**IMPACT FOR COMMON FUND NATIONAL CENTERS FOR BIOMEDICAL COMPUTING (NCBC)**April 4 (2012)

**Approach**This is intended to be a template for future annual progress reports for the Centers program. The purpose of measuring the impact of NCBCs is to encourage and document success and innovation. We acknowledge increasing demand for quantifiable metrics while recognizing that narrative evaluation is currently the primary approach to judging academic performance. The following list therefore includes alternative narrative and numerical metrics that can be tailored to the needs of each Center. In many cases we propose that Centers develop their own specific metrics under the proviso that progress be evaluated at least annually and reported in annual progress reports. Progress on self-identified metrics should become a component of the competitive renewal process. Numerical metrics should be summarized in spreadsheets that are part of the annual progress report. Please indicate in your annual report that these data may also be used to compile Common Fund Systems Centers Program-wide data, with the exception of all information related to the Scientific Advisory Board communications and other as specified by the PI.

**SET ONE METRICS – CONSTANT FOR ALL CENTERS**

***1. RESEARCH AND RESOURCE METRICS***

***1A Summary of Center Progress***

Write the summary of your Center’s progress in language readily understandable to a well-informed scientist who may not be a specialist in your field. Include a brief description of the overall objectives of the Center. Summarize progress made in each of the Research and Core Projects. Discuss at least three Collaborative Research Projects and their fruitful interactions with the Center; this may include collaborative R01/R21s or other projects that are not directly funded by the Center’s NCBC grant but are using Center tools or algorithms in a substantial and enabling manner. Outline the unique role of the Center as a national resource. Address any changes in the scientific or technological direction of the Center and their significance, as well as problems encountered or anticipated.

Provide a brief description of any newtraining and outreach activities conducted during the reporting period and web-links if available. Describe and assess the impact of your Center on biomedical research and research training and outreach at your institution and on the broader community that the Center serves. Institutional benefits might include the organization of special courses and meetings, attraction of students, and faculty participation. Scientific community benefits might include software released, workshops organized, collaborations established, service performed, technology developed, and technology disseminated through patents, publications, peer-reviewed citations of center collaborations by non-center investigators, and personnel trained.

In addition, provide a Center Summary table as shown below. Information provided in the table should be broken down by unit: Projects, Collaborations, Total. Under each unit heading, enter the appropriate numbers.

***Center Summary Table***

|  |  |  |  |
| --- | --- | --- | --- |
|  | ***Center******Projects*** | ***Collaborations*** | ***Total*** |
| ***Number of Publications*** |  |  |  |
| ***Number of Investigators*** |  |  |  |
| ***% of Center Funds Allocated*** |  |  |  |

\* Fractional investigators are allowed but do not count an investigator more than once.

***1B Faculty* (narrative)**Each Center should maintain and up-to-date list of faculty members who participate in the Center and revise the description of their contributions annually. Please provide a few sentences that describes faculty contribution.

***1C Publication Metric: Number and impact of publications, patents, software and resources***

We propose a multi-faceted approach to a publication metrics.

1. ***Comprehensive List (numerical)***
Each Center should maintain an up-to-date publication list on its website. Each listed reference should be hyperlinked to its corresponding Pubmed or relevant Journal entry. This list should be cumulative and part of the annual progress report. Centers may identify publications which have explicitly acknowledged NCBC funding as well as those that do not recognize NCBC funding but used NCBC resources.

Books/Papers/Abstracts for each Center Unit

|  |  |  |  |
| --- | --- | --- | --- |
| **Center Research** | Books | Papers | Abstracts |
| Number Published |  |  |  |
| Number in Press |  |  |  |

Books (List):

Papers (List):
Abstracts (List):

|  |  |  |  |
| --- | --- | --- | --- |
| **Collaborations** | Books | Papers | Abstracts |
| Number Published |  |  |  |
| Number in Press |  |  |  |

Books (List):

Papers (List):
Abstracts (List):

|  |  |  |  |
| --- | --- | --- | --- |
| **Training, and Dissemination** | Presentations | Courses & Workshops | Other |
| Number Published |  |  |  |
| Number in Press |  |  |  |

Presentations (List):

Courses & workshops (List):
Other (List):

1. ***High significance papers (narrative)***
Each Center should maintain a list on its website of “High Significance” publications as chosen by the Center itself. Each publication should include a brief synopsis of significance and how it benefited from the interdisciplinary activities of an Center. Multi-investigator papers are strongly encouraged; we suggest a total of 5 papers for year 2-3 Centers, 10 papers for year 4-5 Center and 20 papers for renewed Centers. The list can change over time and should be part of the annual progress report.
2. ***Bibliometric impact (numerical)***
Each Center could consider provides a citation analysis (for example using ISI Web of Science) including number of citations per paper over time. An aggregate metric (i.e., not necessarily per-paper basis) may be appropriate here. The aim is to determine the trajectory of impact – not its absolute value. These metrics should be part of the annual progress report.
3. ***Software resources (narrative/numerical)***Each Center should maintain a list of the software and electronic resources it has developed along with a brief narrative description and a link to the page from which the software can be downloaded. This information should also be reflected in the Center’s Biositemaps file, which will be leveraged to maintain an up to date listing of all Center resources on the portal site <http://www.ncbcs.org>. For the purpose of the annual progress report, the number of downloads (or a similar metric) should be reported as well as the number of publications in which the software is used. Include Center publications and, if feasible, publications by outside research groups.
4. ***Datasets (narrative/numerical)***

Each Center should maintain a list of its most important datasets along with a brief narrative description and a link to the page from which the data can be downloaded. Evidence of consistently depositing data into external publicly accessible databases is highly encouraged. For the purpose of the annual progress report, the number of downloads (or a similar metric) should be reported as well as the number of internal (and, if feasible, external) publications in which the data is used.

1. ***Patents (narrative)***
Each Center should provide a brief narrative describing the patents it has received and their significance for the goals of the Center. The information should be included in annual progress reports but publication of this information on the Center website is optional.

***1D Collaborative Research Projects Summary Table***

List collaborations, whether under the Collaborations FOA or funded through other means. If there have been collaborative projects removed or added to the Center since the last reporting period, provide a brief statement on the changes made as well as an abstract for each new collaborative project

|  |  |
| --- | --- |
| Project Title | Investigator |
| Name | Affiliation | Grant number | Contact info |
|  |  |  |  |  |
|  |  |  |  |  |

***2. TRAINING AND EDUCATION METRICS***

1. ***Outcomes for students, postdocs and fellows (narrative/numerical)***Each Center should maintain a list of all graduate students, postdocs and fellows for whom the Center has provided at least 25% support (these are considered “directly” supported researchers). The Centers should also maintain a list of “indirectly” funded researchers who profited from the center in other significant ways (use of center funded core facilities, center funded resources, etc). Due to differences in research and outreach activities, each center may have different criteria for determining who is indirectly funded, and these criteria should be listed. Insofar as it is feasible, the Center should try to track the history of these fellows after they leave the Center and provide information on outcomes and employment (industrial and academic). This information should be part of the annual progress reports, and Centers are encouraged to provide as much information on their websites as the dictates of privacy allow.
2. **Education and career development (*narrative/numerical)***
Each Center should provide a list of its educational activities and develop its own metrics for these activities. Once promulgated, the metric should be reported annually and the primary criterion for success will be time trajectory of the activity**.** Each Center should describe its activities in the area of career development for postdocs, senior scientists, junior faculty with respect to promotions and career path.

***3. OUTREACH METRICS***

We note that many outreach programs might fall into more than one of the categories listed below. Centers can chose which one to use or synthesize a new category that more nearly meets their needs.

1. **Development of course/curriculum material and cross-disciplinary meetings/conferences (narrative/numerical)**Each Center should maintain a list of the courses, curricula and meetings its members have developed. The Center can formulate any metric of its choosing for these activities but the metric then needs to be reported annually in the progress reports. Metrics might include (i) the number and diversity of undergraduate interns; (ii) career development/tracking of undergraduate interns; (iii) development of new course materials; (iv) public accessible/downloadable course and curriculum materials; and (v) frequency of conferences and number of participants.
2. **Outreach to underrepresented minorities (narrative/numerical)**

Each Center should describe its activities in addressing the needs of underrepresented minorities. These could include (i) partnerships with minority serving institutions; (ii) developing minority advancement programs; (iii) special programs for visiting students or faculty, etc.; and (iv) evidence of diversity in applicants received per position, diversity of interviewed vs hired, diversity per position, etc.

1. **Other outreach activities**

(i) Each Center should provide a description of its outreach activities updated annually on its website and annual progress reports. (ii) Provide description of any new and ongoing services to the scientific community during the reporting period, e.g., list investigators and their non-host institution who have been helped.

***4. SET TWO METRICS* –**

***4A Center Highlights***

Provide what you consider to be the top three highlights of the Center that illustrate its value and effectiveness. The highlights can be selected from any of the Center components i.e. Research, Cores, Collaborative Projects, Training and Outreach, and Service. Describe accomplishments in terms of their contributions to new knowledge and their significance to actual or potential improvements in health. Each highlight should be about one page long. An extended abstract format is suitable; include the title, investigators, an introduction, methods, results, implications, and discussion. Each highlight should be accompanied by a reference to a significant paper/patent/copyright published that year or accepted/submitted for publication.

***4B Scientific Advisory Board (SAB) Report and Response.***

Include the most recent SAB recommendations and PI’s action plan in response. Provide SAB member information:

|  |  |  |
| --- | --- | --- |
| **Member’s Name** | **Institution** | **Area of Expertise** |
|  |  |  |
|  |  |  |

**OPTIONAL ADDITIONAL ELEMENTS**

 ***4C Development and use of research cores significantly supported by Center resources (narrative/numerical)***

The Center should maintain a list (on its website) of research cores that it supports to a significant extent. The Center should report all of the papers that have been impacted by the core (insofar as this is feasible), and develop a metric of its own choosing that monitors impact. Criteria of success might include (i) steady growth in the number of users; (ii) introduction of fundamentally new technologies or equipment; and (iii) evidence of open access to core facilities and technologies.

***4D Spin-off grants and strategic partnerships (narrative)***

The Center should describe significant academic or industrial collaborations it has established with an emphasis on their significance. Each Center should also briefly describe the goals, status and number of new grants (particularly those that are multi-investigator) that have developed as a result of Center activities; the information is private and updated for each annual progress report.

***4E Evidence of institutional change (narrative/numerical)***

The Center should provide evidence of institutional change, based either on numerical metrics or letters of support from colleagues outside the Center or from University administration.

***4F Center Specific (narrative/numerical)***

A Center may propose a metric (numerical or narrative) on any aspect of their operation that they deem to be important. However, once chosen the metric should be updated annually and included in the annual progress report.