The American Society of Pharmacognosy

Discovering Nature's Molecular Potential

The ASP Newsletter: Volume 52, Issue 4

Historic Gift by Brady Estate to ASP Foundation

By Drs. John Cardellina and Robert Krueger

The ASP Foundation (ASPF) has received its largest single donation ever from the estate of the late Dr. Lynn R. Brady and his wife Geraldine, known as Geri. Dr. Brady died in 1992 and Mrs. Brady in 2015. This current bequest of about $300,000 comes from the final settlement of the Brady estate. Dr. Brady was a long-time devoted member of the ASP, and served as the Society's 11th president (1970-1971) as well as being an Honorary Member (1991) and a member of the *Journal of Natural Products* Editorial Advisory Board for nearly two decades.

This extraordinary ASPF contribution was unexpected, because Dr. Brady had so generously given to the ASP during his lifetime, and Mrs. Brady continued that support with the ASP Lynn Brady Travel Awards after his death. Their combined gifts to the ASP and the Foundation total more than $325,000. The ASPF Board members are deeply moved by this enormous and considerate gift.

ASP President Cindy Angerhofer reacted to this historic donation, Dr. Brady was exemplary in science and service to the field of pharmacognosy as well as to the Society. He has generously provided an endowment that funds travel grants for graduate students to attend ASP annual meetings. With this additional monetary gift from his estate, he has further strengthened his enduring legacy and helped to enable the continued success and vision of the ASP.

Dr. Brady possessed an unswerving commitment to educating and supporting future pharmacists and researchers. After his death, the ASP Lynn Brady Student Travel Grants were established by Mrs. Brady as a way for his legacy in pharmacognosy education to live on. There is also the Lynn R. Brady Endowed Scholarship Fund at the University

continued on page 3

The deadline for 2017 ASP Grants and Awards is February 15, 2017!

Please see www.pharmacognosy.us/grants-and-awards/grant-award-specific-directions/ for application details.

IN THIS ISSUE: WINTER 2016

Editor's Corner	2	Slatkin Memorial Symposium	8	Meet a New ASP Member	15
2017 ASP Annual Meeting: Portlanda!	4	DerMarderosian's New Book	9	New Members	16
Ethnobotanist Quave Featured in *Times Magazine*	5	Hot Topics in Pharmacognosy	10	Brief News from Washington	21
ASP Welcomes SBFgnosia	7	3rd Natural Products Conference Announcement	12	Conference Calendar	23
		Behind the Scenes in Pharmacognosy	13	From the Archives	24

EDITOR'S CORNER

As I reflect upon 2016, I am struck by happenings inside and outside the ASP that will shape it in the future. One of my greatest pleasures this year was representing ASP at the joint pharmacognosy meeting in Copenhagen in late July. As I noted during my opening remarks at that distinguished audience, looking back at the almost 50 year history of the joint meetings, it gave me great pride to consider how the founders of ASP looked to create bridges with other international organizations. This occurred in a post-war era in which international outreach may not have been many American's first instinct. Now, 50 years later, ASP continues to build bridges with other international pharmacognosy organizations in real and meaningful ways: the Japanese pharmacognosy society was an officially on the organizing committee for the 2016 joint meeting for the first time, and the Korean pharmacognosy society will be an official member of the 2020 joint meeting in San Francisco.

Furthermore in this issue of the *Newsletter,* we report that the Brazilian pharmacognosy society has received a grant from their government to officially provide all their members with ASP membership as well. Please take time to read Dr. Barry O'Keefe's article that discusses this unique arrangement with the Brazilian society, and look over the names of the new Brazilian members, and if you are so inclined, write them an email to welcome them to the ASP (e-mail addresses of all ASP members are available through the online directory at www.pharmacognosy.us). Also learn more about our Brazilian colleagues in "Meet a New ASP Member" column that features Dr. Aline Conceição, Professor in the Biological Science Department at Universidade Estadual de Santa Cruz (State University of Santa Cruz). While there may be calls by some in politics to build walls, I am happy indeed to be a member of a professional society that sees the value in forging strong scientific relationships at home and abroad.

Our lead article is about the historic bequeath made by the estate of Dr. Lynn and Geraldine Brady to the ASP Foundation. I do not recall ever meeting Dr. Brady, but as I reviewed the article and read further about the commitment of both him and his wife to the ASP, I was truly touched. Over the decades of his career in pharmacognosy at the University of Washington, he contributed to the ASP by serving as the 11th president, a member of the *Journal of Natural Products* Editorial Advisory Board, an Honorary Member, and in many other capacities. He was a regular at ASP annual meetings, and not only helped to conduct the presidential roasts, but also provided the wood for the commemorative gavels given to the outgoing president. Now, decades after his death, his estate has helped ensure that the Foundation can continue to do its good work of providing honors and awards to those in the field of pharmacognosy. Professional societies like the ASP rely on dedicated members, and Dr. Brady is certainly a fine example of how a committed member can make a significant impact.

The 2017 annual meeting in Portland Oregon is coming up fast. The travel awards to this and all ASP meetings are extensive, and I encourage you and your colleagues and students to take full advantage of the important ASP benefit. **Deadlines for awards is February 15, 2017**. You can also book the conference hotel now, and the negotiated rates are significantly better than any comparable hotel in the downtown Portland area. The scientific and social activities look to be extraordinary, and I encourage you to read the article, and look at the conference website www.asp2017.org.

It is always a pleasure to read about ASP members getting positive treatment in the popular press for their scientific achievements. I was very glad to see ASP member Dr. Cassandra Quave featured in a major article in *The New York Times Magazine* this fall, for her ethnobotanical discoveries. We discuss her work in this issue of the *ASP Newsletter,* and I encourage you to take a look at the *Times* article as well. If you or other ASP members have been featured in the popular press for your scientific discoveries, please let the *Newsletter* know (asp.newsletter@lehman.cuny.edu).

I hope you and your family have a wonderful holiday season, and a terrific start to 2017.

Dr. Edward J. Kennelly

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.pharmacognosy.us/jobs/

NEWSLETTER STAFF

The contribution deadlines are:
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Historic Gift by Brady Estate to ASP Foundation

Dr. Brady's quick humor and seeming irreverence were surely a striking counterpoint to his devotion to his wife and constant traveling companion and his commitment to students, not just his own, but all the young members of the ASP.

continued from page 1

of Washington. Dr. Brady co-edited a classic textbook *Pharmacognosy* (Lea & Febiger, 7th – 9th editions), used in many US pharmacy programs, along with his PhD mentor Dr. Tyler and ASP member and former *Journal of Natural Products* editor Dr. James Robbers.

Dr. Brady received his PhD in Pharmacognosy (1959) at the University of Washington with Dr. Varro Tyler, ASP's first president. His research interests involved secondary metabolites from fungi, and over the course of his research career, he had about 100 publications. Dr. Brady spent his professional career at the University of Washington School of Pharmacy, rising up the ranks to full professor in 1966 and then entering administration, serving as Director of Pharmaceutical Sciences and Associate Dean for Academic and Student Programs.

Dr. Brady is also fondly remembered for his life-long commitment to ASP. Dr. Brady's quick humor and seeming irreverence were surely a striking counterpoint to his devotion to his wife and constant traveling companion and his commitment to students, not just his own, but all the young members of the ASP. Colleague and ASP Honorary Member Dr. David Carew recalled in the ASP History book that Dr. Brady and his wife never missed an ASP annual meeting. He was an integral part of the infamous ASP presidential roasts, along with Dr. Ralph Blomster and the late Dr. Norman Farnsworth. This trio, without the benefit of computer technology, concocted some truly hysterical roasts of outgoing ASP presidents.

Dr. Blomster, a former ASP President and only surviving member of the trio, wrote to the Newsletter, "Lynn made the first presentation. It was hilarious. He started out almost as if it were a eulogy but he kept making hilarious asides. It broke every one up. Over the years the presentation became a yearly roast of the outgoing president." He recalled that Dr. Brady also provided the wood of *Cascara sagrada*, a tree native to his state of Washington, which was used for the commemorative gavel given to each outgoing ASP president. Regarding the Brady bequest, Dr. Blomster commented, "I'm surprised at the amount but not the donation itself. Lynn was one of the early adherents of the ASP."

The ASPF has begun discussing options for utilizing the Brady bequest, in keeping with the wishes expressed in Mrs. Brady's will. While this substantial bequest brings the ASPF closer to the $1.5 million target announced last year, surging interest in creating awards and raising the award amounts in some cases suggests that the ASPF needs to think of a larger target. To place this in perspective, if the ASPF issues awards and grants only from the annual earnings of its corpus (total holdings), a $2 million corpus would permit the ASPF to award up to $100,000 in awards and grants each year, assuming a 5% annual return on those funds.

The ASPF Board is working diligently to balance the desire of the ASP Executive Committee to increase the Society's reach with awards and grants with the current resources. It is the ASPF Board's responsibility to preserve and grow the corpus, and not serve as a drain on the ASP treasury. That is why, despite receiving this wonderful endowment, the ASPF still must rely on the generous donations of individual members on a yearly basis.

The ASPF has received other significant gifts over its history. The wife of the late Dr. John Faulkner gave over $25,000 to the ASPF to establish a student travel award in his name. Dr. Faulkner was a former ASP President and recipient of the 2003 ASP Research Achievement award. The family of the late Dr. Waqar H. Bhatti collectively gave $12,000 to establish his student travel award. The first willed donation to the ASPF was from the late Dr. Matthew Suffness whose trust first named his wife Rita, who is alive and well, and subsequently, the ASPF. In addition to smaller donations made by ASP members and friends, the corpus of the ASPF endowment has been able to grow significantly, thanks to the revenue generated for ASP by the *Journal of Natural Products* publishing agreement with the American Chemical Society.

A listing of all awards provided by ASPF can be found at the ASP webpage www.pharmacognosy.us/grants-and-awards/ **The deadline for most of these awards is February 15, 2017**, and the ASPF Board encourages eligible members to apply.

The ASPF Board has discussed soliciting such gifts from senior ASP members in the past, but was uncomfortable with actively pursuing this. The occasion of Lynn and Geri Brady's gift to the ASP might serve to have all ASP members think of how to help 'pay it forward', either through the annual gifts that many members so generously and tirelessly offer year after year, by some form of endowment in your retirement years, or by putting the ASPF as a beneficiary in your will. The ASPF Board is willing and able to offer advice or suggestions to anyone who is interested in discussing such a gift. To give to the ASPF, please follow the links at the ASPF webpage www.pharmacognosy.us/what-is-pharmacognosy/the-asp-foundation/

On behalf of all ASP members, our enduring thanks and appreciation go out to the Brady family for remembering us so substantially in their estate. ■

2017 ASP Annual Meeting: Portlandia!

By Dr. Kerry McPhail

The 2017 ASP meeting will take place from July 29 to August 2 in Portland, Oregon. Have you seen the TV series "*Portlandia*"? Portlandia is also the name of a sculpture by Mr. Raymond Kaskey located above the entrance of the Portland Building and is the second-largest copper statue in the United States, after the Statue of Liberty. This landmark is just two blocks from the conference location downtown at the Hilton Portland and Executive Tower. This updated article contains information about the conference location, Younger Members event, and the pre-meeting Saturday workshops.

The meeting location is the Hilton Portland and Executive Tower on Sixth Street; it has extensive conference facilities and a newly renovated fitness center, including an indoor swimming pool, in two buildings at the heart of downtown. You can book your room now at the negotiated conference rate by using this link: **http://asp2017.org/accommodations/**.

The hotel is just 5 blocks from jogging paths along Waterfront Park on the banks of the Willamette River. There are twelve bridges crossing the Willamette River as it runs through Portland! HopCity Tavern, the hotel "gastropub," supports local microbreweries, farmers, creameries, butchers, and bakers with its unique menu, and hosts social hour Monday through Friday, 4pm to 6pm. Family members and guests of conference attendees may explore Portland via the MAX Light Rail system, with a station just one block from the conference site; the system provides access to the Portland Zoo, the Japanese Garden, Forest Park, Portland Saturday Market, the Oregon Museum of Science and Industry, and the Portland Art Museum, among other attractions.

On Saturday July 29, there will be one full day workshop as well as parallel half-day workshops in the morning and afternoon. "Quantitative NMR" is one of the topics for the full day workshop, which is coordinated by Dr. Guido Pauli through the Center for Natural Product Technologies, University of Illinois, Chicago, Illinois (cenapt.pharm.uic.edu/). Confirmed half-day workshops include "Scientific Writing" presented by Dr. Douglas Kinghorn (Editor-In-Chief, *Journal of Natural Products*), and "Cellular Apoptosis" presented by Dr. Susan Mooberry (University of Texas Health Science Center, San Antonio, Texas). Topics for further possible workshops are still under consideration and include National Institutes of Health (NIH) proposal writing and analytical techniques in natural products.

The Younger Members event on Tuesday evening (August 1) will take place at Punch Bowl Social, which is near Pioneer Square, and just a five-minute walk from the conference hotel. A light dinner and drinks at 7 pm will be followed by rotating discussion groups with panel members on career-focused topics encompassing academic positions at research-intensive universities, teaching and research at undergraduate institutions, industrial positions in start-up companies and big pharma, as well as work-life balance and dual career situations. After the discussions conclude, there will be open time to network with peers during the variety of social activities available (punchbowlsocial.com/location/portland/). ■

Ethnobotanist Quave Featured in *Times Magazine*

By Dr. Amy Keller

On September 14, 2016, ASP member Dr. Cassandra Quave's research was featured in *The New York Times Magazine* article entitled, "Could Ancient Remedies Hold the Answer to the Looming Antibiotics Crisis?" The article described Dr. Quave's research into botanical sources of antibiotics, her scientific journey, and follows her and research specialist Ms. Kate Nelson on a field collection trip in Florida. The ASP Publicity Committee posted this article on The ASP Facebook page, where it got 26,214 views and 1,600 "likes."

The Quave Research Group at Emory University, September 2016.

PHOTO: MS. CHELSEA LONG

Dr. Quave told the *Newsletter*, "It has been incredibly encouraging to see such a positive public response to the coverage on ethnobotany, pharmacognosy and natural products drug discovery. The rising antibiotic crisis presents a very real and serious threat to public health, and new solutions are urgently needed. I am glad that the piece was able to draw attention not only to the problems we face with antibiotic resistance, but also the solutions that nature may hold in store. The piece also gave me the unique opportunity to serve as a voice for pharmacognosy in a number of other outlets, including radio and TV. I hope to continue to share my passion for research in this field not only with my students, but also by public engagement through scientific communication outlets."

Dr. Quave and her team investigate the botanical and fungal components of traditional medicines used for infectious disease. They look for potential antimicrobial efficacy and the bioactive compounds responsible. A specific aspect of her work centers on quorum sensing (the communication between bacterial cells) and its modulation by natural products. "We have discovered several plants that are used in traditional medicine for the treatment of skin and soft tissue infections and which act not by typical antibiotic growth inhibitory or killing activity, but rather by inhibiting bacterial adhesion and biofilms or by blocking virulence pathways." Dr. Quave is excited by these findings as they not only elucidate likely mechanisms behind this traditional medicine, but also support new avenues for the treatment of infectious diseases.

ASP President Cindy Angerhofer told the *Newsletter*, "Dr. Quave's passion is an inspiration to all of us in the field of natural products. Her work toward unlocking some of the antimicrobial strategies of plants is fascinating and has the potential for significant impact in the treatment of infectious disease."

When asked about the future, Dr. Quave responded, "My future research plans focus around moving some of our more advanced and refined botanical compositions into translational studies. I'm interested in studying the potential role that quorum sensing inhibitors might play in mediating the

continued on page 6

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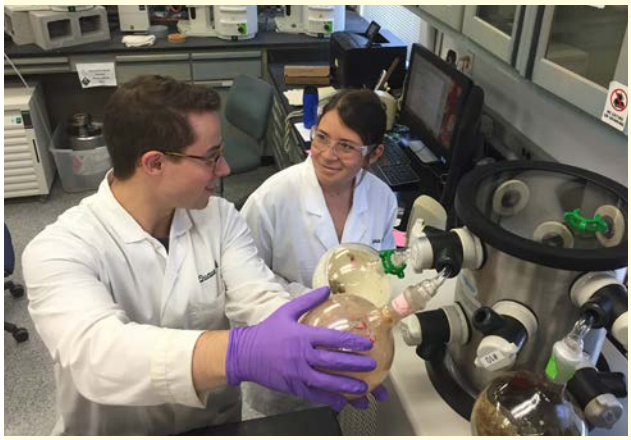
Dr. Quave with her students on a field expedition to Arcadia, Florida.

PHOTO: ADAM MACKIE

Dr. Quave collecting chestnut leaves (*Castanea sativa*) in Italy, 2013.

PHOTO: MARCO CAPUTO



Left: Undergraduate students Mr. Aidan Williams and Ms. Naomi Maisel contribute to the group's research by extracting and processing extracts in preparation for bioassay and chemical testing. Right: Dr. Quave in her laboratory at Emory University.

PHOTO: DR. QUAVE

continued from page 6

microbiome or in potentiating the efficacy of existing lines of antibiotics. I also plan to continue our efforts to tie ethnobotanical field research with rigorous scientific laboratory analyses of extracts for their natural product compositions and bioactivities and to increase the size and scope of our unique natural products library."

The New York Times Magazine article can be found at www.nytimes.com/2016/09/18/magazine/could-ancient-remedies-hold-the-answer-to-the-looming-antibiotics-crisis.html?. ■

A specific aspect of her work centers on quorum sensing (the communication between bacterial cells) and its modulation by natural products.

ASP Welcomes SBFgnosia

"The ASP believes in building bridges between countries, scientific disciplines and researchers, not walls."

By Dr. Barry O'Keefe

The ASP is honored to announce that it has recently completed an agreement to establish joint membership in the ASP for members of the Sociedade Brasileira de Farmacognosia (SBFgnosia). This international collaboration has been funded by the Brazilian government and is largely the work of Dr. Laila Espindola at the Universidade de Brasilia, Brasilia, Brazil, who led the group that submitted the funding proposal. The grant will provide ASP membership for all SBFgnosia members for the next three years. It is hoped that this initiative will increase the level of collaboration between ASP and SBFgnosia members and increase the visibility of the current Brazilian research in natural products.

The ASP continues to try to reach out and improve the scientific discourse between pharmacognocists worldwide, and this agreement is an important part of that effort. As past ASP President Edward Kennelly stated at the 2016 International Conference of Natural Products in Copenhagen, "The ASP believes in building bridges between countries, scientific disciplines and researchers, not walls." This agreement is one action that brings those sentiments to life. It is certainly hoped that this outreach will encourage enhanced relationships between the ASP and other societies involved in natural product research worldwide.

The SBFgnosia was founded in 1976 and its 156 members engage in a variety of disciplines which represent the broad range of sciences devoted to a better understanding of the Brazilian biota and its potential uses. SBFgnosia has edited and published the *Revista Barsileira de Farmacognosia* (*Brazilian Journal of Pharmacognosy*) since 1986. You will be sure to see examples of various SBFgnosia member's research in the pages of the *ASP Newsletter* in the future.

The President of the SBFgnosia and editor of the *Brazilian Journal of Pharmacognosy* is Dr. Cid Aimbiré de Moraes Santos, Universidade Federal do Paraná, Curitiba, Brazil. SBFgnosia Officers also include Vice President Maique Weber Biavatti, Universidade Federal de Santa Catarina, Florianópolis, Brazil, Secretary Carla Regina Andrighetti, Portal da Universidade Federal de Mato Grosso, Sinop, Brazil, and Treasurer Wesley Mauricio de Souza, Universidade Federal do Paraná, Curitiba, Brazil.

Regarding this agreement, ASP President Cindy Angerhofer commented "The ASP has long had an engaged group of members from both Central and South America who bring a unique perspective to the society in terms of plants and their traditional uses. I am excited to welcome the Brazilian pharmacognocists as members to represent their rich biodiversity and scientific research."

We encourage ASP members to reach out to our new colleagues from Brazil to establish not only new scientific collaborations but also new personal ties that will extend beyond scientific endeavors. A list of new members appears in this issue of the *Newsletter*, and their contact information can be found in the ASP Directory, available online at www.pharmacognosy.us. It is through such personal relationships that both of our Societies will benefit from this new association, not only in the near future, but for an extended time. ■

"The ASP has long had an engaged group of members from both Central and South America who bring a unique perspective to the society in terms of plants and their traditional uses. I am excited to welcome the Brazilian pharmacognocists as members to represent their rich biodiversity and scientific research."

Slatkin Memorial Symposium: Honoring an Integrative Career

By Dr. Melany P. Puglisi

On November 18, 2016, Chicago State University College of Pharmacy, Chicago, Illinois, honored the memory of Emeritus Dean David Joseph Slatkin by holding the 2016 Dr. David J. Slatkin Memorial Symposium. The event commemorated the many contributions of Dr. Slatkin to Chicago State University, the pharmacy profession and the ASP. Dr. Slatkin, who served as treasurer of the ASP for 31 years and was a longtime Honorary Member of the ASP, passed away last year after a long battle with Parkinson's disease. The ASP Foundation sponsored this symposium, organized by ASP member Dr. Melany Puglisi and her colleagues at Chicago State University. Over 100 people attended, including local ASP members from the greater Chicago area and Dr. Slatkin's immediate family.

Dr. Guido Pauli, University Scholar and Professor at the University of Illinois, Chicago, Illinois, opened the symposium with a lecture entitled, "The Role of Time in the Pharmacognosists' Understanding of Traditional Medicines." Dr. Pauli described his time as Assistant Treasurer for the ASP when he worked closely with Dr. Slatkin. Drs. Abir El-Alfy and Ehab Abourashed, Associate Professors at Chicago State University, followed with a lecture entitled, "Just a Fancy Spice or More? Therapeutically Significant CNS Targets of Nutmeg Secondary Metabolites." The final presentation, entitled "Applied Pharmacognosy: What a Pharmacist Should Know," was given by Dr. Jeremy J. Johnson, Associate Professor at the University of Illinois.

The Symposium was moderated by ASP President Cindy Angerhofer. Dr. Angerhofer paid tribute to Dr. Slatkin's legacy in a lecture that described his contributions to the ASP and pharmacy education. She attributed the current financial success of the ASP and its Foundation to the shrewd investments made during his long tenure as treasurer. She described Dr. Slatkin as a funny guy who always knew what was going on with the society. This was followed by the presentation of an engraved vase to Dr. Slatkin's family, Mrs. Judy Slatkin, Ms. Stephanie Slatkin, and Ms. Laura Stoll, the Business Manager of the ASP. Mrs. Slatkin and Ms. Stoll thanked everyone for attending the Symposium.

Following the presentations, a poster session was held with contributions from researchers from Chicago State University, Rush Medical School, and the University of Illinois. Ms. Rasika Phansalkar from Dr. Guido Pauli's research laboratory, and Ms. Camila Crnkovich and Mr. Daniel May from Dr. Jimmy Orjala's laboratory, were recognized for their outstanding presentations.

The symposium brought together the college community, friends, colleagues,and family of Dr. Slatkin to honor his memory. There continues to be very few academicians that have made as great an impact on their field of expertise as Dr. Slatkin has in pharmacy education. ■

Dr. Guido Pauli.

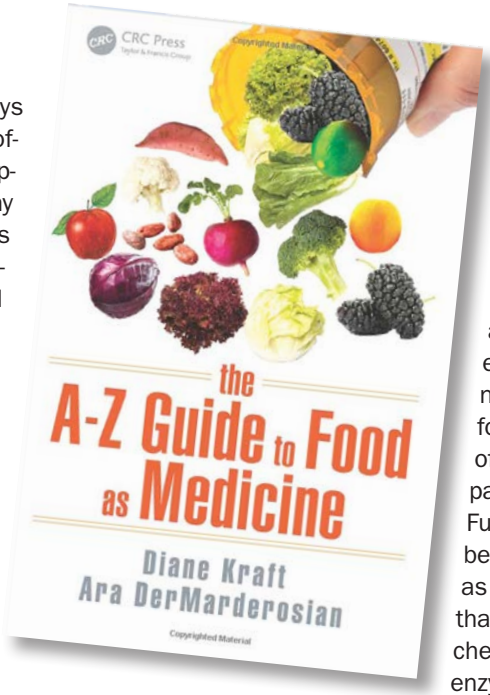
PHOTO: DR. MELANY PUGLISI

From left to right: Dr. Melany Puglisi, Ms. Stephanie Slatkin, President Angerhofer, Mrs. Judy Slatkin, Ms. Laura Stoll.

PHOTO: DR. MELANY PUGLISI

New Book by ASP Member DerMarderosian

By Dr. Ara DerMarderosian



Pharmacognosists have always known that the study of the old often reveals new discoveries. Hippocrates' dictum "Let food be thy medicine and medicine be thy food" is the inspiration for my new book with co-author Ms. Diane Woznicki Kraft entitled *The A-Z Guide to Food as Medicine*, published by CRC Press.

In this 21st century, medical reductionist thinking is balanced by holistic philosophy. The power of modern drugs is formidable, but avoiding many illnesses of old age can be managed by the attention to good diet, exercise, mental acuity, and attitude. In society's headlong run to find the "magic bullet," many people have long neglected the obvious. Many recent studies have begun to focus more on good nutrition as a way to stay healthy. New clinical studies reveal that while proper amounts of carbohydrates, fats and protein are needed, we should pay more attention to the secondary items such as vitamins, minerals, and vast array of phytochemicals in food.

The re-examination of clinical nutrition has shown how plant-based protein diets versus animal-based protein diets make a difference in longevity. Vegetarian diets appear to allow humans to live longer. By limiting over-consumption of dairy and animal-based food as well as our use of potent medications, humans can reap significant health benefits. The benefits of the Mediterranean diet as well as plant foods rich in anti-oxidant, anti-inflammatory, and anti-microbial foods such as onions, garlic, tea, peppermint, fenugreek, turmeric, pomegranates, curry, cumin, allspice, citrus fruits and numerous others, have been well studied.

Currently, modern science has isolated numerous compounds of medical benefits. Phytochemicals are often produced by plants to combat pathogens and pests, but they can also be beneficial to human health. Many recent clinical nutrition articles now focus on the health benefits of beneficial properties of foods, nutrients, and phytochemicals. Whole foods can offer more beneficial sources of nutrients and phytochemicals compared to single isolated compounds. Furthermore, phytochemicals are often better utilized in vivo when consumed as part of the whole food matrix rather than as individual units. In short, phytochemicals act as substrates, cofactors of enzymatic reactions, absorbents, and sequestrants that bind to and eliminate undesirable constituents in the intestines; this may be due to acting as ligands (substances that bind to another molecule to form a complex) that agonize or antagonize cell surface or intracellular receptors. They also serve as scavengers of reactive or toxic chemicals, enhancers of absorption and/or stability of essential nutrients, selective growth factors for beneficial gastrointestinal bacteria, fermentation substrates for beneficial oral, gastric, or intestinal bacteria, or selective inhibitors of deleterious intestinal bacteria.

Suffice to say that the clinical literature is now full of specific advantages of generally unknown and underappreciated benefits of the numerous phytochemicals in food, and this is detailed in *The A-Z Guide to Food as Medicine.* It is obvious that this presents a new challenge for research in classical pharmacognosy research. ■

LITERATURE CITED

[1] Campbell, T.C. Professor Emeritus of Nutritional Biochemistry at Cornell University, Ithaca, New York. Multiple works. Michael Greger, M.D.

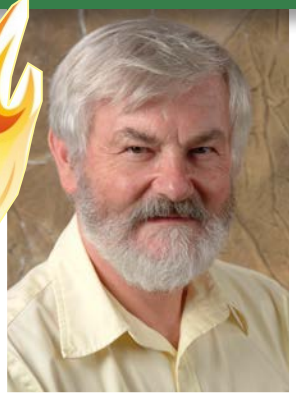
[2] Nutritionfacts.org. Greger, M. http:/nutritionfacts.org/video/food-as-medicine (accessed 2016).

[3] Greger, M. Food as Medicine: Preventing and Treating the Most Dreaded Diseases with Diet. Volume 26. http://nutritionfacts.org/season/volume-26l (Accessed August 3, 2015).

[4] DerMarderosian, A., Beutler, J.A. The Review of Natural Products (Loose-Leaf). Wolters Kluwer Health, Inc.: Alphen aan den Rijn, 2004.

[5] Kraft, D. and DerMarderosian, A. A-Z Guide to Food as Medicine, CRC Press, Taylor and Francis Group: Boca Raton, 2016.

Hot Topics in Pharmacognosy: Everything Old is New Again in Fungal Products



By Dr. David Newman

I have lately been writing about fungi as novel sources of drug candidates. In the last few weeks, there have been some very interesting publications that show how this currently underutilized source has produced data that are definitely "food for further thought."

(CYTOTOXIC) FUNGAL PRODUCTS AND THEIR SIMILARITIES TO OTHER DRUG CANDIDATES.

In a paper in *Future Medicinal Chemistry*,[1] a multidisciplinary international group compared 207 natural products isolated from the fungal collection of Mycosynthetix Inc. These compounds had been investigated under a program project grant from the National Cancer Institute (NCI) looking for novel cytotoxins. These were compared with a series of other compound databases, including Food and Drug Administration (FDA)-approved oncologic and non-oncologic agents, and others on the basis of chemical complexities and drug-like characteristics. Analyses of the data confirmed that these fungal metabolites, and by inference others with different pharmacological properties, were at a minimum, comparable to other natural product sources. Interestingly, no details were given as to the level of endophyte versus "free-living" sources, so it is possible that some of the correlates might change if such sources were compared in the future. However, the underlying findings would not alter.

STATINS AND CANCER TREATMENT

Two very recent papers, one in the November 2016 issue of *Nature Reviews in Cancer*[2] and the other in the November 2016 issue of *Nature Cell Biology*,[3] aptly demonstrated that known inhibitors (derived from fungi) of the mevalonate (MVA) pathway showed some very interesting effects in clinical trials in one case, and in *in vitro* and *in cellulo* studies in the other. To put readers out of their suspense if they do not remember the biochemistry involved in the mevalonate pathway, these agents are the "statins." So why do these hydroxymethylglutaryl-CoA (HMG-CoA, a regulatory enzyme of the MVA pathway) inhibitors have potential as antitumor drugs?

As reported in the paper by Mullen et al.: "Altered metabolism in tumours not only fulfils the energetic and biosynthetic needs of a dividing cell, but also produces metabolites that are important for downstream signalling. This is particularly true of the isoprenoid and sterol metabolites produced by the MVA pathway which are also used by cancer cells to modulate multiple downstream signalling pathways that are important for tumour progression." [sic]

These metabolites are controlled by and can control via feedback loops, the following oncogenic transcription processes. Thus p53 mutants ($p53^{mut}$) can functionally interact with the sterol regulatory element-binding protein (SREBP) to drive increased expression of MVA pathway genes. The oncogene MYC can bind to SREBP thus increasing the expression of SREBP target genes, and the RB tumor suppressor interacts with SREBP reducing its binding at target genes. The loss of RB in cancer cells removes this inhibition, leading to the increased transcription of specific MVA pathway genes.

Since "statins" as a pharmacologic class can significantly alter the lead gene family in the MVA pathway, they may well have potential as adjuncts to cancer therapies. There are reports that indicate the following:

1. Statin use is correlated with reduced mortality in multiple cancer types.[4,5]
2. Certain stages of cancer progression, e.g. breast cancer recurrence, may be sensitive to the anticancer activities of statins.[6,7]

Conventionally, cholesterol-lowering effects of statins are due to the inhibition of the MVA pathway in the liver, but lipophilic statins such as atorvastatin, simvastatin and lovastatin have been detected in the biologically active acid form and the inactive lactone form in the brain and other extra-hepatic tissues.[8] However, the hydrophilic pravastatin was not, which implies that any hydrophilic statins might not be viable as anticancer agents. Investigations are continuing to quantify the levels reached in tumor tissues to determine if cytotoxic levels can be reached.

There is recent evidence that pravastatin will aid in some cancer treatment. When pravastatin was combined with standard-of care treatment in hepatocellular carcinoma (HCC) or in acute myelogenous leukemia (AML), it resulted in a significantly longer median survival in HCC173 and demonstrated a complete or partial response in 60% of patients with AML.[9] Moving to the more lipophilic agents, a combination treatment of lovastatin, thalidomide, and dexamethasone in patients with relapsed or refractory multiple myeloma (MM) led to extended and/or progression-free overall survival.[10]

continued on page 11

continued from page 10

P53^{MUT} AND MVA PATHWAYS

In the second MVA pathway paper, Parrales et al.[3] demonstrated that using suitably genetically modified cells, lovastatin and atorvastatin significantly reduced the tumor load in mice at levels slightly above those used for lipid control in humans. In this study, the levels used in mice were scaled to their corresponding levels in humans. There were two essential findings in this paper. The first was that if the p53 gene product was mutated (as it is in a significant number of cancers), then statins would mediate its removal (degradation) via CHIP (C terminus of Hsc70-interacting protein, also known as STUB1). CHIP is the ubiquitin ligase that performs a similar role for p53^{mut} that mdm2 provides for p53 (wild type).

If CHIP was removed genetically or the cells were supplemented with mevalonate phosphate, then the statins had no effect, thus linking these factors. This also brought out a very important aspect when one looked at the results of clinical trials of statins in cancer treatment. As far as can be ascertained, in the reported trials that involved the use of statins as part of the treatment protocol(s), no determination of the patient's P53 status was made. From the data in this paper, heterozygous P53 patients (one allele being P53^{mut} and one P53^{wt}) may not show significant responses to statin treatment. This would also be the case in homozygous (2 P53^{wt}), whereas those patients homozygous for the mutant (2 P53^{mut}) should show a significant response.

When tumors arise in humans, they are frequently genetically heterogeneous, thus an initial analysis (precision medicine?) should be performed on a tumor in order to decide if statin treatment (as part of a regimen, not alone), would be a suitable option.

ENDOPHYTIC-SOURCED 11B-HSD1 INHIBITOR AND ITS POTENTIAL

The final paper to be discussed is one by Sun et al.,[11] published earlier this year in *Scientific Reports*. They describe a novel cyclic tetrapeptide (1) isolated from the endophytic fungus, *Penicillium commune*, which was isolated from the plant *Vitis vinifera* and produced by a solid-state fermentation on rice. This laboratory has been interested in the inhibition and general biochemistry of the 11B-hydroxysteroid dehydrogenase type 1 (11B-HSD1) enzyme for a number of years. This particular peptide, which was named penicopeptide A, was shown to bind at the active site of this enzyme, and when assayed using the cortisone to cortisol transform, demonstrated inhibition of human 11B-HSD1, with an IC_{50} value of 9.07 + 0.61 μM.

What is of further import in this case is that this enzyme is one of the first used by Waldmann[12] to demonstrate what ultimately became known as BIOS. In this, contrary to what was taught in enzymology texts, Waldmann demonstrated that for enzymes with similar 3D structures, the concept that he named "Protein Structure Similarity Clustering (PSSC)" could permit one to find inhibitors of one enzyme in a PSSC that with slight modifications will inhibit enzymes that are entirely different, according to the Enzyme Code (EC). This apparent dichotomy is due to the EC number of an enzyme being defined by its normal substrate and not by its physical characteristics. Thus, as Waldmann found with the phosphatase inhibitor dysidiolide, it is quite possible that slight modifications of this tetrapeptide will also inhibit the PSSC-related (but not EC-related) Cdc25A phosphatase and acetylcholine esterase.

Hopefully these examples will help "catalyze" the search for novel agents and will also emphasize a point that is often missed: a negative answer in one assay may mean that the natural product probably has an activity that has not yet been recognized. ■

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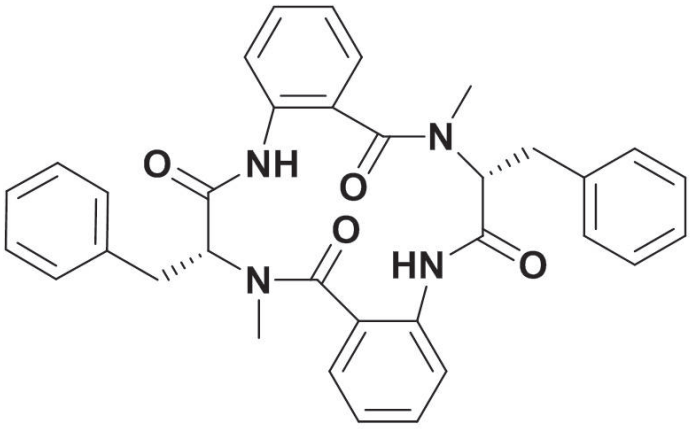


Structure of Penicopeptide A

O'Neil-Johnson Chairs 3rd Natural Products Conference

By Dr. Amy Keller

ASP member Mr. Mark O'Neil-Johnson is organizing the 3rd Natural Products Conference entitled, "Interface of Science and Technology as Applied to Natural Product Research," from March 20-23, 2017, at the Fiesta Americana Condesa, in Cancun, Mexico. This conference will focus on the application of appropriate analytical technology in the field of natural products research. Scientific sessions include Synthesis of Complex Natural Products, Biosynthetic Pathways, Contribution of Women Scientists in Natural Product Research, Natural Product Consortiums, Marine Natural Products, and Technology. Several ASP members are speaking, including Drs. Raymond Andersen, Nadja Cech, Phil Crews, William Fenical, William Gerwick, James McChesney, and Cassandra Quave. The deadline for submitting a talk abstract is January 9, 2017, with the deadline for early bird registration and poster abstract submission January 20, 2017.

Hot Topics in Pharmacognosy: Everything Old is New Again in Fungal Products

continued from page 11

LITERATURE CITED

1 González-Medina, M., Prieto-Martínez, F. D., Naveja, J. J., Méndez-Lucio, O., El-Elimat, T., Pearce, C. J., Oberlies, N. H., Figueroa, M., Medina-Franco, J. L. Chemoinformatic expedition of the chemical space of fungal products. *Future Med. Chem.* **2016**, 8, 1399–1412.

2 Mullen, P. J., Yu1, R., Longo, J., Archer, M. C., Penn, L. Z. The interplay between cell signalling and the mevalonate pathway in cancer. *Nature Revs. Cancer* **2016**, 16, 718-731.

3 Parrales, A., Ranjan, A., Iyer, S.V., Padhye, S., Weir, S. J., Roy, A., Iwakuma, T. DNAJA1 controls the fate of misfolded mutant p53 through the mevalonate pathway. *Nature Cell Biol*. **2016**, 1233-1243.

4 Nielsen, S. F., Nordestgaard, B. G., Bojesen, S. E. Statin use and reduced cancer-related mortality. *N. Engl. J. Med.* **2012**, 367, 1792–1802.

5 Kuoppala, J., Lamminpaa, A., Pukkala, E. Statins and cancer: a systematic review and meta-analysis. *Eur. J. Cancer* **2008**, 44, 2122–2132.

6 Kwan, M. L., Habel, L. A., Flick, E. D., Quesenberry, C. P., Caan, B. Post-diagnosis statin use and breast cancer recurrence in a prospective cohort study of early stage breast cancer survivors. *Breast Cancer Res. Treat.* **2008**, 109, 573–579.

7 Boudreau, D. M., Yu, O., Chubak, J., Wirtz, H. S., Bowles, E. J. A., Fujii, M; Buist, D. S. M. Comparative safety of cardiovascular medication use and breast cancer outcomes among women with early stage breast cancer. *Breast Cancer Res. Treat.* **2014**, 144, 405–416.

8 Chen, C., Lin, J., Smolarek, T., Tremaine, L. P Glycoprotein has differential effects on the disposition of statin acid and lactone forms in mdr1a/b knockout and wild-type mice. *Drug Metab. Dispos.* **2007**, 35, 1725–1729.

9 Kornblau, S. M., Banker, D. E., Stirewalt, D., Shen, D., Lemker, E., Verstovsek, S., Estrov, Z., Faderl, S., Cortes, J., Beran, M., Jackson, C. E., Chen, W., Estey, E., Appelbaum, F. R. Blockade of adaptive defensive changes in cholesterol uptake and synthesis in AML by the addition of pravastatin to idarubicin + high-dose Ara C: a phase 1 study. *Blood* **2007**, 109, 2999–3006.

10 Hus, M., Grzasko, N., Szostek, M., Pluta, A., Helbig, G., Woszczyk, D., Adamczyk-Cioch, M., Jawniak, D., Legiec, W., Morawska, M., Kozinska, J., Waciński, P., Dmoszynska, A. Thalidomide, dexamethasone and lovastatin with autologous stem cell transplantation as a salvage immunomodulatory therapy in patients with relapsed and refractory multiple myeloma. *Ann. Hematol.* **2011**, 90, 1161–1166.

11 Sun, W., Chen, X., Tong, Q., Zhu, H., He, Y., Lei, L., Xue, Y., Yao, G., Luo, Z., Wang, J., Li1, H., Zhang, Y. Novel small molecule 11B-HSD1 inhibitor from the endophytic fungus Penicillium commune. *Scientific Reports* **2016**, 6:26418 (DOI: 10.1038/srep26418).

12 Wetzel, S., Bon, R. S., Kumar, K., Waldmann, H. Biology-Oriented Synthesis. *Angew. Chem. Int. Ed.* **2011**, 50, 10800-10826.

Behind the Scenes in Pharmacognosy: A Better Tasting Fungus Yields Beneficial Brain Compounds

By Dr. Amy Keller

The *Journal of Natural Products* recently featured the article, "Corallocins A–C, Nerve Growth and Brain-Derived Neurotrophic Factor Inducing Metabolites from the Mushroom *Hericium coralloides*," from the laboratory of Dr. Marc Stadler. This project is a collaboration of the Stadler mycochemical laboratory in the Department of Microbial Drugs, Helmholtz Centre for Infection Research, in Braunschweig, Germany, and the Köster laboratory, located at the Department of Cellular and Molecular Neurobiology of the Zoological Institute at the Technical University of Braunschweig. This study of both fungal compounds and their bioactivity yielded neuroprotective compounds. Dr. Stadler kindly took time out of his schedule to tell us about this work and share the team's love of international cooking and neurotrophic cake sessions.

How did you become interested in mushrooms and neurotrophic bioactivity?

Mushrooms of the genus *Hericium* have been used for a long time in Asian traditional medicine. Recent studies have attributed their positive influence on human health to neurotrophic factor-inducing properties of unique terpenoids. Some of these secondary metabolites are located in their fruiting bodies, while others are only produced in the cultured mycelia. Most previous studies for neurotrophic activities have targeted the famous "Lion's Mane" fungus, *H. erinaceus*.[1] Our rationale was that taxonomically related species should generate similar substances with different activity spectra. Therefore, we decided to evaluate *H. coralloides*, another edible species more difficult to culture, but with a better taste.

We have been working for some time on modelling neurodegenerative diseases via mechanisms preventing neuronal cell death and molecular mechanisms of neuronal regeneration. Neurotrophins hold a long-standing history in maintaining neuronal homeostasis and in promoting neuronal survival. Thus, they are prime molecular targets for modulating their activity.

Who in your laboratory carried out the research?

Our two labs quickly teamed up when realizing our mutual interest in compound-stimulated regulation of neurotrophin expression. It was evident that natural chemists and experts in natural product chemistry are ideally suited for purifying novel fungal compounds, while developmental biologists studying signalling cascades and cell biological events of neuronal differentiation, homeostasis, neurodegeneration and regeneration are perfectly suited for characterising their neurotrophic activities.

This was a true interdisciplinary project between microbial chemists and developmental neurobiologists. While Kathrin, Zeljka, and Eduard performed the isolation and structural analysis of the novel natural compounds, Monique and Barbara evaluated cytotoxicity, neurotrophic activity, dose response relations, and selectivity of purified compounds in cultured cells.

The team at the zebrafish tank at the Köster lab. Back/middle row from left: Monique Rascher, Kathrin Wittstein, Reinhard Köster and Marc Stadler; sitting in front: Zeljka Rupcic and Eduard Löwen. Not pictured: Barbara Winter.
PHOTO: SVEN HEY

The close location of both labs allowed for regular discussions about results and facilitated the constant productivity of the compound supply chain and feedback about biological activities.

Could you provide a brief explanation of the work and results in your own words?

Basidiomycota of the genus *Hericium* are known as medicinal mushrooms. In particular, *H. erinaceus* is processed into food supplements due to its stomach-soothing, immuno-modulating, anti-cancer, and neuro-protective activities. We aimed to systematically investigate the compounds produced by different species of the genus *Hericium* for their nerve growth factor (NGF) enhancing effects. Therefore, we started to grow submerged cultures of some *Hericium* species in several media and extracted commercially available fruiting bodies of *H. erinaceus* and *H. coralloides*. The secondary metabolite profiles in the fruiting bodies drastically differ from the ones found in cultured mycelium.

Cyathane diterpenoids (erinacines) were isolated mainly from submerged cultures, but we could not detect any of them in the fruiting bodies. Instead, we obtained different hericenone- and

continued on page 14

continued from page 14

hericerine-type compounds, among them corallocins A-C. At the beginning, we concentrated more on the erinacines and their reported NGF inducing activity, which we also observed for some hericenone derivatives through increased neurite outgrowth in PC12 cells. Then the idea came up to investigate the effect of the compounds on the expression of other neurotrophic factors such as brain-derived neurotrophic factor (BDNF). Suddenly, the previously less interesting fruiting body substances came into focus. In particular, the different patterns of NGF- and BDNF-expression of the structurally very similar corallocins turned out to be special and gave the project an additional boost.

Hericium coralloides basidiomes.

Initially, we tested corallocins for their potential cytotoxicity on 1321N1 cells and determined maximal concentrations that were tolerated by these astrocytes. Next, purified corallocins were added to astrocyte cultures allowing them to produce neurotrophins into their culture medium. Such conditioned media were used for PC12 cell culture as this neural cell line responds to the presence of the neurotrophin nerve growth factor NGF by the outgrowth of long neurites. Two of the selected corallocins showed clear neurotrophin-inducting activity evident by neurite outgrowth activity in PC12 cultures with compound-conditioned astrocyte medium. To independently verify induction of neurotrophin expression semi-quantitative real-time polymerase chain reaction (RT-PCR) was used.

Surprisingly, these PCR studies revealed that corallocins contained different neurotrophin-inducing activity, and some promoted BDNF expression. PC12 do not respond because of lack of BDNF-receptor expression. Thus, corallocins provide diverse neurotrophin-inducing activities that could exert interesting cell type specific as well as combinatorial effects. We are now going to isolate these and other compounds in large amounts and will test their activities in zebrafish models.

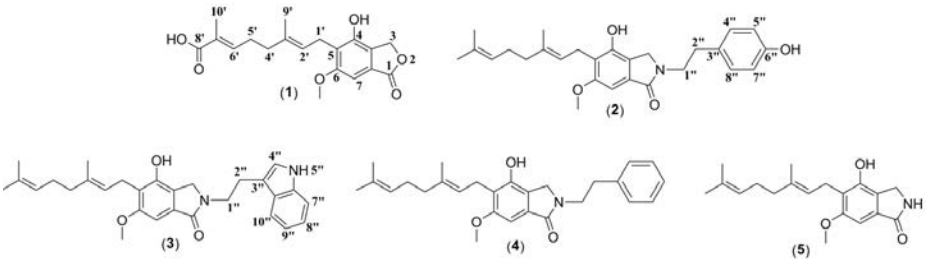
Your work reports new compounds and their ability to induce differentiation in a neuronal cell line. What are the functional implications of this bioactivity?
Neurotrophins have a multitude of functions ranging from maintaining neuronal homeostasis to acting as survival factors. They also promote regeneration in acute lesions and chronic degenerative diseases such as Alzheimer's disease. The direct application of these signalling factors is precluded due to neurotrophins' inability to pass through the blood brain barrier. Therefore, small compounds are required for these targets. Once structure-activity relationships have been determined for such neurotrophic factor inducing substances, they could be tailored for improved solubility, increased blood-brain-barrier-passage, optimal pharmakokinetics and stability to efficiently induce neurotrophin production locally within the central nervous system.

What is a favorite nonscientific activity of your lab?
Stadler laboratory: Our group members are coming from many different countries and often we have guest scientists from Asia, South America, and Africa, due to our international cooperation network. One of our favourite activities is to cook and to try special dishes from all over the world. Among our all-time favourites are sour-spicy Thai soups, Indian butter chicken, Kenyan chapati, North African sweets, Swedish kanelbullar, and of course tasty mushrooms like *H. coralloides*.

Köster laboratory: Neurotrophic cake sessions.

What is your lab's motto or slogan?
Stadler lab: Same same, but different!
Köster lab: Extend your neurites!

What is your greatest extravagance in the lab?
Stadler laboratory: We collect bioreactors in different sizes (from 1 liter to up to 2,000 liters working volume).
Köster laboratory: We cover hallways and office walls with science-art



Chemical structures of corallocins A-C (1-3), hericerin (4) and 5-(2E)-3`,7`-dimethyl-2`,6`-octadienyl]-4-hydroxy-6-methoxy-1-isoindoline (5), five bioactive metabolites isolated from the mushroom.

LITERATURE CITED

[1] Thongbai, B., Rapior, S., Hyde, K.D., Wittstein, K., Stadler M. (2015) *Hericium erinaceus*, an amazing medicinal mushroom. *Mycol Prog.* **2015**, 14, 1-23.

Meet a New ASP Member

Dr. Aline Conceição, Professor in the Biological Science Department at Universidade Estadual de Santa Cruz (State University of Santa Cruz), Ilhéus, Bahia, Brazil, is our featured new ASP member. Dr. Conceição's recent membership in the ASP is due to an agreement between ASP and the Sociedade Brasileira de Farmacognosia (SBFgnosia, Brazilian Society of Pharmacognosy (BSP)), offering joint membership potential collaborations to scientists, as describe in Dr. O'Keefe's article in this issue of the Newsletter. *Dr. Conceição shares with us her inspiration for her research questions, and her love of both plants and viruses.*

By Dr. Dan Kulakowski

Dr. Aline Conceição

GRADIR OLIVEIRA DA CONCEIÇÃO

How did you hear about the ASP?
I knew about ASP through the Brazilian Society of Pharmacognosy (BSP).

Why did you join ASP?
The BSP provided me with membership.

What would you like to achieve through your membership?
I would like to find research collaborators in my subject and explore the possibility to make international exchanges.

Do you belong to any other scientific societies?
I belong to the Brazilian Society of Virology.

What are your current research interests in pharmacognosy?
I am interested in biological activity of medicinal plants, such as antimicrobial activity and the effect of natural products on cell physiology.

What is your scientific background?
I have been doing research in medicinal plants since the second year of veterinary school. The research project for my Master's degree in Veterinary Science was about antiviral activity of Brazilian *Hypericum* species. For my PhD in Biological Science, I conducted research on calcium transport and cell signaling with regard to the effect of medicinal plants on cells.

What inspires you to do research?
The great mystery of life inspires me to do research, especially the power of plant products and their relationship with organisms from other kingdoms.

What do you like doing in your spare time?
In my spare time I love to play with my three cats and dogs, take care of my garden, and spend time with my dear husband.

What are you currently reading?
Start Where You Are: A Guide to Compassionate Living by Pema Chödrön.

What is your favorite organism (to study, or for general interest)?
Viruses are, no doubt, my favorite mystery of the universe. ■

The great mystery of life inspires me to do research, especially the power of plant products and their relationship with organisms from other kingdoms.

New Members of ASP 2016

ASP would like to welcome new 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 7 domestic full members, 9 international members, and 7 associate members. We would also like to welcome the 162 new joint ASP/ Sociedade Brasileira de Farmacognosia (SBFgnosia) members. We look forward to meeting you and learning more about you and your work.

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Universidade Federal de Sergipe
Aracaju

Miryan Ramos de Gouva
Centro Univ Campos de Andrade
UNIANDRADE
Curitiba

Karina Randau
UFPE
Camaragibe

Jose Realino de Paula
Universidade Federal de Gois
Goinia

Flavio Reginatto
UFSC
Florianpolis

Maria Ribeiro
Universidade Federal do Maranho
São Lus

Raquel Ribeiro
UNIVASF
Petrolina

Silvia Ribeiro de Souza
Universidade de Brasilia
Brasilia

New Members of ASP 2016

JOINT MEMBERS OF ASP AND SOCIEDADE BRASILEIRA DE FARMACOGNOSIA (SBFGNOSIA)

Angelica Ribeiro Soares
UFRJ
Maca

Arno Rieder
UNEMAT
Cáceres

Fabiola Rocha
Universitrio UFJFr
Juiz de Fora

Hugo Rocha
Univ Federal do Rio Grande do Norte
Natal

Leandro Rocha
Faculdade De Farmcia - Uff
NITEROI

Marili Rodrigues
UFSC
Campinas

Rodney Rodrigues
UNICAMP
Campinas

Larissa Rolim
UNIVASF
Petrolina

Giuliana Safadi
Universidade Estadual de Goias
Anapolis

Cid Santos
Universidade Federal do Paran
Curitiba

Suzana Santos
UFG
Goinia

Marcus Scotti
Universidade Federal da Paraba, CampusIV
Cabedelo

Professor Dulce Silva
Inst de Quimica - UNESP
Araraquara

Edilberto Silveira
Universidade Federal do Cear
Fortaleza

Naomi Simas
Universidade Federal do Rio de Janeiro
Rio de Janeiro

Claudia Simoes
UFSC
Florianpolis

Joao Siqueira
Universidade Federal de Sao Joao Del Rei
Divinopolis

Fabiana Soares
UNIFOR
Fortaleza

Luiz Soares
UFPE
Recife

Diva Sonaglio
Universidade Federal de Santa Catarina
Florianpolis

Maria Stefanello
Universidade Federal do Paran
Curitiba

Dr. Ivana Suffredini
Universidade Paulista - UNIP
São Paulo

Edna Suyenaga
Universidade FEEVALE e Universidade do V
Porto Alegre

Valeria Teixeira
Universidade Federal Fluminense
Rio de Janeiro

Ana Tonetti
Farmcia Homeoptica
Campo Magro

Keidi Ujikawa
UNESP
Araraquara

Maria Vanderlei de Souza
Universidade Federal da Paraba
Joo Pessoa

Joelmir Veiga da Silva
Universidade Nove de Julho
Joao Pessoa

Rodrigo Veneziani
Universidade de Franca Ribeiro Preto

Ivo Vieira
Universidade Estadual do Norte Fluminense Campos
Goytacazes

Silvia Vieira
UNESP Araraquara
Dourados

Dr. Nilsa Wadt
Faculdades OswaldoCruz, UNINOVE, UNIP
Valinhos

Maria Young
Instituto De Botanica
São Paulo

Jose Zuanazzi
Unive Federal do Rio Grande do Sul
Porto Aleg

Brief News from Washington

By Dr. Georgia Perdue

➢ **On September 7, 2016, three panel members of the Cancer Moonshot Blue Ribbon Panel presented its report to the National Cancer Advisory Board (NCAB)**. In his opening summary Dr. Tyler Jacks, Massachusetts Institute of Technology (MIT), Cambridge, Massachusetts, noted that **the Panel was specifically charged to find scientific opportunities with purposes including cutting edge precision research, greater cooperation and collaboration between academia, government, and the private sector, and to enhance data sharing.** Seven working groups were formed with 150 people each, including topical experts, e.g., scientific and community outreach, online resources and one on one input. The original 14 recommendations were cut to 10. Broad interest included cancer resistance and the importance of screening and new technology needs. Some of the cross cutting themes are:

- A national scale research program with investigators, data etc. coordinated by the National Cancer Institute (NCI)
- Prevention
- Health disparities research
- Biomarkers of the disease
- Development of technology
- Data sharing
- Public/private collaborations, including academia, government and elsewhere, to accelerate the program.

Dr. Elizabeth Jaffee, Johns Hopkins, Baltimore, Maryland, presented more recommendations. Highlights include: form a network for direct patient engagement; have cancer immunotherapy clinical trial networks; identify therapeutic targets to overcome drug resistance; create a cancer ecosystem to share information for common and rare cancers; create a cancer atlas; develop new technologies to accelerate therapies. NCI's Dr. Dinah Singer provided the next steps: acceptance of report by the **NCAB, which was done. The Vice President's Moonshot Taskforce then reviewed the recommendations and how to implement them and issued its report in October, 2016. NCI will identify recommendations which can be implemented and determine which ongoing NCI initiatives it can build upon.** [On a personal note, I truly hope this effort succeeds and avoids all the pitfalls of the 1972 "War on Cancer" program and its documented waste and many other problems; in spite of it all, some good anticancer drugs were discovered.]

➢ **On October 20, 2016, Vice President Joe Biden delivered the Cancer Moonshot Task Force report to the President, which included the Blue Ribbon Panel recommendations.**

➢ It took six years, but at the end of September, 193 member countries of the UN declared their agreement to eliminate drug resistant bacteria, a.k.a superbugs.

➢ At long last, **on September 29, 2016, Congress passed a spending bill which includes $1.1 billion for Zika virus research. Dr. Anthony Fauci, director of National Institute of Allergy and Infectious Diseases (NIAID) noted his Institute will receive $152 million. Researchers will now "smoothly pivot from its 80 person Phase I vaccine trial to a broader Phase II trial in… Latin America, the Caribbean and Puerto Rico, as soon as January."**

➢ At the September 12, 2016, NIAID Advisory Council meeting, Dr. Fauci noted that there are 58 countries with active Zika transmission; 48 of the countries are in the Americas and the Caribbean. In the United States, there are about 3,000 travel related Zika cases reported. Also at his Coun-

continued on page 22

…the Panel was specifically charged to find scientific opportunities with purposes including cutting edge precision research, greater cooperation and collaboration between academia, government, and the private sector, and to enhance data sharing.

continued from page 21

cil meeting, **Dr. Fauci noted that 6,000 existing research drugs and compounds have been screened for activity using a variety of vaccines in monkeys. Thirty people have been enrolled in Phase I clinical trial; the Phase II trial in January or February 2017 will have 2,400 to 5,000 individuals.**

- **Ten days after the NIAID Council meeting the Institute released news that "…[t]wo experimental Zika virus DNA vaccines developed by National Institutes of Health (NIH) scientists protected monkeys against Zika infection after two doses…. One of the vaccines is being evaluated in a Phase I human trial now underway in…the US"** Details of the study were published in *Science*.
- Dr. Fauci also noted at his Council meeting that **yellow fever in the Congo and Angola has been made worse with vaccine shortages. NIAID has launched an early stage yellow fever vaccine Phase I trial.**
- **More money for Zika: $43 million will be allocated to Sanofi Pasteur to manufacture the inactivated Zika vaccine for Phase II clinical trials.** At the end of September 2016, the Biomedical Advanced Research and Development Authority (BARDA, within Health and Human Services Office of Assistant Secretary for Preparedness and Response) tasked with the development and purchase of vaccines, drugs, therapies, and diagnostic tools for public health emergencies, announced this funding. **Sanofi Pastuer has an agreement with Walter Reed Army Institute of Research (WRAIR) to co-develop the vaccine. WRAIR and NIAID will conduct the trials. WRAIR and NIAID already began the Phase I trials in September 2016.**
- **Rockville, Maryland, has another company headed for a home run. Sanaria's preventative vaccine for malaria, SanariaPfSPZ, was granted Fast Track status by the Food and Drug Administration. The vaccine is in clinical trials not only here, but also in Europe and Asia. The trials include patients as young as six months as well as adults.** NIAID's Phase I trials found that "100% of the subjects" were protected by the vaccine after three weeks; after 14 months, when the last dose was given, 55% of the subjects were protected. Founded in 2003, Sanaria is a biotechnology and vaccine development firm. It believes malaria can be eradicated through vaccination.

- Antibiotic Resistance hits the news again in September 2016. Based on the President's Council of Advisors on Science and Technology (PCAST) recommendations, the government **(NIH) and Biomedical Advanced Research and Development Authority, launched a contest worth $20 million to entice researchers, individuals, teams, businesses or nonprofits to develop tests to target drug resistant bacteria. The deadline is January 9, 2016.**
- **An alternative medicine has made news involving Congress, the Drug Enforcement Agency (DEA), and more. A plant, commonly called kratom, (*Mitragyna speciosa*, Rubiaceae), grown in Southeast Asia, has become an "opioid alternative." In late September 2016 members of Congress, at the urging of the Botanical Education Alliance, asked the administration to stop its plan to make this herbal product a Schedule 1 product on September 30; DEA questioned its safety and effectiveness.** A month earlier, DEA had planned to place the plant's opioids (mitragynine and 7-hydroxymitragynine) under Schedule 1, which include ecstasy, heroin and marijuana. All is on hold for now. The NIH has "provided funding to the University of Massachusetts and the University of Mississippi to determine whether kratom could help with opioid withdrawal." The DEA has three years "to convince the FDA to permanently make kratom a Schedule 1 drug." Stay tuned! (Some data are from *Medscape*).
- **In early October, the FDA warned that homeopathic tablets used for teething in infants and children should not be used.** The agency is testing both tablets and gels because seizures have been reported. Both CVS Pharmacy and Hyland's Pharmacy have removed these treatments.
- **The anticancer drug Halaven® (eribulin mesylate) made by Eisai, Co., Ltd., is really getting around.** This time it received approval by UK's National Institute for Health and Care Excellence (NICE). It is for patients with locally advanced or metastatic breast cancer. [See previous issue for approval in China and source of drug].
- **The FDA's CDER (Center for Drug Evaluation and Research) has updated its Manual of Federal Policies and Procedures (MAPP) for its review of botanical drug products.** FDAs CDER/MAPP site has a very well done definition of pharmacognosy!

- **On November 19, the Federal Trade Commission (FTC) announced it will check out the manufacturers of Over The Counter (OTC) homeopathic remedies which have no scientific evidence for their health claims.** This is a rare challenge by the FTC. In a press release FTC noted that, **"companies must have competent and reliable scientific evidence for health-related claims, including claims … for treat[ing] specific conditions." FTC also noted that this industry currently has $1 billion annual sales.** ■

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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.

Synthetic Biology for Natural Products
March 5-8, 2017
Fiesta Americana Condesa
Cancun, Mexico
www.fusion-conferences.com/conference58.php

19th International Conference on Natural Products
June 28-29, 2017
Holiday Inn London-Wembley
London, United Kingdom
waset.org/conference/2017/06/london/ICNP

3rd Natural Products Conference:
Interface of Science and Technology as Applied to Natural Product Research
March 20-23, 2017
Fiesta Americana Condesa
Cancun, Mexico
www.fusion-conferences.com/conference55.php

Gordon Research Seminar:
Natural Products & Bioactive Compounds (GRS)
July 29-30, 2017
Proctor Academy
Andover, New Hampshire
www.grc.org/programs.aspx?id=17477

Society of Economic Botany 58th Annual Conference
June 4-9, 2017
Polytechnic Institute of Braganca
Braganca, Portugal
us2.campaign-archive1.com/?u=7b5241ec2a609d26192947333&id=121610b3bf

ASP Annual Meeting
July 29-August 2, 2017
Hilton Portland & Executive Tower
Portland, Oregon
asp2017.org/

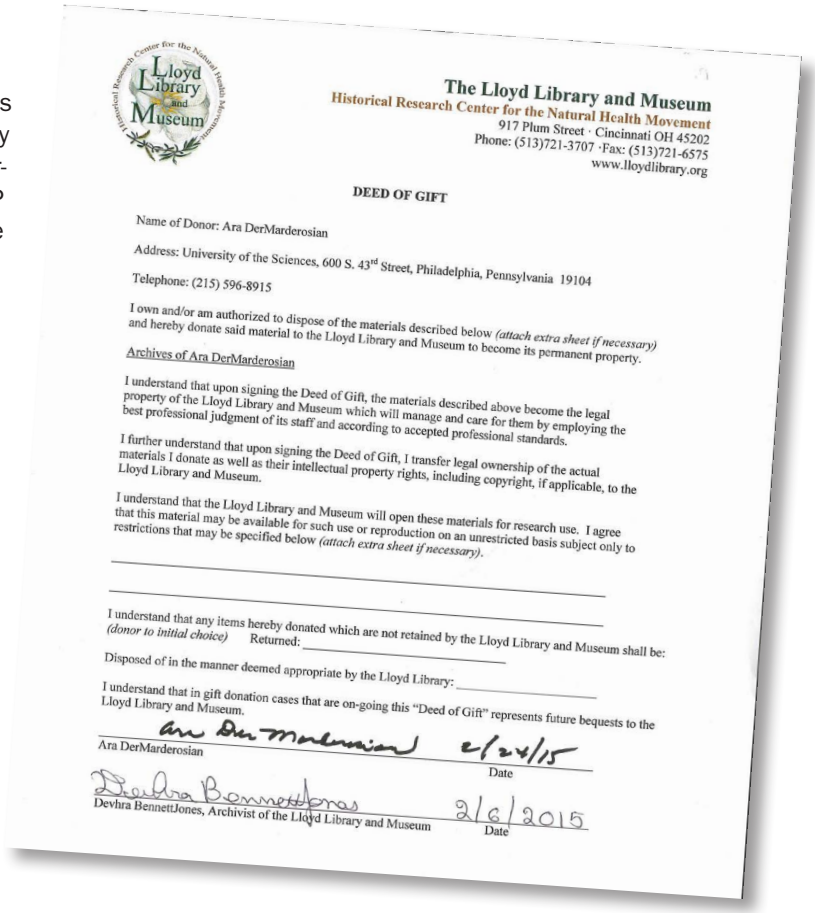
The Lloyd Library: Official Archives of the American Society of Pharmacognosy

By Ms. Devhra BennettJones

The Lloyd Library in Cincinnati, Ohio, is the official archives repository for the American Society of Pharmacognosy (ASP). The Lloyd grants access to and preserves the archives of the ASP, as well as the archives of individual ASP members. Among several well-known ASP archives donors are Drs. John Beutler, Ara DerMarderosian, George Hocking, Edward Kennelly, George "Bob" Pettit, Richard Powell, Robert Raffauf, John Staba, and Varro "Tip" Tyler. The Lloyd Library will soon accession the archives of the esteemed Dr. Norman Farnsworth.

Recently the Lloyd archivist interviewed Dr. Pettit about the role of the archives for ASP history and in documenting the history of science:

> I have been at Arizona State University for 51 years, and was previously at the University of Maine. Farnsworth was a life-long friend of mine, in fact he and I were on the first Scientific Committee sent to China in 1974. My archives collection is voluminous for a number of reasons. I started building the China records in 1974. In 2001, I finished the long-term objective of finishing the Cancer Research Building at ASU. I built a library into it, so I have many runs of records in the Cancer Institute Library. A lot of the really good records in discovering new anti-cancer drugs are being stored on palettes, almost 10 feet high in some cases, wrapped in plastic.
>
> ASP scientists should send their archives to the Lloyd Library. I am a lifelong fan of the Lloyd Library and I would very strongly encourage any of us working on discovery, for example anti-cancer drugs from natural products, to leave their professional papers to further enrich the Lloyd Library collections. Of course I believe that increasing the holdings of the Lloyd Library further increases greatly the availability of scientific information that would otherwise be lost. The Lloyd Library is a most unique and valuable contribution to science and especially our knowledge of natural products and their value to new drug discovery. I have told my children that I want my archives to go to the Lloyd Library and will make that official.



The Lloyd Library and Museum
Historical Research Center for the Natural Health Movement
917 Plum Street · Cincinnati OH 45202
Phone: (513)721-3707 · Fax: (513)721-6575
www.lloydlibrary.org

DEED OF GIFT

Name of Donor: Ara DerMarderosian

Address: University of the Sciences, 600 S. 43rd Street, Philadelphia, Pennsylvania 19104

Telephone: (215) 596-8915

I own and/or am authorized to dispose of the materials described below *(attach extra sheet if necessary)* and hereby donate said material to the Lloyd Library and Museum to become its permanent property.

Archives of Ara DerMarderosian

I understand that upon signing the Deed of Gift, the materials described above become the legal property of the Lloyd Library and Museum which will manage and care for them by employing the best professional judgment of its staff and according to accepted professional standards.

I further understand that upon signing the Deed of Gift, I transfer legal ownership of the actual materials I donate as well as their intellectual property rights, including copyright, if applicable, to the Lloyd Library and Museum.

I understand that the Lloyd Library and Museum will open these materials for research use. I agree that this material may be available for such use or reproduction on an unrestricted basis subject only to restrictions that may be specified below *(attach extra sheet if necessary)*.

I understand that any items hereby donated which are not retained by the Lloyd Library and Museum shall be: *(donor to initial choice)* Returned: _____

Disposed of in the manner deemed appropriate by the Lloyd Library: _____

I understand that in gift donation cases that are on-going this "Deed of Gift" represents future bequests to the Lloyd Library and Museum.

Ara DerMarderosian — Date 2/24/15

Devhra BennettJones, Archivist of the Lloyd Library and Museum — Date 2/6/2015

The Deed of Gift for Dr. Ara DerMarderosian's archives.

For millennia, archival records have provided essential clues to history. The Lloyd Library's archives mission is to collect and maintain botanical, medical, pharmaceutical, scientific records, and works of allied sciences that serve the scientific research community. Through emails, letters, diaries, unpublished writings, as well as through audible, visual, and electronic records, researchers have studied the history of science. The Lloyd Library focuses on preserving and making these rare and unique materials accessible. These scientifically-based archives offers vital information about specific research endeavors and scientific research trends.

Archives take many forms and arrive at the Lloyd Library in a variety of states. Ideally, records should be kept in a cool, dry,

continued on page 25

The Lloyd Library is a most unique and valuable contribution to science and especially our knowledge of natural products and their value to new drug discovery.

continued from page 24

temperature-stable environment. Digital materials should be backed up regularly. In order to be historically significant, archival materials need not be organized or identified, for example the George Hocking Papers currently undergoing archival processing at the Lloyd Library, arrived at the archives in jumbled heaps of documents. Many types of materials are valuable to historians of science and researchers seeking data about scientific studies, such as:

- letters/emails;
- memoirs/reminiscences;
- diaries/blogs;
- scrapbooks/photo albums;
- professional papers;
- genealogical information;
- speeches/lectures;
- articles/essays;
- subject files;
- legal documents;
- minutes/reports;
- brochures and fliers;
- awards/certificates;
- websites;
- photographs, films, videos, and audio tapes (with subjects and locations identified when possible).

The Lloyd Library exercises 'best practice' archives policies. Donors will sign a deed of gift, which formally acknowledges that the archives become the property of the Lloyd Library. Access to the archives is directed by accessibility, duplication, and publication policies. You should discuss any access concerns in advance of donation in order to address such parameters in the deed of gift. While the Lloyd seeks to make all materials openly accessible, reasonable and equitable restriction agreements are possible for periods of time.

Many archives donors have questions about copyright. Copyright assignment is owned by the creator of the records, although it can be legally transferred to heirs or the Lloyd Library. Donors should be aware that ownership of copyright is significantly different from ownership of physical items. The Lloyd Library requests that donors include any copyright ownership with their archives upon accession. Under the terms of United States Copyright Law, the Lloyd Library may provide copies for research under the "fair use" exemption, allowing scholars to publish portions of an item in which the Lloyd does not own copyright. Permission to publish or quote extensively from the archives must be obtained from the copyright holder. To learn more about copyright, see www.copyright.gov, or ask your attorney.

While archives deeds of gifts often address copyright and access, the Lloyd Library rarely advocates for multiple archives donation conditions. Deterred conditions primarily pertain to utilizing the donated archives in exhibits and the speed of archival processing. Deeds of gift are often confused with monetary appraisals for tax deductions. The Lloyd Library recommends that archives donors consult with their tax accountant or attorney regarding the possibility of a tax deduction.

Financial donations are not required for archives donations to the Lloyd Library. Archival processing involves preparing the materials for use by researchers. It entails the arrangement, conservation, preservation, and description of the archives collection. Archival processing is the most expensive operation in the Lloyd Library archives. Archives donors who are ready to begin sending their materials to the Lloyd Library, or are able to assist by providing funds toward archival processing are encouraged to discuss the possibility with the Archivist, Ms. Devhra BennettJones, Devhra@lloydlibrary.org, (513) 721-3707. ■

For millennia, archival records have provided essential clues to history. The Lloyd Library's archives mission is to collect and maintain botanical, medical, pharmaceutical, scientific records, and works of allied sciences that serve the scientific research community.

Jim McAlpine, 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.
Current membership dues and Journal of Natural Products subscription rates can be found at **www.pharmacognosy.us**.

Associate Membership

Associate membership is open to students of pharmacognosy and allied fields only. These members are not accorded voting privileges.
Current membership dues and Journal of Natural Products subscription rates can be found at **www.pharmacognosy.us**.

Emeritus Membership

Emeritus membership is open to retired members of the Society who maintained membership in the Society for at least five years.
Current membership dues and Journal of Natural Products subscription rates can be found at **www.pharmacognosy.us**.

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. John H. Cardellina · Dr. David P. Carew, University of Iowa · Dr. John M. Cassady, Oregon State University
Dr. Geoffrey A. Cordell, University of Illinois at Chicago
Dr. Gordon C. Cragg, National Institutes of Health · Dr. Harry H.S. Fong, University of Illinois at Chicago
Dr. William Keller, Nature's Sunshine Products, Inc. · Dr. A. Douglas Kinghorn, Ohio State University
Dr. Robert J. Krueger, Ferris State University · Dr. Roy Okuda, San Jose State University
Dr. James E. Robbers, Purdue University · Dr. Yuzuru Shimizu, University of Rhode Island
Dr. E. John Staba, University of Minnesota · Dr. Otto Sticher, Swiss Federal Institute of Technology
Dr. Hildebert Wagner, University of Munich · Dr. Mansukh Wani, Research Triangle Institute

Additional information about membership may be obtained by writing to the Treasurer of the Society:
Jim McAlpine, PhD, Treasurer, The American Society of Pharmacognosy,
3149 Dundee Road, #260, Northbrook, Illinois 60062. Email: jim4asp@gmail.com