RECEPTIVE FIELDS OF MONKEY GENICULATE CELLS IN THE DARK ADAPTED STATE. T.N.Wiesel & D.H.Hubel. Dept. of Pharm.,Harvard Med. School, Boston.

Twelve cells in the dorsal layers of the lateral geniculate body of the Rhesus monkey were examined with monochromatic light-spot stimulation in both the light and dark adapted state. All cells had their receptive fields 3° to 18° from the fovea. Four cells with opponent-color center-surround receptive fields showed an increase in the sensitivity of the center responses by about 3 log units; the peak spectral sensitivity of the center responses came to lie at about 500-520 mu,instead of at 540 or 580 mu in the light adapted state. The opposing surround showed no corresponding increase in sensitivity. Hence in the scotopic state at threshold levels these cells showed no opponent color mechanism, the spectral sensitivity was similar to that of rhodopsin, and the field had no center-periphery arrangement. These cells thus seemed to be supplied by both rods and cones; the rods seemed to play little part in the responses in the light adapted state, but dominated the responses at low intensities in the scotopic situation.In 6 other cells,also ones with opponent-color center-surround receptive fields, the threshold of both on- and off-components fell with full dark adaptation by only 1-1.5 log units, and there was little or no change in spectral sensitivity. This would be expected under our experimental conditions if all receptors supplying these cells were cones. Of the other type of opponent-color cell, in which the two antagonistic components had the same spatial distribution(i.e.,overlapped completely), only two were studied in the dark-adapted state. These seemed to receive input from cones only, since they showed only a moderate decrease in threshold and no change in spectral sensitivity of the two components. In summary, some geniculate cells appear to be connected to both rods and cones, others to cones only.

Roentgen Videodensitometric Study of Efficacy of Mitral Valve Closure in Dogs Without Thoracotomy. J. C. P. Williams*, T. P. B. O'Donovan*, R. E. Sturm* and E. H. Wood. Mayo Clinic, Mayo Foundation, Rochester, Minn.

Dogs under anesthesia and IPP respiration were positioned for fluoroscopy in a half-body cast so that the mitral-valve ring was parallel to the x-rays (modified left posterior oblique). Renovist (4 ml. 69%) was injected into the left ventricle (LV) through a spray-tip #5 catheter and angiograms recorded on videotape while the atria and ventricles were driven at constant rate by coupled pacemakers. Vagal "tone" was varied by bilateral stimulation of the distal vagi after section in the neck. Roentgenovideodensographic dilution curves (Fed. Proc. 23:303, 1964) were recorded from a 5x6 mm. sampling window juxtaposed to the mitral valve 2 and 5 mm. upstream (over the left atrium (LA)) and downstream (over the LV). The efficacy of valve closure during effective atrial contraction, EAC, (A-V stimulus interval: 0.05-0.14 sec.) and "ineffective" atrial contraction, IAC, (A-V interval: -0.003 sec.) was assessed as the regurgitant index: ratio of areas under immediately appearing portion of simultaneous LA and LV curves. In the control state, i.e. no vagal tone, and pacing about 15 beats above spontaneous rate of 105 to 185 beats/min., slight regurgitation was usually seen in dogs with EAC. During IAC, regurgitation was unchanged or slightly increased. At this paced rate, moderate and severe vagal stimulation (sinus rates below 90 and 60) had no systematic effect on regurgitation with EAC but usually increased any regurgitation with IAC. When, during the control state, severe circulatory depression was produced with pentobarbital, regurgitation increased during EAC, and still more during IAC, in proportion to the severity of hypotension. In unpaced dogs at slow sinus rates induced by vagal stimulation, the regurgitant index increased due mainly to retrograde flow in diastole. (Supported in part by research grants: NIH H-3532, NASA NsG-327, AHA CI 10, and BNZ.)