NCTR's Research Peer Review System

EVALUATION PLAN FOR RESEARCH SCIENTISTS

National Center for Toxico logical Research

Food & Drug Administration

Jefferson, Arkansas 72079

Revised May, 1994
NATIONAL CENTER FOR TOXICOLOGICAL RESEARCH

RESEARCH PEER REVIEW SYSTEM

EVALUATION PLAN FOR RESEARCH SCIENTISTS

I. PURPOSE

This Evaluation Plan sets forth the guidelines by which NCTR's research scientists at the GS-12 level and above are reviewed for promotion. This Plan contains the review procedures, the packet of information that the scientist must prepare, and the evaluation criteria that will be used to classify the position. A complete copy of the evaluation criteria, the Research Grade-Evaluation Guide, is included as an appendix to this Plan.

This Evaluation Plan establishes the responsibilities, procedures and standards for the peer review system in evaluating the scientific qualifications and contributions of: (1) NCTR research scientists proposed for promotion to the GS-13 level and above; (2) NCTR research scientists at the GS-13, GS-14, and GS-15 level proposed for cyclic classification review by NCTR management every five years; (3) candidates for vacant research scientist positions at NCTR at GS-13 and above; or (4) NCTR Staff Fellows, Visiting Scientists, or ORISE/VA post docs who are to be considered for conversion to a permanent position as a research scientist.

Under this Plan, the grade of a position is based on the "person-in-the-job" concept. Promotions made under the Plan are Career Promotions and are not subject to competitive promotion procedures.

II. POSITIONS COVERED

A. A research scientist position at the NCTR is substantially or predominantly engaged in performing or leading all elements of research (as defined below), and the Research Grade-Evaluation Guide is the classification standard used to determine the grade level. A research position meets the following criteria [from p. 8 of the Research Grade-Evaluation Guide]:

"1. The position is predominantly characterized by systematic investigation of theory, experimentation, or simulation of experiments.

2. The work is characterized by research-type application of the scientific method including problem exploration and definition, planning of the approach and sequence of steps, execution of experiments or studies, interpretation of findings, and documentation or reporting of findings.

3. There is a clear requirement for the exercise of creativity and critical judgment, variation in which may materially affect the nature of the end product."
4. The qualifications, stature, and contributions of the incumbent have a direct and major impact on the level of difficulty and responsibility of the work performed.

5. Research capability as demonstrated by graduate education and/or research experience is a significant requirement in the selection of candidates."

B. A scientist would normally not be considered a researcher if he/she performs limited activities of the research process with extremely close supervision. Such non-research positions generally have limited, if any, involvement in the problem definition and interpretation of results.

III. PEER REVIEW PACKET

A. The research scientist prepares the review packet, and the Division Director reviews and assures that the material accurately reflects and depicts the accomplishments and responsibilities of the subordinate. The research scientist forwards the original and 6 copies (may be more depending on the size of the Panel) to the Chair of the Review Panel. The research scientist will have at least 60 days from written notification to prepare the packet.

B. The package must contain, in order shown, the following:

1. Transmittal memo from the Division Director. (See Appendix 1 for a sample transmittal memo.)

2. List of Accomplishments from the Research Scientist. This list (maximum of 10 career accomplishments) should amplify the research scientist’s accomplishments and cover the following points:
   a) A brief summary of the scientist’s research career (brief paragraph).
   b) Contributions to the scientific community and/or the state-of-the-art. (See Appendix 2 for additional details.)

3. Curriculum Vitae (see Appendix 3).

4. Bibliography (see Appendix 4).

5. Position Description (see Appendix 5).

IV. STRUCTURE OF THE PANEL

A. Members

The Panel will consist of six or more members.

1. The Chair and Co-Chair of the Panel will be scientists from NCTR at the GS-15 or above level. The term is for two years, first year as Co-Chair and second year as Chair.

2. Panel Members, other than Chair, Co-Chair and Position Classification Specialist, will be scientists from outside NCTR. These peer scientists may be from other FDA Centers/ORA, other government agencies, academia, or industry.

3. The FDA Office of Human Resources Management (OHRM) will make available a Position Classification Specialist who will be a full member of the Panel and offer guidance in the case reviews.

B. Advisory Participants

The Panel will have the authority to utilize other scientists, personnel specialists, and any others who can assist in the review process.

V. RESPONSIBILITIES

A. Director, NCTR (or designee)

1. Has ultimate responsibility for the peer review system.

2. Appoints the Panel Chair and Co-Chair.

3. Reviews the Panel reports on all NCTR research scientists.

B. Associate Director for Research

1. Assures that the list of researchers for review is accurate and inclusive.

2. Reviews and approves the proposed Panel members.

3. Reviews the Panel reports on all NCTR research scientists.

4. Ensures that SF-52s are prepared and submitted to the OHRM to effect actions resulting from Research Peer Review Panel recommendations.

C. Division Director

1. Recommends subordinates for promotion review at shorter time intervals than the 5-year mandatory cycle or new employees at the GS-13 level and above, when appropriate.
2. Recommends subordinates at the GS-12 level for promotion review.

3. Recommends to the Panel Chair potential Panel members to help review subordinates.

4. Reviews and assures by signature that the case material accurately reflects and depicts the accomplishments and responsibilities of the subordinates.

5. Discusses Panel report with researcher and prepares response to the report.

D. Researcher

1. Prepares the case material and assembles all exhibits.

2. Discusses the case material with the Division Director.

3. Provides the Panel Chair with the designated number of packets by the due date.

E. Panel Chair and Co-Chair

1. Working with the Position Classification Specialist, the Associate Director for Research, Research Division Directors and NCTR management, compiles the list of researchers for review.

2. Coordinates with the Position Classification Specialist to set the calendar for the review cycle and notifies all affected researchers at least 60 days prior to submission deadline to the Panel Chair.

3. Provides advice to researchers and Division Directors relative to the preparation and submission of cases for peer review.

4. Receives and reviews cases for format and completeness.

5. Selects peer researchers as Panel members (for approval by the Associate Director for Research) and assigns specific cases to members for in-depth review prior to the meeting. Works with the various NCTR Research Division Directors and the Associate Director for Research to identify appropriate peers.

6. Orient all Panel members in the evaluation process prior to serving on the peer review Panel. Stresses importance of discussions with the researcher's supervisor.

7. Distributes cases to Panel members for review prior to the Panel meeting in sufficient time for in-depth reviews.

8. Chairs Panel meetings and participates as a full member.
9. As necessary, invites persons with special knowledge about a specific case to the peer review meeting or contacts them to aid or assist in the review process.

10. Insures the confidentiality of Panel discussions and recommendations.

11. Shares responsibility with the Position Classification Specialist for preparing the Career Evaluation Report of the results of the Panel meeting.

12. Speaks for the Panel in communications with the NCTR Director, Associate Director for Research, Division Directors, researchers and other individuals concerned with the evaluation process.

13. Is responsible for the evaluation and assessment of the NCTR Evaluation Plan for Research Scientists and recommends to the Director, NCTR, changes which would improve the peer review process.

F. Position Classification Specialist

1. Works with the Chair in all aspects of the peer review process, from determining the list of reviewees through follow-up of recommended actions.

2. Coordinates and schedules meeting date and time with the Chair; receives and reviews cases from the Chair.

3. Ensures that cases are processed according to the requirements prescribed in this Plan.

4. Participates as a full member in all Panel meetings.

5. Provides technical personnel advice at Panel meetings.

6. Exercises final classification authority on all recommendations from Panel reviews.

7. Shares responsibility with the Panel Chair for preparing the Career Evaluation Report on the results of the Panel meeting.

8. Distributes the Career Evaluation Report to appropriate NCTR officials for review and signature.

G. Peer Review Panel

1. Meets on an annual basis and/or when determined appropriate by the Director, NCTR.

2. Reviews case material and evaluates each case on the basis of the criteria described in this Plan and the U.S. Office of Personnel Management (OPM) Research Grade-Evaluation Guide.
VI. PROCEDURAL STEPS

A. Prior to the Peer Review Meeting

1. The researcher will prepare case material according to the format described in this Plan and with concurrence of the Division Director.

2. All cases must be received by the Panel Chair at least 30 days before the Panel meeting. All researchers scheduled for mandatory reviews or being recommended for promotion or conversion will be notified in writing by the Chair and will be allowed at least 60 days to prepare their case.

3. The Division Director (Associate Director for Research, NCTR, if the candidate is Division Director) will thoroughly review the case material for adequacy, accuracy, and format.

4. If the Division Director (or Associate Director for Research, NCTR, as appropriate) concurs, the case material is forwarded to the Panel Chair.

5. If the Division Director (or Associate Director for Research, NCTR, as appropriate) does not concur, the supervisor and candidate will discuss and attempt to resolve differences in the case material prior to forwarding it to the Panel Chair.

6. If differences cannot be resolved, the case material will be forwarded to the Associate Director for Research (or Director, NCTR, for Division Directors) for resolution of the case material.

7. The Panel Chair will thoroughly review each case for format and completeness.

8. Upon acceptance, the case is forwarded to the Position Classification Specialist for initial classification review.

9. The Panel Chair, with concurrence of the Position Classification Specialist, will schedule the Peer Review meeting and, at least 3 weeks prior to the meeting, provide Panel members with the case material.

10. Prior to the Panel meeting, each member will review each case and reach a tentative opinion and rating (numerical score) based on the criteria in the Research Grade-Evaluation Guide (Appendix 6) and the Supplement to the Research Grade-Evaluation Guide Degree Definitions (Appendix 7).

11. As assigned by the Panel Chair, members will conduct in-depth reviews, including discussions with the appropriate supervisors, and will obtain any additional information that will help the full Panel to better understand and evaluate a case.
B. During the Meeting

1. Panel discussions will be thorough and confidential.

2. A consensus of those Panel members present at a meeting will determine the final recommendation on the disposition of a case.

3. A Panel member who is also the recommending supervisor may clarify and answer specific questions but not may participate in the final decision.

C. After the Meeting

1. The Panel Chair and Position Classification Specialist will prepare the Career Evaluation Report of the findings for the Position Classification Specialist's signature and final approval.

2. The Career Evaluation Report will include Panel decisions and recommendations and a brief summary clearly stating the reasons for the Panel decision and other pertinent information agreed to at the meeting.

3. The Panel Chair will distribute the Career Evaluation Report to the Division Director of each employee reviewed, through the NCTR Director and the Associate Director for Research.

4. The incumbent's supervisor will discuss the Career Evaluation Report with the employee and respond to the Position Classification Specialist, in writing within 30 days, through the Associate Director for Research, NCTR, that the discussion has taken place and what understandings were reached, particularly regarding constructive suggestions or recommendations by the Panel.

5. The Associate Director for Research will ensure follow-up of any required personnel action through submission of SF-52s and accompanying documents.

D. Ad-Hoc Peer Reviews

This Evaluation Plan will be used for ad-hoc review of research scientists for recruitment and selection purposes when NCTR management is filling a vacant position at the GS-13 level or above. To expedite this process, the servicing Personnel Management Specialist, NCTR, may serve as OHRM representative and the ad-hoc Panel will be composed of the Chair, Co-Chair, and other GS-15 level or above NCTR scientists. In such cases, the Plan will govern and the OHRM representative will obtain any necessary classification concurrences required by existing OHRM delegations of authority.
VII. RECONSIDERATION PROCEDURES

If an employee believes that their job responsibilities do not fall within the definition of a research scientist as described on page 1-2 of this Plan [p. 8 of the Research Grade-Evaluation Guide], the employee may request in writing a reconsideration of his/her classification to the Division Director.

If the Division Director and the Associate Director for Research concur, then the employee will no longer be covered by the Research Grade-Evaluation Guide. A job audit will then be requested for a classification and grade determination in the appropriate series.

If the Division Director does not concur, the employee may seek reconsideration from the Associate Director for Research. If the Associate Director for Research concurs with the employee, then the job audit will be requested as above.

If the Division Director concurs with the subordinate but the Associate Director for Research does not concur, then the decision of the Associate Director for Research applies.

If the Associate Director for Research determines that the employee is a researcher and is covered by the Research Grade-Evaluation Guide, the employee may pursue a formal classification appeal (see Section VIII).

VIII. APPEAL PROCEDURE

All employees may appeal the final classification of their positions through established PHS and OPM classification appeal procedures. If an employee appeals directly to the OPM, the employee forfeits all subsequent appeal rights within PHS.

IX. OTHER RELEVANT INFORMATION

A. Nominations of GS-12 employees into the annual Research Peer Review System can be made at any time (after one year as a GS-12) in one's career by recommendation of the Division Director.

B. Promotion review can be at any annual review within the 5-year cycle by recommendation of the Division Director.

C. Recommendations for promotions to GS-11 or GS-12 for researchers do not fall within the peer review process described in this Evaluation Plan and are at the discretion of the Division Director. However, the Research Grade-Evaluation Guide will still be utilized as the classification criteria (Appendix 6).
APPENDIX 1

TRANSMITTAL MEMORANDUM

DATE: 

FROM: Name
Director, Division of ________________

SUBJECT: Peer Review Evaluation of _______ (name) ________

TO: ________ name _______, Chair, NCTR Research Peer Review

The attached case material is submitted in accordance with the NCTR Evaluation Plan for Research Scientists for the purpose of evaluating _______ (name) ________.

I have reviewed this case material and to the best of my knowledge it accurately reflects and depicts the accomplishments and responsibilities of ________ name ________.

Signature

Director, Division of ____________________________
APPENDIX 2

LIST OF ACCOMPLISHMENTS

The content of this section should include actual accomplishments and/or current research situations. Protocols having significant scientific and regulatory importance that are in progress may also be considered.

This section should begin with a brief paragraph summarizing the scientist's research career by listing total years in research, total number of publications and presentations, and if deemed appropriate, a general statement about the researcher's scientific reputation and recognition. A statement depicting the supervisory/non-supervisory responsibilities, primary research role, and/or regulatory involvement may also be appropriate.

Following the introductory paragraph, the most significant recent accomplishments should be described. Each significant accomplishment should be described as concisely as possible (~ one half page each) with the primary emphasis on what was accomplished and why the accomplishment was significant. In the case of a team effort, it will be necessary to explain exactly what the reviewee contributed to the total accomplishment.

A maximum of 10 accomplishments may be included. As these accomplishments are instrumental in depicting the candidates scientific stature, a great deal of thought and effort should go into determining the most significant accomplishments to include.

Significant accomplishments may take the form of:

1. Development of knowledge using scientific principles in theoretical or experimental investigations: Ranges from "corroborated existing knowledge in a new situation using new and innovative procedures" to "made a major advance in a scientific field, or provided new technology that opened the way for extensive further development."

2. Application of knowledge to an unknown or previously unexplored area: Ranges from "applied known concepts and/or techniques to deal with a new situation" to "solved a problem of major importance to science, industry, or the public."

3. Methods development: Ranges from "used known concepts to modify and/or develop facilities, equipment or techniques of some importance to research and/or industry methodology" to "extensively developed facilities, equipment or techniques of considerable importance to research and/or industry methodology."

4. Literature review and analysis: Ranges from "restated with essentially no change, or reported conclusions from previously published material" to "reviewed, analyzed, interpreted, and synthesized scientific knowledge of broad scope with significant additions to established knowledge."

5. Research leadership: Ranges from "maintained the quantity and quality of productivity of a research team" to "caused an extensive increase in the quantity or quality of productivity of a research team" by "better coordination of research, changing the direction of a research program to
Appendix 2 - Continued

a more significant area of exploration with resultant impact on science or technology, improving the scientific environment or atmosphere in which the research team functions, increasing the efficiency of the team's research capabilities, or improving the research capability of scientific personnel on the research team."

6. FDA-relevant research: A legislative or regulatory document significantly impacted by the candidate. Accompanying documentation from a Center Director or equivalent, specifying the extent of the candidate's contribution is strongly recommended. A complex protocol prepared and managed by the incumbent, involving collaboration with other Centers, with potentially significant impact on FDA and the scientific community may be considered.

7. Management/supervision: Significant management effort/contribution may be considered as an accomplishment. Innovative management/supervisory tools developed by the incumbent that are subsequently utilized by others at the Center might be documentable and contribute to the stature of the incumbent.

These types of accomplishments are not meant to be all-inclusive, but are illustrative of kinds of accomplishments by FDA research scientists. More important than the type of accomplishment is the quality of that accomplishment.

Each accomplishment should be documented by exhibits. Exhibits should be chosen with the following in mind:

- the significance of a particular accomplishment may have increased with time,
- while past accomplishments may be important, recent accomplishments show maintenance of research competence, and
- for some situations, one or two carefully selected exhibits might be sufficient to support a well-stated accomplishment; a maximum of three exhibits per accomplishment is permitted.

Whenever an accomplishment cannot be supported by a publication, abstract, technical report, etc., a statement signed by a knowledgeable authority (such as the supervisor or Division Director) may be used as an exhibit. The statement should elaborate on the accomplishment to provide evidence to support its significance. In addition, the statement should indicate why the accomplishment was not or could not be published.

Many research positions include duties and responsibilities that are not specifically research. Accomplishments of this kind that are extensions of research may help to support the significance and impact of the research, for example, significant FDA collaboration resulting in regulatory impact. Work of this nature that is performed on a regular and recurring basis should be documented in the position description. This includes work such as preparation of handbooks, special assignments, scientific reviews, etc. These accomplishments may be seen as activity similar to research that assures maintenance of research competence.
APPENDIX 3
CURRICULUM VITAE

Each of the following headings must be listed and addressed. Even if there is nothing to report under a heading, include the title of the heading and state "none" or "nothing to report." The reviewers will then know that the heading was not overlooked or inadvertently omitted.

Name

1. **Educational Background** - List the name of each institution and the dates attended, majors and minors, and degrees awarded.

2. **Additional Training** - List part-time or short-term training not included in Educational Background. Any government-sponsored training should be listed under this heading. Give dates and duration of courses, credit hours, course hours, etc.

3. **Professional Experience** - List professional positions held in chronological order giving titles, grade, and dates in each grade or position. Include present position.

4. **Honors and Awards** - List dates and a brief but sufficient description to enable the reader to determine significance and prestige. If a cash award was involved, list the amount.

5. **Special Invitations** - These are usually specific invitations to present a paper before scientific or industry groups, prepare a paper or a chapter for a book, conduct a seminar, etc. Be selective since the stature of the group which made the invitation is as important as the receipt of the invitation. For each invitation, list the title of the presentation, date, location, and organization or purpose of gathering. Provide sufficient information for the reader to determine scientific significance. If a paper was subsequently published (as an abstract, manuscript, etc.), cross reference it to the publication list.

6. **Licenses and Certificates** - List professional licenses and certifications showing kind, licensing authority, year granted, current or expired, and brief description of special significance, if appropriate.

7. **Membership in Professional or Honorary Societies** - List each and show dates of membership, whether invited or elected, and any offices held.

8. **Offices, Committee Assignments, or Special Assignments Held in Professional and Honorary Societies** - List each and give dates.

9. **Participation in National Scientific Meetings, Technical Conferences, Workshops, Seminars, etc.** - List each, give date, location, type of meeting, title of talk or paper if one was presented, or brief description of role or reason for attendance if no paper was presented. Do not include items already listed under Special Invitations. If a paper was presented, cross reference it to the publication list. If the same
meeting or conference has been attended a number of times, summarize the information rather than listing individually.

10. **Outside Professional Advisory and Consulting Activities** - List each, give dates, name and type of organization or situation, and type or significance of contribution. Generally, these should be activities outside of FDA which are not a part of the regular work assignment. If there are numerous activities, summarize information or list activities in recent years only.

11. **FDA Special Assignments and Advisory Committees** - These should be of a technical and professional nature within FDA but outside of the immediate work assignment or organization. Include items such as participation in hearings or testimony preparation, science advisor, or other task force assignments, etc. List each, give dates, and briefly describe the role and significance.

12. **Other Significant Information** - List or present narratively any information not covered in Items 1-11 above that is considered important in the evaluation of the individual as a research scientist. For example, include any scientific publication or article that has been completed but for which no acceptance and/or publication date has been given by the publishing agent. Educational and public relations efforts may also be listed under this item as they may be a part of the incumbent's responsibilities (such as EEO counselor, safety committee representative, etc.). A brief description of the intended role of the individual in meeting the goals and objectives of the organization, how well this role is fulfilled and how effective the individual is in cooperating with others when this is necessary or desirable in the total program can be indicated. Any exceptional or extenuating circumstances that may have affected the quality or quantity of research output (either favorably or unfavorably) should be discussed if not covered by other items in the case material.
APPENDIX 4

BIBLIOGRAPHY

List publications in chronological order and number sequentially. Make separate listings for A) manuscripts, B) abstracts, and C) technical reports. Give full reference including journal, volume, complete pagination, date, and type of publication. If the information was previously published as an abstract, so indicate by referring to the appropriate abstract or vice versa. To be listed, a scientific article must have been accepted by the publishing agent. Those publications submitted, but still in review, may be listed under section 12 of the curriculum vitae, Other Significant Information. Publications since the last promotion should be identified with an asterisk.

Publications other than refereed articles in scientific journals or bulletins should be identified as one of the following:

- Thesis or Dissertation
- Review Article
- Book
- Book Chapter
- Conference or Society Proceeding
- Patent
- Popular Publication
- Other (give specific identification)
APPENDIX 5

POSITION DESCRIPTION FORMAT

The following format should be followed:

I. INTRODUCTION

Begin the position description with an introductory paragraph describing the organizational relationships and general characteristics of the position.

II. DUTIES AND RESPONSIBILITIES

A. The Research Situation

Identify the field of research and outline specifically or generally the problems, research objectives, and lines of investigation that constitute the scientist’s research activities or program. If the assignment is part of a team approach, be specific in showing the candidate’s part. If the assignment includes research leadership, the broad objectives of the research group should be included.

The research assignment reflects the scientist as well as the job. Here is one place where the scientist defines the "person-in-the-job" concept because researchers have their own unique capabilities and ideas. In research, these capabilities and ideas expand the scope and effect of a position. For example, capabilities may permit changing or modifying a research approach. The research assignment should state generally the research plan(s) and expected results that the scientist and technical supervisor have mutually agreed should be conducted by the scientist during the next few years.

B. Supervisory and Team Leadership

Describe the type of leadership exercised by the candidate in selecting problems, defining objectives, organizing, planning, evaluating and reporting, either as an active member of a cooperative research team or by directly supervising research scientists. Indicate the number, titles, range of grades, and location of the scientists and other employees supervised, and outline supervisory responsibilities of an administrative nature.

C. Guidelines and Originality

Guidelines and originality deal with information similar to that required by the research situation. Guidelines speak to the extent and nature of available written guides, the intrinsic difficulty in applying them, and the degree of judgment required in their selection and adoption. Originality is the requirement for, and demonstration of, original interpretation or translation of findings to solutions of problems.
Appendix 5 - Continued

D. Other Duties and Responsibilities

Many research positions include duties and responsibilities which are not research in nature. However, because they reflect the mission of the Agency as officially delegated to scientists in research positions, they are properly documented in the position descriptions when performed on a regular and recurring basis. This includes work such as preparation of handbooks, special assignments, application reviews, consultation on compliance cases, etc. Non-research responsibilities which are extensions of research may help to support the significance and impact of the research.

III. SUPERVISION RECEIVED

Identify the supervisor by title or working responsibility. Describe the nature and purpose of the supervision. If technical supervision is received from someone other than the immediate supervisor, identify by title and show the kind of responsibility for the work. The description should clearly define:

- the degree of responsibility which the scientist has for selecting problems, defining specific objectives, organizing, planning, executing, interpreting, and reporting research,
- the kinds of actions that require approval of the supervisor or technical leader, and
- the nature and extent of commitment authority when dealing with professional, nonprofessional, or other cooperating or interested groups.
PART I – RESEARCH

The Research Environment

In the Federal Government, researchers are typically expected to:

- identify and conceptualize research needs;
- plan and conduct experiments and studies;
- collect, analyze, manage, and document data, results, and findings;
- transfer new information and technology to users;
- publish and disseminate results;
- review, evaluate, and apply research products;
- serve as peer reviewers; and
- keep abreast of and apply new information and technology.

Researchers typically work closely with information users, managers, policy makers, and others to identify information gaps and needs; participate in strategic planning of research programs and projects; organize and lead interdisciplinary research teams; integrate new research findings and technology into policies and programs; and extend and interpret scientific information in terms relevant and useful to the public and society. In conforming to agency mandates and missions, researchers generate findings ranging from new explanations of phenomena to information useful in developing new technologies. These discoveries expand and advance scientific theories and knowledge into new and unexplored frontiers of human experience and perception.

Research Versus Development

Some activities closely resemble the activities covered by this guide, but are more appropriately evaluated with another standard or guide. Of particular relevance is distinguishing between research and development, which is sometimes difficult because they share many common characteristics, standards, and procedures. Researchers often collaborate and perform functions associated with both activities; however, there are key differences between research and development work. Development involves the continuous exploitation of basic scientific and professional knowledge to achieve fairly definable and desired results. In comparison, research is often difficult to define in terms of measurable results and expectations. It is especially difficult to distinguish research from development when application of research is direct and rapid, and development is greatly compressed.

Although research and development share many characteristics, their dissimilarities require different language and criteria for determining grade levels for GS positions. The table below describes some of the critical differences between research and development. Use the criteria in this table to decide whether the Research Grade Evaluation Guide is appropriate for evaluating the grade level of the work of the position. If it is a research position, use this guide to evaluate the grade level of the position. If the work of the position is development more than research, use the Equipment Development Grade Evaluation Guide to evaluate the grade of the position.
<table>
<thead>
<tr>
<th>Purpose</th>
<th>Research</th>
<th>Development</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose</strong></td>
<td>Extending knowledge and understanding</td>
<td>New or improved products, processes, and techniques</td>
</tr>
</tbody>
</table>
| **Assignments** | Problems to be solved:  
- entail relative freedom to explore promising areas in relation to organizational programs;  
- may stem from an intent to close gaps in knowledge in a given field, or to develop new theories or explanations of phenomena; and  
- are difficult to define in terms of expected outcomes and measurable results. | Problems to be solved:  
- are defined in advance or assigned;  
- may stem from an intent to exploit an understanding of phenomena and principles; or  
- have predictable outcomes or measurable results. |
| **Results** | Products are:  
- papers describing new and modified theories and principles;  
- explanations of phenomena; and  
- information to improve the understanding of techniques and processes. | Products are:  
- papers describing application of theories and principles;  
- design concepts, models, patents, and inventions; and  
- equipment, techniques, and processes. |
PART II – GRADING INFORMATION

Evaluation System

Part II provides grading information for use in determining the appropriate grade of non-supervisory two-grade interval professional research positions. These grading criteria are applicable to General Schedule positions classified under chapter 51 of title 5, United States Code. They may also be used as appropriate to determine work levels for other Federal position classification systems.

The Research Grade Evaluation Guide (RGEG) provides criteria for evaluating the grade level of research work for grades 11 through 15. For work that does not meet the minimum criteria for grade 11, use the appropriate occupational or job family position classification standard or guide to determine the grade level of the position.

Factors – The factors used to evaluate research work are:

Factor 1 – Research Assignment,
Factor 2 – Supervisory Controls,
Factor 3 – Guidelines and Originality, and
Factor 4 – Contributions, Impact, and Stature.

Factor Levels – Each factor has five levels, A through E, with increasing point values, respectively. This guide provides specific criteria for factor levels A, C, and E. Assign level B when work falls between levels A and C. Assign level D when work falls between levels C and E. For example, if work exceeds level A criteria, but does not fully satisfy level C criteria, the work is awarded level B.

Factor Relationships – Evaluate and assign factor levels separately for each factor, based on the best match between the factor level criteria and the researcher’s work. In making evaluations, carefully consider the balance and relationship among the factors. Sound classification judgment usually precludes more than a 2-level difference between levels assigned to different factors. For example, if work is evaluated under Factor 1 at level A, it is highly unlikely that work would warrant level D or higher under Factors 2, 3, or 4. Keep in mind that the capabilities of the researcher may markedly influence the characteristics of the work.

Point Values – Each factor level has a point value. Factor 4 is double-weighted to reflect the relative importance of the researcher’s stature and impact to the grade level determination. When evaluating the work, you may award only the designated point values shown in the chart below. Work that fails to meet level A criteria should be awarded zero points.
The table below shows the point values assigned to each level of the factors.

**POINTS BY FACTOR AND LEVEL**

<table>
<thead>
<tr>
<th>Level</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>C</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>D</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>E</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>20</td>
</tr>
</tbody>
</table>

**Grade Level** – To determine the grade level of a position, add the point values for all assigned factor levels. Use the Grade Conversion Table below to convert the total points to a grade.

**GRADE CONVERSION TABLE**

<table>
<thead>
<tr>
<th>Point Values</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 – 14</td>
<td>GS-11</td>
</tr>
<tr>
<td>16 – 24</td>
<td>GS-12</td>
</tr>
<tr>
<td>26 – 34</td>
<td>GS-13</td>
</tr>
<tr>
<td>36 – 44</td>
<td>GS-14</td>
</tr>
<tr>
<td>46 – 50</td>
<td>GS-15</td>
</tr>
</tbody>
</table>

If the assigned points fall near the top or bottom of a point range, be especially careful to consider all relevant facts before making the final point assignment and grade determination.
Grading Criteria

This guide has four factors for grading the work of researchers. While there is some overlap among the factors, each focuses on a different aspect of the researcher’s work and the relationship between the researcher and the research environment.

FACTOR 1 - RESEARCH ASSIGNMENT

This factor deals with the nature, scope, and characteristics of the researcher’s current assignment. Award a factor level that reflects the norm of current assignments, rather than atypical projects. Research assignments are directly dependent upon the individual qualities of the researcher and the inherent difficulty of the research problems. Work commonly expands commensurate with the researcher’s motivation, capability, and creativity.

Projects and Teams – For project and team members, base the factor level only on the specific projects or portion of projects for which the researcher is responsible. For project managers, base the factor level on the scope and character of the total project.

Primary Considerations – In evaluating this factor consider the following:

- assignment scope and complexity, objectives, and means of accomplishment;
- problem breadth and depth;
- availability of related research studies;
- extent to which objectives can be defined;
- number of unknowns and critical obstacles;
- variety and depth of knowledge and expertise required to solve problems;
- extent and complexity of the required validation process;
- necessity to translate abstract concepts into easily understood statements of theory or models, and to determine how best to disseminate information or transfer research findings;
- utility of the end product in solving the initial problem and in opening new areas of investigation; and
- expected impact of end results, products, or outcomes.
Factor 1 – Level A (2 points)

Research assignments have the following characteristics:

- readily definable objectives;
- limited in scope to investigating specific phenomena or problems, or are segments of related investigations;
- require fairly conventional techniques;
- involve applying existing theory or methods to areas previously investigated, but under different conditions, or involve adapting previous studies in light of changes in theory or improved techniques and instrumentation; and
- result in contributions that add to scientific and professional knowledge or support developing new or improved methods and techniques.

The researcher typically works as a project or team member.

Factor 1 – Level C (6 points)

Research assignments have the following characteristics:

- the scope is broad and complex, requiring a series of comprehensive and conceptually related phases and studies;
- problems are difficult to define;
- require sophisticated research techniques; and
- result in contributions that:
  - answer important questions in the field;
  - account for previously unexplained phenomena;
  - open significant new avenues for further study;
  - confirm or modify a scientific theory or methodology;
  - lead to important changes in existing products, methods, techniques, processes, or practices; or
  - are definitive of a specific topic area.

The researcher typically works as a project member or as a primary investigator.

Factor 1 – Level E (10 points)

Research assignments have the following characteristics:

- the scope and complexity are at a level requiring subdivision into separate phases, some of which are considerably broad and complex;
- problems are exceptionally difficult and unyielding to investigation;
- require unconventional or novel approaches or complex research techniques; and
• results may include:
  – a major advance or opening of the way for extensive related development;
  – progress in areas of exceptional interest to the scientific and professional community;
  – important changes in theories, methods, and techniques;
  – opening significant new avenues for further study; or
  – contributions answering important questions in the field.

The researcher typically works as a primary investigator but may also be a project member.
FACtor 2 - SuPervisory Controls

This factor deals with the researcher's current level of independent performance and the technical and administrative guidance and control the supervisor exercises over research work. Researchers may consult frequently with colleagues and collaborators. Use caution in distinguishing between consultation and supervisory control and guidance.

Primary Considerations – In evaluating this factor, consider the following:

- manner in which the supervisor assigns work;
- researcher's freedom to determine a course of action;
- researcher's opportunity for procedural innovation; and
- degree of the supervisor's acceptance of the researcher's recommendations, decisions, and final products.

Researchers working on complex team projects not divided into smaller components exercise independent performance when they:

- participate fully as a professionally responsible team member in substantive aspects of the work; and
- make contributions equivalent to independently performing more limited research projects.
Factor 2 – Level A (2 points)

The supervisor typically assigns specific problems along with general instructions on the scope and objectives of the study. The supervisor or higher management makes any decisions to discontinue work, change emphasis, or change the research plan. The researcher may suggest studies and undertake them after receiving supervisory approval. The supervisor reviews work for adequacy of method, completeness, and appropriate interpretation of results.

The researcher confers with the supervisor regarding problem definition, the relationship of the problem to the organization’s broader research goals, and developing a research plan. Supervisory or managerial direction and guidance help the researcher in the critical problem definition and planning stages, but do not negate the researcher’s responsibility for adequately completing these steps.

The researcher is expected to:

- assume responsibility for the study and pursue it to completion;
- solve problems ordinarily encountered in accomplishing the work with only occasional supervisory input;
- interpret results; and
- prepare entire, or sections of, reports and papers.

Factor 2 – Level C (6 points)

The supervisor may either assign a broad problem area to the researcher or allow the researcher to work with substantial freedom within an area of primary interest. The researcher has substantial freedom to identify, define, and select specific projects, and to determine the most promising research strategies and problem approaches.

The supervisor:

- approves plans calling for considerable investments of time or resources;
- makes final decisions concerning the direction of work and changes in or discontinuance of projects involving substantial research investments;
- relies on the researcher’s professional judgment to such an extent that the researcher’s recommendations are ordinarily followed; and
- reviews final work and reports, principally to evaluate overall results, recommendations, and conclusions.

The researcher is responsible, with little technical direction, for:

- formulating hypotheses;
- developing and carrying out the research plan;
- determining equipment and other resource needs;
- keeping the supervisor informed of general plans and progress;
• addressing novel and difficult problems requiring modification of standard methods;
• analyzing and interpreting results;
• preparing comprehensive reports of findings; and
• working with users to interpret and implement research findings or technologies.

Factor 2 — Level E (10 points)

The supervisor provides broad administrative supervision, which is generally limited to approving staffing, funds, and facilities, and to providing broad guidance on agency policies and mandates. Technical supervision is consultative in nature. Management accepts the researcher’s findings as technically authoritative, as a basis for decisions, and as acceptable for review by the scientific community.

The researcher, working within the framework of management objectives and priorities, is responsible for:

• formulating research plans and hypotheses;
• carrying out the project plan;
• interpreting findings and assessing their organizational and professional applicability; and
• locating and exploring the most promising areas of research in relation to agency program needs and the state of the science or discipline.
Factor 3 - Guidelines and Originality

This factor deals with the creative thinking, analysis, synthesis, evaluation, judgment, resourcefulness, and insight characterizing the work currently performed.

Guidelines usually consist of literature in the field, procedures, instructions, or precedents and may be adapted or modified to meet the requirements of the current assignment. Features to be considered are:

- the extent and nature of available written guides;
- intrinsic difficulty encountered in applying guides in terms of their ready adaptability to the current assignment; and
- the degree of judgment required in selecting, interpreting, and adapting guidelines.

In assessing the impact of creativity in the position, consider the requirement for:

- original and independent creation, analysis, reasoning, evaluation, and judgment; and
- originality in interpreting findings and translating findings into a form usable by others.

Factor 3 - Level A (2 points)

Guidelines include:

- existing theories and methods generally applicable to the research problem; or
- materials that may contain some inconsistencies, be partially defined, or provide several possible approaches to the problem.

Originality is demonstrated by:

- developing a complete and adequate research design by selecting and adapting the most appropriate approach, methods, or techniques for the problem at hand; and
- limited extension or modification of procedures or techniques, as required.

Factor 3 - Level C (6 points)

Guidelines:

- consist of existing literature in the field of limited usefulness due to contradictions, critical gaps, or limited applicability; or
- are largely absent because of the novel nature of the work.
Originality is demonstrated by:

- defining elusive or highly complex problems;
- developing productive hypotheses for testing;
- developing important new approaches, methods, and techniques;
- interpreting and relating significant results to other research findings;
- developing and applying new techniques and original methods of attack to solve important problems presenting unprecedented or novel aspects;
- isolating and defining critical problem features; and
- adapting, extending, and synthesizing theory, principles, and techniques into original or innovative combinations or configurations.

**Factor 3 – Degree Level E (10 points)**

Guidelines are almost nonexistent in pertinent literature.

Originality and creativity are demonstrated by:

- discovering complex theory or methodology;
- contributing significantly to the development of new theory or methodology to supplant or add new dimensions to a previous framework; and
- solving problems and delivering results that markedly influence the scientific field or society.
FACTOR 4 - CONTRIBUTIONS, IMPACT, AND STATURE

This factor focuses on the researcher’s total contributions, impact, and stature as they bear on the current research assignment. It is not restricted to present and immediate past accomplishments and achievements. However, recency of accomplishment is important. Recent research or similar activity is essential to receiving full credit.

Security regulations, proprietary agreements, or other circumstances may prevent publishing research results and make it difficult to evaluate the work based on its impact on the larger professional community. Agencies should develop alternative processes to evaluate the impact of this work. In such cases, the work will have to be evaluated by means of the best possible judgment of its importance and the impact it would have if it could be published.

**Contributions** – The researcher’s contributions reflect the knowledge, skills, and experience the incumbent brings to the position. Professional journal articles are an important product of research results for communicating scientific findings to the broader research community; however, they are not the only outlet for communicating information. Journal articles should be balanced with other forms of communication to ensure broad impact from the results of the work. Indicators of the researcher’s contributions may include:

- research publications (for example, journal articles, monographs, books, reviews, agency and customer reports, models, maps, and novel interpretative materials); and
- innovations and technology transfer.

While the quantity of publications, research contributions, and professional activities represent one measurement of impact on a field, do not give undue weight to this metric. Consider primarily the quality, impact, and relevance of the researcher’s contributions on the scientific community or field.

**Impact** – Consider whether the researcher:

- has an impact on scientific and/or societal issues;
- sets new research directions;
- develops new methods, techniques, or tools to be used by other researchers; and
- drives management and policy outcomes.

**Stature** – Stature is established when the researcher is recognized by the scientific field and/or society, as indicated by:

- requests for expert advice/consultation by other professionals and managers;
- requests to exercise leadership on research teams or projects;
- invitations to serve on advisory boards;
- requests to organize or chair committees, workshops, or symposia;
- invitations to address scientific or professional organizations;
- invitations to write synthesis papers;
- recognition by professional societies and external groups; or
- honors and awards.

A researcher in one field may move into a related field. Such a move does not change Factor 4 credit if, after a reasonably short period, the researcher will perform research work in the new field at substantially the same level of competence as before.

Factor 4 – Level A (4 points)

The researcher defines problems, performs background research, develops and executes a research plan, organizes and evaluates results, and prepares reports of findings. Work is expected to result in, or has resulted in:

- primary authorship of papers or reports filling narrow gaps in an existing framework of knowledge, to corroborate existing theory, or to report findings of limited scope; or co-authorship of a major paper or report of considerable interest to the scientific field;
- providing information and technical support on assigned research projects to collaborators and managers; and
- recognition for contributing to the project and communicating results outside the agency.

Factor 4 – Level C (12 Points)

The researcher has demonstrated competence and productivity as evidenced by conducting rigorous research of marked originality, soundness, and value. Work is expected to result in, or has resulted in:

- primary authorship of publications of considerable interest and value to the field;
- conceiving and formulating research ideas supporting or leading to productive studies by others;
- products that are significant in solving important scientific problems;
- selection to serve on important committees and review panels of technical groups and professional organizations;
- recognition by the scientific community as a significant contributor to the field of study;
- acknowledgement of impact by end users as evidenced by favorable reviews or citation in the work of others;
- invitations to make presentations to professional societies and others outside the organization on technical matters and management practices in the area of specialization; and
- consultation by users and other researchers who are respected in their fields of study.
Factor 4 – Level E (20 points)

The researcher has made outstanding and significant contributions by conducting research in either a broad field or a narrow but very specialized field. The researcher’s accomplishments are of such importance and magnitude that they move science forward. Research is of such impact that other researchers must take note of it to keep abreast of developments in the field.

Work at this level includes many of the following:

- primary authorship of a number of important papers including seminal or synthesis publications, some of which have had a major impact on advancing the field or are accepted as authoritative in the field;
- contributions to inventions, designs, techniques, models, or theories are regarded as major advances and open the way for further developments or solving problems of great importance to the professional community, the organization, or the public;
- being sought as a consultant by colleagues who are themselves recognized experts in the field;
- recognition by the scientific community as an authority in the field;
- requests from highly-respected colleagues to collaborate with the researcher;
- attracting new researchers to the field;
- invitations to address or to assume a leadership role in national professional organizations and associated committees; and
- selection to lead research to solve large and complex problems.

In addition, researchers at this level typically perform a variety of advisory activities based on their scientific reputation and standing such as:

- contributing significantly to professional symposia defining the state of the discipline and new or emerging areas in the field;
- contributing to strategic research planning and program development;
- participating in major technology or information transfer activities of great importance to the scientific field, the agency, or the public; or
- participating in applying the research to important management and policy decisions.
PART III – ADMINISTRATIVE CONSIDERATIONS

OFFICIAL TITLING PROVISIONS

Title 5, United States Code, requires OPM to establish authorized official position titles. These include a basic title and may be appended with one or more prefixes and/or suffixes. Agencies must use the official position titles for human resources management, budget, and fiscal purposes but may establish organizational and functional titles for internal administration, public convenience, program management, or similar purposes. Organizational and functional titles do not replace, but rather complement, official position titles.

Position Titles

Follow the instructions in the occupational or job family position classification standard related to the position under consideration to assign the basic position title and suffixes, as appropriate. Basic titles may be modified with one or more of the following prefixes:

- Research – if work satisfies the criteria for applying this Guide;
- Supervisory Research – if the work satisfies the grade criteria for applying this Guide and meets the criteria for “supervisor” in the General Schedule Supervisory Guide; and
- Lead Research – if work satisfies the criteria for applying this Guide and meets the criteria for “leader” in the General Schedule Leader Grade Evaluation Guide.

Crosswalk to the Standard Occupational Classification

The Office of Management and Budget requires all Federal agencies collecting occupational data to use the Standard Occupational Classification (SOC) system for statistical data reporting purposes. The Bureau of Labor Statistics uses SOC codes for the National Compensation Survey and other statistical reporting. The SOC system recognizes the research function in describing many occupations, but does not identify that function in occupational titles. For that reason, the SOC code for a professional research position is the SOC code that is appropriate for the basic occupation. For example, the SOC codes for the OPM authorized occupational titles, Research Horticulturist, Research Chemist, and Research Metallurgist, are Horticulturist, Chemist, and Metallurgist, respectively. More information about the SOC is available at http://stat.bls.gov/soc.
Evaluation Procedures

Agencies are responsible for properly applying this guide in accordance with OPM guidance and regulations. Human resources specialists play a key role in ensuring compliance and are an integral part in the evaluation process. Agencies have discretion in establishing and evaluating research positions; however, OPM recommends applying the same evaluation method to all research positions within an agency. OPM further recommends the use of evaluation panels:

- staffed by both researchers to provide critical subject matter expertise and human resources specialists to collaborate and to build consensus for the grade level determination; and
- including disciplinary diversity to provide better perspective with respect to the relationship of the specific work of the position to broader areas of research.

The nature, type, importance, and significance of various professional contributions, research products, and other scientific outputs vary across agencies and disciplines. Therefore, agencies may find it helpful to develop supplements to this guide to aid in evaluating research work in their specific research environments.

Agencies applying this guide should establish a comprehensive mechanism for gathering information relevant to the classification process. Information relevant to Factors 1, 2, and 3 is usually included on position descriptions. The researcher typically provides an information package describing professional contributions, recognition, service, impact, and stature for evaluating Factor 4.

Periodic Review

Because significant changes in research positions may occur gradually over time, agency procedures should provide for periodic review to ensure accuracy and proper classification. This classification review may result in a change in grade level or change to a non-research position.

Documentation

Part 511 of title 5, Code of Federal Regulations, permits General Schedule employees to appeal the classification of their positions. Accordingly, agencies must be able to defend their classification decisions. Agencies should retain all material relevant to the evaluation process as part of the documentation supporting their research and grade level decisions.

Vacant and New Positions

Classify vacant and new positions based on the total factor pattern consistent with the contributions, impact, and stature required of prospective candidates.
The Interaction of the Research Situation and the Researcher

The duties and responsibilities of a research position are especially dependent upon the interplay between the research situation or assignment and the individual qualities of the incumbent. For example, the research may call for creativity and originality, but the extent to which these qualities are brought into play is dependent in large part on the incumbent. Furthermore, while nonresearch situations are typically structured as to the breadth of research, the work typically expands in accordance with the incumbent's capabilities. This leads to what may be termed a "person-in-job" concept, based on the interaction of the assignment and the incumbent.

Two factors make it particularly important and desirable to recognize this person-in-job concept in research positions. First, because of its "unlimited ceiling," and "expandable breadth," the research situation is much more likely to provide opportunity for full play of the incumbent's capabilities than the frequently more structured and limited non-research situation. Second in the non-research situation, the incumbent's impact on the job is reflected in less subtle ways (such as additional duties or functions; greater authority for action; more difficult assignments where the difficulty of assignments can be predicted; less supervisory review, etc.) which can be identified and measured by more conventional means.

This guide provides for considering both the research situation or assignment, and the qualifications of the person who occupies the situation or assignment, to recognize the profound impact of the incumbent researcher's personal qualifications on the job. These factors together constitute the position actually being performed and form the basis for determining grade level.

Relationship to Grades of Supervisors

This guide recognizes the value of nonsupervisory research involving a very high degree of technical independence, a high degree of originality, and a high level of professional recognition and contribution. While supervision is one ladder to high-level responsibility in scientific work, another ladder is personal creativity and scientific contribution. A good supervisor can do much to create a favorable climate and to stimulate creativity and originality; however, in the final analysis, creativity and originality come from within the person who displays them.

It is not necessary for supervisors of research work to be in higher grades than their subordinates, because research work is personal to the incumbent, is subject to "supervision" to only a very limited degree, and provides an alternate ladder to high-level work. It may be possible for the contribution of a highly creative nonsupervisory researcher to merit the same grade (for different reasons) as the contribution of the supervisor of the organization or unit. This situation can exist where the supervision is not purely administrative in nature. Technical supervision, including overall evaluation of results and guidance as to priorities of research to be undertaken, may be present.

Thus, positions graded under this guide may, in some instances, be properly classified in the same grade as, or in rare cases, in a higher grade than the supervisor of the position. This can occur when the grade of the researcher is determined based on highly independent personal performance and personal creativity, stature, and contributions.