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Lacunarity analysis and classification of microglia in neuroscience

Fractal analysis in the neurosciences has advanced over the last twenty years to include measures such as lacunarity. Lacunarity assesses heterogeneity or translational and rotational invariance in an image. In general, measures of lacunarity correspond to visual impressions of uniformity, where low lacunarity conventionally implies homogeneity and high lacunarity heterogeneity. It is now necessary to review some of the new permutations of this analysis technique and what it can tell the neuroscientist. This paper outlines methodological considerations associated with three different types of lacunarity analysis applied to the classification of microglial cells.