V1 is the first cortical area that processes visual information.

V1 contains cells that respond preferentially to edges, bars, and gratings,

i.e. linear oriented patterns. They are sensitive to

the orientation of the patterns and, in case of

gratings, to their spatial frequency (for a review, see [127]).

Some cells are more sensitive to edges or single bars while

others prefer gratings. There are two types of such cells, simple

and complex cells. The former are sensitive to the phase of a

grating (or exact position of a bar), the latter are not and have

a larger receptive field.

V1 also contains cells that are sensitive to the end of a bar or edge or the border of a grating. Such cells are called endstopped or hypercomplex [127].

Neurons in areas V1 are not only involved in static scene analysis but also in motion analysis. A fraction of simple and complex cells in V1 are direction selective, meaning that they respond only if the stimulus pattern (grating) moves in one direction and not the other

[127] G. A. Orban. Higher order visual processing in macaque extrastriate

cortex. Physiol. Rev., 88:59–89, Jan 2008.

[127] <http://physrev.physiology.org/content/88/1/59.short>