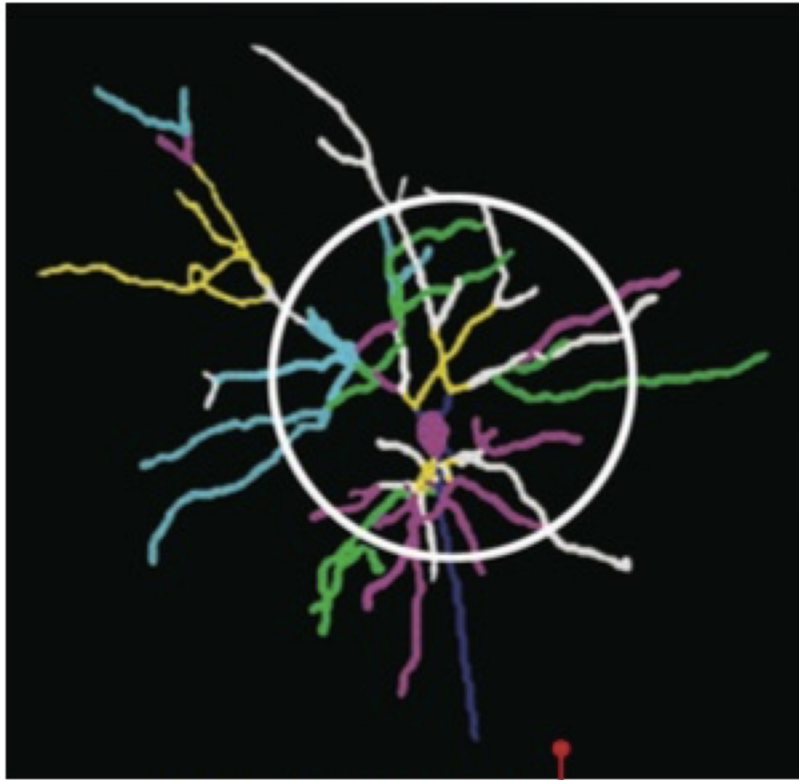
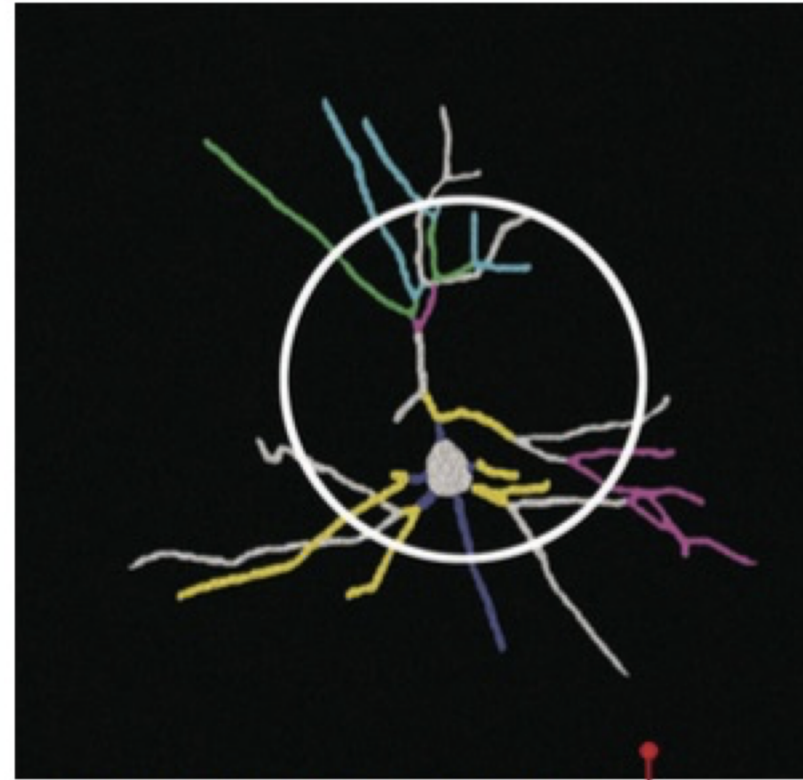


CORE CONCEPTS IN THE SCIENCE OF EARLY CHILDHOOD DEVELOPMENT

Toxic Stress Damages Developing Brain Architecture



Typical neuron: many connections



Neuron damaged by toxic stress: fewer connections

6

Scientists now know that chronic, unrelenting stress in early childhood, perhaps caused by extreme poverty, neglect, repeated abuse, or severe maternal depression, for example, can be toxic to the developing brain. While positive stress (moderate, short-lived physiological responses to uncomfortable experiences) is an important and necessary aspect of healthy development, toxic stress is the strong, unrelieved activation of the body's stress management system in the absence of the buffering protection of adult support. This image depicts the structure of neurons in the areas of the brain that are most important for successful learning and behavior in school and the workplace—the hippocampus and prefrontal cortex. The neuron on the right, which has been subjected to toxic stress, clearly displays underdeveloped neural connections, or weaker brain architecture.