

# children's cancer hospital

## NEWSLETTER

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FROM THE DIVISION OF PEDIATRICS AT THE UNIVERSITY OF TEXAS M. D. ANDERSON CANCER CENTER ••••• WINTER • 2010

Children's Cancer Hospital  
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## Optimizing Nutrition in Pediatric Cancer Patients and Survivors:

### the **ON to Life Program**

at the Children's Cancer Hospital at M. D. Anderson •••••

**T**he Optimizing Nutrition (ON) to Life Program is a multidisciplinary program in the Children's Cancer Hospital at M. D. Anderson, which will instill and promote healthy eating habits in pediatric patients and survivors by combining unique features of the Children's Cancer Hospital. These features include our outstanding education program with its on-site school, collaborations with the Department of



Joya Chandra, Ph.D.  
and Claudia Miller, Ph.D.

Behavioral Science at M. D. Anderson and innovative laboratory research to establish potentially prognostic biomarkers indicative of good nutrition.

For children enduring cancer therapy, nausea, vomiting and oral infections from chemotherapy and suppressed immune systems often make eating difficult and food unappealing. Consequently, many of these patients do not ingest calories commensurate with their age and weight during treatment for their tumors.

Studies show that children who do not take in adequate calories have a lower rate of response to the anti-tumor regimen. One goal of the ON to Life Program is to better document this observation by conducting calorie counts, tracking weight

• continued on page 2

## ON to Life Program *continued from page 1*

and growth, and by examining biomarkers in the peripheral blood of these patients to identify molecular mediators of response to therapy. By identifying these molecules, strategies to improve outcomes based on nutrition-related changes can be formulated. A portion of this research focuses on infants under the age of 3 who are diagnosed with leukemia, lymphoma or brain tumors, which was recently awarded funding in the form of a pilot project grant from the Gerber Foundation.

Central to the ON to Life Program are the education and behavioral therapy components. As described above, children being treated for their tumors face the nutritional challenge of inadequate caloric consumption. Frequently, parents of these children respond by allowing their children to eat “anything they want,” setting up a pattern of ingrained behaviors, which permit unhealthy eating habits that persist beyond their window of cancer treatment. Consequently, obesity in survivors of childhood cancers is frequently seen. Obesity in this population is especially dangerous in terms of long-term health since anthracycline-based cancer regimens are linked to cardiotoxic late effects in nearly 15 percent of pediatric cancer survivors. This predisposition to heart failure, coupled with obesity, has major implications for quality of life in these survivors.

To combat the origins of the cycle of poor eating habits in pediatric cancer patients, educational and behavioral therapy components of the ON to Life Program are critical. Education of parents and children while these young patients are on treatment regarding kid-friendly healthy and nutritious foods will enable the introduction of better eating habits. Nutrition-based educational programs will be carried out as a major initiative of the ON to Life Program.

The Children’s Cancer Hospital has a very active on-site education program for both inpatients and outpatients with four educators with graduate degrees on staff. Outreach programs to reintroduce patients to their home schools are an important part of the education program and represent an opportunity to carry the nutritional curriculum developed by the Children’s Cancer Hospital into the community. In an effort to measure the outcomes of these nutritional programs, surveys will be developed, feedback from patients and parents will be sought and follow-up through the Children’s Cancer Hospital Survivorship Program will be conducted.

Behavioral interventions to change poor eating habits and introduce better ones are a major focus of the ON to Life Program. Recently, the strengths of the Childhood Cancer Survivors Program were paired with those of experienced investigators in the Department of Behavioral Science at M. D. Anderson, and a survey was sent to childhood cancer survivors of all ages and their parents. The 170 respondents communicated their current eating and exercise habits, gave themselves quality of life scores, and indicated their receptivity to intervention strategies. Based on this data, interventions targeting specific age groups will be designed and implemented. After implementation, the success of these strategies will be assessed using both behavioral and laboratory based tools.

In the survivorship setting, the ON to Life Program will supplement the education and intervention programs with basic science research on biomarkers of good nutritional practices. Compelling data (primarily conducted in survivors of adult cancers such as breast and prostate) indicates that certain chemotherapies actually reprogram metabolism. This suggests that there may be a biochemical component to the obesity observed in cancer survivors. Given the volume of new medicines that can hit specific biochemical targets, we now have the means to consider these new agents as tools with which to minimize the potential obesity-promoting effects of current cancer therapies. Little work has focused on children. Therefore, discoveries related to this population are especially needed.

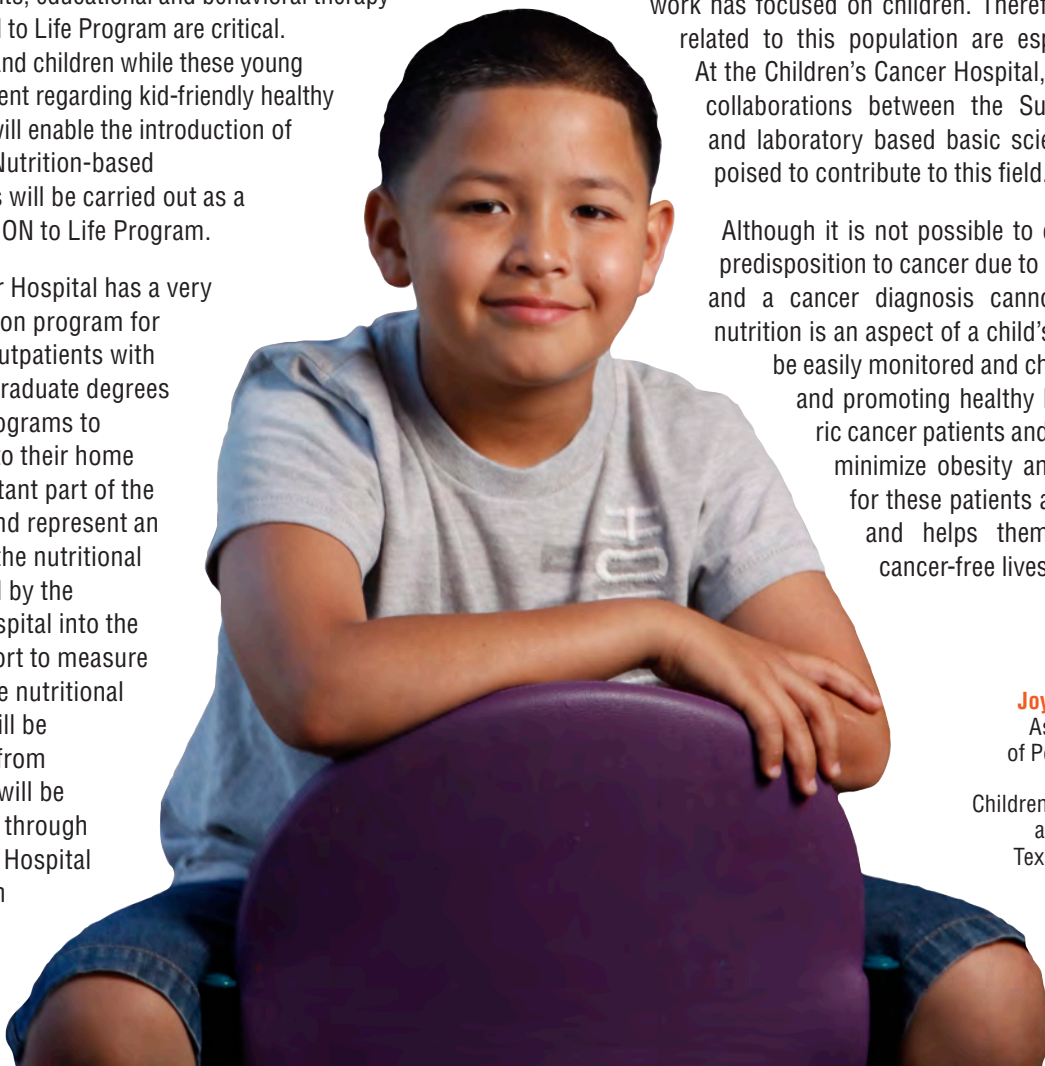
At the Children’s Cancer Hospital, there are active collaborations between the Survivor Program and laboratory based basic scientists, who are poised to contribute to this field.

Although it is not possible to change a child’s predisposition to cancer due to genetic makeup, and a cancer diagnosis cannot be reversed, nutrition is an aspect of a child’s health that can be easily monitored and changed. Instilling and promoting healthy habits in pediatric cancer patients and survivors helps minimize obesity and heart disease for these patients as they grow up, and helps them to enjoy full cancer-free lives.



**Joya Chandra, Ph.D.**  
Associate Professor  
of Pediatrics Research

Children’s Cancer Hospital  
at The University of  
Texas M. D. Anderson  
Cancer Center



# Make 'Healthy' Part of Your Family's Everyday Lifestyle



## Staying Healthy Means Eating Right and Keeping Fit

Most children like hot dogs, chicken fingers and pizza. They also like television and video games. But, with a little effort, you can encourage them to eat healthy and get some exercise. They'll soon learn that fresh fruit and vegetables are delicious, and outdoor games like tag and relays are fun.

At the Children's Cancer Hospital at The University of Texas M. D. Anderson Cancer Center, pediatric patients and their families are taught that healthy eating and exercise help young patients tolerate their treatment – and that a healthy lifestyle can actually be a great way to prevent many types of cancer.

According to the American Cancer Society, the best way to cut your risk of cancer is to achieve and maintain a healthy weight, to be physically active on a regular basis and to make healthy food choices.

### A Healthier Lifestyle

From a very early age, children are usually interested in physical activity, want to have the latest and greatest in athletic equipment and are eager to join sports teams. Physicians and researchers at the Children's Cancer Hospital at M. D. Anderson encourage this activity.

"Kids should become physically active at an early age," says Daniel Hughes, Ph.D., an instructor in M. D. Anderson's Department of Behavioral Science. "Current recommendations suggest that kids ages 6 to 7 should exercise at an intensity high enough to raise their heart rate for at least 60 minutes a day, five days a week."

Hughes explains that because the heart is forced to pump faster during exercise, the immune system works to prevent infections and get rid of factors that may cause cancer. This increased activity also helps tissue absorb important nutrients from food, but most importantly, exercise helps control weight by using extra calories and burning fat.

Exercise together as a family and plan activities such as biking, joining a swim club, giving gifts that encourage activity, trying Wii Fit and simply encouraging one another to get up and move. Hughes counsels parents to set an example for their children by getting off the couch.

Over the past 30 years, Hughes says, obesity has increased and become a serious health concern for children and teenagers. Obesity can lead to cancer because the body can convert fat cells into the hormone estrogen in both men and women. Certain forms of estrogen can increase the chance of cell mutations throughout the body, and cell mutation leads to cancer.

"Damage to the body that causes cancer can potentially start happening early," Hughes says. "As a parent, you need to help your kids develop healthy habits. Teaching them to exercise is a lesson that will last a lifetime. Once your children can walk, they should be up and moving."

"There is an important difference between physical activity and exercise," Hughes says. "Being physically active is important, but in addition to simply walking the dog or going on a class trip, kids need to do moderate to vigorous activities that actually elevate their heart rates."

### A Healthier Menu

In addition to exercise, nutrition is important for children. A healthy diet and exercise keeps little bodies strong. Children should get two servings of fruits and three servings of vegetables every day, according to the United States Department of Agriculture.

Young children usually eat two to three snacks every day. Fruits and vegetables are a great, healthy option. Keep lots of fruits and vegetables freshly cleaned, peeled and cut for easy snacking.

A healthy diet is important to prevent other diseases such as obesity, heart disease and diabetes. If you are trying to control your child's weight, a good first step is to watch portion sizes, especially of foods high in calories, fat, and added sugars. Take a good look at what your child typically eats each day and build a healthy diet plan.

### A Healthy Community

Adopting a healthier lifestyle is easier for people who live, work, play, or go to school in an environment that supports healthy behaviors. Working together, communities can create the type of environment where healthy choices become easy choices.

#### Work together to adopt healthier lifestyles:

- Ask for healthier food choices at workplaces and schools.
- Request healthy alternatives in vending machines.
- Support restaurants that encourage your desire to eat well by offering options such as smaller portion sizes, lower-calorie items, and whole-grain products.
- Work to make your community safer and more appealing with places to walk, bike and be active.



# 2009 Research Wrap-up



## Leukemia

The majority of children diagnosed with acute lymphocytic leukemia (ALL) will be cured of their disease by receiving standard treatment. However, those who relapse or who are diagnosed with acute myelogenous leukemia (AML) have a significantly worse prognosis. At the Children's Cancer Hospital at M. D. Anderson Cancer Center, leukemia researchers are focusing their labs on improving survival for these high-risk patients.

### Successful Targeting of TRK Pathway in Leukemia

Presented at the American Society of Pediatric Hematology Oncology's Annual Meeting



Patrick Zweidler-McKay,  
M.D., Ph.D.

In April, Patrick Zweidler-McKay, M.D., Ph.D., from the Children's Cancer Hospital and fellow Maurizio Ghisoli, M.D., presented pre-clinical research on an anti-cancer agent, AZ23, which effectively inhibits growth in nearly half of human AML, and reduces leukemia burden and prolonged survival in mice carrying human AML. AZ23 works by turning off TRK receptors, which promote the growth of leukemia cells.

### Drug Combination Five Times More Powerful Against Leukemia

Published in BLOOD

Joya Chandra, Ph.D., from the Children's Cancer Hospital, and Claudia Miller, Ph.D., have found in pre-clinical tests that combining the novel proteasome inhibitor, NPI-0052, with the histone deacetylase (HDAC) inhibitor, vorinostat, is five times more effective against leukemia than either cancer agent alone. The two drugs share similar functions, which creates a synergistic effect against the leukemia cells.

### Decreasing Cardiotoxicity of Common Leukemia Drugs

Presented at American Society of Hematology's Annual Meeting

Anthracyclines are a group of chemotherapy agents that have been instrumental in improving childhood cancer survival rates over the past 40 years, but they also are highly toxic to a patient's cardiovascular system, likely because they cause oxidative stress. Chandra and Joy Fulbright, M.D., have discovered in their laboratory that a new anthracycline, amrubicin, causes less oxidative stress than other drugs in its class. They believe this discovery may be related to amrubicin being less cardiotoxic than other anthracyclines, indicating it may be a safer drug to use in children with cancer.

### Turning on the NOTCH Pathway to Induce Leukemia Cell Death

Presented at American Society of Hematology's Annual Meeting

Previous studies done at the Children's Cancer Hospital have illustrated the importance that Notch signaling has on suppressing B-cell leukemia and AML. Most recently, Children's Cancer Hospital researchers Zweidler-McKay and Sankaranarayanan Kannan, Ph.D., demonstrated a potential therapeutic way of turning on Notch using a synthetic peptide. This peptide effectively kills the majority of human B-ALL and AML cells tested while sparing normal cells, leading the way to future clinical trials.

### Lymphocytes Help Predict Patient Prognosis

Presented at American Society of Hematology's Annual Meeting

Previously, Zweidler-McKay has shown the importance of the absolute lymphocyte count (ALC) in evaluating a patient's prognosis. With collaborator Karen Rabin, M.D., he recently completed a follow-up study of pediatric patients comparing ALC data along with the most powerful prognostic factor, minimal residual disease (MRD). Using a combination of ALC and MRD, researchers were able to more accurately predict prognosis, potentially sparing some patients excess treatment and better identifying those who are likely to relapse. Patients who tested negative for MRD and had a high ALC at diagnosis had a 99 percent 7-year survival rate, while those who tested positive for MRD and had a low ALC had a 41 percent overall survival rate.

Zweidler-McKay will co-chair a Children's Oncology Group study in 2010 to better determine which patients would benefit from more aggressive treatment at diagnosis.

## Brain Tumors



Johannes Wolff, M.D.

### New Protocol Improves Outcome for High-Grade Glioma Patients

Published in Cancer

Johannes Wolff, M.D., from the Children's Cancer Hospital, is first author on a study that found a better way to treat pediatric patients with high-grade glioma. Using a new protocol, HIT-gBM-c, that consists of surgery (when possible), radiation and a chemotherapy regimen, researchers found that patients who had a complete surgical resection of their tumor achieved higher survival rates on the new protocol. Specifically, the 5-year overall survival rate for patients with complete resection on the protocol was more than 60 percent compared to less than 20 percent on the older protocol.

### New Standard Treatment Established for Rare Brain Tumor

Presented at International Society of Pediatric Oncology's Annual Meeting

Wolff also led a team of researchers in the largest-ever collaborative study addressing the treatment of a rare pediatric brain cancer called choroid plexus tumors. The findings suggest a new standard protocol could improve survival nearly two-fold for pediatric patients with the disease. The protocol, consisting of three chemotherapy agents and radiation, had projected overall survival rates of 93 percent at one year, 82 percent at five years, and 78 percent at eight years. With the data collected, the team can tell which patients are prone to do better and which have a poor prognosis. In addition, the team established a standard protocol for these patients.

### HDAC Inhibitor Shows Potential Against Medulloblastoma

Published in the Journal of Neurooncology

Vidya Gopalakrishnan, Ph.D., dedicates her research to studying brain tumors at the Children's Cancer Hospital. This year, she uncovered a mechanism that assists medulloblastoma tumor cells in evading cell death.

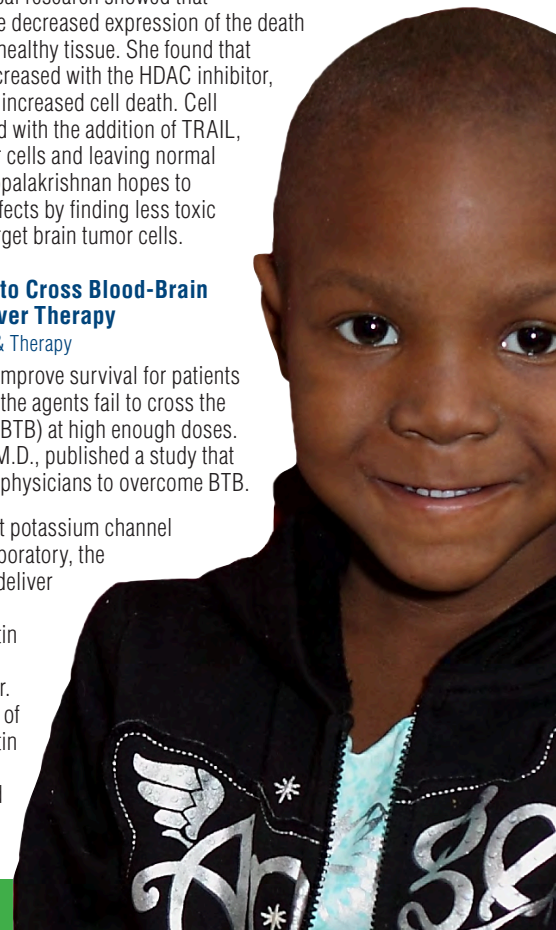
Gopalakrishnan's pre-clinical research showed that medulloblastoma cells have decreased expression of the death receptor, D4, compared to healthy tissue. She found that the expression could be increased with the HDAC inhibitor, MS-275, which resulted in increased cell death. Cell death was further magnified with the addition of TRAIL, a treatment targeting tumor cells and leaving normal cells largely unaffected. Gopalakrishnan hopes to minimize long-term side effects by finding less toxic ways, such as TRAIL, to target brain tumor cells.

### Researchers Find Way to Cross Blood-Brain Tumor Barrier and Deliver Therapy

Published in Cancer Biology & Therapy

Most cancer agents fail to improve survival for patients with brain tumors because the agents fail to cross the blood-brain tumor barrier (BTB) at high enough doses. Recently, Tribhawan Vats, M.D., published a study that showed a potential way for physicians to overcome BTB.

Using a calcium-dependent potassium channel agonist, NS-1619, in the laboratory, the research team was able to deliver anti-cancer agents such as Temozolomide and Herceptin through the BTB at higher volumes to attack the tumor. The combination treatment of Temozolomide and Herceptin also showed improved anti-tumor effect compared to either drug alone.





## Neuroblastoma



Peter Zage, M.D., Ph.D.

### Starving Neuroblastoma Cells Inhibits Tumor Growth by 75 Percent

Presented at the American Society of Pediatric Hematology Oncology's Annual Meeting

Research conducted by Patrick Zweidler-McKay, M.D., Ph.D., Peter Zage, M.D., Ph.D., and fellow Alejandro Levy, M.D., showed for the first time that the M. D. Anderson-developed drug, 3-BrOP, reduces neuroblastoma growth by more than 75 percent as a single agent. The study,

conducted with human neuroblastoma cells transplanted into mice, showed how 3-BrOP, a glycolysis inhibitor, starved the cancer cells to death by shutting down their main energy source, glucose.

"As we explore alternative options to standard chemotherapy agents, we are finding drugs, like 3-BrOP, that have the potential to destroy cancer cells while leaving healthy cells unharmed," said Zweidler-McKay. "These drugs can often enhance the efficacy of other treatments, potentially leading to more successful combinations and better outcomes for our young patients."

### Drug Unexpectedly Inhibits Neuroblastoma Blood Supply and Tumor Growth in Pre-Clinical Tests

Presented at the American Society of Pediatric Hematology Oncology's Annual Meeting

Researchers Levy, Zage and Zweidler-McKay from the Children's Cancer Hospital have also found a way to prevent blood vessels from aiding the growth of neuroblastoma, using the drug AMD3100. In pre-clinical tests on mice, it has reduced human neuroblastoma tumor growth by more than 75 percent.

Zweidler-McKay, senior investigator on the study, reported that AMD3100 doesn't kill neuroblastoma cells directly, but it prevents tumors from growing rapidly by disrupting their blood supply.

### First-Ever Trial Opened to Test Drug Combination in Children with Neuroblastoma

Presented at the American Society of Pediatric Hematology Oncology's Annual Meeting

Peter Zage, M.D., Ph.D., has discovered a new drug combination that significantly hinders tumor growth in neuroblastoma. By combining a novel multi-kinase inhibitor, vandetanib, with 13-cis-retinoic acid, a drug often used for severe acne, researchers from the Children's Cancer Hospital at M. D. Anderson found that the two therapies reduced neuroblastoma tumors by 86 percent in pre-clinical tests.

Zage, who specializes in neuroblastoma at the Children's Cancer Hospital, received this year's Young Investigator Award from ASPHO and was selected to present his research in a special platform session.

Currently, there is a Phase I clinical trial, a first in the world, open for children with multiple-relapsed neuroblastoma to further study the new therapy combination.

## Bone Tumors and Other Solid Tumors

### MEPACT Improves Osteosarcoma Survival, First Time in 20 Years

In early 2009, the European Commission approved a therapy for pediatric patients with non-metastatic, resectable osteosarcoma based on clinical studies led by researchers at the Children's Cancer Hospital and the Children's Oncology Group.

MEPACT (mifamurtide, L-MTP-PE) is an immune-based therapy, that when combined with chemotherapy, resulted in approximately a 30 percent

decrease in the risk of death with 78 percent of patients surviving more than six years following treatment. This therapy is the first in more than 20 years to improve the long-term survival of osteosarcoma patients.

Eugenie Kleinerman, M.D., head of the Children's Cancer Hospital, was the first investigator to translate the drug from pre-clinical testing to a Phase I clinical trial in humans and also led the Phase II clinical trial. Kleinerman hopes by giving MEPACT to newly diagnosed patients, they will prevent relapse by taking care of any remaining tumor cells after chemotherapy.

### Aerosol Chemotherapy Being Further Investigated to Target Lung Metastases

Published in the *Journal of Aerosol Medicine and Pulmonary Drug Delivery*

When osteosarcoma metastasizes to the lungs, a child's chances of survival significantly decrease. Incorporating methods used in asthma treatment, investigators from the Children's Cancer Hospital are combating pulmonary metastases by delivering chemotherapy directly to the lung and minimizing systemic toxicity. Patients are able to receive their therapy at home using this aerosol-based system.



Peter Anderson, M.D., Ph.D.

Recently, Peter Anderson, M.D., Ph.D., from the Children's Cancer Hospital, teamed up with a group of veterinarians to study aerosol gemcitabine in canines with osteosarcoma. When these large dogs had cancer in their lungs, a mist containing gemcitabine was inhaled. The results showed both safety and the efficiency of aerosol gemcitabine against pulmonary metastases of osteosarcoma. These exciting results support doing further investigation of the aerosol approach in humans with lung metastases.

Anderson will share his insights in aerosol delivery of chemotherapy and cytokines in the Respiratory Drug Delivery Symposium in Orlando, FL on April 26, 2010.

### Clinicians Find Arsenal of Tools to Combat Cardiac Metastases in Sarcoma Patients

Presented at the American Society of Clinical Oncology's Annual Meeting

Dennis Hughes, M.D., Ph.D., dedicates his research to fighting pediatric bone tumors. One focus of his research is investigating ways to attack cardiac metastases, which has earned him recognition at national oncology meetings. Using chemotherapy, radiotherapy, novel agents and cardiac tumor resection, Hughes has illustrated how cardiac tumors are best managed. He is currently working with physicians at the Children's Memorial Hermann Hospital to develop a multidisciplinary pediatric cardiac tumor program for patients with malignant and benign cardiac tumors.

### Novel Surgery Gives Patients Hope Against Rare Cancer

Desmoplastic small round cell tumor (DSRCT) is a soft tissue cancer primarily occurring in the abdominal area with a poor survival outcome for pediatric patients.

Wanting to improve outcomes for DSRCT patients, Andrea Hayes-Jordan, M.D., translated an adult surgical procedure called continuous hyperthermic peritoneal perfusion (CHPP) so that it could be performed in children. She is the first and only surgeon performing this novel procedure on children in North America.

As part of the CHPP procedure, Hayes-Jordan surgically extracts dozens to hundreds of tumors before running heated chemotherapy agents through the abdominal area to kill remaining tumor cells. Hayes-Jordan reported that patients receiving this surgery have more than a 70 percent chance of surviving for three years or more compared to the 20 percent survival rate of those who don't receive the procedure.

• continued

# 2009 Research Wrap-up



## Retinoblastoma



### Four Medical Institutions Collaborate to Form New Retinoblastoma Center

Doctors and researchers from the Children's Cancer Hospital at M. D. Anderson, Texas Children's Cancer Center, the Methodist Hospital and Baylor College of Medicine have joined together in the fight against retinoblastoma, a childhood cancer of the eye. The result of their collaboration is the Retinoblastoma Center of Houston.

Dan Gombos, M.D.

Together these specialists are advancing retinoblastoma treatment through ground-breaking research and innovative therapies. The center is the first of its kind in the southwest region of the United States and is the only one in the nation using gene therapy in clinical trials for retinoblastoma. Patients also have access to genetic testing and a special form of radiation called proton therapy.

## Cell Therapy

As pediatric oncologists and researchers are seeking less toxic, more efficient ways to fight cancer, they are turning to immunotherapy. The Children's Cancer Hospital is part of the world's largest cell therapy program and focuses its research on providing vital options to fight a variety of cancers.

### Enhancing the Power of Natural Killer Cells to Fight Cancer

Presented at the American Society of Hematology's Annual Meeting



Natural killer (NK) cells are naturally occurring white blood cells that now are being harnessed to help patients fight cancer. Dean Lee, M.D., Ph.D., from the Children's Cancer Hospital, focuses much of his research on finding ways to maximize the power of these immune cells. In the past year, Lee and his team have discovered ways to genetically modify NK cells in the laboratory so that they carry various antibodies that target specific cancers, such as leukemia and neuroblastoma.

Dean Lee, M.D., Ph.D.

In addition, his lab has developed a way to generate 100 times the amount of NK cells for transfusion, compared to the traditional apheresis method. They also discovered through their studies that a common leukemia drug, decitabine, can be highly toxic to NK cells at high doses. They are now further investigating the optimal dosage of decitabine that can be used to kill leukemia cells while minimizing damage to NK cells.

### Modifying T Cells to Maximize Efficiency Against Cancer

Presented at the American Society of Hematology's Annual Meeting and the BMT Tandem Meetings



Modifying T cells to target tumors is a promising approach for adoptive cell therapy, according to Laurence Cooper, M.D., Ph.D., at the Children's Cancer Hospital. Similar to methods used with NK cells, Cooper and his team are genetically modifying T cells to incorporate antibodies that direct the T cells to specific cancer cells.

Laurence Cooper, M.D., Ph.D.

In addition, Cooper and a team of researchers are developing genetically modified T cells for infusion after hematopoietic stem cell transplants (bone marrow transplants) to improve graft-versus-leukemia effect. To improve the survival of infused T cells, they have found a method to supercharge the T cells in the laboratory using Interleukin-7 (IL-7) prior to infusion in a patient. These boosted T cells will potentially grow faster and live longer, thus avoiding the need to directly infuse the patient with IL-7.

### Improving Engraftment of Cord Blood Transplants

Presented at Annual BMT Tandem Meetings

Cord blood provides a readily available, ethnically diverse source of stem cells for transplantation. However, these stem cells increase the risk of delayed engraftment and graft failure. Elizabeth J. Shpall, M.D. and Patrick Zweidler-McKay, M.D., Ph.D., found that cord blood cells have reduced amounts of naturally sugar-coated proteins, which may lessen their ability to engraft compared to bone marrow and peripheral blood cells used in transplantation.

Zweidler-McKay found that using the enzyme fucosyltransferase VI (FT-VI) increased sugar-coated proteins on cord blood cells and significantly improved the rate and magnitude of cord blood engraftment in mice. In the future, he plans to study this interaction in a clinical transplant setting.

## Endocrinology



Steven Waguespack, M.D.

The Children's Cancer Hospital has one of the only pediatric endocrinology practices in the nation that specifically focuses on the diagnosis and treatment of children with endocrine tumors. Two full-time pediatric endocrinologists trained in both pediatric and adult endocrinology, as well as an experienced nurse practitioner, head up the multidisciplinary program and have dedicated research toward improving our understanding of the etiology, evaluation and treatment of endocrine tumors in children.

### Sorafenib Successful in Treating Pediatric Papillary Thyroid Cancer

Published in *Thyroid*

Pediatric papillary thyroid cancer (PTC) usually presents with more advanced disease in younger patients, yet the prognosis is typically excellent. Most cases of advanced PTC are successfully treated with radioactive iodine (RAI). In a recent study of a teen with PTC and progressive lung metastases that were recalcitrant to RAI, Steven Waguespack, M.D., from the Children's Cancer Hospital, demonstrated the efficacy of sorafenib, a multi-kinase inhibitor, in treating and managing the patient's disease.

### Sunitinib Found Effective Against Advanced Von Hippel-Lindau Disease

Published in the *Journal of Clinical Endocrinology Metabolism*

Von Hippel-Lindau (VHL) disease is characterized by highly vascular tumors affecting multiple organs. Waguespack recently reported a case where a VHL pediatric patient presented with multiple renal and pancreatic tumors along with malignant pheochromocytoma (an adrenal tumor) and lymph node metastases. The patient had severe pain, weight loss and overall poor performance.

Once treated with the tyrosine kinase inhibitor, sunitinib, the patient's symptoms began to dissipate and the tumors showed significant shrinkage. The study provided evidence that targeting tyrosine kinase receptors may have value in the treatment of VHL-related tumors.

## Stay Connected to the Children's Cancer Hospital

You can get the latest research news from the Children's Cancer Hospital at M. D. Anderson.

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**THE UNIVERSITY OF TEXAS M. D. ANDERSON CANCER CENTER**

# Mosbacher Pediatrics Chair

**K**eri Schadler's face lights up as she talks about her work as a graduate research assistant in experimental pediatrics at The University of Texas M. D. Anderson Cancer Center. Assigned to the laboratory of Eugenie S. Kleinerman, M.D., right, head of the Children's Cancer Hospital at M. D. Anderson, Schadler is immersed in a study of the signaling protein Delta-like Ligand 4 (DLL4) and its role in vasculogenesis in Ewing's sarcoma. In lay terms, she hopes to determine whether DLL4 can be used to treat this rare form of pediatric bone cancer by blocking the development of blood vessels in tumors, essentially starving them to death.



Randala Hamdan is equally enthusiastic about her research in Ewing's sarcoma, also in Kleinerman's lab. Hamdan is interested in a protein, SDF-1, that's produced by Ewing's sarcoma cells. SDF-1 may control the signaling process that "tells" bone marrow cells to differentiate into specialized cells called pericytes, which in turn sculpt efficient blood vessels that help the tumor grow. When SDF-1 production is inhibited, Hamdan notes, fewer pericytes appear, and blood vessels aren't as strong. Leaky vessels mean less blood supply to the tumor, which makes it more difficult to grow and metastasize.

Schadler and Hamdan, both students in the Ph.D. program at the Graduate School of Biomedical Sciences, are recipients of funds provided by the Mosbacher Pediatrics Chair at M. D. Anderson, an endowed position established in 1978 by the Honorable Robert A. Mosbacher Sr., chairman of Mosbacher Energy Company. A life member of M. D. Anderson's Board of Visitors, Mosbacher was Secretary of Commerce during former President George H. W. Bush's administration.

The Mosbacher Pediatrics Chair pays the two trainees' salaries, benefits and tuition and also supports materials and supplies for their research projects.

"Without these funds, these students could not have been supported and the research could not have taken place," says Kleinerman, who has held the Mosbacher Pediatrics Chair since 2005. "The data generated from both of their projects contribute to understanding the biology of how the Ewing's sarcoma tumor cells induce the vascular structures that support tumor growth."

Kleinerman says these results may affect future therapy of Ewing's sarcoma, a relatively rare cancer that afflicts mainly adolescents and young adults.

"This research will identify potential new targets," says Kleinerman. "If we can prevent bone marrow cells from migrating into the tumor area and participating in the formation of new tumor vessels, and if we can prevent these bone marrow cells from differentiating into the pericytes that are needed to sculpt efficient tumor vessels, we think this will result in the inability of Ewing's sarcoma to grow and metastasize. It may even lead to the regression of established tumors."

Only 200 new cases of Ewing's sarcoma are diagnosed each year in the United States. Because Ewing's sarcoma is rare, the number of laboratories engaged in research is small compared with those involved in breast, colon, lung, ovarian and prostate cancers, Kleinerman says.

"It's particularly important to train investigators and stimulate their interest in sarcoma research," she says. "The Mosbacher Pediatrics Chair has supported innovative research at M. D. Anderson for more than 30 years. Its impact will continue to grow as it enables young minds to pursue research such as that of these two trainees. They are working to make a difference in the lives of Ewing's sarcoma patients and their families around the world."

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Martha Askins, Ph.D.  
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Susan Staba Kelly, M.D.  
Dean A. Lee, M.D., Ph.D.  
Demetrios Petropoulos, M.D.  
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**The Children's Cancer Hospital Newsletter** is an educational resource for physicians interested in the treatment, research and prevention of pediatric cancers, produced quarterly from the Division of Pediatrics at The University of Texas M. D. Anderson Cancer Center.

• **David B. Coe, Division Administrator**  
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• We welcome your questions and suggestions.

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## Unique Needs of Adolescent and Young Adult Patients

When a young adult is diagnosed with cancer, treatment may be within a children's hospital or within an adult care clinic. However, neither care center seems to be an ideal fit for this "in-between" patient population with unique needs. More concerning is the fact that little improvement has been made in survival rates in decades for those between the ages of 15 to 39.

**At the Children's Cancer Hospital, the Adolescent and Young Adult (AYA) Program was developed to address the special medical and psychosocial needs this age group faces. Fertility trials, targeted therapies, vocational counseling and peer-to-peer support are just a few services provided through the program to all M. D. Anderson young adult patients.**

In 2009, a patient advisory council was formed consisting of young adult patients and survivors as well as faculty and staff from M. D. Anderson. This patient-centered AYA Workgroup is one of the first in the nation that allows young adults to work collaboratively with hospital employees to enhance the experience and services offered to young adult patients. Already, the group has helped with the planning of the Rise to Action Conference at M. D. Anderson on April 10 for AYA patients and survivors. They also have provided feedback on the best ways to reach this patient population.

In addition, a new program, Cancer180, was formed by Volunteer Service's Anderson Network to coordinate young adult social outings for patients, survivors and caregivers and encourage peer-to-peer interaction.

Medically, there are several studies focusing on the epidemiological differences of this patient population compared to its younger and older counterparts. Michael Rytting, M.D., from the Children's Cancer Hospital, presented research at the American

• Society of Hematology's annual meeting on the benefits of treating young adult leukemia patients with a pediatric therapy compared to the adult regimen.

• At the American Society of Pediatric Hematology Oncology's annual meeting, Peter Anderson, M.D., Ph.D., presented a new way of delivering standard osteosarcoma therapy in an outpatient setting to improve quality of life for young adults. The study showed the safety and feasibility of outpatient osteosarcoma therapy and unveiled that most young adult patients preferred this type of care.

• The cell therapy and leukemia teams have also completed studies focusing on AYA patients during stem cell transplants. Anna Franklin, M.D., and Janet Ortiz, RN, CPON, reported ways to successfully address the unmet social needs of this patient population at the BMT Tandem Meetings. In addition, Laura Worth, M.D., Ph.D., and Nicole Rosipal, RN, MSN, CPNP, are piloting an exercise gaming program for use during transplant, and anticipate that exercise will help decrease anxiety and increase overall performance for AYAs receiving transplants.

• As more attention is given to AYA patients, physicians are learning how to better care for these patients from both a medical standpoint and a psychological and emotional perspective. Coupled by collaboration with the AYA Workgroup, M. D. Anderson has established itself as a leader in improving both outcomes and quality of life for all AYA patients.

## Resources for Referring Physicians

PhysicianRelations.org  
is M. D. Anderson Cancer  
Center's online guide for  
referring physicians.

This new guide provides easy access to numerous news features including live M. D. Anderson Cancer Center news feeds, a live Twitter feed, expanded access to clinical trials information and more:

### Faculty Profiles

The new online guide contains over 800 searchable faculty profiles. The profiles are highly detailed and searchable by keyword, department, division, the physician's care center assignments, medical school and training. In an innovative twist faculty members can also choose to provide links to their Twitter or Facebook accounts.

### Print on Demand and Custom Guides

Users may download and print a complete version of the pediatric referring physicians guide or add individual faculty members from multiple departments to a custom guide, which can be downloaded in PDF format.

### Referral Pathways

The guide makes patient referral and follow-up easy by integrating links to myMDAnderson for Physicians throughout the site. Recent enhancements allow referring physicians to securely access even larger portions of their patient's personal health records and send messages directly to the patient's oncologist. Reports of laboratory test results and pathology reports are available to referring physicians as soon as they are finalized.

Explore the new guide at <http://www.physicianrelations.org>