Opening remarks from the Editors

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It is remarkable to consider that 50 years ago, scientists had not defined the most basic of molecular interactions responsible for powering and regulating non-muscle cell motility. There was no accounting of the most important cytoskeletal molecules, textbooks lacked descriptions of contractile proteins outside of muscle, and the only known non-muscle myosins resembled those found in skeletal muscle. Scientists did not know that one end of the actin filament grew faster than the other (nor did they realize this was important!), and they did not know about capping proteins or nucleators... then Thomas D. Pollard got to work.

During his remarkable (ongoing) career, Tom and his colleagues discovered and characterized the first unconventional myosin (myosin-I), polarized growth and disassembly of actin filaments, the Arp2/3 complex, and actin capping proteins. Each of these Pollard-led discoveries was accompanied by a quantitative characterization of associated molecules with the goal of understanding cell-scale mechanism. To this end, Tom has employed rigorous biochemical approaches and has always taken advantage of the newest biochemical, structural, cell biological, and imaging technologies to advance the field.

The molecular discoveries of the Pollard Lab have been spectacular; however, Tom's quantitative approach to cell

biology is equally as important as his discovery of the “molecular players.” Using a reductionist approach, Tom has not only discovered key molecules, he has also determined their cellular concentration, resolved their kinetic properties, solved their structures, localized them in living cells, and modeled their ensemble behaviors. Tom demands this level of quantitative understanding from his own group, and he expects it from the entire field (we have all been at a conference when Tom challenges the attendees with—“the ratios don't matter, what's the K_d !”) If the appropriate parameters are not available for components discovered by others, Tom's Lab gets to work to characterize the components themselves—whether they be crosslinkers, severing proteins, nucleators, or motors. This quantitative approach to Cell Biology has impacted an entire generation of scientists, many he trained, and many who have followed his example.

Tom's magnificent scientific career is all the more incredible when one considers his extensive service and leadership. He has tirelessly chaired departments and institutes, served as president of both the ASCB and Biophysical Societies, served as Dean of the Yale Graduate School, and chaired countless committees and panels. Among his most important leadership contributions has been organizing and implementing a voice in public policy (detailed in the review from Kevin Wilson in this special issue), a service that has benefited us all.

Tom consistently brought a unique and long-term vision while serving under these leadership roles. When recruited to Johns Hopkins Medical School from Harvard in 1977 to succeed David Bodian as Director of the Department of Anatomy, Tom requested that the name of the Department be changed to Cell Biology and Anatomy. He recruited faculty working in two areas: the molecular basis of cellular structure and function to teach cell biology, and physical anthropology to teach anatomy. Tom was uncharacteristically (for the time) aware of the importance of diversity and its necessity for a vibrant and productive department and community. Within a decade, the Department of Cell

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Biology and Anatomy Faculty of 16 was comprised of > 50% women and one under-represented minority. Such an achievement is particularly significant when one considers that departments, universities, and institutions throughout the nation and world are hastily scurrying to remedy this long-standing problem—a problem that Tom has endeavored to address for well over 25 years!

As a tribute to Tom's scientific career, we assembled a series of commentaries and reviews from those who worked with Tom as trainees or very close collaborators. The *Scientific Reviews* cover work from experimentalists and computational biologists that cover topics near-and-dear to Tom's heart and new direction taken by trainees that highlight the quantitative approaches of the trainees. The *Perspectives* speak to Tom's lasting impression on public policy, outlooks of colleagues, and impact on

trainees. We finally added a section of historical photographs contributed by authors of the articles in this special issue.

We hope you enjoy this Special Issue. On behalf of all contributors, trainees, and collaborators, we express our deepest appreciation to Tom for being a positive influence in our lives. Thanks, coach!

Sincerely,

E-, LB, and EMO

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