Betz cells

Betz cells (also known as pyramidal cells of Betz) are giant pyramidal cells (neurons) located within the fifth layer of the grey matter in the primary motor cortex. They are named after Ukrainian scientist Vladimir Betz, who described them in his work published in 1874.

These neurons are the largest in the central nervous system, sometimes reaching 100 µm in diameter.

Betz cells are upper motor neurons that send their axons down to the spinal cord via the corticospinal tract, where in humans they synapse directly with anterior horn cells, which in turn synapse directly with their target muscles. While Betz cells have one apical dendrite typical of pyramidal neurons, they have more primary dendritic shafts, which can branch out at almost any point from the soma (cell body).

These perisomatic (around the cell body) and basal dendrites project into all cortical layers, but most of their horizontal branches/arbors populate layers V and VI, some reaching down into the white matter.

According to one study, Betz cells represent about 10% of the total pyramidal cell population in layer Vb of the human primary motor cortex.