Guidelines for NAMIC based publications
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A critical advantage of a broadly inter-disciplinary effort such as NAMIC is that it can enable investigators to conduct research that is simply not possible using only the tools of a single discipline. By combining insights and techniques from neuroscience, computation, statistics and mathematics, especially by using integrated toolkits that weave together methodologies from these different domains, we are able to successfully tackle problems that would otherwise be out of reach.

Along with the advantages associated with tightly integrated multidisciplinary approaches, however, are some potential disadvantages. Precisely because we are integrating methods from many disciplines, we also must deal with an integration of different cultures. More specifically, different disciplines have different traditions, different standards for acknowledging contributions, as well as different accepted practices. Failure to be sensitive to these differences can lead to misunderstandings, and misconceptions that can undermine the collaborative nature of this enterprise.

To deal with this potential problem in a proactive manner, we are proposing a set of guidelines for use in publications, both concerning appropriate acknowledgement of contributions and concerning co-authorship. The goal of these guidelines is to acknowledge both the needs of different communities and the different kinds of contributions that partners can make towards a successful result and publication.

Needs:

- It is important to understand that in some communities it is essential to acknowledge sources of data. For example, failure to acknowledge use of data by citing the appropriate institution and/or funding source provided by a partner can lead to revocation of funding resources for the partner. This is, for example, especially true for affiliates of Veteran's Administration hospitals where failure to acknowledge the VA can result in the revocation of funding for the investigator. Hence it is essential that all data sources are acknowledged, including citation of the grants that were used to create the data sources.
- It is important to understand that some funding agencies (including NIH) use citation of grants as a measure of performance. Hence, failure to acknowledge both the base grant (NAMIC) and any affiliated grants (such as those used to create tools or data sets) may undermine the ability of our partners to fully leverage their activities.
- It is important to understand that different communities have different standards for judging contribution to a publication. In some, only those participants who directly contributed to the intellectual content of the paper are included as authors (note that even the notion of "intellectual content" can vary between disciplines). In others, the role of a lab head in fostering the environment in which the work is made possible is acknowledged by co-authorship; in others, the role of more junior researchers in defining the data sets is acknowledged by co-authorship. In general, we believe it is better to err on the side of inclusion, when determining co-authorship – remember that there is not a fixed amount of "credit" associated with a

publication, rather all contributors share in the visibility of a well-prepared publication.

Contributions:

Based on this, we believe it is valuable to articulate some of the ways in which partners can contribute to a publication. There are the obvious ones:

- Creating algorithms that are essential to the analysis of data;
- Designing and executing experiments that substantiate hypotheses;
- Articulating and refining the hypothesis to be tested.

There are also other ways in which a partner can make an essential contribution:

- Creating data sets that are unique, especially in cases where the acquired images are carefully processed with extensive and labor intensive manual segmentations as a contribution;
- Creating processing infrastructures without which the analysis could not be executed.

Hence, a good rule of thumb to be used in deciding if someone should be included as a co-author is to ask: "Could this work have been just as easily accomplished without the efforts of this partner?" For example, was the particular data set used (especially if it is not just a set of scans, but includes definitions of particular structures obtained by careful manual delineation) essential to the success of the project, or would any data set have sufficed? Or, was the particular algorithm used to analyze the data, or extract structure from the data, unique, or would any of several stock methods have sufficed?

We suggest, therefore, that the following checklist be used as a guideline for ensuring good publications practices within the domain of the NAMIC enterprise:

1. Has the NAMIC base grant been acknowledged?
2. Have the sources of data been acknowledged?
    a. Have any grants associated with the creation of the data sets been acknowledged?
3. Have researchers essential to the creation of data used in the publication been included as co-authors?
4. Have researchers essential to the creation of algorithmic tools unique to this project been included as co-authors?

It is the responsibility of the senior author on each NAMIC publication to ensure that these points have been addressed before submission of the publication. Following these practices will head off potential misunderstandings, and foster a cooperative environment in which all partners benefit. To aid in this process we plan to set up a board for review of publication citations that will be comprised of individuals from each NAMIC site.