

IS THERE A SCIENTIST IN THE HOUSE? *How Doctors and Researchers are Erasing Boundaries to Create Better Care for Patients*

Dr. Thomas Colacchio, President, Dartmouth-Hitchcock Clinic

On behalf of our Trustees and DMS Overseers, President Jim Varnum, and Dean Stephen Spielberg, it is my honor to welcome you this evening. Welcome.

The special role that philanthropy plays at Dartmouth-Hitchcock Medical Center and Dartmouth Medical School cannot be overstated. YOU – our donors – enable us to respond to new challenges and unforeseen opportunities in ways that help us improve year by year, decade by decade.

Ensuring our forward progress, you are our partners in creating the level of care you expect and deserve and in shaping the future of medicine through our training of the next generation of doctors and scientists.

For your invaluable support in achieving our mission, we thank you.

In my multiple roles of President, doctor, and clinical researcher, I have the special privilege of personally experiencing every day the remarkable interaction of science, learning, and healing that makes this medical center and our medical school so special.

The synergy of these parallel processes is impressive. The blending of the work we do leading to discovery and the focus we place on ensuring that this new knowledge is applied quickly for the delivery of effective care to patients is the hallmark that distinguishes from our peers.

From our scientist colleagues hard at work in labs on the Hanover and Lebanon campuses doing basic research to our physicians, nurses and members of our care teams who are caring for patients here and across the region to our medical students and residents – we are all working along the continuum of discovery, knowledge, and application, for the benefit of those we serve.

We seek answers, we question assumptions and create solutions. Why at the very basic level do our cells behave the way they do, why do they sometimes misbehave and cause disease? And how do we best take what we discover about the biology of life in the lab and put it to work for the patient in the exam room and at the bedside? Putting these two themes in focus together leads us to critical answers for the benefit of our patients.

I like to refer to this marriage of disciplines here in our special, collaborative environment, as the double helix or “genome” that is DHMC. It is our unique blending of the science of disease biology with the science of clinical practice that provides our community that which they expect of us – healthier lives and prevention of illness. The emphasis we place on this marriage is, like our genome, foundational to who we are and directs all we do.

You will not find self-directed or esoteric research here. Many of you have just toured a few of our labs in the Norris Cotton Cancer Center and perhaps have spoken with our researchers. Their work is driven by the patients who walk through the doors two levels below where we stand this evening. This is what we mean by the phrase “bench to bedside or translational research.”

They likely explained to you how they – as I do with my patients – work collaboratively across the institutions – linking lab to exam room and classroom to operating room. These collaborations exist not only on this campus, but across the breadth of Dartmouth – from the medical school to the Thayer School of Engineering to the Tuck Business School and the faculty of the Arts & Sciences undergraduate college.

The title of my talk on your invitation to this evening’s event was “Is there a Scientist in the house” – a twist on the old phrase when urgent care was needed, “Is there a Doctor in the house”. Simplistic perhaps, but it is meant as a way to let you know how much emphasis we put on doing the research that is needed to cure cancer, to prevent chronic illness in our children, to change the way we live at the beginning of our lives and the way we live at the end of it, seeking comfort and awareness for our most vulnerable young and our venerable elders.

So when two DMS researchers earlier this year uncovered the insidious process by which a molecule called Smad7 helps pancreatic cancers grow out of control, it meant hope for the patients I see in my practice. Maybe not today, or even next week. But soon, perhaps, and by having this important piece of new knowledge, we are that much closer to slowing down this cancer’s spread, to halting the proliferation of cells and the growth of blood vessels that feed tumors. We’re doing this to better serve our patients.

We apply this same intensity and determination to question the way that we utilize and sequence treatments we already have.

Transforming medicine calls for “*questioning assumptions – respecting traditions but not following them blindly*”. Let me give you the example of our pancreas team that is hard at work battling one of the most deadly malignancies – pancreatic cancer. The statistics are grim. National Cancer Institute statistics report that only 6 % of patients will survive this deadly disease.

The prevailing treatment is immediate surgery followed by rounds of chemotherapy and radiation. At the Norris Cotton Cancer Center doctors have been questioning the assumption that surgery should be the first line of treatment, and their questioning and practice changes are starting to pay off. Our doctors have been treating patients with pancreatic cancer neoadjuvantly with a powerful cocktail of chemotherapy drugs and simultaneous radiation followed by surgery. The early results are exciting and demonstrate a remarkable decrease in recurrence rates. In the traditional surgery first model, cancer will return locally in 30 % of the cases. We have found that with this

neoadjuvant approach, which simply means that the chemo and radiation are delivered prior to surgery, only 6% of the patients have a local recurrence.

...Is there a scientist in the house? Yes, and his or her arsenal of knowledge is being put to work for you.

But what about the other kinds of research – the kind that has the potential to improve the way health care in this country is funded, the kind that can stop the run-away train of escalating costs.

In 1990, Americans spent about \$650 billion on health care. Yet, at that time, 19 countries had lower infant mortality rates and 26 had better cardiovascular statistics. The cause of the discrepancy apparently wasn't a lack of money, but rather fatal flaws in the American health-care system.

Fast forward to today. The National Coalition on Health Care estimates US health care expenditures have nearly tripled to \$1.8 *trillion*. I think we can all agree that this system is not fixed, our citizens are not as healthy as they deserve and we are certainly not cost-effective.

Undoubtedly you have heard or read about our distinguished Center for the Evaluative Clinical Sciences, founded by Jack Wennberg, now director of the Center. Jack and his colleagues – an innovative group of scientists and clinician-scholars from Dartmouth's medical and graduate schools, conduct cutting edge research on critical medical and health issues. They are hard at work on the macro and micro levels of this complex issue. They are measuring, organizing and evaluating medical practice and economics, providing a basis for rational policy choices and deciding how and where dollars should be spent to produce the results patients need.

They are influencing health care on a national level, international level in fact. But here we are in northern New England, in the Upper Valley, so what impact do we feel here? What do their mountains of data mean for us?

I'll cite one quick example. In the late 1980s we recognized a high mortality rate among patients in medical facilities throughout the northern New England region for coronary artery bypass graft, or CABG, surgery. Researchers and clinicians at DHMC and CECS initiated a collaboration between participating institutions from across the region to share their mortality data and the details of their processes for doing these procedures. This alone was a remarkable accomplishment, since this sort of collaboration just had not been done before.

They discovered there were wide variations among member institutions, and more than a two-fold difference in CABG mortality rates among them. Why the variation? Why did some fare better, simply because of where the surgery was done?

The participants visited one another's institutions and discovered subtle but definite variations in the way they did cardiac surgery. Through retrospective reviews of vast amounts of data, the members were able to determine things they could be doing differently to save lives.

By 2000, the mortality rate for CABG had fallen by 24% region wide, and there was no statistical difference among the participating institutions. This remarkable impact was possible only through collaboration, and through the data-driven work and models that CECS provides for us and for the country.

This model is now the foundation for the Northern New England Cystic Fibrosis Consortium, a multi-institutional, tri-state initiative to improve the quality, safety, effectiveness, and costs of medical interventions in the care of patients with cystic fibrosis and their families.

These are a few of the many ways we are using that DHMC “genome” – that blending of the twin sciences of clinical practice and disease biology – to make your lives better. The translational research we do here is important, and is one of our highest priorities in our strategic thinking about how to keep improving and progressing. Medical advances, always on the move, are accelerating at a breath-taking pace. We are living in one of the most exciting and perhaps also most daunting of times, where the decoding of the human genome and remarkable technological advances have unleashed enormous potential and opportunity.

To continue to be leaders in those areas where we can and do excel, to accomplish stunning new objectives – many of which were unimaginable to last generations, we must invest in our human capital, our facilities, and our fiscal resources. The priorities of our comprehensive fundraising campaign – the Transforming Medicine Campaign – have been carefully chosen to assure our progress, to let us keep pace with medical knowledge, to drive our ability to serve you, your family, and our neighbors.

Today, and tomorrow, just like yesterday and over the past 200 years since the founding of the Medical School, we will continue to progress and succeed – but only in partnership with you – our community and supporters. We are grateful for your faith in our efforts. And I commit to you we will not waver in our commitment to you.

We thank you and appreciate your joining us this evening so that we may show you in this simple way, how very grateful we are for your participation.

Thank you.