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href="zotero:select/items/0_DD5Z3ZJB">Functional anatomy of macaque striate cortex. II. Retinotopic
organization</a></h2><table><tbody><tr class="creator author"><th
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class="author">Author</th><td>E Switkes</td></tr><tr class="creator author"><th
class="author">Author</th><td>M S Silverman</td></tr><tr class="creator author"><th
class="author">Author</th><td>S L Hamilton</td></tr><tr class="volume"><th
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class="pages">Pages</th><td>1531-1568</td></tr><tr class="publicationTitle"><th
class="publicationTitle">Publication</th><td>The Journal of neuroscience: the official journal of the
Society for Neuroscience</td></tr><tr class="date"><th class="date">Date</th><td>May
1988</td></tr><tr class="abstractNote"><th class="abstractNote">Abstract</th><td>Macaque
monkeys were shown retinotopically-specific visual stimuli during 14C-2-deoxy-d-glucose (DG) infusion in
a study of the retinotopic organization of primary visual cortex (V1). In the central half of V1, the cortical
magnification was found to be greater along the vertical than along the horizontal meridian, and overall
magnification factors appeared to be scaled proportionate to brain size across different species. The
cortical magnification factor (CMF) was found to reach a maximum of about 15 mm/deg at the
representation of the fovea, at a point of acute curvature in the V1-V2 border. We find neither a
duplication nor an overrepresentation of the vertical meridian. The magnification factor did not appear to
be doubled in a direction perpendicular to the ocular dominance strips; it may not be increased at all. The
DG borders in parvocortical layer 4Cb were found to be as sharp as 140 micron (half-amplitude, half
width), corresponding to a visual angle of less than 2' of arc at the eccentricity measured. In other layers
(including magnocortical layer 4Ca), the retinotopic borders are broader. The retinotopic spread of
activity is greater when produced by a low-spatial-frequency grating than when produced by a high-
spatial-frequency grating. Orientation-specific stimuli produced a pattern of activation that spread further
than 1 mm across cortex in some layers. Some DG evidence suggests that the spread of functional
activity is greater near the foveal representation than near 5 degrees
eccentricity.</td></tr></tbody></table></li><li id="item-6537" class="item journalArticle"><h2><a
href="zotero:select/items/0_I2XFIBDB">Extended Concepts of Occipital
Retinotopy</a></h2><table><tbody><tr class="creator author"><th
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class="author">Author</th><td>Chien-Chung Chen</td></tr><tr class="creator author"><th
class="author">Author</th><td>Leonid L. Kontsevich</td></tr><tr class="creator author"><th
class="author">Author</th><td>Mark M. Schira</td></tr><tr class="creator author"><th
class="author">Author</th><td>Alex R. Wade</td></tr><tr class="volume"><th
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class="publicationTitle">Publication</th><td>Current Medical Imaging Reviews</td></tr><tr
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know what such theories will look like, but the characterization of human retinotopic maps from the last 25 years is likely to be an important part of future ideas about visual computations.

Visual Field Maps in Human Cortex

Author	Brian A. Wandell
Author	Serge O. Dumoulin
Author	Alyssa A. Brewer
URL	http://www.sciencedirect.com/science/article/pii/S089662730700774X
Volume	56
Issue	2
Pages	366-383
PublicationTitle	Neuron
Date	October 25, 2007
DOI	10.1016/j.neuron.2007.10.012
Abstract	Summary

Much of the visual cortex is organized into visual field maps: nearby neurons have receptive fields at nearby locations in the image. Mammalian species generally have multiple visual field maps with each species having similar, but not identical, maps. The introduction of functional magnetic resonance imaging made it possible to identify visual field maps in human cortex, including several near (1) medial occipital (V1,V2,V3), (2) lateral occipital (LO-1,LO-2, hMT+), (3) ventral occipital (hV4, VO-1, VO-2), (4) dorsal occipital (V3A, V3B), and (5) posterior parietal cortex (IPS-0 to IPS-4). Evidence is accumulating for additional maps, including some in the frontal lobe. Cortical maps are arranged into clusters in which several maps have parallel eccentricity representations, while the angular representations within a cluster alternate in visual field sign. Visual field maps have been linked to functional and perceptual properties of the visual system at various spatial scales, ranging from the level of individual maps to map clusters to dorsal-ventral streams. We survey recent measurements of human visual field maps, describe hypotheses about the function and relationships between maps, and consider methods to improve map measurements and characterize the response properties of neurons comprising these maps.

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Last update: **2019/05/22 16:08**

