Verb tenses in scientific manuscripts

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Verb Tenses

A key aspect of producing a well-written scientific manuscript worthy of publication is the use of appropriate verb tenses in the different sections of the manuscript. Here, we discuss of:

- When
- Where
- How

to use the different verb tenses.

Title

- Titles are often not complete sentences.

  e.g. Cleavage of structural proteins during the assembly of the head of bacteriophage T4 [1].

- In such cases, no verb tense is used.
- However, if you do want to use a complete sentence, use the **present tense**.

  *e.g. CXCL12 in early mesenchymal progenitors **is required** forhaematopoietic stem-cell maintenance* [2].

  *e.g. Single-cell transcriptomics **reveals** bimodality in expression and splicing in immune cells* [3].

Introduction

A mixture of tenses is used in introductions, including the present tense, the present perfect tense and the past tense.

Present tense – use when stating general truths:

*e.g. Today, just over half of NIH-funded clinical-research participants **are** women* [4].

*e.g. While promising, GFP-based methods **rely** on cellular transfection that **proves** to be difficult to achieve in certain primary cell types* [5].

Introduction

Present perfect – use when describing actions that happened in the past but are still relevant today:

e.g. Fluorescent polymers and green fluorescent proteins (GFPs) ***have*** *recently* ***been used*** *for temperature mapping within a living cell* [5].

e.g. Certain rigorous studies evaluating the effects of sex differences ***have been*** *effective in bridging the divide between animal and human work* [4].

Introduction

Past tense – use when discussing previous studies or past events:

*e.g. Earlier this year, a study **demonstrated** that mice with XY chromosomes in the central nervous system **had** greater neurodegeneration than **did** those with XX chromosomes* [5];

*e.g. More than two decades ago, the US National Institutes of Health (NIH) **established** the Office of Research on Women's Health (ORWH)* [4].

Materials and Methods

The methods section should use the **past tense** because it is a report of what was done during the course of the study.

Materials and Methods

The tense most often used in the methods section is the past tense, but sometimes the past perfect tense and past progressive tense are required.

Past tense – use when describing the materials and methods that were used during the study:

*e.g. Bacterial genomic DNA **was isolated** from mice faeces, **amplified** for V1–V4 hypervariable regions of the 16S rRNA gene, and **used** for pyrosequencing analysis* [8].

Materials and Methods

Past perfect tense – use when describing an action that occurred before another action:

e.g. As a substrate, we used degenerately doped silicon onto which a 270-nm-thick layer of SiO2 ***had been grown*** [9].

e.g. Once the temperature set in the thermostat ***had been reached****, the system was allowed to equilibrate for 30 min* [10].

Materials and Methods

Past continuous tense – use when describing an ongoing action that occurred in the past:

*e.g. Participants were asked to recall what they had been told about post-HCT QOL as they **were preparing for** transplant* [11].

*e.g. Patients with relapsed and/or refractory MM whose disease **was progressing** after two or more prior lines of therapy were eligible to participate* [12].

Results

The tense most often used in the results section is the past tense. However, sometimes the present tense is required.

Past tense – use when describing the results of an experiment (which occurred prior to writing the paper, hence the use of the past tense):

e.g. Analysis of the identified gene set ***revealed*** *the induction of a broad-spectrum antipathogen response* [13].

Results

Present tense – use when describing results that can now be stated as a general fact:

e.g. Consistent with the former finding, challenge with the flagellin 51 MAMP peptide, flg22 (ref. 10), or the necrotroph Botrytis cinerea 52 11 ***suppresses*** *photosynthesis-related transcripts* [14].

Discussion

As with introductions, a mixture of tenses is used in the discussion sections of scientific manuscripts, including the past tense, the present tense and the future tense.

Future tense – use when discussing the implications of the study:

e.g. Demonstrating whether forest elephants use clearings to maintain their relationships ***will allow*** *us to understand how elephant social relationships vary across the wide range of ecological conditions occupied by both forest and savannah elephants* [15].

Discussion

When referring to specific results or methods, use the past tense, but use the present when presenting conclusions (“we conclude that gene X is dispensable for ornithine synthesis”). However, the discussion may include the future tense if directions for additional research or scholarship are brought up (e.g., “the methods reported here will allow for rapid screening in the field” or “we will publish the full results of our screen as part of another study”).

Discussion

Mixed tenses in the one sentence

e.g. Males ***were*** **[past]** *more likely to be responsible for the creation of mixed groups, despite a female bias in the visiting population, and therefore* ***appear*** **[present]** *to be more socially exploratory and less socially choosy than females, as seen in savannah elephants* [15].

Figure/table legends

Present tense – use when referencing the figures/tables in the text

*e.g. Selected examples **are shown** in Table 1 and Fig. 2.*

Table and figure legends should be standalone i.e. descriptive enough to be understood by your intended audience without having to read the main text. Due to this need to be independent from the rest of the text, the structure of a legend may somewhat resemble that of a pared-down paper, including a title and short descriptions of both the methods and the results [16]. Therefore, a mixture of tenses is used.

Figure/table legends

e.g. Figure 1. Number of copulations per 6 h during an entire breeding attempt **[title – no tense]**. *Data* ***are shown*** **[present]** *as median and interquartile range. (a) Pairs* ***were caring*****[past continuous]** *for their larvae. (b) Larvae* ***had been*** **[past perfect]** *withheld and pairs* ***were not caring*** **[past continuous]** *for larvae. For statistical analysis of the time course of copulations, we* ***divided*** **[past]** *the observation period into six successive time intervals (TI1eTI6), each with a duration of 42 h* [15].

ABSTRACT

The verb tense chosen for the abstract should be based on the section of the text to which each sentence corresponds. For example, introductory statements describing the current understanding of the issue should use the present tense, references to previous research should use the present perfect, and descriptions of the methods and results should use the past tense. Indeed, one study of verb tense in English medical abstracts has revealed that the three most commonly used tenses are past, present, and present perfect6, in line with the conventions described here.

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Good Luck

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