

# Innovations in Cancer & Blood Disorders



*Rady Children's - A comprehensive system  
focused solely on children.*



## PEOPLE

### Dr. Dennis Kuo leads survivorship, fellowship programs



Dennis John Kuo, M.D., M.S., is the medical director of the Long-Term Follow-up/Thriving After Cancer Clinic at Rady Children's Hospital-San Diego and program director of the hematology/oncology fellowship program. He is also an associate clinical professor of pediatrics at UC San Diego School of Medicine.

The Thriving After Cancer Clinic serves patients who are two or more years from completion of their therapy. A multidisciplinary team works with more than 500 children who are cancer survivors and gives them the tools and education they need to advocate for themselves and their health.

The Rady Children's/UC San Diego pediatric hematology-oncology fellowship program provides state-of-the-art clinical and research training in pediatric hematology/oncology and stem cell transplantation. Fellows spend the first year at Rady Children's Peckham Center for Cancer & Blood Disorders; the second and third years are primarily devoted to basic science, translational or clinical research at Rady Children's and UC San Diego.

With 10 years of experience in the field, Dr. Kuo treats a wide range of pediatric hematology/oncology disorders. His research interests are in pediatric leukemia and lymphoma, cancer survivorship, cancer predispositions and personalized medicine approaches to the treatment of childhood cancer.



## PROGRAMS

### BMT program provides highest quality pediatric care

Rady Children's operates the only pediatric blood and marrow transplant (BMT) facility in San Diego and Imperial counties. The program has been in continuous operation since its inception in 1981, and more than 390 transplants have been performed.

Led by Eric Anderson, M.D., the BMT program's multidisciplinary team includes transplant physician Deborah Schiff, M.D., coordinators, nurses, supportive care nurses, psychologists, social workers, child life specialists, dietitians, parent liaisons and team members of the Integrative Medicine Program.



Dr. Anderson



innovation  
belongs in every moment

Comprehensive care and support are provided throughout the transplant period and recovery process.

The stem cell transplant program performs autologous and allogeneic transplants, including umbilical cord blood transplantation. In 2004, the National Marrow Donor Program approved Rady Children's as an unrelated donor transplant center. In the same year, the Hospital was approved by the Department of Health Services as a certified apheresis center to provide peripheral blood stem cell collection for transplantation.

In 2007, the program was granted certification by the [Foundation for the Accreditation of Cellular Therapy \(FACT\)](#) as the pediatric arm of UC San Diego Medical Center's BMT Program. The joint program with the UC San Diego Moores Cancer Center offers state-of-the-art stem cell processing capabilities, as well as collaborative conferences dedicated to ongoing review to ensure optimal quality care for patients.



Dr. Schiff

The program participates in a number of clinical trials through the Pediatric Blood and Marrow Transplant Consortium, Children's Oncology Group and Blood and Marrow Transplant Clinical Trials Network.

## RESEARCH

### Exploring therapeutic targets for Ewing sarcoma metastasis

[Sun Choo, M.D.](#), researches Ewing sarcoma, working in the [laboratory of Jing Yang, Ph.D.](#), at the UC San Diego Moores Cancer Center. Her most recent research hypothesizes that genes regulating embryonic neural crest cells are involved in Ewing sarcoma metastasis. She is currently seeking funding for research that aims to uncover specific therapeutic targets in the neural crest migration pathway.

While the molecular mechanism underlying Ewing sarcoma metastasis is unknown, some reports indicate that its cell lineage could be traced back to neural crest cells. Through examining Ewing sarcoma patient samples from Rady Children's and Children's Hospital of Orange County, Dr. Choo has found that critical genes involved in neural crest development are also induced in Ewing sarcoma patients. Specifically, the samples showed a strong association between transcription factor Twist 1 and metastasis.



Dr. Choo

To further examine this connection, she used a human tumor xenograft model and injected Twist 1 expressing cells in immunodeficient mice. Twist 1 was found to be a key regulator of Ewing sarcoma metastasis.

## INNOVATIONS

### Transcultural partnership improves pediatric cancer care

Nearly a decade ago, the five-year survival rate for children with acute leukemia in Baja California, Mexico, was estimated at 10 percent, compared to 88 percent in the United States. In response, Rady Children's, St. Jude Children's Research Hospital and the Hospital General de Tijuana implemented a transcultural partnership to establish a pediatric oncology program. The aim was to improve clinical outcomes and overall survival for children in Baja California.

An initial needs assessment evaluation was performed at the Hospital General de Tijuana in 2008 by [William Roberts, M.D.](#), director of the Peckham Center for Cancer and Blood Disorders, and [Paula Aristizabal, M.D., M.A.S.](#), medical director of Rady Children's International Outreach Program. Dr. Aristizabal, a bicultural, bilingual pediatric hematologist/oncologist, worked with the leadership at the Hospital General de Tijuana and designed a five-year action plan to facilitate the implementation of the new pediatric oncology program.



Dr. Roberts

After seven years, the accomplishments included the establishment of a fully functional pediatric oncology unit with 60 new healthcare providers (versus 5 in 2007); a rise in five-year survival for leukemia from 10 to 43 percent; a rise in new cases diagnosed a year from 21 to 70; a reduction in the treatment abandonment rate from 10 to 2 percent; and a 45 percent reduction in the infection rate. More than 700 patients have benefited from the program.



Dr. Aristizabal

One of the most significant outcomes is that the Hospital General de Tijuana has transitioned into a regional referral center and mentors other hospitals in Mexico. A similar program was established in Baja California Sur in 2012, and healthcare professionals from La Paz received training at the Tijuana partner site.

The Yang lab has shown a strong association between Twist 1 and PDGFR $\alpha$  expression in Ewing sarcoma patients. PDGFR $\alpha$  expression was also significantly associated with metastasis and poor survival.

Unlike Twist 1, PDGFR $\alpha$  is targetable with currently available drugs, making it ideal to further explore. By testing targeted therapies through PDGFR $\alpha$  inhibition, Dr. Sun hopes to see a significant reduction in metastatic lung nodules.

**Read these related abstracts:**

<http://www.ncbi.nlm.nih.gov/pubmed/26157788>

[http://www.ajicjournal.org/article/S0196-6553\(15\)01159-1/abstract](http://www.ajicjournal.org/article/S0196-6553(15)01159-1/abstract)



**Learn more at [RCHSD.org](http://RCHSD.org)**