

Section: Contact Information

First Name : **AnnaLynn**
Last Name : **Williams**
Institution : **St. Jude Children's Research Hospital**
Address 1 : **262 Danny Thomas Place**
Address 2 :
City : **Memphis**
State/Province/Region : **TN**
Country : **United States**
Zip/Postal Code : **38104**
Phone Number : **7166283238**
Alternate Phone Number :
Email Address : annalynn.williams@stjude.org

Section: Project Requirements and Description

Group: Requirements to submit AOI

A comprehensive review of previously published data has been completed. : **Yes**

The specific aims are clear and focused. : **Yes**

The investigator has appropriate experience and expertise to develop the concept proposal; if not, has identified a mentor or senior co-investigator. : **Yes**

The investigator agrees to develop an initial draft of the concept proposal within 6 weeks of approval of the AOI and to finalize the concept proposal within 6 months. : **Yes**

Project Title : **Accelerated Aging as an Accumulation of Deficits in Survivors of Childhood Cancer**

Planned research population (eligibility criteria) :

All survivors and siblings in the combined CCSS cohort.

Proposed specific aims :

The goal of this project is to evaluate an age-related deficit accumulation index as an indication of accelerated aging. Deficit accumulation indexes are composed of 30 to 40 aging-related factors that are averaged to conceptualize aging as a process of accumulation of deficits. The index includes items that are: 1) associated with health status, 2) have an increasing prevalence with age, and 3) do not saturate in the population too early. The entire index covers a diverse group of aging-related factors reflective of emotional and physical health and behavioral/functional limitations. The approach allows us to integrate large and small effects, using information that on its own may only weakly correlate with an outcome, but when combined together will contribute to significant effects. These indexes have predicted dementia when individual risk factors do not. Deficit accumulation indices have been used to characterize aging and cognitive decline in breast cancer survivors. However, this framework has not yet been applied to childhood cancer survivors. An integrated approach to measuring individual aging is important because the components that contribute to aging are not independent.

Aim 1: Compare the aging-related deficit accumulation index (DAI) and the change in DAI over time (e.g. from FU2 to FU5) in childhood cancer survivors and sibling controls.

Hypothesis 1.1: Compared to sibling controls, survivors will have a higher aging-related

DAI (e.g. at FU2).

Hypothesis 1.2: Compared to sibling controls, survivors will have a larger change in DAI over time.

Aim 2: Among survivors, examine associations between treatment/clinical factors with change in the aging-related DAI over time.

Hypothesis 2: Survivors of central nervous system tumors, that received craniospinal irradiation, that received HSCT, and are further from diagnosis will have a large change in aging-related DAI.

Aim 3: Among survivors, characterize the association between change in aging-related DAI and subsequent cognitive, sleep (FU6) and mortality.

Hypothesis 3: A positive change in the aging-related DAI between their first and last visit will be associated with an increased risk of neurocognitive impairment, poor sleep, and mortality.

Note: If data from FU7 is frozen when data analysis is ongoing we will examine trajectories of aging (e.g. phase-shift, accelerated) using the aging-related DAI from three time points (FU2, FU5, FU7) in aims 1 through 3.

Will the project require non-CCSS funding to complete? : **No**

If yes, what would be the anticipated source(s) and timeline(s) for securing funding? :

Group: Does this project require contact of CCSS study subjects for:

Additional self-reported information : **No**

Biological samples : **No**

Medical record data : **No**

If yes to any of the above, please briefly describe. :

Group: What CCSS Working Group(s) would likely be involved? (Check all that apply)

Second Malignancy :

Chronic Disease : **Secondary**

Psychology / Neuropsychology : **Primary**

Genetics :

Cancer Control :

Epidemiology / Biostatistics : **Secondary**

Section: Outcomes or Correlative Factors

Late mortality : **Primary**

Second Malignancy :

Group: Health Behaviors

Tobacco :

Alcohol :

Physical activity :

Medical screening :

Other :

If other, please specify :

Group: Psychosocial

Insurance :

Marriage :

Education :

Employment :

Other : **Primary**

If other, please specify : **Sleep from FU6**

Group: Medical Conditions

Hearing/Vision/Speech : **Correlative Factors**

Hormonal systems : **Correlative Factors**

Heart and vascular : **Correlative Factors**

Respiratory : **Correlative Factors**

Digestive : **Correlative Factors**

Surgical procedures :

Brain and nervous system : **Correlative Factors**

Other :

If other, please specify :

Group: Medications

Describe medications :

The deficits accumulation contains an item for poly-pharmacy, defined as taking 5 or more medications.

Group: Psychologic/Quality of Life

BSI-18 : **Correlative Factors**

SF-36 : **Correlative Factors**

CCSS-NCQ : **Primary**

PTS :

PTG :

Other :

If other, please specify :

Group: Other

Pregnancy and offspring :

Family history :

Chronic conditions (CTCAE v3) : **Correlative Factors**

Health status : **Correlative Factors**

Group: Demographic

Age : **Correlative Factors**

Race : **Correlative Factors**

Sex : **Correlative Factors**

Other :

If other, please specify :

Group: Cancer treatment

Chemotherapy : **Correlative Factors**

Radiation therapy : **Correlative Factors**

Surgery : **Correlative Factors**

Section: Anticipated Sources of Statistical Support

CCSS Statistical Center : **Yes**

Local institutional statistician :

If local, please provide the name(s) and contact information of the statistician(s) to be involved. :

Will this project utilize CCSS biologic samples? : **No**

If yes, which of the following? :

If other, please explain :

Section: Other General Comments

Other General Comments :

I agree to share this information with St. Jude : **Yes**