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During the summer, I attended a talk about culture by the extraordinary musician Yo-Yo Ma, and I read an article about basic science by the highly regarded journalist George Will. Here I put the two together.

Ma noted that he is first a person, second a citizen, third a musician, and only fourth a cellist. (Of course, he is one of the world's greatest cellists.) Both Ma and Will used the platform of their widely recognized but specific expertise to speak transcendently about matters that should concern us all, reaching far beyond what we might expect them to say as cellist and journalist and speaking profoundly as citizens. Ma spoke of how art, music, literature, biology, and even shipbuilding all contribute to a culture; these disciplines each have their own distinct culture, as well. Further, Ma noted, with great insight, that the circles of politics and economics can be polarizing and divisive, absent the imposition of culture's circle in a Venn diagram.

What is a citizen and what is culture? The *Oxford English Dictionary* tells us that the latter can be thought of as "manifestations of human intellectual achievement regarded collectively" or "the cultivation of bacteria or cells in a medium containing nutrients." A citizen is "the character of an individual viewed as a member of society." Science certainly can be understood through these definitions. Scientists contribute their achievements (and nutrients) to our culture collectively; and as citizens, as Ma would put it, they may also bring their analytic and intuitive ideas at the edge of society back to the center.

What about basic science? Will suggests that this definition is a great challenge: Basic science helps us understand our environment, ourselves, and one another; but it seems abstract, risky, remote. And it's hard to attract philanthropy to it: *No one ever died of biochemistry*. Basic scientists jump into a dark hole and hope that there is water in it. James Clerk Maxwell's curiosity revealed electromagnetism, and a century later, we have video streaming and MRI. Japanese marine biologist Osamu Shimomura changed the course of cellular biology, though that wasn't his intention. In the early '60s, he was trying to understand why the jellyfish *Aequorea victoria* glows green. At the end of a not very fruitful day in the lab, he had tossed a specimen in the sink and witnessed a flash of blue. He later learned that the addition of calcium in seawater would make the jellyfish flash green and found the protein responsible, which he called GFP (for green fluorescent protein). Scientists now widely apply GFP to track cellular activity in healthy physiology, as well as in models of every disease you can imagine. In the rush to find concrete applications for science, let us remember that we cannot apply what hasn't been discovered! This is understood within the culture of basic science and by the "citizens" who practice or value it.

Our school focuses on the development of physicians who are also scientists. Their culture is driven by their curiosity, and their citizenship is granted by a fascination with discovery that will benefit all of us. The author Saul Bellow (*Herzog*) writes of the "human millions who have discovered what concerted efforts and thoughts can do. As megatons of water shape organisms on the ocean floor. As tides polish stones. As winds hollow cliffs." What might Ma say? Citizens and culture form the soul of our planetary architecture.



JOSHUA FRANZOS

Arthur S. Levine, MD
Senior Vice Chancellor for the Health Sciences
John and Gertrude Petersen Dean, School of Medicine