



TRI-CITIES
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Pictured right:
Dr. Karin Rodland,
Co-Director of PMediC
Pictured left:
State-of-the-art mass
spectrometry is used by
PNNL's 'Integrated Omics
Group' in their studies
of cancer

FROM ALLIGATORS TO PROTEINS: Cancer Research at PNNL

By: Carl Berkowitz, TCCC Volunteer

Cancer is not a singular entity. There are thousands of different diseases we call cancer because there are thousands of different ways for a normal cell to become cancerous. So identifying the right treatment can be a complicated problem. But progress is being made on this problem at Pacific Northwest National Laboratory (PNNL), here in the Tri-Cities.

The early history of cancer research at PNNL

Cancer research in the Tri-Cities started with the Atomic Energy Commission's Pacific Northwest Laboratory (PNL, predecessor to today's Pacific Northwest National Laboratory). In the 50's and early 60's, health physicists at PNL carried out studies with alligators, goats, and other animals to understand the relation between radiation and cancer.

These studies showed that directed radiation could kill localized clusters of cancer cells, a finding that helped in the development of the radiation therapies used today. As research at PNNL continued, improved methods were found to constrain therapeutic radiation to a small volume of cancer cells. Later, researchers learned how to use monoclonal antibodies with radioactive isotopes produced at the Hanford site's Fast Flux reactor to attack individual cancer cells, resulting in very site specific irradiation. These early studies all pointed to the need for more efficient and faster ways to produce a variety of isotopes. Since 2012, with support of the DOE Isotope Program, scientists at PNNL and the University of Washington have worked together to develop automated techniques for the production of high quality isotopes for use in the treatment of cancer.

And more recently...

Physicians are in general agreement that the early detection of cancer is central to having a successful treatment. Today, scientists at

"Using this information, we're working to identify patterns that can be used as early warning signals for the start of tumor formation."

Pictured right: PNNL Richland Campus Entrance



PNNL are developing techniques to identify tumors before the appearance of any symptoms and to also understand the genetic mutations that turn healthy cells into their cancer counterparts.

The big question is, how do we identify the presence of small clusters of cancer cells within the human body? And what therapies can then be deployed before these small clusters grow? Working to solve these problems is front and center to research being done by Dr. Karin Rodland and her colleagues at the Precision Medicine Innovation Co-Laboratory, or PMedIC, where Karin is the co-director. This is a joint research collaboration of PNNL and the Oregon Health & Science University (OHSU).

"We [PNNL] are bringing new analytical technologies to the medical teams and clinical studies at OHSU. These technologies can identify thousands of proteins in the human body, including those given off by cancer cells. Using this information, we're working to identify patterns that can be used as early warning signals for the start of tumor formation." This work may also shed light on the important question, why do some tumors become resistant to drugs and others don't? Such studies would have been impossible not long ago, and can only be done now using instrumentation developed over the years through support of Department of Energy's Biological and Environmental research program.

"Cancer research is very much a multi-team, multi-agency effort" Karin said. The National Institute of Health is supporting work by Dr. Richard D. Smith and his team in the Lab's Biological Sciences Division to quickly characterize the tens of thousands of different proteins that govern cell processes. Another PNNL team being led by Dr. Steve Wiley of the Environmental Molecular Sciences Laboratory (EMSL) is investigating how information gets from outside of a cell to the cell nucleus where genes are turned on and off. This switching, in turn, plays a key role in determining if a cell will become cancerous or not.

Where research is taking us

Our understanding of cancer has come a long way since alligators and other animals were irradiated at Hanford. Many traditional cancer therapies are still based on statistical results from clinical studies that had characterized the cancer by where it was first found (e.g., the liver, the brain, etc.). Today, molecular markers are seeing increased use in characterizing cancers with the result that more targeted therapies are available. And yet more progress is expected as scientists and clinicians learn to use early warning signs of specific genetic mutations to guide treatments.

The research being done at PNNL in conjunction with other institutions is pointing to a future where readily available precision medicine makes use of the patient's own biochemistry and genetics to determine the most effective therapy. New knowledge about treatments is coming fast. Recognizing that it can be difficult to follow all these developments, Karin suggests interested persons check out the peer reviewed information on the websites of the American Association for Cancer Research (www.aacr.org), the National Cancer Institute (www.cancer.gov) and the American Cancer Society (www.cancer.org).

Where will this progress in understanding cancer take us? Karin expects that in the next five years, therapies customized to individual patients will start to be available in health centers around the country. And 10 years down the road, she sees cancer being treated as a chronic disease, like diabetes or asthma, with standard treatment plans that let patients have a life like those who are cancer free.

It's estimated that every year we have 150,000 fewer deaths from cancer in the U.S. than occurred during an average year in the 1980s. And there's every reason to think these numbers will continue to decrease as a result of scientific contributions being made here in the Tri-Cities.



CLINICAL TRIALS: Building Better Health Outcomes

By: Joan Stewart, RT(T), BA HCA Clinical Services Project Coordinator, TCCC

If you or a loved one are faced with a cancer diagnosis you want the best care possible whether it's a simple skin lesion or a life-threatening brain tumor. The question for the physician is what is the best care or course of treatment for this cancer type and your overall condition? At these moments, and in today's ever changing oncology environment, physicians rely on guidelines developed by good clinical evidence. We call this evidence-based medicine and it assures your care is based on solid research and results.

Good clinical evidence is developed by medical research that involves people like you. It might be a review of years of medical evidence gathered by a long running epidemiology study like the Nurse's Study (www.nurseshealthstudy.org). Or it could be the result of a clinical trial created to test a promising treatment that has come from work in a lab such as that at PNNL.

Clinical trials are the process used to compare a new drug or treatment element to an existing 'best care' treatment guideline. For example: If drug A after surgery has shown the best results to date, what would happen if we added new Drug B to the program? Would we add Drug B before surgery or after surgery in combination with Drug A? The clinical investigators must define the trial to compare the new drug or treatment without eliminating the current best care scenario. If it offers better health, either short term or long term, without significant harm it can be added to the guidelines. Thus clinical trials evaluate the effects of a new intervention on health outcomes.

You may never be faced with the decision to participate in a clinical trial. If you should, we would like you to carefully consider the risks and possible benefits. There are always many measures in place to protect the safety of people who take part in clinical trials. Participants are closely observed for safety concerns and side effects throughout the study. Participants always have the right to withdraw their participation at any time. Should you or your loved one participate in a clinical trial?

Let's look at the potential benefits:

- You may help others by contributing to knowledge about new drugs, treatments or procedures.
- You may gain access to new drugs, treatments or procedures before they are widely available.
- You will receive regular and careful medical attention from a team of doctors and other health care professionals.

Now the possible drawbacks:

- There may be unexpected, unpleasant and/or serious side effects from the experimental elements.
- The new experimental element may or may not be better than the standard of care.
- Clinical trials often require more time and attention than the standard treatment would.

Your Tri-Cities Cancer Center partners with the Seattle Cancer Care Alliance and the Fred Hutchison Cancer Research Center to offer the citizens in our community a variety of clinical trials. Please check our website for a listing of trials currently enrolling.

References:

www.cancer.gov/research/areas/clinical-trials
www.seattlecca.org/clinical-trials



WHEN YOU NEED A WARM FUZZY

Your Tri-Cities Cancer Center has started Pet Therapy as a respite from cancer care!

A chemo patient, Cheryl, enjoys a moment with Murphy, a charming 'goldendoodle'.

Dogs certified for pet therapy through agencies such as Pet Partners or Love on a Leash are welcome to join us through our volunteer program.

For more information contact Benita Nyberg, Volunteer Coordinator at (509) 737-3434 or benitan@tccancer.org or Joan Stewart, Education Coordinator at (509) 737-3450 or joans@tccancer.org.



HPV VACCINE protects your child from cancer.



1 IN 4 AMERICANS HAVE HPV.




Most don't know they have HPV. **HPV** causes certain cancers. causes genital warts.

14 MILLION are newly infected each year.

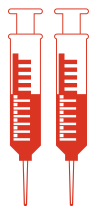
HPV VACCINE PREVENTS SIX TYPES

of cancer including cervical, mouth, throat, anal, and other cancers that risk health and life.

Yearly in the U.S., about **30,800** cases of cancer are caused by HPV.

The HPV VACCINE  IS SAFE AND EFFECTIVE. PROTECTION LASTS THROUGH adolescence and young adulthood.

Children should get vaccines while their immune systems are developing.



Children **ages 11 and 12** should have the vaccine. **This is when their immune system has the best response.** Most children who get the vaccine on time will only need two doses. **Children should be protected BEFORE they are exposed to HPV.**



If they wait until the **age of 15**, they will need **three doses.**

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Visit us online at tccancer.org/womanup for more information on the HPV Vaccine.



OUR COMMUNITY CARES!

Visit the Tri-Cities Cancer Center Foundation office or call (509) 737-3413 for more information on this event.

Play For A Cure

Golf, Bridge, Tennis, & Bunco Bash
Thursday, July 19th, 2018 at Meadow Springs Country Club

Thanks so much to the Meadow Springs Country Club for hosting Play for a Cure another year in support of the Tri-Cities Cancer Center! The event is currently sold out, but tickets for their Super Raffle are still available for \$20! You do not need to be present to win.

You can enter to win a number of prizes including; a Sapphire and Diamond Necklace (\$1,000 value), a Personal Spa and Auto Spa Package (\$500 value), or a Stock the Bar Package (\$1,000 value)!

Come purchase your tickets in the TCCC Foundation Office or call (509) 737-3413 for more information! All proceeds benefit the Tri-Cities Cancer Center's Breast and Cervical Screening programs. Hope to see you there!



2018 HAPO Golf Classic Supporting the Tri-Cities Cancer Center

We would be honored to have you as a Sponsor!

Team sponsorships and tee & green opportunities available!

Friday, August 17, 2018 - 1 p.m. Shotgun - Canyon Lakes Golf Course



For more details:
Contact the Foundation
office at (509) 737-3373
or
Lori Lott
Special Events Coordinator
lori@tccancer.org
www.tccancer.org



Supporting Tri-Cities Cancer Center

SERVING OUR COMMUNITY

Founded in 1994 as the radiation oncology service of Kadlec, Lourdes Health and Trios Health, the Tri-Cities Cancer Center has grown to be the community's leader in cancer prevention, early detection, world-class treatment and survivorship.

Our mission is to provide the best cancer care for patients by working with key specialists, our owner hospitals, volunteers and our community. We are the regional provider of comprehensive cancer solutions. We are your Tri-Cities Cancer Center.

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FEATURED JULY EVENTS

RSVP for presentations by calling **(509) 737-3427** or visit tccancer.org. Presentations offered at no cost unless otherwise stated.

Gentle Yoga

Speaker: Teena Giulio, Unity Yoga

Date: Tuesday, July 10th, 10:00 a.m. - 11:00 a.m.

Yoga is known for its health and wellness benefits. Join us for a gentle, introductory yoga that can improve posture, stretch your body and relieve tension. At this class you will learn sitting yoga flow and yoga from a stance using a chair for stability. Whether you are a cancer patient, survivor or caregiver, we would like you to try yoga and explore how it can benefit you!

Please call (509) 737-3427 for more information. Reservations are not necessary.

Brain Tumor Support Group

Facilitator: Margaret Ley, Chaplain, Tri-Cities Cancer Center

Date: Thursday, July 19th, 10:00 a.m. - 11:30 a.m.

Brain Tumor Support Group meets monthly, the third Thursday of each month at 10:00 am at the Tri-Cities Cancer Center. This group is open to patients and caregivers seeking support, and willing to share ideas and information about surviving and thriving with brain tumors during and after treatment. **Please call (509) 737-3427 for more information. Reservations are not necessary.**

Quit Tobacco

Facilitator: Joan Stewart, Clinical Services Project Coordinator, Tri-Cities Cancer Center

Date: Thursday, July 19th, 2:30 p.m. - 4:00 p.m.

This program will help you identify triggers, come up with ways to beat them, and discuss the use of stress reduction and nicotine replacement therapy. First time participants will be offered the choice of nicotine replacement patches, nicotine gum or lozenges. **Please call (509) 737-3427 to RSVP. May register up until the day of the class.**

Presentation: Resetting Your Dynamic - Getting Mobile After Treatment

Speaker: Andy Hay, PTA, CKTP, Oasis Physical Therapy

Date: Thursday, July 26th, 4:00 p.m. - 5:00 p.m.

The treatments used to battle cancer can in themselves inflict some disruption on our movement and motivation. Join us for education aimed at those recovering from some of the physical side effects of cancer treatment: stiffness, neuropathy, inflammation, mobility issues and loss of energy. Patients, survivors, and caregivers may all find useful information on how physical therapy can minimize pesky lingering side effects of surgery, chemotherapy and radiation. This event is free and open to the public. **Please call (509) 737-3427 to RSVP by July 23rd.**

COME AND BE A PART OF OUR CANCER CRUSHING VOLUNTEER TEAM!

At the Tri-Cities Cancer Center, our volunteers are an integral part of the services we provide. From welcoming patients to the building to serving in the Resource Center, Ralph R. Peterson Library or other areas of the Center, visitors and staff alike appreciate their friendly faces.

Volunteer opportunities available! For more information please contact Babe Nyberg at 509-737-3434 or email benitan@tccancer.org.



JULY 2018 CALENDAR OF EVENTS

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5 CANCER SUPPORT GROUP ^{VCR} 10:00AM - 11:30AM	6 BREAST CANCER SUPPORT GROUP ^{FS} 9:00AM - 11:00AM	7
8	9 WOMEN'S GUILD MONTHLY MEETING ^{WC} 9:30AM - 11:00AM	10 MEN'S CLUB MONTHLY MEETING ^{WC} 7:30AM - 8:30AM GENTLE YOGA ^{WC} 10:00AM - 11:00AM	11 WARRIOR SISTERHOOD CALL (509) 302-1151 FOR LOCATION 5:30PM - 7:00PM	12	13	14
15 Would you like a tour of the Tri-Cities Cancer Center? Call (509) 737-3413 to reserve a time.	16	17 ASK A PHARMACIST ^{FS & RR} 4:00PM - 5:00PM	18 LOOK GOOD... FEEL BETTER [®] ^{VCR} (PRE-REGISTRATION REQUIRED) 1:00PM - 3:00PM	19 BRAIN TUMOR SUPPORT GROUP ^{VCR} 10:00AM - 11:30AM QUIT TOBACCO ^{VCR & RR} 2:30PM - 4:00PM	20 BREAST CANCER SUPPORT GROUP ^{FS} 9:00AM - 11:00AM	21
22 EVENT INFORMATION KEY All classes offered free of charge at the Tri-Cities Cancer Center unless otherwise noted. WC - Wellness Center RR - Reservations Required RC - Resource Center FS - Fireside Room LIB - Library ACR - Admin Conference Room VCR - Volunteer Conference Room	23	24	25 ART EXPRESSIONS ^{VCR & RR - \$5 FEE} 3:00PM - 4:30PM	26 MINDFULNESS MEDITATION FOR HEALTH AND WELLNESS ^{VCR} 12:00PM - 1:00PM PRESENTATION: RESETTING YOUR DYNAMIC - GETTING MOBILE AFTER TREATMENT ^{VCR} 4:00PM - 5:00PM LYMPHOMA-LEUKEMIA MULTI-MYELOMA SUPPORT GROUP ^{VCR} 3:30PM - 4:30PM PROSTATE CANCER SUPPORT GROUP ^{VCR} 5:30PM - 7:00PM	27	28
29	30	31	Reservations can be made by calling (509) 737-3427 or visiting online at TCCancer.org		Be sure to keep updated on future events and presentations by visiting our online calendar at TCCancer.org	