17th International Symposium on Functional Medicine
Cellular Structure Narration—"The Dance"
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(Start Transcript)

I think the best way of demonstrating "dance" is to show a little visual, so if we can go to the video. I'm going to take a little bit of your time (3 minutes), and we'll just talk about the emerging view of the dance.

Here you are looking at lymphocytes, right? Traveling down the bloodstream, winding through the membrane receptors, the cellular architecture, creating signals through the bilayer of the membrane, through the laminar structure, creating architectural changes in lipoproteins.

You see the lipid rafts. These lipid rafts are transport proteins that are involved with cholesterol phospholipids that then engage the internal workings of the cell with the outside activity that signals through the actin and mycin neurofibral network to create, then, messages that transduce through the cell. This is called intercellular signal transduction, that travels down through this lattice network—this gelatinous structure—to ultimately reach the deep structures of the cell, the various organelles: the lysosome, the mitochondria, the ribosome, and ultimately the nucleus.

This is constantly being reformed and regenerated all the time, in real time. It's not static; it's dynamic. It's being responded to in part by the environment itself. As you have this kind of re-creation process occurring, it is recreating itself in the context of the environment that is changing as these fibrils are made, then broken down, and then re-made. It is re-forming the cellular architecture to engage in a new phenotype.

You have these transport molecules that are transporting throughout the cell these extraordinary new machinery that are going to produce the new phenotype of the cell in response to its changing environment. And as the information, then, is transduced into the internal portion of the cell, the cell is this plastic environment that is dynamically changing the molecular configuration to respond, in fact, to those new environmental conditions, and in so doing, you are producing new proteins like ribosomes. You are producing new posttranslational protein alteration by phosphorylation, glycation, oxidation. These proteins, then, travel to various organelles like the mitochondria, the energy powerhouse of the cell, where they enhance bioenergetics. Or they may, in fact, move themselves into the cellular membrane, where they translocate and become part of a plum pudding model of the cell membrane—become antennae that will pick up new messages from the outside environment that transducer new information to the cell.

The cell is a constantly dancing, changing, morphing, altering, dynamic process that is creating a rhythmic response to a changing environment, and eventually it leads to the expulsion of various proteins that send outside signals. These may be cytokines. These might be prostaglandins. These might be hormones that then send distant messages to altered parts of the body as all of this rhythmic, dynamic process is occurring.

It is a demonstration that we are in a constant dance—that what we think is static is not. It is all dynamic. It is all holographic. Every cell is in connection to every other cell. It is that rhythmic, reticular

process that ultimately leads to the regulation and physiological response of which cancer is embedded in that metastable, emergent structure.

(Applause)

Oh, boy. I think I need to take a break!

(End Transcript)