

Fuzzy Predicates from Linguistic Variables for Subjective Quantitative Colocalization Analysis*

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Cellular functional analysis through colocalization in fluorescence microscopy is becoming very popular in the biology, biomedical and chemistry fields. The subjectivity on the interpretation of results made possible the formalization of quantitative measurements. Several of these coefficients can be found in [1]. However, such quantitative parameters (features) extract a rough number that can be very useful if a semantic representation of such data is given back to the performer of the study. By using fuzzy logic theory on linguistic variables, we introduce the design of fuzzy predicates. These fuzzy predicates are an accurate semantic representation of the results obtained when the colocalization study is performed. We propose the construction of linguistic variables and fuzzy predicates based on information available in the state of the art about quantitative colocalization features. Results of designing and implementing fuzzy variables show a successful generation of fuzzy predicates. Fuzzy predicates are given to the performer of the study to support the final interpretation.

References

[1] V. Zinchuk, O. Zinchuk and T. Okada, "Quantitative colocalization analysis of multicolor confocal immunofluorescence microscopy images: pushing pixels to explore biological phenomena," *Acta Histochem. Cytochem.*, vol. 40, pp. 101-111, Aug 30. 2007.

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