SURVIVING THE SHORTFALL

Decreased research funding from traditional sources has led some investigators to get creative.

BY JEANNE METTNER

Fifteen years ago, Daniel Saltzman, M.D., chief of pediatric surgery at the University of Minnesota Amplatz Children's Hospital, conceived a novel—and self-admittedly "crazy"—way to kill solid cancer tumors: inject them with modified strains of salmonella, a bacteria that has the ability to penetrate solid masses and deliver cancer-fighting immune-modulating genes. When tested in a clinical trial involving dogs with metastatic osteosarcoma, Saltzman's investigational therapy had a 38 percent success rate (six of 16 dogs with bone cancer who were treated with it survived).

Even though subsequent research in Saltzman's lab revealed ways that the salmonella can disarm what he calls the "so-called" field of tumor immunosuppression, he knew the chance of getting funding for his work from traditional sources was slim. "You can go to a funding agency like the NIH and say, 'Look, I want to treat cancer with a bacteria that would normally give you horrible diarrhea and belly pain'—and they'll laugh you out of the room simply because of the idea of it," Saltzman says. "Here we are 15 years later and we find that it really works; but a granting agency is still not going to be the one to take a chance and give money for it."

Frustrated with his inability to clinch federal grant money, Saltzman took his pleas to cyberspace. With the help of two Minneapolis agencies, he created Project-Stash.org, a crowdfunding website that provides information about his research and allows individuals to contribute dollars to support his research. Saltzman also has done a TEDx talk and created Twitter and Facebook accounts for ProjectStash to generate interest in his work. Thus far, he has raised about $175,000. When he reaches $500,000, Saltzman says he will have the funds needed to complete the research required to file an Investigational New Drug application with the Food and Drug Administration. In the meantime, his lab has stayed open with the help of smaller philanthropic grants and proceeds from fund-raisers. "We've had crowdfunding donations ranging from $5 to $35,000," he says.

A crisis of inflationary proportions

Although Saltzman's approach to securing funding is decidedly unconventional, it illustrates the hoops researchers must now jump through to ensure their investigations survive in an era when federal funding for research has faced repeated cuts. Perhaps hardest hit has been the National Institutes of Health, which funds 60 percent of the biomedical research in this country. In 2013, when sequestration forced a 5 percent cut to the NIH budget, the agency had, in effect, $4.7 billion (32 percent) less in inflation-adjusted dollars than it had a decade earlier. In 2013, the NIH funded 20 percent fewer research grants than it did in 2003; the number of R01 grants (large, multi-year grants) funded during that same period fell by almost 30 percent.

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The cuts have proved challenging for researchers in Minnesota and throughout the United States. For example, the University of Minnesota Medical School's NIH funding went from $152 million in 2012 to $145 million in 2013. Mayo Clinic's NIH budget fell from $223 million to $211 million during that same period. "As far as disciplines being impacted—whether it's cancer, neuroscience, genetics, cardiovascular, infectious disease, everybody has felt it," says Tucker Leibson, Ph.D., a professor of laboratory medicine and pathology and vice dean for research at the University of Minnesota Medical School. Although he is unaware of any lab closures that have resulted from the NIH cuts, he knows many that were forced to downsize. "A lot of these labs are like small businesses. If you have five or six employees and you lose one, it has a tremendous impact," he explains. "You end up having to narrow the scope of your activities."

The decade of incremental decreases in NIH dollars has also prompted a climate change in the biomedical research world. Stephen Binderen, Ph.D., chairman of research finance and professor of radiology at Mayo Clinic, says the erosion of support has been particularly challenging for young investigators. In 1980, the average age at which an M.D./Ph.D. received his or her first R01 grant was 36. Today, it's 44. "I am concerned about this because it's causing some young investigators to question whether they want to stay in academic research at all," he adds that researchers who are completing their