



THE AMERICAN SOCIETY OF PHARMACOGNOSY

THE ASP NEWSLETTER VOLUME 43 ISSUE 2

The 48th Annual Meeting of ASP, July 14th - 18th

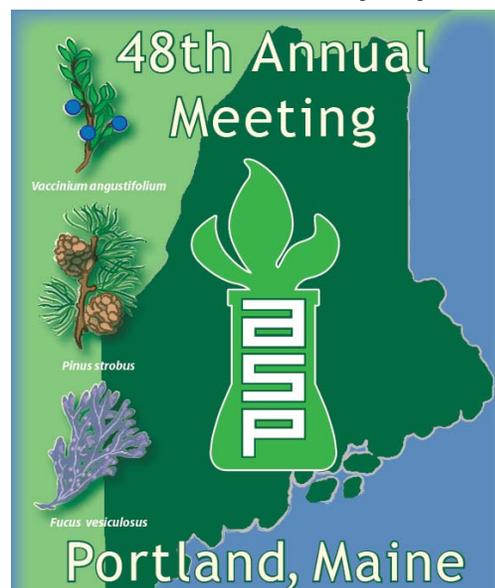
by Amy Keller

The Scientific Program

The 48th Annual Meeting of ASP, entitled, "Natural Products - Research, Development, and Use", will take place at the Holiday Inn by the Bay in Portland, Maine, from July 14th- July 18th, 2007. The scientific program will cover an extensive range of topics, from commercial herbal products and botanical personal care products to medicinal chemistry of natural products and marine toxins and ecology.

Dr. John Cardellina, the Scientific Program Committee Chair, enthusiastically explains, "The Scientific Program Committee was presented with twice as many abstracts as there were slots for oral contributions. With the challenge of making difficult selections now behind us, we are really quite excited about the overall quality and breadth of the scientific program. The symposium lectures, contributed talks, and roughly 300 posters will offer a

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The Future of Pharmacognosy: An Introduction to Four Essays

by Dr. Roy Okuda

While humans have looked to nature as a source of medicinals for many millennia, the organized study of these bioactive substances were formalized, more or less, under the term "pharmacognosy" only in the 19th century. A tremendous amount of development and evolution have occurred in the field of pharmacognosy since then, much of which has occurred since the ASP was founded in 1959.

We have seen impressive developments in technology, such as instruments which allow complex structure elucidation on tiny amounts of compounds. We have seen dramatic changes in the philosophical role of pharmacognosy in drug development, as well. But where is pharmacognosy headed for the next 50 years?

Following are four essays from individuals who offer their own experienced and candid views on the history and future of pharmacognosy. What role will the ASP play? As we approach our 50th anniversary, it is important to open a discussion on this issue.

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EMPLOYMENT SERVICE

The Society offers a placement service to aid our members in seeking positions or employees. This service is available only to ASP members and is free to both the applicant and the employer. For more information see the services website.

www.phcog.org/employment.html

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Editor's Corner

In this issue we have two major themes: looking forward and commemorating the past.

It is with great sadness that we report the loss of three major figures in our Society, former ASP President Dr. Egil Ramstad, ASP Honorary Member Dr. Robert Hegnauer, and ASP Research Achievement Award Recipient Dr. Ian Scott. In addition, Dr. Stephen Straus, former director of NCCAM-NIH passed away as well. The *Newsletter* has included obituaries for these individuals who have each influenced pharmacognosy.

On the afternoon of April 16th, I learned about the tragedy at Virginia Tech. Like many ASP members, I strongly associate that institution with ASP member and Research Achievement Award Recipient, Dr. David Kingston. Early that day, before learning of the events at Virginia Tech, my editorial assistant had e-mailed Dr. Kingston about featuring his work in our new regular series, "Behind the Scenes in Pharmacognosy". I contacted Dr. Kingston to give him my condolences, and assure him that I would understand if he could not contribute. I was pleased to hear back from him that he and everyone in his lab were safe, and that he would be able to share his work with ASP members. He also agreed to write a personal account of the tragedy for the *Newsletter*. Both articles appear in this issue.

While this issue covers many sad events, we also have much to celebrate. The 48th Annual Meeting will take place in Portland, Maine in July, and has an exciting scientific program lined up. A new College of Pharmacy at the University of Hawaii at Hilo will open in Fall, 2007, with ASP member Dr. John Pezzuto as Dean and three other ASP members on the faculty. The Ohio State University's Research Day is described in an article written by two younger ASP members. We also meet new member Dr. Tyler Rose, in an article written by ASP member Dr. Diane Swaffar, who we are happy to have become a regular contributor. I am also excited to welcome ASP member, and former *Washington Insight* Editor, Dr. Georgia Perdue as a guest columnist.

For this issue, ASP President Dr. Roy Okuda developed a concept article looking into the future of pharmacognosy. We asked four ASP members to consult their crystal balls, and tell us what they anticipate for the future of our discipline. The resulting essays are a fascinating look at where pharmacognosy may be headed.

I want to thank everyone who contributed articles or information to the *Newsletter*. The *Newsletter* continues to expand, and I appreciate the assistance of many ASP members.



The 48th Annual Meeting of ASP

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stimulating, state of the art, and forward-looking view of the world of natural products to the meeting participants. We look forward to welcoming everyone to a great meeting, framed by Maine's beautiful summer."

The first symposium, entitled, "Investigations of Commercial Botanicals", features Dr. Amy Howell from Rutgers University and Dr. Jess Reed from University of Wisconsin, both addressing proanthocyanidins from cranberries. In addition, Dr. Tieraona Low Dog from the University of Arizona will be speaking on botanical therapeutics in women's health.

Symposium II, "Marine Toxins", features Dr. Mark Hamann of the University of Mississippi speaking on determining the structure of a fish-killing toxin. Also featured in the symposium is Dr. Patrizia Ciminiello from the University of Naples, talking about harmful algal events and new toxins in the Mediterranean Sea.

"Natural Products- Unique Sources, Unique Techniques", Symposium III, features four presenters beginning with Dr. Frank Schroeder from Cornell University. He will be speaking on the use of NMR to determine the chemical biology of spiders, worms, and bacteria, followed by Dr. Coran Watanabe from Texas A&M on marine natural products from silent biosynthetic pathways. Also presenting are Dr. James Gloer of the University of Iowa on fungi as sources of bioactive natural products, and Dr. Arthur Edison from the University of Florida on insect defensive secretions.

Symposium IV, "Medicinal Chemistry of Natural Products", features presentations by Dr. Thomas Prisinzano of the University of Iowa on novel opioids from *Salvia divinorum*, and Dr. Richard Taylor of Notre Dame University on the evolution of polyketide inhibitors of eukaryotic protein synthesis. Also speaking is Dr. David Kingston of Virginia Polytechnic and State University on Taxol and other tubulin binders.

The final symposium, entitled, "Personal Care Products", will feature Dr. Christoph Schempp from the University Medical Center in Freiburg on botanicals in dermatology, and Dr. Daniel Maes from Estee Lauder on the process of product development, from botanical extracts to finished products.

The scientific program also consists of two special symposia. During the first of these, the Varro Tyler Prize will be awarded to Dr. Jerry McLaughlin by ASP President Dr. Roy Okuda and ASP Foundation Board Chair Dr. John Cassady. After being introduced by ASP Secretary Dr. William Keller, Dr. McLaughlin will talk about the path of paw paw in cancer treatment from discovery to clinical trials.

The second special symposium will feature the conferring of the Norman Farnsworth Award to Dr. Lester Mitscher by ASP President Okuda and Dr. Cassady. Following an introduction by Dr. James McAlpine, Dr. Mitscher will speak about the coevolution of microbes, mankind, and pharmacognosy.

Accompanying each of the five symposia are a myriad of contributed talks, as well as two poster sessions. The Scientific Program Committee has worked hard to put together this exciting program and looks forward to welcoming everyone at the 48th Annual Meeting in Portland, Maine.

Organizing Committee Chair Dr. Stefan Gafner relates, "We are very pleased with the program as it stands; a wide variety of topics will be covered and I am convinced that everyone in the field of natural products research will find something of interest. I am glad that we have been able to include topics with a local flair, including several talks on cranberry and blueberry research, and also some lectures on marine toxins. We hope this will help to attract more researchers from the New England area to participate in the meeting and join the ASP."

From Whales to Beans: Optional Activities at the Annual Meeting

by Laura Morcom

Make this 48th Annual ASP meeting, in Portland, Maine, an unforgettable adventure by participating in some of the amazing optional activities that are being offered. Explore the rocky coast, ride the waves in search for whales and other sea life, learn the art of lobstering, or enjoy a day of shopping. Maine has got it all!

Kennebunkport Whale Watch Adventure

Have a seat in an air-conditioned coach bus and enjoy a boxed lunch while being transported directly to Kennebunkport. From there, you will board *Nick's Chance*, for a 4 ½ hour whale watch adventure. Cruise 20 miles out to the summer feeding grounds of finbacks, humpbacks, minke, the rare blue whale, the endangered right whale, and dolphins. *Nick's Chance* is 87 feet from bow to stern and captained by "Captain Gary" and his 4-legged "first mate" Morgan. Captain Gary knows the whales, their habits, and the waters they travel in, and will definitely keep you entertained on this seafaring adventure! Once you arrive back on solid ground, the coach bus will be ready to pick you up and take you back to Portland in time for dinner.



Cost: \$65 per person

Kennebunkport Scenic Lobster Tour & Shopping

You will share the air-conditioned bus with the Whale Watch group and travel to Kennebunkport, enjoying a boxed lunch along the way. Once in Kennebunkport you will board an authentic lobster boat for a 1 ½ hour scenic tour down the Kennebunk River and along the beautiful Maine coastline. During the boat tour you will get to see seals, former President Bush's summer home, and how "world famous" Maine lobsters are harvested! The captain will be happy to answer questions and fill you in on the lore of the Maine coastline. After your boat trip, you will have about three hours to explore the beautiful village of Kennebunkport. Stroll the streets, shop in the many boutiques, gift and souvenir shops, walk along Ocean Avenue, or relax at one of the coffee shops or restaurants the town has to offer. At the end of the day you will be transported back up to Portland in time for dinner.

Cost: \$45 per person

Portland Sea and Land Tour

Do not want to travel too far? This is the trip for you! Maximize your sightseeing with this great combo tour. Board a chartered trolley from the hotel and enjoy a 90-minute fully-narrated tour as our informative guide treats you to Portland's diverse history and architecture. You will see the childhood home of Henry Wadsworth Longfellow, the Victoria Mansion, the bustling Old Port, and Portland Head Light as you travel from city streets to rocky coast. From there, you will board a boat for a 90-minute cruise on Casco Bay through the busy harbor and out to some of the innermost islands. You will see lighthouses, forts, lobster boats, and hopefully lots of sea life when you reach Half Way Rock, a natural sea habitat. You will get the best of both worlds, so come aboard, and take in the salty air and spectacular sights while enjoying the best narrated cruise around!

Cost: \$32 per person



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From Whales to Beans: Optional Activities at the Annual Meeting

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Shopping trip to LL Bean / Freeport, Maine

Jump on board an air-conditioned coach bus for an adventure like no other! You will enjoy a boxed lunch on your way to Freeport, Maine, about 20 miles North of Portland, home of the famous LL Bean flagship store. Complete with a huge statue of the "Bean Boot", and an indoor trout pond for fishing demonstrations, LL Bean has all the outdoor gear and apparel you'll need for any sort of adventure. Freeport boasts more than 170 upscale outlets, designer stores, eclectic boutiques, fantastic restaurants, and casual cafes all within walking distance of each other. While in Freeport stop by the Harrington House, the home of the Freeport Historical Society, and step back in time to learn about the life of a local shipbuilder. To top of the trip, cool off with a tasty, one of a kind Ben & Jerry's ice cream at their shop in the heart of downtown. The bus will have you back to Portland for dinner.

Cost: \$28 per person



Things to Do in Portland

by Elizabeth Dumas

The well-known *Frommer's Travel Guide* chose Portland, Maine as a "Top Travel Destination for 2007", and it is easy to see why. With outstanding dining, a burgeoning arts district, unique and exciting shopping districts, and unlimited opportunities for outdoor adventure, Portland and southern Maine are not to be missed, particularly during the summer months.

Ten (well, 11) things to do in Portland and Southern Maine:

- 1) **Visit Portland's arts district**, including the Portland Museum of Art, Maine's oldest and largest public art institution. The collection houses works from renowned Maine artists such as Winslow Homer, Rockwell Kent, and Andrew and N.C. Wyeth, as well as those of European art masters including Degas, Monet, Renoir, and Picasso, in addition to fine glass and ceramic works, furniture, sculpture, and more.
- 2) **Shop the Old Port**. Portland's Old Port shopping district boasts cobbled streets and beautiful Victorian brick buildings, and houses an eclectic mix of restaurants, microbreweries, art galleries, boutiques, and specialty shops. The Old Port district is directly connected to Portland's thriving, working waterfront along Commercial Street.
- 3) **Climb the 103 steps to take in the view from the Portland Observatory**. A distinctive Portland landmark, located atop Munjoy Hill on the eastern end of the Portland peninsula, it is the country's last remaining maritime signal tower. In 2006 it was named a National Historic Landmark. The tower stands 240 feet above sea level and was originally used to spot ships entering the harbor.
- 4) **Dine at one of the area's many outstanding restaurants**. Greater Portland rivals most major metropolitan cities in offering a staggering number of places to dine. Whatever your mood,

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Things To Do in Portland

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an incredible dining experience is available to you, from creative to traditional New England, elegant to picnic tables, and fresh seafood to vegetarian delights.

- 5) **Go “antiquing”.** If you are into antiques, Maine is a wonderful place to be. No matter where you travel in the state, you will find antique shops in abundance. Attend one of the weekly auctions found throughout the state, or travel an out-of-the-way road to find what may turn out to be your favorite souvenir of Maine. The state offers some of the most interesting and charming antique treasures in the Northeast.
- 6) **Go back in time by visiting historical sites** such as the Wadsworth Longfellow house, the boyhood home of the poet Henry Wadsworth Longfellow, the Tate House, a pre-Revolutionary home with period furnishings, beautiful grounds and herb garden, or the Victoria Mansion, an outstanding example of the lavish pre-Civil War architecture and design embraced by America’s wealthiest citizens. Also be sure to visit the Maine Narrow Gauge Railroad Co. & Museum.
- 7) **The Portland Sea Dogs, Double-A affiliate of the Boston Red Sox,** are playing at home on July 14th and 15th. Tickets may be pre-ordered online at www.portlandseadogs.com. There is not a bad seat in the house at Hadlock Field, and it is a great way to spend a summer afternoon or evening. Be sure to sample a “Sea Dog Biscuit” while you’re there!
- 8) **Explore Maine’s numerous trails, parks, and nature preserves.** The reason many people visit Maine is to be outdoors and enjoy the unparalleled beauty of nature. Opportunities for exploration on foot abound, including, Portland’s Eastern Prom and Back Cove trails, which offer beautiful views of the harbor and the Portland skyline. Maine Audubon’s Gilsland Farm in Falmouth and Scarborough Marsh Center in Scarborough, offers numerous and wonderful ways to get close to nature. Mackworth Island in Falmouth is a legislated bird sanctuary offering another view of the city of Portland and its harbor. Also, the Wells Reserve at Laudholm Farm in Wells maintains a 1600 acre research, education, and recreation facility offering spectacular views and diverse habitats.
- 9) **Dig your toes into the sand.** Unlike the rest of the Maine coast, the southern Maine coast boasts miles of wide sandy beaches, with rocky ledges, cliffs, and the occasional lighthouse punctuating the landscape. From busy summer havens like Old Orchard Beach to quieter spots such as Higgins Beach in Scarborough, you will be sure to find a spot just right for taking in the beauty of the Atlantic coast.
- 10) **Visit one of Maine’s numerous lighthouses,** including world famous and often-photographed Portland Head Light, or Spring Point Ledge lighthouse, where you can visit Portland Harbor Museum and walk a granite jetty right out to the lighthouse for a close-up view of the vessels entering and leaving Portland Harbor.
- 11) **Golf!** Throughout the state you can find golf courses that offer sweeping mountain vistas, spectacular ocean views, and peaceful lakeside scenery. There is something to suit any golfer’s taste.

Portland’s local weekly events and general municipal and tourist information can be referenced at www.portlandmaine.com.

Jen Adler contributed to this article.

Portland Dining Guide

by Elizabeth Dumas

In recent years, Portland, Maine has earned a national reputation as a dining destination, and people regularly trek for miles to dine there. It is rumored that Portland is second only to San Francisco in restaurants per capita. Whether or not that is true, it is certainly a fact that Portland is packed with fantastic dining opportunities to suit any taste. Portland makes regular appearances in well-known culinary publications such as *Gourmet* and *Food and Wine*, and alongside the spots that gain that sort of national recognition, there are many hidden gems that are every bit as satisfying. Creating a "must visit" list of Portland eateries is not a task well-suited to a newsletter as the list is far too long. Instead, here are some categories of Portland dining in which you might start your own search for favorites.

Award-winning chefs and restaurants: The chef of **Fore Street** was named Best Chef Northeast for 2004 by the James Beard Foundation. This very popular spot presents unpretentious yet creative dishes using local ingredients, in a renovated warehouse space boasting high brick ceilings and huge windows. Diners can view the wood burning oven, grill, and turnspit from most tables. **Five Fifty-Five's** chef was chosen as one of the Ten Best New Chefs of 2007 by *Food and Wine*. Innovative cuisine comprising local seasonal ingredients, along with an excellent wine list make for fine dining in a very inviting atmosphere. The chef of **Hugo's** was nominated for Best Chef Northeast for 2007 by the James Beard foundation (he also won *Food and Wine's* Best New Chef award in 2004). Hugo's delivers casually elegant, very creative cuisine in an intimate bistro atmosphere.

Waterfront dining: Go casual with a burger and a beer at one of the two waterfront decks at **Dry Dock**, or with a lobster roll and some chowder at the **Porthole**, both perennial Portland favorites. For classic diner fare right on Hopson's Wharf, visit **Becky's Diner**. Meet some friends for happy hour at **DiMillo's** floating restaurant, a converted car ferry and Portland landmark. You might even cross the Casco Bay Bridge to South Portland and take in the incredible views and fine food on the deck at **Joe's Boathouse** or the **Saltwater Grille**.

Pubs: There are many options for enjoying a locally brewed beer and some great food and company in a comfortable pub atmosphere. Visit "Maine's original brewpub", **Gritty McDuff's**, for a Vacationland Summer Ale and an all-natural burger from Wolfe's Neck Farm, and don't forget the sweet potato fries! **Bull Feeney's**, just down the road from Gritty's, offers a full menu with local brews and an impressive selection of whiskeys, on two floors of charming exposed brick. Both have live music on the weekend. A bit out of the center of town you will find the **Great Lost Bear**, with its impressive selection of more than 50 beers on tap, huge pub-style menu, and energetic atmosphere.

Ethnic cuisine: There are many Portland gems in this category. For Japanese and Korean specialties, gather around one of **Fuji's** busy hibachi tables or in the more serene traditional tatami room. For traditional Indian food prepared with local, organic ingredients, grab a table at **Hi Bombay**, which has a longstanding relationship with local farmers. For unpretentious, authentic country Italian in a charming and friendly atmosphere, **Ribollita** shines. Find Spanish tapas and French-inspired cuisine next to one another in two inviting and admired Portland dining spots, **Local 188** and **Uffa**.

Seafood, naturally: Of course you can find seafood on the menu just about anywhere in Portland, but some places specialize in one of Maine's finest culinary delights. **Street and Company** presents fine, fresh seafood in a relaxed atmosphere located on a quaint cobblestone street. Or mingle with the working men and women of Portland's waterfront while downing oysters and other fabulously fresh seafood at the very unpretentious **J's Oyster Bar**, a Portland institution.

Vegetarian/Vegan: **Pepperclub** is an excellent place for a nice meal for the vegetarians and vegans. While they do carry non-vegetarian dishes, they always have a good selection of veggie- friendly fare. This restaurant has been noted on the Best Vegetarian and Best Value lists in *Frommer's Guide to*

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Portland Dining Guide

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New England and has been featured on Food Network's *\$40 a Day with Rachael Ray*.

New on the scene: It seems that Portland is always sprouting new and exciting eateries that command rave reviews from the start. The eye catching exposed brick and pendant lighting viewed through the huge windows at **Vignola** are enough to draw you in, but the authentic Italian cuisine and outstanding, one-of-a-kind wine list are this spot's finest attractions. **Bar Lola** is another newcomer at the top of Munjoy Hill. Enjoy tapas style dining in a relaxed, intimate atmosphere that encourages you to linger. The creative dishes served here make each plate an adventure.

It cannot be emphasized enough that this is barely the tip of the iceberg when it comes to dining in Portland. Be sure to leave ample time in your visit for exploring the dining scene. You are sure to discover some of your own Portland favorites, as well as creating your own "must visit" list for your next trip!

For more information:

- Bar Lola, 100 Congress Street, 207-775-5652
- Becky's Diner, 390 Commercial Street, 207-773-7070
- Bull Feeney's, 375 Fore Street, 207-773-7210, www.bullfeeneys.com
- DiMillo's Floating Restaurant, 25 Long Wharf, 207-772-2216, www.dimillos.com
- Dry Dock, 84 Commercial Street, 207-774-3550
- Five Fifty-Five, 555 Congress Street, 207-761-0555, www.fivefifty-five.com
- Fore Street, 288 Fore Street, 207-775-2717, www.forestreet.biz
- Fuji, 29 Exchange Street, 207-773-2900, www.fujimaine.com
- Great Lost Bear, 540 Forest Avenue, 207-772-0300, www.greatlostbear.com
- Gritty McDuff's, 396 Fore Street, 207-772-BREW, www.grittys.com
- Hi Bombay, 1 Pleasant Street, 207-772-8767, www.hibombay.com
- Hugo's, 88 Middle Street, 207-774-8538, www.hugos.net
- J's Oyster Bar, 5 Portland Pier, 207-772-4828
- Joe's Boathouse, 1 Spring Point Drive, South Portland, 207-741-2780
- Local 188, 685 Congress Street, 207-761-7909, www.local188.com
- Pepperclub, 78 Middle Street, 207-772-0531
- Porthole, 20 Custom House Wharf, 207-780-6533, www.portholemaine.com
- Ribollita, 41 Middle Street, 207-774-2972
- Saltwater Grille, 231 Front Street, South Portland, 207-799-5400, www.saltwatergrille.com
- Street and Company, 33 Wharf Street, 207-775-0887
- Uffa, 190 State Street, 207-775-3380, www.uffarestaurant.com
- Vignola, 10 Dana Street, 207-772-1330, www.vignolamaine.com

Jen Adler contributed to this article.



The Future of Pharmacognosy

An Academic Perspective

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by Drs. Alice Clark and Charles Hufford

Pharmacognosy has always been about promise, and the future of pharmacognosy is more promising than ever. This outlook is based on several considerations, chief among them are technological advances, knowledge gained, and lessons learned over the past half-century. These are opening new windows on nature's chemistry, and how it can benefit humanity and sustain our environment. Also, the increasing awareness of, and support for, pharmacognosy among the general public are contributing to this promising future. By acknowledging and addressing the changes and challenges before us, we can shape our future to its greatest potential.



Dr. Charles Hufford

Natural products are potentially useful in any application where a biological response is the desired outcome. Simultaneous advances in many fields, including genomics and the miniaturization and automation of bioassays and synthetic methodologies have transformed the discovery and development of natural products as drugs, agrichemicals, and molecular probes.

In the future, the full potential of natural products will be realized through better understanding of the complexities of both the systems in which they are produced, and the systems in which they will be applied. We need to explore these interactions in complex biological systems, where single compounds can modulate multiple pathways simultaneously, and combinations of compounds can be used to orchestrate a specific effect.

Ultimately, with the increasing knowledge in other disciplines, such as human genetics, we can anticipate the utilization of natural products combinations to achieve varying, individualized biological responses. Thus, we must increase our emphasis on isolating novel compounds, including minor constituents, regardless of biological activity in anticipation of future uses as knowledge increases.

We also believe there will be greater support for pharmacognosy in the future due to increasing public awareness of the field. The emergence of dietary supplements and natural cures, with all the issues and challenges related to them, has created an opportunity for pharmacognosy to provide scientifically-based, quality information that benefits public health.

Some 20% of the population of the United States regularly uses botanical dietary supplements and "natural product" is fast becoming a household term, creating both the opportunity and the need to develop public advocacy for our field. Similarly, the increasing public awareness of the planet's diminishing biological resources provides an opportunity to illustrate the role of pharmacognosy in understanding the world's flora and fauna and how they can be conserved and responsibly utilized.

The challenges we will face in the near future are sustainability, support, and the threat of isolation. These must be addressed through education, advocacy, interaction, and strategic thinking. In the academic sector, we have a unique responsibility to sustain the profession. We are responsible for educating future scientists, educators, and policy-makers, and keeping the field viable and consistent despite the inevitable peaks and troughs of industry, government interest and investment.



Dr. Alice Clark

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We must also educate the next generation of pharmacognosists to be critical thinkers who understand the social, political, economic, and regulatory environment in which they work, whether that be private or public sector. We should strive to stay abreast of advances in related disciplines, perhaps programming interdisciplinary events in our meetings, and we should set aside time at our annual meetings to discuss the future of our discipline, and how we can influence the factors that affect us.

We have seen our field and the Society weather significant challenges and changes over the past 50 years to emerge stronger and more viable than perhaps any time since the middle of the last century. To help shape the future, we must regularly reflect on the past, recognize and seize opportunities, and embrace change. Our comments here are meant to challenge readers to consider these issues, make their own predictions, and help shape the future of pharmacognosy and the world.

The Future of Pharmacognosy

A Government Research Perspective

By Dr. John W. Daly

The impact of natural products research on the knowledge and well-being of humankind has been far-reaching. Physiologists have been provided with momentous, fundamental insights into biological functions. Biochemists and pharmacologists have obtained invaluable selective research probes and clinicians benefit from the many therapeutic agents that emerged from natural products. The skills and strategies of organic chemists have flourished in meeting the synthetic challenges posed by complex natural products. And the impact of the fascinating ecological stories concerning biologically active natural products on the general public is beyond measure, but certainly contributes to the allure of science.



Dr. John Daly

Historically, these discoveries of the last two centuries of natural product research often have resulted from scientists simply looking to study the unique molecules that have evolved in nature, and thereby gain knowledge of the natural world surrounding us. Such intellectual pursuits proceeded relatively unimpeded by regulatory restrictions.

A new era has emerged over the past few decades, where scientific curiosity about nature in terms of the discovery of novel new structures is no longer justification for support and where the freedom to collect, extract, and investigate new entities has become known as "bioprospecting" and is difficult or impossible to pursue in many areas of the world.

After over 40 years of support for a productive natural product research program at NIH, our own small program came close to abolishment last year. Clearly, our rather classical pursuit of further new alkaloids from anuran skin is no longer in harmony with the present "translational" objectives of biomedical research.

It would appear that funding for natural products research will become increasingly focused on projects driven by a clear translational mission from natural product source to bench to bedside. The pendulum for funding priorities will likely continue to swing towards large, multi-disciplinary projects

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The Future of Pharmacognosy

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in which direction comes from high-throughput screening at biological targets, that have the potential for high biomedical impact.

Funding and support for small research programs in which serendipity must play a significant role in discoveries of new agents with high biomedical impact will prove increasingly difficult to obtain. That will be unfortunate, since important discoveries, such as the potent analgetic epibatidine, can still arise from such small programs focused outside of the mainstream of mission-oriented drug discovery.

The ability of natural product chemists to elucidate structures will continue to advance, so that only sub-microgram amounts of complex molecules will be sufficient to quickly and fully define the structures of unique new compounds. Design of target and genome-directed discovery paradigms will see great advances in scope and potential. Such paradigms have been and will be scaled down to the point that sub-milligram quantities of new agents will be sufficient for multi-targeted assays.

Scientists will likely need to agree as part of grant conditions to share agents for physical screening in central drug discovery facilities and to contribute new agents to the growth of extensive libraries of diverse natural products. In addition, scientists will likely need to agree to provide online the structural parameters for new compounds for virtual screening in central facilities established to discover ligands for the ever-increasing number of natural targets with defined pharmacophore sites.

Efforts will be initiated to gather together a harvest of compounds and structures for physical and virtual screening from existing world-wide, widely-dispersed collections of natural products. Research will be directed towards understanding and exploiting the synergistic interactions of natural products that undoubtedly pertain for many of the ethnomedicines and nutraceuticals that are widely used throughout the world.

Broad, binding agreements encompassing most of the world's nations, will need to be put in place to solve the present "bioprospecting" conundrum. The ongoing loss of biodiversity, so essential to further discoveries of natural products, should provide the pressures leading to such all encompassing international agreements from which humankind will benefit if "bioprospecting" can be freed from current nationalistic restrictions.

Discovery and manipulation of biosynthetic genes will provide for large-scale production of new agents as needed, while diversity-driven synthetic paradigms will provide ready access to structurally diverse analogs that perhaps will better define and selectively interact with targeted pharmacophore sites.

How natural products research prospers in the next few decades will depend on how well scientists from diverse disciplines work together to take advantage of opportunities provided by the burgeoning new insights into physiological and pathophysiological functions, and by the emerging new targets and strategies for biomedical interventions. And it will depend on how well scientists, funding sources, private enterprise, and governments work together to fully realize the potential for research in pharmacognosy to advance our knowledge and to translate that knowledge into benefits for humankind.



The Future of Pharmacognosy

A Government Regulatory Perspective

by Dr. Samuel Page

In order to predict the future of natural products research from a government perspective, including regulatory and research support, we first need to examine how we got to where we are now.

General interest in natural products has certainly waxed and waned during the last 30 years. Funding for both government and private sector research has suffered from the nearsightedness of the demand for short term results.

At one point the United States National Cancer Institute all but abandoned its natural products program. It was a sad day when Dr. Jim Duke of the United States Department of Agriculture was forced to abandon the plant specimens he had collected in China. For many years, the Food and Drug Administration (FDA) was a major impediment to the development of traditional medicines. It was clear to many that we were in trouble when the FDA Bureau of Drugs dropped prune juice from the approved list of over-the-counter laxatives.

The rise in public interest in natural remedies, well recognized by the industry, but not by most at the FDA, along with the continuing intransigence of the FDA, resulted in the Dietary Supplement Health and Education Act of 1994. While this did result in some increased federal funding and the establishment of National Center for Complementary and Alternative Medicine and the Office of Dietary Supplements to focus this research at the National Institutes of Health (NIH), it established the charade of traditional medicines as foods. The opportunity to promote individual, healthy, lifestyle factors by building on the public's interest in taking more responsibility for their own health was largely missed.

The regulation of natural medicines is almost completely on a national basis. Most international agreements on the regulation of medicinal products are bilateral or limited multilateral. The World Health Organization (WHO) provides guidelines on regulatory and quality assurance standards. Although the WHO has increased its interest in natural medicines in recent years, they have not given sufficient attention to many traditional systems other than Chinese medicines. However, the WHO has developed guidelines for Good Manufacturing and Good Agricultural Practices for botanicals used as traditional medicines.

Many countries regulate traditional medicines as drugs and have incorporated them into their health care systems. In parts of many countries, traditional medicine practitioners are the only source of health care. For food-related trade issues, the World Trade Organization recognizes the standards and related texts of the Codex Alimentarius Commission (Codex) as international points of reference. However, the Codex mandate does not include substances used *only* as drugs.

Predictions

- Given the food safety problems and the drug evaluation and safety issues in the United States in the last decade, it is likely that a new separate federal food safety organization will be established. This will result in the Federal Drug Administration, which many already think FDA stands for. At that time, more pragmatic approaches, such as the establishment of a separate category for traditional medicines similar to the Canadian system, would be worth considering.
- While Codex could develop international standards for botanicals used as dietary supplements, this is unlikely. Since such botanical products are handled so differently by many countries, it is also unlikely the member states of Codex could ever reach any consensus on the development of standards for dietary supplements, especially those that are also used as traditional medicines.

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- The globalization of the traditional medicine market place will continue to increase. However, even if similar safety problems as those with the deliberate adulteration of over-the-counter drug products occur, it is unlikely that any international regulatory standards will be developed.

Challenges and Opportunities

- We are faced with the loss of plant and animal species as a result of climate change and loss of habitats, as well as the loss of ethnobotanical knowledge through globalization and other factors. There must be an international sense of scientific urgency to maintain these irreplaceable resources. An important related consideration is that of intellectual property rights.



Dr. Samuel Page

- The key to promotion of the safety, efficacy, and quality of traditional medicines is through the development and adherence to pharmacopeial standards, including adequate methods of analysis, and Good Manufacturing and Good Agricultural Practices. Many organizations are in this business. Although the WHO has made some attempts at international coordination, adequate participation by the private sector in their development has been lacking.
- There have been many instances of the misuse of scientific data in health claims, as well as in the dismissal of the possibly of health benefits. The critical issues of weight of evidence and rules of evidence should be examined to develop a much stronger scientific consensus on the interpretation and communication of scientific results. This also is very much needed to thwart some of the misuses of science for political purposes.
- The integration of complementary and alternative medicine into health care systems is important to provide a more seamless, more cost effective, system with increased individual responsibility. This is particularly important in countries in development. Training in pharmacognosy should be an integral part of all pharmacy curricula.

All life on the plant Earth has evolved with the same basic biochemical mechanisms. The ecological processes that have occurred in this evolution suggest that the potential for many heretofore unrecognized useful natural components is enormous. Most diseases have multiple causes. Studies in chemical ecology indicate that most organisms do not rely on a single "magic bullet" for their defenses against disease and other threats in their environments.

Natural products research stands on an enormously exciting threshold. With the advances in techniques for the determination of biological activities, such as microarray technologies and bioassays, interactions of multiple chemicals, including signal transduction mechanisms, are being unraveled. The synergism of components in tradition medicines can be investigated. The current state-of-the-art technologies in separation and structure determination greatly facilitate the use of natural products for molecular probes and drug leads. Natural products chemists should not limit their vision to

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pharmacognosy. Studies in chemical ecology can provide new leads for pesticides, for example. Other areas of potential interest include biofuels and natural fibers.

In the final analysis, the role of government in regulation will be determined primarily by the success of the industry in providing safe products. As far as government support for research, there will always be a debate as to who should pay for it. International public-private partnerships, particularly to include scientists from countries in development, are essential in using the biological and chemical tools that are becoming available to explore the unknown and to revisit some of the known sources of natural products. The next decades will certainly see major advances based on natural products chemistry.

The Future of Pharmacognosy

An Industrial Perspective

by Dr. Guy T. Carter

Twenty-five years ago the buzz in the industrial natural products community was that the future lay in genetic engineering of new antibiotics. This speculation was largely based on the pioneering work done in the laboratory of Sir David Hopwood, at the John Innes Centre in Norwich, United Kingdom. The possibility of constructing hybrid antibiotics by a combination of genes from different biosynthetic pathways suggested that a renaissance of antibiotic discovery was imminent. Both the science of polyketide biosynthesis and the rapidly evolving field of biotechnology were highly seductive.

So what happened? Well, although substantial advances in science continued, there was no return to the Golden Age of Antibiotic Discovery. In fact, most major pharmaceutical companies completely abandoned their natural products discovery operations.

As seen from today's perspective, the potential for natural products-based drug discovery is highly promising. There are many reasons for this optimism, and they are derived from the convergence of two streams of developing technology. The aforementioned revolution in genetic engineering has occurred; however, one would have to admit that it was more of a protracted campaign than a coup. Today the cloning, expression, and alteration of bacterial PKS and other biosynthetic pathways are a practical reality. What is more, the processes have become more rational than random.

At the same time, powerful advances in chemical sciences have reduced timeframes and material requirements. High-resolution preparative separations are accomplished readily by selection of the appropriate HPLC column and mobile phase combinations. Structure determination of newly isolated natural products has evolved from being the most time-consuming aspect of the process, requiring tens of milligrams of hard-won material, to a very clean exercise in modern NMR spectroscopy. At the same time, organic synthesis has developed to the extent that virtually any target seems attainable.

Beyond these technological advances, it is our growing understanding of the biology of natural products that is the most inspirational. Opportunities for research in this area appear almost limitless, if one considers how little is known about the mechanism of action of natural products. Knowledge of the binding partners of natural products and the subsequent effects on downstream events creates new

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Dr. Guy Carter

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avenues for drug design and development.

This does not require the discovery of novel compounds. There are ample known classes that have demonstrated significant biological effects whose mechanisms remain unknown. Owing to the facility with which we can now engineer structural modifications (biosynthetic and/or chemical), absolute novelty is much less of an issue for commercial development.

However, the limitation of compound supply that dampens enthusiasm for natural products drug discovery continues to be an issue. Advances in chemical synthesis, as mentioned, can help facilitate early development, but often will not be practical for kilogram-scale production of complex metabolites. Cases in which the source organisms cannot be cultivated on large enough scale have been viewed as lost causes.

However, it appears that in the next decades that these organisms may be amenable to having their biosynthetic genes transplanted into more manageable hosts. Such applications of molecular biology are likely to have major practical impact in the foreseeable future. Whether the source is an uncooperative microbe, environmental DNA, or even a marine invertebrate or higher plant, the ability to express the pathway in a highly productive surrogate host provides the opportunity for practical development of many novel products.

Realization of the enormous potential of natural products research in the pharmaceutical industry will depend on its continued demystification. As the biological roles of these intriguing compounds are revealed, the impetus to develop these as drug candidates will surely escalate. Despite the fact that the chemical structures of many thousands of secondary metabolites have already been defined, great opportunities exist for the advancement of natural products as pharmaceuticals.

Younger Members Committee: Upcoming Activities

by Drs. Scott Baggett and Sara Crockett

The ASP Younger Members Committee (YMC) cordially invites you to our working lunch on Sunday, July 15th, from 12:00 to 1:30 pm at the ASP Annual Meeting in Portland, Maine. The topic of discussion will be, "Obtaining Funding from Private Sources". The YMC is putting together a web site with links to a number of private funding opportunities. If you know of any private source of funding or have received funding from a private sources, please e-mail Dr. Scott Baggett at scottb@bionovo.com.

In addition, as part of the 50th anniversary of the ASP, the YMC is helping with a book about the Society's history. The book will be unveiled at the 50th Annual Meeting in 2009. Younger members will be asked to interview current and former ASP Presidents, Honorary Members, and Research Award Recipients. This book will allow younger members to contribute to ASP's history. More details will be provided to volunteers at this year's ASP meeting as well as a list of questions to assist in the interview process. Please contact Dr. Baggett if you are interested.

ASP younger members are defined as undergraduate or graduate students, or post-doctoral (or industry equivalent) researchers within five years of their doctoral degree.

The YMC hopes to see you in Portland!

New College of Pharmacy at Hilo Erupts with ASP Members

by Dr. John Pezzuto

The new College of Pharmacy at the University of Hawaii at Hilo (UHH) campus, is prepared to enroll the first class of Pharm.D. students this August. The College will welcome the founding dean, ASP member Dr. John M. Pezzuto, as well as three other ASP members Drs. Robert P. Borris, Leng Chee Chang, and Anthony Wright.

Dean Pezzuto had served for the previous five years as Dean of the College of Pharmacy, Nursing and Health Sciences at Purdue University, following a 22-year career at the University of Illinois at Chicago.

Dean Pezzuto notes, "It is a great honor to serve as the founding dean for the first and only



Heaven's gate: The entrance to the new College of Pharmacy at the University of Hawaii at Hilo.

College of Pharmacy in the State of Hawaii. The support of the community and the profession is powerful, and we intend to build a program that will rank among the best in the world. The combination of abundant natural resources, unimaginable beauty, extraordinary talent, and cultural diversity, creates a uniquely intellectual environment for the education of our students and the pursuit of our scholarly activities. As we continue building our faculty and staff, we invite additional members of ASP to consider opportunities in 'paradise'."

Dr Wright, Associate Professor and Chair, Department of Pharmaceutical Sciences, notes, "I am very excited about joining the faculty at UHH, and helping to build a preeminent department of pharmaceutical sciences. Opportunities for

natural product research in the Pacific Basin are truly outstanding, and our activities in discovery will certainly strengthen our mission of educating Pharm.D. students. I also look forward to the possibility of taking a more active role in the ASP."

Assistant Professor Chang, enthusiastic about a College of Pharmacy enriched with the "aloha spirit" of living and treating others with love and respect, relates, "It is with great excitement that I join the first College of Pharmacy at UHH. At the crossroads of the Pacific, Hawaii provides an extraordinary natural and cultural environment and a great opportunity to educate and train pharmacy students from the East and West. The largely unexplored, rich natural resources of these islands offers great potential for drug discovery in natural products research."

Other faculty include Drs. Dyanne D. Affonso, Executive Administrative Specialist, Edward Fisher, R.Ph., Professor and Associate Dean, Academic Affairs, Ghee T. Tan, Assistant Professor, Anita E. Ciarleglio, R.Ph., Instructor. Also on the faculty are Drs. Mark P. Okamoto, Pharm.D., R.Ph., Professor and Chair, Department of Pharmacy Practice, Carolyn Ma, Pharm.D., BCOP, CHTP/I, Clinical Coordinator, Elizabeth A. Seese, B.A., Director of Student Services, Amy Knehans, M.L.I.S., Pharmacy/Health Sciences Librarian, and Tamara Kondratyuk, Laboratory Manager. Recruitment plans for the next academic year call for filling an additional 16 positions.

The ASP is well represented in the Department of Pharmaceutical Sciences, including Dr. Borris, past ASP President (1997-1998), who will serve as Associate Professor and Associate Dean of Research. Dr. Borris relates, "Joining the faculty at UHH has given me an extraordinary opportunity

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New College of Pharmacy at Hilo Erupts with ASP Members

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to share the experiences of a long career in drug discovery in the pharmaceutical industry with our students and young faculty members. Hopefully, this different perspective will help to energize our research program and enhance our students' perception of their professional horizons. As a pharmacist and pharmaceutical scientist, I am thrilled to be a part of this new venture. As a pharmacognosist, I can only say that paradise is a completely inadequate description of our surroundings in Hilo."

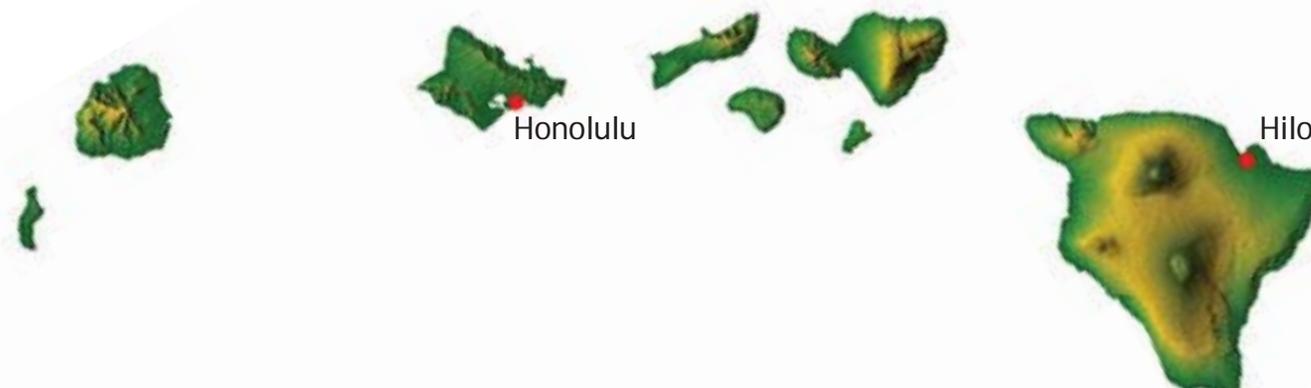
The College of Pharmacy is the only academic pharmacy unit with the University of Hawaii System, and in the State of Hawaii. After the appointment of Dean Pezzuto, the University of Hawaii Board of Regents approved the organizational structure of the new college, as well as the curriculum and the program leading to the award of the Pharm.D. degree. Regional accreditation has been received from the Western Association of Schools and Colleges (WASC), and the Accreditation Council of Pharmaceutical Education (ACPE) is scheduled to visit the program in May 2007 for action at their June board meeting.

Great enthusiasm for investigating the copious natural resources of Hawaii and the Pacific Region, as well as studying the various traditional healing practices of the Pacific, imbues the scholarship of the College. Additionally, the pharmaceutical science agenda of the college will clearly retain an emphasis in natural products. In this vein, Dean Pezzuto serves as a director of a program project, "Natural Inhibitors of Carcinogenesis", supported by the National Cancer Institute, and serves as a collaborator with Dr. Tan on an International Cooperative Biodiversity Group directed by ASP member Dr. Doel Soejarto.

For additional information about the UHH College of Pharmacy, see <http://pharmacy.uhh.hawaii.edu/>.



ASP members Drs. John Pezzuto, Anthony Wright, Robert Borris, and Leng Chee Chang (clockwise from top left) join the new College of Pharmacy at University of Hawaii at Hilo.

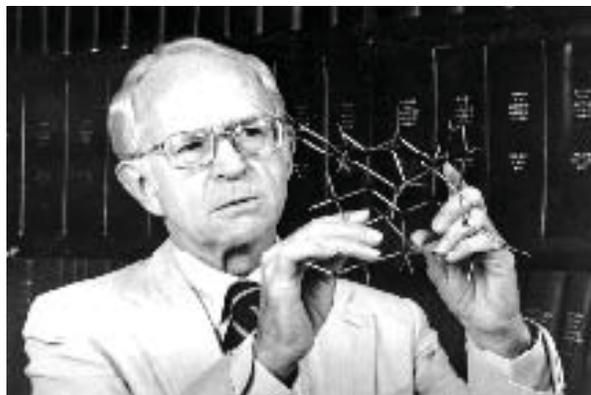


March Issue of the *JNP* Honors Dr. Kenneth L. Rinehart

by Amy Keller

The March 2007 issue of the *Journal of Natural Products* was dedicated to the late Dr. Kenneth L. Rinehart, past ASP President (1995-1996), to honor a widely diverse and distinguished career in natural product chemistry. The honorary issue contains 16 full articles, eight notes, four contributed reviews, and an editorial tribute from four ASP members with a strong association with Dr. Rinehart, Drs. Guy Carter, James Gloer, Jun'ichi Kobayashi, and Cedric Pearce.

Until his passing on June 13, 2005, Dr. Rinehart was a University Scholar, professor, and researcher in the School of Chemical Sciences at the University of Illinois at Urbana-Champaign.



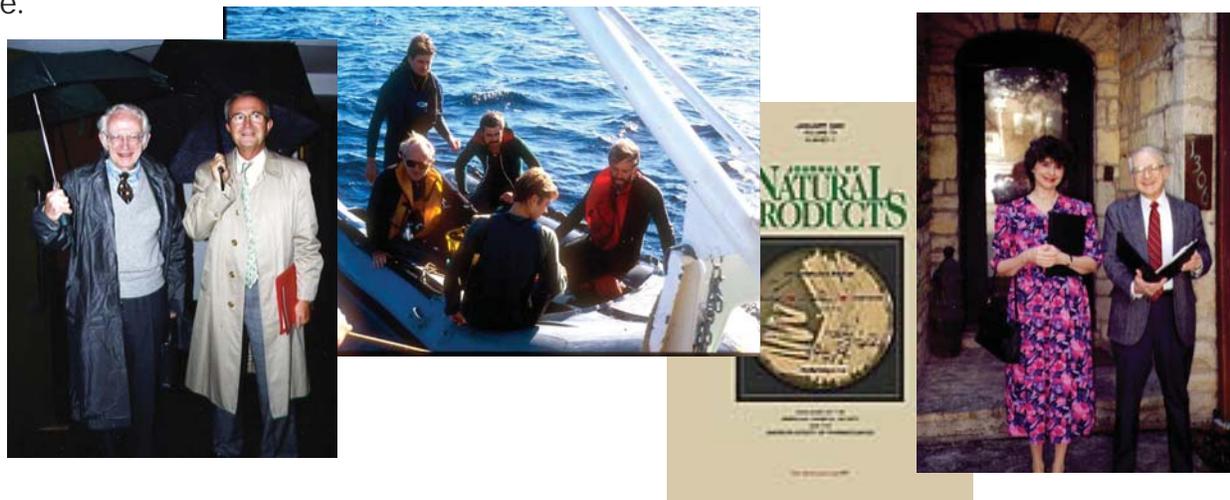
Dr. Kenneth Rinehart

Dr. Rinehart's career began as a chemist with an aptitude and interest in natural products. Initially researching antibiotics from *Actinomycetes*, he specifically investigated a new class of antibiotics, neomycins, from *Streptomyces fradiae*. Dr. Rinehart went on to invent a method known as mutasynthesis, later used by Pfizer to develop an antiparasitic compound for livestock called doramectin.

Later in his career, Dr. Rinehart started studying natural products of marine organisms. Most notably, he and his group discovered didemnins, a class of cyclic depsipeptides, from the marine organism *Trididemnum solidum*. Several of these compounds have been in clinical trials for anticancer activity. These compounds have also been found to reduce the function of the immune system and inhibit viruses of DNA and RNA. Also discovered by Dr. Rinehart's group was another class of anticancer compounds known as ecteinascidins from the marine animal *Ecteinascidia turbinata*. One of the ecteinascidins is currently in drug development for the treatment of various cancers.

Dr. Rinehart's achievements culminated in many awards. In 1988, he was awarded an Anniversary Medal from the Kitasato Institute in Tokyo. In 1989, he was awarded the Research Achievement Award from ASP and later earned the Ernest Guenther Award in the Chemistry of Natural Products from the American Chemical Society in 1997. In 1998, the University of Missouri awarded him an Honorary Doctor of Science degree. Dr. Rinehart graduated 139 graduate students, 67 undergraduates, and 124 postdoctoral researchers. His career resulted in 390 publications, 35 patents, and seven books.

The honorary issue of the *Journal of Natural Products* is a fitting tribute to a wide breadth of achievement and contribution to natural product research. The issue can be purchased at the ACS website.



Beyond Corn: Botanical Center Funded in Iowa

by Amy Keller

The Office of Dietary Supplements (ODS), a component of the National Institutes of Health (NIH), announced a grant to Iowa State University (ISU) to study botanicals used as ingredients in dietary supplements.

A multidisciplinary research team will study *Hypericum perforatum*, or St. John's wort, *Prunella vulgaris* or self-heal, and several types of *Echinacea* species, such as purple coneflower, for their anti-viral and anti-inflammatory properties. The center will be headed by Dr. Diane Birt, Distinguished Professor at ISU, and will bring together researchers from ISU, the University of Iowa (UI), and Yale University.

Dr. Birt told the *Newsletter*, "The focus of the Iowa Botanical Research Center is to use the genetic and chemical diversity among species of *Echinacea*, *Hypericum*, and *Prunella* to probe the relationship between genetics, chemical profile, and bioactivity. The objective is to improve the use of these genera for potential human health benefit. The collaboration of botanists, chemists, food scientists, immunologists, nutritionists, statisticians, virologists, and others makes this a vibrant and invigorating research program."

Dr. Paul Coates, Director of the Office of Dietary Supplements, noted, "The work of all of the NIH-sponsored botanical research centers has proven to be important in advancing science in this area. We expect that this center at Iowa State University and the University of Iowa will continue to provide new insights into factors that can influence levels of bioactive components in plants and thereby modify the biological effects of botanicals used in dietary supplements."

NIH currently funds six dietary supplement research centers focused on botanicals. Scientists within these centers emphasize basic and preclinical research of potential benefit to human health. The studies at ISU will focus on identifying compounds and chemical profiles for anti-viral and anti-inflammatory activities and complement research at other centers that are studying the botanicals and inflammation. In recent years, inflammation has been identified as a common denominator of a number of chronic diseases, such as heart disease.

The National Center for Complementary and Alternative Medicine (NCCAM) at NIH will co-fund the Iowa center. "Given that millions of Americans are using natural products, this research center will join several other NIH-funded botanical centers in conducting key research to determine whether and by what mechanisms botanicals may serve as effective treatments or preventive approaches," said Ruth L. Kirschstein, M.D., Acting Director of NCCAM.

2007 ASP Election Results

The Tellers Committee, appointed by President Roy Okuda, announces the following results of the 2007 election:

Vice President (2007 - 2008)

Guy Carter

Executive Committee Members (2007 - 2010 and 2011)

Barbara Timmermann (4 year term)

Tawnya McKee (3 year term)

A total of 983 ballots (595 USA and 388 non-USA) were mailed in March, 2007. Of this total, 322 ballots (245 USA and 77 non-USA) were returned and counted. Therefore, 33% of the qualified voting members of the ASP participated in this election.

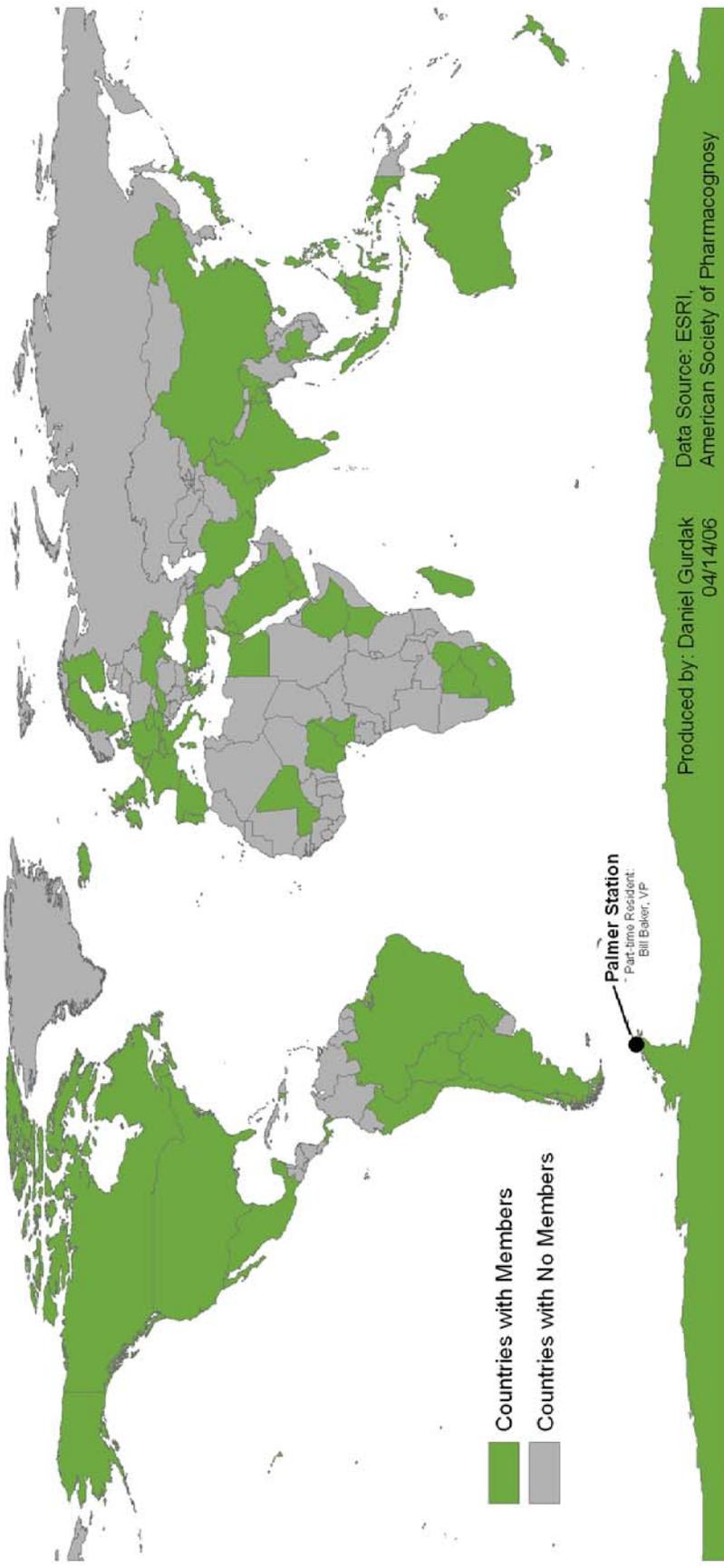
ASP Membership Map

In the past few months, a number of issues have illustrated to me just how globally connected that ASP has become. In March, on a whim, I decided to catalog the countries in the world with one or more ASP members. To my surprise, the number was 69!

An undergraduate student from Lehman College, Daniel Gurdak, working with *ASP Newsletter* Editor, Dr. Edward Kennelly, has produced a map showing the distribution on Earth of our membership. A poster of this map will be displayed at the Annual Meeting in Portland.

We have members from all seven continents! (See the map below to discover who represents Antarctica – it is not a penguin). Of course, we have been a global Society for quite awhile, but this presentation is a striking representation of our range worldwide. We

by Dr. Roy Okuda



ASP Newsletter Welcomes Guest Columnist

Georgia on Our Minds

by Amy Keller

The *Newsletter* would like to welcome Dr. Georgia Persinos Perdue as a guest writer. Dr. Perdue's occasional column will be called "News from Washington". As the former Editor and Publisher of *Washington Insight*, a quarterly publication for natural product scientists, Dr. Perdue brings extensive experience of the many facets of natural products research to the *Newsletter*.

Dr. Perdue's column will cover Washington developments of interest to ASP members. She regularly attends Advisory Council Meetings for a number of NIH Institutes and Centers, as well as FDA and other government agency meetings and public hearings. Relevant information gleaned from these meetings will serve as the basis for her column.

Dr. Perdue earned a B.S. in pharmacy, and an M.S. and Ph.D. in Pharmacognosy from the Massachusetts College of Pharmacy. As the first woman Ph.D. graduate from the College, she became a registered pharmacist in Massachusetts and did her initial research on wound-healing sap from *Croton lechleri*, a traditional Peruvian medicinal plant.

When asked to describe how *Washington Insight* began, Dr. Perdue explained, "I had attended some NCI Advisory Council meetings and wanted a newsletter aimed at pharmacognosists, medicinal chemists, and anyone in the natural products area. Another of my aims was to educate some of the members of Congress as to what pharmacognosy is."

After sending a questionnaire to ASP members to see if there was interest, *Washington Insight* was launched in 1988. As the Editor and Publisher, Dr. Perdue gathered most of the information by attending select NIH Advisory Council and other meetings, some FDA meetings, and with a press pass, sat in on hearings on the Hill.

In addition to her work with *Washington Insight*, Dr. Perdue has also written timely articles on medicinal plants such as *PDQ-A New Resource for Cancer Patients*, and others appearing in publications aimed at the general public, such as *World and I*, and *International Medical Tribune Syndicate*.

Dr. Perdue has had a broad career of both public and private sector work, including directing the Division of Phytochemistry at the Natural Products Research Laboratories in Rockville, Maryland and consulting for Amazon Natural Drug Company. Dr. Perdue has also owned and directed a private laboratory, Bergstrom Toxicology Laboratory.

Dr. Perdue's favorite books include the Bible, *Undaunted Courage* by Stephen Ambrose, *Mary Queen of Scots* by Antonia Fraser, and she is also an avid reader of *Chemical & Engineering News*. In her spare time, Dr. Perdue is active in the Fourth Presbyterian Church in Bethesda, Maryland. One of her many activities includes editing *Fourth Quarterly*, a scholarly publication.

The *Newsletter* is excited to collaborate with Dr. Perdue, and encourages ASP members to look for her contributions in future issues.



Dr. Georgia Persinos Perdue

OSU Celebrates Pharmacognosy

by Mark Bahar and Joshua N. Fletcher

"Natural Products and Pharmacognosy" was the theme of this year's Research Day at the College of Pharmacy, The Ohio State University (OSU). Held at the newly opened Biomedical Research Tower on May 10th, the symposium honored the accomplishments of two faculty members and ASP members Drs. Raymond W. Duskotch and Larry W. Robertson, both now Emeritus Professors, who between them served a total of 48 years on the OSU faculty.

The morning sessions were opened by Dr. Robert W. Brueggemeier, the Dean of College of Pharmacy, who emphasized the importance of the research day series by saying, "Research Day is an opportunity to showcase the research of our faculty, students, and staff of our College. Each year, the symposium highlights the scientific accomplishments of distinguished faculty and invited speakers. Natural products and pharmacognosy have been, and will continue to be, an important part of research activities in this college."

YE DENG AND JONATHAN GLADDEN



Dr. Charles D. Hufford, Dr. and Mrs. Jinn Wu, Mrs. Halia Duskotch, Dr. R.W. Duskotch, his daughter Donna, Dr. Pamela L. Boner, Dr. Shoei-Sheng Lee, and Dr. Michael J. Pcolinski (left to right).

Dean Brueggemeier continued, "This impact is clearly evident at this year's symposium which highlights the outstanding careers of Drs. Raymond W. Duskotch and Larry W. Robertson. Furthermore, the presentations by the invited speakers emphasized the long tradition of OSU's

natural products and pharmacognosy program, beginning with [former ASP President] Dr. Jack L. Beal and now continuing with [former ASP President] Dr. A. Douglas Kinghorn. Research in natural products and pharmacognosy enables the identification of novel chemical scaffolds and biological activities for lead identification in drug discovery," Dean Brueggemeier stated.

Dr. Norman R. Farnsworth, Distinguished University Professor of Pharmacognosy University of Illinois at Chicago (UIC), and Honorary ASP Member, spoke first and discussed, "Do Botanical Dietary Supplements Really Work? What Pharmacists Need to Know". Dr. Farnsworth, a world expert in this field, covered the current regulations on dietary supplements, the UIC based database, NAPRALERT, and how crucial it is to have the facts about herbal remedies, both when claiming that a dietary supplementary "works" or condemning it as toxic for human health.

For example, *Cimicifuga racemosa* (black cohosh), on which his group at UIC is currently working, is claimed by some sources as "hepatotoxic". Dr. Farnsworth noted that the cases needed to be looked at thoroughly before casting blame on this herbal remedy, and added that, "an ongoing four-arm Phase II study at UIC involving menopausal women has not seen any evidence of liver toxicity; neither did another study at Columbia University." Concluding his talk, he emphasized the importance of updated information on dietary supplements, and that pharmacists should not believe everything they see in the press, more specifically the adverse effects of botanicals.

Dr. Gary D. Stoner, Emeritus Professor, Chemoprevention Program, Colleges of Medicine and Public Health, OSU, in his talk, "A Berry-Based Approach to Chemoprevention of GI Tract Cancers", discussed the chemopreventive potential of edible fruits that are considered to be very safe. Dr. Stoner has worked with several types of dietary berries, such as blackberries, blueberries, raspberries, and strawberries, and used standardized extracts to evaluate their effects in preventing induced gastrointestinal tract cancer in mouse models. Black raspberry extract was found to be the most active, and his group

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OSU Celebrates Pharmacognosy

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has elucidated the changes in gene expression and some of the signaling pathways that the extract intervened. He mentioned some clinical trials currently being carried out on humans, and said that the results up to now are very promising.

Dr. Bella H. Mehta, a clinical assistant professor at the College of Pharmacy, OSU then spoke on the current state of complimentary and alternative medicine education at the university in her presentation, "Herbs and Dietary Supplements: Making the Transition from Paper to Practice". The talk focused on health-care professionals and how lack of education and perceived prejudice against the use of botanicals has resulted in most patients not reporting the use of botanicals to their doctors or pharmacists. She mentioned how pharmacists at OSU are trying to change this situation by making information about dietary supplements available to professional colleagues.

The morning session concluded with a presentation by former ASP President Dr. Lester A. Mitscher. After reminiscing about his time on the faculty at OSU between 1968-1975, Dr. Mitscher, a University Distinguished Professor from the Department of Medicinal Chemistry in the School of Pharmacy at the University of Kansas, gave a talk entitled, "Connections: From The Revolution to Novel Chemotherapy". In a blend of science and history, he mentioned his interest in the hop tree, *Ptelea trifoliata*, and its connection to Hessian mercenaries from the American Revolution.

"Everything evolves or it dies", he said, on the significant changes that pharmacognosy took as a



YE DENG AND JONATHAN GLADDEN

Drs. A. Douglas Kinghorn, David J. Newman, Norman R. Farnsworth, Pamela L. Boner, Lester A. Mitscher, Larry W. Robertson, Michael J. Pcolinski, Shoei-Sheng Lee, and Raymond W. Doskotch (left to right).

science in the last 50 years. Focusing on one of these trends, Dr. Mitscher used combinatorial chemistry as a tool to modify natural products for increasing their potency. "Plants or bacteria don't have us in mind when they are producing these compounds" he said, "they need to be tweaked around a little sometimes."

Next, in a keynote address, ASP member Dr. David J. Newman, Chief, Natural Products Branch, National Cancer Institute, Frederick, Maryland, presented, "Mother Nature's Gifts to Cancer Chemotherapy and Other Diseases" and pressed home the importance of secondary metabolites as an integral part of the drug discovery process. In his inspiring talk, Dr. Newman cited figures from his recent review in the *Journal of Natural Products*, and gave examples ranging from plants and marine organisms to cyanobacteria and spiders. Dr. Newman commented, "Although it appears that nowadays drugs are made in laboratories by synthetic chemists, in fact, a preponderance of drugs in clinical use and in clinical trials, particularly in cancer and infectious diseases are still utilizing [nature] as guides to what molecules to synthesize, which I call 'Natural Product-based Chemical DNA'."

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OSU Celebrates Pharmacognosy

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Dr. A. Douglas Kinghorn, Jack L. Beal Professor and Chair, College of Pharmacy, OSU, followed with a brief overview of the pharmacognosy tradition at OSU College of Pharmacy, emphasizing the work of Drs. R.W. Duskotch, L.W. Robertson, the late Dr. Beal, and former ASP President and Dean John M. Cassady. Dr. Kinghorn also mentioned the *Journal of Natural Products*, the head office of which is currently located at OSU. The editorship of the journal has been closely related with OSU in the past. Dr. Beal edited the journal between 1977-1983 and had the foresight to change the title of the journal from *Lloydia* to its current title. The editor prior to Dr. Beal was the late Dr. Arthur E. Schwarting, who obtained his Ph.D. at OSU, and was the first doctoral graduate of the College of Pharmacy.

The research day's closing session began with reminiscences by former students of Dr. Duskotch and Robertson, and was introduced by Dr. Tom Li, Acting Chair, Division of Medicinal Chemistry and Pharmacognosy. Dr. Robertson's former students Drs. Appavu Chandrasekaran, Wyeth, and Robert L. Chapman, Associate Professor, Midwestern University, Illinois, followed by three of Dr. Duskotch's former students, ASP member Dr. Pamela L. Boner, Pfizer, Dr. Michael J. Pcolinski, BASF, and ASP member Dr. Jinn Wu, Xenobiotics Labs, who spoke highly of their time at Ohio State.

The day's event was highlighted by reflections by Drs. Larry W. Robertson and Raymond W. Duskotch, who talked about the work they did during their time at OSU. Dr. Robertson took the audience on a journey through time with a picture slideshow, starting from his initial faculty appointment at the University of Mississippi to his lengthy tenure at OSU. He covered the key points of his research fields, namely microbial biotransformation and the continued work on cannabinoids, a Mississippi tradition.

Dr. Duskotch started his talk with a little piece of history about his roots in Ukraine. He told the audience about how his family moved from Ukraine to Canada when he was a child, and then moved to his graduate school years at University of Wisconsin, where he said, "the academic environment was unique". In the last part of his talk, he went on to talk about his students, one by one. "Every student is different", he said, "and they all become like your children, with their own strengths and weaknesses. And as their mentor, you haven't done a good job if you haven't set them on a path where they can thrive in their future careers".

When reflecting on the day's events, Dr. Kinghorn commented, "It was a real pleasure to have coordinated the scientific program for our 2007 Research Day, highlighting the work on natural products and pharmacognosy. All of us present were very impressed with the excellent quality of the speakers. We can look forward to many more years of active contributions in this field at the College of Pharmacy, at Ohio State."



Reflections of the ASP President

by Dr. Roy Okuda

Sadly, just in the past few months we have lost four colleagues who have played a significant role in the Society, and who exemplify our global range.

In March, we learned of the passing of Professor Egil Ramstad, who was the seventh President of the ASP from 1966 to 1967, when the Society was still in its formative years. After a period spent at Purdue, he took posts in three universities in the African continent, finally retiring from Rhodes University.



ASP President Dr. Roy Okuda

Shortly after, we lost Professor Robert Hegnauer, a longtime Honorary Member of the ASP. Professor Hegnauer was on the faculty of the School of Pharmacy of Leiden University, Netherlands.

Within four days in May, Professor A. Ian Scott of Texas A&M and Dr. Steve Straus, the first Director of NCCAM, passed away. Professor Scott, a native of Scotland, received the ASP Research Achievement Award in 1993, and his pioneering contributions to natural products will leave a lasting impact.

Dr. Steve Straus is known to many ASP members who work with NIH-NCCAM, and his untimely passing will be a loss for our field. The ASP mourns the loss of these esteemed colleagues and expresses our condolences to their families.

Looking ahead, in 2009, the ASP will celebrate the 50th Anniversary of our founding. A number of activities are planned to coincide with that milestone. We will commemorate our golden year with a special meeting in Hawaii that summer.

One reason for holding the meeting there is to build our ties with Pacific region colleagues. Under way are several projects geared towards collecting our history in various forms, including a History Book, led by Dr. Gordon Cragg, a photo archive, led by Dr. John Beutler, and a Society records archive, collaboration by Drs. Bill Keller and Gordon.

These projects should largely be done by the time of our anniversary in 2009, but what happens after that? I think that the time of our 50th anniversary is not only a time to reflect on the past, but to consider the future of pharmacognosy.

To begin this discussion, this edition of the *ASP Newsletter* contains four essays from notable colleagues that share their thoughts on how we got to where we are today, and their views of the future. Representing industry is Dr. Guy Carter, representing government are Drs. John Daly and Samuel Page, and academia is represented by Drs. Alice Clark and Charles Hufford. These are very thoughtful articles from highly knowledgeable ASP members, and should be of interest to anyone working in our field.

A few days ago, I returned from judging in the Intel International Science and Engineering Fair (ISEF) in Albuquerque, New Mexico, where 1,500 high school students from over 40 countries exhibited their high quality projects.

My co-judge, Dr. Rosie Bonjouklian, and I decided on three excellent projects involving pharmacognosy. Among the winners were three young men from Shanghai whose project dealt with the development of a novel steroid glycoside from oleander as an insecticide. At the award ceremony, when their names were announced, they ran at full speed to the stage!

Backstage, two of the students pulled out their cell phones and, not caring about the time difference, immediately called their families in Shanghai to let them know they had won an award in Albuquerque. Now THAT's the global reach of the ASP!

In Memoriam: Egil Ramstad

by Dr. Isadore Kanfer

Past ASP President (1966-67), Professor Egil Ramstad, died on March 8, 2007 in South Africa at the age of 95.

ASP President Dr. Roy Okuda stated "As the seventh President of the ASP, Dr. Ramstad played an important role in the evolution of the Society in its early years. He also contributed significantly to the modern development of pharmacognosy as an academician at Purdue University, and in establishing pharmacy programs at two universities in Nigeria and at Rhodes University, South Africa. We are saddened to hear of his passing, and offer our sincere condolences to his family."

Professor Ramstad was born on an island off the coast of Norway, near Namsos. He attended the primary school on the island where there were only two classes, the lower and the upper. Children spent four years in each, attended alternately in two-week stretches, and had one teacher throughout.

From this humble background he proceeded through his schooling to graduate in Pharmacy from the University of Oslo in 1935, and subsequently from Liege University in Belgium where he obtained his doctorate in Pharmacognosy in 1939. His studies focused on the anatomy, chemistry, and physiology of plants.

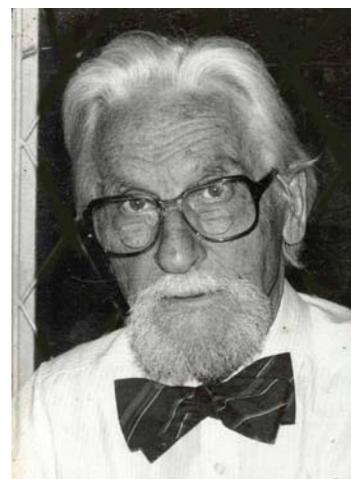
Professor Ramstad joined the staff of Oslo University, where he was then acting head of pharmacognosy. During his time there, he collaborated with Dr. Tor Christiansen to produce his first book in 1943, *Sammensatte Lægemidler*, and then another as sole author, both on medicinal agents of natural origin.

In 1936 he married Petrine Rypdal in Oslo, and had two sons, Yngve and Tore, and one daughter, Liv May. Dr. Tore Ramstad noted that his mother played an important role in his father's early success.

Along with other academics, Professor Ramstad was placed briefly in a concentration camp during the later years of World War II. Both before and after this event he was actively involved in teaching and research.

In 1949, he accepted a post as Professor of Pharmacognosy in the College of Pharmacy at Purdue University. His 22 years at Purdue inspired many young researchers as students for masters and doctoral degrees. His students came from throughout the United States, Canada, Europe, and the Far East and Africa.

At Purdue he wrote his third book, *Modern Pharmacognosy*, published in 1959. This is considered to be a revolutionary approach to pharmacognosy. Previous texts had taken a distinctly botanical approach to the subject, classifying medicinal plants taxonomically and dealing in great detail with the identification of the plant material both macroscopically and microscopically. His approach focused instead on the active constituents and classified useful substances on the basis of their chemical structure, giving rise to the current procedure of chemotaxonomy. His approach subsequently became the norm in this field. He was instrumental in shifting the focus in this field from a study of the chemistry of active constituents to one of a biochemical nature in which the process by which the living organism produces molecules of medicinal interest was investigated. He published extensively, particularly on the biogenesis of clavine alkaloids.



Dr. Egil Ramstad

He was chairman of committees of the American Association of Colleges of Pharmacy and of the American Academy of Pharmaceutical Sciences, and a reviewer and member of the Editorial Board of *Lloydia*, now the *Journal of Natural Products*. He was a Fellow of the American Academy of Pharmaceutical Sciences and of the Academy of Pharmacy of Nigeria. He was a consultant for USAID

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In Memoriam: Egil Ramstad

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to assist the University of Taiwan in its research efforts in natural products. He received a Research Achievement Award from the American Pharmaceutical Association in 1969.

Professor Ramstad left Purdue University in 1971 to take up a post at the University of Ibadan in Nigeria to assist in developing their research potential in natural products. He headed their Drug Research Unit and became Dean following the sudden death of the incumbent. He was Dean of Pharmacy there during its move to the University of Ife, remaining there until he accepted a research fellowship from the Council of Scientific & Industrial Research that brought him to Grahamstown, South Africa.

He then went to Rhodes University in 1974, immediately prior to the retirement of Professor Chris Price, and so was positioned to accept the post of Head of the School of Pharmaceutical Sciences. During his few years as Head, he worked diligently to revise the curriculum of the School so as to ensure the integration of the various disciplines of Pharmacy at the undergraduate level. He also spearheaded the effort to create a Faculty of Pharmacy, taking Pharmacy out of the Science Faculty and allowing it to develop on its own. He retired just at that time paving the way for the appointment of the first Dean of the Faculty, his successor, Professor Ben Potgieter.

Former ASP President Dr. Gordon Cragg said, "I was a junior chemistry faculty member at Rhodes University when pharmaceutical sciences was first introduced to the university curriculum, but I left before Egil arrived and played a major role in establishing one of the leading Schools of Pharmacy on the African continent. His contributions to natural products science in sub-Saharan Africa are notable, and we owe him much for his leadership in promoting and strengthening our discipline in this region so rich in biodiversity."

Following his retirement, he continued to study the natural world but this time as an undergraduate in geology. Knowledge gained here added considerably to his enjoyment of walks in the wild where he continued throughout his life to taste the leaves of plants he did not recognize. As his academic interests had largely centred on alkaloids, he held the view that if the plant was bitter, it would be worth studying.

His son Dr. Tore Ramstad recalls that his father always had an amazing command of foreign languages and linguistics. During the early years of his retirement, he allowed a lifetime interest in words to take hold, and virtually until his death he pursued a driving passion to show that the Norwegian language developed from the same source as Anglo-Saxon while the Icelandic language was a development of Gothic. In other words, that Old Norse did not act as the direct precursor of Norwegian.

Also during his retirement, he married Dr. Beverley Wilson with whom he shared his strong interest in the natural world as well as in language. They enjoyed extensive travels together throughout eastern and western Europe as well as North America. They shared a deep love for each other through 25 years of marriage. Dr. Wilson notes fondly that, "he remained a pharmacognosist to the end."

Professor Ramstad is survived by his three children and six grandchildren. His son, Dr. Tore Ramstad, noted "Yngve and I both earned doctorates, which I would think speaks to the inspiration and unbringing we got, in considerable part from Egil. My sister Liv May has done fine, too. She is presently a science teacher."

Professor Ramstad maintained a strong link with his country of birth where he had a wide network of family, having been one of eleven children.

He was a gentleman and scholar in the richest sense of these words and brought a novel point of view into his work and his life. He gained the respect of all his friends and colleagues. He is deeply missed by all who knew him.

In Memoriam: Robert Hegnauer

by Dr. J.J.C. (Hans) Scheffer

On April 14, 2007, ASP Honorary Member Professor Robert Hegnauer passed away after a short hospitalization due to a hip fracture, a subsequent operation, and an infection.

Fellow ASP Honorary Member, Dr. Norman Farnsworth, recalled, "Professor Robert Hegnauer was one of the finest gentlemen that I have ever met. His major claim to fame was the magnificent series of volumes of the *Chemotaxonomie der Pflanzen*, which are widely used by anyone interested in secondary metabolites from higher plants."



Dr. Robert Hegnauer

Professor Hegnauer was born August 1, 1919, near Bern, Switzerland. There, he started his pharmacy education and continued it in Zürich, where he obtained his pharmacist diploma. He then worked for one year in a pharmacy, while he also collected the plant material he needed for his doctoral study. He was a doctoral student at ETH Zürich, where he obtained his Ph.D. degree in 1948. His thesis was entitled, "*Beitrag zur chemischen und morphologischen Kenntnis der schweizerischen Thymusformen*".

In 1949, he moved to The Netherlands where he began his academic career at the Institute of Pharmacy of Leiden University, and where he was appointed Professor of Pharmacognosy in 1952. He focused his research on chemotaxonomic topics and as a result, changed his position in the Institute of Pharmacy to Biology in 1962, where he became Professor of Experimental Plant Systematics.

His scientific life has always been dedicated to the secondary constituents of higher plants, and it is to his great merit that he had a strong desire to include not only chemical, but also biogenetic and physiological data into plant systematics.

Professor Hegnauer is most famous for his enormous opus *Chemotaxonomie der Pflanzen*, used as a rich source of information by pharmacognosists, phytochemists, taxonomists, plant biochemists, and scientists of related areas. The first volume appeared in 1962 and the 13th one (volume XI-b2) in 2001. Thus, it took almost 40 years to finish this unique masterpiece consisting of more than 9,300 pages; most of these were written after he retired in 1979.

He was made an ASP Honorary Member in the 1970's. These members are selected by the Executive Committee of the ASP, based on meritorious service to the ASP. ASP President Dr. Roy Okuda noted, "Dr. Hegnauer was a long-standing Honorary Member of the Society. His work on glycosides and chemotaxonomy are still important contributions to the field today. We express our condolences to Mrs. Hegnauer and family."

Dr. Farnsworth fondly recalls Dr. Hegnauer participating in ASP Annual Meetings, "I recollect one ASP meeting many years ago when I offered him a few Marsh Wheeling cigars, which he seemed to savor. I indicated that I would send him a box, but he pleaded with me to not send them because the duty that he would have to pay would exceed the value of the cigars. I sent them to him marked 'non-living plant material, of no commercial value, for research purposes only', and he was delighted to receive them without his paying duty!"

In an award nomination, Professor Hegnauer's *Chemotaxonomie der Pflanzen* was described as, "not only compiling phytochemical data, but also discussing the structural variation of plant constituents, their biosynthetic routes, their variability in different taxa above and below the level of species, their impact on plant systematics, their biological effects, and last but not least, their function in terms of

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In Memoriam: Alistair Ian Scott

By Shana K. Hutchins

Professor A. Ian Scott, ASP member and recipient of the ASP Research Award, died on April 18, 2007 at the age of 79 in Texas.

Professor Scott held the Robert A. Welch Chair in Chemistry and the D.H.R. Barton Professor of Chemistry at Texas A&M University. He achieved international recognition for his work with vitamin B12, the essential life pigments chlorophyll and heme, the cancer drug taxol, and other antibiotics that fundamentally affected the field of natural products.

Professor Scott was born and educated in Glasgow, Scotland, received his doctorate from Glasgow University in 1952, and occupied chairs of chemistry at the University of British Columbia, the University of Sussex, and Yale University before joining Texas A&M 30 years ago. Dr. Scott was named a distinguished professor of chemistry and biochemistry at Texas A&M in 1981.

Dr. Scott was awarded the ASP Research Award at the 1993 Annual Meeting in San Diego. Each year the ASP selects a recipient for this award among its members who have made outstanding contributions to research on natural products. The award consists of an honorarium and travel expenses to present the award lecture at an annual meeting of the Society. Dr. Scott's award talk was entitled, "Genetically Engineered Synthesis of Natural Products".

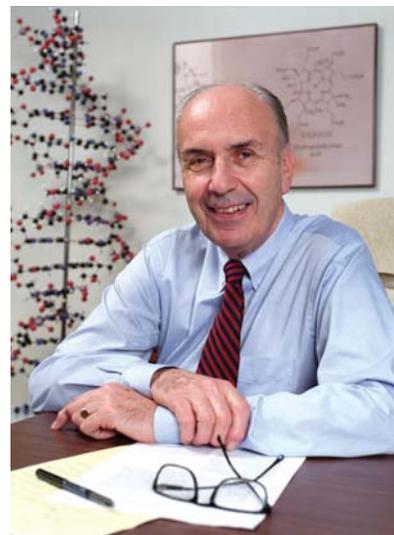
ASP President Dr. Roy Okuda remarked, "Professor Scott's passing is a tremendous loss for the natural products/bioorganic field. Still active in his research, he leaves a legacy of numerous seminal contributions to chemistry, and many scientists who trained in his laboratory. The ASP is fortunate to have honored Dr. Scott with The ASP Research Achievement Award in 1993."

In addition to ASP, Dr. Scott has received many awards and accolades, including the Queen's Royal Medal from the Royal Society of Edinburgh in 2001, the Davy Medal in 2001, the Bakerian Lectureship in 1996 from the Royal Society of London, and the Tetrahedron Prize and Medal for Creativity in Organic Chemistry in 1995. He received honorary degrees from the University of Pierre et Marie Curie in Paris and the Universidade de Coimbra in Portugal.

Most recently, Professor Scott was honored with the American Chemical Society's 2003 Nakanishi Prize for his successful efforts to replicate the vitamin B₁₂ creation process in a test tube. The Nakanishi Prize is named after another ASP Research Award Recipient, Professor Koji Nakanishi. In a separate article in this *Newsletter*, Dr. Nakanishi writes of Dr. Scott's achievements in natural products.

Dr. Geoffrey Cordell of the University of Illinois at Chicago recalled, "From our interactions over the past 40 years, I can say that Ian was an exceptional chemist. He was one of the few who could take on the great challenges of elucidating the magnificent pathways of monoterpene indole alkaloid or vitamin B12 biosynthesis, and he pioneered the use of tritium NMR in studying these processes, sometimes controversially. I think of Ian as a true Scottish laird, one who liked his glass of beer in the evening, even when, as in Karachi, it meant giving up one's passport temporarily to get it! Bio-organic chemistry has lost a great scholar and true gentleman."

In 1994, the A. Ian Scott Endowed Lectureship was established at Texas A&M in Dr. Scott's honor to provide funds for an annual lecture by a renowned chemist or biochemist who broadened educational opportunities for students in bio-organic chemistry.



Dr. Ian Scott

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Ian Scott Remembered

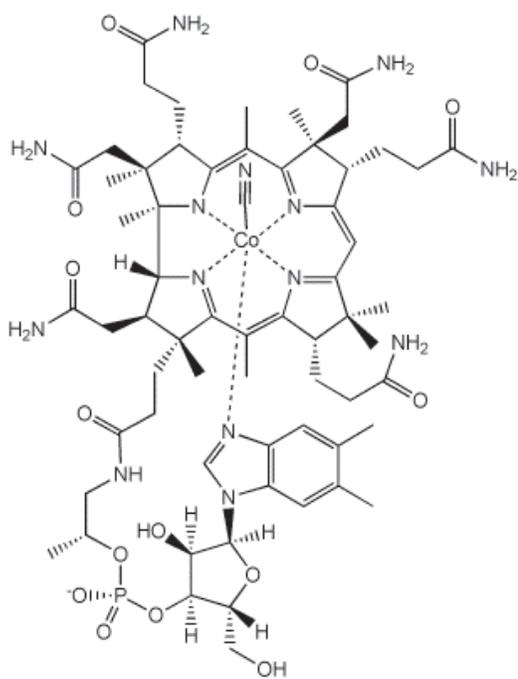
By Dr. Koji Nakanishi

Ian Scott was one of my closest friends for 40 odd years, since his days at the University of Sussex. Below are edited excerpts from a nomination letter I wrote for him earlier this year.

In his early career, during the 1960's and 1970's, Ian published seminal papers dealing with the biosyntheses of polyketides, and later the indole alkaloids. In the latter case he traced the biosynthesis of the alkaloids that give rise to vinblastine and vincristine, clinically important anticancer agents, by performing 200-hour exhaustive time-resolved isolation and characterization studies of the numerous intermediary alkaloids produced by *Vinca rosea* seeds grown with radioactive precursors. It was one of the very first time-resolved biosynthetic experiments performed with one of the most complex systems leading to various important alkaloids. He clarified the sequences in which one indole alkaloid is converted into the next, finally ending in the clinically important dimeric products.

Ian was a pioneer in demonstrating the power of physical methods in structure determination. Using circular dichroism, he was the first to establish that rings A, B, and C adopted antistructures in certain crucial terpenoids. His monograph, "Interpretation of the Ultraviolet Spectra of Natural Products", 1964, also became a most popular reference in natural products. Ian also pioneered the usage of solid state NMR, where he demonstrated its power in pursuing enzyme reactions which are slowed down in the solid state so that the process can be followed.

One of the most outstanding of Ian's efforts was his series of successes in clarifying the biosynthetic pathway of vitamin B₁₂. In an elegant and astounding manner, he combined the techniques of organic synthesis, ¹³C NMR, and molecular biology. This is a feat that only very few chemists could have done. In vitamin B₁₂ biosynthesis, which attracted many of the best minds in chemistry, Ian was clearly the most thorough in these complex studies. His combination of genetic engineering, spectroscopy, complex organic synthesis, and clear thinking led to a series of highly impressive series of papers.



Vitamin B12

In 1994, Ian disclosed that recombination of 12 biosynthetic enzymes in a single flask led to the 17-step synthesis of the corrin, hydrogenobyrinic acid in high yield. This approach is applicable to the synthesis of many natural substances including plant alkaloids, antibiotics, and hormones. Thus by transferring the genes encoding the synthesis of plant alkaloids from the cDNA library to *E. coli* and coupling the resultant expressed enzymes, the biochemical machinery of the plant can be specifically directed to produce alkaloids in bacteria. This discovery opened up a new field of synthesis of natural products.

In summary, Ian's insight and achievements in the design of experiments to uncover the mechanisms leading to vitamin B₁₂, plant alkaloids and antibiotics, and in the burgeoning area of biological nuclear magnetic resonance included discoveries which are unparalleled in this field. As a result of these works, it has become feasible to study the control of metabolism at the molecular level in living cells and tissues by direct, noninvasive spectroscopy, to devise extremely sensitive probes of enzyme-substrate interactions and to discover short-lived, air-sensitive intermediates in biosynthetic pathways at the microgram level.

Ian's studies were always characterized by his courageous application of new methods, whether spectroscopic or biological, and he continued to produce exciting and unique results on very important targets. He was an undisputed champion with no parallel.

In Memoriam: Stephen E. Straus

by Amy Keller and Dr. Georgia Perdue

Dr. Stephen E. Straus passed away on May 14, 2007, in Potomac, Maryland, of brain cancer at the age of 60. Dr. Straus was the first director of the National Institutes of Health (NIH) National Center for Complementary and Alternative Medicine (NCCAM) from 1999 to 2006.



Dr. Stephen E. Straus

Dr. Straus had a distinguished career, building Complementary and Alternative Medicine (CAM) research into a rigorous scientific field. Dr. Straus not only led investigation into herbal and botanical remedies, but also bolstered NCCAM's research into energy and body-mind therapies.

Dr. Straus was a Senior Investigator at the Laboratory of Clinical Investigation at the National Institute of Allergy and Infectious Diseases (NIAID). In addition to working on viral diseases and those affecting the immune system, Dr. Straus had experience with HIV/AIDS, Lyme disease, and chronic fatigue syndrome. He also studied and characterized chronic Epstein-Barr infections and served on a team that proved a vaccine effective against shingles in adults.

Dr. Straus earned a B.S. degree from Massachusetts Institute of Technology in Life Sciences in 1968 in Cambridge, Massachusetts, followed by a M.D. degree in 1972 from Columbia University College of Physicians and Surgeons in New York, New York. Shortly afterward,

Dr. Straus became a Fellow of Infectious Diseases at Washington University in St. Louis, Missouri. Dr. Straus had over 400 scientific publications.

ASP member Dr. Georgia Perdue noted, "I followed very carefully the tumultuous establishment and era of the Office of CAM, followed by NCCAM. I liked Steve Straus very much. He agreed to take on a very difficult job and was very candid, forthright, and gutsy in a polite way. I will never forget his saying that CAM products will be subjected to scientific clinical trials and the outcome, be it positive or negative, will have to be accepted by the American people."

Dr. Perdue recalled what she considered to be a brave statement made by Dr. Straus at his first NCCAM Advisory Council meeting in January 2000, "CAM materials are neither well standardized nor made under good manufacturing procedures. They lack purity, stability, bioavailability or any other preclinical data. A customer needs to know what is in the product. One cannot buy a bottle off the GNC store shelf and say it's okay to use in clinical trials."

Dr. Straus was to make NCCAM a strong, science-based Center, and tapped pharmacognosists for advice, which resulted in the primary goal of investigating the safety and efficacy of botanicals in humans. Dr. Straus was also instrumental in having ASP members Drs. Barbara Timmermann and Larry Walker serve on the NCCAM Advisory Council. Their terms ended recently.

ASP Honorary Member and UIC Botanical Center PI, Dr. Norman Farnsworth, remembers, "Steve Straus was the right person to head up NCCAM. A world class clinician, his major concern was to apply scientific principles to botanical science and weed out that which does not work and support research on botanicals that seem to work. He has developed NCCAM into a world class agency to support botanical science research and will be sorely missed."

Dr. Straus inspired scientists at all levels. Doctoral student and ASP member Adam Kavalier reflected, "Dr. Straus was an inspiration to many students and professors alike. His motivation and drive led to tremendous impacts in the field of natural products. On a personal level, he displayed sincere interest and kindness, and provided meaningful advice and guidance to graduate students."

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In Memoriam: Robert Hegnauer

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the plant's benefit." When Dr. Hans Scheffer presented Dr. Hegnauer with the ESA in Gold, the highest scientific honor of the Society for Medicinal Plant Research, or Gesellschaft für Arzneipflanzenforschung (GA), he cited these same words. The award was presented in 1999 at the joint meeting in Amsterdam of the ASP, GA, and other pharmacognosy societies.

In earlier years Professor Hegnauer had already received several honors. He was Honorary Member of the GA, and of the Deutsche Botanische Gesellschaft. He received honorary doctorate degrees from the ETH Zürich, and of the University of Utrecht. In 1977, he was honored with the Flückiger Medal and in 1987 he was awarded the Silver Medal of the Phytochemical Society of Europe.

The loss of Professor Hegnauer will be deeply felt in the world of plant sciences. He will be remembered not only as a great colleague and teacher, but also as a good friend, who has always been ready to help and inform those who asked his advice.

Dr. Hegnauer is survived by his wife, Mrs. Minie Hegnauer-Vogelenzang, and three children and their families.

In Memoriam: Alistair Ian Scott

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Dr. Scott is survived by his wife of 57 years, Elizabeth Scott of College Station, son and daughter-in-law Will and Cabrina Scott of College Station, daughter and son-in-law Ann and David Ryder, of Southlake, and six grandchildren.

Letters of condolence may be addressed to the A. Ian Scott Family in care of the Department of Chemistry, Texas A&M University, College Station, TX 77843-3255. The Scott family has requested that donations be made to the A. Ian Scott Endowed Scholarship to support students pursuing degrees in chemistry in care of the Texas A&M Foundation, 401 George Bush Drive, College Station, TX 77840-

In Memoriam: Stephen E. Straus

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Dr. Perdue remembers seeing Dr. Straus most recently at the NCCAM Advisory Council meeting in 2006, which she says, "took a lot of stamina for him to attend after surgery and chemotherapy treatments". In his Annual State of the Center Report, she remembers his noting the considerable work still needed in the area of CAM.

Dr. Straus is survived by his wife, Barbara, two daughters Kate and Julie, and son Benjamin.

The Shootings at Virginia Tech: A Personal Account

by Dr. David Kingston

Monday, April 16th, began like most other workdays for me in my office in Hahn Hall checking the weekend's accumulation of e-mails. The first indication of anything unusual was an e-mail message just before 9:00 am from our undergraduate laboratory coordinator to say that she had heard from a student about a gun threat in one of the dormitories. This was confirmed about half an hour later in an e-mail message from the University. Sadly, by the time I received this message the gunman, Mr. Seung-Hui Cho, had entered Norris Hall, an engineering building also used for teaching undergraduate classes in English and Foreign Languages, and had shot and killed 25 students and five faculty members, in addition to the two students he had killed earlier in the dormitory, and then himself. He also wounded another 20 or so students, some seriously. Hahn Hall is separated from Norris Hall by several buildings, so I saw or heard nothing of what was going on, and relied on e-mail, and later on TV news, to learn what was going on.

Once the second shootings happened, classes were cancelled for the day and soon thereafter for the rest of the week, and everyone was sent home. I spent most of the rest of the week trying to understand what had happened and trying to keep up with the flood of e-mails that poured in from around the world. Once the news of the shootings was made public I began to receive enquiries from colleagues and friends, some of whom I had not communicated with for years. The first e-mail was from Dr. Yali Fu Hallock at the National Cancer Institute, who wrote to ask if I was okay, and this was followed by many more over the rest of the day and the rest of the week.

Fortunately no one in my research group was killed or injured; most of the dead and wounded were either Engineering, English, or German students or instructors, since these were the classes underway in Norris Hall at the time. However, there were many deaths that impacted me or my students in various ways. One of my graduate students was the dance partner of a Lebanese female student who was killed, and another of my students, a female Indian graduate student, was close friends with an Indian female student who was killed.

A student in my undergraduate Organic Chemistry class was on the rescue squad tasked with taking some of the bodies to Roanoke for autopsy, and found that one of the dead he had to take was a close personal friend of his whom he had known since their freshman year together in the Corps of Cadets. One of the faculty members killed was the Israeli Engineering Professor Liviu Librescu, 76, who was a close friend of an Egyptian man who had been in our house many times. When the shootings started, Professor Librescu threw himself in front of the door to his classroom, and thus gave his students time to escape. He himself was shot to death, but all the students lived because of him. Finally, one of the students killed was a young woman who was a member of my church in Blacksburg.

One encouraging thing to come out of this tragedy has been the overwhelming response of so many people around the world. A common theme in the messages I received was, "we hope you are okay, and we are praying for you". The area churches held special prayer vigils, as did several student groups, and in the days following the shootings people could be seen on the Drill Field, a large grass area in the center of campus, gathered in small groups or as individuals for prayer and meditation.

In the days after the shootings help arrived from all over the country. As just one example, I met a member of a group of military chaplains, who are experienced in dealing with death, who had

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The Shootings at Virginia Tech: A Personal Account

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traveled down from New Jersey to provide support and counseling. The university community also hung together, and provided a lot of mutual support and encouragement. And I and all my colleagues received hundreds of e-mail messages, cards, and other expressions of sympathy.

The entire third grade class of a school in Northern Virginia sent a greeting card to the Chemistry Department, and messages came from all over the world. I personally received messages from friends and colleagues in the UK, Canada, Nigeria, Turkey, Brazil, Spain, India, and Madagascar, as well as the United States, and the University has received messages from more than 36,000 individuals and families. Anyone interested in reading some of these messages may do so at www.vt.edu/remember/.

In trying to come to grips with the enormity of the tragedy, I had a number of thoughts. The first one is that the gift of life is never something we should take for granted. Had Mr. Cho chosen to target a chemistry class, April 16th might well have been my last day, since I was scheduled to teach a section of Organic Chemistry later that day. I am grateful to God for preserving me. A second thought, that is especially meaningful to me as a Christian, is that there is such a thing as evil despite modern efforts to reclassify it as something else. In the April 20th issue of International Herald Tribune, Barbara Oakley, in a commentary titled, "A Killer on the Campus", closes her article with the words, "This is about evil, and about how our universities are able to deal with it as a literary subject but not as a fact of life."

The Christian writer Ravi Zacharias writes, "The strident atheists of our time like Sam Harris and Richard Dawkins are writing ruthless articles against any transcendent worldview, mocking and deriding belief in God. Let them look at the face of Cho and his video clips and see the end game in sight if their worldview is true: Life with no permanent address, with no name, no justice.... Life just dancing to a generic DNA. But their metaphysical framework flies in the face of every existential bone in the human frame. We have names, we long for purpose, we see evil, we cry out for justice, we wrestle against the silence of death, we define ourselves by relationships. Why? Because God has fashioned us with two great commandments in mind: to know and love Him and to know and love our fellow human being. Those two commandments are inextricably bound."

My thoughts and prayers continue to be with the families of those who have lost loved ones. Those who were killed were from many countries, such as Israel, Lebanon, Indonesia, India, and others, in addition to the United States. It must be especially hard for the parents of such children to lose them in this way. At least two of the students killed were the only children of their parents; my heart goes out to these parents in a special way.

The student who was a member of my church was Lauren McCain. Shortly after the shootings her father, Navy Captain David McCain, gave an interview on Fox News. As he spoke through tears about his slain daughter, he said, "She firmly believed that Christ forgave the people that killed Him. And she believed in forgiving, no matter what." Fox News reporter Shepard Smith was visibly moved by McCain's final comment, "I forgive him [Mr. Cho]". I pray that I will be able to show the same love and forgiveness to those around me who offend me in much smaller ways than Mr. Cho.



A memorial quilt for Virginia Tech displayed at Lehman College, Bronx, NY.

ASP 50th Anniversary Logo Contest

by Dr. Roy Okuda

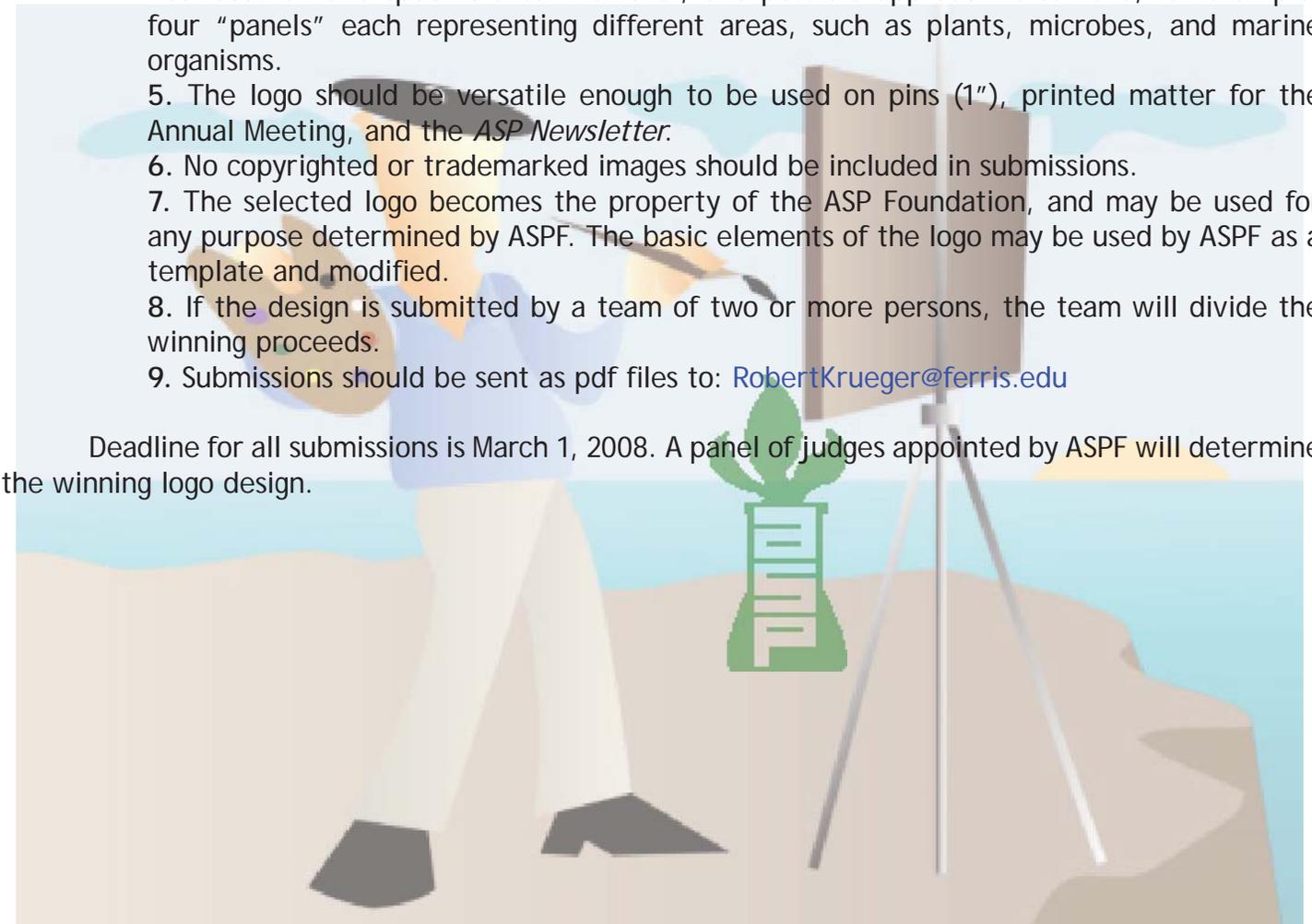
In 2009, the ASP will celebrate the 50th anniversary of our founding in 1959. For this special occasion, a special logo will be used to mark this milestone. The logo will be used in various ways, such as in the *ASP Newsletter*, printed items for the Annual Meeting, a special pin, and other ways, so it will have a lot of viewings!

We know the ASP is full of creative minds, so to encourage logo design submissions, the ASP Foundation is sponsoring a logo design contest. The guidelines for preparing and submission designs are listed below. The designer of the selected logo will receive one complementary registration for the 50th Anniversary Meeting of the ASP in Honolulu, or \$500 if unable to attend the meeting.

The rules for the logo design contest are below:

1. Submission must be by an active ASP member. Younger members are especially encouraged to contribute!
2. Submissions should at minimum, include the following design elements:
 - ASP "flower" logo
 - the years "1959-2009"
3. While not required, reference to the 50th or Golden Anniversary may be included, if it can be made to fit appropriately.
4. The logo should generally represent the broad nature of ASP and its members, and not focus on one specific area. However, one possible approach is to have, for example, four "panels" each representing different areas, such as plants, microbes, and marine organisms.
5. The logo should be versatile enough to be used on pins (1"), printed matter for the Annual Meeting, and the *ASP Newsletter*.
6. No copyrighted or trademarked images should be included in submissions.
7. The selected logo becomes the property of the ASP Foundation, and may be used for any purpose determined by ASPF. The basic elements of the logo may be used by ASPF as a template and modified.
8. If the design is submitted by a team of two or more persons, the team will divide the winning proceeds.
9. Submissions should be sent as pdf files to: RobertKrueger@ferris.edu

Deadline for all submissions is March 1, 2008. A panel of judges appointed by ASPF will determine the winning logo design.



Conference Calendar

The *Newsletter* is pleased to announce the following upcoming conferences and meetings. The events portrayed here reflect what listings and notices the *Newsletter* has specifically received. For a more extensive calendar, please visit the ASP website at www.phcog.org. If you have a conference or event you would like mentioned, please send us relevant information, including any graphics or appropriate fliers, at asp.newsletter@lehman.cuny.edu.

11th International Congress Phytopharm 2007

Leiden, The Netherlands
June 27-29, 2007

www.adaptogen.ru/phyto2007.html

55th Annual Meeting and International Congress of the Society for Medicinal Plant Research

Graz, Austria
September 2-6, 2007

www.ga2007.org

The 48th Annual Meeting of the American Society of Pharmacognosy

Portland, ME
July 14-18, 2007

www.phcog.org/AnnualMtg/Portland.html

5th International Symposium on Pharmaceutical Chemistry

Istanbul, Turkey
September 5-7, 2007

www.ispc5.hacettepe.edu.tr

Gordon Research Conference Plant Metabolic Engineering

Tilton, NH
July 13-15, 2007

www.grc.org/home.aspx

Materia Medica Linnaeus and Medicinal Products

Uppsala, Sweden
September 5-8, 2007

www.lakemedelsakademin.se/materiamedica

New Members of ASP

ASP would like to welcome our newest members. The Society's main objectives are to provide the opportunity for association among the workers in pharmacognosy and related sciences, to provide opportunities for presentation of research achievements, and to promote the publication of meritorious research. New members include 16 domestic full members, four international full members, and seven associate members. We look forward to meeting you and learning more about you and your work.

Full Members:

Dr. Esperanza Carcache-de-Blanco
Columbus, Ohio

Brian Carroll
Gig Harbor, Washington

Dr. Benjamin Clark
San Diego, California

Dr. Brent Copp
Auckland, New Zealand

Dr. Guang-Yao
New Brighton, Minnesota

Dr. Jimmy Gutman
Vaudreuil-Dorion, Quebec, Canada

Kate Hahn
Sugar Grove, Illinois

Dr. David James
Lexington, Massachusetts

Dr. Peter Katavic
Iowa City, Iowa

Dr. Aaron Monte
La Crosse, Wisconsin

Dr. Odorico Morales
Fortaleza-Ceara, Brazil

Dr. Louis Nelson
Abuja, Nigeria

Dr. Gemma O'Donnell
Lawrence, Kansas

Dr. Alison Pawlus
Houston, Texas

Mr. Mark Peterson
Chimacum, Washington

Dr. Mohamed Radwan
University, Mississippi

Dr. Tyler Rose
South Jordan, Utah

Dr. Ravi Subramanyam
Belle Mead, New Jersey

Dr. Ajay Singh
New Brunswick, New Jersey

Ms. Ginger Singer
Thompsonville, New York

Associate Members:
Mr. Alaadin Alaadin
Erbil, Iraq

Mr. Joseph Ashidi
London, United Kingdom

Ms. Enitome Bafor
Benin, Nigeria

Ms. Rita Dickson
London, United Kingdom

Dr. Fall Dlor
Dakar, Senegal

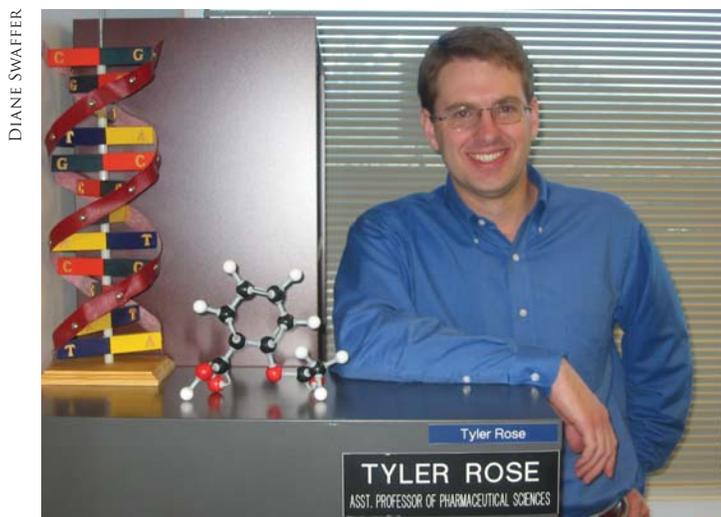
Mr. Zachary Kulberg
Fairfax, California

Ms. Margaret Teasdale
Westerly, Rhode Island

Meet a New ASP Member

by Dr. Diane S. Swaffar

ASP welcomes many new members to the Society each year. Our featured new member is Dr. Tyler Rose, Assistant Professor of Pharmaceutical Sciences at the South Jordan, Utah campus of the University of Southern Nevada (USN), one of the nation's newest pharmacy schools. He is a charter member of the faculty there and teaches medicinal chemistry and biochemistry to pharmacy students. We are grateful to him for giving us the opportunity to get more acquainted with him.



Dr. Tyler Rose

Why did you join ASP?

I have had a long-standing interest in natural product chemistry. As a child I was fascinated by plants while hiking around my native town of St. George, Utah, and wondered what kinds of molecules could be in those plants. My earliest attempts at extraction consisted of collecting leaves, twigs, and sticks from around the neighborhood with my friends and putting them in gallon milk jugs filled with water. I would store the jugs in the refrigerator but my parents would throw them away. Who knows what important medicines they threw out!

What are your research interests in pharmacognosy?

I am interested in native desert plants of Utah, including the symbiotic bacteria that may be associated with these plants. I am especially interested in plant compounds with antidiabetic properties.

What is your scientific background?

I obtained my B.S. in Chemistry from Southern Utah University. I began my graduate work at Utah State University where I studied marine microbial natural products with Dr. Bradley Davidson. I later entered Dr. Glenn Prestwich's group at the University of Utah where I received my Ph.D. in Medicinal Chemistry in 2006 working on fluorogenic probes for phospholipases.

What would you like to achieve through your membership?

I hope to be able to enhance my teaching and research career by developing skills and techniques in natural products research that I have not yet had the opportunity to become familiar with. By joining the ASP, my major aspiration is to develop collaborations so that our new pharmacy school will eventually be able to expand its research program in natural products and foster exciting research opportunities for pharmacy students at USN.

What are you currently reading and what do you like doing in your spare time?

I enjoy spending time with my two young daughters. We especially like hiking, biking, gardening, and roller-blading. When not with my daughters, I am reading books on natural product techniques.

Behind the Scenes in Pharmacognosy

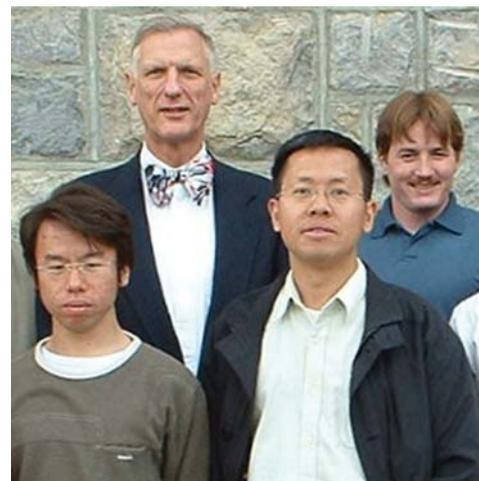
From the Madagascar Rain Forest to the Hills of Virginia

by Amy Keller

In March of this year, the *Journal of Natural Products* published, "Cytotoxic Triterpenoid Saponins of *Albizia gummifera* from the Madagascar Rain Forest", authored by Shugeng Cao and others in the laboratory of Dr. David Kingston. This article appeared in the March 2007 issue in honor of Dr. Kenneth L. Rinehart. Dr. Kingston graciously answered our questions regarding this multi-faceted study.

How did you become interested in *Albizia gummifera*?

We did this work as part of the Madagascar International Cooperative Biodiversity Group (ICBG). In this group our botanical colleagues at Missouri Botanical Garden (MBG) and Centre d'Application des Recherches Pharmacutiques (CNARP) make essentially random collections of plants from the northern part of Madagascar, and chemistry colleagues at CNARP prepare extracts of these plant collections. We then screen these extracts for activity against the A2780 ovarian cancer cell line, and select the most promising extracts to work on. An extract of *Albizia gummifera* showed significant activity in this assay, and thus was selected for fractionation studies.



The Virginia Tech *Albizia* team: Dr. David Kingston, Andrew Norris, Yanpeng Hou, and Dr. Shugeng Cao (left to right, back to front).

What is it like to be part of an International Cooperative Biodiversity Group? How did you become involved with this kind of cooperative research?

The ICBG program has been one of the hardest but also one of the most rewarding things I have done. It is hard because the program is very complex; we have seven independent Associate Programs working together in Madagascar, and just keeping up with all the e-mails, managing all the budgets, and writing all the reports seems to be a full time job! But it is rewarding because we have been able to do much more than simply discover new chemical compounds. For example, we have done a lot of good work in the development area, with bridges built, wells dug, and storage buildings constructed. We have enhanced the capabilities of CNARP by the establishment of a malaria bioassay unit, purchase of a new HPLC and other equipment, assisted in the establishment of the Diego protected area, and have greatly extended our knowledge of the plant life of Madagascar with the identification of several new species and the publication of guides to the ferns and plants of Zahamena.

I became involved in the ICBG program back in 1992, when the first RFA was announced for the formation of different ICBG programs. Dr. Mark Plotkin, who was then at Conservation International, called me up one day to ask if I was interested in collaborating with him in an ICBG application, and I agreed to do this. Because of my experience with NIH grants I was "elected" the Program Leader, and Mark and I between us assembled a team to work in Suriname. Our grant application received the best priority score I have ever had (I think it was something like 120), and we began our work in Suriname. Later we added Madagascar to the program, and eventually we moved all our work there.

Who in your laboratory carried out the research? Did this study involve fieldwork in Madagascar?

The chemical work in my laboratory was all done by an extremely skilled colleague and ASP

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Behind the Scenes in Pharmacognosy

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member, Dr. Shugeng Cao. Shugeng did an outstanding job of analyzing some very complicated NMR spectra and elucidating the structures of the compounds. The bioassay work was done by my former laboratory technician, Mr. Andrew Norris. The botanical collection program was headed up by Dr. James S. Miller of MBG, and the actual collection was carried out by Fidy Ratovoson and Jeremi Razafitsalama of MBG. The extraction program at CNARP was headed by Rabodo Andriantsiferana, and the actual extraction was made by Vincent E. Rasamison. And finally some of the bioassay work was done by our collaborators at Eisai Research Institute, Karen TenDyke, and ASP member Dr. Ted Suh.

Could you provide a brief explanation of the work and results in your own words? In what way are the data in your paper new?

We succeeded in isolating three new triterpenoid saponins with good potency against the A2780 ovarian cancer cell line. They are highly complex structures with several sugar units linked in some cases by prenyl-type linker units, and the structure elucidation of these compounds, carried out on 3 - 18 mg of sample, was a real tour de force.

What impact does this research have, in terms of the cytotoxic compounds of *A. gummifera*?

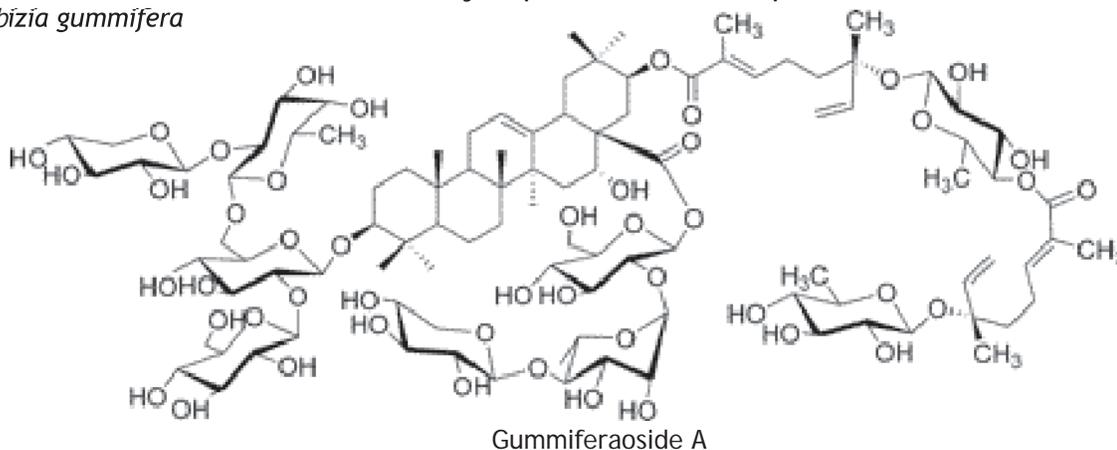
In spite of their good potency they, sadly, are unlikely to become drug development candidates because compounds of this type have not proved to be successful in the past. Interestingly compound 3 was tenfold more potent against the HT-29 colon cancer cell line than compound 1 even though they have very similar activity against the A2780 ovarian cancer cell line, so clearly there are some subtle effects on antiproliferative activity which we do not understand.



Albizia gummifera

Your article appeared in a special issue of the *Journal of Natural Products* dedicated to Dr. Kenneth Rinehart. What impact did Dr. Rinehart have on your research in general? How did he influence you?

I did not work personally with Dr. Rinehart, but he was a great role model for me in my early years in natural products chemistry in this country. Since I was doing natural products chemistry in a chemistry department, I was encouraged by the fact that he was a successful natural products chemist in a chemistry department and I aspired to emulate him.



From the Archives

ASP Logo Demystified?

by Dr. Edward J. Kennelly

It is green, definitely plant-like, but what exactly is the official ASP logo that appears prominently on the ASP website, *Newsletter*, and the inside cover of the *Journal of Natural Products* supposed to represent and what is its origin? ASP President Dr. Roy Okuda admits he has no idea. Nor do a number of ASP members. After some pondering, President Okuda suggested, "Our logo somewhat resembles the 'fleur de lis' emblem (which represents an iris), but only in a general way."



The current ASP logo.

Younger Members Committee Co-Chair Dr. Sara Crockett says the logo reminds her of "a plant in an Erlenmeyer flask, with the letters ASP also stuffed in it. The three-lobed aspect of the plant reminded me a bit of Ranunculaceae or Berberidaceae." ASP Past President (1978-1979) Dr. Harry Fong concurs, "The logo symbolizes a medicinal plant based science, and it consists of a medicinal plant (3 leaves) growing or being extracted in an Erlenmeyer flask, symbolizing pharmacognosy research."

The origin of the ASP logo is also elusive. Dr. Ara DerMarderosian recalls that there was a logo contest held in the 1960's, perhaps at the Annual Meeting in Pittsburgh in 1964. Dr. DerMarderosian he said he submitted a picture of *Vinca* in a flask, but it was not chosen.

ASP Past President and Honorary Member Dr. Norman Farnsworth developed the very first ASP logo which used a benzene ring as centerpiece. He thought that the current logo may have been designed by the late ASP member Dr. Marvin Malone.

Dr. Malone's doctoral student, Dr. Ezra Bejar, has recently located a memo dated July 12, 1966 from Dr. David Carew (ASP President 1965-1966) to Dr. Malone acknowledging the receipt of two drawings for the logo contest. In the memo Dr. Carew wrote that at the 1966 ASP meeting in Minneapolis, "Your two fine drawings provided a great deal of discussion and conversation...At present I'm not certain what the next decision will be..."

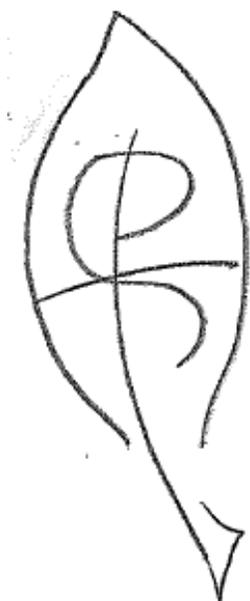
Dr. Bejar found two ASP logo drawings in his files from Dr. Malone (see figures). Dr. Carew is fairly confident that neither of Dr. Malone's designs was chosen as the final logo, but he does not know who was responsible for the ASP logo drawing.

Dr. DerMarderosian suggests that the plant in the ASP logo looks too stylized to have been drawn by a scientist. "Perhaps the ASP hired a graphic artist to design the final logo," he offered.

Dr. Fong noted that in the early 1960's ASP was comprised mostly of university-based researchers with an interest in natural products drug discovery from higher plants, plant tissue culture of medicinal plants, biosynthesis/biochemical studies of medicinal plants, and pharmacological study of medicinal plants. Marine and microbial natural products chemistry was not a major activity of ASP members at that time, and, "the addition of marine [and microbial] natural products chemists was a much later affair," Dr. Fong said. Therefore, this explains the lack of any symbol representing these areas of natural products.



Logo from Dr. Marvin Malone's files.



Logo from Dr. Marvin Malone's files.

David J. Slatkin, Ph.D., Treasurer
The American Society of Pharmacognosy
3149 Dundee Road, #260,
Northbrook, Illinois 60062

ASP Membership

Full Membership

Full membership is open to any scientist interested in the study of natural products. Dues are \$75 per year. In order to receive the *Journal of Natural Products* the subscription rates are as follows: United States, Canada, and Mexico: \$131 (Print Edition), \$70 (Web Edition), \$140 (Archive Web Edition); All other countries: \$196 (Print edition), \$70 (Web edition), \$140 (Archive Web Edition).

Associate Membership

Associate membership is open to students of pharmacognosy and allied fields only. These members are not accorded voting privileges. Dues are \$25.00 per year. In order to receive the *Journal of Natural Products* the subscription rates are as follows: United States, Canada, and Mexico: \$98 (Print Edition), \$70 (Web Edition), \$140 (Archive Web Edition); All other countries: \$163 (Print Edition), \$70 (Web Edition), \$140 (Archive Web Edition).

Emeritus Membership

Emeritus membership is open to retired members of the Society who maintained membership in the Society for at least five years. Dues are \$10.00 per year. These members receive the ASP Newsletter. Emeritus members may subscribe to the *Journal of Natural Products* at the Full Member rates.

Honorary Membership

Honorary members are selected by the Executive Committee of the American Society of Pharmacognosy on the basis of meritorious service to pharmacognosy.

Present Honorary Members are:

- Dr. Arnold Brossi, National Institutes of Health (NIH), MD • Dr. David P. Carew, University of Iowa, IA
 - Dr. John Cassady, Oregon State University, OR
- Dr. Gordon C. Cragg, National Cancer Institute (NCI), NIH, MD
- Dr. Norman R. Farnsworth, University of IL at Chicago, IL • Dr. R. Hegnauer, Leiden, Netherlands
 - Dr. Albert Hofmann, Switzerland • Dr. Harry H. S. Fong, University of Illinois IL at Chicago, IL
- Dr. James E. Robbers, Purdue University, IN. • Dr. Mansukh Wani, Research Triangle Institute, NC
- Dr. E. John Staba, University of Minnesota, MN • Dr. Hildebert Wagner, University of Munich, Germany
 - Dr. David J. Slatkin, Chicago State University, IL



Additional information about membership may be obtained by writing to the Treasurer of the Society:
David J. Slatkin, Ph.D., Treasurer, The American Society of Pharmacognosy,
3149 Dundee Road, #260, Northbrook, Illinois 60062. Email: asphcog@aol.com