Scientists discover backup growth system in leukemia cells

Like a wrestler with one arm pinned to the mat, a cancer cell whose growth is halted by a drug molecule is not necessarily ready to concede defeat.

So, when Dana-Farber scientists found that acute myeloid leukemia (AML) cells stopped dividing when a key protein was blocked, they weren’t shocked when the cells eventually began growing again. What surprised them was the speed of the rebound: Within days of being treated, the cells were proliferating as if nothing happened. When cancer cells recover the ability to grow and divide after drug treatment, it is often the result of a mutation—a change in a gene or group of genes that allows the cells to shake off the drug’s effects. In this case, the escape was too rapid to have involved mutation. Somehow, the cells were engineering their own revival.

In a new study in the journal Nature Medicine, researchers led by Thomas Look, MD, and Alex Kentsis, MD, PhD, identify not only the protein they first targeted—an ignition switch for cancer cell growth in nearly half of all AML patients—but also the cells’ strategy for circumventing front-line drug treatment. Their findings suggest that therapies directed at both the initial growth trigger and the backup system may have the best chance for success.

“Despite years of research effort, the treatment of AML, particularly for people who aren’t helped by standard therapy and for the elderly, is very difficult,” Look says. “There is a major need for therapies that target the specific genetic defects of AML cells. The challenge has been that, in many cases, the genes driving the disease have been impossible or hard to block with drugs.”

In their research, Look’s team used RNA interference—a technique for silencing individual genes—to systematically eliminate one protein after another in AML cells to see which were necessary for the cells’ survival. The leading candidate was HGF, a growth-provoking protein that switches on a receptor called MET, a kind of portal for incoming cell signals. When investigators muzzled the gene for HGF or genes necessary for silencing individual genes—such as HGF—AML cells stopped proliferation. In many cases, the genes driving the disease have been impossible or hard to block with drugs.

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Better care is Maine conference objective

When home is three hours away from the clinic where one gets cancer treatment, patients and their caregivers can feel the strain. Even in an age of instant communication, the coordination of care between community medical centers and distant cancer hospitals isn’t always smooth.

With that issue in mind, Dana-Farber recently sponsored a one-day conference with care teams from Maine Medical Center (MMC) and other health care facilities in the state, focusing on the needs of Maine patients who come to DF’s Longwood campus for stem cell transplants. Held in Portland, Maine, the conference gave Maine-based and Dana-Farber clinicians a chance to view cancer care from each other’s perspective and to discuss how to reduce the “bumps” in transferring patients between the two systems.

“An average of 50-60 patients from Maine complete their stem cell transplants at Dana-Farber every year, the largest group from any state except Massachusetts,” says Amy Emmert, administrative director of the hematopoietic stem cell transplant program at the Institute.

“For more than a year, we’ve been talking with people at Maine conference, page 4

Dana-Farber honors exemplary college grad

Although Taylor Wensley joined Dana-Farber as a volunteer in February 2011, those who know her say that her contributions are inversely proportional to her time here. Wensley, a 2012 Emmanuel College graduate, was awarded the Sidney Farber Volunteer Award for her commitment at a June 7 recognition event.

At the ceremony, Institute President Edward J. Benz Jr., MD, thanked Dana-Farber volunteers for their dedication to patients, families, and staff, and for choosing to spend their free time fulfilling essential roles throughout the Institute. “All of our volunteers are incredibly giving and empathetic people who are the quintessential embodiment of compassionate care,” said Patricia Stahl, MEd, program manager of Volunteer Services. “They are the front lines of the social and emotional impact that’s so important here.”

In addition to managing a full course load and interning at a homeless shelter, Wensley volunteered at the Institute three days a week. “Cancer is something that hits close to home for me,” said Wensley. “Once I started volunteering, I wanted to interact, learn, and do more.”

Wensley took on many volunteer roles, serving as an ambassador, working the food cart, preparing care bags, covering the front desk, and training incoming volunteers. Perceptive and tenacious, she created new initiatives, including

Volunteer Award, page 4

Leukemia cells, page 3

Taylor Wensley

William Kaelin
Getting to know Anna Norcross
Scooper Bowl raises $335,000

Visit the DFci intranet at www.dfcionline.org
The surge in HGF to 30 times its normal level spurred the growth or died. When investigators added a second inhibitor to block the feedback loop, it eliminated the effect of the genetic changes that caused lung cancer in non-smokers...
How sweet it is: Scooper Bowl a success

30,000 visitors. 10,000 gallons of ice cream. $335,000 raised. One cause: the 30th annual Jimmy Fund Scooper Bowl® presented by FedEx.

Held June 5–7 at Boston’s City Hall Plaza, the Scooper Bowl is synonymous with the start of summer. While the sun shone reluctantly during the three-day event, attendees arrived en masse to taste ice cream, gelato, frozen yogurt, and sorbet from 10 of the nation’s leading ice cream companies. This year, SoCo Creamery’s Salted Caramel and Byrne Dairy’s Holy Cow were among the favorite flavors.

The nation’s largest all-you-can-eat ice cream festival relies on volunteer scoopers like Clayton Shih, a Dana-Farber employee who helped dish out frozen treats for his second year. “Volunteering for the Jimmy Fund is personally meaningful for me, as I recently lost a close relative to lung cancer,” says Shih, training analyst in Patient Accounting. “This is my way of stepping up to make a difference. I’m proud to offer my time to have a positive effect.”

“I really like helping out at the Scooper Bowl, which I do every year along with my colleagues in the Information Systems-Project Management Office,” adds Michael Madden, project specialist in Information Systems. “To see the smiles on all the kids’ faces really makes it all worthwhile. My daughter, Charlotte, has been talking about the event for the past two weeks. Everyone is in a jovial mood, and serving ice cream along with volunteering for Dana-Farber is very rewarding.”

All proceeds from the Scooper Bowl benefit the Jimmy Fund, which supports pediatric and adult cancer research and care at Dana-Farber Cancer Institute.

Since its inception in 1983, the Jimmy Fund Scooper Bowl has raised more than $3 million.

Volunteer Award continued from page 1

working with staff to cut waste and finding ways to donate uneaten food to those in need.

“Taylor truly demonstrated her commitment to helping others, dedicating herself fully in a short period of time,” said Deborah Toffler, MSW, LCSW, director of Volunteer Services and the Shapiro Center for Patients and Families. “She is the kind of volunteer who brings a new perspective and an energetic spirit to volunteering.”

The award is made possible by Rowena and Charles Simberg and includes a $2,500 prize. Wensley will allocate these funds to the Friends’ Place CARE Bag Program, which provides complimentary support bags for patients starting treatment and for caregivers.

Last year’s award recipients, Anne and Dick Tonachel, were delighted by Wensley’s honor. “Taylor has really brought joy to patients. They’d look for her and she made sure they found them every week,” said Anne. “She very much deserves this award and is an example to each of us for how to be caring and helpful without being intrusive.”

Wensley also has a way of “turning sadness into hope,” added Stahl. According to Toffler, there are more than 400 volunteers whose roles are integral to the organization, offering everything from legal assistance, or reading material to distract from a long infusion session. “We all talk about the ‘special sauce’ – a term often used by Dr. Benz – of what makes Dana-Farber unique,” said Toffler. “It’s not only the excellent clinical care that patients receive, but that extra support and kindness of volunteers that makes people feel good and a part of a community.”

To view a full list of volunteers and years of service, visit the “Awards and Recognition” section of the Volunteer Services page on DFCI Online.

Maine conference continued from page 1

Medical Center, our main collaborator in the state, on ways to improve the patient pathway between Dana-Farber and MMC,” adds Emmert. “The goal is to better prepare the patient, and prepare us for the patient.”

Improved coordination of care can do more than simply reduce inefficiencies or inconveniences. Studies show that survival rates have risen more slowly for cancer patients treated far from home than for those treated locally. (Some Maine patients come from more than 400 miles away, roughly the same distance as between Boston and Washington, D.C.)

The benefits of coordination are especially evident in cases of bone marrow or stem cell transplant – the complexities of which can be magnified when patients travel long distances for treatment. In Maine, transplant patients may have their initial tests and work-up at a community hospital like MMC, travel to Dana-Farber for the transplant itself, and then return to Maine for follow-up care. “This is a clear area where Dana-Farber and Maine caregivers need to be in sync,” Emmert comments.

Basic questions

The conference attracted 30 clinicians from seven Maine health centers – physicians, social workers, patient navigators, nurses, physician assistants, and dietitians – one of whom made a nearly 300-mile round-trip to attend. “Many of them had very basic questions about the elements of care at Dana-Farber, the details of the services we provide,” says Bethany King, quality improvement analyst. By the same token, Dana-Farber representatives at the conference said they weren’t as familiar as they’d like to be with the services patients receive in Maine.

“We learned that patients’ medical records aren’t moving between Maine care providers and Dana-Farber as smoothly as they could be,” Emmert remarks. “Key milestones in the care process aren’t being communicated well.”

Attendees formed teams to discuss ways of improving communication between Dana-Farber and its care partners in Maine, and easing the burden of travel on patients and their families. Among their suggestions was to arrange for a van to shuttle patients from a mall in southern Maine to Dana-Farber, and then back in the evening. Another was to hold an open house at the Institute for Maine caregivers who wish to observe the patient treatment process in action. These ideas and others will be explored in the coming months.

Inside the Institute | June 19, 2012