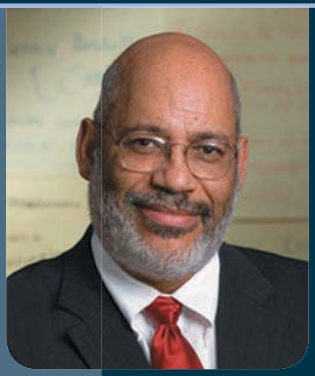

Born in Baton Rouge, Louisiana, Lovell Jones was one of the first students to integrate the schools in that city. He went on to major in biology at California State University at Hayward (now CSU East Bay). He then earned a Ph.D. in Zoology with an emphasis in endocrinology and tumor biology from the University of California, Berkeley, in 1977. As a postdoctoral fellow at the University of California, San Francisco, he carried out research on the effects of estrogen on breast cancer. In 1980, after his post-doc, he moved to the MD Anderson Cancer Center as an assistant professor in the Department of Gynecology and Biochemistry, where he remained until his retirement in 2013. In addition to making major contributions to our understanding of the role of steroid hormones in reproductive cancers, Dr. Jones is considered a pioneer in addressing health inequities and social justice. He has continued the latter work during his retirement. During his long, distinguished career, Dr. Jones has received numerous awards and has been commended in the U.S. House of Representatives for his lifelong work.

"Studying biochemistry in a holistic way is going to be the key to the answers we need."

Dr. Lovell Jones in his lab, where he has studied the relationship between hormones and cancers.

An Interview with Lovell Jones

What did you study in graduate school?

I got my Ph.D. at UC Berkeley, working with Howard Bern on the effects of hormones on cervical and vaginal development. I developed an interest in the effects of an artificial estrogen called diethylstilbestrol (DES), a medication used to stop spontaneous abortion in pregnant women. Women that used DES during their first trimester gave birth to girls who had an increased incidence of a rare form of cervical cancer at a very early age, as young as 7. At that time, it was thought that DES was acting as a chemical to initiate cancer, but I thought it was a hormonal action because it was mimicking estrogen, and I wanted to test that using mice. By exposing mice to natural estrogen when their cervical and vaginal tracts were developing, I showed that this exposure produced related types of tumors.

How did you continue to work on the relationship between hormones and cancer?

After I got my Ph.D., I worked with Finn Siiteri at UCSF, who was an expert on endocrine-related hormones but had no cancer knowledge. He brought me on because I had shown that hormones could initiate cancer. I started to work on finding a way to measure estrogen levels as a risk factor for developing breast cancer. I found that the level of free estrogen—estrogen that isn't bound to other molecules—was the risk factor because only free estrogen was able to function. At this point, I was recruited to MD Anderson Cancer Center to develop hormonal therapies using agents that blocked estrogens. We developed treatments for lung cancer, head and neck cancers, and salivary cancers. At the same time, I was looking at long-term effects of estrogens on neonatal development and developing a method to use hormone levels to predict breast cancer risk.

Why study biochemistry, and what are the most exciting avenues of biochemical research?

Studying biochemistry in a holistic way is going to be the key to the answers we need. We have to get out of our silos and do what some people call trans-disciplinary research. As far as future research goes, the most exciting area is precision medicine, an approach to treatment that considers a person's genes, environment, and lifestyle. We can now get away from looking at individuals in terms of their race, which is not a biological construct, and instead look at them as members of populations: subgroups that have a particular history together. For example, one of the highest incidences of pre-menopausal breast cancer is among blacks and whites in the Chesapeake Bay area. Why? Well, most white females who came into Maryland during colonial times were Scotch–Irish Catholics who arrived as indentured servants, a higher form of slaves. Roughly a third of them had interactions with African slaves. So a lot of people in that area have genes that came from Africa, and some people who look white have black ancestry. A disease called triple-negative breast cancer, where tumor cells are missing three types of receptors, is spoken of as a "black cancer." But it's really just that a group of genes that arose in one place in Africa leads to early onset of breast cancer. Also, triple-negative breast cancer is a disease of the young, not of black females in particular. So that's why I say precision medicine will need to analyze all of an individual's genes and consider their evolutionary history rather than just assigning them to one race or another.

What is your advice to an undergraduate considering a career in biology?

Find a good mentor. Some of the greatest mentors put their students ahead of themselves. Howard Bern, my Ph.D. advisor, said that the greatest contribution to science is not your papers or grants, but the people you leave behind.