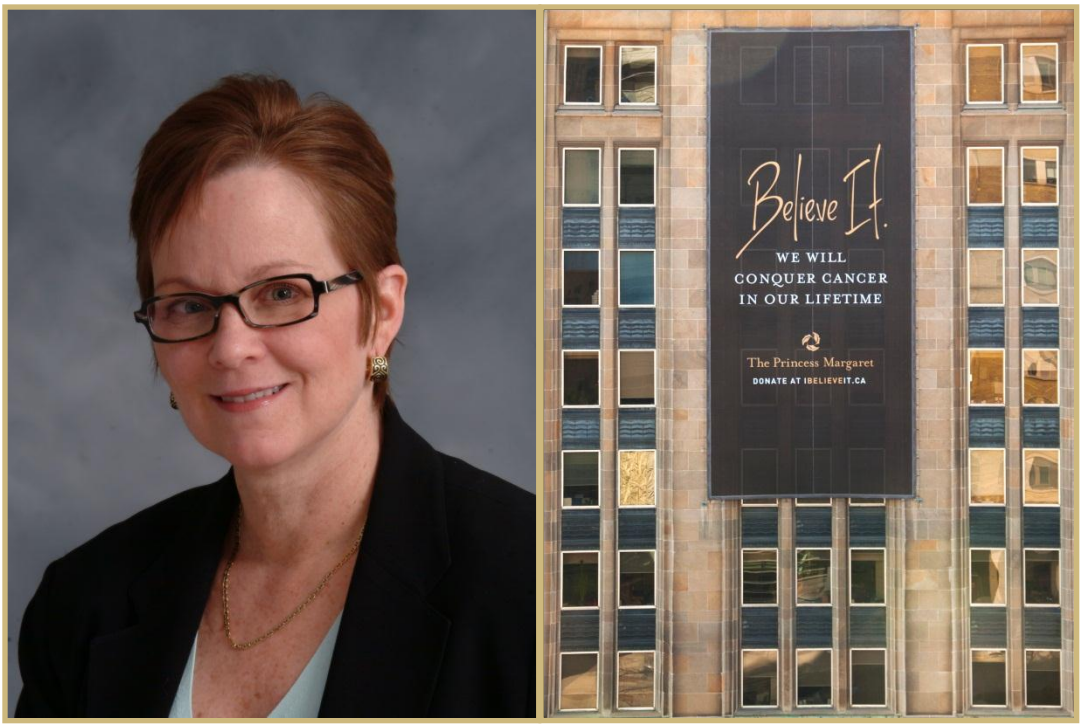
A Report on the Molly and David Bloom Chair in Multiple Myeloma Research at The Princess Margaret



July 2012

Table of Contents

Princess Margaret Hospital and its research arm, Ontario Cancer Institute, have achieved an international reputation as global leaders in the fight against cancer. Princess Margaret Hospital is a member of the University Health Network, which also includes Toronto General Hospital, Toronto Western Hospital and Toronto Rehabilitation Institute. All are research hospitals affiliated with the University of Toronto.
For more information, please visit pmhf.ca

Introduction

Thank you for your remarkable commitment to multiple myeloma cancer research at The Princess Margaret.

Over the past year, **Dr. Donna Reece** has used money from the **Molly and David Bloom Chair in Multiple Myeloma Research** to continue her work in basic and translational research. Ultimately, research like this helps move discoveries from the lab to the clinic, creates new therapies with fewer side-effects, studies genetic codes that lead to cancer and examines the relationship between genetic make-up and reaction to treatment. It is also perfectly aligned with The Princess Margaret's objective of creating the gold standard in cancer care: Personalized Cancer Medicine.

Dr. Donna Reece

At The Princess Margaret, Personalized Cancer Medicine encompasses four main themes:

1) DETECT – finding cancers earlier
2) DIAGNOSE – analyzing cancers more precisely
3) TARGET – targeting treatment more specifically
4) SUPPORT – providing comprehensive physical and emotional support

The following pages illustrate how this work is bringing us closer to our goal of conquering cancer in our lifetime. Thank you again.

Your Support

Update

As you know, my focus as the David and Molly Bloom Chair is to bring new therapeutic tactics to patients with multiple myeloma, as quickly as possible. This involves individualizing our approach to different tumour subtypes. To this end, we are focusing our efforts on laboratory research, specifically supporting the work of **Dr. Rodger Tiedemann**, our clinician scientist who joined us from the Mayo Clinic, Scottsdale in the summer of 2010.

Dr. Rodger Tiedemann

Transitional research requires close interaction between the laboratory "bench" and the clinic "bedside". The Clinical Research Program contributes marrow samples to the lab which helps us identify priorities for basic research. This is done by analyzing outcomes from large myeloma patient populations – a strength of The Princess Margaret program. It also helps us to directly evaluate new drugs/approaches that are developed in the lab using these myeloma patient specimens. Conversely, the lab provides a testing ground for new drugs (to see if they hit the target) and insight into drug resistance so that we can find the vulnerable "Achilles' heel" genes in these diseases. This type of research aligns perfectly with our goal of targeting treatment more specifically.

Laboratory Developments

Funds from the Bloom Chair are covering 50% of Dr. Tiedemann's laboratory start-up costs. Outside of this commitment to the Ontario Cancer Institute (the research arm of The Princess Margaret), Dr. Tiedemann has hired two key personnel to assist in his experiments. **These include a post-doctoral candidate hired in November 2011, Dr. Kim Chan Chung, and laboratory research technician, Natalie Erdmann.**

Your Support

Clinical Developments

While the Clinical Research Program strives to be financially solvent by bringing in funding from clinical trials to support the current staff of 13 (4 Registered Nurses, 8 Research Coordinators, and 1 Research Clerk), the rising costs of conducting clinical research is leading to shortfalls. **The Bloom Funds are making up for this by allowing research to continue, particularly with investigator initiated trials that are funded at a much lower level, but allow our staff to drive projects independently.**

Over the next few years, we anticipate utilizing these funds to help monitor selected patients through multiparameter flow cytometry and whole genome sequencing. Sequential tracking will allow for a more sensitive evaluation of the tumour cell and its acquisition (and perhaps reversal) of drug resistance, than is available by current immunologic studies.

Our biggest purchase from the Bloom Chair for the clinical research program this year will be a state-of-the-art myeloma database. Currently, initial data from over 3,000 myeloma patients referred to The Princess Margaret is entered into the older database and follow-up information, which includes response to treatment and time of relapse, is collected manually by using separate and time-consuming mechanisms such as excel spreadsheets.

The new database will allow integration of this previously collected data with real time outcomes in the clinic, and will provide direct entry from the electronic patient record system used at the University Health Network. The project has been estimated at $140,000, but we have secured a separate grant for $50,000 which reduces the total cost to the Chair to $90,000.

Work on the new database began in May 2012, with an expected go live date of January 10, 2013. We have hired **Ben Chu** as our database entry person who will be responsible for updating the information. This will allow for efficient tracking of myeloma patients over the years to further identify individuals at high-risk for relapse and for whom new therapy is urgently needed. In addition, the database will help determine newer, investigational methods of disease evaluation.

Future Outlook

One of the highest risks groups of myeloma patients is those with a deletion of the p53 gene. This genetic abnormality is not unique to myeloma and, in fact, abnormalities of p53 are found in an extremely high proportion of patients with other cancers. The biology of p53 abnormalities is complex and involves deletions as well as mutations. In patients with myeloma, for instance, one p53 allele may be missing (deleted) and the other may be normal or abnormal (mutated).

Understanding these variations is essential to identifying better and more personalized treatments. Local expertise in p53 function is available at the Ontario Cancer Institute and York University. In addition, preliminary laboratory efforts at the Department of Pathology at the University Health Network have identified potential therapeutic agents, along with the approaches described in Appendix A. **We are planning an expert symposium in Toronto this year, focused on p53 deletion/mutation that will help us to brainstorm for new research directions.**

Thank you

The overall goal of Personalized Cancer Medicine is to consider the unique aspects of individuals and their environment in the delivery of comprehensive care. We hope that our update illustrates the important impact we are having in this way on cancer patients through the **Molly and David Bloom Chair in Multiple Myeloma Research.** Thank you once again for helping us achieve this.