

of up to 2 others (mentioning the reasons for exclusion); however the final choice of reviewers rests with the editor. During the submission process, the corresponding author must confirm that she or he has secured all of the above requirements.

Authors are encouraged to submit a single manuscript file for the initial submission, including title page, abstract, text, embedded tables and figures. During revision, authors will be required to submit original files separately. The journal reserves the right to edit the manuscript for clarity and presentation and as per house style.

Manuscript Preparation

General reporting and style requirements

Manuscripts must be written in English, and largely conform to the "Uniform Requirements for Manuscripts Submitted to Biomedical Journals," developed by the International Committee of Medical Journal Editors (ICMJE). Authors should write for a sophisticated readership, follow principles of clear scientific writing and statistical reporting, and prepare manuscripts according to recommended reporting guidelines and checklists, when applicable.

All manuscripts must be submitted in a single-column format. Text should be unjustified (left-aligned), double-spaced throughout, with 1-inch (2.5-cm) margins on all sides using 12-point type in Times New Roman font (or equivalent). All pages should be numbered consecutively on the lower right corners, and all lines should be numbered consecutively throughout the entire manuscript, starting from the title page. All tables and figures must be mentioned in the text and placed at the end of the manuscript, clearly labeled.

All articles must be accompanied by a title page, which should include:

- A full title of up to 200 characters, without spaces.
- Authors' full names. At least one person must be listed as an author; no group authorship is allowed without a responsible party. A group can be listed in the authorship line, but only on behalf of a person or persons. All group members not listed in the authorship line must be listed in the Acknowledgments.
- Authors' affiliations corresponding to superscripts used in conjunction to authors' full names above for identification.
- One author identified as the corresponding author, providing full contact details (e-mail and ground mail addresses, telephone and fax numbers).
- Word count of text, abstract, number of references, and number of tables and figures.
- A disclosure statement summarizing potential conflicts of interest.
- Clinical Trial Registration Number, if applicable.

Immediately following the title page, all articles, except for editorials and commentaries, must include a structured abstract of up to 250 words. The information reported in the abstract must summarize the rationale of the study, the methods, the principal findings and their interpretation or implications; or provide a succinct summary in the case of mini-reviews. The abstract should be divided into the following sections: Objective, Materials/Methods, Results, Conclusions. The abstract should not include references and abbreviations should be kept to a minimum. No abstract is required for commentaries and editorials.

At the end of the abstract, 3-5 key words, which do not appear in the title of the paper, must be provided for indexing purposes and information retrieval.

Immediately following the abstract, a list of abbreviations used in the manuscript must be provided.

Clinical trials need to follow the CONSORT guidelines. The CONSORT Statement which described a minimum list of essential items to consider when reporting the results of a randomized trial in any journal or conference abstract can be found in Hopewell S, Clarke M, Moher D, Wager E, Middleton P, et al. (2008) CONSORT for Reporting Randomized Controlled Trials in Journal and Conference Abstracts: Explanation and Elaboration. *PLoS Med* 5(1): e20. doi:10.1371/journal.pmed.0050020.

Original Research Papers

These manuscripts describe original research findings. They should be no longer than 5000 words, excluding the title page, abstract, references, tables, and figure legends, but including the abbreviation list, acknowledgements, funding, disclosure statement, and author contributions. They should contain no more than 10 tables and figures combined and no more than 60 references. Their final accepted version should, in general, not exceed 8 printed journal pages; additional information may be included as a supplementary appendix, to be published online.

These articles should include the following sections:

- Introduction, including the background and rationale of the study.
- Methods, in adequate detail to permit reproduction of the research.
- Results, using subheadings if required.
- Discussion, including the interpretation and implications of the findings.
- Acknowledgements, stating the names of those people who contributed to the study but did not meet the requirements for authorship.
- Funding, including all sources of financial support for the study.
- Disclosure statement, summarizing potential conflicts of interest with any of the authors, or mentioning that there are none.
- Author contributions, describing the contribution of each author in the design and conduct of the study, data collection and analysis, data interpretation and manuscript writing.
- References
- Tables
- Figure legends
- Figures

Fast-Track Papers

These manuscripts describe original research findings of exceptional novelty and importance, usually in a rapidly growing and competitive field. The requirements are the same as for original research articles. Fast-track articles are usually peer-reviewed within 2-3 weeks from submission and authors will be given up to 4 weeks for revisions; should these papers be accepted, articles will be published online within 4 weeks and appear in print in the next available issue of the journal.

Brief Reports

These manuscripts describe limited but novel, focused and straightforward original research findings. Preliminary data, pilot studies, case reports, case series, or studies with small sample sizes do not usually qualify, unless they are of exceptional quality, utilize novel methodologies, or report findings that can form the basis of future, more definitive studies and/or are of great interest to the journal's readership. They should be no longer than 1500 words, excluding the title page, abstract, references, tables, and figure legends, but including the abbreviation list, acknowledgements, funding, disclosure statement, and author contributions. They should contain no more than 2 tables and figures combined and no more than 20 references. Their final accepted version should, in general, not exceed 3 printed journal pages; no additional information may be included. Other than the length, the requirements and review process are the same as for original research papers.

Methods Papers

These manuscripts describe the development of novel methodologies in the field of metabolic research, including significant refinements of well-established techniques. They should be concise but detailed enough so that the method can be readily reproduced. Methodologies utilizing proprietary, non-commercially available tools (whether by the authors themselves or an independent vendor) will not be considered. The requirements and review process are the same as for original research articles.

Meta-analyses

These articles systematically find, select, critique, and synthesize evidence relevant to well-defined questions in metabolic research. Meta-analyses of randomized controlled trials should follow PRISMA reporting guidelines and checklist, whereas those of observational studies should follow MOOSE reporting guidelines and checklist. The requirements and review process are the same as for original research articles. Additional information (including references to disqualified papers and study summary tables) should be included as a supplementary appendix, to be published online.

Mini-reviews

These articles are usually but not necessarily solicited by the journal editors, and summarize salient literature that appeared over the past few years; they describe important new clinical research, or basic and translational research that has direct relevance to human metabolism. They may be divided under liberal headings and subheadings, and should be no longer than 5000 words, excluding the title page, abstract, references, tables, and figure legends, but including the abbreviation list, acknowledgements, funding, and disclosure statement (if applicable); no author contributions are required. They should contain no more than 6 tables and figures combined and no more than 100 references. Their final accepted version should not exceed 8 printed journal pages. The editors may modify these requirements at the time of invitation, depending on the amount of published research and the width of the field intended to be covered. These articles are not pre-screened and are usually reviewed by members of the editorial board.

Commentaries

These articles are usually but not necessarily solicited by the journal editors and concisely address a timely or controversial issue of importance to the journal's readership, usually in response to work that has been published in the journal (typically, they are published in the same issue). They should be unstructured (without headings) and should be no longer than 1500 words, excluding the title page, references, tables, and figure legends, but including the abbreviation list, acknowledgements, funding, and disclosure statement (if applicable); no abstract or author contributions are required. They should contain no more than 2 tables and figures combined and no more than 50 references. Their final accepted version should, in general, not exceed 2 printed journal pages; no additional information may be included. These articles are not pre-screened and are usually reviewed by members of the editorial board.

Editorials

These articles are written by the journal editors or by invited authors. The requirements and review process are the same as for commentaries, although the scope of the articles may be more liberal.

Letters

These articles are unsolicited short commentaries related to specific points of agreement or disagreement with the work that has been published recently in the journal (namely, in the past 3 issues). They should be no longer than 500 words (all inclusive), contain no more than 1 table or figure, and no more than 15 references. Accepted letters will only appear online, not in print.

References

Within the manuscript text, references to the literature should be numbered consecutively using Arabic numerals in brackets (eg, [7]), in the order in which they first appear, and should be listed in the same numerical order at the end of the manuscript. Multiple references should be separated by a comma and a space (eg, [7, 8]) unless there are more than 3 consecutive references, in which case they should be grouped (eg, [7-9]). References cited in a table or figure should also appear in the text, where the respective table or figure is mentioned (eg Table 1 [7, 9-11, 15]).

In the reference list, all authors (last name, first and middle initials) should be listed when there are 3 or fewer; when there

are 4 authors or more, the first 3 should be listed followed by "et al." The full title of the work should be cited. Journal names should be abbreviated according to Index Medicus and appear italicized, followed by the year, volume, issue and/or supplement in parenthesis (if applicable), and the full range of pages. Articles accepted for publication but not yet published should appear in the same format, with the DOI; if no DOI has been assigned yet, the authors should add the phrase "in press" and provide a copy of the accepted version of that paper as supporting information along with their submission.

Unpublished material may not be cited in the reference list; it should only be mentioned in the text, properly identified with the name of the investigator(s), the phrase "unpublished data" and the year of the observation. The authors should provide a letter from those investigator(s) (who may or may not be authoring the manuscript) affirming the accuracy of the unpublished material.

The author(s) are responsible for the accuracy of references. Examples of references for journal articles as well as other source material are shown below.

Journal articles:

- 1 Lusk G. The calorimeter as the interpreter of the life processes. *Science* 1915;42(1093):816-9.
- 2 Harris JA, Benedict FG. A biometric study of human basal metabolism. *Proc Natl Acad Sci U S A* 1918;4:370-3.
- 3 Krebs HA. Metabolism of amino acids and proteins. *Annu Rev Biochem* 1938;7:189-210.
- 4 Keys A, Anderson JT, Aresu M, et al. Physical activity and the diet in populations differing in serum cholesterol. *J Clin Invest* 1956;35:1173-81.
- 5 Bjorntorp P, Sjostrom L. Carbohydrate storage in man: speculations and some quantitative considerations. *Metabolism* 1978;27(12 Suppl 2):1853-65.
- 6 Lai YH, Chien Y, Kwok CF, et al. Enhanced long-chain fatty acid uptake contributes to overaccumulation of triglyceride in hyperinsulinemic insulin-resistant 3T3-L1 adipocytes. *Metabolism* 2010; doi: 10.1016/j.metabol.2010.1005.1007.

Authored books:

- 1 Frayn KN. *Metabolic regulation: a human perspective*. 2nd edn. Oxford: Blackwell Science; 2003.
- 2 Montoye HJ, Kemper HCG, Saris WHM, et al. *Measuring physical activity and energy expenditure*. Champaign, IL: Human Kinetics; 1996.

Note: Book title should appear in normal font, and in sentence case.

Edited books:

- 1 Bjorntorp P, ed. *International textbook of obesity*. Chichester: John Wiley & Sons; 2001.
- 2 Reilly T, Secher N, Snell P, Williams C, eds. *Physiology of sports*. London: E & FN Spon; 1990.

Note: Book title should appear in normal font, and in sentence case. The name of all editors should be given.

Book sections:

- 1 Roth J, Kahn CR, De Meyts P, et al. Receptors for insulin and other peptide hormones in disease states. In: Bajaj JS, ed. *Insulin and metabolism*. Amsterdam: Elsevier/North-Holland Biomedical Press; 1977:73-9.
- 2 Wolfe RR, Klein S. Assessment of the control of the triglyceride/fatty acid cycle. In: Chapman TE, Berger R, Reijngoud DJ, Okken A, eds. *Stable isotopes in paediatric nutritional and metabolic research*. Andover: Intercept; 1990:115-22.

Note: Chapter title should appear in normal font, and in sentence case. The name of all editors should be given. Book title should appear in normal font and in sentence case.

Proceedings:

- 1 Havel RJ. Triglyceride and very low density lipoprotein turnover. In: Cowgill G, Estrich DL, Wood PD, eds. Proceedings of the 1968 Deuel Conference on Lipids on the Turnover of Lipids and Lipoproteins. Bethesda, MD: U.S. Department of Health, Education, and Welfare, National Institutes of Health, National Institute of Arthritis and Metabolic Diseases; 1968:117-30.
- 2 Fredrickson DS, Gordon RS, Jr. Metabolism of albumin-bound labeled fatty acids in man [abstract]. *J Clin Invest* 1957;36(6 Pt 1):890.

Note: If the book of abstracts is unedited, the editors section in the citation may be excluded. Posters published in journal special issues or supplements should be cited like journal articles, rather than conference proceedings, and denoted as an abstract (within brackets) at the end of the title.

Electronic sources:

Beck M. Eating to live or living to eat? Assessed at <http://online.wsj.com> on 13 July 2010.

Tables

Tables should be double-spaced, with their number and a concise heading indicated above. Each table must be intelligible without reference to the text. Footnotes at the bottom of the table should contain information about the type of data presented (eg, means and standard deviations, medians and quartiles, frequencies, 95% confidence intervals), a brief note on the statistical analyses performed, and the abbreviations used (if any); footnotes referring to specific cells may be numbered consecutively by using alphabetical superscripts (a, b, c, etc.). Only the following symbols should be used as superscripts to indicate grouped levels of statistical significance, always in this order: *, †, ‡, §, ¶; no more than these 5 symbols may be used. Alternatively the authors may opt to show exact *P*-values for all comparisons presented in separate columns or rows. The width of the table must be designed to occupy 1 or 2 journal columns, with no more than 5 or 10 columns, respectively. Tables should be constructed by using the specialized table creation tools and functions available within word processing programs; tabs, multiple spaces, etc., should not be used to create tables, columns, or rows. During the initial submission, tables should be embedded within the manuscript text. During revision, tables should be submitted as clearly named separate files (i.e., Table 1, Table 2, etc.).

Figures

Each figure must have a corresponding legend with the figure number, a concise heading, and details about the data presented (same as in table footnotes), being intelligible without reference to the text. Figure legends should be clearly numbered and included at the end of the manuscript, after the tables, and should not be included on the figure or image files themselves. Key information should either be included in the figure legend (using words, eg, white bars: placebo; solid line: before treatment, etc.) or placed in any available white space within the figure itself (using corresponding symbols rather than words). To denote statistical differences, only the following symbols should be used, always in this order: *, †, ‡, §, ¶; then: **, ††, ‡‡, §§, ¶¶, etc. During the initial submission, figures should be embedded within the manuscript text, with only the figure number on the same page for identification. During revision, figures should be submitted as clearly named separate files (i.e., Figure 1, Figure 2, etc.). Multipanel figures should have clearly labeled parts (A, B, C, etc.) and corresponding legends (eg, Figure 1: Heading. A: Subheading; B: Subheading, or Figure 1A: Heading; Figure 1B: Heading, etc.), and must be submitted as such, not as individual panels; however, each panel will count as a separate figure towards manuscript length.

Figures should be produced at approximately the size they are to appear in print. Each figure must fit in 1 or 2 journal columns, corresponding to 21 picas wide (3.5 inches or 9 cm) or 43 picas wide (7 inches or 18 cm), respectively. At 100% size,

text should be 8-11 points, in bold and solid typeface and in Arial font (or equivalent), and used consistently throughout all figures. Lines should be thick, solid, and no less than 1-point rule. Reverse type (white lettering on dark background) and lettering on top of shaded or textured areas should be avoided. Wording on figures should be kept to a minimum.

For line or bar graphs, labeling of the y-axis should be vertical. Shading and texturing should be avoided, whenever possible. If unavoidable, differing shades must vary by at least 25%, i.e., 25%, 50%, 75%. For texturing, variations from solid black and white should be denoted with clear bold hatch stripes (vertical, horizontal, or diagonal). Data points should be marked with white and black circles, squares, triangles, and diamonds. Key information should be placed in any available white space within the figure; if space is not available, the information should be placed in the legend. Symbols of statistical significance should be explained in the legend.

Color figures should be submitted in RGB (red, green, blue) format. Color images will be preserved as RGB up until the time of printing and will be posted online in their original RGB form. Using RGB color mode for online images offers a significant improvement for figures that contain fluorescent blues, reds, and greens. Therefore, the online journal will accurately reflect the color of the images the way the author intended. For print, the images will be converted to CMYK through an automated color conversion process.

Reproduction of previously published material

If materials (eg, figures and/or tables) are reproduced from other sources, this should be noted in the legend. The authors must provide written permission for reproduction, obtained from the copyright holder.

Supplementary online appendix

Supplemental data allow authors to enhance their papers by making additional substantive material available to readers, in the form of figures, tables, datasets, etc, and is published only online; it does not appear in the printed version of the journal. Alternatively, the authors may be required to include some of the initial manuscript material as a supplementary online appendix in order for their manuscript to meet the journal's length requirements; generally, only results should be included as supplemental data, although methods may also be included, if necessary. Supplemental files should be submitted at the time of submission and will be reviewed along with the manuscript. Authors should refer to the supplemental data in the manuscript at an appropriate point in the text or figure/table legend. Supplemental data will be copyedited per journal style whenever possible.

Supporting information

Supporting information should include cited accepted papers without DOI (not available online), cited unpublished material or respective confirmation letters, published abstracts, as well as any other material that may facilitate the handling of the authors' manuscript. Supporting information will be reviewed along with the manuscript, but will not be published, either online or in print.

Units of measure and format

Data should be expressed in metric units or Systeme Internationale (SI) units, but use of one system or the other must be consistent throughout the manuscript, tables and figures. Temperature should be expressed in degrees Celsius (°C), energy should be expressed in calories (not joules), and time of day should be expressed using the 24-hour clock (eg, 0800 h, 1500 h). Slash should be used to indicate division (eg, mg/dL, nmol/L); a small dot, larger than a period and centered on the cap height of a font (·) should be used to indicate multiplication (eg, mg/kg·min, mmol·mU/L·min). Common units of measurement should appear as follows: ng, µg, mg, g, kg (for weight); µL, mL, L (for volume); sec, h, d, mo, y (for time); mm, cm, m, km (for length); cal, kcal (for energy). Plural tense should be avoided (eg, kgs, secs, kcals, etc.). *P* values should appear italicized. A space should be used before and after common mathematical symbols

and units of measurement (eg, 5 ± 2 ng/mL, $P < .001$, 22 °C, 52%, 5-10 min).

Abbreviations

Metabolism does not implement any standard abbreviations. Abbreviations should generally be kept to a minimum and be used solely to improve readability. They may be used for scientific terms which are widely known by their acronym (eg, DNA, EDTA, ELISA, ANOVA, etc) or for scientific terms appearing 3 or more times in the manuscript abstract or text, but should generally not be used to denote different interventions or groups or different levels of a treatment, unless absolutely necessary; the title of the manuscript should contain no abbreviations. In the abstract, abbreviations must be defined immediately after their first mentioning. In the text, authors may use abbreviations without prior definition; however, all abbreviations in the text

must be defined in the list of abbreviations at the beginning of the manuscript, immediately following the abstract and before the manuscript text.

Publications involving microarray data

Metabolism has adopted the microarray data standard developed by the Microarray Gene Expression Data society (MGED) and requests that all authors using microarray data analysis in their research submit the complete data sets to one of three databases prior to manuscripts submission: the NCBI Gene Expression Omnibus (GEO); the EMBL-EBI Array Express repository; or the Center for Information Biology Gene Expression (CIBEX) database. Also, provide the set of login credentials (username and password) that will let referees access the data set during review, if it is set up as a private resource.