

---

# Biophysical Journal

## STYLE GUIDE

---

**1st Edition 12/5/2007**

**Revised 3/5/2010**

---

**Please note:** This guide may change periodically and is not “complete,” in the sense that many points of grammar and general technical style are not included. Scientific writing should be clear and economical. The CSE Style Manual should be used for material not covered here. Please feel free to email suggestions about this guide to [bj@biophysics.org](mailto:bj@biophysics.org).

## *Table of Contents*

<b><i>Biophysical Journal</i></b> .....	<b>1</b>
<b><i>Abbreviations</i></b> .....	<b>4</b>
<b>General guidelines</b> .....	<b>4</b>
<b>Latin abbreviations</b> .....	<b>4</b>
<b>Abbreviations accepted without expansion</b> .....	<b>5</b>
<b>Abbreviations for buffers</b> .....	<b>5</b>
<b>Common abbreviations</b> .....	<b>5</b>
<b>Units of measure</b> .....	<b>7</b>
<b>Units of time</b> .....	<b>7</b>
<b>Numbers</b> .....	<b>8</b>
<b>City/State/Country</b> .....	<b>8</b>
<b><i>Company names</i></b> .....	<b>8</b>
<b><i>Trade names</i></b> .....	<b>8</b>
<b><i>Acknowledgments</i></b> .....	<b>9</b>
<b><i>Grants</i></b> .....	<b>9</b>
<b>Sources for grants</b> .....	<b>9</b>
<b><i>Appendices</i></b> .....	<b>10</b>
<b><i>Figures</i></b> .....	<b>10</b>
<b>Citations</b> .....	<b>10</b>
<b>Legends</b> .....	<b>11</b>
<b><i>Footnotes</i></b> .....	<b>11</b>
<b><i>Headings</i></b> .....	<b>11</b>
<b><i>Hyphenation</i></b> .....	<b>12</b>
<b><i>Mathematical composition</i></b> .....	<b>12</b>
<b>Equations</b> .....	<b>12</b>
<b>Multidots</b> .....	<b>13</b>
<b>Variables</b> .....	<b>13</b>
<b><i>Opening page—in order of placement</i></b> .....	<b>14</b>
<b>Article title</b> .....	<b>14</b>
<b>Author line</b> .....	<b>14</b>
<b>Names</b> .....	<b>14</b>

<b>Affiliations for authors .....</b>	<b>14</b>
<b>Runheads .....</b>	<b>15</b>
<b>Abstract.....</b>	<b>15</b>
<b>Footnotes—in order of placement .....</b>	<b>15</b>
<b>Copyright.....</b>	<b>16</b>
<b><i>References .....</i></b>	<b><i>16</i></b>
<b>Unpublished.....</b>	<b>16</b>
<b>Personal communications.....</b>	<b>16</b>
<b>Journal .....</b>	<b>17</b>
<b>Book (edited).....</b>	<b>17</b>
<b>Book.....</b>	<b>17</b>
<b>Book chapters .....</b>	<b>17</b>
<b>Abstract.....</b>	<b>17</b>
<b>Erratum .....</b>	<b>18</b>
<b>Thesis.....</b>	<b>18</b>
<b>Supplement .....</b>	<b>18</b>
<b>Proceedings.....</b>	<b>18</b>
<b>Letter to the editor .....</b>	<b>18</b>
<b>Internet.....</b>	<b>18</b>
<b>References with subtitles .....</b>	<b>19</b>
<b>References in press.....</b>	<b>19</b>
<b>Journal abbreviations.....</b>	<b>19</b>
<b><i>Supporting Material.....</i></b>	<b><i>19</i></b>
<b><i>Tables.....</i></b>	<b><i>20</i></b>
<b><i>Word usage.....</i></b>	<b><i>20</i></b>
<b>Scientific terms .....</b>	<b>20</b>
<b>General usage .....</b>	<b>26</b>
<b>Preferred usages.....</b>	<b>30</b>

## ABBREVIATIONS

### General guidelines

No periods, except in references

Usage in text: Minimum usage for allowance: Total of 3×

Usage in abstract: Minimum usage for allowance: Total of 3×

Usage in lists: Spell out in text *OR* use authors' supplied abbreviations list, although such lists are rare. Abbreviations should not be and need not be spelled out both in list and text — it's one or the other.

*Example in text:*

High-performance liquid chromatography (HPLC)...

No “and” in series of abbreviations in footnotes.

*Example in list:*

*Abbreviations:* Abb., abbreviation; Abb1., abbreviation1; Abb2, abbreviation2.

### Latin abbreviations

**e.g.**, Roman with following comma

**i.d.** Spell out as inner diameter or inner dimension. Query.

**i.e.**, Roman, with following comma

**in vivo, in vitro, en bloc, per se, vice versa, in situ, de novo, in vacuo, a priori**, All Roman

**et al.** Roman; e.g. Jones et al. (19).

### Abbreviations accepted without expansion

All those listed in the *CSE Style Manual* plus the following:

ASC

DSC

EGTA

EDTA

Hepes or HEPES (but make consistent throughout article)

NMR

Tris

NADH

ADP

ATP

GTP

NTP

NVT

### Abbreviations for buffers

**buffers** written in text by abbreviated form first with ingredients listed in parentheses with first mention.

*Examples:*

TEM buffer (0.2 M Tris, 0.54 M EDTA, 1.5 M methylhydroxy)

buffer A (0.2 M Tris, 0.54 M EDTA, 1.5 M methylhydroxy)

Spell out first time used except as above

All caps or cap and lc OK; be consistent within article (Mes or MES; Pipes or PIPES)

No minimum usage for buffer abbreviations

### Common abbreviations

**CHO** Chinese hamster ovary (spell out on first reference)

**dpm** disintegrations per minute

**DPPC** dipalmitoylphosphatidylcholine (spell out on first or only reference)

**DSC** differential scanning calorimetry (doesn't need to be spelled out)

**FTIR** Fourier transform infrared spectroscopy (but spectroscopy is not part of the abbreviation)

**G** gauss

**HERG** human ether-a-go-go-related gene

**I/V** current/voltage

**KI** (potassium iodide—don't need to spell out)

**kHz** kilohertz

**kDa** kilodaltons (see also daltons)

**KscA** can stand alone without being spelled out

**Liter** L, mL,  $\mu$ L

**LUV** large unilamellar vesicle

**mAb** monoclonal antibody(ies)

**MD** molecular dynamics

**mol** moles

**mol wt** molecular weight (use with numbers preceding it, write out otherwise)

*Example:*

A 60,000-mol wt protein. The protein had a molecular weight of 60,000.

**NA** numerical aperture (does not need to be spelled out)

***nH*** Hill number (no definition needed)

**NMR** nuclear magnetic resonance (do not spell out)

**OD** outside diameter or optical density depending on context.

***p*** probability

**pN** picoNewton

***p*-value**

**PDB** Protein Data Bank

**P<sub>i</sub>**, inorganic phosphate

**PME** particle mesh Ewald

**rpm**

**RATTLE** algorithm

**SAXS** small angle x-ray scattering.

**SD** standard deviation

“SD” is OK also in this context (but not as an abbreviation for standard deviation in text).

**SE** Use for standard error. Change “SEM” to “mean  $\pm$  SE.” “SD” is OK also. **SEM** also can mean scanning electron microscopy

**SHAKE and SETTLE** algorithms

**Thr** a residue

**Tris** not spelled out.

**W** watts

## Units of measure

Use numerals for all units of measure except months

*Note:* keep as 20 mg·ml, or change to 20 mg ml.

**10°C** (closed up for temp.) 10° angle

°**F**

**g** for centrifugation ( $100 \times g$ )

**K** Kelvin; no degree sign; not closed up

**Number** *N n* (follow copy for cap or lowercase)

**Ranges** 7–9 (en dash used here), but, from 7 to 9 days

See *CSE Style Manual* for acceptable abbreviations.

## Units of time

**day** do not abbreviate; takes a number (7 days)

**h** for hours (not closed up; use numerals)

**inches** spell out (see CSE, page 207).

**min** for minutes (not closed up)

**month** do not abbreviate except in tables

**s** for second; ms for millisecond, etc. Not closed up.

**time 0**, but zero time

**week(s)** use numerals (2 weeks)

## Numbers

No., Nos. in text and figures

Words for numbers one through nine and numerals for larger numbers, *except* within a context in which some numbers are 10 or more and some are less than 10, then use numerals.

Do not add comma to 4-digit numbers; add them to 5-digit and over numbers.

## City/State/Country

DC (not D.C.)

FRG change to Germany throughout

## COMPANY NAMES

Company, Co, Co.: follow *Guide to Scientific Instruments*, but usually not included as part of company names (along with Inc. and similar identifiers) in text

Add city and state for US companies, city and country if outside US; for first use, not needed for subsequent instances.

MATLAB (note all upper case). The company is The MathWorks, Natick, MA (note “The” before “MathWorks”, and uppercase “M” and “W” in name).

## TRADE NAMES

Capitalize

Delete TM or registry symbol

Registered marks: delete



## ACKNOWLEDGMENTS

Acknowledgments are optional (in other words, the author doesn't need to have this section. However, do not delete it for space or other reasons!).

Appear after the text and before the reference list in small type with no heading.

Use "The authors thank ...", not "The authors would like to thank ...".

Close up initials of author acknowledgments (D.J.J.).

*Note added in proof:* should appear immediately before acknowledgment. Code as acknowledgment.

## GRANTS

Grant acknowledgment is a separate paragraph. Grant information follows acknowledgments. Should be a complete sentence, not a fragment.

*Examples:*

...supported by grant 12345 from the National...

...supported by National Institutes of Health (12344 and 12567) and American Heart Association grants...

Change initialized agencies to full name form.

### Sources for grants

ACS American Chemical Society

AHA American Heart Association

BMFT Bundesministerium für Forschung und Technologie

CDC Center for Disease Control

CNRS Centre National de la Recherche Scientifique

EMBL European Molecular Biology Laboratory

INSERM Institut National de la Santé et de la Recherche Médicale

MRC Medical Research Council

MRCC Medical Research Council of Canada

NCI National Cancer Institute  
NFWO National Fund for Scientific Research  
NHMRC National Health and Medical Research Council  
NIH National Institutes of Health  
NIADDK National Institute of Arthritis, Diabetes, and Digestive and Kidney Diseases  
NIAID National Institute of Allergy and Infectious Diseases  
NICHD National Institute of Child Health and Human Development  
NINCDS National Institute of Neurological and Communicative Disorders and Stroke  
NSERC National Sciences and Engineering Research Council of Canada  
NSF National Science Foundation  
ONR Office of Naval Research  
UNDF United Nations Development Fund  
USPHS U.S. Public Health Service  
WHO World Health Organization

## APPENDICES

Header and title run in

*Example:*

APPENDIX A: QUASI-EQUILIBRIUM DIMER FLUCTUATIONS (note caps).

Eqs. Numbered per author – continued from text or A1, A2, ...

Numbering of Appendices is author's choice – ie., can be A, B, C, etc. or I, II, III.

## FIGURES

### Citations

*Examples:*

Fig. (Fig.) Fig. at start of sentence. Use cap or lowercase letters according to figure.

Fig. 1 A

Fig. 1, A and B

Fig. 1, A–C

Figs. 2 and 4.

Use (see Fig. 2) if reference to figure appears before actual callout.

## Legends

Parts of figures and references to items in figures are italic.

Only use italics when elements of figure are used *within parentheses*. Otherwise use Roman. Fig. labels though are always italic.

*Examples:*

Fig. 2, *B* and *C*, show ...

Concentrations of 1 (*squares*), 5 (*triangles*).

The arrow points toward the DNA...

...found in the DNA (*arrow*).

*Preferred style:*

(*A*) The cell membrane...(*B*) The DNS...

Labels can be upper or lower case and must match legends.

Symbols are “solid” or “open” not “closed” or “filled.” For supporting material, figures are Fig. S1, not Supplemental Fig.

In a caption with a figure, spell out and capitalize, as in FIGURE 1 (no period after numeral).

## FOOTNOTES

The only footnotes should be on the opening page. All others should be listed at the point of reference parenthetically. In-text footnotes are allowed in Biophysical Letters (“REFERENCES and FOOTNOTES” section).

## HEADINGS

**H1** INTRODUCTION

**H2** Basic mechanism of calcium dynamics

**H3** Mechanisms

**H4** *Parameters for the receptor activation/desensitization.* (Italic, run in with the paragraph, and flush left)

**H5** ACTIVATED RECEPTOR IS QUICKLY DESENSITIZED AND REMAINS INTERNALIZED FOR A LONG TIME. (Run in with paragraph, and flush left.)

## **HYPHENATION**

Unit modifiers: 20-ms pulse or 20 ms pulse. Can use hyphen or space; author choice.

Combination modifiers: conductance-concentration relation

Journal prefers no hyphen with double letters: antiinflammatory

No longer necessary to avoid double letters by hyphenating prefixes.

*Examples:*

intraarterial, isoosmotic, reexamine, preexisting, nonnarcotic, and protooncogene are all acceptable.

In general, close up any such item unless doing so would create a homograph.

*Examples:*

re-ally versus really, re-cover versus recover, re-mark versus remark, un-ionize versus unionize

## **MATHEMATICAL COMPOSITION**

### **Equations**

In text: Eq. 1. Use “(1)” for numbers for displayed equations.

In Appendix: numbers can be either continuation of text numbers or “(A1)” or “(1a)” if author prefers.

Use either “...in the following:” or “...as follows.” or “...in the equation,”; be consistent.

Use Equation 1 at start of sentence (not, e.g., Eq. 1)

Possessive (') with equations: change to “values”

*Example:*

Never: “the  $\alpha$ 's were used...” Always: “the  $\alpha$ -values were used...” Greek characters are italicized.

Brackets: Use for labeling and other typical math functions. Do not change brackets to parentheses in equations

## **Multidots**

In equations, dots are never used to indicate multiplication:

*Example:*

For  $3 \cdot 4 = 12$ , change to  $3 \times 4 = 12$ .

However, dots are acceptable for scalars, vectors, dot products, and other constructs. Always query if you change dots to multiplication signs.

For  $1 \cdot 10^x$  constructs, change dot to multi sign and query author.

*Example:*

For  $2 \cdot 10^9$ , change to  $2 \times 10^9$

In unit constructs, dots, multi signs, or just a space can be used; use as author supplied.

*Example:*

$\text{kg} \cdot \text{m/s}^2$ ,  $\text{kg} \times \text{m/s}^2$ , or  $\text{kg m/s}^2$  (kilogram meters per second squared)

$\text{m} \cdot \text{s}^{-1}$ ,  $\text{m} \times \text{s}^{-1}$ , or  $\text{m s}^{-1}$  (meters per second)

## **Variables**

Query author about obvious inconsistencies.

## OPENING PAGE—in order of placement

### Article title

uc/lc

no subtitles

uc after colon

do not break a line after a preposition or conjunction

### Author line

Comma before affiliation symbols, on line and not sub- or superscript; no commas between or after affiliation symbols. All symbols superscript, except asterisk.

Use \* after corresponding author name in author group to link to correspondence footnote.

Space between author initials (when last name included): E. B. White

Two authors, use “and”, no comma: E. B. White and John Jones

Two or more in series, the usual rule applies: comma before penultimate name, then “and”: E. B. White, John Jones, and Theodore Bartholemew

No period at end of author line

### Names

Jr., 2nd, 3rd: no commas after name (CSE).

### Affiliations for authors

Use symbols in the order <sup>†</sup>, <sup>‡</sup>, <sup>§</sup>, <sup>¶</sup>, <sup>||</sup>, <sup>\*\*</sup>, <sup>††</sup>, <sup>‡‡</sup>, <sup>§§</sup>, <sup>¶¶</sup>, <sup>||||</sup>, etc. Symbols are in order in the actual affiliations line; they can be in jumbled order in the author line. Be sure to make all of these explicitly superscript. (Also see “author line”.) Spell out names of states. Add country except USA.

In affiliations and address lines, use American spelling of foreign cities. Colloquial spellings of institutions OK, e.g., Ludwig-Maximilian-University München, Munich, Germany.

## Runheads

Left runhead: *example*: Vogel et al.; Bentele and Falcke

Right runhead: *example*: Phase Separation in Mixed Lipid Layers

## Abstract

No reference citations allowed in Abstract. Delete reference, inform author. However, if it is the only citation to that reference in the entire article, then incorporate the reference into the Abstract (see example). As always, query the author. If reference is in ref. list and author wants to refer to it in the abstract, then use “another study”.

*Example*:

(Stehle, R., M. Krueger, and G. Pfister. 2002. *Biophys. J.* 83:2152-2161).

## Footnotes—in order of placement

Submitted (spelled-out month, date, year) and accepted for publication (spelled-out month, date, year).

Dedication to deceased colleague (if applicable); check style.

Author(s) (name(s)) contributed equally to this work (if applicable). No footnote symbol used.

*Example*:

Rinku Majumder and Jianfang Wang contributed equally to this work.

\*Correspondence: [email address]

Use \* after corresponding author name in author group to link to footnote. If affiliation links are used, the \* is placed last in list of links (e.g., J. Doe<sup>†\*</sup>).

Present address: Author's (name) present address is ... (No footnote symbol used).  
Content can vary with author. If more than one present address, set each one on a new line.

Other footnotes as necessary.

Open access footnote

Editor: [Name]. (Editor footnote is always directly above copyright.)

## Copyright

Author is permitted to add a copyright line at the end of the author footnotes and above the Biophysical Society copyright, *but only with prior permission of the Biophysical Society*. This additional copyright *must* read as follows

“The publisher or recipient acknowledges right of the U.S. Government to retain a nonexclusive, royalty free, license in and to any copyright covering this article.”

## REFERENCES

Numbered, in parentheses, with in-text citations appearing in numerical order in parentheses.

**years** in reference list: extensions are not allowed (e.g., 2000a and 2000b)

## Unpublished

References should not be cited in the References list, but in parentheses in the text.  
(Can be worded “unpublished data, unpublished work, unpublished results, unpublished observations”, etc.; author's choice, be consistent; or simply “unpublished”, which may work best. List author initials and last name.)

## Personal communications

Name, affiliation, personal/written communication, year.

*Example:*

R. Smith, University of Iowa, personal communication, 1992.



## Journal

Beuckelmann, D. J., and W. G. Wier. 1988. Mechanism of release of calcium from sarcoplasmic reticulum of guinea-pig cardiac cells. *J. Physiol. (Lond.)*. 405:233–255.

Lummis, S. C., D. L. Beene, L. W. Lee, H. A. Lester, R. W. Broadhurst, et al. 2005. *Cis-trans* isomerization at a proline opens the pore of a neurotransmitter-gated ion channel. *Nature*. 438:248–252.

Delete issue numbers throughout: change 23(2):244–246 to 23:244–246.

**Foreign articles:** Query author to translate title to English, write article title in English, no brackets, no “in French”, etc.

## Book (edited)

Levinson, S. R., W. B. Thornhill, D. S. Duch, E. Recio-Pinto, and B. W. Urban. 1990. The role of nonprotein domains in the function and synthesis of voltage-gated sodium channels. *In* Ion Channels, 2nd ed., Vol. 2. T. Narahashi and A. S. Jones, editors. Plenum Publishing, Deleted “Corp.”, per style New York. 33–64. (If state needed, use postal abbrev., e.g., Boca Raton, FL).

## Book

Title in caps; don’t need page range.

## Book chapters

Unnecessary. Delete.

## Abstract

Fabiato, A. 2006. Inositol (1,4,5)-trisphosphate-induced release of  $\text{Ca}^{2+}$  from sarcoplasmic reticulum of skinned cardiac cells. 2006 Biophysical Society Meeting Abstracts. *Biophys. J.*, Supplement, 20a, Abstract, 814-Pos.

Or, if full information is not available:

Fabiato, A. 2006. Inositol (1,4,5)-trisphosphate-induced release of  $\text{Ca}^{2+}$  from sarcoplasmic reticulum of skinned cardiac cells. 2006 Biophysical Society Meeting Abstracts. *Biophys. J.*, Supplement, Abstract.

Other journal Abstracts: author name(s), year, article title, journal acronym, Abstract, volume number (if applicable):page number or other identifier (such as poster or board number).

## Erratum

Placed at end of reference citation

*Example:*

(Erratum in *Cytometry*. 2000. 41:150).

## Thesis

*Example:*

Bluhm, R. T. 2000. Superstrings in four dimensions. PhD thesis. The Rockefeller University, New York.

## Supplement

*Examples:*

Gall, J. G. 1981. Chromosome structure and the C-value paradox. *J. Cell Biol.* 91(3, Pt. 2):3s–14s.

Gibbons, I. R. 1985. Cilia and flagella of eukaryotes. *Cell*. 36(Suppl.):24–38.

Follow BIOSIS: if Suppl. is part of journal title, then it should be printed that way and not in parens after the vol. number.

## Proceedings

Cited two ways, with or without article titles.

*Examples:*

Rozenkranz, N., and L. L. Smith Jr. 1968. Disposal of nuclear wastes. *Proc. Geneva Conf. Peaceful Uses At. Energy, 2nd, Geneva*. 15:693–701.

Durelli, N., and V. A. Parks. 1962. Proc. US Natl. Congr. Sppl. Mech., 4th. 938 pp.

## Letter to the editor

*Example:*

Price, N. D., I. Famili, D. A. Beard, and B. O. Palsson. 2002b. Extreme pathways and Kirchhoff's Second Law (letter to the editor). *Biophys. J.* In press.

## Internet

Web site references are permissible.

*Example:*

AfCS (Alliance for Cellular Signaling) Protocols.  
<http://www.signalinggateway.org/data/ProtocolLinks.html>. Accessed August 16, 2006.

## References with subtitles

Cap after Roman numeral

I. The end of the gene...

Lowercase following colon

...of DNA: the experimental procedures for

Cap after a period

...of DNA. The use of...

## References in press

If author cannot update, use:

Smith, A. B. 1993. Title. *Biophys. J.* In press.

## Journal abbreviations

Use PubMed for journal title abbreviations.

## SUPPORTING MATERIAL

When the first Supporting Material is cited, insert “in the Supporting Material”. For example, “(see Fig. S1)” becomes “(see Fig. S1 in the Supporting Material)”. No need to add “in the Supporting Material” to subsequent citations.

In-text citations for Supporting Material items: Fig. S1, Movie S1, Table S1, Eq. S1.

For Supporting Material, the following paragraphs are included at the end of the article, before the acknowledgments (note: second paragraph will be online only):

### SUPPORTING MATERIAL

[list elements in supporting material] are available at  
[www.biophysj.org/biophysj/supplemental/S0006-3495\(XX\)XXXXX-X](http://www.biophysj.org/biophysj/supplemental/S0006-3495(XX)XXXXX-X).

### Supporting Material

Document S1. [Title]

[legend if wanted].

## TABLES

Title is short, no longer than one sentence, no period, no footnote links, in bold.

Footnote links are closed up.

Footnotes are on separate lines.

Use footnote links in order: \*, †, ‡, §, ¶, ||, \*\*, ††, ‡‡, §§, ¶¶, |||, etc.

## WORD USAGE

### Scientific terms

**aa** amino acid. Use mostly with numbers. Otherwise, treat as an abbreviation

**baseline** not base-line or base line

**basepair** one word

**base triplet** T-R-T (use middle dot and hyphen)

**blood type** e.g., O<sup>+</sup>

**blots:** Western blot, Northern blot, Southern blot (but dot blot)

**Boltzmann** equation, theory, calculation, etc.

**Brownian motion** note capital B

**buffers** written in text by abbreviated form first with ingredients listed in parentheses with first mention.

*Examples:*

TEM buffer (0.2 M Tris, 0.54 M EDTA, 1.5 M methylhydroxy)

buffer A (0.2 M Tris, 0.54 M EDTA, 1.5 M methylhydroxy)

**by** use × (multiplication sign) in dimensions, spaced (e.g., 8 × 8)

**C-terminal, C-terminus** note hyphens

**ca.** change to approximately or symbol, but not before a date

**Ca<sup>2+</sup>** (not Ca<sup>++</sup>)

**cells** B cells, blood cell, Caco-2 cells, carrier cells, egg cell, fat cell, ganglion cell, germ cell, ghost cell, HeLa cell, killer or K cells, Kupffer cells, Langerhans' cells, Leydig's cells, natural killer or NK cells, Purkinje's cells, Schwann cells, sickle cell, T cell (except hyphenated when used as a modifier, target cell)

**centrifugation:** 100 × g (lower case, italicized g)

**cf.** (roman, no comma)

**Chemical formulas**, elements, compounds: are roman. Chemical concentrations in brackets are roman.

*cis* and *trans* (italicize) (these terms are part of the chemical configuration and thus are not capitalized at the start of a sentence or in titles.)

**cm<sup>3</sup>**

**co-linear** (hyphenate, although most words beginning with co are closed up; see “co-worker”)

**complexes** Chem. points (NH<sub>4</sub>·ATP).

**Coomassie brilliant blue** note capital C

**counterions** one word (as are most words beginning with counter)

**coverslip**

**cpm** (lower case, no punctuation)

**cytochrome c** Lower case.

**Da** Daltons (not for use in weights; see molecular mass versus weight)

**database**

**data set**

**department** Spell out in most cases, but not in corresponding author lines.

**designative terms:**

day 1

week 3

experiment 1

model 15

**dimensions** 8 × 8 (not closed up)

**diseases:**

Alzheimer's disease

Legionnaires' disease

Lyme disease

venereal disease

**disk** not disc

**downregulate (upregulate)**

**drug/strand** (not drug-to-strand ratio)

**en bloc**

**endo** (Roman)

**end plate**

**enzymes:** see CSE

**Epstein-Barr virus**

**Fab an antibody**

**fields/s** (not fields/second)

**force field**

**F-test**

**Fura-2**, fura-2 make consistent within an article

**G•C:** use middle dot

**G-protein**

*gauche* (italicized)

**Gaussian** (note capital G)

**genus** and **species:** write out upon first usage, thereafter use abbreviation: *E. coli*

**Giemsa stain**

**Golgi's stain**

**Gram's stain**

**halfwidth**

**halfwidth at half-maximum** (HWHM)

**Hanks'** (as in balanced salt solution)

**H-bond, H-bonding**

**headgroup** (one word)

**Henderson-Hasselbalch**

**herpesvirus**

**herpes simplex virus**

**homolog**

**Hill number** (*nH*) No definition needed.

**hyperosmotic**

**in-plane**

**intraarterial**

**isoosmotic**

**human immunodeficiency virus (HIV)**

**isotopes:**

**[<sup>14</sup>C]hexane; but <sup>2</sup>H-NMR, <sup>3</sup>H-labeled**

**k<sub>B</sub>T**

**kbar**

**lipid**

**log** (analog)

**logical** (e.g., biological, not biologic)

**loop-out**

**loop coordinates** hyphenated, e.g., 120-122

**Lorentzian** (cap)

**magnification** use ×: 40× magnification

**mean-square** mean-square displacement, mean-square deviation (both MSD, depending on author's use; be consistent)

**melting temperature** *T<sub>m</sub>*

**mid** midline incision

**model** (lowercase)

**Molar concentration:** M (not small cap)

**molecular mass versus weight** According to the *CSE Style Manual*, “It is correct to say the molecular weight of protein X is 30,000 or the molecular mass of protein X is 30,000 daltons. However, it is incorrect to say that the molecular weight of protein X is 30,000 daltons.”

**mol %**

**molecular size** and **apparent molecular weight** are both acceptable terms

**mixed nomenclature** change “Na-acetate” to “sodium acetate”

**multi** (when used as a prefix). Closed up.

**Normal concentration** N (not small cap)

*n*, *N* italic before a chemical name (if means normal; e.g., (*n*-*N*-methylpyridiniumyl)porphyrin ) and usually hyphenated, and italic in equations (e.g., where *n* = ...). If N means nitrogen, then it's Roman.

**overall**

**“of”** in quantities: do not use; e.g., 3 g/ml salmon sperm

**offline**

**pairwise**

**panel A**

**patch-clamp technique**

**pathlength**

**per** / (shilling, use only with numbers)

**%**

**pK** as in “pK values” doesn’t need to be spelled out.

**petri** (not Petri)

**pipette** (not pipet)  
protein

**protein A**

**pre** (closed up; preimmune)

**position** lower case, with numeral (e.g., position 12)

**post** (closed up)

**pseudo** (closed up)

**ratios** 1:1; e.g., drug/strand (not drug-to-strand); signal/noise (not signal-to-noise)

**Rayleigh**

**red shift** (n) red-shift (adj)

**restriction enzymes** *HindIII*, *BamHI*, *PstI* (first three characters italic; all closed up)

**Rous sarcoma virus**

**residues** Author may use three-letter code, written out form, or single-letter abbreviation in sequences without definition. Three-letter style: Asp<sup>14</sup> or Asp-14 are acceptable, but Asp 14 is NOT acceptable. Single-letter style: D14 (no hyphen). Written-out form is asparagine 14, NOT asparagine-14.

**root mean-square** (note hyphen)

***sn*** italic before a chemical name

**'s** (in equations and math terms): change to values:

Never: the  $\alpha$ 's were used...

Always: the  $\alpha$ -values were used...

**semi** closed up

**Semliki Forest virus**

**Sendai virus**

**Series** run in: 1), 2), 3); or 1); 2); 3); ... depending on context.

***Shab*** (italic)

***Shaker*** (italic)

***Shaw*** (italic and often paired with *Shaker*)

**short chain** (n) short-chain (adj)



**side chain** (n) side-chain (adj)

**simian virus 40** (or SV40)

*syn* (anti) is italicized.

**standard error/deviation:** Use “SE” for standard error, “SD” for standard deviation.

Change “SEM” to “mean  $\pm$  SE.”. (SEM can also mean “scanning electron microscopy”.)

**Stains:**

Giemsa stain

Golgi’s stain

Gram’s stain

**steady state, steady-state** space as a noun, hyphenate as modifier

**stepwidth**

**stepwise**

**Stokes radius** or equation (no apostrophe)

**Student's *t*-test** (author also allowed to simply use *t*-test).

**sub** (closed up except when used with abbreviations).

**Subscript, superscript** roman except for lower case Greek letters and single-letter symbols used for quantities or variables, which are italic

**terminal, -terminus** (as in N-terminus, T-terminal).

$t_{1/2}$

**time course**

**time point**

**timescale**

**$T_m$  melting** temperature

***trans*** (*cis* and *trans*) (these terms are part of the chemical configuration and thus are not capitalized at the start of a sentence or in titles.)

**transmembrane**

**T-run**

**U/...** (change to units/...)

**ultra** (closed up)

**upshift** (one word)

**upregulate**

**van der** Waals forces

**van 't Hoff** (note space)

**wavelength**

**wavenumber**

**web site**

**-wide** (as suffix, use hyphen)

**wild-type** (always hyphenated)

**wt %**

**x axis, y axis, *a* axis, z axis**, etc. (uppercase is OK, so long as it is consistent throughout the article)

**x-intercept**

**X-PLOR** (a Yale University computer program).

**Xplor** (a company)

**x ray** (noun) x-ray (adjective) as in x-ray therapy. Cap X at start of a sentence.

**y axis**

**Z-line**

**z-position** (atomic force microscope studies, etc.)

**z-test**

**Z-weight**

## **General usage**

**after** use instead of “following” in proper context.

**allusions:**

To authors of paper (usually in parens): D. J. Jones (note space between initials)

To other parts of Text: e.g., “see Results.”

**although** see “while” under usage.

**anti** close up, except when being used not in the sense of against; for e.g., anti-human IgG and anti-goat antibody. Examples of “anti” words (antiaminin, antifibronectin, antiinflammatory, etc.). *Another exception:* retain the hyphen with abbreviations (anti-FN). Do not italicize

**before** instead of prior to

**classic** versus **classical** leave as classical; this has a special meaning (see “—logical”)

**co-workers**

**cross:**

crossability

crossbar  
crossbite  
crossbreeding  
crossbred  
cross-bridge (n., adj.)  
cross-check  
cross correlation  
cross-cylinder  
cross-examination  
cross-eye(d)  
cross-fertilize  
cross-grained  
cross-hair  
crosshybridization  
cross-index  
crossing-over of genes  
cross-link  
crossmatching  
cross multiply  
crossover  
crosspeak  
cross-pollinate  
cross-polarized  
cross product  
cross-reaction  
cross-reference  
crossroad  
cross section (n.); cross-section (v.); cross-sectional (adj.)  
cross-sterile  
cross talk  
cross-term  
crossway

**cutoff** one word as a noun, two as a verb

**fold:**

onefold, twofold, threefold, fourfold, fivefold, sixfold, sevenfold, eightfold, ninefold, 10-fold, 11-fold, etc.

severalfold, manyfold

a two- to fourfold increase, *but* a 2- to 4.5-fold increase;  $\sim$ 2-fold (not, e.g., approximately twofold)

an 8- to 12-fold increase

**following** change to after in proper context

**Greek** Use symbols (rather than spelled out). Lower case Greek symbols are italicized for formatting purposes. Takes hyphen when single, to anchor to following word e.g.,  $\beta$ -barrel (but not if the following word is super- or subscript).

**inset** versus **insert** An *inset* is an extra “window” or panel that is placed within a figure. An *insert* is additional wording placed into text. Use inset in figure legends when referring to the former.

**inter** no hyphen

**labeled**

**Latin word/phrases** Roman: per se, ad libitum, in vitro, cf., viz

**multiplication** ( change to multi sign, unless author means a scalar, vector, or product dot. (Copyeditor should always query when changing.)

change  $3 \cdot 4 = 12$  to  $3 \times 4 = 12$

**non** (closed up), except with abbreviation (e.g., non-RMSD) and proper noun.

**parentheses** OK to use a parenthetical element within an already parenthetical statement

**possessive** (’s) with equations: change to values:

Never: the  $\alpha$ 's were used...the  $\alpha$ -values were used...

**priority claims**

“This is the first time ...” Add “to our knowledge”

**quotes:** No single quotes – Double quotes for direct quotations or to define author used word on first use only. Use double quotes sparingly.

**Spelling:**

BJ usually follows first spelling in Webster’s.

Single "l" is preferred over double "l", e.g., labeled (not labeled).

Prefixes get closed up (coauthor, realign, reinfect, etc.) unless the dictionary suggests otherwise (co-worker, re-try).

British spellings to American (but not necessarily in references, as publication in reference may be British and uses colloquial spellings):

*Change this to this:*

amoeba	ameba
amoebae	amebas
anaesthetized	anesthetized
analyse	analyze
characterize	characterize
colour	color
favour	favor
fibre	fiber
grey	gray
haemocytometer	hemocytometer
litre	liter
localize	localize
neighbouring	neighboring
polymerization	polymerization
tumour	tumor
whilst	while

Foreign cities: In affiliations and address lines, use American spelling of foreign cities. Colloquial spellings of institutions OK, e.g., Ludwig-Maximilian-University Munchen, Munich, Germany.

**symbols** (order) \*, †, ‡, §, ¶, ||, \*\*, ††, ‡‡, §§, ¶¶, |||, etc. Be sure to make all of these explicitly superscript, except for the asterisk.

**vectors** (bold face, no italics). Take multidots in equations

**vice versa** (Roman)

**Viruses:**

Semliki Forest virus

Sendai Virus

simian virus 40 (or SV40)

**volume** use v/v in comparisons, even with more than two things. Use colon with numbers (water/air/CO<sub>2</sub>, 30:23:3, v/v). vol is noncomparison abbreviation

**versus** (lower case in titles)

**vs.** (with numbers) and versus (with text)

### **Preferred usages**

after not following

before not prior to

although / whereas not while

maximal / minimal as adj.

despite not in spite of

to not in order to

toward not towards