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Tryptophan-Dependent Membrane Interaction and Heteromerization with the Internal Fusion Peptide by the Membrane Proximal External Region of SARS-CoV Spike Protein

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OBJECTIVES OF THE JOURNAL

The purpose of *Biochemistry* is to publish the results of original research that contribute significantly to the understanding of the mechanism of biological phenomena in terms of molecular structure and/or function. Preference will be accorded to manuscripts that develop new concepts or experimental approaches, particularly in the advancing areas of biochemical science. Manuscripts that are primarily theoretical in nature or in the field of bioinformatics must be directed toward explaining important results previously not understood, making important predictions that can be experimentally tested, or developing significant advances in theory of general interest to biochemists. Submission of manuscripts in emerging areas in chemical biology, biophysics, proteomics, model studies and structures, cellular and molecular biology, computational chemistry, and new methods development is encouraged especially if they address basic biochemical mechanisms. Publication of preliminary or inconclusive results is discouraged, as is the simultaneous publication of manuscripts of overlapping content. Submission of a manuscript to *Biochemistry* implies that the same work has not been published nor is under consideration for publication elsewhere. This policy also applies to material submitted for publication in an electronic database system of a public nature, which we consider to constitute prior publication. In addition, no legal restrictions must exist, e.g., those associated with the filing of patents.

In addition to regular research reports, *Biochemistry* publishes four types of special articles: Rapid Reports, Accelerated Publications, New Concepts, and Current Topics. These are described below in detail.

EDITORIAL ORGANIZATION AND REVIEWING PROCESS

The Editor is appointed by the American Chemical Society and has the final responsibility for all editorial decisions. Associate Editors, together with the Editor, process all manuscripts received. Members of the Editorial Advisory Board are usually appointed for a three-year term and may be reappointed.

When a manuscript is received, the Editors first judge whether its content falls within the scope of *Biochemistry*. Manuscripts that are primarily descriptive, confirmative of previous work, of a highly specialized nature, or that do not address fundamental biochemical questions or, in the judgment of the Editors, are not of sufficient interest to the general readers of *Biochemistry* will be returned to the author without a formal written review. These decisions are reached with the participation of at least two Editors or an Editor and an Editorial Advisory Board member and should be considered final. After this preliminary review, manuscripts are sent to at least two independent reviewers for evaluation. Reviewers are selected for their competence in specialized areas of biochemistry from a database of qualified specialists. They are expected to disqualify themselves if they have a conflict of interest, such as association with the author's laboratory or preconceived opinions about the work. Authors are required to recommend four qualified reviewers other than members of the Advisory Board. Authors should take care not to recommend reviewers that have a real or perceived conflict of interest (e.g., a collaborator or someone who has recently published with one of the authors). Authors may also request that certain (but not more than three) reviewers not be chosen. Any request to exclude a reviewer must be accompanied by an explanation in the cover letter. Members of the Editorial Advisory Board cannot be disqualified from participating in the final disposition of a manuscript. The reviewers are advisory to the Editor, and their reports are used to reach the editorial decision. If the reviewers disagree, or if in the judgment of the Editor the manuscript has not received adequate consideration, the manuscript and the reviewers' opinions are submitted to a member of the Editorial Advisory Board for arbitration. Editorial decisions that result from this process are usually final. Reviews will normally be sent to authors by e-mail unless the authors request otherwise.

When a manuscript is returned to the author for revision, the author should reply to the specific recommendations of the reviewers and in an accompanying letter indicate those recommendations that have been incorporated into the revision and the reasons any have been disregarded. Usually only one major revision will be considered.

Handwritten corrections will not be accepted. The revised manuscript should be returned to the assigned Editorial Office within 60 days. **A revised manuscript received beyond the 60-day period will be considered as a new submission, will receive a new number, and usually will undergo a new review process.**

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Just Accepted manuscripts are peer-reviewed, accepted manuscripts that are posted on the ACS Publications website prior to technical editing, formatting for publication, and author proofing—usually within 30 minutes to 24 hours of acceptance by the editorial office. During the manuscript submission process, Authors can choose to have their manuscript posted online as a *Just Accepted* manuscript. They should take this choice

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ASAP Publication. Accepted manuscripts will be published on the “Articles ASAP” page on the Journal Web site as soon as page proofs are corrected and all author concerns are resolved. Publication on the Web usually occurs within three working days of receipt of page proof corrections, and this can be anywhere from two to four weeks in advance of the cover date of the issue. Authors who do not choose the *Just Accepted* option should take the ASAP schedule into account when planning intellectual and patent activities related to a manuscript. The actual date on which an accepted paper is published on the Web is recorded on the Web version of the manuscript and on the first page of the PDF version.

SUBMISSION OF MANUSCRIPTS

Authors should submit manuscripts through the ACS website. Mailed (hard-copy) submissions are discouraged and will only be considered after the author has obtained prior permission of the Editor. E-mailed submissions will not be processed.

Authors should review Assembly/Preparation of Manuscripts prior to submission of a manuscript. Close attention to all the required details discussed in Assembly/Preparation of Manuscripts will expedite review and reduce the time to publication.

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statement will be published in the article: “The authors declare no competing financial interest.”

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Author List. During manuscript submission, the submitting author must provide contact information (full name, email address, institutional affiliation and mailing address) for all of the co-authors. Because all of the author names are automatically imported into the electronic Journal Publishing Agreement, the names must be entered into ACS Paragon Plus in the same sequence as they appear on the first page of the manuscript. (Note that co-authors are not required to register in ACS Paragon Plus.) The author who submits the manuscript for publication accepts the responsibility of notifying all co-authors that the manuscript is being submitted. Deletion of an author after the manuscript has been submitted requires a confirming letter to the Editor-in-Chief from the author whose name is being deleted. For more information on ethical responsibilities of authors, see the [Ethical Guidelines to Publication of Chemical Research](#).

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Any materials that cannot be supplied electronically should be addressed to

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832 RRB, 23rd Avenue South at Pierce
Nashville, TN 37232-0146

Electronic manuscript templates are available in several word-processing versions at the *Biochemistry* homepage. Authors are encouraged to use the templates provided. Rapid Reports are strictly limited to four printed journal pages and **must** be submitted on the template for Rapid Reports

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ELECTRONIC MANUSCRIPT PREPARATION

The final accepted version of the manuscript must be submitted in electronic form. Manuscripts prepared with the software packages listed below will be used for production, providing the following guidelines are adhered to. Failure to adhere to the following instructions may cause delays in publication.

When preparing a manuscript, use the document mode or its equivalent in the word-processing program; i.e., do not save files in "Text Only" (ASCII) mode. If a non-Western version of the word-processing software was used to prepare the manuscript, save the file in rich-text format (RTF). Do not include any page-layout instructions such as placement information for graphics in the file. The text should be left justified, and automatic end-of-line hyphenation should be turned off. Use carriage returns only to end headings and paragraphs, not to break lines of text. Do not insert spaces before punctuation. References must conform to the format described herein. Ensure that all characters are correctly represented throughout the manuscript: for example, 1 (one) and l (ell), 0 (zero) and O (oh), x (ex) and × (times sign). Check the final version carefully for consistent notation and correct spelling. The Journal Publications office conversion program will faithfully translate any errors to the typeset copy.

All text (including the title page, abstract, all sections of the body of the paper, figure captions, scheme or chart titles and footnotes, and references) and tabular material should be in one file. It is best to use the fonts "Times" and "Symbol." Other fonts, particularly those that do not come bundled with the system software, may not translate properly. Ensure that all special characters (e.g., Greek characters, math symbols, etc.) are present in the body of the text as characters and not as graphic representations. Consult the documentation for the specific software package being used on how to detect the presence of graphics in the files, and replace them with the appropriate text characters.

Tables may be created using a word processor's text mode or table-format feature. The table-format feature is preferred. Ensure each data entry is in its own table cell. If the

text mode is used, separate columns with a single tab and use a line feed (return) at the end of each row.

Please find a list of acceptable word processing packages at <http://pubs.acs.org/paragonplus/submission/general/software.html>.

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MANUSCRIPT TYPES

There are six manuscript types. When submitting a manuscript through the electronic submission process, the submitting agent selects the appropriate manuscript type from a pull-down menu. The majority of manuscripts will naturally be considered as Regular Articles. Other more specialized manuscript types are Rapid Reports, Accelerated Publications, New Concepts, Current Topics, and Additions/Corrections. Descriptions of these manuscript types follow.

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The *Biochemistry* Rapid Report is a short manuscript type reserved for timely topics of unusual interest. The journal will make every effort to return an initial decision with three weeks of receipt. These Rapid Reports will be strictly limited to four printed pages. Authors are asked to adhere to the following guidelines when submitting a Rapid Report. Manuscripts that do not adhere to these rules will be placed in the standard *Biochemistry* Article workflow. **Use of the appropriate template is mandatory for submission of Rapid Reports.**

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- Abstract (no more than 100 words)
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 - Includes an introduction, a brief description of experimental procedures, and the results and discussion in one combined block of text (no headings for subsections)
 - Display Items such as tables, structures, charts, schemes, figures, and figure legends should be embedded in the Main Text.

- Detailed Experimental Procedures should be included in the Supporting Information. These methods should be described in sufficient detail to enable others to repeat the experiment.
- Acknowledgments (in-line heading)
- References. Note that for Rapid Reports the inclusion of complete titles for the references is optional; however, complete titles should be included if space permits.
- Graphic for the Table of Contents (on a separate page)
- Supporting Information (as a separate file)

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- The manuscript must be accompanied by a transmittal letter justifying the reasons why the author(s) believes the work should receive accelerated publication status.
- The transmittal letter should include the names of at least four knowledgeable scientists who are qualified to act as impartial reviewers.

Every effort will be made to expedite the review of such manuscripts. It is intended that these papers be published within two months of acceptance. Galley proofs of papers accepted for accelerated publication must be returned to Journal Publications within 24 hours. Questions regarding the suitability of manuscripts for accelerated publication should be addressed to the Editor in writing.

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New ideas, original models, imaginative correlation of data, and controversy all contribute to the progress of science. In order to provide a venue for new concepts and productive scientific discourse, *Biochemistry* will publish short articles that represent personal views and new ideas about important areas of biochemistry. In areas where controversy exists, opposing views will be published. Both solicited and unsolicited contributions will be considered for New Concepts.

CURRENT TOPICS

Current Topics are intended to familiarize the general reader with the current knowledge in a biochemical field or a topic of particular interest. Authorship usually is by invitation,

but the Editors welcome suggestions of topics and authors. Topics that have been recently reviewed in other journals will not be considered.

Manuscripts should adhere to the general format of regular papers published in this Journal but do not require the subheadings of experimental papers. Manuscripts will be reviewed for content, accuracy, and clarity. It is intended that accepted manuscripts be published within two months of acceptance. They will appear in the front of an issue.

ADDITIONS/CORRECTIONS

Additions and Corrections may be used to address important issues or correct errors and omissions of consequence that arise after publication of an article. Additions and Corrections may be requested by the author(s) or initiated by the Editor after discussions with the corresponding author. Readers who detect errors of consequence in the work of others should contact the corresponding author of that work. All Additions and Corrections are subject to approval by the Editor, and minor corrections and additions will not be published. Additions and Corrections from authors should be submitted via the ACS Paragon Plus environment by the corresponding author for publication in the “Addition/Correction” section of the Journal. The corresponding author should obtain approval from all of the article co-authors prior to submitting an Addition and Correction or provide evidence that such approval has been solicited. The Addition and Correction should include the original article title and author list, citation including DOI, and details of the correction. For proper formatting, see examples in a current issue of the Journal.

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ASSEMBLY/PREPARATION OF MANUSCRIPTS

Manuscripts should be written in clear, concise English. Editors, reviewers, and readers may tend to be biased against results reported in complex or excessively verbose language. Regular research Articles should include section headings.

Manuscript Assembly: Structures, charts, schemes, figures, and figure legends may be embedded in the text or should appear as indicated below.

- Title Page
- Abbreviations and Textual Footnotes
- Abstract
- Introduction (no heading)
- Experimental Procedures (Materials and Methods)
- Results
- Discussion
- Acknowledgments
- Supporting Information paragraph (if necessary)
- References
- Tables (must be included in the manuscript file, not uploaded separately)
- Structures, Charts, Schemes
- Figure Legends
- Figures
- Graphic for the Table of Contents
- Supporting Information (as a separate file)

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	single (preferred)	double
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minimum		10.6 cm (4.167 in.)
maximum	8.5 cm (3.33 in.)	17.8 cm (7 in.)
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For the final revision, illustrations should be submitted in the actual size at which they should appear in the Journal. Illustrations which do not need to be reduced to fit a single- or double-column format will yield the best quality. Lettering should be no smaller than 4.5 points. (Helvetica or Arial type works well for lettering.) Lines should be no thinner than 0.5 point. Lettering and lines should be of uniform density.

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Avoid using complex textures and shading to achieve a three-dimensional effect. To show a pattern, choose a simple cross-hatch design.

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Chemical Structures. Structures should be produced with the use of a drawing program such as ChemDraw. Structure drawing preferences (preset in the ACS Stylesheet in ChemDraw) are as follows:

(1) As drawing settings select:

chain angle	120°
bond spacing	18% of width
fixed length	14.4 pt (0.508 cm, 0.2 in)
bold width	2.0 pt (0.071 cm, 0.0278 in)
line width	0.6 pt (0.021 cm, 0.0084 in)
margin width	1.6 pt (0.056 cm, 0.0222 in)
hash spacing	2.5 pt (0.088 cm, 0.0347 in)

(2) As text settings select:

font	Arial/Helvetica
size	10 pt

(3) Under the preferences choose:

units	points
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(4) Under page setup choose:

Paper	US Letter
Scale	100%

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Title Page (page 1). **A. Title.** Provide a brief and informative title to assist in the classification and indexing of the paper. Do not use trade names of drugs or abbreviations. Serial numbers may be used only if consecutive papers appear in the same issue of *Biochemistry*. Avoid uninformative titles such as "Studies on ...". **B. Funding Source Statement.** Give acknowledgments of financial aid, including the granting agency and the grant award identification number. The submitting author is asked to select funding sources from the list of agencies included in the FundRef Registry (<http://www.crossref.org/fundref/>). (Other acknowledgments should appear in a separate section at the end of the Discussion.) Identifying funding sources is optional during submission of an original manuscript. Funding source information is required when a revised manuscript is submitted. **C. Byline.** List full names and institutional affiliations of all authors. It is implicit in listing a person as an author that he/she has agreed to co-author the manuscript and is in full agreement with its content. The symbol * should be used to indicate the author to whom correspondence should be addressed. Provide complete contact information for the corresponding author, including a phone number and an e-mail address.

Abbreviations and Textual Footnotes (page 2). List the abbreviations used in an individual paragraph. Textual footnotes, numbered consecutively, should be brief and kept to a minimum.

Abstract (page 3). An abstract of not more than 250 words should succinctly present the problem and experimental approach and state major findings and conclusions. It should be self-explanatory and suitable for reproduction by abstractive services without rewriting. Since the abstract will be published in Chemical Abstracts, footnotes or undefined abbreviations may not be used. If a reference must be cited, complete publication data must be given [e.g., White, R. H. (1982) *Biochemistry* 21, 4271–4275].

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Results. The results should be presented concisely. Tables and figures should be used only if they are essential for the comprehension of the data. The same data should not be presented in more than one figure or in both a figure and a table. As a rule, interpretation of the results should be reserved for the Discussion. In the interest of economy of space, Supporting Information (also subject to review) should be submitted as a separate file. The policy of the Journal is to publish only representative data. For example, routine gels and linear plots will not be published. However, if such information is important for evaluating the research, it should be included in the submission for the reviewers or as Supporting Information. The Supporting Information will be included in the web edition of the Journal (see Supporting Information).

Kinetic and Equilibrium Data. Authors are referred to the STREND A (Standards for Reporting Enzymology Data) Commission of the Beilstein Institut (<http://www.strenda.org/documents.html>) for an example of detailed guidelines. For publication in *Biochemistry*, the reporting of steady-state, pre-steady-state, or approach-to-equilibrium kinetic data and equilibrium-binding data for proteins, nucleic acids, and other species must include a description of the identity of the catalyst or binding molecule, its origin, purity of composition, and any modifications such as mutations, post-translational modifications, or other modifications made to facilitate expression and purification. The method of assay and the exact experimental conditions of the assay must be provided as a reference to previous work, with or without modifications, or fully described if a new assay. Regardless of whether previously reported, the temperature, pH, and pressure (if other than atmospheric) of the assay **must** be included. Terms such as “not detectable” (ND) should be avoided. Instead, an estimate of the limit of detection based on the sensitivity and error analysis of the assay should be provided.

First-order and second-order rate constants (including steady-state values of k_{cat} and $k_{\text{cat}}/K_{\text{M}}$ for enzymes and nucleic acids) should be reported in units of s^{-1} and $\text{M}^{-1} \text{s}^{-1}$, respectively. Equilibrium binding constants should normally be reported as dissociation constants with units of concentration (M, mM, μM , etc.). Steady-state enzyme activity (specific activity) should be optimally reported as k_{cat} or, if there is uncertainty in the molar concentration of the catalyst, as a V_{max} (nmol, μmol) of product formed per amount of protein per unit time. All reported parameters should be given with a calculated estimate of error and a description of the software used in the data analysis.

Protein Sequence Data. These data should be deposited with **Protein Identification Resource, National Biomedical Research Foundation, Georgetown University Medical Center, Washington, DC 20007**. For the documentation of the sequence analysis of proteins, see *Biochemistry* (1983) 22, 2595. Authors of accepted papers containing nucleotide sequences should submit the sequence data, preferably in computer-readable form, plus information for annotation of the data and a copy of the paper to **GenBank Submissions, National Center for Biotechnology Information (NCBI), Building 38A, Room 8N-805, 8600 Rockville Pike, Bethesda, Maryland 20894** [telephone (301) 496-2475; fax (301) 480-9241; e-mail (submissions) gbsub@ncbi.nlm.nih.gov, (information) info@ncbi.nlm.nih.gov]. Submission to

GenBank ensures entry also into the Protein Data Bank in Europe (PDBe). A separate paragraph should indicate that such a deposit has been made.

Manuscripts dealing primarily with the isolation, sequencing, and expression of DNA segments usually are not appropriate for *Biochemistry* unless significant new information is obtained about the structure and/or function of the proteins. Also, manuscripts primarily dealing with protein-sequence comparisons and evolutionary considerations are appropriate only if they explain important results not previously understood or make important predictions that can be experimentally tested.

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Crystal structures of nucleic acids should be deposited with the **Nucleic Acid Database (NDB; <http://ndbserver.rutgers.edu/>; ndbadmin@ndbserver.rutgers.edu)** at <http://ndbserver.rutgers.edu/NDB/deposition/> or with the RCSB PDB at <http://pdb.rutgers.edu/adit/>. A preprint of the related manuscript should be mailed or faxed to **The Nucleic Acid Database, Department of Chemistry, Rutgers, The State University of New Jersey, 610 Taylor Road, Piscataway, New Jersey 08854-8087 [fax (732) 445-4320]**.

For papers describing structures of biological macromolecules from electron microscopy experiments, the 3D map should be deposited at either the Protein Data Bank in Europe (UK) or RCSB (USA) EMDB deposition site (<http://www.emdatabank.org/>). Once the map has been deposited, any fitted atomic coordinates should be deposited with the Protein Data Bank (PDB) by following the link provided from the EMDB deposition

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