

So we're introducing ourselves into this process about one month after fertilization, when the entire embryo is smaller than the size of a dime. We're going to look in at the nervous system where relatively small numbers of cells have been allocated and then monitor, over the 9 months of human gestation the increase in the number of cells and the change in shape of the central nervous system. So by three months we have something like a million cells, the nervous system is beginning to exceed the size of a dime. You can see that the future forebrain and the cortical region are expanding disproportionately to the rest of the nervous system. By 6 months we have hundreds of millions of neurons and the brain is beginning now to take a familiar shape. You can see the beginnings of the indentations, the sulci and gyri that Eric described, so that by the time we approach 8 and 9 months this is now a familiar picture and we have tens of billions of nerve cells present. After birth, there's yet further addition of cells to produce the hundred billion or so nerve cells that occupy the human brain. And one remarkable feature is that even in adult life, new neurons are being added. And there is evidence that the rate of new neuronal production depends on the degree of richness of your environment. So every time you come to the Howard Hughes Medical Institute headquarters here you're going to be producing neurons at a remarkable rate and you will leave with more neurons than you came in with. And so this process of neuronal generation really drives all aspects of behavior.