

# Silicon Valley Chemist

Santa Clara Valley Section

American Chemical Society

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## January Dinner Meeting: Mosher Award Drug Discovery: Where have we been and where are we going?

Dr. Paul S. Anderson

### Abstract

Early practitioners of medicine used preparations of naturally occurring materials to achieve therapeutic benefit with little knowledge of the material's chemical composition or information about how the benefit was achieved. Over time, these endeavors evolved into a formal process for drug discovery in which medicinal chemistry has played a key role. Understanding molecular structure and its relationship to biological activity was central to this evolutionary process. Today, targets for drug discovery are selected based on un-met or under-met medical need. These objectives are pursued through specific biochemical mechanisms for drug action that link the target to the experimental biology. Active molecules are discovered and designed with the mechanism of drug action in mind. Often the discovery process is facilitated by knowledge of the target's molecular structure. Molecules are optimized for fit to the target as well as for other drug-like properties by exploring a full range of ADMET parameters. While the advances in science that have enabled this process are truly remarkable, the power of a good idea in the mind of a medicinal chemist frequently determines



whether or not the discovery effort will be successful.

### Biography

Dr. Anderson obtained his B.S. in chemistry from the University of Vermont in 1959 and his Ph.D. in chemistry with R. E. Lyle at the University of New

Hampshire in 1963. After a postdoctoral appointment with Professor Meinwaid at Cornell, he joined the Merck Sharp and Dohme Research Laboratories where he quickly moved from Senior Research Chemist to Research Fellow to Director of the Medicinal Chemistry Department to Vice President for Chemistry at the West Point research facility. He was Senior Vice President of Chemical and Physical Sciences for the DuPont Pharmaceuticals Company in Wilmington, Delaware. Dr. Anderson recently retired as Vice President, Drug Discovery, Bristol-Myers Squibb Company in Wilmington. He currently serves on the Board of Directors of several companies.

Dr. Anderson and his co-workers at Merck were involved in research

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## Chair's Message

It's been 50 years we've been a Section of ACS. We were honored by the visit of Dr. William Carroll, President-elect of the ACS, who helped us celebrate our anniversary; how appropriate it was during National Chemistry Week, a time to celebrate chemistry. Dr. Carroll's meetings with students and teachers at Buchser Middle School, San Jose State University, Santa Clara University, and Stanford were most appropriate as these events offered an opportunity to see chemistry at its instructional roots here in the Santa Clara Valley. The exchange between the President-elect of our national society and those students who are trying to find out where they fit in was substantive in that ideas and concepts about the future of chemistry in our lives were discussed. The conversation included such topics as student educational needs for content and materials, how the public perceives chemists and chemistry in general and what ACS and our Section are doing or can do to further the science and practice of chemistry.

This brings me to talk about what our Section is up to. We have provided a program of dinner meetings and

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*Drug Discovery, continued from front page*

directed at the design and synthesis of molecules that act at neurotransmitter receptors such as MK-801, enzyme inhibitors such as simvastatin, a potent cholesterol lowering compound, and drugs for the treatment of glaucoma. These studies led to TRUSOPT, the first topical carbonic anhydrase inhibitor for treating glaucoma and ZOCOR, a frequently prescribed drug for lowering cholesterol levels.

More recently, Dr. Anderson has directed extensive medicinal chemistry efforts at Merck and DuPont Pharmaceuticals Company committed to discovery of new chemotherapy for AIDS. These efforts led to synthesis of inhibitors of HIV-1 reverse transcriptase and of HIV protease. The HIV protease inhibitor, CRIVAN, and the HIV reverse transcriptase inhibitor, SUSTIVA, resulted from this work.

Dr. Anderson has served as Chairman of numerous committees, councils, boards, and conferences. To name a few more recently, he has been a member of the National Advisory General Medicinal Sciences

Council of the National Institutes of Health and the National Research Council, Board on Chemical Sciences and Technology. In 1997, he served as President of the American Chemical Society.

In 1994, he retired from Merck to become the Senior Vice President for Chemical and Physical Sciences at the Dupont-Merck Pharmaceuticals Company that became Dupont Pharmaceuticals Company in 1998. He received the E. B. Herschberg Award for important discoveries in medicinal-ly-active substances from the American Chemical Society in 1995. He received a Doctor of Science Honoris Causa from the University of Vermont (1998) and a Doctor of Chemistry Honoris Causa from the University of New Hampshire (2001). Dr. Anderson was the recipient of the American Chemical Society Award in Industrial Chemistry in 2001, the Perkin Medal in 2002 and the National Academy of Sciences Award for Chemistry in Service to Society in 2003.

*Chair's Message, continued from front page*

talks about how chemistry is involved with our health and well being with such topics as biotech, mad-cow disease, industrial hygiene and the chemistry of eating "good" chocolate. As you know, the theme of National Chemistry Week in October was Health & Wellness & Chemistry and the Sally Ride Science Festival at Stanford provided an opportunity for families and members to have some fun with chemistry. And coming soon is another Teachers Workshop to be held at Roche in Palo Alto. Watch for details.

Coming next year is an exciting program that will include opportunities for members to get involved with students as Volunteer Student Coaches to help young aspiring students prepare their resumes as they enter the job market. Stay tuned for more information on this. In the planning stages are meetings and get togethers at places like the Monterey Bay Aquarium and the Stanford Linear Accelerator. But to make it more interesting and worthwhile, we need your input. What is it you want for yourself and the Section? When the Section Survey gets to you, please take some time to look it over and submit your survey comments to us. At the same time, consider volunteering to participate in any of our Committees of Program, Finance, Women Chemists, Silicon Valley Chemist Newsletter and Chememployment. Contact any of our Section Officers, Councilors or Alternate Councilors for more information. We are also working with the California Section, AIChE and others to develop joint activities to benefit all of our memberships.

As I stated last month, we are on the lookout for "new solutions" and some new "reactants" a few "free radicals" to help us keep chemistry in the forefront. This means you and your ideas and participation.

Check out

<http://www.scvacs.org/>.

See you at our next meeting.

## Thoughts to Ponder....

I came to understand that you best lead by serving the needs of your people. You don't do their jobs for them; you enable them to learn and progress on the job. —Ken Melrose

Who gossips with you will gossip of you. —Irish Proverb

Having fun is simply holding on to the joy of each day. —Judith Harlan

It's easy to make a buck. It's a lot tougher to make a difference. —Tom Brokaw

I think that I had better remain as I am. I had better follow the light of my reason, be true to myself, express my honest thoughts, and do the little I can for the destruction of superstition, the little I can for the development of the brain, for the increase of intellectual hospitality and the happiness of my fellow-beings. One World at a Time. —Robert G. Ingersoll

Simplifying your life frees up time for you to figure out what really matters. —Elaine St. James

If you do not believe in yourself you cannot expect other people to believe in you. —Cyrus Hepplewaite

## VIEW FROM THE BOARD

Stanley Pine, ACS Director - District VI

Continuing my goal of communicating with the members, I want to bring you up to date on some of the ACS activities. I will try to keep you informed and ask that you do the same for me. You may also want to look at my web site, ([www.stanleypine.org](http://www.stanleypine.org))

High School Chemistry Teacher Membership - The ACS Council, at the Philadelphia national meeting, approved a bylaw change to include a specific membership category for pre-college teachers in the chemical sciences. The goal, which I have been promoting for several years, is to make these teachers feel welcomed into our professional society. I expect that the Board will approve the change later this Fall.

I suggest that local sections use this change as a catalyst to reach out to their high school teacher colleagues. Although we have many teachers who are affiliate members, we would like them to take a more active role in our professional society as full members.

President-elect Bill Carroll, has proposed several initiatives to attract teachers. He is also very interested in programs that encourage chemists into a second career as a teacher.

Employment - The latest ACS salary survey (C&EN, August 16, 2004) paints a good and a bad picture. For those chemical scientists that are fully employed, salaries are up somewhat. And I note that the highest average salaries are in the west coast states where many of you in District VI work. But the downside is that unemployment remains at a relatively high level.

The ACS is striving to better serve its members who are unemployed, underemployed, or just looking for a change. The new Chemical & Engineering News Classifieds and [www.JobSpectrum.org](http://www.JobSpectrum.org) have joined together to launch Chemjobs, an online job website dedicated to the employment needs of the chemical enterprise. Chemjobs features online-only job postings as well as classified

ads from Chemical & Engineering News. ACS members are offered a special advantage in that online ads from C&EN Classifieds are limited to ACS members for the first two weeks from the date they are published. ACS members may also place situations wanted ads for low or no cost; this unique membership service gives ACS members an opportunity to get employer's attention in the country's leading publication for chemists. Log on at [www.cen-chemjobs.org](http://www.cen-chemjobs.org).

And we must not forget the Academic Employment Initiative (AEI) begun this year by ACS President Charles Casey. Its goal is to ensure that those interested in academic employment have the greatest possible exposure to potential employers. Over 120 candidates displayed their qualifications in posters presented at the Philadelphia meeting.

### Change in Voting Procedures

Also at the Philadelphia meeting,

the ACS Council approved a bylaw change that will allow ballot options, in addition to mailed ballots, for ACS elections. This generated considerable discussion since the intention is to explore methods of electronic voting. The presenters of this change provided the Council with several plans that would ensure security and also provide appropriate alternatives so that no member would be disenfranchised. I expect that the Board will approve this bylaw change later in the Fall.

### Local Section/Division Recognition

Recognition of outstanding activities by ACS Sections and Divisions takes place at the ChemLuminaries awards during the Fall national meeting. Most categories depend upon self nomination through your annual report due each year in early February. Do provide an illustrative description of those great things your section or division is doing.

Log on to [www.chemistry.org](http://www.chemistry.org) for the broadest connection to ACS and its services

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## Reconnecting with Old Friends

Another key initiative of the ACS Membership Division in 2004 has been focused on converting graduating students to full ACS members and reinstating lapsed members.

As you know, undergraduate students can be a part of ACS as "student affiliates" for a lower fee with a corresponding package of reduced member benefits. In the past, it has been difficult converting these affiliates into full members once they have graduated, simply because this is a time when money can be tight for many of these job-seeking chemists.

Therefore, the Membership Division gives special consideration to these up-and-coming members, by offering them 50 percent off the full membership dues for their first year, to help them get on their feet in a chemically-related profession! We believe the ACS employment services and programs are ideally beneficial to them as they enter the professional

marketplace. Our strategy seems to work: applications come in steadily, and new graduates can take advantage of the various ACS career services including the job counseling services and interviewing opportunities at our twice-yearly national meetings. It's a win-win situation for everyone involved!

Our other targeted group is made up of former members who, for whatever reason, let their ACS membership lapse in the past 3-4 years. We lost touch with many of them through relocations, changing jobs, or other unforeseen events. Having made an effort to acquire their new addresses, we have sent them special mailings, asking them to reenlist in the Society and reconnect with friends and colleagues at the next national meeting. We hope that you might chance upon one of these old friends the next time you attend an ACS meeting - please be sure to tell them "welcome back!"

## New Program Aims to Help Mature Chemists

ACS industrial members age 45 and over who have lost their jobs, or have been given notice that they will become unemployed by December 31, are eligible for a pilot program that aims to assist them to return to work.

Five mid- and late-career members will receive financial subsidies to receive professional career coaching and to participate in the Chemjobs Career Center at the Spring 2005 National Meeting in San Diego. The ACS Department of Career Services with the support of Corporation Associates launched the new program, "Member Career Outreach," this fall.

Data show that mature chemists (age 45+) face very different challenges in securing employment than younger chemists. Not only are older workers more likely to be unemployed and to experience lengthy periods of unemployment, but they also may lack recent experience in looking for a job, face greater family and financial responsibilities than younger candidates, have outdated skills, bring unrealistic expectations to the job search, and suffer age discrimination.

According to data from the 2004 ACS Comprehensive Salary and Employment Status Survey, the unemployment rate is positively correlated with age. Not only is the unemployment rate higher for older chemists, but also chemists over the age of 45 are likely to experience a lengthier period of unemployment than younger chemists. According to the latest survey, as of March 1, 2004, 38.5 percent of the unemployed age 45+ had been unemployed for a year or more, while

only 17 percent of those under age 45 were unemployed for a long period.

The "Member Career Outreach" program will help grantees in four essential ways:

- It will provide financial support to receive professional career coaching, purchased online and delivered via telephone and e-mail. This personal, one-on-one assistance can help members refine their job-search strategy.
- It covers travel expenses to attend the Spring 2005 National Meeting in San Diego. This will enable grantees to participate in Chemjobs Career Center, including taking interviews with prospective employers and attending workshops and technical sessions.
- A reception for mid- and late-career job seekers and selected employers will be held at the San Diego National Meeting. This will afford grantees an opportunity to interact informally with other chemists, including prospective employers. Networking is known to be one of the main mechanisms by which job seekers learn of job opportunities and eventually secure positions.
- Each participant will receive a career transition workbook developed by the Department of Career Services. The workbook will guide ACS members through the stages of the career transition process as well as provide a record-keeping system for tracking the progress of their job search.

After advertising "Member Career Outreach" in Chemical & Engineering News, DCS will select awardees by a combination of lottery and evaluation of their application materials with the assistance of the Subcommittee on Professional Services of the Committee on Economic and Professional Affairs (CEPA). CEPA reviews ACS career programs and services. Those selected for the program will be notified in early January.

To apply for the program or for further information, contact Elaine Diggs (e\_diggs@acs.org).

## Editor's Corner A Call to Volunteer!

Happy autumn! Are you interested or have you ever thought how you can get more involved with your local section? Now is your chance! There are many opportunities to become more involved with the local section activities. Since I have become involved as the newsletter editor - about three and a half years ago - not only have I learned about editing the newsletter, I have also developed many professional and personal relationships with other involved section members. I would encourage you to volunteer for the local section because it will be worth your time!

If you are interested in learning about possible volunteering opportunities, please let me or any other executive committee member know! Our contact information is on the back of the newsletter.

We look forward to hearing from you!



Bill Carroll stops for a photo.

## International Chemistry Olympiad Results

Emily Tsui, Potomac, MD, Eric Brown, Chattanooga, TN, Fan Zhang, Montvale, NJ, John Leon Kiappes, Jr., Houston, TX, the nation's top high school chemistry students have each won a silver medal for the United States in the 36th annual International Chemistry Olympiad in Kiel, Germany.

The four competed with 234 students from 61 other countries in the event.



# National Chemistry Week 2005



Here come the next generation of scientists!



More scientists join in on the fun!



Awesome booth setup at the Sally Ride Festival, Stanford University.



Sally Ride autographs a book.



The SCVACS and PA-AWIS team works hard.

## CHEMPLOYMENT ABSTRACTS NOVEMBER 2004

### CHEMPLOYMENT ABSTRACT 3761

*Position Title:* Nanocrystal/Organometallic Chemist #2243

*Job Description:* Candidates for this position will be required to synthesize, develop and characterize various types of nano-crystals, ligands and surfactants. Flexibility in the face of rapidly changing issues, effective communication skills, and individual initiative are critical.

#### QUALIFICATIONS DESIRED

*Education:* Ph.D. degree in Inorganic or Organometallic Chemistry or the equivalent  
*Experience:* Candidates should have 2+ years of relevant industry experience. Knowledge and experience is required in the use of air-free schlenk and drybox techniques, NMR, UV-vis, IR, mass spectrometry, crystallography, and general spectroscopic characterization methods. Experience with materials characterization equipment such as TEM, XRD, and PL is a plus.

#### LOCATION, SALARY, MAIL ADDRESS

*Location:* Palo Alto, CA

*Salary:* unspecified

*Employer Description:* Nanosys is an industry leading nanotechnology company developing products based on a technology platform incorporating high performance inorganic nanostructures.

*Application Instructions:* Please e-mail your resume to [careers@nanosysinc.com](mailto:careers@nanosysinc.com) or fax to: 650 331-2101 attention Human Resources.

### CHEMPLOYMENT ABSTRACT 3762

*Position Title:* Chemistry Instructor (Temporary, part-time assignments)— Apply by November 10, 2004

*Job Description:* Examples of teaching assignments: Chem 1A - General Chem, Chem 2 - Introductory Inorg Chem, Chem 30A - Inorg Chem for Health Occupations & Chem 30B - Introductory Organic & Biochem for Health Occupations. An eligibility pool of qualified candidates will be established to fill positions as they may develop.

#### QUALIFICATIONS DESIRED

*Education:* Lifetime CA Community College Instructor credential in chemistry or meet state minimum qualifications  
*Experience:* Knowledge & commitment to teaching strategies & methods, which enhance student success at community colleges; effective oral & written communication skills; demonstrated ability to teach the courses or perform the duties effectively; ability to communicate well with students of diverse backgrounds; ability to work cooperatively with others

#### LOCATION, SALARY, MAIL ADDRESS

*Location:* Various campus locations; days, evenings and/or weekends

*Salary:* \$921 to \$1378 per teaching unit, per semester depending on education & exp.

*Application Instructions:* Application forms may be obtained through our web site: <http://www.cabrillo.edu/services/hr/apps/index.html> OR by contacting the Human Resources Department at (831) 479-6217 OR our office location at 6500 Sequel Drive, Aptos, CA 95003.

### CHEMPLOYMENT ABSTRACT 3763

*Position Title:* Staff Scientist

*Job Description:* Synthesis and development of processes used in the manufacturing of electro and photoactive materials. Physical and chemical characterization of organic and inorganic nanomaterials.

#### QUALIFICATIONS DESIRED

*Education:* MS or PhD in polymer or inorganic chemistry or related discipline, with strong interdisciplinary skills.

*Experience:* At least 3-5 yrs of hands-on bench synthesis experience. Good knowledge of principles of modern synthetic chemistry, lead optimization & structure activity relationship is essential. Knowledge & experience with organometallic reagents.

Experience performing electrochemistry and photochemistry. Knowledge of absorption spectroscopy, emission spectroscopy & modern chromatographic techniques.

#### LOCATION AND MAIL ADDRESS:

*Location:* Fremont

*Description of Employer:* UltraDots, Inc. Is a nanomaterial/nanotechnology based company.

*Application Instructions:* Please email your resume to [jobs@ultradots.com](mailto:jobs@ultradots.com)

### CHEMPLOYMENT ABSTRACT 3764

*Position Title:* Research Information Specialist

*Job Description:* Focus on providing answers to critical projects using information available online, from consultants, & from print sources, both in response to requests from clients, & as the information member of project teams in discovery research. Perform detailed patent/scientific literature search & demonstrate the ability to interpret, analyze, & integrate relevant patent related issues, including patentability, infringement & validity.

#### QUALIFICATIONS DESIRED

*Education:* PhD in org or med chemistry  
*Experience:* Online search experience in a R&D environment, with demonstrated ability & desire to learn more (i.e. a super-user within the lab (e.g. using Dialog, STN, Questel, Crossfire, SciFinder or other web-based end user tools) or ability in searching patent resources (Derwent, CAS, Inpadoc, and Markush Searchable Patent Files).

#### LOCATION, SALARY, ADDRESS

*Job Location:* Foster City, California

*Employer Description:* Gilead Sciences is a pharmaceutical company that discovers, develops and commercializes therapeutics to advance the care of patients suffering from life-threatening diseases worldwide.

*Application Instructions:* Contact Us: Gilead Human Resources, 333 Lakeside Drive, Foster City, CA 94404 - [www.gilead.com](http://www.gilead.com) - Job Ref: AF4-285 - [karen.duffy@gilead.com](mailto:karen.duffy@gilead.com)



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#### CHEMPLOYMENT ABSTRACTS

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### FUTURE MEETINGS

**Nov** No SCV Dinner Meeting  
**Dec** No SCV Dinner Meeting  
**Jan 20** SCV Dinner Meeting  
Mosher Award Presentation  
Dr. Paul Anderson  
**Jan 23-29** Winter Conference on Medicinal  
and Bioorganic Chemistry  
Steamboat Springs, CO  
**Feb 6-9** ACS ProSpectives  
Process Chemistry in the  
Pharmaceutical Industry  
Miami, FL  
**Mar 13-17** ACS National Meeting  
San Diego, CA

For the latest information, please visit  
SCV/ACS web site: [www.scvacs.org](http://www.scvacs.org)



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