Eberhard Fetz received his B.S. in physics from the Rensselaer Polytechnic Institute in 1961, and his Ph.D. in physics from the Massachusetts Institute of Technology in 1967. He came to the University of Washington for postdoctoral work in neuroscience and has been on the faculty ever since. He is currently Professor in the Department of Physiology & Biophysics and Head of the Neuroscience Division of the Washington National Primate Research Center.

His overall research has concerned the neural control of limb movement in primates. This began with studies of monkeys’ ability to volitionally control the activity of brain cells. In this operant conditioning paradigm monkeys controlled a biofeedback meter arm with patterns of activity in motor cortex neurons. This work in 1969 first showed that neural activity could be used to drive an external device, and demonstrated the ability of the brain to volitionally control the activity of cortical neurons in variable patterns, phenomena that underlie much of the current work in brain-machine interfaces. He went on to investigate the functional organization of motor cortex cells controlling forearm muscles by documenting the correlational linkages of output cells with muscles in spike-triggered averages of EMG. He pioneered the recording of spinal interneurons in behaving monkeys and showed that spinal neurons share many properties of cortical cells, including preparatory activity prior to instructed movements. Other studies investigated the synaptic interactions between cortical neurons by using in vivo intracellular recordings and spike-triggered averages of membrane potentials. To elucidate neural computations in large-scale neural networks he developed dynamic recurrent network models that simulate the neural interactions generating behavior like target tracking and short-term memory. Most recently, his lab has developed an implantable recurrent brain-computer interface that can record activity of cortical cells during free behavior and convert this activity in real time to stimulation of cortex, spinal cord or muscles. This so-called “neurochip” creates a continuously operating artificial feedback loop that the brain can learn to incorporate into behavior. A second application of the neurochip is to produce changes in the strength of synaptic connections through activity-dependent stimulation. These two capacities of the recurrent brain-computer interface have promise for many basic research and clinical applications.

He has also pursued an abiding interest in art, beginning with cyanotype collages created with custom Kodalith negatives. A year’s sabbatical at the Wissenschaftkolleg in Berlin provided an opportunity to create print collages made with Photoshop and to experiment with video editing. His current interests are multimedia representations of mind/brain relationships.