**ABSTRACT writing**

**(Based on**

[**http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWsections.html**](http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWsections.html)**)**

Although it is the first section of your paper, the Abstract, by definition, must be written last since it will summarize the paper. An abstract summarizes, in one paragraph (usually), the major aspects of the entire paper in the following prescribed sequence:

1. the ***question(s) you investigated***(or purpose), (**from**[**Introduction**](http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWsections.html#introduction))
	* state the purpose very clearly in the first or second sentence.
2. the ***experimental design****and****methods*** used, (**from**[**Methods**](http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWsections.html#methods))
	* clearly express the basic design of the study.
	* Name or briefly describe the basic methodology used without going into excessive detail-be sure to indicate the key techniques used.
3. the ***major findings***including***key quantitative results***, or ***trends*** (**from**[**Results**](http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWsections.html#results))
	* report those results which answer the questions you were asking in the first or second sentence
	* identify trends, relative change or differences, etc.
4. a brief summary of your ***interpretations*** and ***conclusions***. (from [**Discussion**](http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWsections.html#discussion))
	* clearly state the implications of the answers your results gave you.

Please, remember:

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| * **Most abstracts are no less than 120 words but no more than 300 words. Remove unnecessary words or phrases. Brevity is the key. The Abstract SHOULD NOT contain abbreviations or terms that may be confusing to readers,**
* **Write your abstract in the past tense, except for conclusions that are always true**
* **Make sure that all the information appearing in the abstract actually appears in the body of the paper.**
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***How do you know when you have enough information in your Abstract?*** A simple rule- is to imagine that you are another researcher doing a study similar to the one you are reporting. If your Abstract was the only part of the paper you could access, would you be happy with the information presented there?

**Example:**.

# Multiparametric characterization of grade 2 glioma subtypes using magnetic resonance spectroscopic, perfusion, and diffusion imaging.

### (from the internet)Abstract

#### BACKGROUND AND PURPOSE:

The purpose of this study was to derive quantitative parameters from magnetic resonance (MR) spectroscopic, perfusion, and diffusion imaging of grade 2 gliomas according to the World Health Organization and to investigate how these multiple imaging modalities can contribute to evaluating their histologic subtypes and spatial characteristics.

#### MATERIALS AND METHODS:

MR spectroscopic, perfusion, and diffusion images from 56 patients with newly diagnosed grade 2 glioma (24 oligodendrogliomas, 18 astrocytomas, and 14 oligoastrocytomas) were retrospectively studied. Metabolite intensities, relative cerebral blood volume (rCBV), and apparent diffusion coefficient (ADC) were statistically evaluated.

#### RESULTS:

The 75th percentile rCBV and median ADC were significantly different between oligodendrogliomas and astrocytomas (P < .0001) and between oligodendrogliomas and oligoastrocytomas (P < .001). Logistic regression analysis identified both 75th percentile rCBV and median ADC as significant variables in the differentiation of oligodendrogliomas from astrocytomas and oligoastrocytomas. Group differences in metabolite intensities were not significant, but there was a much larger variation in the volumes and maximum values of metabolic abnormalities for patients with oligodendroglioma compared with the other tumor subtypes.

#### CONCLUSIONS:

Perfusion and diffusion imaging provide quantitative MR parameters that can help to differentiate grade 2 oligodendrogliomas from grade 2 astrocytomas and oligoastrocytomas. The large variations in the magnitude and spatial extent of the metabolic lesions between patients and the fact that their values are not correlated with the other imaging parameters indicate that MR spectroscopic imaging may provide complementary information that is helpful in targeting therapy, evaluating residual disease, and assessing response to therapy.