



May 2012

## Cancer Facts & News Part 9: Dimensions of Cancer

By: Dr. Michael Dufresne, *Seeds4Hope Administrator*

This month's article will be the last before the summer hiatus, but certainly not the last in the series. In view of this, it seems the right time to revisit why I feel it is important to understand the nature and biology of cancer, and to review what we've covered in the last 8 articles.

I have spent most of my professional life - before and after retirement from the University of Windsor - studying cancer, and like many others, I have lost loved ones including a spouse, my parents, and too many relatives and friends, to this terrible disease. The current prevalence of cancer is disturbing. Equally disturbing is the increasing number of misconceptions about cancer and cancer research appearing in the traditional and social media. Fiction that we are asked to accept as fact. In my experience, the single most important reason underlying this deception is a lack of understanding of the true nature and biology of cancer. The general objective of the "*Dimensions of Cancer*" series is to present the facts as we know them so you are better equipped to understand cancer, the necessary role of research to this understanding, and ultimately to help you distinguish fact from fiction.

We've covered a lot of ground and while there is a lot more to cover, the first 8 articles in the series already demonstrate the complex nature of cancer and how that complexity help us to understand why cancer increases with age and is most prevalent in aging populations (i.e., after the age of 50 years), and why cancer is so difficult to fight. Cancer development (i.e., *carcinogenesis*) is a multi-stage process that occurs over time. In most cases, for example breast cancer, the process begins with the transformation of a

normal cell to a cancer cell as a result of an accumulation of changes in areas of the cell's genetic material (i.e., *mutations*) that control cell growth and division. **The necessary transformation event itself can take decades to occur!** And once completed, the resultant cancer cell doesn't send off any warning signs; it poses no immediate threat. For cancer as we think of it to develop, the original cancer cell must grow and divide, producing progeny cancer cells that in turn grow and divide, and so forth, until a mass consisting of billions of cancer cells is formed (i.e., *primary tumour formation*). In more recent articles, I explained that as long as the majority of cells in the tumour continue to divide, the tumour increases in size. However, at some point the cells in the inner portion of the tumour may become cut off from blood vessels carrying nutrients to the cells, and waste material away - both necessary for cell survival. When this happens, the cells closer to the interior will die. As tumour cell death increases, the rate of tumour growth will slow, and in some cases, eventually stop. Such contained tumours (i.e., *steady state/dormant tumours*) can exist in the body for many years - sometimes a lifetime - without causing detectable harm. However, research has demonstrated that over time, some of the dividing cells within a cancer tumour acquire more mutations in their genetic material that result in the unscheduled production of activating factors that when secreted can ultimately lead to the creation of new blood vessels that penetrate the entire tumour, a process termed *tumour angiogenesis*. Once this happens tumour growth resumes.

Looking ahead, additional mutations that occur in some cells of the primary tumour can lead to the

next stages of cancer development. In the case of a solid tumour such as breast cancer, these include: i) breaking away of cancer cells from the primary tumour (i.e., *detachment*); ii) invasion of cancer cells into surrounding healthy tissue (i.e., *invasion*); iii) the spread of cancer cells from the primary site to other parts of the body (i.e., *metastasis*); and iv) the growth of secondary (i.e., *metastatic*) tumours. Each of these different stages takes time and rarely proceeds uninterrupted. Cancer cells must overcome built in genetic mechanisms to repair or destroy them, as well as the body's immune response to eliminate them. Not surprisingly, all of this depends on the general wellness and social history of the person involved, and consequently differs from person to person. I'll discuss these post primary tumour stages after the summer break. Please join me then!

### SUMMER HIATUS

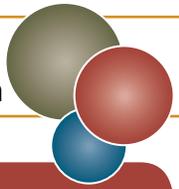
Please note that *The Donor Difference* will be taking a break for the summer, and will resume with the September issue.

### Watch for Our HUGE Announcement

Be on the lookout for a major announcement from the Windsor & Essex County Cancer Centre Foundation... *coming soon!*

### Nursing: The Health of Our Nation May 7<sup>th</sup> – 13<sup>th</sup>

In 1985, the Minister of Health proclaimed the 2<sup>nd</sup> week of May as *National Nursing Week* in Canada. Please join us and take a moment to thank and celebrate the dedicated, compassionate, and caring nurses of the Cancer Program!



May 2012

## Exciting Events!

Our Foundation is privileged to partner with wonderful people in our community for fund raising events. We gratefully acknowledge our event partners from April:

The **4<sup>th</sup> Annual Ladies Day Spring Expo** was held at the Caboto Club on April 15<sup>th</sup>. Over 2,000 women attended visiting 98 vendors. Proceeds from the event will help support Seeds4Hope. Thanks very much to event organizer Sherry Coombs, and to all those who attended.

The **2<sup>nd</sup> Annual Feel the Teal** took place at the Fogolar Furlan on April 21<sup>st</sup>. Over 200 attendees enjoyed dinner, entertainment and a silent auction, helping to raise funds for ovarian cancer patients at the Cancer Centre.

### COMING EVENTS

MAY

#### 27<sup>th</sup> – The 8<sup>th</sup> Annual Motorcycle Ride for Dad

Get your registration and pledge form from the Foundation office, or online at [www.motorcyclerridefordad.org/chapters/Windsor](http://www.motorcyclerridefordad.org/chapters/Windsor). Pre-registration will also take place on the 26<sup>th</sup> at Rack N Roll, 3087 Forest Glade Dr., from 11am-5pm. The Ride departs the WFCU Centre, 8787 McHugh St., at 10am on the 27<sup>th</sup>. Visit the website for more details.



JUNE

#### 3<sup>rd</sup> – 3<sup>rd</sup> Annual Miss Lizzy's Tea Party

Join Liz and her amazing committee for a traditional afternoon of tea, sandwiches and sweets. Make sure to wear your best hat! Roma Club Pavilion, 19 Seacliff Dr. E., Leamington. Tickets are \$40 (with a \$25 tax receipt). Contact Liz at 519-326-1955. Proceeds benefit the Patient Assistance Fund.

#### 4<sup>th</sup> – Windsor Club Charity Golf Tournament

A fun day of golf and fund raising for the WindsorEssex Prostate Cancer Support Group. All proceeds will be donated to the *da Vinci® Surgical System*. Shotgun start at noon at Roseland Golf & Curling Club. \$170 registration fee includes 18 holes with cart, lunch, contests, and dinner. To register, contact Agnes Stainton at 519-258-1465 or visit [www.windsorclub.com](http://www.windsorclub.com).



#### 10<sup>th</sup> – 23<sup>rd</sup> Annual McGregor Music Festival

From 12pm - 10pm, at Co-An Park, McGregor, listen to 9 great local bands, take part in a pig auction, look around the car show, or enjoy great food. Proceeds support the *da Vinci® Robotic Surgical System* and the Patient Assistance Fund.



JULY

#### 29<sup>th</sup> – 7<sup>th</sup> Annual Running From Cancer

The event will feature a half marathon, 10K, 5K and Kids Disney Dash, starting at 7am at the Tecumseh Arena. Visit [www.runningfromcancer.com](http://www.runningfromcancer.com) for all of the race details and to download your registration and pledge form.



AUGUST

#### 20<sup>th</sup> – Frank Taylor EMS Memorial Golf Tournament

Taking place at Dominion Golf Course this year. Visit [www.franktayloremsgolf.com](http://www.franktayloremsgolf.com) for all of the event details!



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