Nancy Andrews

AN UNABASHED ADVOCATE

PHYSICIAN-SCIENTISTS ON A TIGHTROPE NEED A SAFETY NET.

Natalia Weedy

Physician-scientists encounter firsthand the pathology of disease, and with highly developed research skills they can wield the tools of the laboratory to create new treatments, says Nancy Andrews, former HHMI investigator and now dean of the Duke University School of Medicine. It's time for schools and others to step up and relieve the social and economic pressures that threaten this important career path.

I got my first taste of the biases I would encounter as a physician-scientist when I was applying to M.D./Ph.D. programs as an undergraduate. At the end of an interview with a surgeon at a prominent medical school, he concluded, "I can tell already that you are never going to be a scientist, because you like people more than molecules."

Science is not a molecules-versus-people endeavor. It is often an intensely social enterprise, in which you work closely with talented people on exciting, challenging projects.

Still others warned me, "You have to choose one or the other, or you are not going to be good at either"—another misconception that persists today.

Wrongheaded attitudes about combining medicine and research make me wince. I know many physician-scientists who have made a critical difference in their fields.

One of my favorite examples is pediatrician-geneticist Hal Dietz, an HHMI investigator at Johns Hopkins University (and a Duke alum). Early in his career he discovered the molecular etiology of Marfan syndrome, a common disorder that predisposes young people to catastrophic cardiac aneurysms. Over the following years Hal worked out how mutations in the *fibrillin-1* gene cause Marfan syndrome, *and* he took advantage of his scientific knowledge to try a new, rationally conceived treatment. If Hal hadn't been a pediatrician, he wouldn't have become interested in this problem. If he hadn't developed expertise in genetics, he would not have solved it. And he made major contributions to our understanding of the fundamental cellular process called nonsense-mediated mRNA decay, which protects against deleterious mutations.

M.D./Ph.D. physician-scientists—as well as M.D.s who seek to do research—face considerable pressures not experienced by their purely clinical or research colleagues. For example, academic medical centers may push young physician-scientists to take on heavier patient loads, viewing clinical income as more predictable and cost-effective than revenue from research grants. On the other hand, scientific colleagues may view clinical work as an irrelevant distraction. Physician-scientists must repeatedly defend the notion that combining patient care and scientific investigation opens up important new ways of thinking about medical problems.

Pressuring physician-scientists to increase patient loads and decrease research may not, in fact, be in the long-term economic interest of an academic medical center. True, a medical center needs to foster excellence in patient care, but what really puts it on the map is the excellence of its research. A center is more likely to attract cancer patients, for example, if it has investigators actively testing experimental diagnostics and therapies at the leading edge of treatment.

In addition, strong clinical and translational research can enhance fundamental science efforts at medical schools and universities. Many basic scientists enjoy thinking about their work in the context of real-world problems and gain from collaborations with physicians and physician-scientists that broaden their perspectives.

The stark funding climate at the National Institutes of Health puts enormous pressure on all biomedical scientists and, in particular, discourages young people from choosing physician-scientist careers. With a net decline in the spending power of the NIH budget, young people hear a negative drumbeat of how hard it is to attract funding and how much time they will spend writing grant applications. Full-time clinical careers seem secure by comparison. I am very worried about the talent drain that may ensue.

Leaders in academic medicine must take concrete steps to correct wrongheaded attitudes and support young physician-scientists. We can provide mentoring beyond the usual apprenticeship training given graduate students, with mentors who understand the distinctive pressures physician-scientists face. I feel especially fortunate to have had a graduate advisor, David Baltimore, who strongly advocated my finishing clinical training after defending my Ph.D. thesis and encouraged me to span both worlds.

Medical centers and research foundations can also show their support with cash. At Duke we are exploring institutional mechanisms for providing salary relief more systematically to those young physician-scientists with the highest potential. Such efforts must be deliberately aimed at providing flexibility to junior faculty negotiating how to effectively allocate time between clinic and laboratory. It would be terrific to see HHMI take a leadership role in solving this problem.

INTERVIEW BY DENNIS MEREDITH. *Nancy Andrews is the first woman to head a top-ten medical school. She was previously dean for basic sciences and graduate studies at Harvard Medical School and director of the Harvard-M.I.T. M.D./Ph.D. program.*