Temporal acuity in the auditory system - its high rates of firing, its sensitivity to input synchrony, and its fast time constants - is founded on the presence of fast-acting potassium channels at the synaptic junctions that are responsible for maintaining and recovering of the resting potentials (Trussell, 1999; Dietel, 2005). Cells in regions of the brain that receive sensory input are transiently activated by afferent signals, and have different types of K-channels. Some K-channels are fast-acting, while others are slow-acting. Fast-acting K-channels and potassium leak channels lacking certain channels (Grigg, 2008). Since the expression of potassium channels is different in different auditory regions of the brain, different K-channels and potassium leak channels lacking certain channels have been discovered in the auditory brainstem of the mouse. The study was conducted in collaboration with J. R. Ison, P. D. Allen, and B.J. Walteron of the University of Rochester. The study was supported by a grant from the National Institutes of Health (R01 DC 00432).

**Figure A:**
- **A:** 
  - **A:** Temporal acuity in the auditory system - its high rates of firing, its sensitivity to input synchrony, and its fast time constants - is founded on the presence of fast-acting potassium channels at the synaptic junctions that are responsible for maintaining and recovering of the resting potentials. The study was conducted in collaboration with J. R. Ison, P. D. Allen, and B.J. Walteron of the University of Rochester. The study was supported by a grant from the National Institutes of Health (R01 DC 00432).

**Figure B:**
- **B:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure C:**
- **C:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure D:**
- **D:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure E:**
- **E:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure F:**
- **F:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure G:**
- **G:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure H:**
- **H:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure I:**
- **I:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure J:**
- **J:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure K:**
- **K:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure L:**
- **L:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure M:**
- **M:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure N:**
- **N:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure O:**
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**Figure P:**
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**Figure Q:**
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**Figure R:**
- **R:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure S:**
- **S:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure T:**
- **T:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure U:**
- **U:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure V:**
- **V:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure W:**
- **W:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure X:**
- **X:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure Y:**
- **Y:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.

**Figure Z:**
- **Z:** Changes in the firing rate of a neuron in response to a sound stimulus. The firing rate increases rapidly in response to the sound stimulus and then decreases to a baseline level after the stimulus is removed.