

Prevention Matters

| FOX CHASE CANCER CENTER RISK ASSESSMENT PROGRAM PUBLICATION | SPRING/SUMMER 2023

A Clinical Trial of a Vaccine to Prevent Cancer in People with Lynch Syndrome Is Happening at Fox Chase

The past few decades have seen remarkable progress in cancer treatment through the rapid development of genetic testing and immunotherapy, which uses genetic and other information to train the body's immune system to destroy cancer cells.

The first investigational vaccine that boosts the immune system to protect high-risk patients against future hereditary cancers is being tested at Fox Chase Cancer Center.

"If you can, perhaps, identify patients with a genetic propensity for cancer, and vaccinate them early in life, even if that cuts down their chance of cancer by 50 percent, that's a huge difference in their quality of life and in savings for society," says Dr. Michael Hall, who is leading the Fox Chase trial.

The vaccine is being studied to see if it can protect those with a specific genetic condition called Lynch Syndrome, which puts individuals at risk for developing cancer at some point in their adulthood. The early-phase Ib/II clinical trial is the first step to learn if it can prevent these people from developing colorectal cancer later in life.

"Lynch Syndrome is one of the most common hereditary causes of colon cancer," Hall explains. "It affects about one in 300 people, but frustratingly it's often only with a cancer diagnosis that people get tested, which misses the chance to prevent that cancer."

The development of the vaccine represents a crucial step in the rapid progress made in combatting Lynch Syndrome. Recently, immunotherapy and genetic testing have been revolutionary for Lynch Syndrome. Hall became interested in Lynch Syndrome in the early 2000s when genetics in cancer treatment wasn't a priority of the medical community. With the development of genetic testing, Lynch Syndrome became a critical instance where someone's genes could reveal that they were at risk for cancer later in life. And fortunately, the tumors that form in people with Lynch Syndrome can be treated successfully with immunotherapy, making it the prototypical case for using genetics to combat cancer. In one pivotal study,



Michael J. Hall, MD, MS, Principal Investigator at Fox Chase

patients with rectal cancer due to Lynch Syndrome were given immunotherapy rather than surgery, and the results were incredible.

The vaccine works similarly to many other vaccines you've probably received but takes advantage of decades of genetic testing advancements. For example, cancer cells in patients with Lynch Syndrome regularly create something called frameshift peptides—a mistake protein that Hall compares to a failed piece of writing that the body crumples up and throws away. The vaccine trains the immune system's T cells to recognize those frameshift peptides and generate an early immune response to them, allowing the body to eliminate the Lynch Syndrome tumors as soon as they develop. In laboratory studies, frameshift vaccines have already had success in shrinking and preventing new tumors in Lynch Syndrome model mice.

"The idea is if we can super boost the immune system to recognize these peptide products early, we can quash the formation of tumors early in these patients," Hall says. "For a population like this who face very high risks of cancer and lifelong screenings, we may be able to intercept cancers before they develop."

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If this vaccine trial is successful, the significance could extend beyond those with Lynch Syndrome. Certain cancers that cause similar changes in tumors could benefit from similar vaccines or related technologies. Still, more importantly, according to Hall, a successful vaccine trial would demonstrate that preventive treatment could be effective for other genetics-driven cancers, such as those derived from BRCA1/2 mutations and other high-risk genes.

Fox Chase Cancer Center is one of four institutions participating in this clinical trial, along with MD Anderson Cancer Center, City of Hope Cancer Center, and University of Puerto Rico.

This is a small, early phase clinical trial that will enroll only about 45 people meeting eligibility criteria in conjunction with a timely scheduled standard of care annual screening colonoscopy.

Due to a limited number of vaccines, we won't be able to guarantee the vaccine to all those who are interested. We will update you about the progress of this clinical trial in our newsletter.

Alternative prevention clinical trial: "Impact of Atorvastatin ± Aspirin on Colorectal Biomarkers in Patients with Lynch Syndrome"

We are still enrolling individuals with Lynch syndrome in the prevention clinical trial that investigates use of aspirin and atorvastatin to prevent colorectal cancer in Lynch syndrome.

We are looking for a few more healthy volunteers with no history of pre-cancerous colon polyps or colorectal cancer, and upcoming colonoscopy to complete this clinical trial.

In you are interested in this research opportunity, please call 215-214-3216.



High-Risk Breast Cancer Clinic Update

Fox Chase Cancer Center welcomed Dr. Austin Williams on 9/1/2022 as an Assistant Professor in the Breast Cancer Program of the Department of Surgical Oncology. Dr. Williams earned his undergraduate degree in biochemistry and molecular biology from Franklin & Marshall College and holds a Master's of Science in Education from the University of Pennsylvania. He received his medical degree from Drexel University College of Medicine in 2013.

He was a breast surgery oncology fellow at Memorial Sloan Kettering Cancer Center. He also completed a general surgery residency at Lankenau Medical Center, where he served as Administrative Chief Resident. In addition, he completed a postdoctoral research fellowship at the University of Pennsylvania, where he focused on breast surgical oncology.

His treatment focus includes breast cancer surgery, high-risk patients and risk-reducing surgery, male breast cancer, LGBTQ+ health, and breast cancer clinical trials. Given his clinical and research interest in the high-risk population, Dr. Williams opened a monthly high-risk breast clinic in conjunction with the Department of Clinical Genetics in March of 2023. We value his expertise and perspective in this setting. Please direct all high-risk breast clinic appointment inquiries for Dr. Williams or any of our Advanced Practice Providers: Kathleen Henderson, Devora Schapiro, Kathryn Tumelty, to Vershana Brown, Intake Coordinator, of the Department of Clinical Genetics at 215-728-4765.



Meet a new genetic counselor: Corrine Zrada, MS, LCGC

I am very excited to join Fox Chase's Risk Assessment Program as the newest genetic counselor. I grew up in Moorestown, New Jersey and completed a Bachelor of Science in Health Science at the University of Miami. I returned back to the Philadelphia area and obtained a Master's in Genetic Counseling from the University of Pennsylvania. During my graduate training, I had the opportunity to rotate at Fox Chase. It was a wonderful experience and I feel extremely fortunate to come full circle and now be a part of the team. I look forward to bringing my dedication, excitement, and desire to learn and grow to the Risk Assessment Program at Fox Chase Cancer Center.



Research news from BCFR

The Breast Cancer Family Registry (BCFR) is an international resource of multi-generational families, data, and biospecimens established for collaborative research on breast cancer, which is available to the entire scientific community. Over 40,000 women and men from nearly 15,000 families have generously contributed questionnaire data, clinical data and/or biospecimens. Over 150 individual investigators have used the BCFR resources since its inception in 1995, generating over 600 scientific publications.

Mary Daly, MD, PhD, FACP is a principal investigator of BCFR at Fox Chase Cancer Center, and co-author of the article.



Maternal and prenatal factors and age at thelarche (breast development) in the LEGACY Girls Study cohort: implications for breast cancer risk

The average age of breast development (thelarche) has declined rapidly over the past 50 years. This is a concern because earlier breast development has been linked with higher breast cancer risk. Although rising rates of obesity in girls may be contributing to earlier ages of breast development, evidence suggests that other factors may also be involved. Identifying modifiable risk factors (risk factors that people may be able to change) is an important part of breast cancer risk reduction efforts.

A new study published in International Journal of Epidemiology examined mothers' weight and exercise during pregnancy as possible modifiable risk factors for early breast development. This study of 1031 girls investigated the impact of mothers' pre-pregnancy body mass index (BMI), physical inactivity, and weight gain during pregnancy on their young daughters' age at breast

development in the Lessons in Epidemiology and Genetics of Adult Cancer from Youth (LEGACY) Girls Study. Results showed that girls whose mothers were overweight or obese before pregnancy and gained 30 pounds or more during pregnancy were 57% more likely to have earlier breast development than girls whose mothers were not overweight or obese and gained less than 30 pounds during pregnancy. Also, daughters of women who reported no recreational physical activity during pregnancy were more likely to have earlier breast development than daughters of physically active women. This study highlights that modifiable factors in women as early as pre-pregnancy can impact physical development in their daughters. Moving forward, there is an opportunity for breast cancer risk reduction efforts starting earlier in life.

Read full article: <https://pubmed.ncbi.nlm.nih.gov/35613015/>

How mutations in APC and MUTYH genes may affect development of colorectal cancer

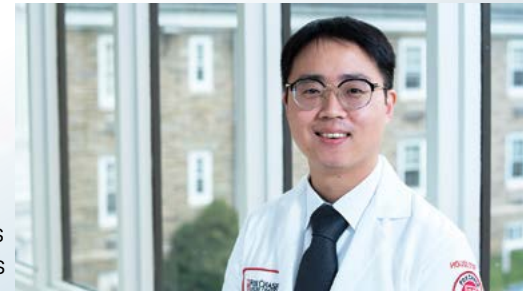
Dong "Jake" Kim, MD, a second-year hematology/oncology fellow at Fox Chase Cancer Center, recently presented new findings of his research: "Characterizing Colorectal Cancer (CRC) Carriers of the Recessive MUTYH Founders (G396D/Y179C) and the Low-Penetrance APC Founder APC-I1307K Mutation", at the ASCO Gastrointestinal Cancers Symposium in January 2023.

Kim investigated how specific mutations may or may not affect the development of colorectal cancer. He conducted the research as part of his hematology/oncology fellowship under the direction of Michael Hall, MD, MS, chair of the Department of Clinical Genetics at Fox Chase.

"There are certain genetic mutations that we are concerned about and believe may lead to a predisposition to cancer. There are two very common ones in the genes called MUTYH and APC, so when we see these mutations, it is unclear what to do with them," said Kim. He added that because data has been limited or mixed on the effects of these mutations in the development of colorectal cancer it has been difficult to develop specialized screening recommendations. To investigate this, Kim and colleagues conducted a retrospective review of over 13,000 patient samples submitted for next-generation sequencing of DNA and RNA.

"One of the things we tried to do is look at patients with these mutations who also had colorectal cancer and find out whether their

colorectal cancer looked different in some way from those without the mutations. The idea is that if it does look different, it points to the fact that patients with these mutations who haven't developed cancer yet may be at higher risk," he said.



The study concluded that the status of the original carrier of MUTYH and APC may positively impact the course of disease in patients with these mutations and colorectal cancer. Kim said further investigation into these biomarkers is warranted.

Dr. Kim received a 2023 Conquer Cancer Merit Award from the American Society of Clinical Oncology (ASCO) for this high-quality abstract submitted at an ASCO meeting.

For more information: https://ascopubs.org/doi/abs/10.1200/JCO.2023.41.4_suppl.210

RESEARCH OPPORTUNITY



ASIAN PATIENTS DIAGNOSED WITH CANCER NEEDED FOR PERSONAL INTERVIEW

Dr. Michael Hall of Fox Chase Cancer Center and Dr. Sarah Bass of the Temple University School of Public Health invite you to participate in research study

Study Purpose:

The goal of the study is to examine beliefs and perceptions of genetic risk and medical mistrust among patients from different racial and ethnic groups.

Who May Join:

Cancer patients who identify themselves as Asians and are treated at:

- Fox Chase Cancer Center or
- Temple University Hospital



Study Requirements:

Participate in 1-hour personal interview either in-person or virtually and complete a brief demographic survey

- **Previous topic knowledge is not necessary**
- **Participation is confidential**
- **A \$50 gift card is offered upon completion of interview**

PLEASE CONTACT:

Yana Chertock, study coordinator at Fox Chase Cancer Center
Tel: 215- 214-3216 email: yana.chertock@fcc.edu

May is Skin Cancer Awareness Month

Simple Advice from Hugh Jackman: WEAR SUNSCREEN

In April 2023, Jackman posted an Instagram video after having two new biopsies on lesions that his dermatologist identified as potential a Basal cell carcinoma (BCC) which came back negative. BCC is the most common form of skin cancer. In the video, he urged fans to use sun protection.

"If I can just take this opportunity to remind you, summer is coming for those of us in the northern hemisphere, please wear sunscreen. It is just not worth it, no matter how much you want a tan, trust me, trust me, trust me. This is all stuff that happened 25 years ago, it's coming out now. Put some sunscreen on. You'll still have an incredible time out there. Please be safe," Jackman said.

Jackman is strongly committed to raising awareness by using social media to discuss his skin cancer history. Jackman wrote in the caption alongside his video: "I know you've heard me talk about my basal cell carcinomas before. I'm going to keep talking about them if need be. And if it reminds even one person to put on sunscreen with a high SPF, then I'm happy."



American Cancer Society Releases New Colorectal Cancer Statistics: Rapid Shifts to Younger People and More Advanced Disease

Colorectal cancer (CRC) is the third most commonly diagnosed cancer and the third most common cause of cancer-related death in both men and women in the United States. Overall, in 2023, an estimated 153,020 people will be diagnosed with CRC in the U.S., and 52,550 people will die from the disease, including 19,550 cases and 3750 deaths in individuals younger than 50 years.

Every 3 years, the American Cancer Society publishes an update of colorectal cancer statistics based on incidence from population-based cancer registries and mortality from the National Center for Health Statistics. For this report, researchers used cancer incident data available through 2019 and national mortality data available through 2020.

According to a new report published in March 2023 in *CA: A Cancer Journal for Clinicians*, colorectal cancer is swiftly shifting to younger individuals and more advanced disease.

Diagnoses of people under 55 years of age doubled from 11% (1 in 10) in 1995 to 20% (1 in 5) in 2019. Early onset CRC incidence rose in every racial and ethnic group in the United States in the past decade. In addition, the proportion of individuals in the United States diagnosed with advanced-stage colorectal cancer increased from 52% in the mid-2000s to 60% in 2019 despite increased screening. The higher prevalence of advanced disease in younger versus older patients is only partly explained by screening.

A study of symptomatic patients found that individuals younger than 50 have longer time to diagnosis, including both longer duration of symptoms and work-up time, often because of misdiagnosis with more common conditions.

These alarming trends should motivate everyone 45 and older to get screened.

In 2018, the American Cancer Society lowered the recommended age to begin screening in average-risk individuals from 50 to 45 years based on evidence of increasing risk at younger ages as well as showing greater benefit of screening than harm.

Other key findings from the report include:

- CRC incidence declined rapidly in people 50 and older during the 2000s, largely because of increased screening with colonoscopy. However, this progress has slowed over the past decade with decreasing trends now confined to people 65 and older.
- Diagnosis of CRC was 33% higher in men (41.5 per 100,000) than in women (31.2 per 100,000) during 2015-2019, likely attributing to differences in risk factors, such as excess body weight, processed meat consumption, and historical smoking.
- Colorectal cancer is highest in people who are Alaska Native (88.5 per 100,000), American Indian (46.0 per 100,000), or Black (41.7 per 100,000; versus 35.7 per 100,000 in Whites); similar to mortality rates which are highest in people who are Alaska Native (50.5 per 100,000),



American Indian (17.5 per 100,000), or Black (17.6 per 100,000; versus 13.1 per 100,000 in Whites).

- Screening is lowest among ages 45-49 years, Asian Americans, individuals with less than a high school education, the uninsured, and recent immigrants.
- Shift from the right side of the colon to the left side, and an increase in the proportion of cancers located in the rectum, increasing from 27% in 1995 to 31% in 2019. The reasons for these shifts in the location of colon cancers are not known.
- Patients have begun living longer with advanced disease in recent years because of advances in treatment and development of targeted therapies. However, survival among Black patients remained low, likely caused by unequal access to these advances. Black patients are less likely to be represented in clinical trials and to receive the molecular tumor profiling necessary for the use of targeted therapies to fight cancer.

Read full article:

<https://acsjournals.onlinelibrary.wiley.com/doi/full/10.3322/caac.21772>





Prostate Risk Assessment Program (PRAP) UPDATE

The PRAP program in the Department of Clinical Genetics is a research and clinical program for men at high risk of developing prostate cancer. Our program combines a clinical examination, as well as research opportunities for men ages 35-69.

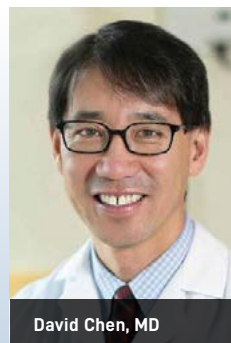
Recently, our team has changed. Dr. Michael Hall is new to our PRAP program replacing Dr. Elias Obeid. Dr. David Chen, MD is still working with our PRAP team. In addition, Lisa Bealin, research coordinator, accepted a new position at Fox Chase and will no longer be working with the PRAP team. New to our program is Maria Kadlec, BSN, RN and Vershana Brown. Maria will be your contact for clinical matters, such as PSA, MRI, and mammogram results. Vershana will be your contact person for scheduling your clinic visit, your mammogram and blood work.

Our team is happy to assist you.
Our PRAP phone number will remain
the same 215-728-2406.

The NCCN Guidelines for Prostate Cancer Early Detection recommend that men with Lynch syndrome can consider annual prostate cancer screening starting at age 40.



Michael J. Hall, MD, MS



David Chen, MD



Maria Kadlec, BSN, RN

Prostate Supplements: PROS vs CONS

Multivitamin/mineral supplements

Eat whole fruits and vegetables to ensure you're getting all the vitamins you need. Fruits and vegetables also contain phytochemicals (compounds found in plants) and fiber not found in vitamin pills.

Flaxseed

Flaxseed has been shown to help reduce the growth and spread of prostate cancer and is a good source of omega-3 fatty acids and fiber. Flaxseed oil does not have the same benefit as ground flaxseed.

Folate

A study found that taking folic acid supplements can more than double your risk of developing prostate cancer. However, adding folate (400 micrograms) in your diet can slightly lower your risk for prostate cancer. Eat folate rich foods such as legumes, green leafy vegetables, asparagus, avocado and nuts.

Green tea

Green tea is unlikely to reduce the risk of prostate cancer, but it continues to be researched.

Vitamin E + Selenium

Selenium and vitamin E are antioxidants studied in the Selenium and Vitamin E Cancer Prevention Trial (SELECT). The study found that selenium and vitamin E supplements, didn't prevent prostate cancer. Taking vitamin E alone had a small increase in their risk of developing prostate cancer.

Saw Palmetto

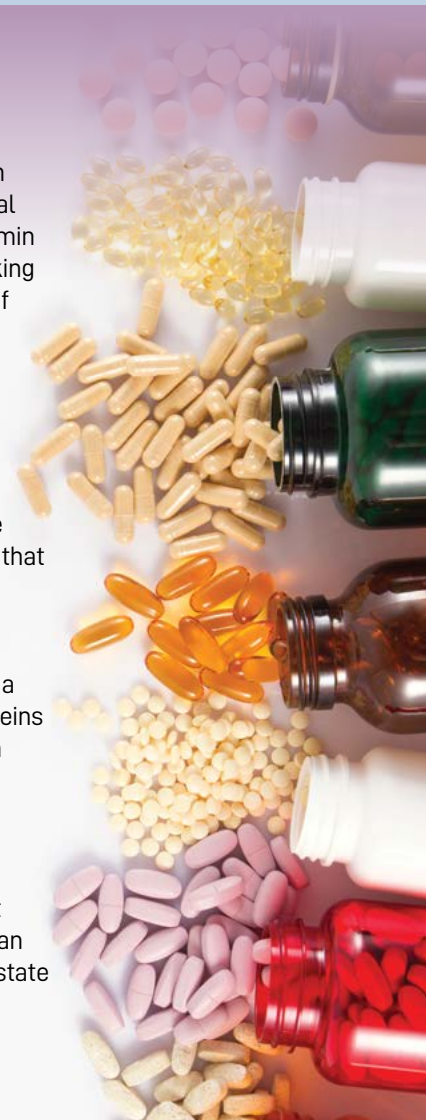
Some studies indicate that saw palmetto has the potential for limiting prostate gland enlargement and easing urine flow. Researchers also found the supplement to be safe to use, with no real adverse effects, however, there are limitations on the data that suggest a benefit.

Soy

Soy products make a good addition to your diet as a replacement for foods that are high in animal proteins and saturated fat. Soy products should be eaten in moderation.

Zinc

Zinc is needed for normal cell functioning, nerve signaling, and for the body to protect itself against infection. Studies have shown that taking more than 100 mg of zinc daily may increase your risk for prostate cancer, so it should be taken in moderation.



Clinical Nutrition Services at Fox Chase

Fox Chase offers free outpatient nutrition services to all Fox Chase patients. Through the Office for Clinical Nutrition, the Center's team of registered dietitians provides counseling, education, meal planning, and more, including:

- Pre-treatment nutrition advice and monitoring
- Inpatient and outpatient nutrition evaluations, counseling, and recommendations
- Support through treatment-related side effects, including appetite loss and weight loss
- Specialized nutrition assessment and evaluation for feeding tubes (enteral feeding) or intravenous (parenteral feeding)
- Outpatient counseling for nutrition concerns and questions



Patients can be seen via telehealth appointment or in person. Please ask your medical team to make a referral to the nutrition services at Fox Chase.

Citrus Quinoa Avocado Salad

This colorful quinoa salad is full of vibrant flavors with the addition of zesty lemons and fresh cilantro. It is also rich in cancer-fighting foods including omega-3-rich avocados combined with fiber-rich quinoa, chickpeas and fresh vegetables. The dish is plant-based, but hearty and filling enough to be a satisfying meal for everyone.

Ingredients:

- 1/2 cup cucumber, diced
- 1 cup cherry tomatoes, cut in half
- 2 small cloves garlic, minced
- 1/4 cup red onion, chopped
- 1 bunch cilantro
- 2 cups spinach, thinly sliced
- 1 15.5 oz can no salt added garbanzo beans (drained and rinsed)
- 1 cup cooked and cooled quinoa
- 2 medium avocados, diced

For the Dressing:

- Juice of 2 lemons
- Zest of 1 lemon
- 2 tsp. Dijon mustard
- 1 Tbsp. olive oil
- 1 tsp. honey
- 1/2 tsp. ground cumin
- Dash of cayenne pepper (optional)
- Salt and pepper, to taste

Directions:

1. Place all salad ingredients in a bowl.
2. Whisk all dressing ingredients together in a separate bowl.
3. Drizzle dressing over salad mixture and gently toss ingredients together until dressing is incorporated throughout

Makes 4 servings. Per serving: 390 calories, 20 g total fat (3 g saturated fat, 0 g trans fat), 0 mg cholesterol, 43 g carbohydrates, 11 g protein, 13 g dietary fiber, 110 mg sodium, 6 g sugar, 1 g added sugar.

For more healthy recipes visit: <https://www.aicr.org/cancer-prevention/recipes/>

Nutrition Facts	
servings per container	
Serving size	(365g)
Amount per serving	
Calories	390
% Daily Value*	
Total Fat 20g	26%
Saturated Fat 3g	15%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 110mg	5%
Total Carbohydrate 43g	16%
Dietary Fiber 13g	46%
Total Sugars 6g	
Includes 1g Added Sugars	2%
Protein 11g	
Vitamin D 0mcg	0%
Calcium 96mg	8%
Iron 3mg	15%
Potassium 922mg	20%

*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.



Prevention Matters

The Department of Clinical Genetics offers one of the most comprehensive risk assessment programs in the Philadelphia region. It encompasses all of Fox Chase Cancer Center's clinical services for people at risk for cancer, as well as innovative research in the areas of cancer prevention and genetics.

CONTACT THE RISK ASSESSMENT PROGRAM:

1-877-627-9684 | foxchase.org/rap | rapinfo@fccc.edu

Mary Daly, MD, PhD

Director, Risk Assessment Program

Michael Hall, MD, MS

Chair, Department of Clinical Genetics

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Risk Assessment Program
FoxChase.org/RAP



CALENDAR OF EVENTS:

Living Beyond Breast Cancer - Survivorship Series for Young Women

Stay Alert: Managing the Long-Term Side Effects of Breast Cancer Treatment

Virtual Event

Date & Time: Tuesday, June 06, 2023 7:00 pm to 08:00 pm

Registration:

<https://www.foxchase.org/events>

REC Education Series: Understanding Skin Cancer

Virtual Event

Date & Time: Tuesday, June 13, 2023 from 12:00PM to 1:00PM

This session will discuss skin cancer prevention, screening, and treatment options. For more information, please call 215-214-1618 or email: RECstaff@fccc.edu

Paws for the Cause 2023

In-Person Event

Date & Time: Sunday, September 10, 2023

09:00 am to 12:00 pm

Location: Fox Chase Cancer Center
333 Cottman Ave, Philadelphia, PA 19111

Register: <https://www.foxchase.org/events/paws-cause-2023>



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Risk Assessment Program

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