Josh's Circuit Diagram References

Cell #1: Chu, Zhiguo, Mario Galarreta, and Shaul Hestrin. "Synaptic Interactions of Late-Spiking Neocortical Neurons in Layer 1." *Journal of Neuroscience* 23(2003): 96-102.

Cell #2: Dantzker, J. L., and E. M. Callaway. "Laminar sources of synaptic input to cortical inhibitory interneurons and pyramidal neurons." *Nature Neuroscience* 3(2000): 701-707.

Cell #3: Dantzker, J. L., and E. M. Callaway. "Laminar sources of synaptic input to cortical inhibitory interneurons and pyramidal neurons." *Nature Neuroscience* 3(2000): 701-707.

Cell #4: Dantzker, J. L., and E. M. Callaway. "Laminar sources of synaptic input to cortical inhibitory interneurons and pyramidal neurons." *Nature Neuroscience* 3(2000): 701-707.

Cell #5: Kapfer, Christoph, Lindsey Glickfeld, Bassam Atallah, and Massimo Scanziani. "Supralinear increase of recurrent inhibition during sparse activity in the somatosensory cortex." *Nature Neuroscience*. 10(2007): 743-753.

Cell #6: Buhl, E. H., G. Tamas, T. Szilagyi, C. Stricker, O. Paulsen, and P. Somogyi. "Effect, number and location of synapses made by single pyramidal cells onto aspiny interneurones of cat visual cortex." *J. Physiology*. 500(1997): 689-713.

Chu, Zhiguo, Mario Galarreta, and Shaul Hestrin. "Synaptic Interactions of Late-Spiking Neocortical Neurons in Layer 1." *Journal of Neuroscience* 23(2003): 96-102.

Kaiser, Katharina, Joachim Lubke, Yuri Zilberter, and Bert Sakmann. "Postsynaptic Calcium Infulx at Single Synaptic Contacts between Pyramidal Neurons and Bitufted Interneurons in Layer 2/3 of Rat Neocortex Is Enhanced by Backpropagating Action Potentials." *Journal of Neuroscience*. 24(2004): 1319-1329.

Kapfer, Christoph, Lindsey Glickfeld, Bassam Atallah, and Massimo Scanziani. "Supralinear increase of recurrent inhibition during sparse activity in the somatosensory cortex." *Nature Neuroscience*. 10(2007): 743-753.

Bjorn, Kampa, Johannes Letzkus, and Greg Stuart. "Cortical feed-forward networks for binding different streams of sensory information." *Nature Neuroscience* 9(2006): 1472-1473.

Reyes, Alex, R. Lujan, A. Rozov, N. Burnashev, P. Somogyi, and B. Sakmann. "Target-cell-specific facilitation and depression in neocortical circuits." *Nature Neuroscience*. 1(1998): 279-285.

Thomson, Alex M., David C. West, Yun Wang, and A. Peter Bannister. "Synaptic Connections and Small Circuits Involving Excitatory and Inhibitory Neurons in Layers 2-5 of Adult Rat and Cat Neocortex: Triple

Intracellular Recordings and Biocytin Labelling In Vitro." *Cerebral Cortex*. 12(2002): 936-953.

Thomson, Alex M., and Oliver T. Morris. "Selectivity in the inter-laminar connections made by neocortical neurones." *Journal of Neurocytology* 31(2002): 239-246.

von Engelhardt, Jakob, Marina Eliava, Axel Meyer, and Andrei Rozov. "Functional Characterization of Intrinsic Cholinergic Interneurons in the Cortex." *J. Neuroscience*. 27(2007): 5633–5642.

Wang, Yun, Anirudh Gupta, Maria Toledo-Rodriguez, Cai Zhi Wu, and Henry Markram. "Anatomical, physiological, molecular and circuit properties of nest basket cells in the developing somatosensory cortex." *Cerebral Cortex*. 12(2002): 395–410.

Cell #7: Blatow, Maria, Andrei Rozov, Istvan Katona, and Sheriar Whittington. "A Novel Network of Multipolar Bursting Interneurons Generates Theta Frequency Oscillations in Neocortex." *Neuron*. 38(2003): 805-817.

Reyes, Alex, R. Lujan, A. Rozov, N. Burnashev, P. Somogyi, and B. Sakmann. "Target-cell-specific facilitation and depression in neocortical circuits." *Nature Neuroscience*. 1(1998): 279-285.

Cell #8: Rozov, A., J. Jerecic, B. Sakmann, and N. Burnashev. "AMPA Receptor Channels with Long-Lasting Desensitization in Bipolar Interneurons Contribute to Synaptic Depression in a Novel Feedback Circuit in Layer 2/3 of Rat Neocortex." *J. Neuroscience*. 21(2001): 8062–8071.

Cell #9: Thomson, Alex M., David C. West, Yun Wang, and A. Peter Bannister. "Synaptic Connections and Small Circuits Involving Excitatory and Inhibitory Neurons in Layers 2-5 of Adult Rat and Cat Neocortex: Triple Intracellular Recordings and Biocytin Labelling In Vitro." *Cerebral Cortex*. 12(2002): 936-953.

Cell #10: Reyes, Alex, R. Lujan, A. Rozov, N. Burnashev, P. Somogyi, and B. Sakmann. "Target-cell-specific facilitation and depression in neocortical circuits." *Nature Neuroscience*. 1(1998): 279-285.

Cell #11: Wang, Yun, Anirudh Gupta, Maria Toledo-Rodriguez, Cai Zhi Wu, and Henry Markram. "Anatomical, physiological, molecular and circuit properties of nest basket cells in the developing somatosensory cortex." *Cerebral Cortex*. 12(2002): 395–410.

Cell #12: Thomson, Alex M., David C. West, Yun Wang, and A. Peter Bannister. "Synaptic Connections and Small Circuits Involving Excitatory and Inhibitory Neurons in Layers 2-5 of Adult Rat and Cat Neocortex: Triple Intracellular Recordings and Biocytin Labelling In Vitro." *Cerebral Cortex*. 12(2002): 936-953.

Cell #13: Thomson, A. M., and A. P. Bannister. "Postsynaptic Pyramidal Target Selection by Descending Layer III Pyramidal Axons: Dual Intracellular Recordings and Biocytin Filling in Slices of Rat Neocortex." *Neuroscience* 84(1998): 669-683.

Thomson, Alex, David West, Joel Hahn, and Jim Deuchars. "Single axon IPSPs elicited in pyramidal cells by three classes of interneurones in slices of rat neocortex." *J. Physiology*. 496(1996): 81-102.

Thomson, Alex M., David C. West, Yun Wang, and A. Peter Bannister. "Synaptic Connections and Small Circuits Involving Excitatory and Inhibitory Neurons in Layers 2-5 of Adult Rat and Cat Neocortex: Triple Intracellular Recordings and Biocytin Labelling In Vitro." *Cerebral Cortex*. 12(2002): 936-953.

Cell #14: Lubke, Joachim, Veronica Egger, Bert Sakmann, and Dirk Feldmeyer. "Columnar Organization of Dendrites and Axons of Single and Synaptically Coupled Excitatory Spiny Neurons in Layer 4 of the Rat Barrel Cortex." *The Journal of Neuroscience*. 20(2000): 5300-5311.

Staiger, Jochen F., Iris Flagmeyer, Dirk Schubert, Karl Zilles, Rolf Kotter, and Heiko J. Luhmann. "Functional Diversity of Layer IV Spiny Neurons in Rat Somatosensory Cortex: Quantitative Morphology of Electrophysiologically Characterized and Biocytin Labeled Cells." *Cerebral Cortex*. 14(2004): 690-701.

Tarczy-Hornoch, K., K.A.C. Martin, K.J. Stratford, and J.J.B. Jack. "Intracortical excitation of spiny neurons in layer 4 of cat striate cortex in vitro." *Cerebral Cortex*. 9(1999): 833-843.

Thomson, Alex M., and A. Peter Bannister. "Interlaminar Connections in the Neocortex." *Cerebral Cortex* 13(2003): 5-14.

Cell #15: Ali, Afia, A. Peter Bannister, and Alex Thomson. "Robust correlations between action potential duration and the properties of synaptic connections in layer 4 interneurones in neocortical slices from juvenile rats and adult rat and cat." *J. Physiol* 580(2007): 149-169.

Buhl, E. H., G. Tamas, T. Szilagyi, C. Stricker, O. Paulsen, and P. Somogyi. "Effect, number and location of synapses made by single pyramidal cells onto aspiny interneurones of cat visual cortex." *J. Physiology*. 500(1997): 689-713.

Staiger, Jochen F., Iris Flagmeyer, Dirk Schubert, Karl Zilles, Rolf Kotter, and Heiko J. Luhmann. "Functional Diversity of Layer IV Spiny Neurons in Rat Somatosensory Cortex: Quantitative Morphology of Electrophysiologically Characterized and Biocytin Labeled Cells." *Cerebral Cortex*. 14(2004): 690-701.

Tamas, G., E. H. Buhl, and P. Somogyi. "Fast IPSPs elicited via multiple synaptic release sites by different types of GABAergic neurone in the cat visual cortex." *J. Physiology* 500(1997): 715-738.

Tarczy-Hornoch, K., K.A.C. Martin, K.J. Stratford, and J.J.B. Jack. "Intracortical excitation of spiny neurons in layer 4 of cat striate cortex in vitro." *Cerebral Cortex*. 9(1999): 833-843.

Thomson, Alex M., David C. West, Yun Wang, and A. Peter Bannister. "Synaptic Connections and Small Circuits Involving Excitatory and Inhibitory Neurons in Layers 2-5 of Adult Rat and Cat Neocortex: Triple Intracellular Recordings and Biocytin Labelling In Vitro." *Cerebral Cortex*. 12(2002): 936-953.

Thomson, Alex M., and A. Peter Bannister. "Interlaminar Connections in the Neocortex." *Cerebral Cortex* 13(2003): 5-14.

Wang, Yun, Anirudh Gupta, Maria Toledo-Rodriguez, Cai Zhi Wu, and Henry Markram. "Anatomical, physiological, molecular and circuit properties of nest basket cells in the developing somatosensory cortex." *Cerebral Cortex*. 12(2002): 395–410.

Cell #16: Ali, Afia, A. Peter Bannister, and Alex Thomson. "Robust correlations between action potential duration and the properties of synaptic connections in layer 4 interneurones in neocortical slices from juvenile rats and adult rat and cat." *J. Physiol* 580(2007): 149-169.

Cell #17: Ali, Afia, A. Peter Bannister, and Alex Thomson. "Robust correlations between action potential duration and the properties of synaptic connections in layer 4 interneurones in neocortical slices from juvenile rats and adult rat and cat." *J. Physiol* 580(2007): 149-169.

Thomson, Alex M., David C. West, Yun Wang, and A. Peter Bannister. "Synaptic Connections and Small Circuits Involving Excitatory and Inhibitory Neurons in Layers 2-5 of Adult Rat and Cat Neocortex: Triple Intracellular Recordings and Biocytin Labelling In Vitro." *Cerebral Cortex*. 12(2002): 936-953.

Cell #18: Ali, Afia, A. Peter Bannister, and Alex Thomson. "Robust correlations between action potential duration and the properties of synaptic connections in layer 4 interneurones in neocortical slices from juvenile rats and adult rat and cat." *J. Physiol* 580(2007): 149-169.

Cell #19: Ali, Afia, A. Peter Bannister, and Alex Thomson. "Robust correlations between action potential duration and the properties of synaptic connections in layer 4 interneurones in neocortical slices from juvenile rats and adult rat and cat." *J. Physiol* 580(2007): 149-169.

Cell #20: Ahmed, Bashir, John Anderson, Kevan Martin, and J. Charmaine Nelson. "Map of the Synapses Onto Layer 4 Basket Cells of the Primary Visual Cortex of the Cat." *The Journal of Comparative Neurology*. 380(1997): 230-242.

Ali, Afia, A. Peter Bannister, and Alex Thomson. "Robust correlations between action potential duration and the properties of synaptic connections in

layer 4 interneurones in neocortical slices from juvenile rats and adult rat and cat." *J. Physiol* 580(2007): 149-169.

Beierlein, Michael, Jay Gibson, and Barry Connors. "Two Dynamically Distinct Inhibitory Networks in Layer 4 of the Neocortex." *J. Neurophysiology*. 90(2003): 2987-3000.

Feldmeyer, Dirk, Arnd Roth, and Bert Sakmann. "Monosynaptic Connections between Pairs of Spiny Stellate Cells in Layer 4 and Pyramidal Cells in Layer 5A Indicate That Lemniscal and Paralemniscal Afferent Pathways Converge in the Infragranular Somatosensory Cortex." *The Journal of Neuroscience*. 25(2005): 3423–3431.

Staiger, Jochen F., Iris Flagmeyer, Dirk Schubert, Karl Zilles, Rolf Kotter, and Heiko J. Luhmann. "Functional Diversity of Layer IV Spiny Neurons in Rat Somatosensory Cortex: Quantitative Morphology of Electrophysiologically Characterized and Biocytin Labeled Cells." *Cerebral Cortex*. 14(2004): 690-701.

Tarczy-Hornoch, K., K.A.C. Martin, K.J. Stratford, and J.J.B. Jack. "Intracortical excitation of spiny neurons in layer 4 of cat striate cortex in vitro." *Cerebral Cortex*. 9(1999): 833-843.

Thomson, Alex M., David C. West, Yun Wang, and A. Peter Bannister. "Synaptic Connections and Small Circuits Involving Excitatory and Inhibitory Neurons in Layers 2-5 of Adult Rat and Cat Neocortex: Triple Intracellular Recordings and Biocytin Labelling In Vitro." *Cerebral Cortex*. 12(2002): 936-953.

Thomson, Alex M., and A. Peter Bannister. "Interlaminar Connections in the Neocortex." *Cerebral Cortex* 13(2003): 5-14.

Thomson, Alex M., and Oliver T. Morris. "Selectivity in the inter-laminar connections made by neocortical neurones." *Journal of Neurocytology*. 31(2002): 239-246.

Cell #21: Beierlein, Michael, Jay Gibson, and Barry Connors. "Two Dynamically Distinct Inhibitory Networks in Layer 4 of the Neocortex." *J. Neurophysiology* 90(2003): 2987-3000.

Thomson, Alex M., David C. West, Yun Wang, and A. Peter Bannister. "Synaptic Connections and Small Circuits Involving Excitatory and Inhibitory Neurons in Layers 2-5 of Adult Rat and Cat Neocortex: Triple Intracellular Recordings and Biocytin Labelling In Vitro." *Cerebral Cortex*. 12(2002): 936-953.

Cell #22: Thomson, Alex M., David C. West, Yun Wang, and A. Peter Bannister. "Synaptic Connections and Small Circuits Involving Excitatory and Inhibitory Neurons in Layers 2-5 of Adult Rat and Cat Neocortex: Triple Intracellular Recordings and Biocytin Labelling In Vitro." *Cerebral Cortex*. 12(2002): 936-953.

Cell #23: Beierlein, Michael, Jay Gibson, and Barry Connors. "Two Dynamically Distinct Inhibitory Networks in Layer 4 of the Neocortex." *J. Neurophysiology* 90(2003): 2987-3000.

Cell #24: Ahmed, Bashir, John Anderson, Kevan Martin, and J. Charmaine Nelson. "Map of the Synapses Onto Layer 4 Basket Cells of the Primary Visual Cortex of the Cat." *The Journal of Comparative Neurology*. 380(1997): 2 30-242.

Cell #25: Wang, Yun, Anirudh Gupta, Maria Toledo-Rodriguez, Cai Zhi Wu, and Henry Markram. "Anatomical, physiological, molecular and circuit properties of nest basket cells in the developing somatosensory cortex." *Cerebral Cortex*. 12(2002): 395–410.

Cell #26: Tamas, G., E. H. Buhl, and P. Somogyi. "Fast IPSPs elicited via multiple synaptic release sites by different types of GABAergic neurone in the cat visual cortex." *J. Physiology* 500(1997): 715-738.

Cell #27: Xiang, Zixiu, John Huguenard, and David Prince. "Synaptic Inhibition of Pyramidal Cells Evoked by Different Interneuronal Subtypes in Layer V of Rat Visual Cortex." *Journal of Neurophysiology* 88(2002): 740-750.

Cell #28: Thomson, Alex M., and Oliver T. Morris. "Selectivity in the inter-laminar connections made by neocortical neurones." *Journal of Neurocytology*. 31(2002): 239-246.

Cell #29: Angulo, Maria Cecilia, Jochen Staiger, Jean Rossier, and Etienne Audinat. "Distinct Local Circuits Between Neocortical Pyramidal Cells and Fast-Spiking Interneurons in Young Adult Rats." *Journal of Neurophysiology*. 89(2003): 943-953.

Cell #30: Angulo, Maria Cecilia, Jochen Staiger, Jean Rossier, and Etienne Audinat. "Distinct Local Circuits Between Neocortical Pyramidal Cells and Fast-Spiking Interneurons in Young Adult Rats." *Journal of Neurophysiology*. 89(2003): 943-953.

Cell #31: Ali, Afia, A. Peter Bannister, and Alex Thomson. "Robust correlations between action potential duration and the properties of synaptic connections in layer 4 interneurones in neocortical slices from juvenile rats and adult rat and cat." *J. Physiol* 580(2007): 149-169.

Markram, Henry, Yun Wang, and Misha Tsodyks. "Differential signaling via the same axon of neocortical pyramidal neurons." *Proc. Natl. Acad. Sci.* 95(1998): 5323-5328.

Schubert, Dirk, Jochen Staiger, Nicole Cho, Rolf Kotter, Karl Zilles, and Heiko Luhmann. "Layer-Specific Intracolumnar and Transcolumnar Functional Connectivity of Layer V Pyramidal Cells in Rat Barrel Cortex." *The Journal of Neuroscience*. 21(2001): 3580-3592.

Silberberg, Gilad, and Henry Markram. "Disynaptic Inhibition between Neocortical Pyramidal Cells Mediated by Martinotti Cells." *Neuron* 53(2007): 735-746.

Thomson, Alex M.. "Activity-dependent properties of synaptic transmission at two classes of connections made by rat neocortical pyramidal axons in vitro." *Journal of Physiology* 502(1997): 131-147.

Cell #32: Schubert, Dirk, Jochen Staiger, Nicole Cho, Rolf Kotter, Karl Zilles, and Heiko Luhmann. "Layer-Specific Intracolumnar and Transcolumnar Functional Connectivity of Layer V Pyramidal Cells in Rat Barrel Cortex." *The Journal of Neuroscience*. 21(2001): 3580-3592.

Cell #33: Xiang, Zixiu, John Huguenard, and David Prince. "Synaptic Inhibition of Pyramidal Cells Evoked by Different Interneuronal Subtypes in Layer V of Rat Visual Cortex." *Journal of Neurophysiology* 88(2002): 740-750.

Cell #34: Kapfer, Christoph, Lindsey Glickfeld, Bassam Atallah, and Massimo Scanziani. "Supralinear increase of recurrent inhibition during sparse activity in the somatosensory cortex." *Nature Neuroscience*. 10(2007): 743-753.

Cell #35: Silberberg, Gilad, and Henry Markram. "Disynaptic Inhibition between Neocortical Pyramidal Cells Mediated by Martinotti Cells." *Neuron* 53(2007): 735-746.

Cell #36: Ahmed, Bashir, John Anderson, Kevan Martin, and J. Charmaine Nelson. "Map of the Synapses Onto Layer 4 Basket Cells of the Primary Visual Cortex of the Cat." *The Journal of Comparative Neurology*. 380(1997): 2 30-242.

Beierlein, Michael, and Barry W. Connors. “Short-Term Dynamics of Thalamocortical and Intracortical Synapses Onto Layer 6 Neurons in Neocortex.” *J. Neurophysiol*. 88(2002): 1924-1932.

Schubert, Dirk, Jochen Staiger, Nicole Cho, Rolf Kotter, Karl Zilles, and Heiko Luhmann. "Layer-Specific Intracolumnar and Transcolumnar Functional Connectivity of Layer V Pyramidal Cells in Rat Barrel Cortex." *The Journal of Neuroscience*. 21(2001): 3580-3592.

Tarczy-Hornoch, K., K.A.C. Martin, K.J. Stratford, and J.J.B. Jack. "Intracortical excitation of spiny neurons in layer 4 of cat striate cortex in vitro." *Cerebral Cortex*. 9(1999): 833-843.

Zhang, Zhong-Wei, and Martin Deschenes. "Intracorticol Axonal Projections of Lamina VI Cells of the Primary Somatosensory Cortex in the Rat: A Single-Cell Labeling Study." *The Journal of Neuroscience* 17(1997): 6365-6379.

Cell #37: Mercer, Audrey, David West, Oliver Morris, Sarah Kirchhecker, Jane Kerkhoff, and Alex Thomson. "Excitatory Connections Made by Presynaptic

Cortico-Cortical Pyramidal Cells in Layer 6 of the Neocortex." *Cerebral Cortex*. 15(2005): 1485-1496.

Cell #38: Mercer, Audrey, David West, Oliver Morris, Sarah Kirchhecker, Jane Kerkhoff, and Alex Thomson. "Excitatory Connections Made by Presynaptic Cortico-Cortical Pyramidal Cells in Layer 6 of the Neocortex." *Cerebral Cortex*. 15(2005): 1485-1496.

West, David, Audrey Mercer, Sarah Kirchhecker, Oliver Morris, and Alex Thomson. "Layer 6 Cortico-thalamic Pyramidal Cells Preferentially Innervate Interneurons and Generate Facilitating EPSPs." *Cerebral Cortex*. 16(2006): 200-211.

Cell #39 (Thalamus): Porter, James, Cary Johnson, and Ariel Agmon. "Diverse Types of Interneurons Generate Thalamus-Evoked Feedforward Inhibition in the Mouse Barrel Cortex." *The Journal of Neuroscience* 21(2001): 2699-2710.

Staiger, Jochen F., Iris Flagmeyer, Dirk Schubert, Karl Zilles, Rolf Kotter, and Heiko J. Luhmann. "Functional Diversity of Layer IV Spiny Neurons in Rat Somatosensory Cortex: Quantitative Morphology of Electrophysiologically Characterized and Biocytin Labeled Cells." *Cerebral Cortex*. 14(2004): 690-701.

Cell #40: Thomson, Alex M., David C. West, Yun Wang, and A. Peter Bannister. "Synaptic Connections and Small Circuits Involving Excitatory and Inhibitory Neurons in Layers 2-5 of Adult Rat and Cat Neocortex: Triple Intracellular Recordings and Biocytin Labelling In Vitro." *Cerebral Cortex*. 12(2002): 936-953.

Cell #41: Buhl, E. H., G. Tamas, T. Szilagyi, C. Stricker, O. Paulsen, and P. Somogyi. "Effect, number and location of synapses made by single pyramidal cells onto aspiny interneurones of cat visual cortex." *J. Physiology*. 500(1997): 689-713.