American Society of Pharmacognosy

Fall 2020

Discovering Nature's Molecular Potential

ASP Newsletter: Fall 2020, Volume 56, Issue 3

ASP President Oberlies Addresses Members

By Nicholas Oberlies, PhD

The first ASP meeting I attended was in Halifax, Nova Scotia in 1984. If you can find pictures from that meeting's final banquet (and I fear that Barry O'Keefe already has), you might see an eager graduate student with a long, dark ponytail, possibly wearing a lobster bib. I sported that ponytail with a great deal of pride for over 4 years, and then one day, I cut it off, essentially shaving my head. Later that day, there was a parade of sorts coming by the labs at Purdue, all to see "the new Nick," so to speak. My boss, Dr. Jerry McLaughlin, a former associate editor of the *Journal of Natural Products* and president of the ASP in 1982-1983 (aka the six of clubs in the ASP deck of cards), came by and said: "You know, Nick, there is only one constant in life, and that's change."

His comment has always stuck with me, and in the waning days of the summer of 2020, they could not be more resonant. Like many of you, I am trying to figure out how to lead my students via Zoom as well as how to teach a class in the short term while wearing a mask, and quite likely, if the world closes again, also from Zoom. We are setting up our house with more computer horse power, so that my kids can go to high school via Zoom; and several nights a week, my wife and I go on campus tours with our daughter, who is trying to figure out where to apply for college, also in a virtual manner via Zoom. We have all had to change and do so rapidly, and likely every one of you is doing something similar. Thankfully, our health is perfectly fine, and I hope the same is true for all of you.

Nicholas Oberlies, PhD PHOTO: UNC GREENSBORO

As I sit here, penning this address, I keep seeing in my mind's eye the way I wanted to deliver it. If you bear with me for a moment, I hope you can envision all of us sitting at the final banquet in San Francisco, not only surrounded by our long-time friends and colleagues in this Society, but also with new friends and colleagues from around the world. We would have passed along our gratitude to the organizers of the annual meeting, our president, our business manager, the speakers and presenters, our colleagues in sister societies, and all of you for attending. Tradition would have it, then, that I would have asked active members of the Society to stand and be recognized, and, in turn, this would have included: the past presidents, fellows and honorary members, editors of the *J. Nat. Prod.*, members of the Executive Committee and the

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American Society of Pharmacognosy

Discovering Nature's Molecular Potential

***ASP Newsletter*: Fall 2020, Volume 56, Issue 3**

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Dr. Nicholas Oberlies

ASP Equity and Diversity

Annual Meeting

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/

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Spring: Feb. 15; Summer: May 15
Fall: Aug. 15; Winter:Nov. 15

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Editor's Corner

American Society of Pharmacognosy

By Edward J. Kennelly, PhD

The Fall 2020 issue of the *ASP Newsletter* is like no other fall issue that I have edited over the past 15 years. This issue is usually packed full of memories from the ASP annual meeting that traditionally happens in the summer months. As a result of the pandemic, the 2020 annual meeting, which was slated to be a joint meeting with six other societies, was cancelled as reported previously. The articles missing from this newsletter include the many awards that the Society typically distributes during this time, as well as lots of photos of the event. I hope next year the 2021 ASP meeting in Grand Rapids, Michigan will be a great opportunity for ASP members to reconnect after many months of isolation and limited travel opportunities. Read more about the planning for the 2021 meeting in this issue of the *Newsletter.*

Despite the pandemic, ASP was still able to conduct some of its normal business virtually, including the Executive Committee meeting and Membership meeting. New officers were installed, including ASP President Dr. Nick Oberlies. Dr. Oberlies has been hard at work already, and you can read more about his vision for the ASP in our cover article. One area of change that has begun is the *ASP Newsletter* itself, which has a new and expanded advisory board, which has already met and recommended ways to modernize this 56-year old publication. We hope to begin implementing some of these changes in the next few issues.

Another new initiative that ASP has been involved with includes outreach to primarily undergraduate institutions. Dr. Amy Lane has written about this important topic in this issue. Have you ever been frustrated after reading NIH grant reviewer comments with the apparent lack of knowledge or appreciation for natural products? If so, please read Dr. Susan Mooberry's article on how ASP can play a role in changing this situation.

The last issue of the *ASP Newsletter* had several articles that addressed racial injustice. ASP's Diversity and Inclusion Committee has written a follow-up article with useful ways to consider this issue for scientists working on natural products and beyond. ASP Fellow Dr. Bill Gerwick has contributed an op-ed essay on the uncertain situation with foreign students in the USA at this time due to changes in federal policies.

There is good news to report as well! Former *Journal of Natural Products* Editor and ASP Fellow Dr. A. Douglas Kinghorn has been awarded the Egon-Stahl Award from our sister society, the Society for Medicinal Plant and Natural Product Research (GA). Congratulations, Doug! Although there was no annual meeting, the ASP Foundation has given its annual Schwarting and Beal awards for the best papers in the *Journal of Natural Products* to two ASP members. Congratulations, Drs. Valerie Paul and Sandra Loesgen!

Our regular columns continue to provide the foundation to the *ASP Newsletter*, and I hope you take a look at these as well. Have a great fall; in New York the leaves are at peak this weekend, and it is good to know that, despite the many challenges of 2020, the seasons still progress. ■

ASP President Oberlies Addresses Members

The call to action, then, is both to increase the membership, and more importantly, to increase participation in the Society. I see no reason why we cannot have 1,000 members consistently, with at least 25% of them (if not many more) having an active role.

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ASP Foundation, and the chairs and members of the >30 separate committees of the Society.

After a hearty round of deafening applause, I would pause (glance down at my saddle oxfords) and then make the following observations and call to action. At present, we have just over 700 members. If you counted all those who were just standing, you would come up with about 70 to 100 people, depending on who made it to the annual meeting. That means that just over 10% of the membership are actively involved in the Society. While 10% may seem shocking, I think it is fairly consistent across numerous organizations. For example, with about 400 families in my children's school, only about 40 volunteered for most PTA duties. I have played on an adult soccer team for decades, and with approximately 20 players on the roster, about two to three of those could be counted on to organize the season and games. Certainly, you can come up with examples from your own lives, be it at schools, civic organizations, religious organizations, sports teams, etc.

You could quibble about the numbers. You could point out that the membership would be even higher if we had an annual meeting, because many would join the ASP to enjoy a discounted registration. You could observe that many people serve on more than one committee or that they have been on the same committee for years if not decades. Regardless, on balance, I stand by those calculations. There are 700 plus members and 70 plus involved in the duties of the Society.

The call to action, then, is both to increase the membership, and more importantly, to increase participation in the Society. I see no reason why we cannot have 1,000 members consistently, with at least 25% of them (if not many more) having an active role. There are countless active roles that all of us can consider. As your president, I see it as my duty to help you find your place, your niche, your role, your responsibility, and your opportunity to grow with the Society.

Here are just a few ideas of opportunities for involvement in the Society and advocating for the natural products sciences, in general:

Is there a committee you would like to learn more about or join?

All committees will be meeting, periodically, throughout the year, and I can easily help to get you involved, perhaps in an ad hoc way at first with an opportunity to join in the future. Every year, people roll on and off committees, making plenty of room for new members.

Is there a new idea or committee you would like to initiate?

There are many things we do today that started as new ideas only a few years ago. The Younger Members had their first meeting, as an ice cream social with about a dozen people, at the annual meeting in Oaxaca, Mexico in 2001. Today, the Younger Members are extremely vibrant, even holding their own virtual meeting. A group of people approached me at the end of the meeting last year about a committee focused on members at Primarily Undergraduate Institutions, and as you will read in this *Newsletter,* Amy Lane and her committee are off to a great start, with loads of ideas to share with you at the 2021 meeting. Those are only two of many examples, and I encourage you to bring forward ideas and suggestions. Working together, we'll start building the foundations needed to make them a reality.

Do you regularly attend the ASP meeting, and do you encourage your students to do so?

Some of us come nearly every year. Some of us come when we have funds to do so. Some come only if they are invited. Please know that if you are a member of the ASP, you are ALWAYS invited to attend and contribute to the annual meeting, and you are ALWAYS encouraged to bring your students and postdocs. Please bring some of your colleagues too, even if they are in ancillary fields, as we would love to hear about their science and share ours as well. If funding is a challenge, please pay attention to the due dates for the various travel awards and

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look for opportunities to share costs with colleagues. I believe in the adage that ***where there is a will, there is a way.***

What is your relationship to the Journal of Natural Products?

Are you submitting your best papers there? Are you encouraging your students, postdocs, friends, and colleagues to peruse its content regularly? Do you accept invitations to review manuscripts? Do you cite the most relevant papers from the *Journal*? *The Journal of Natural Products* is our organ for disseminating science to the world, and I encourage you to contribute to its growth, vitality, and stewardship.

Do you contribute to the American Society of Pharmacognosy Foundation?

Have you or one of your students received a travel award in the past? Have you contributed to the annual campaign or thought about raising funds to honor a colleague? Have you thought about including the ASP Foundation in your will? Even modest donations, over time, build and grow and allow us to carry out many of the benevolent goals of the Society. Throughout the coming year, you will hear more about the ASP Foundation in the *Newsletter,* and I encourage you to use it as a vehicle to help pay forward to the next generation of scientists.

Do you review grants for the NIH, NSF, USDA, etc.?

If you poll most grant-funded investigators in the ASP, I predict that a common concern is that, often, grant applications are not reviewed by experts in the natural products sciences. The NIH has started a program to identify a greater number of qualified reviewers, and as Dr. Susan Mooberry reports in an article in this issue of the *Newsletter,* the ASP has formed a committee to help recommend people for such a role. Regardless, we need more people sitting on those review panels, speaking up for the natural products sciences, thwarting the all too common critique of this research being "a fishing expedition." In the times that I have served on various panels, I am often shocked at how few of us there are on the panel. While it is work, service on review panels is a way to effect positive change in this regard.

Returning to thoughts of previous meetings, in 2000 when I was a postdoctoral chemist, I had to make a pitch to Dr. Monroe Wall to support my travel to the annual meeting in Seattle, WA. Although Research Triangle Institute (our employer) was a not-for-profit, it was also a not-for-loss, and it was going to cost a great deal to fly across the country and attend the meeting. He agreed to the trip after I showed him the data that I wanted to present, but he had the following two caveats. First, he told me not to hide behind my poster and instead get out there and "talk about my science." While many of you may know Dr. Wall as the co-discoverer of taxol, which happened in 1971, he was always keen on new ideas and was always encouraging his team to think about ways to improve our science. Secondly, he told me to get involved, promising me that whatever I "invested" in the Society, it would be returned to me in "dividends."

I learned a great deal from all my mentors over the years, and as I sit here planning for 365 days at the helm of the ASP, thoughts of what Dr. Wall said are bouncing around in my head. People join the ASP and come to meetings for various reasons, and in the beginning, that is likely both to showcase their own science as well as to pick up new ideas. However, they stick around for years, if not decades, because of the relationships that are formed. We all need you in the Society. We need your ideas, we need your energy, we need your enthusiasm, and we need your creativity, so that we can all continue to explore and discover nature's molecular potential.

It is an honor to serve as your president. ■

We all need you in the Society. We need your ideas, we need your energy, we need your enthusiasm, and we need your creativity, so that we can all continue to explore and discover nature's molecular potential.

Taking Action: Equity and Diversity in the Lab

By Christine Salomon, PhD

This article is part of a continuing series in the *ASP Newsletter* focused on anti-racism and building a culture of equity in our society that supports all scientists interested in natural products. We want to provide resources and information to recognize white privilege, reduce implicit bias, improve hiring and student admission practices, promote supportive lab environments, and host inclusive meetings. We are starting with a call to action focused on developing an inclusive lab culture that specifically supports Black, Latinx, and Indigenous (BLI) scientists, while recognizing the need to include people from many marginalized communities in science, including women, those with disabilities and those that identify as LGBTQ+.

Over the past several decades, there have been increasingly urgent calls to diversify the scientific workforce, increase the number of postdocs and faculty of color, and improve the diversity of student cohorts in STEM programs. Large sums of money have been spent on various diversity initiatives by federal agencies, research institutes, universities and colleges. And yet, it is clear that relatively little progress has been made in recruiting and retaining students, postdocs and faculty who are underrepresented minorities.

It is easy to superficially quantify this issue: Consider how many BLI students or postdocs are in your lab currently. How many speakers in your departmental seminar series were people of color last year? How diverse are the faculty in your department? What was the racial makeup of the most recent grant review panel you served on?

To begin to critically think about the underlying issues and possible solutions, it is important to consider what the word "diversity" means. As an example, my city of Minneapolis is highly diverse, with some of the largest populations of Somali and Hmong immigrants in the US. But it is also deeply racially segregated and inequitable for people of color by all measures, including education, employment, income, police violence, and healthcare. This is not an isolated situation and exists in many cities throughout the country. Decades of oppression and racism continue to widen the achievement gap and limit opportunities to only some members of "diverse" communities.

It is clear that equity, opportunity and access need to be addressed. The natural *outcome* of systemic and institutional equity is diversity. In the article "The Language of Appeasement," Professor Dafina-Lazarus Stewart provides helpful context:

- Diversity asks, "Who's in the room?" Equity responds: "Who is trying to get in the room but can't? Whose presence in the room is under constant threat of erasure?"
- Inclusion asks, "Has everyone's ideas been heard?" Justice responds, "Whose ideas won't be taken as seriously because they aren't in the majority?"
- Diversity asks, "How many more of [pick any minoritized identity] group do we have this year than last?" Equity responds, "What conditions have we created that maintain certain groups as the perpetual majority here?"

The pipeline cannot be fixed by simply identifying and recruiting smart, creative Black, Latinx, and Indigenous scientists. We need to fundamentally change the culture of academic labs to authentically support and mentor them through all stages of training and development. Here are some practical steps to take action and make a difference.

1 Use existing resources to educate yourself about obstacles to equity. Recognize white privilege to understand how whiteness inherently benefits from an unjust and inequitable society.

To begin to critically think about the underlying issues and possible solutions, it is important to consider what the word "diversity" means.

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Talk about racism, implicit bias, the intersection of gender and race, and systemic inequity with your lab group regularly.

Learn about implicit bias and how to counter it. The University of Minnesota Chemistry Department has compiled a useful list of articles, books and videos on anti-racism and social justice, including resources that address gender, sexual orientation, and disability.

a. Faculty Fighting Racism

b. 10 Steps to Non Optical Allyship

c. 100 Things White People Can Do for Racial Justice

d. 7 Anti-Racist Books Recommended by Educators and Activists

e. Being #blackinchem

2 Talk about racism, implicit bias, the intersection of gender and race, and systemic inequity with your lab group regularly. Ask lab members to choose an article for the group to read and discuss on a rotating basis as part of your science journal club or group meeting. These discussions can be uncomfortable and difficult, but these conversations help validate the experiences of scientists of color. Conversations about race and equity with your lab members can also be inspiring and enlightening and can play a meaningful role in bringing the group together and building trust. They also get easier with practice!

3 Recognize the many complex barriers that Black, Latinx and Indigenous students face when trying to move through the academic research pipeline. If a student needs to work a full-time job to support their family, they may not be able to afford to volunteer for the summer in a research lab, which is part of the essential currency of being competitive for top graduate programs. Income inequality and lack of generational wealth contribute significantly to the lack of "prior opportunity." Additionally, PIs can request supplements to some existing grants from NIH and NSF to support summer BLI students.

4 BLI students should have role models, seminar speakers and faculty mentors who look like them and share similar life experiences. Use your power and privilege to insist that a minimum number of invited seminar speakers are people of color. Consider the requirements and expectations for admission into your graduate programs. Actively work to improve and innovate your outreach for faculty job openings; if you consistently reach only qualified white applicants, dig deeper to understand why.

5 Pair new students or postdocs with a specific "point person" in the lab who they can trust and from whom they can ask questions and seek advice and help. Ensure that they understand your expectations around support, mentorship, and equity in your group, and regularly check in with both.

6 Build relationships with student clubs on campus as part of your recruitment efforts. The National Organization for Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE), Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS), and the American Indian Science and Engineering Society (AISES) are all national organizations that have local chapters at many universities and colleges.

7 Consider taking the Intercultural Development Inventory (IDI) to assess and improve your cross-cultural competency through growth and development.

Openly question inequitable words and practices.

Taking Action: Equity and Diversity in the Lab

"Increasing diversity within our scientific community is not a problem we can simply solve by throwing money at it."

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8 Confront inequitable ideas and systems. Openly question inequitable words and practices. Bystander silence grants permission to injustice.

9 Team up with one or more colleagues or friends to develop a system of accountability for your anti-racism and equity work. Build tractable goals and regularly check in with each other to debrief, course-correct, and stay committed.

10 Share your successes and strategies. We would love to hear about how you are recruiting and supporting your BLI students, postdocs, researchers and faculty colleagues so that we can learn from each other. For students and postdocs, we want to know how you have been supported in your lab and how your PI or other mentors have developed an inclusive and equitable environment. Please email csalomon@umn.edu with suggestions, and we hope to provide a follow-up article in the future with new ideas, approaches, and an evaluation of what works.

In a recent exchange I had with ASP member Dr. Lesley-Ann Giddings about the lack of diversity in science, she emphasized the need for a cultural shift. "Increasing diversity within our scientific community is not a problem we can simply solve by throwing money at it. If we could, we wouldn't be having the same conversation for decades. The problem is nuanced. First, we must realize that we have intentionally created cultures and methods of social capital that create environments that exclude some individuals while benefiting the same people. Those who disagree with that statement tend to be in the group that always benefits. We also cannot say we are now inclusive in our diversity and hiring statements when the statistics reflecting diversity in science continue to be abysmal. Generations of BLI scientists continue to have the same experiences with institutional racism and are locked out of the same positions. How can we complain that there are no diverse scientists to hire when we created this culture? We are the gatekeepers who uphold inequitable structures and practices. Throwing money at this is only part of the solution. The missing part, and arguably the most challenging part requiring more buy-in, is intentionally changing the culture and institutional policies to make BLI scientists feel valued and treated as equal contributors within our community. Why is the 'free' part the most challenging? It goes back to whoever benefits from the current policies in place."

Systemic and institutional inequities have existed and compounded for decades, and the solutions will require system-wide changes in policy, practice and culture. These systems begin with each of us: How are you using your voice, power and privilege to effect change? It is time to move far beyond statements of diversity, inclusion and solidarity. We have an opportunity as educators, colleagues and scientific leaders to build an inclusive culture within our own labs. ■

The Diversity and Inclusion Committee started the Taking Action column in the ASP newsletter to focus on anti-racism and building a culture of equity in the ASP. To better serve and engage our readership, we want to know more about you, and to know the content of interest to you. Please respond to this anonymous survey by December 1, 2020. Your responses will be used to select the topics for future newsletter articles and online panel discussions.

Opinion

Current Federal Policies Are Injurious to US Science and Natural Products Research

THE BOSTON GLOBE.COM

EDITOR'S NOTE: *The views and opinions expressed in this article are those of the author and do not necessarily reflect the position of the ASP or this* Newsletter.

By William Gerwick, PhD

The value of international engagement in US science is enormous, and recent proposed changes in immigration law for foreign students is having a devastatingly negative impact. It has been expressed that the biggest impact of the current administration is to have "sown the seeds of fear" in our foreign student population. This essay explores some of the highly positive aspects of foreign students being trained in the US and gives my perspective on some things that should be done to reverse the negative trend of the current administration.

VALUE OF FOREIGN SCIENTISTS TO US SCIENCE AND TECHNOLOGY

Since 1990, almost half the US Nobel laureates in science fields were foreign-born, and 37% received their graduate education abroad. Nearly half (49%) of US-trained postdocs and 29% of full-time science and engineering faculty were born overseas.[1] Similarly, a large proportion of international postdocs have received their PhD outside of the US. Thus, the US has benefitted enormously from the educational programs present in other countries. Many of these students have stayed in the US after their degree programs and now occupy research positions in industry and academia, are professors, leaders in government, medical doctors, research directors in industry, and heads of major academic institutions.

Foreign graduate students and postdoctoral scholars make up a substantial proportion of the US science and technology workforce, around 50% overall (over 46% of current STEM advanced degrees are for foreign-born students).[2] This is especially true in the natural products sciences, perhaps in part because many other cultures have a great interest and respect for the role of natural products in promoting human health. In recent years, many of these students and scholars have come from Asia (China, Japan, South Korea, India). They have been attracted to come to the US because of the perception of its high quality, access to impressive infrastructure, and moderate costs for education; collectively, these have led to foreign scholars contributing enormously to the US STEM output and resulting patents and entrepreneurial activities. A proportion of these foreign scholars return to their home countries after these experiences, taking with them not only scientific training and capacity, but also a deep appreciation for the US culture, language and lifelong contacts. The financial value of this goodwill is incalculable, but clearly enormous.

However, a proportion of these foreign-born scholars decide to stay in the US and contribute to the rich melting pot culture that has developed here. One just has to

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Opinion: Current Federal Policies Are Injurious to US Science and Natural Products Research

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look around at your professional environment, turn on the TV and listen to physician spokespeople giving fact-based recommendations in our time of COVID-19 crisis, scan the list of CEOs of biomedical startups, and you will observe evidence of the huge rewards the US system has received by embracing cultural, national and racial diversity. It makes no sense whatsoever to destroy this incredible legacy, which is in fact what the current administration's policies are doing.

CURRENT EXECUTIVE BRANCH PROPOSED LEGISLATION

Foreign students in US universities contribute enormously to US economics, jobs, and the development of an advanced work force. They contribute both in the training phase as well as in subsequent research and teaching positions in private, academic and government positions, entrepreneurial efforts, and in the development of improved relationships. However, the current administration has been systematically making it more and more difficult for foreign students to get visas and gain advanced education in the US. China has been especially hard hit, and even before COVID-19, there was a significant drop in Chinese students in US universities; this likely has multiple causes and certainly does include some wrongdoing by the Chinese government in some cases.[3]

This was intensified in June 2020 with the current administration's announcement that foreign students in this country that were taking all online classes due to COVID-19 would either have to move to another university that offered in-person classes or leave the country. The stress and induced fear of this poorly conceived policy targeting foreign students was enormous, and uncertainty was rampant as students worried about the many insecurities it created. Was computer lab work done at home in support of a doctoral student's thesis "distance learning"? This and many other aspects of the unfairness of this proposed policy spawned a number of lawsuits from major universities, and after a relatively short period, on July 6 the policy was essentially rescinded. Nevertheless, announcements are now commonplace in US universities to be on the lookout for "spies" from foreign military-associated students; this further erodes trust in our country and seems largely unnecessary.[4]

IMPACTS ON FOREIGN SCIENTISTS AND STUDENTS IN THE US

Thus, much of the damage of these policy shifts has already occurred. Justifiably, foreign students in the US can no longer be certain that they will be able to complete their degrees here. It is clear that the current US government views foreign students unfavorably and is looking for ways to remove them from the country. The message is that our current administration does not value foreign students. Sadly, those that might be thinking to make long-term contributions to the US now have to seriously question whether that is a good placement of their trust in the future. Indeed, the stay rate after earning advanced degrees of students from China and India have declined over the past 15 years from 95% to 83% for China and from 89% to 83% for India; we can expect further reductions following this current administration's attitudes. This comes at the same time as there are increased investments in researchers by foreign countries, notably China, making a return to the home country more attractive.[2]

Another negative aspect of the current administration's policy changes towards international students relates to increases in college tuition. Foreign students currently pay the highest rate for education in a US university; however, on the world market, this cost is considered reasonable for the many benefits gained. Many universities develop their tuition models based on admitting a certain number of foreign students; reduction in the number of these premium tuition payers will force universities to increase tuition rates for all students. This will put a US university education further out of reach for both US and foreign students and start a downward spiral of escalating tuition costs.

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Opinion: Current Federal Policies Are Injurious to US Science and Natural Products Research

We need to reconnect the US with the rest of the world by rejoining the many international organizations abandoned by this administration, such as the World Health Organization, the Paris Agreement on Climate Change, and the UN Educational Scientific and Cultural Organization (UNESCO), among others.

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US ELECTIONS AND OPPORTUNITIES

Other consequences of this misguided and short-sighted attitude towards foreign students include job losses, a weaker economy, lower levels of innovation in science and technology, and less exposure to diversity. In this latter regard, a majority of US students have their greatest exposure to cultural and national diversity through contact with foreign students residing in the US (only 10% of US student interaction with foreigners occurs outside of the US)[5]; this will be significantly reduced as lower numbers of foreign students are interested or allowed to study in the US.

Just as other types of diversity enrich communities, be they scientific, social, racial or spiritual, diversity in national origins of students in the US has helped to develop the strong and vibrant scientific and entrepreneurial environment that we have enjoyed in this country over the past 75 years. In the words of *C&E News*, "Science in the US is built on immigrants."[1] However, this cultural melting pot of ideas, approaches and perspectives is imperiled by recent efforts of the current administration of our country to limit foreign students, and this is to the detriment of the US economy, its scientific culture, and our role in the world.

Fortunately, the US is close to elections, and there is a groundswell of enthusiasm for new leadership in this country. I believe we need to reconnect the US with the rest of the world by rejoining the many international organizations abandoned by this administration, such as the World Health Organization, the Paris Agreement on Climate Change, and the UN Educational Scientific and Cultural Organization (UNESCO), among others. By these withdrawals, we have isolated ourselves from the world and abdicated our responsibilities, diminishing the US and endangering the world in general.

We must recognize and appreciate at the highest and most visible levels the role and value of foreign students to developments and innovations in our science and technology sectors. We must change our visa policies such that students wishing to learn and contribute to the incredible culture of science in the US are facilitated and encouraged, rather than the current situation of being rebuffed and abused. We will have to initiate new programs that encourage international science teams around major challenges of our time, for example, COVID-19 and subsequent pandemics, climate change, and racial and economic disparities. Indeed, we have major challenges before us, and through tapping into the full diversity of human thought and experience, such as via increased internationalism of scientific communities, we can succeed even against the greatest of these challenges. ■

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New ASP Committee Regarding Primarily Undergraduate Institutions

The newly launched ASP PUI ad hoc committee aims to build a community of natural products scientists that are currently at PUIs or considering future PUI career paths.

By Amy Lane, PhD

Faculty at primarily undergraduate institutions (PUIs) face unique challenges in balancing research pursuits with substantial teaching commitments and a variety of service activities. Additionally, PUIs typically offer facilities and resources that differ significantly from the research intense institutions where most PUI faculty completed their degrees and postdoctoral fellowships. This can be daunting for new and even seasoned PUI faculty as well as graduate students and postdoctoral fellows contemplating PUI careers. Magnifying these challenges, graduate students, postdoctoral fellows, and PUI faculty often lack resources and mentorship that is tailored to the unique opportunities and challenges of PUIs.

The newly launched ASP PUI ad hoc committee aims to build a community of natural products scientists that are currently at PUIs or considering future PUI career paths. This committee aims to provide resources for landing PUI faculty positions, navigating promotion and tenure at PUIs, mastering teaching and research responsibilities, and mentoring undergraduate students as the next generation of natural product scientists. The ASP PUI committee brings perspectives from both pre- and post-tenure faculty at private and public PUIs, with Dr. Amy Lane (University of North Florida) as chair and committee members Drs. Skylar Carlson (University of the Pacific), Lesley-Ann Giddings (Smith College), and Ethan Van Arnam (Claremont McKenna, Pitzer, and Scripps Colleges).

The ASP PUI committee is interested in connecting with and promoting PUI faculty as well as graduate students, postdoctoral fellows, and others interested in learning more about the trials and triumphs of PUIs. The committee is currently conducting a survey to learn more about the needs of the ASP PUI community and invites interested faculty, students, and others to complete the survey at: www.tinyurl.com/ASPPUI.

The committee is organizing a PUI workshop for the 2021 ASP Conference in Grand Rapids. The workshop is targeted toward graduate students and postdoctoral fellows interested in learning more about PUI careers, early-stage PUI faculty aiming to network and strategize for success in the PUI realm, and others who wish to learn more about PUIs. Workshop topics will include determining whether a PUI career is the right choice, crafting a winning CV for PUI positions, competing for grant funding at PUIs, conquering teaching and research expectations at PUIs, and building experimental resources and other expertise needed for a PUI research program.

The ASP PUI committee is eager to hear from members of the ASP community about what PUI initiatives may benefit your career development and promote undergraduate training at your institutions. Reach out via the survey link above and/or via email or phone to any of the committee members as the committee launches PUI programming and builds a community of PUI scholars. ■

The ASP PUI committee is eager to hear from members of the ASP community about what PUI initiatives may benefit your career development and promote undergraduate training at your institutions.

Expanding the NIH Reviewer Pool

As many of us know acutely, there is often a lack of natural products expertise on NIH study sections. This expertise is needed to advocate for the advancement of our field.

By Susan Mooberry, PhD

In May of this year the Center for Scientific Review (CSR) at the NIH put out a call to scientific societies to identify new reviewers to serve on NIH study sections. The initiative is called "Broaden the Reviewer Pool." The goal is for societies to identify the rising stars of their disciplines who could be called upon to serve on NIH review panels. Anyone who has already served on any NIH study section is already in their system, and this initiative is to find new prospective reviewers who are under the CSR radar. Scientific societies are asked to identify and vet reviewer qualifications before entering the recommendations into an online portal.

The CSR criteria indicate that nominated individuals should have an active research program with extramural funding and be considered experts who are respected in their field. Scientists must be generally willing to serve on a review panel. Importantly, the extramural funding does not have to be from NIH. Early stage reviewers who do not meet these criteria yet can apply for the CSR Early Career Reviewer Program to gain review experience, but not through this mechanism. Once reviewers are identified and indicate they are agreeable to serving as potential reviewers, they provide information about their expertise and potential study sections where they could be of assistance, and this information is uploaded to CSR.

As many of us know acutely, there is often a lack of natural products expertise on NIH study sections. This expertise is needed to advocate for the advancement of our field. In response to this call from CSR, ASP President Nick Oberlies assembled a committee to identify potential new reviewers. The members of the "Broadening the Reviewer Pool Committee," Carole Bewley, Alessandra Eustaquio, Hendrik Leusch, Thomas Prisinzano and I, came up with a list of names of many individuals that could meet these criteria as potential new reviewers. These individuals have been contacted, and a few excellent potential reviewers have been identified. Their information is being loaded into the portal by ASP Business Manager Ms. Laura Stoll. The major challenge has been that many are already serving on NIH panels and thus are known to the CSR. If you know of scientists who might fit the above qualifications, please do not hesitate to reach out to me or another committee member and we will contact them.

CSR staff also let us know that another challenge is that experienced reviewers are not willing to assist in grant reviews. I appeal to our ASP members who have provided significant service for CSR in the past to continue to be available to help in reviewing grants when contacted by a scientific review officer. The future of outstanding natural products research depends on our full participation. ■

2020 ASP Foundation Donors

The ASP Foundation wishes to acknowledge and thank its donors. The ASPF was founded to promote, support, and further the scientific and educational interests and purposes of the ASP. If you wish to make a donation, please visit the ASPF webpage for instructions at www.pharmacognosy.us/what-is-pharmacognosy/the-asp-foundation/

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This program will support research geared toward development of robust, validated analgesic assays suitable for medium- to high-throughput screening of natural product libraries.

By D. Craig Hopp, PhD

The National Center for Complementary and Integrative Health (NCCIH) at the National Institutes of Health recently published a research funding opportunity in natural products that may interest members of ASP. Through a recent Notice of Special Interest (NOSI), NCCIH announced participation in the National Institute of Neurological Disorders and Stroke IGNITE program. This program will support research geared toward development of robust, validated analgesic assays suitable for medium- to high-throughput screening of natural product libraries. For this funding opportunity, NCCIH is prioritizing analgesic targets relevant to musculoskeletal, neuropathic, and inflammatory pain conditions.

In light of the ongoing national opioid public health crisis, discovery of new nonaddictive pain treatments is of the highest importance. Nature has been a prolific source of analgesic compounds. Much of what we know about nociception is due to discovery of natural products that illuminated the various signaling pathways and targets responsible for sensory perception of painful stimuli. Yet, despite this history, there is very limited current research devoted to discovering new natural products with analgesic activity. Thus, a renewed focus on studying natural products for pain management seems not only timely but also perhaps the most productive approach to take in our quest for solutions to the current opioid crisis.

For the purposes of this NOSI, natural products are defined as extracts, chromatographic fractions, or isolated constituents derived from herbal, botanical, marine, microbial, or animal sources.

If your research interests align with this new opportunity, NIH welcomes you to review the **NOSI** and contact NCCIH staff to discuss your research concepts before submitting your application.

Please review a NINDS **IGNITE Q&A Webinar** to learn more about how to apply. ■

National Institute of Neurological Disorders and Stroke

In light of the ongoing national opioid public health crisis, discovery of new nonaddictive pain treatments is of the highest importance.

Kinghorn Honored with Egon Stahl Award in Gold

By Edward J. Kennelly, PhD

ASP Fellow, Honorary Member and *Journal of Natural Products* Editor Emeritus Dr. A. Douglas Kinghorn has received the 2020 Egon Stahl Award in Gold from the Society for Medicinal Plant and Natural Product Research (GA). The award lecture was slated to take place at the now-canceled ICNPR 2020 meeting in San Francisco and will now occur at the GA eSymposium on November 6.

Dr. A. Douglas Kinghorn

Kinghorn, who is a professor and Jack L. Beal Chair in Natural Products Chemistry and Pharmacognosy, College of Pharmacy, The Ohio State University, wrote, "I am immensely gratified to have received the Egon Stahl Award in Gold for 2020 from GA. As someone who was trained originally to the PhD degree level in the United Kingdom at the University of London, I know the very great importance of this award in Europe to the disciplines of pharmacognosy and pharmaceutical biology. When I look over the list of outstanding scientists who have received this award previously, I am very humbled indeed to be considered among their ranks. Working in the natural products field at different institutions has resulted in a lifetime of scientific stimulation and collegiality. I have very much enjoyed not only being a researcher, but also in serving as a mentor to many talented graduate students and postdoctoral fellows, and in functioning as a journal and book series editor."

The Egon Stahl Award in Gold is GA's highest honor and is given every three years since 1999. Kinghorn is the eighth recipient of this award, and he is the first to be based at an institution in the United States. The GA specifically noted Kinghorn's many contributions to natural products research, including his "tremendous contributions to science, his mentoring of so many younger colleagues, his dedication to scholarly publishing especially his editorship of the *Journal of Natural Products* for a quarter of a century and, of course his scientific output (425 major original publications, 58 reviews, 27 edited books, 79 book chapters, and 7 patents)."

The seven previous recipients of this prestigious award, Professors Robert Hegnauer, Hildebert Wagner, Detlef Gröger, Max Wichtl, Otto Sticher, Kurt Hostettmann, and Robert Verpoorte, are familiar to many ASP members. GA President, Prof. Judith Rollinger, noted, "It is a major honour for the GA to bestow Professor A. Douglas Kinghorn with our most distinct award, the ESA in Gold." She went on to recognize specifically "…his enduring and outstanding contribution to pharmacognosy, his eminent achievements in natural product drug discovery, his leading role in natural product education, his engagement also for the GA and Planta Medica, besides being the embodiment of editor-in-chief for the *Journal of Natural Products* for over two decades…"

Candidates for the Egon Stahl Award in Gold must have two written nominations. Professor Matthias Hamburger, primary nominator from the University of Basel, Switzerland and a frequent attendee of ASP meetings, wrote in an e-mail, "I am delighted that Doug is the recipient of the 2020 Egon-Stahl Award in Gold! He is a remarkable scientist and teacher, and as the tireless Editor-in-Chief of the *Journal of Natural Products* he has done so much for the natural products community. It is a privilege to have known Doug since my postdoc days in Chicago thirty years ago. He has always been a role model for me as an

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…his "tremendous contributions to science, his mentoring of so many younger colleagues, his dedication to scholarly publishing especially his editorship of the *Journal of Natural Products* for a quarter of a century …and, of course his scientific output (425 major original publications, 58 reviews, 27 edited books, 79 book chapters, and 7 patents)."

Kinghorn Honored with Egon Stahl Award in Gold

Judith Rollinger

"…his enduring and outstanding contribution to pharmacognosy, his eminent achievements in natural product drug discovery, his leading role in natural product education, his engagement also for the GA and Planta Medica, besides being the embodiment of editor-in-chief for the *Journal of Natural Products* for over two decades…"

—Professor Judith Rollinger

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academic, and as a colleague and friend!" Professor Tina de Tommasi, secondary nominator from the University of Salerno, Italy and member of the Editorial Advisory Board of the *Journal of Natural Products*, first met Kinghorn in 1994 at a guest lecture he presented at her university. She has stayed in contactwith him and wrote, "During this time we have become great friends; this was wonderful because I discovered a man caring and gentle. Douglas is not only a dear friend, but he is one of the most gifted scientists I have ever met. He is also a good listener, observer, thinker, and presenter. His competence to inspire students and scientists from all the world is unquestionable."

ASP President Dr. Nick Oberlies, who has collaborated extensively with Kinghorn on NIH-sponsored research projects, noted, "It's wonderful to see Professor Kinghorn honored with the highest award from the GA. Many of us know him from his decades of stewardship at the helm of the *Journal of Natural Products*. Somehow, in between editing countless manuscripts, he found the time to break new ground in his own right (and do so many times over). His work on silvestrol, and other plant-derived anticancer agents, has been exemplary. Moreover, I have always been inspired by his leadership into compounds from plants that impart a sweet taste. On the one hand, one could argue that they must obviously exist in nature, but to design the experiments to discover them took creativity and a willingness to truly explore the unknown. I am sure that he'll grumble at the platitudes, and humbly point out that his students did all the work. But, it took a leader to guide them to those beautiful results."

Kinghorn's education and early training was in the United Kingdom, including University of London, where he received his doctorate. Kinghorn credits Emeritus Professor J. David Phillipson, former Head, Department of Pharmacognosy, School of Pharmacy, University of London, with introducing him in 1975 to ASP founding member Professor Norman Farnsworth during his visit to the UK from Chicago. This interaction eventually led to Kinghorn's academic appointment at the University of Illinois at Chicago. Phillipson noted in an e-mail to Kinghorn this pandemic summer, "Many congratulations on the award of the Stahl medal. I am delighted! It is a change to have some good news…"

Professor Michael Heinrich, currently at UCL School of Pharmacy, wrote, "With this award, the GA recognises Doug's dedication and his journey from undergraduate and graduate studies in the United Kingdom to his career in the USA. After his studies at the University of Bradford and the University

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Matthias Hamburger

"…He is a remarkable scientist and teacher, and as the tireless Editor-in-Chief of the *Journal of Natural Products* he has done so much for the natural products community. It is a privilege to have known Doug since my postdoc days in Chicago thirty years ago. He has always been a role model for me as an academic, and as a colleague and friend!"

—Professor Matthias Hamburger

Kinghorn Honored with Egon Stahl Award in Gold

J. David Phillipson

Kinghorn credits Emeritus Professor J. David Phillipson ...with introducing him to ASP founding member, Professor Norman Farnsworth. This interaction eventually led to Kinghorn's academic appointment at U. Illinois at Chicago.

"Many congratulations on the award of the Stahl medal. I am delighted! It is a change to have some good news..."

—Emeritus Professor J. David Phillipson

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of Strathclyde he spent his formative years at the School of Pharmacy, University of London [the 'Square'; now UCL School of Pharmacy], including his work towards his PhD and then the DSc. The 'Square' has a long tradition in natural products/ medicinal plant research and, having worked here for over 20 years now, it is an enormous personal and professional pleasure to see Doug's work recognised by one of the globally most important societies in the field."

Despite spending most of his professional career in the US, Kinghorn maintained close ties to Europe, and many of his colleagues sent their best wishes. GA and ASP member Prof. Simon Gibbons at University of East Anglia, commented enthusiastically on Kinghorn's recognition, "I have to say that for Doug this is very well deserved and earned. Not only is he the greatest living phytochemist of our time, he has inspired and nurtured the discipline…To be able to do great research AND hold down such editorial roles is astounding, absolutely outstanding. Us lesser mortals struggle to keep the papers flowing but Doug is the Master. This comes about from high energy levels, exceptionally hard work, routine and devotion. Quite a combo."

Kinghorn will present his 25-minute award lecture at the GA eSymposium on November 6, 2020 at 4 p.m. Central European Time. GA has extended an invitation to all ASP members to participate for free, but registration is required at **www.conference-service.com/YRW-2020/access.html.** ■

" ...The 'Square' has a long tradition in natural products/ medicinal plant research and, having worked here for over 20 years now, it is an enormous personal and professional pleasure to see Doug's work recognised by one of the globally most important societies in the field."

—Professor Michael Heinrich

Michael Heinrich

Simon Gibbons

"...Not only is he the greatest living phytochemist of our time, he has inspired and nurtured the discipline ...To be able to do great research AND hold down such editorial roles is astounding, absolutely outstanding. Us lesser mortals struggle to keep the papers flowing but Doug is the Master."

—Professor Simon Gibbons

Journal of Natural Products Recognizes Outstanding 2019 Papers

Dr. Valerie J. Paul
PHOTO: JOHN SPIERS

ARTHUR E. SCHWARTING AWARD

Dr. Sandra Loesgen
PHOTO: OREGON STATE UNIVERSITY

JACK L. BEAL AWARD

By Vanessa Nepomuceno, PhD

The *Journal of Natural Products*, published jointly between the ASP and the American Chemical Society, has announced the winners of the Arthur E. Schwarting and Jack L. Beal awards for best papers. Dr. Valerie Paul received the Arthur E. Schwarting Award and Dr. Sandra Loesgen was awarded the Jack L. Beal Award, and both are active members of the ASP.

Dr. Valerie J. Paul is the director of the Smithsonian Marine Station at Fort Pierce, Florida. Best known for her emphasis on marine chemical ecology, Dr. Paul's research focuses on marine plant-herbivore interactions, coral reef ecology, and marine natural products. "It is a tremendous honor to have our paper chosen for the A. E. Schwarting Award for best paper. I especially want to recognize all of my co-authors for this research because this was very much a team effort." In their work, Dr. Paul and her co-authors characterize and highlight two compounds, looekeyolide A and B.

Dr. Sandra Loesgen is an associate professor of chemistry at the Whitney Laboratory for Marine Bioscience and part of the chemistry department at the University of Florida. Dr. Loesgen's research uses multidisciplinary approaches to isolate compounds produced by underexplored groups of microorganisms with various bioactivities. "We are very grateful for the recognition of

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Best known for her emphasis on marine chemical ecology, Dr. Paul's research focuses on marine plant-herbivore interactions, coral reef ecology, and marine natural products.

Dr. Loesgen's research uses multidisciplinary approaches to isolate compounds produced by underexplored groups of microorganisms with various bioactivities.

Journal of Natural Products Recognizes Outstanding 2019 Papers

In 2001, the ASP Foundation began a new initiative to recognize the best papers in the *Journal of Natural Products*, resulting in the Arthur E. Schwarting and Jack L. Beal awards.

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our article with the *JNP* Jack L. Beal Award," Dr. Loesgen states. Dr. Loesgen accredits PhD student George Neuhaus, who wanted to identify the absolute configuration of his new polyketides but found that he could not match up the DFT-predicted conformers with his NMR results. Undeterred, he teamed up with former lab member Dr. Donovon Adpressa and collaborator Dr. Torsten Bruhn to develop an approach for using NMR to guide conformational analysis. Dr. Loesgen goes on to say, "We were excited to be able to nail down the configuration of our compounds, and we're hoping that this is useful for other labs as well."

In 2001, the ASP Foundation began a new initiative to recognize the best papers in the *Journal of Natural Products*, resulting in the Arthur E. Schwarting and Jack L. Beal awards. In this manner, two former distinguished editors of the journal are fondly remembered. The Schwarting Award is open to all papers published in the journal within a given year (either in print or electronically). In turn, the Beal Award is awarded to younger investigators, i.e., persons within 12 years of receiving their PhD degree or within 10 years of gaining their first professional appointment (e.g., assistant professor or an equivalent position in industry or government). A two-tier process was used to determine the winners of the best papers published in *J. Nat. Prod.* in 2019, with editors Daneel Ferreira, A. Douglas Kinghorn, Cedric J. Pearce, Philip J. Proteau, and Steven M. Swanson having nominated two papers each for the Schwarting Award and one each for the Beal Award. ASP President Barry O'Keefe then appointed an ad hoc committee comprised of Drs. Amy E. Wright (Harbor Branch Oceanographic Institution, Florida Atlantic University), Chair; Marcy J. Balunas (University of Connecticut); Tim S. Bugni (University of Wisconsin); Roger Linington (Simon Fraser University); and David J. Newman (special volunteer, National Cancer Institute) to make the final selections.

With the cancellation of the 2020 ICNPR meeting in San Francisco due to the COVID-19 pandemic, the distribution of the awards will be coordinated with the recipients. Nonetheless, the ASP bestows its warmest felicitations to Drs. Paul and Loesgen and to their co-authors! ■

2020 ARTHUR E. SCHWARTING AWARD

Sarath P. Gunasekera, Julie L. Meyer, Yousong Ding, Khalil A. Abboud, Danmeng Luo, Justin E. Campbell, Alexander Angerhofer, Justin L. Goodsell, Laurie J. Raymundo, Junyang Liu, Tao Ye, Hendrik Luesch, Max Teplitski, **Valerie J. Paul,*** "Chemical and Metagenomic Studies of the Lethal Black Band Disease of Corals Reveal Two Broadly Distributed, Redox-Sensitive Mixed Polyketide/Peptide Macrocycles," *J. Nat. Prod.* **2019**, *82,* 111-121.
https://doi.org/10.1021/acs.jnatprod.8b00804

2020 JACK L. BEAL AWARD

George F. Neuhaus, Donovan A. Adpressa, Torsten Bruhn, and **Sandra Loesgen,*** "Polyketides from Marine-Derived *Aspergillus porosus*: Challenges and Opportunities for Determining Absolute Configuration," *J. Nat. Prod.* **2019**, *82*, 2780-2789.
https://doi.org/10.1021/acs.jnatprod.9b00416

The ASP Foundation: How Are Travel Awards Created?

By Nicholas Oberlies, PhD

While most scientific meetings currently are being held virtually, I hope that many of you are starting to think ahead about traveling to future ASP annual meetings. Have you ever wondered how the various travel awards are created? Throughout the coming year, the ASP Foundation will be contributing articles that help to explain how funds are generated, invested, and utilized for the benefit of our membership.

To start this series, I thought it would be beneficial to relay to you, from personal experience, how the two McLaughlin Travel Awards germinated. Perhaps you can use this as a guide, should you want to create something similar. Regardless, if you ever wish to create an award or think about a benevolent donation or bequest to the American Society of Pharmacognosy Foundation (ASPF), I urge you to speak first with Drs. John Cardellina, Bob Krueger, or Kirk Manfredi.

For those that do not know, Dr. Jerry McLaughlin is a longtime member of the ASP and, although once very active, now devotes more of his time to salmon fishing than pharmacognosy. If you ever used the brine shrimp to test the activity of your samples, that was one of his many ideas. You may remember that our journal was once named *Lloydia*; Dr. McLaughlin was part of the committee that worked to change the name to the *Journal of Natural Products* and form a publishing partnership with the American Chemical Society. He was an associate editor for the *Journal of Natural Products*, a past president of the ASP, and a winner of the Varro Tyler Prize for contributions to botanical science. However, for many of his students and postdocs, he was, first and foremost, a great mentor. A huge advocate for his students and postdocs, he always insisted that as many people as possible attend and present their work at the annual ASP meetings. If you want to hear a long story, ask Dr. Craig Hopp or me about our 30-plus hour drive (one way) across the eastern United States and Canada to attend the meeting in Halifax, Nova Scotia in 1994. That is the kind of boss he was, always encouraging us to participate and using every means at his disposal to include as many students as possible, even if that meant driving two vans for hours on end.

When Dr. McLaughlin won the Tyler Prize, he donated the cash award ($5,000) back to the ASPF. From serving on the ASPF Board for several years, I knew that $12,000 was needed to start a travel award. While the mathematics is not precise, the general idea is that the ASPF takes the earnings of the award corpus (dividends/interest) and gives that out as an award each year. For this set of awards, the ASPF operates on the presumption of an average return of 5% interest; thus it takes a $12,000 corpus to make a $600 travel award each year. In this way, the award can theoretically be funded in perpetuity.

That started me on a campaign to contact many of Dr. McLaughlin's former students and postdocs. It is not as hard as you might think, especially when you can use LinkedIn and a few friends to help you find people. While some of us are still active in the ASP (such as Drs. Rachel Mata, Jon Anderson, Craig Hopp, and Holly Showalter), many others have moved into other fields. Regardless of the science they study today, many of Dr. McLaughlin's former students felt a strong obligation to honor him, and we quickly generated over $12,000 of support. Having surpassed the original goal, I then simply extended it for another couple years, so that we could make modest, tax deductible donations to the ASPF, until the corpus eventually reached $24,000, or the equivalent of two travel awards each year.

For those of you that have someone to honor, I urge you to consider using the ASPF as the vehicle to accomplish that noble goal. With planning, good communication, and a willingness to be creative, you will be surprised what good you can create with some modest donations. Dr. McLaughlin always said that young people were the future of the ASP, and we hope that our work toward creating this travel award stimulates some young minds to the study of "Nature's molecular potential." If we ever hold a meeting in Halifax again, you can even save some of your travel costs by driving there with Craig and me. ■

For those of you that have someone to honor, I urge you to consider using the ASPF as the vehicle to accomplish that noble goal. With planning, good communication, and a willingness to be creative, you will be surprised what good you can create with some modest donations.

Dr. Jerry McLaughlin enjoying his favorite pastime. PHOTO: NICHOLAS OBERLIES

#ASPYM2020 – Younger Members Events and Research Symposia Go Virtual

By C. Benjamin Naman, PhD, Jaclyn M. Winter, PhD and Karen M. VanderMolen, PhD

In mid-to-late May, many of us were lamenting the cancelation of the 2020 ASP Annual Meeting and International Congress of Natural Product Research (ICNPR) that would have been held in San Francisco. ASP member Jackie Winter, co-chair of the Younger Members (YM) Committee, along with Roy Okuda and Shichang Miao, had organized multiple professional networking and development sessions for the attendees. Some of which we hope to save for the next in-person conference, including the career development workshops and a networking casino night with more seasoned members of the natural products community. Rumor has it that many pillars of our professional society have hidden talents at the cards' tables.

When we were discussing the possibility of transitioning some aspects of the planned YM events to an online platform, including a fireside chat with an all-star panel of vice presidents from San Francisco Bay Area companies, ASP younger member Joe Egan, a PhD candidate from Roger Linington's group at Simon Fraser University, reached out to ask if he could be of service to the ASP. He told us that presenting at the 2019 ASP meeting had felt like the most important moment yet in his career and that he wanted every one of our students to have the same chance during their studies. We echoed this sentiment and realized that losing this year's annual meeting could have drastic consequences for our younger members, since these events serve as platforms to showcase their research and network with potential collaborators, future mentors, and employers.

Tuesday, August 11, 2020

Session 1: New Methods and Informatics
Chaired by Joe Egan (Simon Fraser University)

Michelle Schorn	Wageningen University
Hongyan Ma	University of Oklahoma
Raphael Reher	University of California, San Diego
Manead Khin	University of North Carolina at Greensb

Session 2: Pharmacognosy and Bioprospecting
Chaired by Eduardo Caro Diaz (University of Puerto Rico)

Shamsunnahar Khushi	University of Queensland
Ludek Sehnal	Recetox, Masaryk University, Brno
Riley Kirk	University of Rhode Island
Ali Ramadan Elnaas	Griffith University

Panel 1: Careers in Academia

Wednesday, August 12, 2020

Panel 2: Careers in Industry

Session 3: Chemical Ecology
Chaired by Skylar Carlson (University of the Pacific)

Gordon Luu	University of Illinois at Chicago
Ria Kidner	Indiana University
Daniel May	University of Wisconsin - Madison
Jack Ganley	Duke University

Session 4: Biosynthesis
Chaired by Jie Li (University of South Carolina)

Shannon Ohlemacher	National Institutes of Health
Jason Hedges	University of British Columbia
Trevor Purdy	University of California, San Diego
Lindsay Caesar	Northwestern University

Thursday, August 13, 2020

Session 5: Ethnobotany
Chaired by Joshua Kellogg (Penn State University)

Caitlin Risener	Emory University
Jessica Furner-Pardoe	University of Warwick
Kristelle Hughes	University of French Polynesia
Mohammad Faruque	University of Chittagong

Session 6: Medicinal Chemistry and Pharmacology
Chaired by Fatma Al-Awadhi (Kuwait University)

Charles Fermaintt	UT Health Science Center, San Antonio
Victoria Klein	University of California, Santa Cruz
Amanda Christine Maldonado	University of Illinois at Chicago
Mahsa Khoshbakht	Oregon State University

Panel 3: Current Events and Impactful Careers Away From Lab Benches

As the four of us talked about this over Zoom, it became very clear that we would be putting together a virtual symposium in an 8-10 week time frame, and none of us had any real experience doing this. However, it didn't take long for the excitement to build and quickly garner support for an official approval from the ASP Executive Committee; then it was all hands on deck! The outpouring of support from so many ASP members for this event was truly tremendous.

The Younger Members Virtual Symposium (YMVS) that was held on August 11-13, 2020 was designed to provide a meaningful, useful, and stimulating experience for the community. We knew it was never going to be a full replacement for an in-person conference, especially not for the ICNPR that rotates between countries every four years and draws larger audiences with stronger representation from all over the world. However, building our event with an online-only platform clearly brought the silver lining of increased accessibility for researchers by removing the financial burdens associated with attending in-person meetings. Given how quickly the YMVS was put together, we were

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About 250 attendees registered from 35 countries, of which 50% were students and 25% were postdocs, and from these we welcome 139 new members (102 students and 37 postdocs) to ASP!

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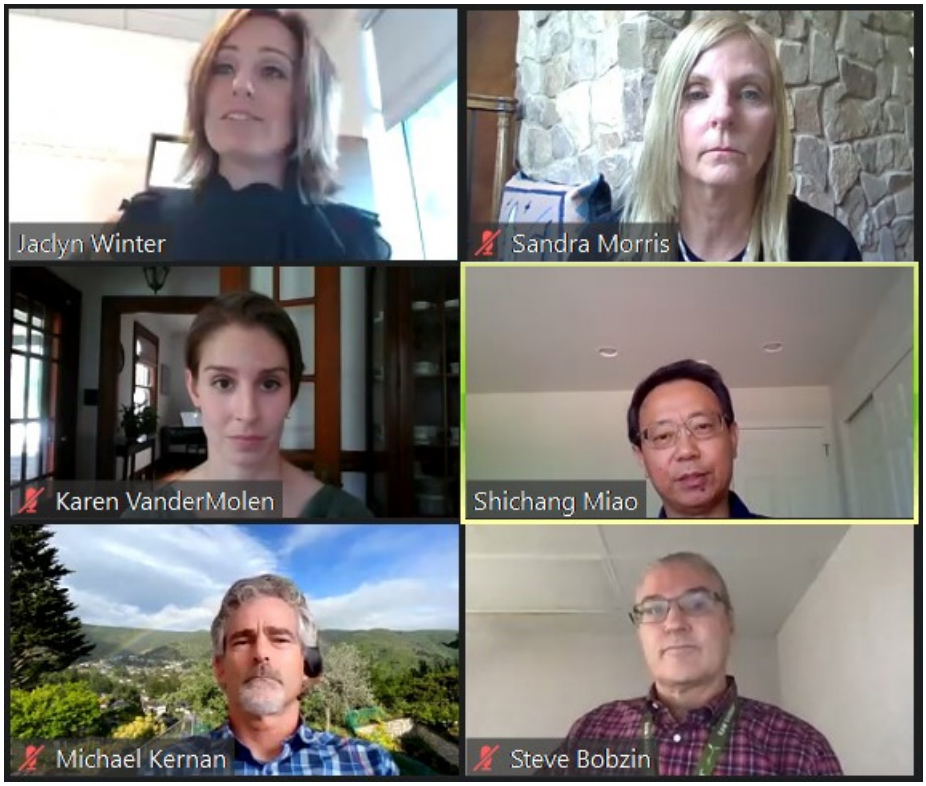
ecstatic with the turnout, and the ASP Executive Committee agreed to include ASP associate membership for the remainder of 2020 and all of 2021 with every student and postdoc registration.

After the call for abstracts, the 24 speakers that were selected represented eight countries and were at various career stages, including one undergraduate student, 15 graduate students, seven postdocs, and one early career researcher. Regarding diversity, equity, and inclusion, 58% of the presenters were female and many nationalities, ethnicities, and other backgrounds were represented. To organize the program, six sessions were arranged in order to cover the diverse research topics discussed in the submitted abstracts. These were New Methods and Informatics (chaired by Joe Egan from Simon Fraser University), Pharmacognosy and Bioprospecting (chaired by Eduardo Caro-Diaz from University of Puerto Rico), Chemical Ecology (chaired by Skylar Carlson from University of the Pacific), Biosynthesis (chaired by Jie Li from University of South Carolina), Ethnobotany (chaired by Joshua Kellogg from Penn State University), and Medicinal Chemistry and Pharmacology (chaired by Fatma Al-Awadhi from Kuwait University). The session chairs are all formal or honorary members of the ASP YM committee and enthusiastically support our younger members in research and career advancement.

In retrospect, the hardest part of planning the YMVS was selecting the final 24 speakers from the talented pool who submitted abstracts. Every abstract was reviewed in a matter of days by members of the YM committee so that the selected speakers would have enough time to prepare slides and practice their presentations before taking on the Zoom spotlight in front of our membership. Priority was given to applicants who indicated that they were approaching the end of their studies or postdoc contracts, and the session chairs did a great job highlighting the backgrounds



CAREERS IN INDUSTRY PANEL. Jaclyn Winter from University of Utah (moderator); Sandra Morris, Vice President, Strategy Realization at Johnson & Johnson; Karen VanderMolen, Group Head, Global Product Stewardship at The Procter & Gamble Company; Shichang Miao, Vice President, Preclinical Development, DMPK & Clinical Pharmacology at ChemoCentryx Inc.; Michael Kernan, Vice President, Analytical Operations at Gilead Science; Steve Bobzin, Vice President, Research at Central Coast Agriculture LLC.

SCREENSHOT PRODUCED BY C.B. NAMAN

of the speakers and their future career path preferences without cutting into the short time allotted for each presenter. All of the research presentations were truly exceptional, engaging, and demonstrated the strong future of our field and the younger members of our society.

Several abstracts submitted by early career researchers that were not selected to present at the YMVS have been forwarded for further consideration to the ASP Publicity Committee, which has taken on the tremendous task of organizing the new ASP Webinar Series this year. The Publicity Committee chair, Sandra Loesgen, responded with thanks and relayed a message about including some of these speakers for future events. Two upcoming ASP webinars, scheduled for October 8 and November 5, will highlight the work of some of our younger members who were excluded from the YMVS primarily due to being "too well-seasoned" or not being on the job market at this time. We appreciate everyone understanding the prioritization of job-seekers and near-to-graduation students for the YMVS, and we plan to reconnect with unselected abstract submitters for other opportunities in the future.

A major focus of the YMVS, as is typical for in-person YM events, was showcasing career prospects and offering constructive advice to our younger members. Panel discussions were arranged for each day of the symposium, divided

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topically for Academia, Industry, and Impactful Careers Away from Lab Benches. The lattermost panel, which closed the inaugural YMVS, was designed to specifically include some discussion of current events and allow ASP President Nicholas Oberlies to update the community on future ASP initiatives.

We were thrilled that many of the Industry panelists who were going to participate in the ICNPR workshops were able to join the YMVS. This panel highlighted some key differences between working in smaller biotechnology and big pharmaceutical or consumer goods companies and stressed the importance of flexibility and being keenly alert for opportunities as they appear. The panelists also emphasized the integrative role that natural products scientists can employ in many different aspects of industrial research and development. The panel on Academia was comprised entirely of ASP members and was designed to introduce some aspects of applying for or working in jobs at a Primarily Undergraduate Institution (PUI), Minority Serving Institution (MSI), Very High Research Activity Institution (R1), and International Institution, including being a research scientist rather than faculty member. The panel on Impactful Careers Away from Lab Benches, or as Dr. Oberlies termed it: "the non-traditional path," highlighted ways to work in government grant funding, scientific diplomacy and policy advising, scientific communication and journalism, information availability and searching, and a nonprofit research institute.

CAREERS IN ACADEMIA PANEL. **Karen VanderMolen from Procter and Gamble (moderator); C. Benjamin Naman, Associate Professor and Deputy Director of Marine Pharmacy, Ningbo University; Huzefa Raja, Research Scientist, University of North Carolina at Greensboro; William Gerwick, Distinguished Professor of Oceanography and Pharmaceutical Sciences, University of California – San Diego; Amy Lane, Associate Professor of Chemistry, University of North Florida and ASP PUI Committee; Patrick Still, Assistant Professor of Chemistry, California State University, Dominguez Hills.**

SCREENSHOT PRODUCED BY C.B. NAMAN

Based on the quality and quantity of questions submitted to the panelists from YMVS attendees, it is clear that they were all very well received and provided valuable resources for our younger members. We thank all of our panelists for taking time out of their busy schedules to share their perspectives and insights with the younger members of ASP.

With help from the ASP Job Service committee, and especially the committee co-chair Scott Baggett, the ASP jobs page got a massive update of current postings for natural product researchers that was planned to coincide with the YMVS in lieu of an in-person jobs board. We hope that many ASP members will apply and receive offers for the positions that can be found online at www.pharmacognosy.us/jobs/. Panelists speaking during the YMVS event also gave recommendations for job seekers to browse a non-comprehensive list of websites including professorpositions.com/, www.academickeys.com/, www.higheredjobs.com/, jobs.sciencecareers.org/, www.timeshighereducation.com/unijobs/, and chemistryjobs.acs.org/. Since education and research training in natural product-related sciences prepare us for a very broad range of careers, people with the skillsets acquired in this discipline are very much in demand. Furthermore, as is evident from the attendance demographics for the YMVS, and indeed the ASP membership, the field of natural products research is fortunately both global and growing.

We thank all of the attendees, presenters, session chairs, and panelists of the first-ever ASP YMVS for their support of this real-world social experiment. We did not know in advance quite how it would turn out, and we are happy to declare the event a great success thanks to all participants! We plan to take some time for further reflection on the positive aspects of this program, and also potential improvement areas, as we have already begun discussing the idea of hosting another similar event several months down the line. The next (tentative) YMVS would be akin to an interim virtual symposium about halfway between now and the next annual meeting, which we hope will be safe to hold in-person, as scheduled, from July 24 – 28, 2021 in Grand Rapids, MI, USA. In the meantime, please reach out to representatives on the YM Committee or its co-chairs if you have feedback or suggestions. An email from Younger Member Joe Egan and a Zoom meeting were enough to initiate this whole shebang, so don't be shy or hold back. ■

2021 ASP Annual Meeting Slated for Grand Rapids

By Arun Rajgopal, PhD and Melany Puglisi-Weening, PhD

Greater Grand Rapids downtown
UPPER RIGHT: Devos Place convention centert

With Michigan's longest river as a backdrop, the organizers of the 2021 annual meeting invite you to **Grand Rapids, Michigan from July 24-28 for "A Grand Natural Products Adventure"** (aspmeetings.pharmacognosy.us/). Set in a vibrant downtown, acclaimed as Beer City USA and enveloped in history, surrounded by natural wonders and anchored by academic, technological and industrial foundations, the conference will be held in the Devos Place convention center (www.devosplace.org/). The official hotel for this event is the Amway Grand Plaza (amwaygrand.com/), adjacent to the convention center and centrally located in downtown Grand Rapids (GR). Within walking distance are the Gerald R. Ford Presidential Museum (www.fordlibrarymuseum.gov/visit-museum.aspx), GR Public Museum (www.grpm.org/), GR Art Museum (www.artmuseumgr.org/), GR Civic Theater (www.grct.org/), Studio Park Cinema (celebrationcinema.com/cinemas/Studio-Park), and a wide variety of restaurants and pubs.

The ASP 2021 meeting will include diverse speakers of different ethnic backgrounds from industry and academia. The scientific and organizing committees will also provide speaking opportunities for attendees from all stages in their careers. Graduate students and postdoctoral fellows are highly encouraged to submit abstracts for oral presentations. Included in the programming for the 2021 annual meeting will be a memorial symposium honoring Drs. Koji Nakanishi, Yuzuru Shimizu, and Mansukh Wani.

Given the success of the "Unconscious Bias" lunch symposium at the 2019 meeting in Madison, WI, the 2021 annual meeting will include a lunch symposium concerning diversity in the sciences. Additional information concerning the program will be coming in future newsletters. The Saturday evening opening reception will be held in Amway Grand Plaza ballroom. Monday evening attendees will gather at the Grand Rapids Public Museum where attendees will be able to tour the museum. Both events will feature local foods and brews. The Younger Members Event on Tuesday evening will be held at the Grand Rapids Brewing Co (www.grbrewingcompany.com/), featuring craft beer, delicious food, and arcade games.

Grand Rapids is very well connected by air, road, and rail. The Gerald

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2021 ASP Annual Meeting Slated for Grand Rapids

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R. Ford International Airport (www.grr.org/), with 100+ daily flights connecting to several major hubs, is approximately 13 miles from downtown Grand Rapids. In addition to the Amway Grand Plaza Hotel, the JW Marriott (www.marriott.com/hotels/travel/grrjw-jw-marriott-grand-rapids/) and the Courtyard by Marriott (www.marriott.com/hotels/travel/grrdt-courtyard-grand-rapids-downtown/) are also very close to the convention center. After the day's events, attendees can take short drives/excursions from the convention center to explore the Frederick Meijer Botanical Gardens (www.meijergardens.org/), dense woodlands, various rivers, parks, and beaches containing diverse flora and fauna bordering the largest connected bodies of freshwater lakes in the world. For the more adventurous, canoeing, kayaking, paddle boarding and tubing trips are available. In addition, Grand Rapids offers a diverse dining scene, from casual pub-type food to upscale and ethnic eateries, sure to appeal to any palate. And as mentioned, as Beer City USA, attendees can find a patio where they can relax and enjoy a craft beer or cocktail from one of the approximately 80 breweries/distilleries in the Grand Rapids area.

So, please join us at the ASP 2021 annual meeting and be part of a Grand Natural Adventure in science, culture and entertainment! ■

SPEAKER SPOTLIGHT

From mollusks to medicine! Introducing Mandë Holford, PhD, an ASP 2021 Plenary Speaker, who is an associate professor of chemistry at Hunter College and CUNY-Graduate Center. Holford also has joint appointments at the American Museum of Natural History and Weill Cornell Medicine. With a PhD in synthetic protein chemistry from The Rockefeller University, Holford currently is combining biology and chemistry to isolate and identify unique peptides from venomous snails, leveraging such molecules for pain and cancer treatment. Holford has a keen eye for recognizing the ability of nature to benefit society as a whole and, despite the depletion of variety, champions to restore and conserve natural systems through educational platforms such as her KillerSnails.com, a co-created resource for K-12 students, and as co-developer of the Science Diplomacy course at The Rockefeller University. Additionally, Holford is an AAAS Science and Technology Policy Fellow and is a life member of the Council of Foreign Relations. Many are her accolades, including the Breakthrough Women in Science designation (Howard Hughes Medical Institute), the Camille Dreyfus Teacher-Scholar Award (NSF), the New Champion Young Scientist award (World Economic Forum), and being part of NPR's Science Friday series. ■

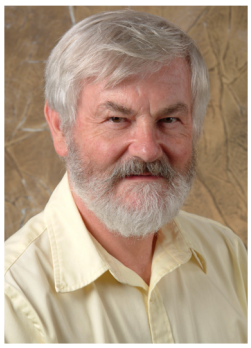
Mandë Holford
PHOTO: DENNIS FINNIN, AMNH

Deeply rooted in plant science! With admiration of a tree outside her childhood apartment window in Seoul, Seung Yon (Sue) Rhee, PhD, an ASP 2021 Plenary Speaker, continues to explore the exciting, yet complex world of plants. With an aim of understanding how plants adapt to the world around them, especially in challenging conditions like drought and salt tolerance, Rhee's lab at the Carnegie Institution for Science employs a myriad of techniques and technologies to advance their research. These include computer science, evolution and genetics, all being leveraged to discover novel genes and pathways within plants and how these contribute to the mechanistic adaptive strategies that have evolved. Obtaining her PhD at Stanford University, Rhee is currently a senior staff scientist within the Department of Plant Biology at the Carnegie Institution. Previously, she has served as the founding director of the *Arabidopsis* Information Resource (TAIR), curator of the *Arabidopsis thaliana* database at Stanford, and was an education film producer for Celadon Films. She is active in several scientific societies and has approximately 90 peer-reviewed publications. Awards include an NSF Predoctoral Fellowship, an NSF/DOE/USDA Plant Training Grant Fellowship and a Howard Hughes Undergraduate Research Fellowship. ■

Seung Yon (Sue) Rhee
PHOTO: ROBIN KEMPSTER

HOT TOPICS IN PHARMACOGNOSY

Almost 70 Years from Veterinary Drugs Through the Latest Natural p-Product Derived Antibiotic to Molecules Active Against Cancer Cells and Dormant TB Bacilli: The Pleuromutilins and Derivatives



By David Newman, DPhil

Although people are usually aware of the death cap mushroom (*Amanita phalloides* and its lethal natural products the amatoxins) what is often not realized is that the basidiomycete *Pleurotus mutilus* and a similar organism, *P. passeckerianus* Pil., produced pleuromutilin, though later on these organisms were reclassified into the genus *Clitopilus*. Pleuromutilin (**1**) was first isolated in 1951 as a crystalline antibiotic by Kavanagh et al.,[1] from *P. mutilus* and *P. passeckerianus* and reported to have modest activity against Gram +ve organisms *in vitro* and weak activity against the same class *in vivo*.[2] The compound languished for a few years until, in the early to middle 1960s, its structure and biosynthesis were reported by the groups of Arigoni[3] and Birch.[4,5]

At the time of these reports, the antibiotic armamentarium was full of "then novel compounds covering all of the major groups" and little attention was paid to the problem of antibiotic resistance, even though Fleming himself had recognized penicillin resistance years earlier, and MRSA was on the horizon in the middle 1960s.

In the late 1960s to early 1970s, a group at Sandoz, following on from the discovery of exceptional activity against mycoplasmas, developed a number of semisynthetic pleuromutilins and derived the first drug, tiamulin (**2**), which gave an increase in activity of between 10-50 times against Gram +ve bacteria and mycoplasmas in a veterinary setting.[6] At roughly the same time, the first modified "mutilin" was tested in man when compound (**3**), Azamulin (TDM 85,530), was tested in human volunteers in approximately the early 1980s but did not proceed further, mainly due to extensive early metabolism by P450 enzymes.[7,8] Later on, with a report in 1997, a second veterinary agent, valnemulin (**4**), was launched due to its better antibacterial activity.[9]

The mechanism of action of these molecules was initially elucidated by Hogenauer using radiolabeled tiamulin and 19,20-dihydro-tiamulin and ribosomes from *E. coli*, together with cell-free extracts from the same bacterium. Interestingly, the "mutilins" selectively inhibit the prokaryotic 70S ribosome and have no effect on eukaryotic ribosomes.[6] Although there was some discussion as to the exact MoA of these agents at the prokaryotic ribosome, in 2001 a "foot-printing analysis" by Poulsen et al.[10] confirmed the reports from the Hogenauer group, confirming that the two veterinary molecules were strong inhibitors of peptidyl transferase(s), via their interaction with the "V" domain of 23 S ribosomal RNA. Interestingly, these two "mulins" were able to bind concurrently with erythromycin but competed with carbomycin, a known peptidyl transferase inhibitor. Later work by the Schluenzen group in 2004 demonstrated that tiamulin bound to the peptidyl transferase center (PTC) of the 50S subunit with its tricyclic nucleus located inside a defined cavity. That site overlapped the binding site(s) of both A- and P-site tRNA substrates, thus explaining the direct inhibition of peptide bond formation.[11]

In April 2007, the first human-use "mutilin," retapamulin (**5**, Altabax®) was approved by the FDA, and a month later it also received EMA approval. This was a topical antibiotic for use against bacterial skin infections such as impetigo. Although SmithKline Beecham, as it then was, claimed that this was a new structural class for antibiotics, they "conveniently failed to mention the two earlier approved veterinary drugs that had been in use for over 20 years" when presenting the compound at a scientific meeting attended by the author (who corrected them during their presentation).

Then in August 2019, Nabriva, which is based in Dublin, Irelandand is a descendent of the company Sandoz, who brought the first "mutilins" to market (veterinary), announced that lefamulin (**6**) had been approved by the FDA for the oral and intravenous use against community-acquired bacterial pneumonia (CABP). The story behind the drug was nicely outlined in an article in *C&E News* (22 June 2020; volume 98, issue 24 and available at cen.acs.org/pharmaceuticals/drug-development/One-molecules-journey-discovery-market/98/i24). They were able to overcome the problems with metabolism thus giving oral and/or injectable versions, and recently a paper by Falco et al.[12] described the *in vivo* activities in the clinical trials that led to the approval. However, recently Nabriva received a rejection letter from the FDA (June 2020) for their fosfomycin injectable, but that may well be due to problems that the FDA has in inspecting Nabriva subcon-

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HOT TOPICS IN PHARMACOGNOSY:

Almost 70 Years from Veterinary Drugs Through the Latest Natural p-Product Derived Antibiotic to Molecules Active Against Cancer Cells and Dormant TB Bacilli: The Pleuromutilins and Derivatives

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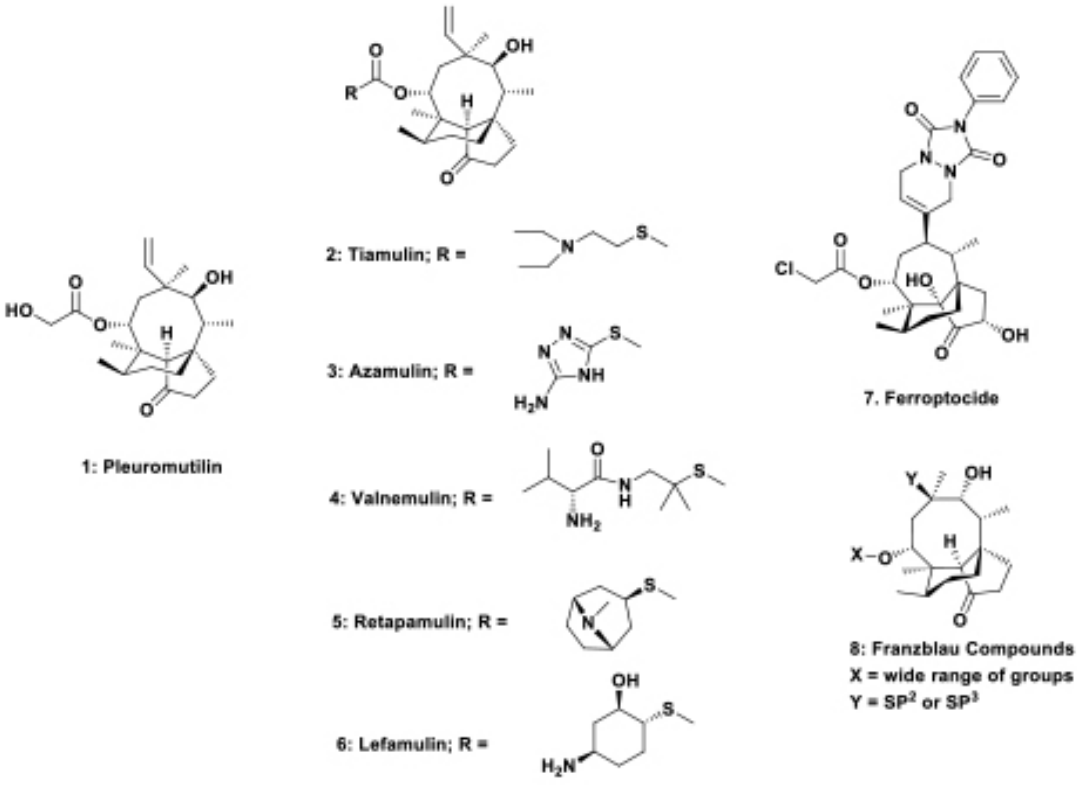
tractors outside of the USA due to COVID-19. Currently there are news reports of layoffs.

What is of significant interest is the recent report of modification of the base pleuromutilin structure to produce a novel compound named as ferroptocide (**7**) that rapidly and robustly induces ferroptotic death in cancer cells, probably via covalent inhibition of thioredoxin.[13] The import of this mechanism of cell death is given in the recent review by Qiu et al.[14] demonstrating the involvement of this mechanism in a number of diseases.

Thus, from an early recognition of an unusual fungal terpene came veterinary anti-infectives, human use anti-infectives and now a potential series of compounds based upon the original pleuromutilin that may have a significant effect on anticancer drug development. Finally, to demonstrate the potential of this general structure, the Franzblau group at UIC have reported[15] on a series of molecules based on the original skeleton that have the potential to kill non-replicating *M. tuberculosis*, with the general structure as shown in compound **8**. ■

Structures



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HOT TOPICS IN PHARMACOGNOSY:

Almost 70 Years from Veterinary Drugs Through the Latest Natural p-Product Derived Antibiotic to Molecules Active Against Cancer Cells and Dormant TB Bacilli: The Pleuromutilins and Derivatives

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Meet a New ASP Member

Dr. Adam Jones

Dr. Adam Jones *is our featured new member in this issue of the* Newsletter. *He received his PhD from the Scripps Institution of Oceanography with Professor Bill Gerwick and performed postdoctoral work in chemical biology with Professor Lutz Hyde at the University of Tübingen in Germany. Adam is now a science program officer at the Gordon and Betty Moore Foundation in Palo Alto, California. At the foundation he primarily works on two large grantmaking initiatives focused on Symbiosis in Aquatic Systems and Marine Microbiology and leads awards advancing science policy and engagement in Washington, DC, Sacramento, and other state capitols, as well as overseeing grants in partnership with their Environmental Conservation program. Adam also co-manages the foundation's Moore Inventor Fellows program, which supports scientist-inventors who create new tools and technologies to accelerate progress in the foundation's areas of interest — scientific discovery, environmental conservation and patient care. We are pleased to officially welcome Dr. Jones back to the ASP!*

By Wendy Strangman, PhD

What is your scientific background?

I got my start in marine natural products research and pharmacognosy shortly after finishing my BS in biology from Providence College in Providence, Rhode Island. As an undergraduate I had a fantastic experience during a Research Experiences for Undergraduates (REU) program at Cornell's Shoals Marine Laboratory in the Gulf of Maine, and this got me interested in pursuing graduate work in some form of marine ecology. I met Professor Joseph Pawlik from the University of North Carolina Wilmington at a Benthic Ecology Meeting where I was presenting my REU research, and that was the first time I learned about the chemistry driving interactions in coral reef environments. I completed my Master's in Marine Biology at UNCW with Joe and had a lot of opportunities to do fieldwork to complement my work in the lab.

Following an additional year at UNCW conducting research across three different labs in coral reef ecology, environmental toxicology, and molecular biology, I moved to San Diego to join Professor William Gerwick's laboratory at Scripps Institution of Oceanography, first as a lab technician and then to start doctoral research. At Scripps I worked with natural products from filamentous marine cyanobacteria and pursued several projects focused on biosynthesis, genetics, genomics, and heterologous expression of natural product gene clusters. After graduating I moved to Germany and completed postdoctoral research with Professor Lutz Heide in Pharmaceutical Biology at the University of Tübingen. As a postdoc I developed methods for mobilizing large natural product gene clusters in *Streptomyces* for heter-

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Dr. Adam Jones
PHOTO: ADAM JONES

As a postdoc I developed methods for mobilizing large natural product gene clusters in *Streptomyces* for heterologous expression, focusing primarily on the immunosuppressant FK506 (tacrolimus).

One thing I really enjoyed about my time in government was the ability to work on many different topics, but, in considering jobs after the fellowship, I also wanted to find a better balance between having a broad portfolio and still being able to use my technical expertise.

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ologous expression, focusing primarily on the immunosuppressant FK506 (tacrolimus).

Next, I decided to switch gears and spent two years in Washington, DC as an American Association for the Advancement of Science (AAAS) Science and Technology Policy Fellow at the US State Department, where I was able to get direct experience in US foreign policy and collaborate with diplomats from the United States and other countries on a variety of science and technology issues. The AAAS fellowship was a great way to get broader insights into different career options. One thing I really enjoyed about my time in government was the ability to work on many different topics, but, in considering jobs after the fellowship, I also wanted to find a better balance between having a broad portfolio and still being able to use my technical expertise.

The Moore Foundation ended up being a perfect fit, as in my current role I manage over 100 grants on a wide range of science topics (e.g., chemistry, genetics, instrumentation, microbiology, imaging, emerging model systems, ocean and freshwater sciences, science policy, and invention), which allows me to stay closely connected to research while continually learning a huge amount beyond my own scientific background.

How did you hear about the ASP?

I am actually a returning ASP member. I was an ASP member and attended my first ASP meetings as a graduate student. I am happy to reconnect to stay closer to the community.

Why did you decide to join ASP?

I rejoined ASP to learn more about current member activities and to take advantage of the new virtual options the society is providing while in-person meetings are not possible. I am also hoping to raise awareness of our symbiosis initiative work with ASP members as our foundation team enjoys engaging with scientists from many different disciplines.

What would you like to achieve through your membership?

My main goals are to continue learning and to stay in touch with the exciting research underway in ASP member laboratories.

What other scientific societies do you belong to?

As a program officer I try to stay active in several different societies. My other recent/current memberships include AAAS, the American Society for Microbiology (ASM), the Association for the Sciences of Limnology and Oceanography (ASLO), the International Society for Microbial Ecology (ISME), and the International Symbiosis Society.

What do you like doing in your spare time – movies, activities, etc.?

In my spare time I enjoy spending as much time outdoors as possible with family, either hiking on the coast or traveling. During the pandemic and having more time inside, I am spending free time reading and trying some new hobbies, including learning guitar. ■

I am also hoping to raise awareness of our symbiosis initiative work with ASP members as our foundation team enjoys engaging with scientists from many different disciplines.

New Members of ASP Fall 2020

ASP would like to welcome our 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 twelve full members and twelve associate members. We look forward to meeting you and learning more about you and your work.

American Society of Pharmacognosy

FULL MEMBERS

Mr. Waleed Alsulmy
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Lecturer

Dr. Ji-Yeong Bae
Jeju National University
Jeju City, Republic of Korea
Assistant Professor

Dr. Joelle Houriet
University of North Carolina at Greensboro
Greensboro, NC
Postdoctoral Researcher

Dr. Adam Jones
Gordon and Betty Moore Foundation
Palo Alto, CA
Program Officer

Dr. Haoxin Li
Adapsyn Bioscience
Hamilton, Ontario, Canada
Natural Products Chemist

Dr. Bruce Littlefield
Eisai Inc.
Cambridge, MA
Distinguished Scientist and Head, Translational Medicine

Dr. Xu Lu
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Assistant Professor

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Prof. Clay Wang
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Professor and Department Chair

Ms. Allison Wright
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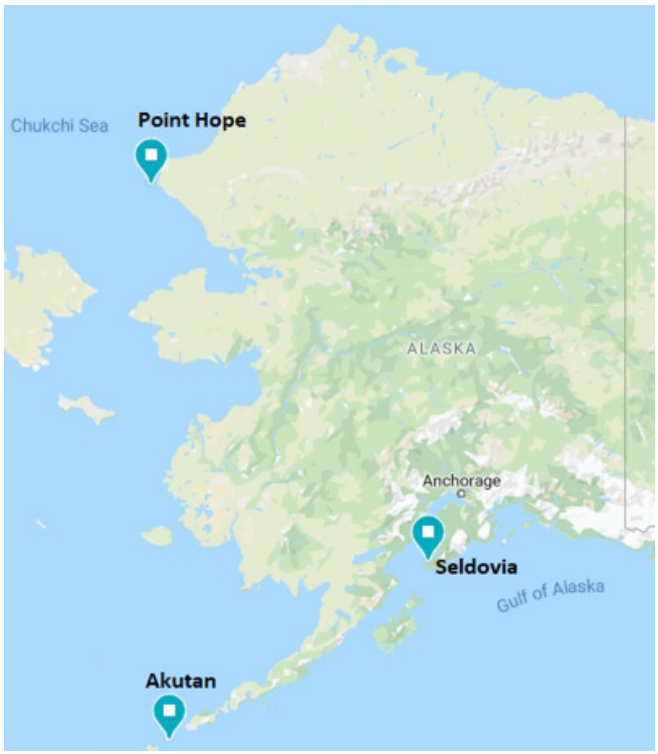
Pharmacognosy Field Notes

Exploring Berry Patches at the Top of the World

By Joshua J. Kellogg, PhD

As natural product researchers, fieldwork is always one of the great benefits of our research that we look forward to and treasure. Accounts of famous botanists and explorers fuel our imagination and perhaps even prompt us to consider natural products as a career. Who hasn't wanted to drag a GC into the middle of the Amazon, à la Sean Connery? I was similarly excited to embark on journeys to distant places; when I joined my graduate lab, my advisor Dr. Mary Ann Lila explained that the project I had originally sought to join, an International Cooperative Biodiversity Group (ICBG) project in Central Asia, was rapidly wrapping up with little chance of refunding. Her next project was in Alaska, had just been funded, and would entail at least one or two trips into the field.

Our work was an EPA-funded project to investigate how climatic variations could impact the phytochemistry and health benefits of traditional resources. American Indian/Alaska Native (AI/AN) populations suffer disproportionately high rates of diabetes and obesity, primarily attributed to a shift from a traditional to more Western lifestyle. The traditional ecological knowledge (TEK) of these communities has long held that wild indigenous berries are a health-promoting resource, and so offered a culturally-relevant plant to investigate. To forge research partnerships, engage the community, and foster greater participation in the research project, we wanted to integrate tribal representatives in the bioassay research process by introducing a series of field-deployable assays to assess bioactive properties of berries. In order to sample from a varied climate as much as possible and gauge differences in the polyphenolic chemistry as well as the antimetabolic syndrome capabilities of these fruits, we partnered with three communities: Akutan, an island in the Aleutian chain; Seldovia, on the Kenai Peninsula; and Point Hope, a village far north on the Chukchi Sea (Figure 1). While each town and field expedition were unique, Point Hope stood out.



Field sites for initial berry collection and participatory community workshop.

I had an indication of the remoteness of Point Hope as soon as we boarded our Cessna prop plane, when our pilot had to match the weight of the research team against the mail and canned good delivery so the plane could take off safely. The plane cruised over a crystal blue sea, the chalky white cliffs keeping to our right. We crossed back onto the land; a small grid of mostly prefabricated houses on a gravelly peninsula of land overlooking the sea appeared, with no roads emerging beyond the town. Stepping off the plane,

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Pharmacognosy Field Notes:
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The main three indigenous berries around Point Hope, Alaska. (From L to R) *Rubus chamaemorus* (cloudberry), *Vaccinium uliginosum* (lowbush blueberry), and *Empetrum nigrum* (black crowberry).

PHOTO: JOSHUA J. KELLOGG.

A fundamental part of this project was engaging the community, but we were initially met with a healthy dose of skepticism.

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feeling the wind rushing to greet us, crowned with salt and the high arctic sun sparkling on the water on three sides, we felt as if we were at the edge of the world. We dragged our belongings and equipment across the tarmac and lodged in a few empty classrooms in the local school.

A fundamental part of this project was engaging the community, but we were initially met with a healthy dose of skepticism. Some in the community felt we, non-Alaska Natives and outsiders (i.e., anyone not from Alaska), were there to either steal their knowledge or secret berry field locations, or somehow muck up their environment. Based on past interactions with other outsiders, this was not an unfounded concern. These communities have had their knowledge doubted and have had Western companies and developments wreak havoc on their communities, their environment, and their way of life.

Our goal to gain their trust was reinforced by the structure of the project, which placed them at the center of the research discovery process. By getting their hands on the bioassays and sharing in the process of experiment and discovery, we were able to forge an equitable partnership. We tested the berries for antioxidant potential, anti-glucosidase inhibitory activity, and other metabolically-related properties with students and some community elders as investigators, participating in the extraction and testing of their crops. The tone in the room changed when the elders and community members saw how our data conformed to their traditional knowledge surrounding the berries. Local participation enriched the research process and outcomes. Stories of harvests past, family traditions, and even recipes started flowing. Everyone wanted to share their variation of akutuq with us, a traditional dessert made from berries mixed with sugar, seal oil, and snow.

The next day we set out for collecting. The hills containing the berry thickets were a few miles away, with no roads or trails by which to navigate. We loaded up the ATVs and discovered a characteristic Alaskan fieldwork tool that most of us would not consider; nearly all of our guides carried rifles. Why? Bears. The bears are natural competitors for the berries, and the late summer season, when the berries ripen, coincides with the time when bears are most active in preparing for their hibernation, leading to semi-regular clashes with community harvesters; two weeks before we arrived someone had been mauled.

We roared down the beach, past whale bones and drift-

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Looking across the tundra near Point Hope, AK.

PHOTO: JOSHUA J. KELLOGG.

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wood tossed onto the sand, and turned up to climb the ridge where the best picking lay. The collecting ridge looked over the tundra, ablaze with the warm colors of the turning foliage. All of these species are low-growing – the *Empetrum nigrum* (black crowberry) creeping along a few inches above the ground – so we lay on the tundra's mossy carpet as we picked berry after berry, slowly filling our buckets. There was not a sound except the purring of the wind, and the elders with us shared stories of whale hunting from traditional boats, visits to the "south" (i.e., the lower 48 states), and favorite music (the Steve Miller Band came up surprisingly frequently). To break, we partook in more traditional trail snacks, the most memorable of which was the muktuk, preserved whale skin with the subcutaneous fat still attached.

The collecting continued until almost 10:00 p.m., but Arctic summer evenings stretch on forever, the sky turning salmon as the sun finally set after 11:00 p.m., and local kids played in the playgrounds until after 2:00 a.m. We returned each day to the school kitchen to clean and freeze the berries. Harvesting by hand was slow going, and it took several days to pick enough of each species to last us through the study. Our precious cargo was frozen and transported via a fish packing service in Anchorage.

Our stay in the far north drew to a close too quickly, though we would be back the following summer to share our results on the chemistry and detailed bioactivity data with the community. Point Hope was an incredible opportunity to blend participatory research and field bioexploration at the end of the world, and an experience I will never forget. ■

Core berry team on the tundra with the fruits of our labor. Pictured left to right: Drs. Courtney Flint, Josh Kellogg, Mary Ann Lila, and Gary Ferguson.

PHOTO: JOSHUA J. KELLOGG.

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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.pharmacognosy.us.
If you have a conference or event you would like mentioned, please send us relevant information, including any graphics, at asp.newsletter@lehman.cuny.edu.
A number of scientific conferences have been delayed or canceled due to the COVID-19 pandemic.
Please check with conference organizers about the status of any in-person conferences.

ASP Natural Product Sciences Webinar
Bimonthly Zoom Seminars
Thursdays 4 PM ET / 1 PM PT
www.pharmacognosy.us/natural-product-sciences-webinar/

ACS Webinars
Every weekday 2 PM ET / 11 AM PT
www.acs.org/content/acs/en/acs-webinars.html

C&EN Webinars
Various Days and Times
cen.acs.org/media/webinar.html

GA Award Lectures and Young Researchers' Workshop (YRW)
November 6-7, 2020
www.conference-service.com/YRW-2020

20th International Congress of the International Society for Ethnopharmacology
April 18-21, 2021
Thessaloniki, Greece
www.ethnopharmacology2021.org

American Society of Pharmacognosy 2021 Annual Meeting
July 24-28, 2021
Grand Rapids, Michigan
aspmeetings.pharmacognosy.us

American Society of Pharmacognosy

Brief News from Washington

By Georgia Perdue, PhD

THE LATEST NEWS ON COVID-19 VACCINES

- On August 12 the **US signed an agreement with Moderna Inc. for 100 million doses of COVID-19 vaccine.** The cost is estimated at $1.5 billion. The cost per dose would be around $30.
- On the same day **Health Secretary Alex Azar** announced that after the needs of Americans are met the COVID-19 vaccine would be available "in the world community…."
- Days earlier, at a virtual meeting by the Reagan-Udall Foundation, **FDA Commissioner Dr. Stephen Hahn** strongly noted that vaccine and therapeutic approvals for COVID-19 will be "based on good science and sound data." He emphatically stated that FDA will be rigorous in its approval. "We will not cut corners…. Good science … and careful, deliberative processes we have always used" will apply here. [*Medscape* in part]
- California based **Gilead Sciences struck a multiyear agreement with Pfizer for the manufacture of its Remdesivir.** If needed, Gilead is prepared to make more Remdesivir beginning in October.
- The **Bill and Melinda Gates Foundation** has stepped up to the plate: it entered into a partnership with India's **Serum Institute** and **Gavi, the Vaccine Alliance**, to manufacture 100 million doses of COVID-19 vaccine for "low to middle income countries." The Foundation is donating $150 million.
- On August 7 it was announced that the US Government will buy 100 million doses of the COVID-19 vaccine from **Johnson and Johnson** for at least $1 billion.
- On August 7 the National Institute of Allergy and Infectious Diseases announced it had launched a **Phase 3 trial of Remdesivir and Merck's Rebif, an anti-inflammatory drug to treat hospitalized COVID-19 patients.**
- Dr. Anthony Fauci noted a bit earlier than the above news: "We should have a couple hundred million doses of COVID-19 vaccine by the start of 2021." Phase 3 trials, the final stage, with 30,000 people ages 18-55, elderly and people with underlying health conditions, will be finished by mid-summer. He expects to have 100-200 million doses by November. "Scientists should have enough data by November or December to determine if the vaccine works." He added a note of interest: **AstraZeneca** and the University of Oxford have a trial underway… on a similar schedule!
- On August 9 Dr. Fauci said, "More than 150 vaccines are being developed around the world; 27 are already

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in human trials." He believes all drug makers will produce "tens of millions of coronavirus vaccines by early next year. "

- On Aug. 5 an NIH press release was titled: **NIH-MODERNA INVESTIGATIONAL COVID-19 VACCINE SHOWS PROMISE IN MOUSE STUDIES.** Stay tuned.
- **In early June Eli Lilly announced it had begun "the world's first human trial of a potential antibody treatment for…coronavirus."** Stay tuned.

OTHER NEWS

- In June, the **FDA appointed John Farley as Director of the Office of Infectious Diseases, part of the Center for Drug Evaluation and Research's Office of New Drugs.** John Farley has been with FDA since 2009 serving in various positions.
- In mid-May **President Trump, through the Biomedical Advanced Research and Development Authority,** awarded a $354 million-dollar contract to a new company, **Phlow Corp.,** to produce the drugs the US is now buying from India and China.
- **Researchers at King's College, London and Guy's & St. Thomas' Hospital are conducting a clinical trial with ibuprofen to see if it helps treat breathing problems of COVID-19 patients.** If it helps, use of ventilators could be discontinued.
- In early August a headline read: **"UK Invests in Valneva Facility for COVID-19 Vaccine Production."** Valneva is in France and will upgrade its manufacturing facility in Scotland. **The UK agreement is for 60 million doses of COVID-19 vaccine.**
- At the **June NIH Director's Advisory Committee virtual meeting,** using Zoom, Dr. Collins noted he has been working from his home office for three months for 80-100 hours/week. He said the **FY 2021 President's budget allows for $2.4 billion increase in the NIH budget!** One interesting note from Dr. Collins: "Hope is more important than coronavirus."

Dr. Francis Collins

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- An August 10 NIH press release: **Clinical Trials of Monoclonal Antibodies to Prevent COVID-19 Now Enrolling.** An aim of the trial is to learn how best to reduce the level of SARS-COV-2 infection… "and ultimately end the COVID-19 pandemic." [Stay tuned.]
- **At the June NIAID Advisory Council's virtual meeting, Dr. Anthony Fauci noted the President visited the NIH Vaccine Research Center on March 3** for "a very productive meeting." On May 5, **Vice President Pence met with Drs. Collins and Fauci to discuss development of a vaccine in partnership with Moderna. In mid-March the Australian Foreign Minister, Marise Payne, and her team met with the NIH team regarding increased cooperation with Australia re: vaccine development.** Dr. Fauci met with senators regarding clinical trials and COVID-19 cases in Greece, UK, Germany, Denmark, Spain, Singapore and South Korea! In June AstraZeneca struck a deal to supply 400 million doses of experimental COVID-19 vaccine to European Union countries by the end of the year: France, Germany, Italy and Netherlands.
- In late June FDA announced that **Oxford University** began a Phase 3 COVID-19 vaccine trial in Brazil, **the first Phase 3 trial in Latin America**. Brazil has an agreement with AstraZeneca to produce the vaccine.

NATURAL PRODUCTS NEWS

- **The NIH Office of Dietary Supplements, along with the National Center for Complementary and Integrative Health (NCCIH), and the NIH National Institute of Aging will fund five research centers at $27 million** that will generate data needed to support clinical trials of complex natural products from plants, bacteria, fungi, etc. The Center for Natural Product Technology, Methodology and Productivity Optimization will collaborate with other research groups. More to follow!
- A **National Science Foundation** press release on August 12 was titled: **The Last Unknown: Study reveals richest island flora in the world. "Scientists identify 13,634 plant species in New Guinea, with thousands yet to be discovered!"** Michael Sundue and his colleagues at the **University of Vermont** are working on this. Also, an NSF funded study published in the journal ***Nature*** includes a list of **vascular** plants of New Guinea and surrounding islands. Researchers, mostly

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Michael Sundue

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taxonomists, "poured over digital records of plant collections scattered around the world…They drew on the expertise of 99 specialists to tally 13,634 species in 264 families with thousands yet to be discovered."

- In early August the **NCCIH** posted an article: **Black Cohosh, Root or Rhizome?** The plant, ***Actaea racemosa* or *Cimicifuga racemosa*, which grows in North America, has an interesting history.** Native Americans used it for a variety of ailments; European colonists learned of it; today it is a dietary supplement. Check it out!
- The American Heart Association warns that marijuana can cause heart problems. Robert Page, professor of clinical pharmacy at the University of Colorado's Skaggs School of Pharmacy and Pharmaceutical Sciences in Aurora, is trying to determine if cannabis causes any cardiovascular affects.
- It has been reported that several American citizens have received "mysterious seeds." The USDA Animal and Plant Health Inspection service is looking into it. The seeds appear to be innocuous: cabbage, mint, hibiscus, morning glory, rosemary, sage, mustard, rose. If the seeds were not from China or India there would be no story! ■

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Black Cohosh

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