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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
large-field pattern
long-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- μ m-diameter tip
a 3-cm-diameter tube

1-mm-thick disk
2- μ m-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

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 M₁-receptor antagonist

AT₂-receptor antagonist

statistical tests

Student's *t*-test

F-test

sutures

6-0 silk suture

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

angiotensin converting enzyme inhibitor
whole kidney measurements

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).

tail temperature
subcutaneous tail temperature
tail temperature measurements

however, author may use

tail-temperature measurements

When two separate adjectives modify a single noun:

euglycemic hyperinsulinemic clamp
primed continuous infusion
paracrine signaling machine

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.

165 mM MgCl₂
165 mM of MgCl₂

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, I α -fiber (Greek letter)