

K18 GUIDE FOR REVIEWERS

Career Enhancement Award for Stem Cell Research

EXECUTIVE SUMMARY

Career Enhancement Award for Stem Cell Research (K18)

- Supported by NCI, NHLBI, NIAAA, NIDDK, NIEHS
- The NIH Career Enhancement Award for Stem Cell Research (K18) is intended to enable investigators to change the direction of their research careers or to take time from their regular professional responsibilities to broaden their scientific background by acquiring new research capabilities, specifically in the use of human or animal embryonic, adult, or cord blood stem cells. The use of stem cells in biomedical research offers the potential for significant advances in the next decades, provided investigators not only understand this potential, but are equipped to take advantage of it. Human embryonic stem cells (hESC) have only recently become available and most investigators are not prepared to handle, maintain, or properly study hESCs. Likewise, the potential of human adult or cord blood, and even animal, stem cells for understanding, treating and curing human disease is great.
- This Career Enhancement Award is meant to provide the opportunity and necessary protected time for investigators to gain experiences that will enable them to take full advantage of stem cells in their research.
- Applicants must propose a research career development program suitable for their level of experience and scientific interests, and seek an environment where the training and career development can occur. All training and career development should be carefully tailored to meet the individual needs of the applicant and should, usually, include a description of a research project involving stem cells.
- The proposed training and career development may include both didactic as well as laboratory-based instruction in the growth, management, and application of human, or animal, embryonic stem cells or adult stem cells for the broad areas of interest supported by the NIH.
- The K18 award is intended to provide 6 months to 1 year of research support although 2 years will be considered. The applicant (also called candidate) must commit a minimum of 6 person-months (equivalent to 50% of full-time professional effort) conducting stem cell research and relevant career development activities during the period of the award.
- Applicants should be either (1) independent junior faculty who wish to expand their research by the use of stem cells or (2) more senior, established investigators who wish to re-direct their research, in whole or in part, to include the use of stem cells.

Visit parent FOA at <http://grants.nih.gov/grants/guide/pa-files/pa-09-110.html>

INSTRUCTIONS FOR WRITTEN CRITIQUE AND PRELIMINARY SCORES

The mission of the NIH is to support science in pursuit of knowledge about the biology and behavior of living systems and to apply that knowledge to extend healthy life and reduce the burdens of illness and disability. As part of this mission, applications submitted to the NIH for grants or cooperative agreements to support biomedical and behavioral research are evaluated for

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scientific and technical merit through the NIH peer review system.

The overall goal of NIH-supported research career development programs is to help ensure that a diverse pool of highly trained scientists are available in adequate numbers and in appropriate research areas to address the Nation's biomedical, behavioral, and clinical research needs.

The Scientific Review Officer (SRO), and in particular the funding opportunity announcement (FOA) for each specific career development award, provide additional guidance for each core and additional review criterion. **Reviewers must become fully familiar with the detailed review criteria provided in each FOA before assessing any K award application in response to that announcement.**

Written Critiques

- The format of the critiques should follow the structured template provided for each mechanism, which can be downloaded from the Internet Assisted Review (IAR) site and found on the CD.
- Each core criterion and additional review criteria are represented in the reviewer template and should be commented on, listing the strengths and weaknesses of each in a bulleted form.
- The goal is to provide the maximum and most pertinent information in a concise manner.
- After considering all of the review criteria, briefly summarize the strengths and weaknesses of the application in the Overall Impact section of the template.
- Assigned reviewers must upload critiques before entering an overall impact/priority score.
- Criterion scores should be entered in IAR before the review meeting.
- Assigned reviewers may submit criterion scores only after their critiques have been uploaded. At the SRO's discretion, discussants who are assigned to the application and SRG members who are not assigned to the application may submit criterion scores without critiques.
- The criterion scores may be changed during FINAL SCORING on your electronic or paper Voter/Scoring Sheet, or following the review meeting during the EDIT phase.
- Please do not write your criterion scores on the critique template.

Preliminary Scores

- Each core review criterion should be given a score using the nine-point rating scale in accordance with the new Enhanced Peer Review Criteria.
- The criterion scores for the applications should be entered in the meeting Internet Assisted Review (IAR) site in NIH Commons before the review meeting using the same page that is used for submitting the preliminary impact/priority score and critique.
- The criterion scores may be changed following the review meeting during the EDIT phase.
- In the READ phase of the meeting reviewers may submit their scores and critiques, but may not edit them. Core criterion scores can be submitted only after your critique had been uploaded into IAR.
- The criterion scores will appear in the summary statement as part of your critique.

Overall Impact

- Reviewers will provide an overall impact/priority score to reflect their assessment of the likelihood for the candidate to maintain a strong research program, in consideration of the following five scored review criteria, and additional review criteria. An application does not need to be strong in all categories to have a major impact.
- Reviewers should recognize that an individual with limited research experience is less likely to be able to prepare a research plan with the breadth and depth of that submitted by a more experienced investigator.
- Your critique should indicate the most significant strengths and weaknesses.

Scored Review Criteria

Reviewers are asked to consider each of the five review criteria below in the determination of scientific and technical merit, and give a separate score for each. These individual criterion scores are considered part of your critique and will not be discussed at the review meeting. They may be changed in the EDIT phase in IAR.

Candidate

- Has the candidate provided evidence of excellence in academic, research, and, if appropriate, clinical activities?
- Does the candidate have potential to become, or continue as, an outstanding investigator, teacher, resource person, and leader in research programs related to the mission of the appropriate Institute?
- Is there evidence of quality and breadth of prior scientific training and experience?
- Is the candidates degree and extent of previous research support and publications commensurate with their academic level?

Research Plan

- Is the research plan of high quality, relevant to the candidates research interests and does it have potential for advancing the field of study?
- Is the scientific and technical merit (research question, design, and methodology) of the proposed research plan of significance?
- When applicable for the specific candidate and situation, do the letters from consultant(s) and collaborator(s) adequately document their willingness to participate in the independent scientist award program?
- If applicable, are there adequate plans to include both genders and minorities and their subgroups as appropriate for the scientific goals of the research? Are there adequate plans for the recruitment and retention of subjects?
- Is the research plan appropriate for the candidates career level and as a vehicle for developing the research skills described in the career development plan?

Career Goals and Objectives

- Is there likelihood that the award will contribute substantially to the continued scientific development and productivity of the candidate?

- Are the career goals and objectives consistent with the candidates career goals?
- Is there evidence that the award will enable the candidate to devote full time (at least the required minimum of 50% of full-time professional effort) to research and related duties by release from teaching, administration, clinical work, and other responsibilities?
- Is there an assessment of the value of the proposed training and career development experience as it relates to enhancing the candidates capabilities as an independent investigator?

Consultant(s), Collaborator(s) and Stem Cell Expert (Mentor)

- Are the proposed collaborations with other active investigators and other opportunities for professional growth appropriate and of high quality?
- Is there adequate information provided that clearly documents expertise in the proposed area(s) of consulting/collaboration?
- Is there evidence of the stem cell experts qualifications as well as prior experience and record of fostering academic growth and productivity?
- Is there documentation of the experts history of productivity and peer-reviewed research support?
- Is there evidence of adequate active support for the proposed research project, if applicable?

Environment and Institutional Commitment to the Candidate

- Is the level of the applicant institutions commitment to the scientific development of the candidate appropriate?
- Is the level of assurance from the institution that they intend the candidate to be an integral part of its research program adequate?
- Are the research facilities, resources and appropriate educational opportunities available to the candidate appropriate and adequate?
- Are the quality and relevance of the environment for continuing the scientific and professional development of the candidate and for others pursuing research appropriate and adequate?
- Is the commitment from the sponsoring institution to provide adequate protected time for the candidate to conduct the research program adequate?
- Is the level of commitment from the candidates institution adequate in supporting future plans to use stem cells in research?

Additional Review Criteria

As applicable for the project proposed, reviewers are asked to consider the following additional items in the determination of scientific and technical merit, but not to give separate scores for these items.

Protections for Human Subjects

For research that involves human subjects but does not involve one of the six categories of research that are exempt under 45 CFR Part 46 (as described in [Human Subjects Protection and](#)

Inclusion), reviewers are asked to evaluate the justification for involvement of human subjects and the proposed protections from research risk relating to their participation according to the following five review criteria: 1) risk to subjects, 2) adequacy of protection against risks, 3) potential benefits to the subjects and others, 4) importance of the knowledge to be gained, and 5) data and safety monitoring for clinical trials. If all of the criteria are adequately addressed, and there are no concerns, write "Acceptable Risks and/or Adequate Protections." A brief explanation is advisable. If one or more criteria are inadequately addressed, write, "Unacceptable Risks and/or Inadequate Protections" and document the actual or potential issues that create the human subjects concern. Also, if a clinical trial is proposed, evaluate the Data and Safety Monitoring Plan. (If the plan is absent, notify the SRO immediately to determine if the application should be withdrawn.) Indicate if the plan is "Acceptable" or "Unacceptable", and, if unacceptable, explain why it is unacceptable.

For research that involves human subjects and meets the criteria for one or more of the six categories of research that are exempt, evaluate: 1) the justification for the exemption, 2) human subjects involvement and characteristics, and 3) sources of materials. If the claimed exemption is not justified, indicate "Unacceptable", and, if unacceptable, explain why it is unacceptable.

NOTE: To the degree that acceptability or unacceptability affects the investigator's approach to the proposed research, such comments should appear under "Approach" in the five major review criteria above, and should be factored into the score as appropriate.

For additional information to assist you in making these determinations, please refer to http://grants.nih.gov/grants/peer/guidelines_general/Human_Subjects_Protection_and_Inclusion.pdf and

Inclusion of Women, Minorities and Children

When the proposed project involves clinical research, reviewers are asked to evaluate the proposed plans for inclusion of minorities and members of both genders, as well as the inclusion of children.

Public Law 103-43 requires that women and minorities must be included in all NIH-supported clinical research projects involving human subjects unless a clear and compelling rationale establishes that inclusion is inappropriate with respect to the health of the subjects or the purpose of the research. NIH requires that children (individuals under the age of 21) of all ages be involved in all human subjects research supported by the NIH unless there are scientific or ethical reasons for excluding them. Each project involving human subjects must be assigned a code using the categories "1" to "5" below. Category 5 for minority representation in the project means that only foreign subjects are in the study population (no U.S. subjects). If the study uses both then use codes 1 thru 4. Examine whether the minority and gender characteristics of the sample are scientifically acceptable, consistent with the aims of the project, and comply with NIH policy. For each category, determine if the proposed subject recruitment targets are "A" (acceptable) or "U" (unacceptable). If you rate the sample as "U", consider this feature a weakness in the research design and reflect it in the overall score. Explain the reasons for the recommended codes; this is particularly critical for any item coded "U".

NOTE: To the degree that acceptability or unacceptability affects the investigator's approach to the proposed research, such comments should appear under "Approach" in the five major review criteria above, and should be factored into the score as appropriate.

<u>Gender Inclusion Code</u>	<u>Minority Inclusion Code</u>	<u>Children Inclusion Code</u>
G1 = Both genders G2 = Only women G3 = Only men G4 = Gender composition unknown	M1 = Minority and nonminority M2 = Only minority M3 = Only nonminority M4 = Minority composition unknown M5 = Only foreign subjects	C1 = Children and adults C2 = Only children C3 = No children included C4 = Representation of children unknown

For additional information to assist you in making these determinations, please refer to http://grants.nih.gov/grants/peer/guidelines_general/Human_Subjects_Protection_and_Inclusion.pdf

Vertebrate Animals

Reviewers are asked to evaluate the involvement of live vertebrate animals as part of the scientific assessment according to the following five points: 1) proposed use of the animals, and species, strains, ages, sex, and numbers to be used; 2) justifications for the use of animals and for the appropriateness of the species and numbers proposed; 3) adequacy of veterinary care; 4) procedures for limiting discomfort, distress, pain and injury to that which is unavoidable in the conduct of scientifically sound research including the use of analgesic, anesthetic, and tranquilizing drugs and/or comfortable restraining devices; and 5) methods of euthanasia and reason for selection if not consistent with the AVMA Guidelines on Euthanasia.

For additional information to assist you in determining if the Vertebrate Animals section is "Acceptable" or "Unacceptable", please refer to: <http://grants.nih.gov/grants/olaw/VASchecklist.pdf>.

Biohazards

Reviewers will assess whether materials or procedures proposed are potentially hazardous to research personnel and/or the environment, and if needed, determine whether adequate protection is proposed.

Resubmission Applications

When reviewing a Resubmission application (formerly called an amended application), please evaluate the application as now presented, taking into consideration the responses to comments from the previous scientific review group and changes made to the project.

Renewal Applications

This award may not be renewed.

Revision Applications

This criterion is generally not applicable to K awards.

Under rare circumstances, when reviewing a Revision application (formerly called a competing supplement application), the committee will consider the appropriateness of the proposed expansion of the scope of the project. If the Revision application relates to a specific line of

investigation presented in the original application that was not recommended for approval by the committee, then the committee will consider whether the responses to comments from the previous scientific review group are adequate and whether substantial changes are clearly evident.

Additional Review Considerations

As applicable for the project proposed, reviewers will address each of the following items, but will not give scores for these items and should not consider them in providing an overall impact score.

Training in the Responsible Conduct of Research

Reviewers will evaluate plans for instruction in responsible conduct of research as well as the past record of instruction in responsible conduct of research, where applicable. Reviewers will specifically address the five Instructional Components (Format, Subject Matter, Faculty Participation, Duration of Instruction, and Frequency of Instruction as detailed in [NOT-OD-10-019](#). The review of this consideration will be guided by the principles set forth in [NOT-OD-10-019](#). Plans and past record will be rated as ACCEPTABLE or UNACCEPTABLE

Select Agents

Reviewers will assess the information provided in this section of the application, including 1) the Select Agent(s) to be used in the proposed research, 2) the registration status of all entities where Select Agent(s) will be used, 3) the procedures that will be used to monitor possession use and transfer of Select Agent(s), and 4) plans for appropriate biosafety, biocontainment, and security of the Select Agent(s). Select agent information is available via http://grants.nih.gov/grants/policy/select_agent/.

Resource Sharing Plans

Reviewers will comment on whether the following Resource Sharing Plans, or the rationale for not sharing the following types of resources, are reasonable:

1) Sharing Model Organisms

(<http://grants.nih.gov/grants/guide/notice-files/NOT-OD-04-042.html>). All NIH grant applications are expected to include a description of a specific plan for sharing and distributing unique model organism research resources generated using NIH funding or state why such sharing is restricted or not possible. Unlike the NIH Data Sharing Policy, the submission of a model organism sharing plan is NOT subject to a cost threshold of \$500,000 or more in direct costs in any one year, and is expected to be included in all applications where the development of model organisms is anticipated.

2) Genome Wide Association Studies

(<http://grants.nih.gov/grants/guide/notice-files/NOT-OD-08-013.html>). Applications and proposals that include GWAS, regardless of the requested costs, are expected to include as part of the Research Plan either a plan for submission of GWAS data to the NIH designated data repository or an appropriate explanation for why submission to the repository will not be possible.

Budget and Period Support

Is the proposed budget and period of support appropriate in relation to the proposed research and the career development needs of the candidate?

Additional Comments to the Applicant

Reviewers may provide guidance to the applicant or recommend against resubmission without fundamental revision.