3. The main techniques you will be using (to help study section personnel decide which reviewers to assign to your grant),
4. Your overall experimental plan. Indicate how the results of the various

**Publish as much of your work as possible in the most rigorous journals in your field. Their reviewers will provide expert commentary on your work, and the study section reviewers inevitably pay attention to the journals you publish in.**

**Concerning EXPERIMENTAL DESIGN AND METHODS**
Indicate how you will design and execute experiments addressing each of your Specific Aims. Propose only experiments that are directly relevant to testing your hypotheses and that you have the expertise to execute successfully. Be aware of the limitations of each technique, e.g., don't use a qualitative method to address a quantitative question. Include appropriate controls. Don't propose more than your laboratory can reasonably do within the allotted time.

It often helps to divide this section into Detailed Methods (where you give all the important specifics) and Experimental Strategy, where a clear narrative indicates the rationale and design of each experiment, and the interpretation you would give to each possible experimental outcome. Address the most basic issues first. For specific representative experiments, indicate not only how you will execute the experiments, but also how you will analyze the data, interpret various possible results, and revise your experimental plan as results unfold. Indicate important specifics, citing appropriate literature. Minimize your use of abbreviations, and always explain the abbreviations you do use.

Address detailed attention to the techniques with which you have the least published experience, checking with experts to make certain your plans are realistic, state-of-the-art, and rigorous. It is helpful to state that you will consult with an expert concerning techniques in which you have less demonstrated expertise, but remember that all relevant techniques must be explained in your application. **Remember that you are trying to sell yourself as a person qualified to oversee the entire project.** If you do mention using expert consultants and collaborators, make certain that their Biographical Sketches and Support pages are included, as well as letters signed by them that specifically agree to do the things indicated your proposal. It is a good idea to send these experts a sample letter indicating the specific statements you would like them to include.

Avoid repeating yourself—it can make a tired reviewer angry.

Try to close Methods with some overall enthusiastic statement about the importance of your experiments, rather than just petering out leaving the reader exhausted by details.

**Concerning BUDGET and BUDGET JUSTIFICATION**
**Ask for the minimum amount of money you need to do the work. If you pad the budget, the reviewers are likely to cut it by more than the amount you padded.**

If you are just beginning as an independent investigator, don't ask for megabucks. Show the agency that you can complete a good small project for relatively few dollars, and they will be more willing to entrust you with more dollars to do bigger projects in the future.

Make certain your application is internally consistects

**JUSTIFY EVERYTHING. DON'T ASSUME THAT ANYTHING WILL BE OBVIOUS TO THE REVIEWER.**
Personnel: Justify the amount of effort you propose to spend on the project; **less than 20% raises concerns about your commitment to the study. Don't ask for more than 50% if you are on tenure-track.** Indicate in detail how each salaried person (including yourself) will contribute to the project, including their experience and established expertise.

Consultant expenses: These are very hard to get. The request should be minimal and very well justified.

Equipment: Justify why you need each requested piece of equipment. If you are requesting a specialized item of equipment that costs more than standard, then you must specify in a convincing way which features of the deluxe model are vital for your project (i.e., why the standard, less expensive model isn't suitable for your project). Indicate, in both the justification and in your experimental methods, the specific experiments that need the requested pieces of equipment.

Study sections award equipment to beginning investigators just setting up their own laboratory, and to experienced investigators who need to replace equipment that has worn out or become obsolete. They will not give you an expensive item of equipment in an area in which you have no demonstrated expertise, so acquire the expertise on borrowed equipment before you apply.

Supplies: Design your experimental plan to make efficient use of supplies and labor. Think carefully about all the experiments you will need to do to accomplish your objectives, and plan your supply budget accordingly. Each year's requested budget must agree with the number and type of experiments you propose to do in that year. For example, don't ask for funds in years 1 and 2 for supplies for experiments that will not be performed until the third year. A carefully detailed supply budget helps convince reviewers that you are capable of directing the project.

If your university has made or will make a financial contribution to your project, e.g., funding a graduate student or helping you buy a piece of equipment, make certain that is noted. Study sections like to see a university commitment to the success of your research project.

**REVISIONS**
You will likely need to apply more than once. If your first application is rejected, read the reviewer's comments carefully. When you first read them, you will be sad and angry, so spend a week being angry—write nasty rebuttal letters, but DON'T SEND THEM TO ANYONE—they are for therapy only! Don't call anyone at the funding agency. Then a week later, after you have calmed down somewhat, re-read the critique and your application. Gauge whether or not the reviewers show any enthusiasm for your study—a senior investigator skilled in reading critiques will be helpful for this. Consider the reviewers' suggestions for change and their requests for more preliminary data. Figure out what parts of your application might have confused or misled them. Then decide whether your application is fatally flawed or fixable.

If you decide to fix the application and re-apply, respond explicitly to each criticism and suggestion, indicating how and where you have revised your application. If you disagree with the

reviewer on certain points, state your arguments in a logical manner. NEVER impugn the intelligence or motives of the reviewer. Add any additional improvements that you have thought of yourself, and point these out as well. Reviewers may have found twenty problems in your first application, but only commented on the ten that they considered most important. They will be impressed if you find and fix the other ten on your own.

**Page limit requirements for NIH R01 grants**: see more here https://grants.nih.gov/grants/how-to-apply-application-guide/format-and-write/page-limits.htm

| **Section of Application** | **Page Limits** [if different from |
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