Several components of the application package are considered “nonscored” items. These sections contain information that will be used by the NIH for public information purposes should your grant be funded (Project Summary and Project Narrative) or to ensure that your training will be in compliance with NIH guidelines (Responsible Conduct of Research). These items neither contribute to the individual scores nor will they influence the overall impact score of your grant application. However, it is still essential that the utmost care be used in writing each of these sections.

7.1 PROJECT SUMMARY/ABSTRACT (30 LINES)

The project summary is the abstract for the Research Training Plan and as such serves as a succinct description of the proposed work. Should the application be funded, the NIH will publish the Project Summary online on the NIH Reporter database (http://projectreporter.nih.gov/reporter.cfm). Therefore, the Project Summary must serve as a stand-alone document. Further, it must be written so that anyone scientifically or technically literate will be able to understand it. Because it serves as an overview of the project, the Project Summary must include background information, overall objectives, a statement of the hypothesis to be tested, the evidence or data that allowed the development of the hypothesis or supports the feasibility of the project, the Aims to be tested and the methods used to address these aims, and a reference to the health relatedness of the work.

Because the Project Summary succinctly summarizes the research project, it is often best to write this section after the Research Training Plan has been completed. Therefore, it is easy to take sentences written for the research plan and modify them slightly for the Project Summary.
A general rubric that assists in constructing the Project Summary can be as follows:

- Begin the paragraph with two to three sentences describing the background of the project. You want to provide enough information so that the reader can understand the overall field and have perspective for how your project fits into this field. Along these lines, it is often good to lead off with a catchy sentence that highlights the severity of a disease or puts a scientific question in perspective as it relates to human health: “Chronic alcohol consumption alters metabolic regulation, which can lead to muscle wasting, one of the most recognized factors affecting morbidity in these individuals.” To facilitate writing these opening sentences, it is helpful to condense and paraphrase the opening paragraph of your Specific Aims page.

- Once you have established the background, explicitly state the gap in knowledge and why this gap is a problem to advancing treatments: “However, the underlying molecular mechanisms that contribute to the development of chronic alcohol associated muscle wasting are not fully understood. Without this knowledge the ability to develop novel therapies to reduce morbidity associated with this condition will be greatly inhibited.”

- Once you have stated the gap in knowledge, provide additional information from published literature evidence or preliminary data that allowed you to develop your hypothesis. This needs to be done in one to three sentences. As with the opening sentences, it is recommended to condense and paraphrase the literature evidence and preliminary data as stated on your Specific Aims page.

- Having provided the required information, state your hypothesis: “Therefore, we hypothesize that…” being very specific about what your hypothesis is. For example, if you are examining the role of a specific molecule in a signaling pathway and how that signaling is altered in a disease state: “Therefore, we hypothesize that the presence of chemokines in the proinflammatory environment associated with chronic alcohol consumption alters signaling ultimately disrupting the expression of genes associated with muscle wasting.” It is recommended to use the exact wording for the statement of the hypothesis in the Project Summary that you used on the Specific Aims page.
• Then, state your specific aims: “We will address this hypothesis through the following Specific Aims...” making sure that the specific aims you describe here are written identically to those written in the Research Training Plan.”

• Follow up the statement of the aims with a very brief (one to two sentences) description of the experimental model system and how this model system will be used to address the aims. “We will utilize muscle satellite cells derived from our chronic binge alcohol animal model as our experimental model. We will treat these cells with proinflammatory cytokines and monitor molecules of the signaling pathway along with the transcriptional activity of the key transcription factor and the expression of genes essential for protein degradation.”

• Wrap up the paragraph by summarizing how you expect the successful completion of this project to advance the field and how this advancement will contribute to the health relevance of the disease and/or health-related issue you are studying. “The information obtained from this project will provide a solid groundwork to establish a model by which proinflammatory molecules contribute to muscle wasting. This model will thereby enable more detailed studies aimed at determining how we can exploit these molecular mechanisms to develop novel therapies to alleviate the morbidity associated with this disease.”

After providing a statement of the health relevance of the project, applicants sometimes include a statement that describes how this project, or more generally the overall training plan, will provide a framework for an excellent training environment. This statement is not required and in fact the inclusion or failure to include such a statement does not detract from the overall summary.

7.2 PROJECT NARRATIVE (2–3 SENTENCES)

The Project Narrative is a statement that will be used for public dissemination and describes how your project is relevant to public health. This section is very short and consists of only two to three sentences. Because this element is used for public release, it must be written in a language that can be understood by the general, lay audience. Therefore, do not use jargon or highly technical terms but instead use
broad language that focuses on the general impact that the project will have to a particular disease or health-related issues. For example: “Rhabdomyosarcoma is an aggressive childhood solid muscle tumor with a poor prognosis that is characterized by the oncogenic protein. Understanding how this oncogenic protein changes global miRNA and gene expression thereby altering transcriptional regulatory networks to affect normal muscle development will assist in identifying new targets that could be exploited for the rational design of drugs for the treatment of this tumor.”

7.3 RESPONSIBLE CONDUCT OF RESEARCH (1 PAGE)

In 1989, the NIH established a policy concerning the teaching of responsible conduct of research. This policy requires that any training grant application must include a description of how the applicant will be instructed in the ethical issues related to basic research (http://grants.nih.gov/grants/guide/notice-files/NOT-OD-10-019.html). The responsible conduct of research encompasses many aspects of ethical behavior and is not limited to research misconduct, which refers to the fabrication, falsification, or plagiarism of work in proposals or published materials. Therefore, responsible conduct of research is the practice of scientific investigation with integrity and involves the awareness and application of established professional norms and ethical principles in the performance of ALL activities related to scientific research. Research training grants that lack a description of these types of instruction may be returned without review.

The NIH has established explicit information that is required for an acceptable description on the instruction in the Responsible Conduct of Research:

- **Class format:** Include a description of the format the instruction takes. Will the instruction include didactic lecture, group discussions, or both? What will be the source material for the lecture and/or discussion (i.e., text book, essays, handouts)? How will performance in the class be determined (i.e., exam, take home essays, in class participation, etc.)?
- **Subject matter:** Include an explicit description of the topics to be covered in the instruction. This is most easily addressed by including a list of all of the lecture and/or class topics included in the courses the applicant will take. The NIH does not have
specific curricular requirements for the instruction. However, several topics are recommended that constitute satisfactory training. These topics include conflict of interest, use of human subjects or vertebrate animals, mentor/mentee responsibilities and relationships, collaborative research, peer review, laboratory tools and management, intellectual sharing and ownership, research misconduct, authorship on publications, and the scientist as a responsible member of society.

- Faculty participation: Include a description of how faculty will participate in the instruction. Will a single faculty member lead the class? Will several faculty members contribute in a team-taught format each lecturing on a topic given their area of expertise?
- Duration of instruction: Provide a description of how long the class and/or instruction will last (i.e., 6 weeks, one semester, etc.)
- Frequency of instruction: Provide a description of how frequently the class will meet. This information can be combined with the duration as in the following example: “The course met/will meet for one hour each week for the fall semester.”

In addition to the formal instruction just described, it is also acceptable to include a statement that is tailored to the individual applicant and includes one-on-one mentoring from the sponsor as it relates to general scientific integrity or ethical issues associated with the specific research activities. While these latter discussions are acceptable as supplementary information, one-on-one instruction with the mentor will not be considered a substitute for formal classroom instruction. Further, as the Responsible Conduct of Research is not a scored item, a poorly written section will not prevent the funding of an otherwise exceptional grant. The applicant will simply have to rectify the problematic issues to be acceptable to the NIH before the grant is officially awarded.

7.4 FORMATTING

The NIH has very specific guidelines regarding formatting and these guidelines apply to all sections of the grant application. These guidelines are in place to make sure consistency exists in the presentation of grant applications, thereby facilitating the ease with which the applications can be read. These guidelines also prevent the utilization of smaller fonts that would allow increased amounts of information to be included
within the application. These formats are to be strictly adhered to and failure to do so may result in the grant being administratively rejected without review. These formatting specifications are as follows:

- **Font**: Arial, Helvetica, Palatino Linotype, or Georgia typeface, 11 point or larger, with a black font color.
- **Type density**: May be no more than six lines per inch, which equates roughly to a single spaced distance between lines of type.
- **Paper size and margins**: 8.5” × 11” paper size is required with a minimum of 0.5-inch margins on top, bottom, left, and right.
- **Page formatting**: Use only a “single column” format (instead of double column format) and do not include headers or footers.
- **Page numbering**: It is not required. Page numbers will be system-generated in the complete application upon submission, with pages numbered sequentially for all parts of the grant.
- **Figures, Graphs, and Tables**: Figure legends, table descriptors, and text within graphs and charts may be smaller than the 11 point required for the body of the text. However, you must use the same font in the legends and descriptors as you do in the body of the text. Further, the font size cannot be any smaller than is legible when viewed at normal size or printed out onto 8.5” × 11” paper.
- **Page limits**: The page limits for each section, as dictated by the application guide are strictly adhered to. Failure to stay within these page limits will result in an administrative rejection without review.

### 7.5 COVER LETTER

Part of ensuring that the grant application receives a fair review is making sure that it is sent to the most appropriate study section. As described in Chapter 2, a majority of the study sections associated with the Ruth L. Kirschstein training grants are interdisciplinary and therefore focus on a particular scientific topic and/or discipline. While some of these disciplines may overlap, they each have a very distinct focus. As such, the reviewers on these panels have very different ways of thinking about science. For example, a grant may contain a research training plan that discusses the role of a transcription factor in regulating gene expression during muscle development. The research examines a molecular mechanism important in muscle development and proposes experiments that are molecular biological and biochemical in nature. Technically, this grant should be directed to the study section
on Genes, Genomes, and Genetics, which review grants that relate to the regulation of gene expression. However, because the research examines transcriptional regulation in the context of muscle development, it could also be considered for the study section on Cell Biology and Development. On the surface either section would seem appropriate. However, consider the research focus of the members of these study sections. Many reviewers on the Genes, Genomes, and Genetics study section perform molecular biological, biochemical, and genetic work and can therefore appreciate the line of proposed experiments. In contrast, many of the members on the Cell Biology and Development study section perform more developmental biology work and would expect and/or want to see a line of experiments that utilize more developmental biology. Although it seems as if assignment to the latter section would be okay, in actuality, the grant may not receive as appropriate review simply due to differences in scientific experience.

The assignment of grant applications to study sections occurs in the Division of Receipt and Referral at the Center for Scientific Review. It is within this division that the content of the scientific plan is examined and a decision as to the most appropriate study section is made. Since people who are not intimately familiar with the work are making decisions on where the application is assigned, the applicant can facilitate this process, and influence the assignment of the application, by requesting a study section and providing explicit logic within the cover letter as to why this section is the most appropriate. Along these lines the NIH has developed a recommended format when including assignment requests in the cover letter, which is as follows:

“Please accept for consideration the Ruth L. Kirschstein National Research Service Awards for Individual Predoctoral Fellows (Parent F31) grant application entitled [insert title] in response to announcement [insert the NIH program announcement number].

Please assign this application to the following:

Institute/Center:
   National Cancer Institute—NCI

Scientific Review Group:
   IMST—Interdisciplinary Molecular Sciences and Training Fellowship:
   Oncological Sciences [F09]

The reasons for this request are. . . ."
Follow this statement by one short paragraph outlining your rationale for this request. When describing the rationale, it is often advisable to quote directly from the description of the topics covered by that study section. “The stated focus of the Oncological Sciences IMST study section are to ‘review applications involving the pathology of the malignant cell… with an emphasis on mechanisms… and molecular events in gene regulation’. Among the stated specific areas covered are ‘gene regulation including… transcription… relevant to oncogenesis’.” This rationalization is followed by a second short paragraph in which you briefly describe the research in the proposal and state exactly how this research fits within the scope of the topics considered by the desired study section. Finally, a cover letter for the Ruth L. Kirschstein training grants also requires the inclusion of the name, degree, position, and affiliation of the individuals who have agreed to submit reference letters.