Multiple Large Inputs to Principal Cells in the Mouse Medial Nucleus of the Trapezoid Body.

Jeremy B. Bergsman, Pietro De Camilli, and David A. McCormick.
Departments of Cell Biology and Neurobiology and Howard Hughes Medical Institute, Yale University School of Medicine

Abstract:
The calyx terminal of a giant mossy fiber is a powerful synapse that provides the input from the lateral lemniscus to the central nucleus of the trapezoid body (MNTB). We determined the input properties of these synapses in rat MNTB principal neurons. Our findings indicate that ~5% (5/94) of principal cells receive multiple strong inputs, and that the EPSC amplitudes of such cells are distinct from those of cells with single inputs.

Introduction:
The calyx terminal of the MNTB has been shown to be a powerful synapse that provides input from the lateral lemniscus to the central nucleus of the trapezoid body (MNTB). We determined the input properties of these synapses in rat MNTB principal neurons. Our findings indicate that ~5% (5/94) of principal cells receive multiple strong inputs, and that the EPSC amplitudes of such cells are distinct from those of cells with single inputs.

1 A Curious Observation (Cell A)

2 Three Response Sizes

3 High Threshold Input in Isolation

4 All Inputs are Glutamatergic

5 Depression of Low/Middle and High Threshold Inputs

6 Recovery from Depression

7 Characteristics of Cells with Multiple Large Inputs

8 Properties of MNTB Principal Cell B

Implications:

Materials and Methods:

Abstract:
The calyx terminal of a giant mossy fiber is a powerful synapse that provides the input from the lateral lemniscus to the central nucleus of the trapezoid body (MNTB). We determined the input properties of these synapses in rat MNTB principal neurons. Our findings indicate that ~5% (5/94) of principal cells receive multiple strong inputs, and that the EPSC amplitudes of such cells are distinct from those of cells with single inputs.

Introduction:
The calyx terminal of the MNTB has been shown to be a powerful synapse that provides input from the lateral lemniscus to the central nucleus of the trapezoid body (MNTB). We determined the input properties of these synapses in rat MNTB principal neurons. Our findings indicate that ~5% (5/94) of principal cells receive multiple strong inputs, and that the EPSC amplitudes of such cells are distinct from those of cells with single inputs.

1 A Curious Observation (Cell A)

2 Three Response Sizes

3 High Threshold Input in Isolation

4 All Inputs are Glutamatergic

5 Depression of Low/Middle and High Threshold Inputs

6 Recovery from Depression

7 Characteristics of Cells with Multiple Large Inputs

8 Properties of MNTB Principal Cell B

Implications:

Materials and Methods: