed in Three-Day-Eventing and Show Jumping. She has maintained her scholarly interests by reading incessantly, researching and editing books for friends and family, as well as serving on the University of California Press Foundation Board of Trustees.

While writing the book Patricia and co-author Shirley Streshinsky often marveled over how the lives of "our women" and others in the book were intertwined. Another one of the concurrences is that Patricia's father (who flew in Burma and China during the war) spent most of his Air Force career flying with the 509th Bomb Wing, whose predecessor the 509th Composite Group had dropped the first atomic bombs on Hiroshima and Nagasaki. Patricia grew up on Strategic Air Command bases in North Africa and Roswell, New Mexico, some 100 miles from the Trinity Test site.

More information is available at <http://atomiclovestory.com>.

### **EX-Ls Membership reminder.**

If you have not paid your 2014 membership dues, please do so before the 1 May deadline.

Membership dues are a bargain: \$15 for one year, or a one-time fee of \$150 for a lifetime membership (and no dues reminders!). Membership forms will be at the May 22 luncheon or can be downloaded from the EX\_Ls website: <http://www.lbl.gov/EX-Ls>, or contact the membership coordinator, Patti Powers-Risius, 525-9045, pattijac@icloud.com, and she will send you a form. If your renewal information has not changed, you may send a check made out to EX-Ls and mail to ;

LBNL EX-Ls  
1925 Walnut St. #1550  
Berkeley, CA 94720

### **SAVE THE DATE**

On Tues. July 29, 2014, the Laboratory Directorate will be sponsoring a Retiree Reception at the cafeteria. More information will be announced at the May 22 luncheon!

## ANDY SESSLER – (1928-2014)



Andrew Marienhoff Sessler passed away today (April 18, 2014), following a long illness. He was 85. The former director of Lawrence Berkeley National Laboratory was a visionary in accelerator and energy sciences, and was instrumental in the worldwide effort to liberate scientists suffering from political oppression. Born on December 11, 1928, Sessler showed an early talent for science, and was one of the first Westinghouse Talent Search finalists. He received a B.A. in mathematics from Harvard and a Ph.D. in physics from Columbia University. He was in the first group of National Science Foundation post-docs, working at Cornell University with Hans Bethe. From 1954 to 1959 he was on the faculty at Ohio State, after which he joined the Lawrence Radiation Laboratory, now the Lawrence Berkeley National Laboratory. He spent the rest of his career there and served as the Laboratory's third director from 1973 to 1980.

His many honors included the Ernest Orlando Lawrence Award in 1970, which is the U.S Department of Energy's highest scientific recognition; the American Physical Society (APS) Dwight Nicholson Medal in 1995; the APS Robert R. Wilson Prize in 1997; and the Enrico Fermi Award in early 2014. He was APS president in 1998.

Sessler made several key contributions to physics and accelerator science. His paper with J. Emery in 1960, together with a contemporaneous competing paper from Anderson et al., is generally acknowledged as the first to predict the superfluid transition of helium-3. His contributions to accelerator science, which began with his association with the Midwestern Universities Research Association, were pivotal for developing modern high-performance accelerators. They included a Hamiltonian-based radio-frequency acceleration theory, developing a method to produce intense circulating

proton beams by stacking, which made feasible very high-luminosity proton colliders, such as CERN's Large Hadron Collider, and a systematic study of beam instabilities at high intensity, which became the standard for all modern accelerator design. His 1981 proposal for a high-gain free electron laser (FEL) amplifier for high-power, mm wave generation, helped lay the foundation for the emergence of the era of x-ray FELs that began in 2009 with the successful start of operation of the Linac Coherent Light Source at SLAC. His basic concept for a two-beam accelerator that mixed high and low energies and currents was modified to become the Compact Linear Collider project at CERN, a candidate technology for a future multi-TeV electron-positron linear collider.

As director of the Lawrence Berkeley National Laboratory, Sessler ushered in a new era of research on energy efficiency and sustainable energy technology by establishing what would become the Energy and Environment Division, the first such group at any of the national laboratories. This was instrumental in transforming the mission of national laboratories from science labs to science, engineering, and energy labs. Under Sessler's leadership, Lawrence Berkeley National Laboratory grew to its largest size ever, with more than 5,000 employees, and expanded beyond its leading roles in physics, chemistry and biology to its current multi-program efforts.

Said Paul Alivisatos, the current director of the Lawrence Berkeley National Laboratory, "Andy Sessler changed the face and character of our Laboratory. He successfully made the case for science to aid our country during its first energy crisis and helped establish the Lab's efforts that brought about important technologies and standards that have improved the way we conserve and consume energy."

In addition to his ground-breaking work in particle accelerator and beam physics, and his leadership in directing the scientific research landscape toward new horizons in sustainable energy and the environment, Sessler was also an acclaimed humanitarian and public advocate for scientific freedom. His activities at the American Physical Society (APS) over many years helped transform its focus on "physics" to include "physics and society," with attention to national funding, patterns of employment, science education at all levels, societal issues involving physics, informing the public, international affairs, arms control, and, in particular, the human rights of his physics colleagues  
(continued next page)

## **Berkeley Lab Volunteer Program to Support Non-Profit Organizations**

Victor M Markowitz, head of the Biological Data Management and Technology Center (BDMTC) in the Computational Research Division at Berkeley Lab, spoke to our Board members about volunteer opportunities. Berkeley Lab has a volunteer program to support local community-based non-profit organizations (NPOs) address challenges in the areas of data collection and management, web presence, IT infrastructure maintenance, cloud based systems, and preparing grant proposals. Such NPOs tackle a wide range of economic, health, education and environmental problems, and have limited or no expert support in areas such as IT and grant proposal preparation.

Victor is the lead person in this endeavor which recently got off the ground with a project for the East Oakland Youth Development Center (<http://eoydc.org/>) which serves low-income students in East Oakland by providing various after-school and college preparation programs. Berkeley Lab volunteers will help improve EOYDC's data management system and provide occasional IT support. Help is needed for similar projects with other local NPOs such as The Mentoring Center (<http://www.mentor.org>).

If you would enjoy such a volunteer experience and have a few hours a week or month to contribute to aid community based NPOs, please contact Victor M Markowitz. Email: [vmmarkowitz@lbl.gov](mailto:vmmarkowitz@lbl.gov); phone: 510-486-7079

### **EX-LS EXECUTIVE BOARD OPENINGS**

The EX-Ls will have the following Board position vacancies that need to be filled by January 1, 2015. Interested EX-Ls members, who would like to be involved with the EX-Ls management, Berkeley Laboratory, and the UC Retirement Center, should contact Cheryl Fragiadakis, EX-Ls 2<sup>nd</sup> Vice President and Chairperson of the Nominating Committee by June 1. For more information, please email Cheryl at: [cheryl.fragiadakis@gmail.com](mailto:cheryl.fragiadakis@gmail.com).

#### **Positions to be filled:**

**2<sup>nd</sup> Vice President** - serves as Chairperson of the Nominating Committee and will assume the powers and duties of the President in case both the President and the 1<sup>st</sup> Vice President are absent or unable to act. The 2<sup>nd</sup> Vice President also serves as Executive Committee liaison to the Newsletter Editor and as Vice Chair of the Luncheon Speaker Committee.

**Secretary** –records and distributes the minutes of all Board meetings and, if relevant, of business transacted at General Membership meetings. He/she prepares the agenda for EX-Ls Board meetings with input from Board members. He/she maintains the official/historical files, records, and documents of the organization in accordance with the EX-Ls' Policy on Essential Documents.

### **Andy Sessler (continued from page 5)**

Intensely concerned about human rights, Sessler focused on scientists caught in political situations beyond their control. He wrote letters in support of dissidents in the Soviet Union and other countries. He was active on boards and committees that pursued human rights activities within many organizations, including the American Physical Society, the National Academy of Sciences, the New York Academy of Sciences, the Committee of Concerned Scientists, the Union of Concerned Scientists, and Amnesty International. He donated large sums of money to charities including Doctors without Borders, Berkeley Food and Housing, and FINCA (a global charitable microfinance organization).

Sessler was instrumental in initiating the APS Committee on International Freedom of Scientists and raising funds to endow the APS Sakharov Prize for Human Rights. Along with his colleague Moishe Pripstein, he was a co-founder of Scientists for Sakharov, Orlov, and Sharansky (SOS). Protests by SOS and others led to the release of these Soviet dissidents and to an overall increase in pressure by the scientific community in solidarity with their politically oppressed colleagues. He also was one of the principal organizers of the "good-faith witness" exchange, which earned the release of Elena Bonner, the wife of Andrei Sakharov, from the Soviet Union to the U.S. to receive medical care.

Sessler was an avid outdoor person and loved sharing physical activities, such as swimming, rowing, skiing, and bicycling, with family and friends. He was a mentor to many younger colleagues and to many his own age who learned much from him. Later in life, he could be found jogging with others during lunchtime, sharing jokes and solving physics challenges. Just as he loved sharing the outdoors, he loved sharing knowledge and seldom wrote scientific papers alone. A long-time friend and colleague expressed a sentiment shared by many who knew Sessler: "If there was ever a scientist for whom the physics community was at the center of his life and work, it was Andy Sessler."

### **Acknowledgement**

This article was prepared by Andy Sessler's longtime friends and colleagues Robert Budnitz, Kwang-Je Kim and Herman Winick.

## A Luncheon to Remember

The EX-Ls luncheon on February 20 was a very special occasion that we will remember for a long time. Amid balloons, sparkling cider and an atmosphere of anticipation, two very special members of our association were feted: Ed Lofgren for celebration of his 100<sup>th</sup> birthday and Andy Sessler for receiving the prestigious Fermi Award from President Obama.

Ed Lofgren is remembered by many of our members as the person who helped develop the Bevatron and later became its first director. He was the overseer of the Bevatron when the first anti-proton was discovered. In recognition of his leadership and expertise he became the first Director of the Accelerator Division.

At the luncheon Ed received many well wishes and a signed certificate from Director Paul Alivisatos. The photo below shows Ed holding the certificate surrounded by family and close friends.



Andy Sessler was our illustrious Director of the Lab between 1973-1980. Over his lifetime, he has made outstanding contributions to the world of beam-physics. His knowledge helped in the development of current particle accelerators and storage rings. He had the early foresight and wisdom to recognize the need for sustainable sources of energy and he went about establishing a new division, the Energy and Environment Division (now called the Environmental Energy Technologies Division).

In recognition of his many contributions and outstanding leadership in the field of particle physics and energy research, he was awarded the Enrico Fermi Award by President Obama. This award is one of the federal government's oldest and most prestigious awards recognizing scientific achievement. The photo below shows Andy with the President and his science advisor, John Holdren, in the Oval Office at the time of presentation of the award. All seem to be enjoying the occasion.



## **NEW LOCATION FOR LUNCHEON**

**HS Lordships Restaurant** located at the Berkeley Marina will be the location for our May 22 luncheon.

**Directions to restaurant:** On University Avenue, cross over freeway, proceed to the Marina and veer left at the Y. Continue to end of road and turn left at the stop sign, and then turn left into restaurant parking lot.

**Parking:** Free - large lot

**Banquet Room:** Banquet room is located to the right of the main entrance doors.

**Luncheon Service:** Buffett style

**Registration Deadline:** **May 16** – **Seven day** notice to restaurant for number of members attending luncheon.

## **RETIREMENT CENTER UPDATE**

As I write my last column, I am moving closer to my "retirement" date of June 27. Although my time at Cal has been brief compared to most of our retiree population, the time has been a rich experience of a great institution served very well by talented, committed and interesting people. One especially enjoyable experience has been my time working with retirees from the Lab. As I said at the recent EX-Ls board meeting, it has been a pleasure to work with the EX-Ls and the Lab in ensuring access for Lab retirees to campus and other resources to help them stay connected, nurture their curiosity and creativity and get answers to pension and benefit and other later life concerns in a timely and responsible manner. EX-Ls represent intelligent and interesting people that I will miss interacting with. I hope to maintain some connection to the EX-Ls by attending their always interesting and engaging luncheon presentations.

### **New Center Director**

As I transition to my next chapter in life, the Office for the Faculty and a search committee of representatives from the four retiree associations have begun to review Center Director applications. If all goes well, we hope to have the new Director on board by the beginning of the fiscal year on July 1.

### **Database and Website Improvements**

The Center continues to move forward with a database modernization project. A new customer relations management system by Salesforce is up and running. With expert help and additional software, we will next build a web interface to allow retirees, if they choose, to conduct almost all program activity online. This means you will be able to register for programs online, purchase parking permits and pay any program fees with a credit card and check and update your contact information.

### **Center Summer Programs**

Due to the transition in Center leadership this summer and the remaining significant work on the database and website, the Center's programming this summer will not be as robust as usual. We will need to put our annual picnic and golf outing on hold. If database and Director actions proceed well, then we will schedule those events later in the summer and alert retirees by email. The use of email for such updates and other breaking news is a good reason to be sure the Center has your email address.

### **Lab Honors Retirees**

As noted elsewhere in this newsletter, the Lab plans to honor recent Lab retirees this summer. The Center will help that effort.

### **Fall CUCRA-CUCEA Meeting**

This fall UC Berkeley, the Lab and OP retiree associations will host the meeting of CUCRA-CUCEA (Council of UC Retiree Assns. and Council of UC Emeriti Assns.) The meeting will be held Oct 22-23 at the UC Berkeley Alumni House. A planning committee of representatives from each association is working with the Center on the two day meeting. If interested, retirees will have the opportunity to observe the meeting and to volunteer to help.

### **Fitness for Longevity**

Plans are underway with the UCB Rec Center on a summer fitness program for retirees. Currently titled Fitness for Longevity, the program would be offered over a six week period by professional fitness coaches at RSF and include workshops on healthy habits. If all goes well, the pilot effort will be announced in the summer Center newsletter.

### **One-on-One Appointments with Fidelity Guidance Consultants**

**Thursday**, May 22, 9am-5pm and **Friday**, April 25, 9am-5pm we have arranged to have Fidelity Planning and Guidance Consultants available by appointment at the Retirement Center. They'll be glad to meet one-on-one with you to establish a plan that includes an annual review of your portfolio and professional guidance on investments and goal planning. To schedule a confidential consultation at the Retirement Center, call us at 510-642-5461. You may also call Fidelity directly at 1-800-558-9182 or go online to [ucfocusonyourfuture.com](http://ucfocusonyourfuture.com) to schedule an appointment for a date that is more convenient for you.

### **Email Addresses**

If the Center has your email address, then we can be sure you are included in email alerts about developments, like open enrollment, that impact the lives of retirees. You can share your email address with the Center by calling 510-642-5461 or writing to [ucbrc@berkeley.edu](mailto:ucbrc@berkeley.edu).

### **Retiree ID Card**

Your retiree ID card gives you access to many campus discounts, use of the campus libraries and other services. The card is free. If you do not have one, call or email the Center or drop by the office between 1 and 4 p.m. any workday.

You are always welcome in our offices. We are conveniently located at 1925 Walnut St. in Berkeley.

Be well, goodbye, hello!

Patrick C. Cullinane, Director  
UCB Retirement Center

## TURKEYS INSPIRE SMARTPHONE-CAPABLE EARLY WARNING SYSTEM FOR TOXINS

By [Sarah Yang](#), Media Relations, Berkeley

January 21, 2014

Some may think of turkeys as good for just lunch meat and holiday meals, but bioengineers at UC Berkeley saw inspiration in the big birds for a new type of biosensor that changes color when exposed to chemical vapors. This feature makes the sensors valuable detectors of toxins or airborne pathogens.



Researchers took inspiration from the way turkey skin color is altered to create a new sensor that can change color when exposed to volatile chemicals. (Photos by Valerie Burtchett)

Turkey skin, it turns out, can shift from red to blue to white, thanks to bundles of collagen that are interspersed with a dense array of blood vessels. It is this color-shifting characteristic that gives turkeys the name “seven-faced birds” in Japanese and Korean.

The researchers say that spacing between the collagen fibers changes when the blood vessels swell or contract, depending upon whether the bird is excited or angry. The amount of swelling changes the way light waves are scattered and, in turn, alters the colors we see on the bird’s head.

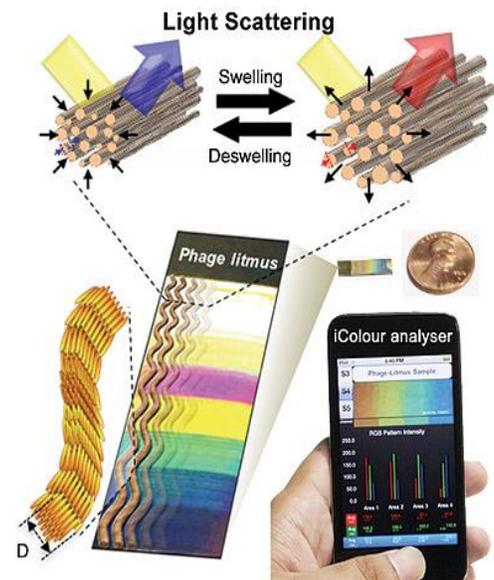
Seung-Wuk Lee, UC Berkeley associate professor of bioengineering, led a research team in mimicking this color-changing ability to create biosensors that can detect volatile chemicals.

“In our lab, we study how light is generated and changes in nature, and then we use what we learn to engineer novel devices,” said Lee, who is also a faculty scientist at the Lawrence Berkeley National Laboratory.

The researchers created a mobile app, the Colour Analyzer, to show that a smartphone photo of the sensor’s color bands could be used to help identify chemicals of interest, such as vapor of the explosive TNT. They described their experiments in a study published today (Tuesday, Jan. 21) in the journal *Nature Communications*.

Sensors that give off color readings are easier to use and read than conventional biosensors. However, the major color-based sensors in development elsewhere can only detect a limited range of chemicals and, according to the researchers, they can be very difficult to manufacture.

“Our system is convenient, and it is cheap to make,” said Lee. “We also showed that this technology can be adapted so that smartphones can help analyze the color fingerprint of the target chemical. In the future, we could potentially use this same technology to create a breath test to detect cancer and other diseases.”



Bio-inspired sensors are made from bacteriophages that mimic the collagen fibers in turkey skin. When exposed to target chemicals, the collagen-like bundles expand or contract, generating different colors. The researchers also created a mobile app to be used with smartphones to help analyze the sensor’s color bands. (Schematic courtesy of the Seung-Wuk Lee Laboratory)

In copying this turkey-skin design, Lee and his team employed [a technique they pioneered](#) to mimic nanostructures like collagen fibers. The researchers found a way to get M13 bacteriophages, benign viruses with a shape that closely resembles collagen fibers, to self-assemble into patterns that could be easily fine-tuned.

The researchers found that, like collagen fibers, these phage-bundled nanostructures expanded and contracted, resulting in color changes. The exact mechanism behind the shrinking or expanding phage bundles is still unclear, but it’s possible that the small amount of water in the phage is reacting to the chemical vapors, the researchers said.

The turkey-inspired biosensors were exposed to a range of volatile organic compounds, including hexane, isopropyl alcohol and methanol, as well as TNT, at concentrations of 300 parts per billion. The researchers found that the viruses swelled rapidly, resulting in specific color patterns that served as “fingerprints” to distinguish the different chemicals tested.

The researchers showed that the biosensor’s specificity to a target chemical could be increased by genetically engineering the DNA in the M13 bacteriophage to bind with sites specific to TNT. The biosensor was then exposed to two additional chemicals, DNT and MNT, which have similar molecular structures to TNT. The engineered biosensor successfully distinguished TNT from the other chemicals with distinct color bands.

The biosensors were also able to signal changes in relative humidity, ranging from 20 percent to 90 percent, becoming redder with moister air and bluer with drier air.

The study lead author is Jin-Woo Oh, a former postdoctoral researcher in Lee’s lab and now an assistant professor in the Department of Nanomaterial Engineering at Pusan National University in South Korea.

The National Science Foundation, the Defense Acquisition Program Administration and Agency for Defense Development in South Korea, Korea’s Ministry of Education, Science and Technology, and Samsung helped support this work.

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### **SUMMARY OF DR. PEGGY HELLWEG’S TALK AT FEBRUARY 20<sup>th</sup> LUNCHEON**

The Feb 20<sup>th</sup> luncheon speaker was Dr. Peggy Hellweg Operations Manager of the Berkeley Seismological Laboratory (BSL) at UC Berkeley.

Dr. Hellweg gave an interesting and informative talk titled “Earthquakes in our Backyard”.

Dr. Hellweg gave an entertaining talk with thought provoking information that we need to consider when thinking “earthquakes”. Some interesting and informative points brought up are summarized below.

Earthquakes occur at the earth’s Plate edges. There are three types of plate margins - transform, oceanic/continental, and divergent margins. The movement along the various edges can be strike-slip, thrust/reverse or normal.

In our area the pacific plate is sliding northward along the North American plate creating three main faults, the

San Andreas, the Hayward, and the Calaveras Faults. All of these faults are “strike-slip” types and, in fact, the Pacific Plate is moving to the north at a rate of about 2.5 in. per year.

Geodetic/GPS measurements verify the plate movement and geological studies have shown that the movement over 20 million years has changed the California coast. A video of the movement can be found here: [http://emvc.geol.ucsb.edu/1\\_DownloadPage/Download\\_Page.html](http://emvc.geol.ucsb.edu/1_DownloadPage/Download_Page.html)

Studies of the historical earthquakes in our area have led scientist to say that there is a 63% probability that one or more magnitude 6.7, or greater, earthquakes will occur in the San Francisco Bay Area in the next 30 years.

A video of magnitude 7.0 Hayward fault earthquake scenario can be found at: <http://earthquake.usgs.gov/regional/nca/simulations/hayward.>)

The BSL’s mission is to reliably produce seismic data of high quality, to report quickly and reliably on Northern California earthquakes, and to develop and implement useful new earthquake information products. This is done through a network of seismic monitoring stations as well as 30 borehole stations in the Bay Area and near Parkfield, CA. Bay Area earthquakes have been monitored since 1887. The BSL is also a member of the California Integrated Seismic Network, that operates more than 3000 seismic stations in California.

Research studies include whether the non-volcanic tremor at Parkfield is a precursor to big earthquakes and whether the earth’s “hum” is evidence of climate change (Rhie and Romanowicz, 2005), and a study of seismic shear-wave velocity beneath the central Pacific (French et al, 2013). Other sources of seismic waves, e.g. nuclear explosions and mine collapse can also be detected and identified.

Without more funding for monitoring stations and research earthquakes cannot yet be reliably predicted. However, an earthquake early warning system is being tested. In this system a stream of earthquake information starts with the first trigger of movement and can give users a 5 second-arning and estimate of the intensity as well as instructions such as “Get under desk”.

Widespread use of such a system, which is similar to that used in Japan, will not be available until the public is trained how to respond calmly and reasonably.

More information on earthquakes and research can be found on the BSL’s blog at <http://seismo.berkeley.edu/seismo.blog.html>

## 2014 AROHE CONFERENCE

\*Register for the 2014 AROHE Conference by June 20 for best rate\*

The AROHE biennial Conference <http://arohe.org/EmailTracker/LinkTracker.ashx?linkAndRecipientCode=eW3s8e5Ao3aagaxq0%2fw5AAIEe%2fCY%2fbTKMtizb%2fXRw7GxtLaCJ0WSIKABj%2fq%2bP%2bUq6mo8iD911scFd%2bBKs7UqBKT0Jj7Bi0AqWiA26ypNC5c%3d> offers two full days of stimulating workshops, discussions and networking opportunities for retiree organization leaders.

**\*Who should attend the conference?\***

- Retirees interested in starting or improving a retired faculty/staff association
- Leaders of retiree/emeriti centers or emeriti colleges
- Campus administrators wanting to utilize the talent and skills of retired faculty and staff

**\*Why should you attend?\***

- Save time and money by learning about successful practices and valuable resources on a variety of topics, including:
  - \*CONNECTING\* to diverse retiree populations
  - \*BUILDING\* effective advocacy programs
  - \*CREATING\* marketing and promotional materials
  - \*SUPPORTING\* the transition to retirement
  - \*HONORING\* and recognizing retirees

**\*Conference Attendance Toolkit\***

Even small organizations with modest budgets have realized a great return on investment by sending one or more representatives to the conference. Others have obtained professional development funds from their campus to attend. AROHE has developed a “\*Conference Attendance Toolkit

<http://arohe.org/EmailTracker/LinkTracker.ashx?linkAndRecipientCode=O1uomszymUqR0vuEw3L6ZJ3romarpyLDSeS2ET7m8qpQSSpmhEkqa5a%2bRSbsj2Naxw5NpPDnhDKH4idf%2f6TV8HJCWbml6eD%2fwHsnWPawBDI%3d>”

that you can use to demonstrate to your Board of Directors or your campus administration that attending the conference will benefit your organization and the campus as a whole.

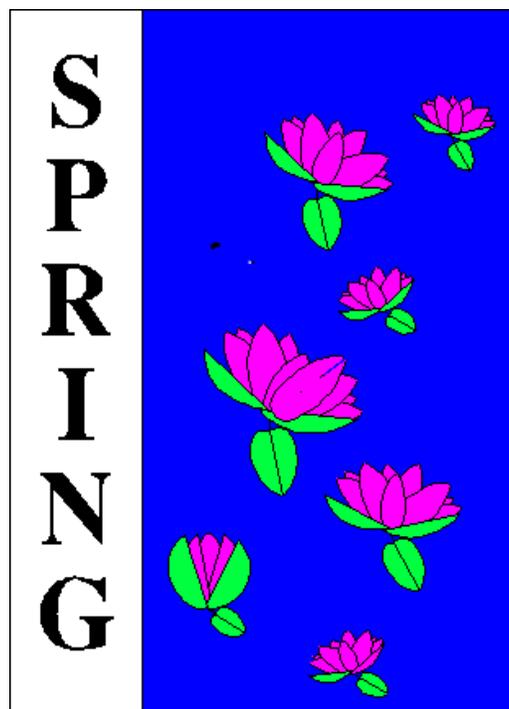
**\*Registration\***

Early bird registration discounts are available through \*June 20\*. Click here to register <http://arohe.org/EmailTracker/LinkTracker.ashx?linkAndRecipientCode=hvnucEi4n2YwZn%2bRGmrpCA0hufxPyO3rqOp1xxwmqvbWPjnUV9HWX253Ivna kbG1NjzHU5RkvUiCxrVokF52EhfAFtZs%3d>

**\*More information\***

Additional details on costs, featured speakers, the pre-conference workshop, an optional Twin Cities tour and the conference hotel are available on the conference website. Click here for more details <<http://arohe.org/EmailTracker/LinkTracker.ashx?linkAndRecipientCode=eW3s8e5Ao3aagaxq0%2fw5AAIEe%2fCY%2fbTKMtizb%2fXRw7GxtLaCJ0WSIKABj%2fq%2bP%2bUq6mo8iD911scFd%2bBKs7UqBKT0Jj7Bi0AqWiA26ypNC5c%3d>>

If you have questions or need additional information, please contact AROHE at [info@arohe.org](mailto:info@arohe.org) or (213) 740-5037.



## EXCITING NEW UC TRAVEL OPPORTUNITIES FOR 2014-15

What a wonderful way to get into the Holiday spirit by partaking in the **"Classic Christmas Markets"** in Austria, France and Germany. The tour commences on December 13, 2014 and for the following 9 days you will be traveling through the Black Forest, Strasbourg, Franconia Region, Wurzburg, Nuremberg, Neuschwanstein Castle, Oberammergau, Munich and Innsbruck enjoying their Christmas markets. The base price is \$3,299. Book now and save \$250 per person. Booking No. 620646.

Discover the magic and wonder of **"Antarctica"** aboard the stylish and comfortable MS Fram. The 18-day tour, departing December 31, 2014, includes Buenos Aires, Ushuaia, Tierra del Fuego National Park, Home-Hosted Dinner, The Drake Passage, Half Moon Island, Deception Island, Paradise Harbor, Antarctic Sound and Port Lockroy. Pricing starting as low as \$11,699. Book now and save \$250 per person. Booking No. 563669.

Welcome to Spring and the **"Reflections of Italy."** This tour begins March 25, 2015 in "The Eternal City" of Rome. For the next 9 days you will be enjoying the sites of Assisi, Perugia, Siena, Florence, Venice, Murno Island, Lugano, Switzerland and Como. The base price is \$3,999. Book now and save \$250 per person. Booking No. 620653.

**"Magnificent Cities of Central & Eastern Europe"** featuring Berlin, Prague, Vienna, Budapest, Krakow and Warsaw. This 14-day tour will depart April 19, 2015 with a base price of \$4,299. Book now and save \$250 per person. Booking No. 620662.

If you have never been to the British Isles, the tour **"British Landscapes"** is a wonderful 10-day journey through England, Scotland and Wales. This Spring tour departs April 23, 2015 and has a base price of \$3,849. Book now and save \$250 per person. Booking No. 620668.

If you enjoy music, this tour beginning April 26, 2015 is for you: **"America's Music Cities"** featuring New Orleans, Memphis and Nashville. You will be touring the French Quarter, New Orleans School of Cooking, Swamp Tour, Graceland, Grand Ole Opry and Backstage Tour, Historic RCA Studio B, Country Music Hall of Fame, Ryman Auditorium and the Wildhorse Saloon. The base price for this fun tour is \$2,499. Book now and save \$100 per person. Booking No. 620682.

For more information/reservations contact Collette at 1-800-852-5655 and mention the Booking Number. All tour costs are per person, double occupancy and include round trip airfare from LAX. Remember, you do not have to be a UC retiree to enjoy these tours; feel free to invite your family and friends. But please mention if you are a UC retiree so that CUCRA will get a commission. Also, if the commencement date for a tour is not convenient for you, Collette has other departure dates that you can consider.

**Travel Brochures will be available at the May 22 Luncheon at HS Lordships.**



Andy Sessler greeting friends

## **FEBRUARY LUNCHEON GUEST LIST**

Jose Alonso	Harvey Gould	Marty Morimoto
Richard Baker	Don & Becky Grether	Fred Perry
Winnie Baker	Connie & Edward Grondona	Conway Peterson
Tom Beales	Herman Grunder	Tayce Phillipson (Lofgren's relative)
Robert Belshe	Lilian Hawkins	Arthur Poskanzer
Roy Benedict	Dawn Holly	Esther Schroeder
Edward Bennett	Egon & Annette Hoyer	Clay Sealy
Igor Blake	Joe Jaklevic	Rich & Joan Sextro
Kay Bristol	Vicky & Richard Jared	Brenda Shank
Jerry Bucher	John & Ann Kadyk	Clair Shigley
Patrick Cullinane	Joseph Klems	Ben Shuey
Diane D'Aoust	Judy and Stan Kody	Betsy Smith
Eleanor Dahl	Matt Kotoski	Karen & Bob Springsteen
Janis & Ned Dairiki	Shara Lana (City of Berkeley)	Frank & Marie-Agnes Stephens
Genevieve Dreyfus	Richard LaPierre	Sandra Stewart
David Edgar	Almon Larsh	William Turner
Tom & Ione Elioff	Branko & Ana Leskovar	David Vanecek
Ben & Mary Feinberg	Anna Mae & Richard Morrish	Irma Vogel
Pauline Fleischer	Dough McWilliams	Louise Vogelsberg
Trudy Forte	Robert Miller	Weiyuan Wu
Cheryl Fragiadakis	Ken Mirk	Allan Zalkin
Rick Gould	Nancy & Vic Montoya	

Guests: Peggy Hellweg, Ed Lofgren and Andy Sessler

Raffle Prize Winnters: Bob Belshe, Almon Larsh and Clay Sealy

# EX-Ls Luncheon

**Date:** Thursday, May 22, 2014

**Where:** HS Lordships Restaurant, 199 Seawall Drive, Berkeley Marina

**Time:** Doors Open at 11:30 AM - Lunch Served about 12:00

Bar Service: Opens at 11:30



**New Location: HS Lordships Restaurant**

**Time:** 11:30 AM - Lunch Served at 12:00 (or there about)

**Bar Service:** Located left of the entrance door - opens at 11:30

**Luncheon Speakers:** Shirley Streshinsky and Patricia Klaus authors of the Book entitled "[An Atomic Love Story: The Extraordinary Women in Robert Oppenheimer's Life](#)"

**Topic:** Three women were central to the scientist's life. One was his best friend. One was his great love. One was his wife. And two of them were members of the Communist Party USA. See full abstract in this newsletter.

**Buffet Selection:**

**First Course:** Caesar Salad, Fresh Fruit in Season, dinner rolls and butter.

**Entrees:** Sliced Tri Tip, Portobello Mushroom Ravioli, Scalloped Potatoes, Green Beans Amandine

**Desserts:** Assorted Desserts, Coffee, Tea, Decaf and Iced Tea

**Cost: \$30 per person (prepaid)**

**Reservations:** Computer access to the LBNL/EX-Ls Web page ([www.lbl.gov/EX-Ls](http://www.lbl.gov/EX-Ls)) will also give you the lunch form. Vicky must receive your reservation by Friday, May 16. Please mail form to Vicky Jared, 4849 John Muir Road, Martinez, CA 94553. Call (925) 228-2145 - or email to: [jaredrv01@aol.com](mailto:jaredrv01@aol.com) if you want to sign up or have questions.

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See you at the **May 22 luncheon at HS Lordships Restaurant**. Be sure to make reservations by Friday, **May 16, 2014**.  
Mail To: Vicky Jared, 4849 John Muir Road, Martinez, CA 94553

From: \_\_\_\_\_

I Plan to attend the EX-Ls Luncheon **\$30 per person** PREPAID

I will bring \_\_\_\_\_ guest(s)

Name(s) of Guest(s): \_\_\_\_\_

**Menu is Buffet: Advance Choice is not required**

Please make check payable to **EX-Ls** Total Enclosed: \$ \_\_\_\_\_

Willing to carpool: As Rider? \_\_\_\_\_ As Driver? \_\_\_\_\_

Need to sit closer to the Screen? \_\_\_\_\_ Other: \_\_\_\_\_

Wish Assistance with Buffet? \_\_\_\_\_