Informal Discussion Transcript

General Session III – Learning From Genetics

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ANNA RAPPAPORT: Thank you all for very interesting papers. I have a question about the study of families and I'm wondering if, in addition to being concerned about genetic issues, you're trying to explore whether the way the family conducted its life when the people were young and the things they were taught about nutrition, how they lived their lives, whether that has some influence as well, and if that's anything you can explore or are trying to think about.

THOMAS PERLS: Thank you. It has a huge influence. Familiarity isn't just genes, it's all the habits, years of education, access to health care, environmental exposures, all those things are hugely important to these estimates. We think, as Paola had said, that to get to these most extreme ages, genes are playing a greater and greater role in terms of having a combination of the right variance, maybe even protective variance, but that's part of the power of just looking at these pedigrees is that you're hoping you're capturing the other effects, all the environmental effects that are helping these families get to these ages like, for example, not smoking.

LES LOHMANN: Thanks very much, I enjoyed it. I observed some simple things, and I think sometimes we fail to see the obvious when we're digging so hard, and probably the

most important reason that I will die before 100, is that as a male I have testosterone, and it makes an enormous difference in my personal longevity, and in every male in this room. We know from sports medicine and the use of synthetic testosterone in athletes that it is an extraordinary, destructive chemical in our bodies, and so I see us digging deeply into an area that is obtuse and difficult and avoiding the obvious, and then the second obvious thing on the cellular reproduction issue: I assure you that the cells in my body come from ancient, ancient times. There has been no break in the life of the cells in any person in this room from the beginning of life on earth, and there is a capacity to survive that I think is being ignored in this discussion. I have no idea how it works. I did not learn more on that particular issue this morning, but you know, those cells keep reproducing and they've been reproducing for a very long time. Everyone in this room, their cells are about the same age, and that's pretty much forever. Thank you.

LEONARD HAYFLICK: Well, what I think you're overlooking in that statement about the immortality of somatic cells or the germ cell line is the incontrovertible fact that molecules turn over, so that the cells in your body today are not, although they may sit in the same position as cells did when you were a youth or when you were born,

those cells are different in the sense that there has been enormous molecular turnover, so that their identity has changed in that respect. There is a fundamental problem in a discussion like this in respect to the definition of immortality. It’s not as simple as it may seem at first, and I think this is a good illustration of it. The only thing that’s immortal in biology is the information contained in information-containing molecules, and even that is not strictly unchanged, because without mutations in those information-containing molecules, we would not have speciation.