INSTRUCTIONS TO AUTHORS

CANCER RESEARCH is the official organ of the American Association for Cancer Research, Inc., and is devoted to the publication of significant, original research in the field of cancer and cancer-related medical science. The Editors will be happy to consider manuscripts from any country in the world, covering material which falls within the scope of the Journal.

When a manuscript is received for consideration, the Editors assume that no similar paper, other than an abstract or preliminary report, has been or will be submitted for publication elsewhere. Papers will be reviewed as promptly as possible, and a letter of decision will be sent from the Editorial Office to the author as soon as review of the paper has been completed. To minimize the time required for review of manuscripts and to avoid wasteful expense, authors are urged to read and follow these instructions.

Authors should submit their contributions in duplicate (i.e., the original typescript and one clear copy with two sets of original illustrations) to Dr. Sidney Weinhouse, Editor, CANCER RESEARCH, Fels Research Institute, Temple University School of Medicine, Philadelphia, Pa. 19140. The submission of a third copy is helpful to the Editors and may further expedite the review process. Please attach a covering letter with the manuscript, clearly indicating to whom related correspondence should be addressed.

Types of Manuscripts Accepted

The following categories of publication are acceptable. (1) Reports of original research, i.e., experimental, clinical, or statistical papers that clearly and concisely report the results of timely and significant studies in which the data are sufficiently well documented to be acceptable to the critical reader; (2) Brief Communications of special timeliness and significance for rapid publication (however, these papers will be given stringent review by members of the Editorial Board and will be accepted only under unusual circumstances); (3) brief reviews on a subject of importance to cancer researchers (however, such reviews will also be given stringent editorial evaluation before acceptance); (4) Letters to the Editor, which deal with especially important issues; (5) reports of meetings and symposia related to cancer research; (6) announcements of meetings, and books and other publications in fields related to cancer. Announcements should be forwarded to the Editorial Office no less than 4 to 6 months before the date of the meeting.

Format and Style

Papers should conform to the style and usage of the Journal. For assistance in the proper arrangement of papers, consult a recent issue of CANCER RESEARCH. Manuscripts are to be written in clear, grammatical, idiomatic English. Papers which do not meet these requirements will be returned to the authors without review since the Editorial Office does not have the facilities or staff for converting manuscripts to acceptable English standards. Investigators not entirely familiar with the English language can avoid long delays in publication by conferring with knowledgeable editorial colleagues in the preparation of their manuscripts.

Data should be presented as concisely and as clearly as possible by eliminating verbosity and laboratory slang. It is essential that the typescripts be proofread carefully to avoid typographical errors.

The Journal recommends that authors follow Webster's International Dictionary for spelling and punctuation. For additional assistance in the preparation of copy, authors may refer to the following publications: Style Manual for Biological Journals (published for the Conference of Biological Editors by the American Institute of Biological Sciences, 2000 P Street N. W., Washington, D. C. 20036) and Handbook for Authors of Papers in the Journals of the American Chemical Society (American Chemical Society Publications, 1155 Sixteenth Street N. W., Washington, D. C. 20036).

Type the manuscript on 8½ x 11-inch paper with double or triple spacing throughout and allow for ample margins. Number all pages in succession, the title page being page 1. Numbered and lettered sections should be avoided. Use separate sheets for (a) title, (b) authors and complete name of institution or laboratory (cite clearly with which institution each author is affiliated), (c) running title, (d) footnotes, (e) tables, (f) legends for illustrations, and (g) other subsidiary material. Indicate by marginal notes the appropriate location of tables and illustrations. Simple chemical formulas or mathematical equations may be presented in a form which allows their reproduction in single horizontal lines of type; however, complicated mathematical formulas or chemical structures which are difficult to set in type should be drawn in India ink and inserted in the text where required.

Title. Titles should be brief but informative, and limited to two printed lines. In order to aid indexing services, it is important to include in the titles such key words as are necessary to identify the nature of the subject matter. Chemical formulas or arbitrary abbreviations should be avoided. The Journal does not accept titles with subtitles, whether set off by punctuation or roman numerals. If the paper is one of a series, a footnote to this effect may be included.

Authors and Their Affiliations. Authors' names should be complete with first and middle names or initials but should not include degrees. Give the full names of institutions and subsidiary laboratories, together with a useful address (including zip code).

Running Title. Please provide a brief running title not to exceed 50 characters.

Summary. The Summary should be brief, clear, and informative. It should recapitulate the principal procedures and the results of the investigation in abstract form (avoiding such statements as "...the significance of the results is discussed...". Limit the excessive use of abbreviations.

Introduction and Discussion. Wide-ranging reviews of the literature in either the Introduction or Discussion sections should be rigorously avoided; these sections should, on the whole, deal with the experimental results in the paper. Large masses of data of peripheral significance to the main thesis of
the investigation should not be included in the paper. The data may be deposited in the National Auxiliary Publications Service of the American Society for Information Science, and a footnote may be inserted to indicate where this material can be obtained.

**Materials and Methods.** The experimental procedures should be brief but adequate for repetition by qualified investigators. Procedures that have been published previously should not be described but should merely be cited in appropriate references. Only new and significant modifications of previously published procedures need detailed exposition. All materials used should be identified and their commercial suppliers and locations given.

**Results.** Results should be presented in tables, figures, or charts. Only data necessary for the understanding of the experimental work should be included in the Results section.

Under certain circumstances, it may be desirable to combine the Results and Discussion sections.

**References.** Please refer to a recent issue of the Journal for style. Arrange references in alphabetical order and list all authors (with their initials) for each reference. For journals, it is important to give the complete title, journal, volume number, inclusive pages, and year. Serial compendia, such as *Advances in Cancer Research* and the *Annual Review of Biochemistry*, which appear annually in numbered sequence, should be cited as if they were journals rather than books, thus omitting the names of publishers and editors. Consult *Chemical Abstracts* for abbreviations of journals and serials. When citing a specific chapter or article in a book, list the author(s) of the chapter, its title, editor(s) of the book, book title, volume, edition, inclusive pages of the chapter, location and name of the publisher, and year. For complete books, give all of the above information that is pertinent.

Papers in press may be listed among the references; however, references to papers in preparation or submitted for publication, unpublished data, or personal communications must be cited either parenthetically in the text or in a footnote. Before using material conveyed by "personal communication," make sure that the author has given permission for its publication.

The number of citations in the bibliography should be kept to a minimum. If review articles amply cover the background, it is unnecessary to repeat this same material with many additional references.

Authors are responsible for verifying the accuracy of all references in their bibliographies before submitting their papers for publication.

**Footnotes.** Footnotes to the title page and text are to be designated with superscript numerals.

**Tables.** For assistance in the preparation of tables, refer to a current issue of the Journal. Tables should be numbered with Arabic numerals, and table footnotes should be indicated with superscript italic letters (a, b, c, etc.). Every table must have a descriptive title and an explanatory paragraph directly underneath the title, which clearly gives the experimental details for proper understanding by the reader. Do not duplicate material already presented in the charts. Unnecessary columns of data which can easily be derived from results in the table should not be included. Each column should carry an appropriate heading and, if numerical measurements are given, these units should be added to the column heading. Clearly designate all units of measurement, concentration, etc., and avoid exponential terminology (e.g., the term mM is preferable to $10^{-3}$ M). Large masses of individual values should be avoided; instead, these should be averaged and carry an appropriate designation of the dispersion, such as standard deviation or standard error. Authors are obliged to indicate the significance of observations by appropriate statistical analysis; tables without such information are not acceptable.

**Charts.** Line-cut illustrations (graphs and drawings) are to be designated *charts*. Please carefully number each chart (with Arabic numerals) on the reverse side and indicate the first author’s name.

Charts should be drawn with instruments and may be on Bristol board, tracing paper or cloth, or coordinate paper printed in light blue. *Please do not mount on heavy cardboard.* Clear, glossy photographs will be acceptable in lieu of original drawings as long as all parts of the photograph are in focus. If submitted, original drawings of an overall size not exceeding 8½ x 11 inches are preferred.

Except under unusual circumstances, all charts will be reduced to one-column width (3½ inches). It is the author’s responsibility to see that the abscissas, ordinates, lines, and symbols are sufficiently large so that, when reduced to the size of a single column, the letters and numbers will be at least 1.5 mm high and the smallest part on the illustration discernible.

Denote points of observation with different symbols, rather than different types of lines, and explain their significance directly on the chart or in the legend. If possible, use only those common symbols for which the printer has type ($X$, $O$, $\bullet$, $\square$, $\diamond$, $\triangle$, $\Delta$, $\epsilon$).

Graphs should be used sparingly, and only when a specific point is illustrated. Straight-line functions, such as relationships between concentration and absorbance, Lineweaver-Burk plots, etc., when these are linear, should not be presented in a graph but should be described instead in a few lines in the text. In order to conserve space, please include on one chart those curves which may appropriately appear together. Charts should be ruled off on all four sides close to the area occupied by the curve, and abscissas and ordinates should be clearly marked with appropriate units.

Legends for charts should be sufficiently informative to be intelligible to the reader, but do not repeat descriptive material in the text. Adequately identify units, mathematical expressions, ordinates, and abscissas, and explain all symbols used.

The use of exponentials for units in charts and tables is often ambiguous and should be avoided if possible. If multiples or submultiples are used, please designate in the legend how they are to be calculated to give the correct value.

**Figures.** Halftone illustrations (photomicrographs and photographs) are designated as *figures*. These are difficult and expensive to reproduce and should therefore be kept to a bare minimum. Because of the Journal’s ever-increasing publication load, along with rising printing costs, the Editors must insist that authors submit only those photographs which are absolutely essential to the clarity of the presentation.

Arrange photographs on "plates" enclosed within an area
Terminology and Abbreviations

For clarity and ease of reading, keep abbreviations to a minimum. Do not abbreviate short terms or introduce nonstandard abbreviations without identification. Avoid the use of abbreviations which form recognizable words.


Specialized terminology for components of macromolecules, such as proteins, nucleic acids, and polysaccharides, should follow that given in the January 1970 issue of the Journal of Biological Chemistry. This issue also gives accepted chemical abbreviations for nucleotides, coenzymes, phosphorylated derivatives, etc. Enzymes should be identified by the appropriate IUB Commission number as given by the recommendations of the International Union of Biochemistry, 1964. This number may be included in the text in a footnote, and the common or trivial name can be used thereafter.

Designations for inbred mouse strains should conform to the listing of the Committee on Standardized Genetic Nomenclature for Mice, Cancer Res., 28: 391–420, 1968.

Wherever possible, tumors used in experimental investigations should be clearly described and identified in acceptable terminology. Where these tumors are well known and have been readily identified in previous publications, extended descriptions and photomicrographs are unnecessary and should not be included.

Accepted Abbreviations. Authors may use, without definition, the abbreviations in the list below:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPN⁺, DPNH</td>
<td>Diphosphopyridine nucleotide and its reduced form</td>
</tr>
<tr>
<td>TPN⁺, TPNH</td>
<td>Triphosphopyridine nucleotide and its reduced form</td>
</tr>
<tr>
<td>NAD⁺, NADH</td>
<td>Nicotinamide adenine dinucleotide and its reduced form</td>
</tr>
<tr>
<td>NADP⁺, NADPH</td>
<td>Nicotinamide adenine dinucleotide phosphate and its reduced form</td>
</tr>
</tbody>
</table>

(Please note that DPN⁺—DPNH, NAD⁺—NADH and TPN⁺—TPNH, NADP⁺—NADPH are paired abbreviations for the oxidized and reduced forms of the same substances. Either system is acceptable; however, both systems should not be used interchangeably in the same manuscript.)

CoA, acyl-CoA | Coenzyme A and its acyl derivatives (e.g., acetyl, etc.) |
AMP, GMP, IMP, UMP, CMP, TMP | The 5'-phosphates of ribonucleosides of adenine, guanine, hypoxanthine, uracil, cytosine, and thymine |
ADP, etc. | The 5'(pyro)-diphosphates of adenosine, etc. |
ATP, etc. | The 5'(pyro)-triphosphates of adenosine, etc. |
RNA, DNA | Ribonucleic acid, deoxyribonucleic acid |
RNase, DNase | Ribonuclease, deoxyribonuclease |
mRNA | Messenger RNA |
nRNA | Nuclear RNA |
rRNA | Ribosomal RNA |
tRNA | Transfer RNA (sRNA is not recommended for RNA preparations that accept amino acids and should no longer be used.) |
Tris | Tris(hydroxymethyl)aminomethane |
EDTA | Ethylenediaminetetraacetate |
POPOP | 1,4-bis[2-(5-phenylloxazolyl)]benzene |
PPO | 2,5-diphenyloxazole |
UV | Ultraviolet light |

All other abbreviations should be explained in an inclusive footnote after the first one is used.

Other Abbreviations.

Units of Concentration

<table>
<thead>
<tr>
<th>Unit</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molar (mole/liter)</td>
<td>M</td>
</tr>
<tr>
<td>Millimolar (mmole/liter)</td>
<td>mM (preferred to 10⁻³ M)</td>
</tr>
<tr>
<td>Micromolar (µmole/liter)</td>
<td>µM (preferred to 10⁻⁶ M)</td>
</tr>
</tbody>
</table>

Avoid the use of the expression mg%; weight concentrations should be given as g per ml, g per 100 ml, g per liter, etc.
Instructions to Authors

Units of Length, Area, Volume, Mass, Time

<table>
<thead>
<tr>
<th>Unit</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>meter</td>
<td>m</td>
</tr>
<tr>
<td>centimeter</td>
<td>cm</td>
</tr>
<tr>
<td>square centimeter</td>
<td>sq cm</td>
</tr>
<tr>
<td>millimeter</td>
<td>mm</td>
</tr>
<tr>
<td>micron</td>
<td>μ</td>
</tr>
<tr>
<td>Angstrom</td>
<td>Å</td>
</tr>
<tr>
<td>liter</td>
<td>l</td>
</tr>
<tr>
<td>milliliter</td>
<td>ml (use instead of cc or cm³)</td>
</tr>
<tr>
<td>microliter</td>
<td>μl (not λ)</td>
</tr>
<tr>
<td>gram</td>
<td>g</td>
</tr>
<tr>
<td>milligram</td>
<td>mg</td>
</tr>
<tr>
<td>microgram</td>
<td>μg (not γ)</td>
</tr>
<tr>
<td>kilogram</td>
<td>kg</td>
</tr>
<tr>
<td>hour (s)</td>
<td>hr</td>
</tr>
<tr>
<td>minute (s)</td>
<td>min</td>
</tr>
<tr>
<td>second (s)</td>
<td>sec</td>
</tr>
<tr>
<td>counts per minute</td>
<td>cpm</td>
</tr>
<tr>
<td>disintegrations per minute</td>
<td>dpm</td>
</tr>
<tr>
<td>revolutions per minute</td>
<td>rpm</td>
</tr>
<tr>
<td>Curie</td>
<td>Ci</td>
</tr>
<tr>
<td>Svedberg unit</td>
<td>S</td>
</tr>
<tr>
<td>mole</td>
<td>not abbreviated</td>
</tr>
</tbody>
</table>

Physical and Chemical Units

retardation factor | Rf
acceleration of gravity | g
sedimentation coefficient | s (not °C)
degree Centigrade | °C
degree Fahrenheit | °F
degree Kelvin (absolute temp.) | °K
inhibition constant | Ki
Michaelis constant | Km
maximum velocity | Vmax

Others

absorbance | A (not O.D.)
probability | p
roentgen | R
standard deviation | S.D.
standard error of the mean | S.E.

in chemical compounds

ortho | o
meta | m
para | p
secondary | sec
tertiary | tert

routes of administration

intramuscular | i.m.
intraperitoneal | i.p.
intravenous | i.v.
oral | p.o.
subcutaneous | s.c.

Isotope designations should conform to the following style: $^{32}$P, $^{14}$CO₂, glycine-$^{14}$C, but $^{3}$H-labeled thymidine.

Decimals are preferred to fractions; the form 0.01, not .01, is required in text, tables, and charts.

Alterations in Galley Proof

Any changes from the original manuscript made in galley proof will be billed directly to the author. We urge authors to proofread and edit their manuscripts carefully in order to minimize galley alterations. If excessive corrections are made by the author in galley proof, or if galleys are not returned promptly, it may be necessary to reschedule the paper to a subsequent issue.

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