

LINUS PAULING INSTITUTE

OREGON STATE UNIVERSITY
RESEARCH NEWSLETTER

FALL 2020

20th Anniversary of the Micronutrient Information Center LOOK INSIDE ►

SHAPING THE FUTURE OF HEALTH

New Leadership for the Linus Pauling Institute

In July 2020, we welcomed our new director of the Linus Pauling Institute, Dr. Emily Ho, who has been an investigator at the Institute for 17 years. After her first month in the director's chair, we sat down for an interview with Dr. Ho to discuss her approach to leadership, her inspiration, and the future of the Pauling legacy.

What inspires your approach to science?

What I love about science and what gets me excited every day is that I have endless problems to solve.

I think this stems from family. My father is a retired engineer, my mother is a retired public health nurse, and two of my grandparents were schoolteachers.

I would like to think that I have inherited all of their best qualities, including an analytical mind, as well as their drive, determination, and commitment to empower others.

Nutrition is a scientific field that affects everyone every day. We all need to eat! I believe that by understanding the best food and supplement choices, I can be a champion for people in their journey through life.

As a scientist, I also believe that it is my responsibility to make sure our discoveries are accessible to the people we are trying to help.

This feeds my deep commitment to teaching the next generation of scientists and health leaders.

Continued on page 4

IN THIS ISSUE

Shaping the Future of Health.....1

From the Director....2

In Memoriam.....2

Reader Questions.....3

20th Anniversary of the Micronutrient Information Center.....6



Oregon State University
Linus Pauling Institute



Emily Ho, PhD
Endowed Chair
and Director,
Linus Pauling Institute

On August 26th, Dr. Emily Ho presented her vision of the Institute's future. The video of this event is available at: youtu.be/PgS28qB-Cgl

Transcripts are available upon request.

FROM THE DIRECTOR

Let me take the opportunity to say hello!

Our previous edition of the newsletter went to press just before I assumed my new role, so please allow me to introduce myself as the next director of the Linus Pauling Institute.

First, I would like to thank Dr. Richard van Breemen for his years of leadership at the Institute. Dr. van Breemen will continue his outstanding research at the Institute, so expect to hear more about his botanical discoveries in the future.

This issue of the newsletter features an interview with me (see cover). This is complemented by my webinar about the Linus Pauling Institute, now available **online** (see sidebar).

Also in this issue, we highlight the 20th anniversary of the Micronutrient Information Center (see page 6). From its debut in 2000, this website has been a valuable resource for the world.

The Micronutrient Information Center has published well over 150 articles in three different languages – an impressive feat. This is due in no small part by the foundation laid by the late Dr. Jane Higdon and the hard work of Dr. Victoria Drake and her team of researchers.

In closing, I would like the Institute to focus on more frequent interactions with our supporters. As part of this initiative, this newsletter will now be coming to you quarterly instead of twice a year. I also hope you enjoy our new “Reader Questions” feature (see page 3).

Be sure to look for other opportunities to interact with the Institute in the near future.

Enjoy the issue. Stay healthy and well.

Emily Ho, PhD



IN MEMORIAM

It is with great sadness and loss that we share the passing of **Melinda (Mindy) Chérie Myzak, MD, PhD**.

Mindy was a part of the Linus Pauling Institute from 2001-2006 and was well known for her drive and conviction. Initially a student worker, she was later supported by an endowed graduate student fellowship. This gave her the opportunity to work in the laboratories of both Drs. Emily Ho and Rod Dashwood.

Mindy completed her PhD in record time for the Institute. This was only one of the many achievements that would define her career.

Mindy earned her MD at the University of Vermont and then completed her residency in Internal Medicine at Oregon Health & Science University. She also completed an oncology fellowship at Johns Hopkins University and an

advanced fellowship at Mayo Clinic. More recently, Mindy worked to develop cancer medications and treatment at AbbVie, Inc.

Mindy's lifelong passion was the fight against cancer. She was dedicated to her patients, who she considered part of her family.

All of us at the Institute will remember her love of animals, the tales of her travels, and her boundless energy. We especially remember the laughter and joy she brought to the people around her.

Mindy was a talented and thoughtful scientist and physician. Overall, she was an amazing person. She will be missed.

If you wish to honor Mindy's life and career, please consider making a donation in Mindy's name to the Oregon Humane Society at oregonhumane.org

READER QUESTIONS

Q. **Dr. Richard Cheng has been administering IV vitamin C to COVID-19 patients in China to great effect. Why isn't the Linus Pauling Institute endorsing these findings and promoting this research?**

– Various emails

A. I have been reviewing Dr. Cheng's research since the COVID-19 outbreak began. His reports are very impressive, but they are often not supported by data. This makes it very difficult to properly evaluate his claims.

In a webinar to the NIH this spring, Dr. Cheng reported that IV vitamin C reduced pro-inflammatory biomarkers and improved organ function in COVID-19 patients. He also suggested that patients receiving IV vitamin C were released from hospital care earlier than those who did not receive this therapy.

However, this was just a slide in a webinar and not published or peer-reviewed data. To advance the Linus Pauling Institute's mission to promote evidence-based therapies, we need more details about the intervention, the patient population, and the outcomes before sharing.

– From Dr. Alexander Michels

Q. **What role does vitamin D play against COVID-19?**

– S.A. New York City, New York

A. Vitamin D plays an important role in the function of the immune system and its responses against infection. It also plays an important role in regulating the production of inflammatory signals.

If your blood levels of vitamin D are too low, your immune system could go into overdrive in response to a viral infection and overproduce inflammatory cytokines, leading to a condition termed the "cytokine storm."

This "storm" is a hallmark of serious, life-threatening cases of infection. It occurs when the immune system is completely out of control. This overabundance of inflammation often leads to lasting injury or death.

Vitamin D appears to act as a brake, preventing the immune system from getting out of control.

Do low blood levels of vitamin D make you more susceptible to COVID-19? Recent research suggests vitamin D deficiency increases risk of both contracting the SARS-CoV-2 virus and having severe complications of that infection. There are ongoing studies to see if vitamin D supplements are useful in this disease.

Ideally, everyone should have blood vitamin D levels at 30 ng/ml or higher. Follow the LPI recommendations or work with your physician to help you achieve that goal.

– From Dr. Adrian Gombart

Q. **Does zinc really "boost" your immunity?**

– K.A. Fort Wayne, Indiana

A. There is some evidence that zinc can help your body fight a cold if taken within the first 24 hours of symptom onset. It is not known how effective zinc may be in other respiratory infections.

It is really important to make sure that you are getting enough – avoid zinc deficiency. When your body is low in zinc, the immune system is compromised and doesn't work well.

One problem is that blood tests are not a good indicator for adequate zinc, so it is difficult for you to know if you are getting enough.

If you are thinking of taking zinc supplements, be careful not to take too much. Keep your intake from food and supplements combined to under 40 mg of zinc per day. High dose zinc supplements don't cause harm directly, but taking too much zinc can be harmful by interfering with copper and iron absorption.

I think it is best to rely on food sources of zinc like nuts, seeds, and meat instead of supplements for most of your zinc needs.

– From Dr. Emily Ho 

Do you have a question for our experts?

Send us your questions by regular mail or an email to lpi@oregonstate.edu.

When sending your question, please indicate if we have permission to publish your name.

Who are some of your most influential mentors?

When I was an undergraduate at the University of Guelph, I had a summer fellowship to work with Dr. John P. Phillips in a genetics lab. He was studying how defects in the enzyme superoxide dismutase caused health problems in fruit flies.

Up until that point, my career path was leading towards veterinary school. Working with Dr. Phillips was my introduction to free radicals and antioxidants. He is the one who revealed to me that food is a major source of antioxidants and might be a key to better health. This is the moment when I started to get interested in nutrition.

Dr. Phillips introduced me to Dr. Tammy Bray at the Nutrition Department in Guelph.

Soon after, I had the nutrition science bug: I changed my major to Nutrition Sciences, investigated the role of antioxidants in diabetes, and completed my PhD under Dr. Bray's mentorship at the Ohio State University.

Dr. Bray introduced me to the complexities of nutrition and the impact that nutrition can have on health. She inspired me to think big and make sure to give back. Working with her, I found my passion for research.

I also had the pleasure of being mentored by Dr. Bruce Ames at UC Berkeley. As a mentor to former LPI director Dr. Balz Frei and current LPI faculty member Dr. Tory Hagen, Dr. Ames is one of the most committed scientists out there. We all learned a lot from him.

"I asked Dr. Phillips, 'Is it possible to improve antioxidant status to help disease?' He replied, 'Yes, many antioxidants are available in the foods that we eat.'

That's when a light bulb went off, and I wanted to find out more about food."

"Dr. Tammy Bray joined Oregon State University as a Dean and Linus Pauling Institute researcher in 2002. This was just another reason for me to join the Institute."

Emily with her two sons.
Photo credit: Audra Terry



What do you like to do for fun?

When out of the laboratory – or out from behind a desk – I love spending time outdoors, especially with my family. In any season of the year, it means getting out to explore what Oregon has to offer.

Did I mention that I am also a cardio kickboxing instructor? I love the energy I get from both teaching and participating in group exercise classes.

I also enjoy cooking and baking, and I love a good meal. My boys have also started to become "foodies," so it is forcing me to step up my home cooking game.

If you had an unlimited budget, what are some dream projects for research?

I think the goal in research should be more than just asking tough questions. Ultimately, I want to make sure that research projects can make a difference in people's lives. Scientists call this "translation": how scientific inquiry focuses on application to our everyday lives.

With the right amount of funding, we can facilitate a path to optimal health with different foods or supplements. It starts with more intervention studies and leads to healthier communities. How we get there is a combination of personalized medicine (understanding what is right for you) and population-based recommendations.

And we need to share that wealth. With the right amount of support, this knowledge can be made available to the people who really need it.

What is your approach to leading the Linus Pauling Institute?

Building the science that helps people live healthier lives is a complicated task. Tackling global health issues requires all of us working together in new ways.

My plan is to use each researcher's unique strengths to solve big problems. Even if we are targeting different parts of a larger question, this approach will amplify and accelerate our work and mission.

What is your view on Dr. Pauling's research and his legacy?

Our mission is to uphold the values and legacy of Linus Pauling, and this will never change. The core goals of the Institute remain: to be a source of scientific innovations designed to improve human health and to be a trusted resource of relevant health information for the public.

My vision for the Institute is to continue to lead the scientific community toward those goals. We will continue to push for innovation in dietary components and improving health across the lifespan.

We want to help people live longer but also help them feel better while they live. In other words, we want people to improve their healthspan.

To do this, we must work together and integrate across multiple scientific fields, not just the ones traditionally part of nutrition science. The full cycle of Dr. Pauling's legacy is to make sure that every discovery we make is available to everyone, especially the communities of greatest need.

Where do you see the Linus Pauling Institute in 10 to 20 years?

I see the Linus Pauling Institute as the model for integrating multiple disciplines together. This will help all of us to age healthily by solving some of the biggest health issues in our nation.

We will be known for the discoveries that help us all "live longer and feel better" and for making those discoveries available to everyone, worldwide. 🌍



Why pay more taxes? You can give to the Linus Pauling Institute with a portion of your retirement savings!

Did you know? Recent changes in US federal tax law concerning minimum distributions have made IRA qualified charitable distribution gifts (also called charitable IRA rollovers) more attractive than ever.

Are you over the age of 70½ and have a traditional IRA? The change in tax law states you must now withdraw minimum amounts from your account annually. Chances are that this will increase your taxable income.

Avoid extra taxes! Making a qualified charitable distribution directly from your IRA to the Linus Pauling Institute allows you to avoid paying income tax on that gift and counts toward your required minimum distribution. It's a tax-wise gift!

Interested? Contact your IRA provider and request exact instructions for making a qualified charitable distribution. Before sending anything to the Linus Pauling Institute, please contact the OSU Foundation at Andrew.Norwood@osufoundation.org or 503-936-0086. We will make sure your gift receives special handling and is used exactly as you wish.



A BEAUTIFUL LEGACY

By utilizing a qualified charitable distribution (QCD) from an IRA, you can make a legacy that will live forever.

Contact us to learn how you can create your Linus Pauling Institute legacy.

CELEBRATING 20 YEARS OF THE MICRONUTRIENT INFORMATION CENTER

Access the Micronutrient Information Center at: lpi.oregonstate.edu/mic

If you prefer print resources, contact the Linus Pauling Institute for books based on content from the Micronutrient Information Center.

In 2000, the Linus Pauling Institute launched a website with objective, evidence-based information on the roles of nutrients and dietary factors in health and disease. Called the **Micronutrient Information Center**, this site quickly established itself as a comprehensive source for scientifically accurate information on nutrients for healthcare professionals and the general public alike.

Initially, the website contained 14 articles: one on each of the 13 vitamins and one on the nutrient choline. Articles on the 14 nutritionally essential minerals were added a year later. Over the years, the Micronutrient Information Center broadened its coverage beyond vitamins and minerals with articles on food and beverages, various phytochemicals, and life stages.

Although each article on a particular nutrient or dietary factor reviews studies on disease prevention and treatment, a Health and Disease expansion allows users to directly access nutrition information pertinent to a specific health or disease condition. This section currently includes 23 different health and disease topics, including articles on heart disease, Alzheimer's disease, and certain cancers.

Over the past two decades, the Micronutrient Information Center has become a popular resource both domestically and internationally. Spanish and Japanese translations have been added over the years to extend this global reach. Most recently, content has been specifically developed for healthcare professionals in the form of two online, continuing education courses: "Meeting Micronutrients Needs" and "Micronutrients for Bone Health."



**MICRONUTRIENT
INFORMATION CENTER**

20 YEARS

2000 Micronutrient Information Center launched by Jane Higdon, PhD

2003 Articles on food and beverages

2004 Articles on various phytochemicals

2006 New manager, Victoria Drake, PhD

The Micronutrient Information Center strives to be a global leader for providing evidence-based information that informs healthy dietary and supplement choices. Articles focus on evidence from clinical trials and other human research rather than animal models, making the information more relevant to human health. All articles are written by PhD nutrition scientists with the Linus Pauling Institute and are reviewed by experts in the field – often research professors at other universities.

Each article contains extensive references: readers are directed to peer-reviewed studies whenever possible. Hyperlinks take readers directly to the US National Library of Medicine's PubMed database where the study summary, if not the entire scientific publication, is found.

While we celebrate 20 years of the Micronutrient Information Center, we also plan for the future. We rely on generous donations from our readers to update our existing content. Each update requires up to eight weeks of full-time, focused labor to review the research published since the previous update. This entails sorting through hundreds of relevant scientific publications, and then reading and evaluating the most relevant to determine if they should be included in the update.

Without your support, we would not be able to maintain this valuable public resource. Please go online and check out what the Micronutrient Information Center has to offer, and join our **\$20 for 20 years** campaign at: bit.ly/MIC20for20

Article Breakdown

Micronutrients
48%

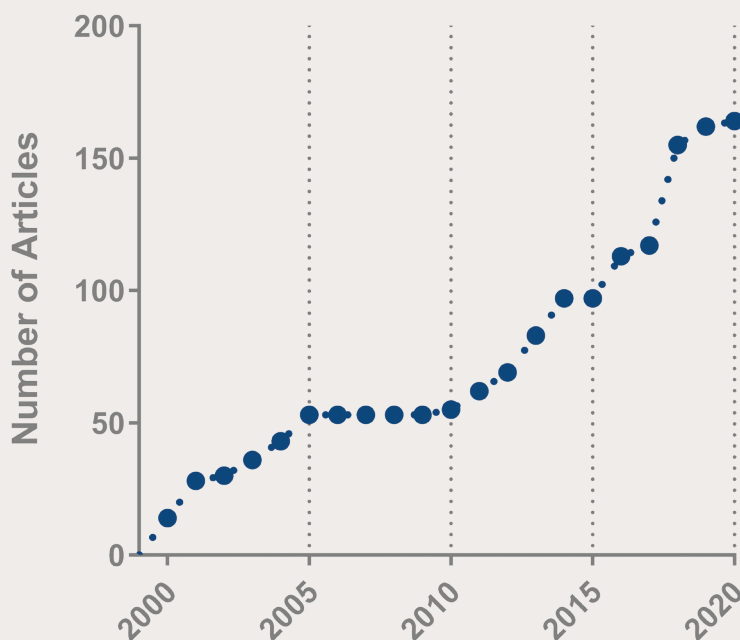
Health and Disease
26%

Other Dietary Factors
14%

Food and Beverages
12%

Top 5 Articles in 2020

- **Vitamin C**
- **Zinc**
- **Essential Fatty Acids**
- **Vitamin C and Skin Health**
- **Supplemental Forms of Vitamin C**



2013 Spanish version published

2018 Japanese version published

2011 Micronutrients in life stages

2016 Health & Disease section

2019 Professional education courses



Oregon State University
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**LINUS PAULING INSTITUTE
RESEARCH NEWSLETTER**

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LINUS PAULING'S VISION – YOUR LEGACY

WE ARE PLEASED AND GRATEFUL to recognize the following Legacy Society members who have included the Linus Pauling Institute in their will or estate. Estate gifts create opportunities that continue the momentum of the Institute's growth and leave a lasting legacy.

To learn more, visit lpi.oregonstate.edu/legacy

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Join us for our 20th anniversary celebration!



FOR THE LAST 20 YEARS...

the **Micronutrient Information Center** has been a source for evidence-based information about diet and supplements. Let us know what this valuable resource means to you at:

<http://bit.ly/MIC-contact>



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