

Attachment 1: Background Information about the Physical Sciences - Oncology Center (PS-OC) and Program Evaluation Plans

The NCI launched the Physical Sciences - Oncology Center (PS-OC; <http://physics.cancer.gov/>) program in Fall 2009 as Phase I of the Physical Sciences in Oncology (PSO) Initiative. The PSO Initiative seeks to establish research projects that bring together cancer biologists and oncologists with scientists from the fields of physics, mathematics, chemistry, and engineering to study key questions in cancer research from a physical sciences perspective. The PS-OC program consists of a virtual network of 12 centers, which receives approximately \$30.1 million in funding per year through U54 cooperative agreements. The program goals include:

- 1) Facilitate team science and field convergence at the intersection of physical sciences and oncology,
- 2) Connect physical sciences perspectives with translational research by reducing barriers between physical scientists and physician scientists,
- 3) Build a trans-disciplinary network that collectively tests physical sciences based theories and models of cancer and promotes innovative solutions, and
- 4) Establish a sustainable physical sciences perspective within the cancer research community through training and infrastructure development.

Unconventional aspects of the program include a focus on training a trans-disciplinary group of scientists at the intersection of physical sciences and oncology and programmatic activities aimed at promoting transdisciplinary science and collaborations. Specifically, there is a requirement for an investigator with a physical sciences degree, to work closely with an investigator who has formal training as a cancer biologist or a clinical oncologist. Additionally, the investigators can use pilot and trans-network set-aside funds to support high-risk innovative research ideas sprouting from collaborative discussions and results.

As part of the PSO Initiative, evaluation plans were developed in 2009 and divided into three components dependent upon the phase of the program (Attachment 1):

- Phase I (Year 1-3) - Prospective evaluation. This phase is in its last stages and involves continuous extant data collection and analysis for in-the-moment programmatic improvement.
- Phase II (Years 4-5) - Structured evaluation. An expert peer-review panel will assess program design, implementation and preliminary outcomes.
- Phase III (Years 10+) – Summative/full outcome evaluation. This phase is conducted at least 10 years after the start of the program.

Information collected in the prospective evaluation of Phase I helped identify specific program activities to emphasize within the centers in years 4-5, such as trans-network

projects. The program officials are highly integrative with program evaluation and share data collected with program investigators on a 6-month time basis to improve program performance. In Phase I, data shared with investigators contributed in part to changes in personnel/scope of 17% of the research projects during the program period. It is expected the more comprehensive structured evaluation will have similar results and help to prioritize activities.

A report summarizing initial findings of the prospective evaluation of Phase I was completed after 3 years of the PS-OC program and the evaluation found that the program was making steps toward each of the program goals and highlighted some unexpected positive outputs, such as the early translation of PS-OC research to the clinic. The prospective evaluation of the PS-OC program was determined to be instrumental in allowing program officials to monitor and provide constructive feedback to the PS-OC program investigators continually and at site visits.

NCI has recently approved a Phase II of the PSO Initiative within the Division of Cancer Biology (DCB). Phase II will again use cooperative agreements to help build an interactive network and will consist of both centers (U54) and projects (U01) solicited over the course of two to three years via program announcement reviews to create the Physical Sciences - Oncology Network (PS-ON). In 2015 the PSO Initiative is transitioning from Phase I to Phase II representing a critical time for the initiative to reflect on the outcomes of Phase I and restructure the process evaluation to account for changes in Phase II. The National Institutes of Health (NIH) Evaluation Set-Aside program awarded funds to NCI DCB to support a structured evaluation to review accomplishments and lessons learned from Phase I.