Hyphens (adapted from APA Style Manual)

Hyphens connect words, prefixes, and suffixes permanently or conditionally. They create compound words such as “free-for-all.” As connectors, hyphens prevent ambiguity and clarify meaning. For complete hyphenation rules, see Chicago Manual of Style. For absolute accuracy, consult Webster Merriam.

When to use a hyphen

After the following prefixes in most words: “all-“, “cross-“, “ex-“, and “self-” (unless the word is shown without a hyphen in Webster). Most “servo-” words are hyphenated (two exceptions: servomechanism, servomotor).

The suffix “-like” is hyphenated if:

- the root word is 3 or more syllables (emulsion-like)
- a succession of three “L”s occurs with the addition of “like” (shell-like)
- the root word is a proper noun (an Apple-like computer)

After “anti-” when it is combined with a substance or a species and modifies words such as antibody, antiserum, or any of the immunoglobulins (IgG, M, A, D, and E).

- anti-peptide antiserum
- anti-yeast CS1
- anti-rabbit IgG
- anti-Ras activity
- anti-cdc252 antibody
- anti-tubulin

exceptions

- antibody
- antiserum
- antioxidant

Before the suffix “-fold”:
for numbers less than 10, there is no hyphen

twofold
ninefold

in a combination of single-digit numbers, only the first has a hyphen

two- and fourfold increases

in a combination of single- and double-digit numbers in the same sentence, use numerals

8- and 10-fold increases; 3- and 3.5-fold increases

follow the same rules for ranges

a seven- to ninefold increase; an 8- to 12-fold increase

After “quasi-,” but only when used as an adjectival compound.

quasi-public (adjective)
quasiparticle (noun)

After all prefixes preceding a proper noun, a number, or an abbreviation.

trans-Golgi network
mid-1960s
non-GABAergic responses

When the prefix ends in “a” or “i” and the word begins in “a” or “i,” respectively:

intra-arterial, anti-immune.

With suffixes -type, -elect, and -designate.

Valsalva-type
chair-elect
secretary-designate

Between two words that together function as an adjective (and precede the noun). Note: not all compound adjectives are hyphenated. Always consider meaning. For example,
“plasma membrane enriched fraction.” Is the membrane enriched or is the fraction? Use these guidelines:

*when both words are adjectives used coordinately, regardless of whether they precede the noun*

We performed a double-blind test; the test we used was double-blind. The test results were false-positive; the false-positive results were recorded.

*when an adjective and a noun are used together as a modifier*

high-amplitude wavelength
developmental pattern
gleaming term effects
low-voltage current
steady-state expression
well-known study

*when the second word is an adjective*

voltage-dependent properties
cell-specific voltage trajectories
APV-resistant cell
ATP-free electrodes

*when a noun and a present or past participle function together as an adjective*

burst-generating mechanisms
Teflon-insulated wires
calcium-sensing receptor
cAMP-mediated epithelial chloride secretion
IGF-binding protein
kinase-signaling pathway
calcium-transporting epithelia
hyperpolarization-activated current
fluorocarbon-simulated ischemia

For three or more words used as an adjective, or two words used as an adjective when the first word has a normally unhyphenated prefix.
analog-to-digital converter
length-to-width ratio
non-insulin-dependent diabetes
out-of-phase inhibition
signal-to-noise ratio

*note exception*

very low-density lipoprotein

Between a number/word combination used as an adjective:

two-dimensional
single- and double-stranded
8- and 12-cell stage (see $$$Numbers, Numerals, and Math Signs)

Between the numerator and denominator of a spelled-out fraction, unless either is already hyphenated:

one-third
five thirty-seconds

To spell out compound numbers from 21 to 99.

twenty-one
forty-four
ninety-nine

To express two parts of a whole.

95% O₂-5% CO₂

With a number and a single unit of measure when used as a modifier, or when a number and unit of measure is part of a compound adjective.

a 12-kDa fragment
a 25-km run
3 × 4-cm strip
2-μm-diameter tip
a 3-cm-diameter tube
1-mm-thick disk
2-μm-thick sections

To separate locants (numbers, element symbols, small caps, Greek and italic letters) and configuration descriptors from the syllabic part of a chemical name:

D-arabinose
N-methylmethanamine
3-chloro-4-methylbenzoic acid
*trans*-2-bromocyclopentanol
F-actin

To separate a Greek letter preceding or following a term:

α-adrenergic receptor
γ-aminobutyric acid

When combining letters and numbers in a model or catalog number:

SQ-19844

Between amino acids in a known sequence (see *CBE*, 5th ed., p. 216, and *Amino Acids*).

Gly-Lys-Ala-Arg-Asp

Other commonly encountered scientific terms that require a hyphen include:

*afferents*

Ia-afferent
terminal

*a amino acid terminals (when used as an adjective; see below)*

COOH-terminal
NH₂-terminal
Ia-terminal

*axes*

y-axis
x-axis
intercepts

$y$-intercept

receptor agonists/antagonists

acetylcholine $M_1$-receptor antagonist
AT$2$-receptor antagonist

statistical tests

Student's $t$-test
$F$-test

sutures

6-0 silk suture

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When not to use a hyphen

The following prefixes are not usually hyphenated:

anti, bi, co (coworker), contra, counter, de, extra, infra, inter, intra, micro, mid, multi,
non, over, peri, post, pre, pro, proto, pseudo, re, semi, sub, super, supra, trans, tri, ultra,
un, under

Exceptions include “co-occurrence” and “un-ionized”. Also, some prefixes with a
technical meaning may be hyphenated (see “anti-”, above). As always, defer to
Webster’s Collegiate Dictionary (latest edition).

For a two-word modifier when the first word is an adverb ending in “-ly”:

slowly depolarizing voltage ramp
poorly clamped neurite membrane
densely packed tissue
highly refractile cells
genetically manipulated mice.

if the adverb does not end in “-ly”, use a hyphen
well-known fact
fast-acting drug

*unless it is superlative*

best known example
least significant difference

When a normally hyphenated compound adjective follows a linking verb and does not precede a noun; i.e., when it functions as a predicate adjective:

**hyphenate**

Light-adapted retinal slices...

**do not hyphenate**

The retinal slices were light adapted...

To spell out a number above 99:

one hundred ten (not one-hundred)

For combination forms of anatomic or directional adjectives:

vestibuloocular
spinocervical
spatiotemporal.

For Latin or foreign phrases used as adjectives:

post hoc testing
an a priori argument
an in vitro experiment

For compound nouns that are well established in the field:

amino acid receptors
fast Fourier transform
pentobarbital sodium anesthesia
soft tissue mass
inner ear disorder
Compound nouns composed of two nouns do not require a hyphen, nor do adjectives that modify them. If the compound noun is itself used as an adjective, it does not require a hyphen (though if the author hyphenates it consistently, do not change).

<table>
<thead>
<tr>
<th>tail temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>subcutaneous tail temperature</td>
</tr>
<tr>
<td>tail temperature measurements</td>
</tr>
</tbody>
</table>

*however, author may use*

tail-temperature measurements

When two separate adjectives modify a single noun:

<table>
<thead>
<tr>
<th>euglycemic hyperinsulinemic clamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>primed continuous infusion</td>
</tr>
<tr>
<td>paracrine signaling machine</td>
</tr>
</tbody>
</table>

Do not hyphenate a number and unit modifier if the unit of measure has two or more parts.

| a 4 ml·kg⁻¹·h⁻¹ rate of infusion |

Do not use a hyphen when the numeral and unit are followed by a compound. Authors may also use the word “of”; do not change if this is done consistently.

<table>
<thead>
<tr>
<th>165 mM MgCl₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>165 mM of MgCl₂</td>
</tr>
</tbody>
</table>

Other commonly encountered scientific terms that require a hyphen include:

- *bars*
- *bar 2*
- *bands*
- M band, Z band
- I band
*cells and cell lines*

X cell, N cell, NK cells

*connectors*

Y connector

*fibers*

group II fibers
A fiber

*however, Iα-fiber* (Greek letter)