

*Washington Square Health Foundation Research Fellows in cooperation with
Ann & Robert H. Lurie Children's Hospital of Chicago*

The purpose of the Washington Square Hematology/Oncology Research fellowship is to encourage and support promising young physicians to gain experience in basic bench and clinical research, making it not only a viable and attainable career alternative to private practice, but also providing a career in translational medical research and its host of accompanying opportunities, i.e. clinical trial research or participation; publishing, mentorship, training, translational research, and more. Overseen and nurtured by Program Director Catherine Kapella, MPH, almost from its inception, this program has flourished and produced a group of highly trained individuals who are making a significant difference across the globe.

The funding initiative for the fellowships was conceived during the Foundation retreat in La Jolla, California, in which a site visit was conducted by Foundation staff at the Salk Institute. During this time Foundation Directors and staff were able to get an in depth view of the current state of medical research including its complexity, the desperate need for funding sources, and the profound and sometimes almost immediate impact each and every dollar and research effort has on positive patient outcomes, especially in view of emergent translational research which, enabling a bench to bedside approach, is ideally suited to the field of medicine.

In July, 2003, Washington Square Health Foundation sent its first commitment letter for the Hematology/Oncology fellowship to then-Children's Memorial Hospital, thus beginning a 10+ year relationship during which Washington Square has supported pediatric cancer research fellows and as a byproduct, their associated research projects at the hospital with a total investment, including the current fellow, of \$500,000. During this time period six outstanding fellows and their projects have benefitted from the Foundation's support, engaging in "ground-up" research while being mentored by senior research faculty and continuing to hone their clinical skills.

In 2009, Catherine Kapella, MPH/Foundation Educational Awards Program Manager, initiated the first review session of the Research Fellowships, focusing on the scholars' fellowship experiences and their then-current research and clinical activities. At that time, two prior fellows (Dr. Gosiengfiao and Dr. Burke) and then-current fellow (Dr. Watson) met the Washington Square Health Foundation Board of Directors at Children's Memorial Hospital and provided them with updates.

This report, also initiated by Ms. Kapella, serves as a second review and ten year benchmark for the program. It provides an update on all of the physician-scientists to date who are or have been recipients of Washington Square's generous multi-year funding, and takes a personal look at where they are now, what they are doing, their continuing thoughts regarding their

experiences as fellows, their plans for the future and the continuing impact of the funding on their lives.

Preface:

It is clear from the following interviews that the investment of WSHF in the Hematology/Oncology Research Fellowships is an unqualified success. The Foundation's support of this program is doing much to assist in training outstanding individuals to conduct bench and clinical/translational research. In so doing, it expands the boundaries of understanding bench and clinical/translational research by increasing the numbers of clinical practice physicians utilizing these skill sets to unearth the underpinnings of disease and/or actively research and participate in clinical trials. And more importantly and additionally, it provides the tools by which these advances will be used to improve patient outcomes. Each fellow completes the program with hands on research skills as well as an important and critical awareness of the complete translational process continuum and its value in the realm of medicine. With every interview it is apparent that the Washington Square-funded fellows are spreading this awareness as part of their daily work, utilizing their skills and professional affiliations to conduct, evaluate, participate in, or otherwise utilize research to improve the outcomes of their patients. There is such intrinsic value in this type of medical investment because it is the traditional "gift that keeps on giving" or, as Dr. Watson stated in her interview, with this fellowship support, Washington Square is "teaching how to fish instead of providing fish".

Further to the interviews, every scholar without hesitation said that if requested, they would be absolutely willing to assist Washington Square Health Foundation in some capacity, i.e. mentoring, advisory panel to the foundation, subject matter expert, or contribution of another skill set, as long as time permitted. To a person, these individuals, from those at the beginning of their respective careers to those who are beginning to become established in their roles, are a credit to the foundation and to their training.

I would be remiss if I did not acknowledge the efforts of Catherine Kapella, MPH, Program Director, who has provided constant advice and guidance during the course of this project. Her contribution to the study was invaluable from providing data and reviewing the interview criteria, to providing general and specific information regarding the Foundation's fellowship program. Also of great assistance was Tracy Sadlon, Associate Director, Private Foundation Gifts, Ann & Robert H. Lurie Children's Hospital of Chicago Foundation. Ms. Sadlon assisted in establishing contact with the fellows, ensuring their availability for interviews, and providing/verifying the accuracy of award years and progress report data.

*Submitted by Barbara Berendt
January 15, 2014*

Dr. Yasmin Gosiengfiao: Fellowship duration 7/1/03-6/30/04.

Background:

Dr. Gosiengfiao, the first holder of the Washington Square Hematology/Oncology Fellowship, and a highly qualified second year fellow at Children's Memorial upon receipt of her award, earned her medical degree from the University of the Philippines College of Medicine in Manila and completed her residency training at the University of Illinois at Chicago. Her mentor was Dr. Alexis A. Thompson. During her fellowship tenure she studied "the role of HoxA11 genes which, if altered, could affect a child's ability to make platelets and may affect limb formation." Her research during her fellowship period yielded the following report: Transcription factors GATA-1 and Fli-1 regulate human HOXA10 expression in megakaryocytic cells.

http://www.scholars.northwestern.edu/pubDetail.asp?t=pm&id=34547905337&u_id=839

Currently:

Dr. Gosiengfiao is engaged in academic medicine in the Center for Cancer and Blood Disorders at the Ann & Robert H. Lurie Children's Hospital of Chicago and is an Assistant Professor in Pediatrics-Hematology, Oncology, and Stem Cell Transplantation at the Northwestern University Feinberg School of Medicine.

<http://fsmweb.northwestern.edu/faculty/facultyProfile.cfm?xid=15749>

Dr. Gosiengfiao's area of interest is solid tumors. Additionally she oversees the Pediatric Fertility Preservation Program. As she explains "Whenever a patient undergoes chemotherapy or radiation, it may or may not affect fertility. The patient may develop early menopause. One of the aspects of the program is to advise patients and their families of risks, options, and how to preserve fertility. Another is to continue clinical research and progress in this area. There are different options for post-pubertal and pre-pubertal children. We may offer freezing of ovarian tissue, oocyte and embryo freezing, as well as sperm cryopreservation and testicular preservation as needed."

Dr. Gosiengfiao is currently engaged in clinical research as part of the pediatric fertility program. She states that she is currently spending approximately 80% of her time teaching, mentoring, and seeing patients; and 20% in clinical research (currently involving post-pubertal preservations), but that of course could change depending on what research or other clinical opportunities arise.

When asked how she has benefited from her research training, Dr. Gosiengfiao observed that "Learning bench/ laboratory research enables you to understand what research is good and what is not, to discern, and also how to conduct research, whether clinical or bench research, with integrity. In reviewing retrospective or prospective studies with patients, you will want to refer to research regarding which treatment is better than another. And you will ask yourself, how are they practicing when there is a controversial issue? For example, in the case of someone doing contraception research- what is their knowledge about contraception during chemotherapy? "

Dr. Gosiengfiao says that curing patients with cancer and helping them think about their future, helping them to have a better future than they would otherwise have, has been the most fulfilling aspect of her career. She believes that cancer and funding for pediatric cancer research continue to be of paramount importance, and that research in the area of pediatric fertility preservation is a growing field and represents a critically important research area as well.

Outside of work, Dr. Gosiengfiao spends what little personal time she has, helping pediatric oncologists in the Philippines and provides them with free consultation as well as specific items they might need. She also helps them bring program initiatives to fruition, as much as she is able. Immediately after completion of her WSHF fellowship, Dr. Gosiengfiao returned to her home country, the Philippines, for two years and worked there as a pediatric oncologist before returning to Lurie. Dr. Gosiengfiao was determined to “pay forward” the knowledge and skills given to her by improving patient outcomes in the Philippines, as most pediatric oncology patients there do not survive. While she feels that she made a significant difference there, she ultimately came to understand that she would accomplish more for her field and best serve others both here and overseas by continuing practice in the USA. Still, she is optimistic that, with world efforts to cure cancers on the increase, more local institutions will embrace these efforts and she will be able to participate in an institution-sponsored global outreach program at some point during her career.

Since the time of her award, Dr. Gosiengfiao has additionally published and/or coauthored a number of other reports: <http://fsmweb.northwestern.edu/faculty/viewpub2.cfm?xid=15749>. She continues to be committed to her career in academic medicine and views her fellowship experience as life altering.

Dr. Michael Burke: Fellowship duration 7/1/04-6/30/06.

Background:

At the time of Dr. Burke’s award, Washington Square and Lurie Children’s collaborated to create what is now the current Washington Square Health Foundation award structure, encompassing two years of stipend support to be provided during years 2 and 3, which comprise the research portion of the fellowship training in accordance with the foundation’s emphasis on research.

Dr. Burke, a promising first year fellow at the time of his award selection, was the first two-year WSHF Fellow. He entered the field of medicine after initially completing a BS degree in Biological Sciences at the University of California at Irvine and subsequently earned his medical degree from Ross University School of Medicine in Dominica.

Dr. Burke completed his internship and residency at the Medical College of Virginia, Virginia Commonwealth University, before entering the fellowship program at Children’s Memorial. His mentor while at Children’s Memorial was Dr. William Tse. The overall goal of his research was “to understand how different types of stem cells function and to develop effective clinical strategies to cure more patients with stem cell transplantation.” His extensive research in this

area was highlighted in a presentation on stem cell plasticity at the Annual International Hematology Meeting in Atlanta, GA in December, 2005, and since that time several of his publications (among the many he has produced over the years), include this area of focus. Dr. Burke has stated "I had 3 publications as a fellow. Numbers 2 and 3 were in journals and #1 was as an abstract only. #1 was the work I did in the lab and was presented at the American Society of Hematology Meeting, as follows:

1) Myogenic Developmental Potential of Hemangioblasts Derived From Mouse Embryonic Stem Cells. Burke MJ, Kennedy P, Wang L, Bhatt D, Tse WT. American Society of Hematology (ASH) Annual Meeting. Blood November 2005; Vol. 106, Issue 11: 1702;

2) Tandem High-Dose Chemotherapy with Peripheral Blood Stem Cell Rescue as Consolidation Therapy for High-Risk (Primary Unresectable Pelvic Tumors or Metastatic Disease) Ewing's Sarcoma Patients Compared to Standard Chemotherapy. Burke MJ, Kletzel M, Jacobsohn DA, Duerst RE. ASBMT Annual Meeting. Biology of Blood and Marrow Transplantation February 2005; Vol.11, Issue 2, Supplement 1:85;

3) Burke MJ, Cohn SL. Rituximab for treatment of opsoclonus-myoclonus syndrome in neuroblastoma. *Pediatr Blood Cancer*. 2008 Mar;50(3):679-80. PubMed PMID: 16900484."

Currently:

Dr. Burke is engaged in academic medicine at the Medical College of Wisconsin in Milwaukee. He is an Associate Professor of Pediatrics in the Department of Pediatrics, Division of Hematology/Oncology. Approximately 75% of his time is involved in clinical research which he passionately embraces, along with teaching, mentoring, and administrative work, while the remaining 25% of his time is dedicated to seeing patients. Dr. Burke's research is undertaken and his office located at the MACC Fund Research Center <http://www.maccfund.org/> on the Medical College Campus. His clinical focus is ALL, AML, non-Hodgkins lymphoma, Hodgkins Lymphoma, CML, JMML, myeloid dysplastic syndromes, and myeloproliferative syndromes. His research interests include development of early phase clinical trials involving novel agents and/or combination therapies for relapsed/refractory hematologic neoplasms with particular focus in genetic targeting of hemopathic neoplasms through epigenetic pathways.

<http://www.mcw.edu/PhysicianDirectory/Burke-Michael-J.htm?returnURL=%2fproviderdirectory%2fSearchHome.htm%3Fkeyword%3Dburke%26searchtype%3DAI%26searchmode%3DDefault%26providertype%3DAI%26rpp%3D30%26pn%3D1%26groups%3D3%2C2%2C1>

Dr. Burke feels that the experiences throughout his training helped to lead him into his current field and research interests. Early on in medical school he starting to see and meet pediatric cancer patients and over time he found himself taking a larger role in their care. This pointed him toward pediatric oncology, and then his fellowship at Northwestern Children's Memorial exposed him to the area of leukemia diseases which he immediately became interested in, simply by virtue of attempting to understand them. By the time he finished his fellowship in 2006, he knew he wanted to obtain a leukemia position.

Dr. Burke has many and varied interests, but they all primarily revolve around childhood leukemia and clinical/translational research. He spends much of his time designing and

implementing bench to bedside clinical trials for patients with leukemia, newly diagnosed as well as relapsed, with much of his work focused on the latter, because, as he observes “the outcomes for those children are incredibly poor.”

A more recent and still developing area of his research involves examining and improving the quality of life and therefore outcomes, for children with leukemia as they go thru treatment, as well as relapsed patients undergoing treatment, and identifying/measuring the levels of fatigue, stress, anxiety, and depression they are experiencing. Dr. Burke notes “There are so many complexities in treating a child with cancer. Most oncologists focus on the treatment of the disease but not everyone has the time to consider these other variables and their effects on outcomes.” Dr. Burke is looking at who and what kinds of interventions can ameliorate these stressors and to what degree; as well as what services are available, how to employ them, and what else can be done earlier in the treatment process to minimize stress factors and improve quality of life during treatment and hence outcomes.

In the area of relapse disease, Dr. Burke notes that most practitioners are less aware of the impact of treatments on the patient and “are just trying to get these very ill children to live, not thinking of whether the child is stressed and what are they going through.” He would like to identify the risk factors for relapse, whether age, gender, socio-economic status, and provide resources for patients and families. His current endeavor is in building a case for making everyday life for patients and their families easier, beyond simply developing novel treatments.

Dr. Burke’s premise for his treatment model is that “The more personalized you can make the care and environment, it gives people a stronger sense that they are valued and cared for. If you are just a number and a chair and you get your medicine and you go, it is more stressful.” He asks “What is the collateral damage that happens when we overlook their stressors and their quality of life? What better serves the patient and family as a whole? We need to provide more opportunities and availability for treatment, supported care, and quality of life. As we look at providing each thing that will help, things that families with critically ill children have no time to do on their own, we can have a package that ensures they are receiving the best treatment medically as well as in a palliative sense, which results in a better environment for children and above all, better outcomes.” Accordingly, he is developing the ultimate model of care for family unit and patient.

The treatment model that Dr. Burke is working on creating is a Comprehensive Pediatric Leukemia and Lymphoma Clinic at the Children’s Hospital of Wisconsin. In his vision, children with leukemia rotate into the clinic at some point during their treatment, during which they will meet with what Dr. Burke refers to as a “critical mass” of practitioners, including a pediatric oncology physician and/or nurse practitioner, physical therapist, neuropsychologist, nutritionist, social worker, child-family life specialist, and dentist. As part of his clinical research he is also interested in examining the impact of consolidated care within the context of where are the patients in their current therapy, what are the typical side effects, what are their challenges in school and athletic settings.

Each phase of pediatric cancer treatment is a little different, and Dr. Burke believes that integrating these practitioners into the treatment model will improve outcomes and prevent relapses. To that extent, his comprehensive clinic model is also collecting quality of life surveys, collecting scores on anxiety, fatigue, and depression, among other variables. Dr. Burke is hoping that, in his words "...if there is a well oiled machine it could be extrapolated to your cancer of interest" and could serve as a model of care around the country with practical variations relative to the treatment center size, location, and local culture. Dr. Burke is currently in the process of sending a letter describing this clinic to pediatricians across Wisconsin and cooperating other agencies/groups. He developed the original model during his tenure at the Hematology/Oncology Department of Pediatrics at the University of Minnesota.

In terms of mentoring and training, Dr. Burke is a mentor for one of the first year clinical fellows, and is also a mentor to a junior faculty member at Ohio State University with a leukemia interest. He also teaches medical students by participating in a yearly program where they meet with a physician to go over case notes in groups of approximately 15. He also teaches and lectures to residents or fellows regarding leukemia-related topics.

In response to being asked what is the main benefit derived from his fellowship experience, Dr. Burke was very forthcoming in exactly how invaluable the gift awarded to him has been: "The process of applying for a grant early on in your training is very useful. There are so many elements: Putting together an application. The awarding of the grant is another something. You learn a lesson in how the funding process works. Research relies on funding to drive it. Fellows are very fortunate to have that opportunity within their grasp. It serves the fellow as well, when a grant is received. With this and the other grant, having to submit progress reports helps to teach accountability. When the trainees are new, it is a nice opportunity to go thru these processes on a smaller scale. It is not as competitive, but you go thru process of application, doing all the same things you would do for a million dollar grant. The experience teaches you what clinical research requires to be successful. And at this level, it is exciting that people are interested in what you are doing and you receive positive reinforcement to keep doing what you are doing."

Beyond this, Dr. Burke has numerous volunteer roles which are served in the medical field in national and other committees where he is not paid. An addendum to this report lists his countless involvements, publications, and initiatives. In his personal life, Dr. Burke is very absorbed in family activities with his wife and three children. He would like to make the world a better place by completing his clinical trials and opening clinics across the country for relapsed disease children similar to what exists at St. Jude's. With the comprehensive leukemia program, after it has been optimized and data collected, he plans to go to various centers in the region and discuss what is happening in Milwaukee, and use other research centers to collect more data beginning regionally and moving on from there. He spends much time networking with his colleagues, including his mentee from Ohio State as well as within Minnesota where he just left, both of which are interested in launching similar models.

Dr. Andrea Watson: Fellowship duration 7/1/06-6/30/08

Background:

Dr. Watson attended the University of Minnesota Medical School and completed her Pediatric residency at St. Mary's Hospital/Mayo Clinic in Rochester, Minnesota. During her tenure at Northwestern, Dr. Watson additionally obtained a Masters of Clinical Investigation in June, 08, while simultaneously undertaking her fellowship research. Her mentor was Dr. David Waterhouse. Her research was a translational project, utilizing the resources of the Translational Genomics Research Institute. Her project, entitled "GLI Haplotypes and the Risk of Ultraviolet Induced Basal Cell Carcinoma" involved studying over 400 patients from the NMFF Dermatology Clinic with the ultimate goal of being able to report on the effect of carrying the GLI1 gene on a patient's predisposition to Basal Cell Carcinoma, and whether the presence of the GLI1 gene increases susceptibility to cell damage due to sunlight.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2789726/>

Currently:

Dr. Watson is a Pediatric Cancer Care physician in Duluth MN. She is board certified in Pediatrics and Pediatric Hematology/Oncology, and is affiliated with Essentia Health, an integrated health system headquartered in Duluth, and serving patients in Minnesota, Wisconsin, North Dakota, and Idaho. She has a community pediatric oncology practice and sees patients at both the Essentia Health Cancer Center and St. Mary's Children's Hospital, also an Essentia institution.

<http://www.healthgrades.com/physician/dr-andrea-watson-3dpft>.

Dr. Watson is currently doing clinical pediatric work almost full time. She characterizes her current work as "Not at a big academic center, but rather, in a smaller community with a small program and most of my practice is not academic." She assists oncologists who treat adult patients with grant preparation but she is not actively working at a research center. She is "simply taking care of children with blood problems."

Dr. Watson is also an active participant in the Children's Oncology Group, enrolling her patients as applicable into clinical research programs, treatments, and biological studies that are current in the field. Without her participation and membership, she believes her patients would not be given the opportunity to participate, nor would she have had the opportunity to be involved and benefit from the process and available treatment resources. This, she believes, has been one of several benefits derived from her fellowship experience.

When asked if she saw a compelling area of focus or need in the medical community, Dr. Watson identified the need to decentralize and/or offer alternative treatment models for childhood cancer care that would enable caregivers to provide care closer to patient homes. She would like to see care models that leverage existing support systems in or as close as possible to the patient's home community. She notes, "In Chicago it may take 2-3 hours to get into town. Big hospitals and research are essential, but for the day to day lives for children in treatment, how do we support them where they live? As it stands now, there are patients who drive 3 hours each way, each week, for an appointment." Dr. Watson observed that she treats people who do not even have the means to be seen at a major hospital. She has seen parents who have to take

off work, and over time they lose their jobs. Additionally, children with cancer who must travel to be seen, have no support system. She observed "In Chicago we didn't think about that. But if you train and support people well, and create a structure to safely care for the kids it is best done where the child lives." She believes this can happen through coaching, mentoring, and facilitating activities at inpatient or outpatient settings, including didactic teaching of the oncology nurses, as well as teaching residents and medical students.

As regards the major benefit of her fellowship, Dr. Watson feels that it has been invaluable to be able to have a critical eye with regard to other research. She observed that qualified specialists should be looking all the time at other research and that, given that she is on the front line, she looks at the literature all the time and is always looking at studies and analyzing their outcomes; and that as a result of her fellowship she can better determine the integrity of the work. In her view, "The wave of the future is to look at the literature and studies, and then draw it back to your own clinical care work." Dr. Watson also believes that the research fellowship funding provided by Washington Square "is unique, because it teaches people to fish as opposed to providing the fish." She feels that the number of people who continue with research versus academic medicine or private practice is small and that caring for patients while continuing research is "where it's at."

Currently Dr. Watson does not work full time. She works an 80% week because she has five children between the ages of 1 and 12 who occupy most of her time outside of work. She is fully in support of "paying it forward", and while at work, she invests "heart and soul taking care of the children in this part of the country and this part of the world." She helped to get the beads of courage started in her local area; it is a program rewarding children for their treatment states. She would also like to start a creative writing program that helps children during their journey with cancer.

Dr. Jamie Dargart: Fellowship duration: 7/1/08-6/30/10

Background:

Dr. Dargart received her medical degree from Case Western Reserve University School of Medicine and completed her residency at Northwester's Children's Memorial Hospital at the McGaw Medical Center before taking up her fellowship. She additionally obtained an MS degree in Clinical Investigation at Northwestern University while engaged in her research there. Her mentors were Dr. Richard M. Longnecker, who leads a successful research program primarily focused on viral oncology; Dr. Ben Katz, and Dr. William Tse. Her research focused on the link between viral infections, particularly the Epstein Barr virus and their role in the development of malignancies. She studied the association between EBV and cancers with a particular emphasis on lymphoma and published the outcome which "supports the idea that dasatinib may prove an effective molecule for treatment of EBV-associated malignancies."

<http://www.ncbi.nlm.nih.gov/pubmed/22609829> Additionally, Dr. Dargart piloted a clinical study focused on adverse outcomes in underweight survivors of childhood cancer, a population not previously well studied. And Dr. Dargart was additionally engaged in a project involving treatment of adult leukemia patients with the drugs imatinib and bortezomib, in collaboration with Dr. Longnecker and oncologists from the Lurie Comprehensive Cancer Center.

Currently:

Dr. Dargart is a Pediatric Hematologist/Oncologist at ProMedica Toledo Children's Hospital, and is board certified in Pediatrics. She is a member of the American Society of Hematology, The American Society of Clinical Oncology, The American Society of Pediatric Oncology and Hematology, and the Children's Oncology Group, the latter she describes as a consortium for most clinical trials for pediatric oncology. She is the designated Principal Investigator for Children's Oncology Group for Toledo Children's Hospital and is a member of the electronic health records steering committee for the Promedica Health System. Dr. Dargart has authored/co-authored several clinical research studies and publications which she states may not yet be published due to their being somewhat recently completed.

Dr. Dargart describes her current role as mainly clinical practice with a small amount of clinical research, and estimates that currently, her time is divided into approximately 80% seeing patients, 10% teaching, mentoring, and administrative work, and 10% clinical research. In practice, she is mainly dedicated to seeing children with leukemia/lymphoma, while her lab research was associated with viral lymphomas. She teaches residents on rounds and in conferences, as well as medical students, nursing students, pharmacy students, and residents in various other mentorship scenarios.

Dr. Dargart became interested in her areas of specialty during medical school, where she had an early interest in pediatrics, as well as in hematology/oncology as a subject matter. She thought it might be too depressing to pursue these areas together, but when she rotated in her first year of residency, she realized that she would have an opportunity to see many outpatients as well as a spectrum of patients who are generally well, on through to those who are very sick. She found it rewarding to have patients where there was continuity of care and where she could see them on through to post care. Dr. Dargart currently is very fulfilled in having sustained relationships with both her patients and families, whether inpatient or ambulatory and where she can be part of the outcome and a guiding presence through the process of treatment.

When asked what impact her fellowship has had on her current activities, Dr. Dargart immediately brought up her experiences in laboratory research. She stated that even though she is not actively engaged in it currently, she gained extensive experience through her fellowship research. She was able to look at specific malignancies and specific medications to see if they would treat specific types of lymphomas, and learn whether these might treat children as well as adults. She could take cell lines of certain kinds of cancer and determine if they might treat certain cells without hurting normal cells. She had the opportunity to see lab mice treated with medicines and how they were affected versus the control groups. She had the invaluable experience of examining cell lines, then working with animal models, then with children who have had relapses and then on to phase three patients, with the goal of finding therapies that are more effective and with fewer side effects. Her experiences showed her what these studies entail. She stated "When reading the literature or seeing presentations on new drugs, it helps you to understand what steps are involved, the details from bench to bedside, and it helps you to discern the integrity of the work."

Regarding the impact of the award to her personally, Dr. Dargart stated that the fellowship completely changed her life, that it taught her everything she knows about pediatric oncology, and that she would not be where she is now without having received such a generous gift. She considers herself very fortunate and has highly recommended the program to others who she has trained, mentored, and networked with in the course of her work. She regards the program as equal to the best in the country in terms of patient volume, expert physicians, numbers of transfers of care and patient referrals with particularly complicated or advanced diagnoses. She also stated that the program was structured in such a way that she had the opportunity to spend time with each element “Hematology was a little different from oncology, was different from stem cell transplant. I was able to focus on each specific area within the larger subspecialty.”

When asked what she finds most fulfilling in her current work, Dr. Dargart said “Definitely the fact that I can truly make a difference in the lives of my patients and their families. Some people go to work for 8 hours a day. When I go to work it is more to me than just putting in time; it is making a difference. I can be with families from the time of diagnosis, through therapy, until the time of remission, or even if my patients pass away, I can be with the family and offer so much as someone who has been there with them from the beginning. Other than that, the job is very intellectually stimulating, rarely boring. Even if you see something that is the same, there are always intricacies specific to the patient that makes you stop and think, should we do something differently than the standard of care? How can we best find the most effective therapy, reduce the side effects of therapy? The difference could be the seriousness of the disease, allergies, age, or something rarely treated, which makes you have to look at the literature.”

When asked if she saw any areas of particular need relating to her work or the general field of medicine, Dr. Dargart had the following to say: “The largest thing I see for pediatric hematology and oncology is what I and my colleagues and patients and families believe is a relative paucity of support for research for pediatric hematology and pediatric oncology. The percent of children diagnosed is very low compared to adults. But the percent of dollars invested is much lower by proportion. Since research began there has been a huge success with small amounts of dollars. But past research has plateaued. Some of the drugs kill both malignant and normal cells. The field of oncology is changing; moving more toward targeted therapy, not “killing everything that is dividing”. We are looking at these therapies in children but these are tried first on adults. Multiple myelomas for example in older adults, the treatment then moves to children. These types of treatments should not trickle down. More money and resources should be dedicated to children. But there are some cancers that are only exist in children and not adults. In those cases nobody may be looking. Nobody is there to support it. A drug successful in neural blastoma may overlap to an adult blastoma. Sickle cell disease has really stalled. There is a huge community of basic and clinical researchers interested in sickle cell disease and we are using the same drug to treat it for the past 50+ years, and it is not tuned as some of the other drugs are. This is not good enough.”

Outside of her work, Dr. Dargart has a one-year-old daughter along with her husband and works between 40-50 hours weekly. She said she does not have a lot of outside activities other than reading, yoga, cooking, and occasionally travelling when she has the opportunity. She hopes to engage in more community work both inside and outside of her work as her family becomes older and she has more time available to contribute.

Dr. Tracey Haertling: Fellowship duration 7/1/10-6-3-12

Background: *Dr. Haertling received her medical degree from A.T. Still University in Kirksville, MO (the world's first osteopathic medical school), and completed her pediatric residency at St. Louis University School of Medicine, Cardinal Glennon Children's Medical Center, in St. Louis MO. During her tenure at Northwestern, Dr. Haertling also received an MS degree in Clinical Investigation while simultaneously undertaking her fellowship research. Her mentor was Dr. Stewart Goldman, Medical Director of Neuro-oncology, along with a committee of 3 faculty members: Dr. Joanna Weinstein, Dr. Jin-Shei Lai, and Dr. Alfred W. Rademaker. Her research project, entitled "Exploring the potential association between carnitine deficiency and pediatric cancer-related fatigue: a cross-sectional study" had as its goal to more definitely determine the prevalence of carnitine deficiency in children with cancer and the relationship of carnitine levels with fatigue, and in so doing to clarify cancer-related fatigue and improve risk-based care. Further to her study, Dr. Haertling submitted an abstract and presented her findings at the Children's Memorial Hospital Research Scholars Day in May, 2012. As of that date, her plans were to prepare and submit her research for publication.*

Currently:

Dr. Haertling began work six months ago, in July, 2013 as one of two Pediatric Hematologist/Oncologists who manage the Pediatric Hematologist/Oncology program at Memorial Children's Hospital of South Bend (whose non-profit parent organization is Beacon Health System <https://beaconhealthsystem.org/about/>). Their program operates as a satellite program affiliated with Riley Children's Hospital in Indianapolis and offers an array of services: <http://www.qualityoflife.org/childrenshospital/pediatricspecialties/pediatricematologyoncology/>.

Dr. Haertling describes her work as being "on a smaller scale than academic programs, but...quite busy. The clinic provides services to an underserved area of the state of Indiana. Often times, by being able to receive chemotherapy in South Bend, patients and families are able to stay close to home and work which reduces their stress." As there are only two physicians in the practice, she finds herself often on call and working countless hours.

In terms of research projects, there are no formal projects originating at her location. However she is involved with the Children's Oncology Group through Riley Children's Hospital and several of her satellite patients are enrolled in COG trials through Riley. Dr. Haertling says that she does have a number of projects that she and her colleague (Dr. Colleen Morrison, also a former Northwestern fellow) would like to start, but that "time and manpower continue to be an issue". She and her team are working with a pediatric hospitalist service through Beacon that assists them with care for those patients who must be admitted to the hospital. The hospitalist staff is

assisting them in developing standard operating inpatient protocols; and Dr. Haertling would like to do the same for their outpatient clinic, particularly for their patients with sickle cell disease.

Dr. Haertling observes “There are also some quality improvement projects for our inpatients that are being developed with nursing. We have also discussed working with one of the ER physicians on blood coagulation research that he is involved with through Notre Dame.”

Beyond this, Dr. Haertling is on a planning team as part of the hospital’s project to create new facilities for a Memorial Children’s Hospital. Currently inpatient pediatrics, NICU, and PICU are part of an adult community-based hospital but this will change. She is also on a hospital committee working to improve the current electronic medical records system.

One of Dr. Haertling’s personal initiatives involves working with trainers at the hospital-affiliated health and fitness center to develop some programs for the pediatric oncology patients to help them develop exercise programs that fit their needs (stress relief, endurance, strength, balance, overall fitness/well-being, etc). She wants to continue promoting health and wellness for children and hopes to have more time in the future to bring this to fruition, her personal gift to the patients.

Dr. Haertling trains and mentors residents who are part of the hospital’s family practice residency program. She also trains residents and medical students who come to the clinic to shadow her. She describes the training as both formal and informal. Most recently she gave a lecture at the 17th annual North Central Indiana Sickle Cell Conference this past October. http://www.qualityoflife.org/tasks/sites/memorialcms/assets/File/Sickle_Cell_program_2013.pdf And she is a member of the American Society of Hematology, the American Society of Clinical Oncology, and the Children’s Oncology Group. Dr. Haertling hopes to leverage her memberships as she becomes more comfortable in her role at the hospital and can begin to better apply her considerable skills and training from her fellowship years to the work in front of her.

Overall, Dr. Haertling has many plans for the future, but as she has only been in her current position for less than six months, she is still learning the infrastructure of her hospital and practice, as well as the institutional culture. She says “Moving forward, I would like to be able to devote more time to developing and completing clinical research and quality improvement projects. I would also want to continue to educate medical students and residents as well as nursing students and nurses. At some point in the future, I would also like to offer my knowledge and skills to help provide care to children in need in developing nations as part of a mission trip.”

When asked what she sees as a benefit from her Washington Square fellowship, Dr. Haertling said “The assistance that the scholarship has provided has been invaluable. I have accumulated much student loan debt through college and medical school, so receiving a scholarship to help fund my fellowship education and research was a true blessing. During my pediatric hematology/oncology fellowship, I received clinical education and training, developed research skills and knowledge and also had the opportunity to complete a Master’s in Clinical

Investigation through Northwestern University. Every day I use the education, skills and experience that I received during my fellowship to care for patients. The scholarship made it possible for me to receive the education, have the experiences and develop the skills that I need to pursue my career choice. Although, I am not actively participating in research of my own, I use the knowledge and skills I learned during fellowship to review, interpret and apply research findings to the care of patients on a routine basis.”

Dr. Daniel Choi: Fellowship duration 7/1/12-6/30/14

Background:

Dr. Choi obtained his bachelor’s degree from Northwestern University in Evanston, IL, after which he attended medical school at Drexel University College of Medicine in Philadelphia, PA. He completed his residency at McGaw Medical Center of Northwestern University Feinberg School of Medicine in Chicago, IL before undertaking his fellowship at Lurie Children’s Hospital.

Currently:

Dr. Choi is still engaged in his fellowship studies and was also selected to pursue a Master’s degree in Clinical Investigation (MSCI) which he will receive this coming March. In the first year of his fellowship, he was awarded “fellow of the year” by the hospital. At the end of his three year fellowship, he hopes to have his board certification as a pediatric hematologist/oncologist.

His mentor is Dr. David Walterhouse, and his research project is entitled “Efficacy of the Influenza Vaccine in Pediatric Patients with Malignancies: A Prospective Analysis of Immune Response and Clinical Outcomes”. Dr. Choi is very enthusiastic about his project. He is in his third year of his fellowship, and the second year of his research study. The area he is studying has typically been examined in small groups only, whereas his research will be able to publish information encompassing well over 100 patients.

As he was already a resident at Lurie Children’s Hospital, he feels that he has been able to benefit from less adjustment time, which allowed him to begin earlier in his career what he wanted to do. In addition, he feels extremely fortunate that his project sprung out of a division hematology discussion.

As mentioned earlier, Dr. Choi’s study looks at the impact of the flu vaccine on children who are on chemotherapy, recognizing complications that children with cancer get from infections. Dr. Choi observes, “There are multiple angles and ways to reduce complications from infections: antibiotics, ways to reduce toxicity of chemotherapy, boost immune system in times of weakness to reduce infections. With survivors of cancer, we have every reason to believe their immune systems have gone back to normal. But when the immune system is constantly being hammered with chemotherapy, what is the impact of a flu vaccine, typically administered in the period from October thru January, and technically a year round risk.”

The first element of Dr. Choi’s study asks “Is there evidence that when immune system is lowest, can they respond at all to produce the protective molecules that defend against the flu? Second,

assuming you had the ability to respond to the flu, does it prevent you from getting it? Do you make enough 'cruise missiles' and do they actually work? Third, with all the information at the biological level, does that actually keep them from having symptoms or contracting flu? We have to look at symptom screening. Did they have known exposures to the flu and then developed no symptom at all? Right now there is mixed data regarding kids with cancer. While it is rare for them to die from the flu, it can make them sick enough for them to be admitted to the hospital."

Dr. Choi's ideal goal upon completion of his fellowship would be to do a combination of clinical research and clinical practice in an academic medicine environment. He says that Dr. David Walterhouse, his mentor, has been very generous with his time. As far as his own training and mentoring of others, Dr. Choi says "It's been kind of nice because I've been a resident here too. My mentoring is for residents thinking of going into hematology/oncology, and residents who are pediatricians in training. They do pediatric board review preparation, which covers all topics a pediatrician is supposed to know. I am responsible to help all residents to prepare for the pediatric certifying exam for board certification, beginning at start of residency." Dr. Choi also provides actual instruction in pediatric hematology oncology to medical students, which is lecture-based. He explains that every medical student does six weeks of pediatrics while in the hospital on the floor.

Dr. Choi feels that the main benefit from his award has been that he has been given invaluable protected time to really engage in research, which he says cannot be done well at a superficial level. He says "Research requires protected time to really engage the question in depth, including the implementation of the question, in order to create research with integrity." Beyond that, Dr. Choi said that his award additionally helps supplement costs of the actual lab test, through salary support in that it has allowed him to continue scholarly pursuits and be guaranteed a salary. He observed that there is a limit to how much any university can support versus various other means, and in particular this fellowship training and the overall amount of funds needed to train very highly specialized fellows. He is aware that this subspecialty is very expensive and there are very limited funds available at that area. The award goes a long way in offsetting costs and gives them guaranteed time, secures their position, allows them to be comfortably trained, goes directly to their immediate needs.

In terms of the training and experience shaping his integrity, he states that in being allowed to conduct this particular study, it has given him a lot of one on one time with the patients and that he has gained a much broader understanding of how families and children struggle with infection, fevers, fears; and how hard they have to try not to take away from a child's normal experience. He said "This experience has helped to make it much more clear to me to be sensitive to the family and their constant state of worry, it has helped me to be more understanding as a physician, to be able to see how taxing it is on the family each and every day. I have learned not to just look at the forest and to see the individual trees."

As far as what he finds most fulfilling in his current role, he said that it has been an incredible experience for him with this particular project, to have had the opportunity to build it from the

ground up, which is not something a trainee typically has the ability to do. He has done it with the help of his mentor, making mistakes along the way and learning from them. He said it has been "his baby" and that it has been so helpful to learn from step one. Dr. Choi views it as an extremely important experience for anyone to be a clinical researcher, to see all aspects of the project, and that overall this has been a tremendous learning experience for him.

When asked about any compelling medical needs that he can see, Dr. Choi observed that "Clearly there is a need for continued focus on improving outcomes in pediatric cancer treatments. Survival is up to 80 percent, better than decades ago. But certain fields have not improved at all. Acute AML pediatric AML has the exact same outcome as in the past. Another one, acute metastatic rhabdomyosarcoma- in 20 some odd years there are not any improved outcomes despite efforts ongoing. Pediatric leukemia has done a great job but other areas need more help and continued funding."

In terms of what he finds fulfilling outside of his work, Dr. Choi said that he also participates in One Step at a Time Camp <http://www.onestepcamp.org/> run by Children's Oncology Services, Inc. (COSI). He serves as a medical counselor for summer and winter camp in Wisconsin on a volunteer basis. He is there as the doctor and he "gets to do all the fun things with the kids, and gets to see them outside the medical realm". He says that "it is tremendously rewarding to see the kids swimming in the lake and roasting marshmallows and just having fun."