

Nobel Prize winner shares life experiences with UB audience

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Michael Levitt, PhD, Robert W. and Vivian K. Cahill Professor in Cancer Research, Stanford School of Medicine

The University at Buffalo Jacobs School of Medicine and Biomedical Sciences welcomed a scientific celebrity to campus for the Clinical and Translational Science Institute (CTSI) Seminar Series/O.P. Jones Lecture on May 2.

[Michael Levitt](#), PhD, a biophysicist in the Stanford University School of Medicine, is considered one of the founders of computational biology. He was awarded the 2013 Nobel Prize in Chemistry, along with Martin Karplus and Arieh Warshel, for the development of multiscale models for complex chemical systems.

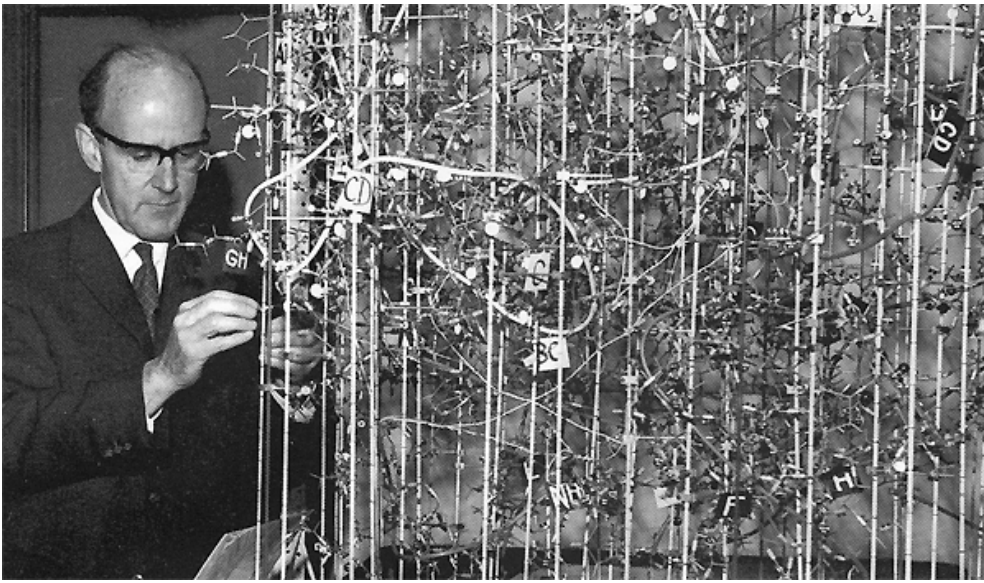


An audience of about 300 people were on hand for the third 2016-17 CTSI Seminar Series lecture.

Levitt was the guest of the medical school's Department of Biomedical Informatics. UB's Ram Samudrala, PhD, chief of the department's division of bioinformatics and a member of the CTSI informatics core faculty, was Levitt's student at Stanford in the late '90s and early 2000s.

Levitt pioneered the use of computer models for examining the structure and function of molecules beginning in the late 1960s. His presentation on "The Birth and Future of Multiscale Modeling of Macromolecules" looked back on his storied career and served as an inspiration to students and faculty among the nearly 300 people who came out to Butler Auditorium to hear him speak.

Combining elements of his biography with developments in the field, Levitt described how translating some of the most fundamental formulas of physics into Fortran (an early computer coding language) allowed him and his early collaborators to form images of submicroscopic particles, such as proteins and amino acids. The state of the art at the time was to construct physical models out of tinker toy-like components.



Max Perutz with his model of a hemoglobin molecule, 1959. Photo: Life Sciences Foundation.

As computing power increased and the virtual models grew increasingly sophisticated, simulation of the complex structure of molecules and their interactions allowed researchers to predict in advance how compounds would react to one another, facilitating, for instance, the development of new drugs. Levitt's current research interests involve modeling the behavior of the ribosome, a "molecular machine" whose mysteries he called "The Holy Grail of Simulation."

Levitt presented a slide showing how computing power, thanks to Moore's law, has changed by a factor of about 10,000 since he started his career in terms of cost, speed, memory capacity and reduced size. "If cars were like computers," he mused, "a new Volvo would cost \$3, have a top speed of 2,000,000 kph, it would carry 50,000 adults and fit in a shoebox."

Throughout the lecture, Levitt situated his scientific work in the context of his ongoing life experiences, emphasizing his point that discoveries made in the lab do not exist in a vacuum. When asked what kind of curriculum schools should design for students interested in doing the kind of work he's involved in, Levitt demurred.

"I have this maxim about what is a good education," he said. "When you leave, you shouldn't hate learning." Amid a round of laughter from the audience, he admitted, "It's a pretty low bar." His concern is that the area is becoming harder and harder and people are working more and more just to keep up. The first course in the curriculum, he said, should be meditation.

"Just learn to do nothing. Put down your phone and sit quietly for 10 minutes. ... You don't get good ideas by working really hard. You often get good ideas by going for a walk or having a shower, washing the dishes or walking the dog." Creativity and originality are more important to the field, he said, than learning how to add fractions.

[You can watch a video of the entire O.P. Jones Lecture here.](#) (You may need to enable Adobe Flash Player in your browser. If the video doesn't start, click on Video File to download a video you can watch from your desktop.)

Levitt was the third speaker in the 2016-17 academic year CTSI Seminar Series. Prior guests were [Peggy Compton](#), PhD, RN, FAAN, an associate professor in the University of Pennsylvania School of Nursing, who talked about treating opioid addiction, and [Arnold Monto, MD](#), professor of epidemiology and a leader in infectious disease research from the University of Michigan School of Public Health.