

The time for multidisciplinary research is now

Jerome A. Gilbert, Ph.D.¹

Author Affiliations:

1. Marshall University, Huntington, West Virginia

The author has no financial disclosures to declare and no conflicts of interest to report.

Corresponding Author:

Jerome A. Gilbert, Ph.D.
Marshall University
Huntington, West Virginia
Email: gilbert@marshall.edu

At the turn of the current century, the National Academy of Engineering published a list of what they considered engineering's "Grand Challenges of the 21st Century," including energy, food, water, cybersecurity, health care and health informatics, personalized medicine, and virtual reality.

As a biomedical engineer by training and a firm believer in multidisciplinary problem solving, I found their list relevant and thought provoking. I have since seen other, similar lists from various organizations and believe them to be worthy of reflection, as well.

Since coming to Marshall earlier this year, I have been considering what might be the top challenges facing Appalachia in the first part of the 21st century, and have come up with three major issues: lack of jobs and economic opportunity, obesity, and the opioid crisis. The field of medicine will take the lead in addressing the latter two of these ills and will have some influence over the first.

It also occurred to me that all three of these challenges for Appalachia are interdependent to varying degrees. Poverty and poor lifestyles contribute significantly to obesity, and in a similar fashion, poverty and the lack of hope for the future reinforces a temptation to turn to drugs.

These observations led me to the obvious conclusion that complicated problems such as these must be approached from the standpoint of multidisciplinary research. *Physicians and medical researchers must become more involved in multidisciplinary teams if we are to solve the complicated problems facing Appalachia today.*

It goes without saying that the health and subsequent social and economic consequences of obesity are myriad. Solving the obesity epidemic will require more than a medical solution. We must consider a number of factors, including increased nutritional education, an approach to encourage individual physical activity, the availability of work and recreation spaces to facilitate exercise, the availability of inexpensive and healthy food sources, and informing the general public about the value of living a healthy lifestyle. The disciplines that must be involved in attacking and conquering obesity include medicine, dietetics, sociology, psychology, urban planning, architecture, agriculture, business and economics, political science, public health, and education. The problem cries for multidisciplinary basic and applied research.

The opioid and addiction crisis also requires a number of approaches in addition to medical. The social and behavioral aspects of addiction are enormous. Solving addiction will require adjustments in the legal system, techniques to identify and reach out to addicts, recovery programs for withdrawal from addictive substances and re-entry into society, emotional and spiritual support for addicts and their families, and employment opportunities for recovering addicts. The list of required disciplines is similar to that of obesity in that attacking addiction must include medicine, sociology, social work, psychology, urban planning, business and economics, political science, the humanities, business, political science, public health, and education. Again, multidisciplinary teams are essential for basic and applied research on addiction.

At Marshall University, we are committed to working across disciplines to find holistic solutions to addiction and other challenges. We are focusing our efforts on forming multidisciplinary teams to attack problems here at home and across mankind.

We recently formed a Substance Abuse Coalition that spans the entire campus community and includes faculty and staff working in many of the aforementioned disciplines. We also are conducting a national search for a new position—a director and professor of addiction sciences who will be key to linking medicine and pharmacy with the social, economic and psychological disciplines.

If we are to be successful, we must create and maintain a synergy among all involved parties. The challenges are significant. We don't have time to waste.

Jerome A. "Jerry" Gilbert, Ph.D., is the 37th president of Marshall University. He took office in January 2016.