Characteristics that Impress Reviewers

1. Candidate
    a. Healthy publication record at all stages of training; some record with the mentors
    b. Track record of fellowship, small grant, or pilot funding
    c. Strategic training path, focused and specific career goals
    d. Ownership and leadership in the writing, with all the t's crossed and I's dotted.
    e. Accounting for any gaps in training in the Biosketch, personal statement, and/or the training plan
2. Goals/Training Plan
    a. Good balance of didactic, enrichment, and hands-on skill development
        i. Training should include **BOTH** research and professional development
    b. Training activities that are coordinated with the research activities
    c. K99/R00 – well defined completion of training by year 2; reasonable transition to independence
    d. Responsible conduct of research- 5 points are specifically addressed (bulleted)
3. Research Plan
    a. Well-developed graphic of working model, with a clear indication of what aspects will be tested
    b. Hypothesis driven, with observations that will be significant regardless of the outcome
    c. Aims that are independent but thematically integrated
    d. Well-presented preliminary data from candidate or mentors
        i. It should be clear what data were collected by the candidate
    e. Should lead to a **NEW** skillset for the trainee
4. Mentors
    a. Mentor(s) and mentoring team that appears strategically picked for their expertise or contribution to the training experience
    b. Solid Funding, track record of success in research and mentorship
    c. Enthusiastic mentor statements that confirm what is in the proposal; a clear dedication to the candidate's success and independence
    d. Clear distinction between mentor's program and candidate's independent research
5. Environment
    a. Enthusiastic support and a pre-existing investment/dedication to the candidate's success (protected time, promotion to faculty, space, etc…)
    b. A detailed plan outlining the plans for promotion (**NOT** contingent on the award), advancement, and tenure track opportunities; ideally having the candidate be in a tenure-track assistant professor position by the time they submit their first R01.
    c. Abundant core facilities, enrichment opportunities, and opportunities for collaboration

Common ways to annoy the K proposal reviewer

1. Candidate
    a. Modest publication record, with numerous publications in preparation
    b. A wandering, unfocused training path.
    c. Lack of enthusiasm in the writing
    d. Does not identify gaps in knowledge or existing skillset
2. Goals/Training Plan
    a. Plan is not specific to the candidate- could be for anyone
    b. Training activities are not integrated well with the research plan
    c. K99/R00 – training plan extending well into the R00 phase of the award
    d. Stating that responsible conduct of research is already completed
    e. No timeline; too much or too little planned for the proposed time
3. Research Plan

   a. Lack of a working model of what you think is happening; no sense of directionality
   b. Not hypothesis driven or open-ended aims with unclear outcomes
   c. Preliminary data that is poorly presented or conflicting with the working model
   d. Not considering limitations/alternatives, rigor or reproducibility, or sex as a biological variable.
   e. No timeline or milestones for success
4. Mentor(s)
   a. Lack of a mentoring team, modest funding support, or no training experience
   b. Too many mentors; too few mentors
   c. Contribution of each member is not clear or strategic
   d. Mentor statements that conflict with or not well integrated with proposal
   e. A sense that the candidate is still working on the mentor's research
5. Environment
   a. Lack of commitment to or enthusiasm for the candidate's success
   b. Lack of a reasonable path to independence and R01 funding

Additional Guidelines from NIH About RCR – Address 5 points specifically

Excerpt from: http://grants.nih.gov/grants/guide/notice-files/NOT-OD-10-019.html

1. **Format:** Substantial face-to-face discussions among the participating trainees/fellows/scholars/participants; a combination of didactic and small-group discussions (e.g. case studies); and participation of research training faculty members in instruction in responsible conduct of research are highly encouraged. **While on-line courses can be a valuable supplement to instruction in responsible conduct of research, online instruction is not considered adequate as the sole means of instruction. A plan that employs only online coursework for instruction in responsible conduct of research will not be considered acceptable, except in special instances of short-term training programs (see below), or unusual and well-justified circumstances.**
2. **Subject Matter:** While there are no specific curricular requirements for instruction in responsible conduct of research, the following topics have been incorporated into most acceptable plans for such instruction:
   a. conflict of interest – personal, professional, and financial
   b. policies regarding human subjects, live vertebrate animal subjects in research, and safe laboratory practices
   c. mentor/mentee responsibilities and relationships
   d. collaborative research including collaborations with industry
   e. peer review
   f. data acquisition and laboratory tools; management, sharing and ownership
   g. research misconduct and policies for handling misconduct
   h. responsible authorship and publication
   i. the scientist as a responsible member of society, contemporary ethical issues in biomedical research, and the environmental and societal impacts of scientific research

   While courses related to professional ethics, ethical issues in clinical research, or research involving vertebrate animals may form a part of instruction in responsible conduct of research, they generally are not sufficient to cover all of the above topics.
3. **Faculty Participation:** Training faculty and sponsors/mentors are highly encouraged to contribute both to formal and informal instruction in responsible conduct of research. Informal instruction occurs in the course of laboratory interactions and in other informal situations throughout the year. Training faculty may contribute to formal instruction in responsible conduct of research as discussion leaders, speakers, lecturers, and/or course directors. Rotation of training faculty as course directors, instructors, and/or discussion leaders may be a useful way to achieve the ideal of full faculty participation in formal responsible conduct of research courses over a period of time.
4. **Duration of Instruction:** Instruction should involve substantive contact hours between the trainees/fellows/scholars/participants and the participating faculty. Acceptable programs generally involve at least eight contact hours. A semester-long series of seminars/programs may be more effective than a single seminar or one-day workshop because it is expected that topics will then be considered in sufficient depth, learning will be better consolidated, and the subject matter will be synthesized within a broader conceptual framework.
5. **Frequency of Instruction:** Reflection on responsible conduct of research should recur throughout a scientist's career: at the undergraduate, post-baccalaureate, predoctoral, postdoctoral, and faculty levels. Institutional training programs and individual fellows/scholars are strongly encouraged to consider how to optimize instruction in responsible conduct of research for the particular career stage(s) of the individual(s) involved. Instruction must be undertaken at least once during each career stage, and at a frequency of no less than once every four years. It is highly encouraged that initial instruction during predoctoral training occurs as early as possible in graduate school. Individuals at the early

career investigator level (including mentored K awardees and K12 scholars) must receive instruction in responsible conduct of research at least once during this career stage. Senior fellows and career award recipients (including F33, K02, K05, and K24 awardees) may fulfill the requirement for instruction in responsible conduct of research by participating as lecturers and discussion leaders. To meet the above requirements, instruction in responsible conduct of research may take place, in appropriate circumstances, in a year when the trainee, fellow or career award recipient is not actually supported by an NIH grant. This instruction can be documented as described below.

Rigor and Reproducibility – Address 4 points specifically in key sections of the grant

Excerpt from: https://grants.nih.gov/policy/reproducibility/guidance.htm

4 AREAS OF FOCUS	WHAT DOES IT MEAN?	WHERE SHOULD IT BE INCLUDED IN THE APPLICATION?
Rigor of the Prior Research	A careful assessment of the **rigor of the prior research** that serves as the key support for a proposed project will help applicants identify any weaknesses or gaps in the line of research. Describe the strengths and weaknesses in the rigor of the prior research (both published and unpublished) that serves as the key support for the proposed project. Describe plans to address weaknesses in the rigor of the prior research that serves as the key support for the proposed project *See related FAQs, blog post	**Research Strategy** ➢ Significance ➢ Approach
Scientific Rigor (Design)	**Scientific rigor** is the strict application of the scientific method to ensure robust and unbiased experimental design, methodology, analysis, interpretation and reporting of results. Emphasize how the experimental design and methods proposed will achieve robust and unbiased results. *See related FAQs, blog post, examples from pilots	**Research Strategy** ➢ Approach
Biological Variables	**Biological variables**, such as sex, age, weight, and underlying health conditions, are often critical factors affecting health or disease. In particular, sex is a biological variable that is frequently ignored in animal study designs and analyses, leading to an incomplete understanding of potential sex-based differences in basic biological function, disease processes and treatment response. Explain how relevant biological variables, such as the ones noted above, are factored into research designs, analyses, and reporting in vertebrate animal and human studies. Strong justification from the scientific literature, preliminary data or other relevant considerations must be provided for applications proposing to study only one sex. *See related FAQs, blog posts, article	**Research Strategy** ➢ Approach
Authentication	**Key biological and/or chemical resources** include, but are not limited to, cell lines, specialty chemicals, antibodies and other biologics. Briefly describe methods to ensure the identity and validity of key biological and/or chemical resources used in the proposed studies. These resources may or may not have been generated with NIH funds and: • may differ from laboratory to laboratory or over time; • may have qualities and/or qualifications that could influence the research data; • are integral to the proposed research. The authentication plan should state in one page or less how you will authenticate key resources, including the frequency, as needed for your research. Note: Do not include authentication data in your plan. *See related FAQs, blog post, examples	**Other Research Plan Section** ➢ Include as an attachment ➢ Do not include in the Research Strategy.