

# Teal Talk



October 2020

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“And all at once summer collapsed into fall...” ---*Oscar Wilde*

We hope you had an amazing summer with family and friends. Are you looking forward to cooler temperatures and pumpkin everything? At the OCAO we have been busy wrapping up with the Strides for Hope and are already getting started on plans for 2021 event.

We are enjoying all of the pictures you have shared of your own walks and celebrations. It was terrific to see so many of you at the Survivor Brunch. We have missed being able to spend time with you. Keep an eye on our website for more activities to come.



# IN THE NEWS

## **Nanoparticles for Effective and Targeted Ovarian Cancer Treatment**

---cdmrp.army.mil  
September 8, 2020

Dr. Paula Hammond is a pioneer in nanotechnology. She has had great success in developing drug-delivery products in areas as diverse as ophthalmology, wound care, and tendon repair. The Ovarian Cancer Research Program awarded her the Teal Innovator Award in 2012, which provided funding to focus her innovative drug delivery system designs on ovarian cancer. With support from this award, Dr. Hammond's laboratory developed the layer-by-layer (LbL) nanoparticle system to encapsulate and protect cancer treatments and selectively target them to ovarian tumors.

The LbL nanoparticle approach involves "layering" positively and negatively charged polymers around a core. The layered nanoparticle is also wrapped in an external "stealth" layer that can facilitate tumor targeting. This lessens the side effects caused by treatment toxicity in healthy cells and also protects the drug from clearance. Dr. Hammond and her team demonstrated that LbL nanoparticles formulated with Poly-L-Arginine and hyaluronic acid external layers selectively target receptors on ovarian cancer cells.

Dr. Hammond examined the use of the LbL nanoparticle system in cancer chemotherapy administration, as more targeted methods would be helpful in minimizing the adverse side effects common in systemic chemotherapy treatment. Dr. Hammond's team demonstrated the capability of incorporating cisplatin into the core and poly ADP-ribose polymerase (PARP) inhibitors into the polymer layers of the LbL nanoparticles. In mouse models of ovarian cancer, combination treatment with cisplatin and PARP inhibitors showed drastic reduction in tumor burden and prolonged survival compared to free combination drug. In addition, there were indications of increased toxicity in the mice treated with free drugs.



siRNA is a strong candidate for cancer treatment because it could reverse the chemoresistance seen in recurrent ovarian cancer by blocking the genes that enable the resistance to treatment. It is difficult to deliver siRNA directly to tumors, as it is quickly degraded outside the cell and is toxic at high doses. Using the LbL technique, Dr. Hammond's team was able to form stable nanoplexes to package, protect, and deliver siRNAs to tumors. They tested their system on the protein kinase MK2 pathway, which is required for survival of cells deficient in the tumor suppressor, p53. Tumor suppressor p53 is the most frequently mutated gene in cancer, and its mutation is often connected to resistance to standard chemotherapies. In a mouse model of chemoresistant ovarian cancer, mice receiving both MK2 siRNA nanoplexes and chemotherapy exhibited the most dramatic decreases in tumor proliferation compared to either siRNA or chemotherapy alone. Thus, nanoplex-mediated silencing of the protein kinase MK2 profoundly sensitized ovarian tumors to chemotherapy.

Another exciting finding is that Dr. Hammond and her team were able to safely deliver cytokines within the LbL nanoparticles to tumor tissues to initialize an immune response against the cancer while maintaining the health of normal cells and tissues. Many commonly known immunotherapies are not as effective in ovarian cancer. Cytokines are a promising therapy for ovarian cancer treatment, but clinical use has been limited due to their toxicity for healthy tissue. The team focused on interleukin-12 (IL-12), which is a potent cytokine. IL-12 was packaged into the core of the LbL nanoparticle, and they were then tested in a mouse model of ovarian cancer. The team found that the LbL nanoparticles containing IL-12 greatly reduced toxicity and prolonged survival compared to both carrier-free IL-12 and a similar IL-12 loaded liposome lacking the LbL structure. This suggests that the LbL nanoparticle system can be used to systemically deliver potent cytokines to treat ovarian tumors while minimizing their systemic toxicities

Dr. Hammond has made significant strides in designing the LbL nanoparticle system for the targeted treatment of ovarian cancer. She demonstrated numerous successful applications of the LbL nanoparticles in the delivery of combination small molecule drugs, siRNAs, and immune-activating proteins such as cytokines specifically to ovarian cancer cells. The potential of this is monumental, as it could provide more positive outcomes for ovarian cancer patients. This platform has the potential to offer personalized treatments in ovarian cancer that could better target the tumors while reducing toxicity and eliminating chemotherapy resistance. Dr. Hammond has received funding from the National Institutes of Health to continue these studies focused on ovarian cancer and further expand and improve this platform.

# Survivor Spotlight

## *Meet Lisa Mitchell– 7-year Survivor*

*OCAO Board Member, Secretary, Survivor Connection Director*

My story begins in November 2011. I was 42 years old, a wife, and mother of four boys (two were in college and two were still at home). I had always been up-to-date on my routine exams but wanted to get a really thorough physical. I also felt I had an umbilical hernia caused by the tubaligation surgery after the birth of my fourth child. I made an appointment with my primary physician, gynecologist, and dermatologist. My primary physician agreed that I probably had a small hernia and referred me to a general surgeon, who confirmed it and scheduled the surgery. The next step was to see the gynecologist, Margarite. Margarite was a nurse practitioner that was overworked, overbooked and going Mach-20 with her hair on fire. I casually mentioned, during the whirlwind of an exam, that I was having surgery in a few weeks for a hernia. She said that since I was having abdominal surgery I should have an ultrasound just to be sure everything was good in that area, and off she went to the next patient. She ordered transvaginal and abdominal ultrasounds. I remember thinking that it was a waste of time to have the ultrasounds. I didn't have any issues with my monthly cycle or regular pain in my abdomen, so reluctantly I kept the appointment.

At the ultrasound appointment, while the technician was “digging around”, she asked me if I had any abdominal pain. I did not have constant pain, but every so often I would have a sharp pain that left as quickly as it came. I thought it was due to ovulation. Of course, the technician can't tell you what they are seeing, but by the look of concern on her face I became a little uneasy. That afternoon I had a phone conversation with my mom and told her about the appointment. She was an avid Dr. Oz fan and never missed an episode. The topic of the show that morning was about gynecologic issues and more specifically ovarian cancer. I immediately began searching the internet for symptoms and found that I had all of the main ones except abnormal bleeding. The next week I had a follow up appointment with the Margarite and the report showed that I had a fibroid in the uterus, cysts on both ovaries, and my uterus was enlarged. According to Dr. Oz an enlarged uterus is a little-known symptom of ovarian cancer and is often overlooked. Margarite, in her speedy interpretation, explained that the fibroid was causing the uterus to be enlarged, which made sense to me. She then continued to dismiss every single one of the things on the report. She explained them all away and said I was simply too young to have ovarian cancer. The plan was to follow up with me in a year to check on the status of the fibroid that was causing me to have heavy periods.



Fast forward to 2012. I was back to see Margarite and she wanted me to repeat the ultrasounds for comparison. I once again expressed my concern about ovarian cancer because I had all of the symptoms and by now the bloating was out of control. Nothing was fitting me and I hadn't gained any weight. When I went back to her for the results of the new ultrasounds, it was discovered that I now had a second growth in my uterus. It was not determined if it was another fibroid. Margarite wanted to do more tests to rule out something more serious. She ordered a CA-125 and some other blood tests and I immediately drove to the lab to have the blood drawn. While I was sitting there I Googled (like we all do) the tests she ordered and immediately went into panic mode. Wait, What? Why? Why didn't she listen to me a year ago when I told her I was having symptoms? The CA-125 came back at 97 and Margarite of course did not believe the results so she ordered another one. It was not computing with her that my symptoms were showing a *real* possibility of cancer. The new CA-125 was 95. Still unconvinced, Margarite next did an endometrial biopsy thinking that perhaps the new growth was endometriosis. That test came back negative. The next plan was to watch and wait. I would have a repeat ultrasound in three months. This ultrasound would show that the "thing" had grown exponentially. At this follow-up appointment I finally said I don't care what you have to do, I want whatever this is out. I was done having children, the fibroid was causing me to have terrible menstrual bleeding and now I had something rapidly growing inside of me. There was no need to keep testing and exploring, just do a hysterectomy and get it over. Margarite said that she would discuss it with the doctor and get back with me. About an hour later I got a call from Margarite. The doctor had agreed to go ahead with the hysterectomy to remove the uterus and keep the ovaries so that I wouldn't go through menopause at such an early age. I was scheduled for surgery on March 1, 2013. That is when my life was forever changed.

I remember saying as I was being taken to the surgical room "let's get this done and please let there be no cancer". The doctor, to his horror and surprise (as he later confessed to me) discovered tumors on both ovaries. They did preliminary testing and found that the tumors were borderline cancer. Because he wasn't a gynecologic oncologist, he left everything intact, closed me back up and referred me out. At the follow-up appointment he irresponsibly told me that it didn't matter when I had surgery to remove the tumors because they were borderline, not actual cancer. However, what he didn't know was that I had actual ovarian cancer in my lymph nodes. I thankfully did not take his advice and found a gynecologic oncologist immediately and had surgery on April 8, 2013. I was diagnosed with stage 3c low grade ovarian cancer. I underwent six rounds of intraperitoneal (chemo is put directly into the abdomen through a port rather than in the blood stream) cisplatin and taxol.

I have been blessed to see two of my children married and the birth of my first grandchild-- a boy, go figure. I don't take anything or anyone in my life for granted. I have met so many wonderful Survivors through my work with OCAO. Their stories of survivorship inspire me to continue moving forward and hopefully make a difference in this ovarian cancer world that we have unwillingly been thrust into.



# Survivor Celebration Brunch

On September 19<sup>th</sup> we held the 3<sup>rd</sup> Annual Survivor Celebration Brunch. Next to Strides for Hope, the brunch is the most anticipated event of the year. It is a time for Survivors and their guests to come together to meet other Survivors and supporters, share stories and celebrate survivorship. The event was held at Via Vecchia Winery and there were 81 people in attendance. There was a wide assortment of food, and some specialty drinks available from the bar....it was a winery after all. The entertainment was a harpist and keyboard player. The music was simply beautiful, thank you so much for sharing your gifts with us. A huge thank you to the volunteers who covered registration and to board members Kelli Merb and Kim Britt for all of your planning to make this another wonderful event for our Survivors.











# Did Someone Say Pumpkin?



## Pumpkin French Toast

4 Large eggs, beaten

$\frac{3}{4}$  cup Milk

$\frac{1}{2}$  cup Pumpkin puree

1 tsp Vanilla extract

$\frac{1}{2}$  tsp Pumpkin pie spice

Kosher salt

1 loaf Brioche, cut 1" thick

3 Tbsp Unsalted butter, divided

### Pumpkin Butter

4 Tbsp Unsalted butter, softened

2 Tbsp Pumpkin puree

2 Tbsp Maple syrup

$\frac{1}{4}$  tsp Pumpkin pie spice

Powdered sugar for dusting

Maple syrup for drizzling

In a shallow baking dish, whisk eggs, milk, pumpkin puree, vanilla, pumpkin pie spice, and a pinch of salt. Place bread slices into pumpkin mixture and let soak about 30 seconds per side. In a large nonstick skillet over medium-low heat, melt 1 tablespoon butter. Cook 2 slices bread at a time until golden, 3 to 4 minutes per side. Repeat to cook all slices.

Make pumpkin butter: In a medium bowl, whip softened butter with pumpkin, maple syrup, pumpkin spice, and a pinch of salt until light and fluffy. Top French toast with pumpkin butter, sprinkle with powdered sugar, and drizzle with maple syrup.



## Pumpkin Alfredo

- |                         |                              |
|-------------------------|------------------------------|
| 12 oz. Fettuccine       | ½ cup Finely grated Parmesan |
| 2 Tbsp Butter           | ½ tsp Chopped rosemary       |
| 2 Garlic cloves, minced | ¼ tsp Grated nutmeg          |
| ¾ cup Pumpkin puree     | 2 Tbsp Chopped parsley       |
| ½ cup Whole milk        |                              |



In large pot of salted boiling water, cook fettuccine according to package directions until al dente. Drain. In large skillet, melt butter over medium heat. Add garlic & sauté until fragrant, about 1 minute. Stir in rosemary & pumpkin. Pour in milk & stir until evenly combined, stir in Parmesan & nutmeg. Season with salt & pepper. Simmer 5 minutes, or until desired consistency. Turn off heat & toss pasta in sauce. Garnish with parsley & more Parmesan, if desired.

## Pumpkin Spice Latte

- |                         |                       |
|-------------------------|-----------------------|
| 1 cup Whole milk        | 1 tsp Vanilla extract |
| 2 Tbsp Pumpkin Puree    | ¼ cup hot coffee      |
| 1 Tbsp Maple Syrup      | Whipped cream         |
| ½ tsp Pumpkin Pie Spice |                       |



In a saucepan over medium heat, whisk together milk, pumpkin, maple syrup, spice, and vanilla extract. Cook, whisking constantly, until mixture is warmed, then blend mixture with an immersion blender until frothy. Pour hot coffee into a mug, then top with pumpkin-spice foamed milk. Top with whipped cream and a sprinkle of pumpkin pie spice.



### To make your own pumpkin pie spice:

- |                        |                        |
|------------------------|------------------------|
| 2 Tbsp Ground cinnamon | 2 tsp Ground ginger    |
| 1 tsp Ground cloves    | 1 tsp Ground all spice |
| ½ tsp Ground nutmeg    |                        |



Calling all Survivors, Caregivers and Family Members. OCAO has received a grant to produce videos that will help in spreading awareness and educating about ovarian cancer. In an effort to reach the people who may not otherwise have access to reliable resources of information, the videos will be shown in places that may be thought of as out of the ordinary. The Education & Awareness Committee will also be utilizing the videos at all of the events that they attend.

The premise is sharing...sharing your story, your caregiver(s) sharing their story and your family members sharing their story. There will also be group discussion about coping with diagnosis from each perspective.

Filming will be taking place on SATURDAY OCTOBER 17. If you are interested in learning more about how you can help and take advantage of this amazing opportunity to spread awareness and education please contact Marianne Dean at [madean@ocao.org](mailto:madean@ocao.org)

**WHERE: OCAO OFFICE  
4900 REED ROAD, SUITE 331  
COLUMBUS, OHIO 43220**

**WHEN: SATURDAY OCTOBER 17, 2020**

# OCAO SURVIVOR DAY COLUMBUS



Join us for a day at the zoo...lunch included for Survivors & 1 guest. We also have a limited number of entry tickets for additional guests. For more information and/or to reserve your tickets contact Lisa Mitchell  
email: [lmitchell@ocao.org](mailto:lmitchell@ocao.org) cell: 954-604-9538

## SUNDAY OCTOBER 11

# Ways to Give Back



You shop. **Amazon gives.**

Amazon donates 0.5% of the price of your eligible AmazonSmile purchases to the charitable organization of your choice.

AmazonSmile is the same Amazon you know. Same products, same prices, same service.



Create a Kroger digital account

Link your card to OCAO

OCAO earns a percentage of your spending AT NO COST TO YOU!

*THANK YOU FOR YOUR  
CONTINUED SUPPORT*