Childhood Cancer Survivor Study

Credits… Priceless!

CCSS 101 – *A Primer on the Successful Use of this Resource*

Due October 1, 2019

CCSS Career Development Awards – see details on CCSS website

CCSS
Childhood Cancer Survivor Study

So Why Should I Get Involved?

CCSS

1. The number of trainees involved with CCSS since its inception?*
   a) <25
   b) 25-49
   c) 50-74
   d) ≥75

2. Number (on?
   since 201
   a) <5
   b) 5-9
   c) 10-14
   d) ≥15

3. The average number of abstracts presented at national meetings each year?†
   a) <10
   b) 10-14
   c) 15-19
   d) ≥20
   b) 100-199
   c) 200-299
   d) ≥300

1. Highly productive study with long track record of engaging trainees
2. Platform to develop skills in clinical research / survivorship
3. Opportunity to collaborate and learn from world-class investigators

* As of 9/2018; †From 2014-2018

Childhood Cancer Survivor Study
An NCI-funded resource

Introduction to the Cohort / Resource

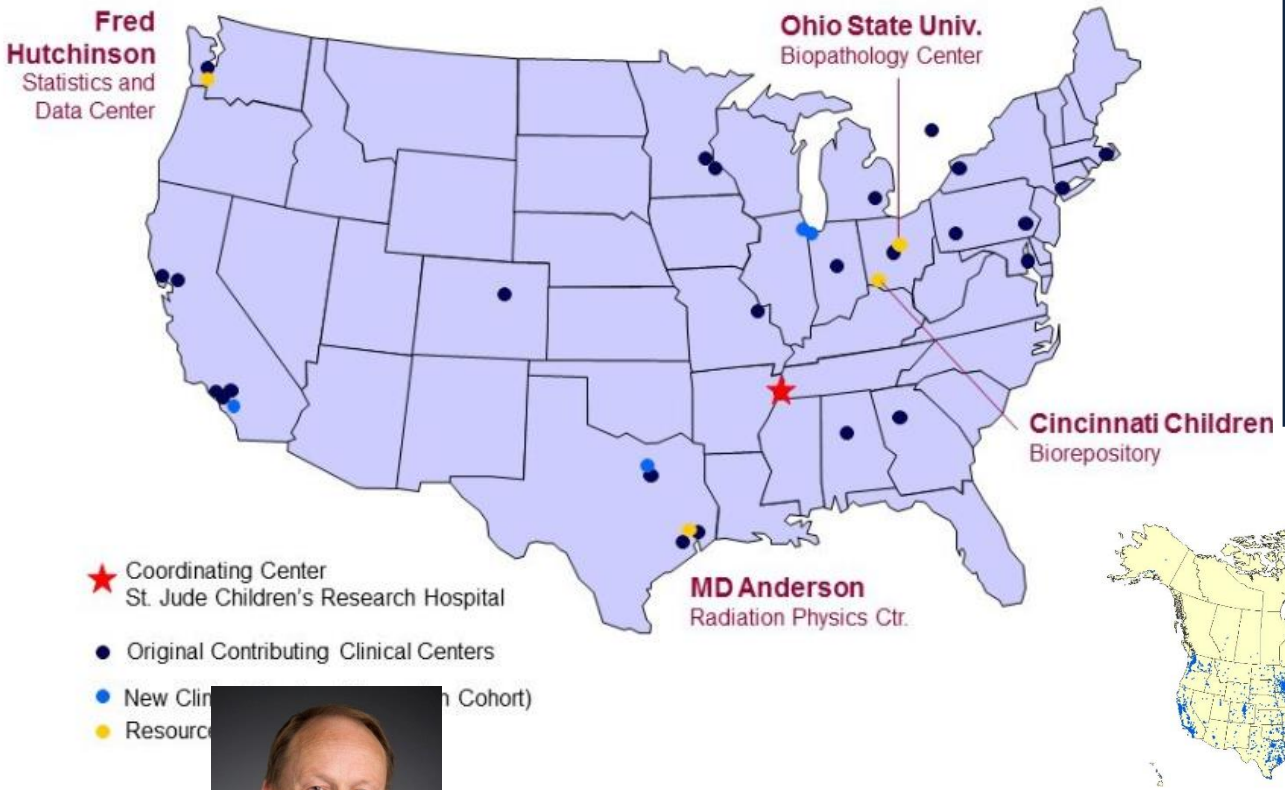
CCSS

- Rationale to establish this cohort
  - Limitations of single institution studies
    - Small sample sizes
    - Heterogeneity of exposures; *in a small sample, this can be a fatal flaw; in a very large sample, this is a strength that allows investigation of dose-effects*
  - Lack of extended follow-up of childhood cancer survivors into the adult years
    - Often incomplete (response bias) and/or passive follow-up

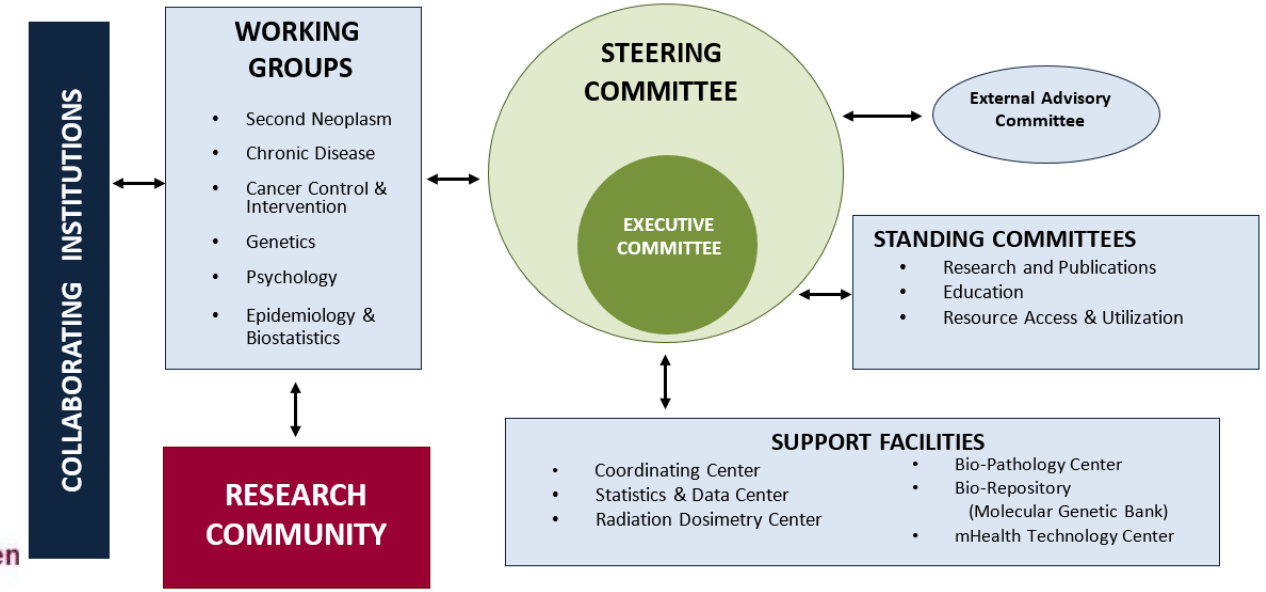
Organization

CCSS

- >30 participating centers in US & Canada



- 6 primary working groups



- *Grant-funded biostats support to help investigators carry out analyses*

Investigators from ANYWHERE in the WORLD welcome to use this RESOURCE

Childhood Cancer Survivor Study

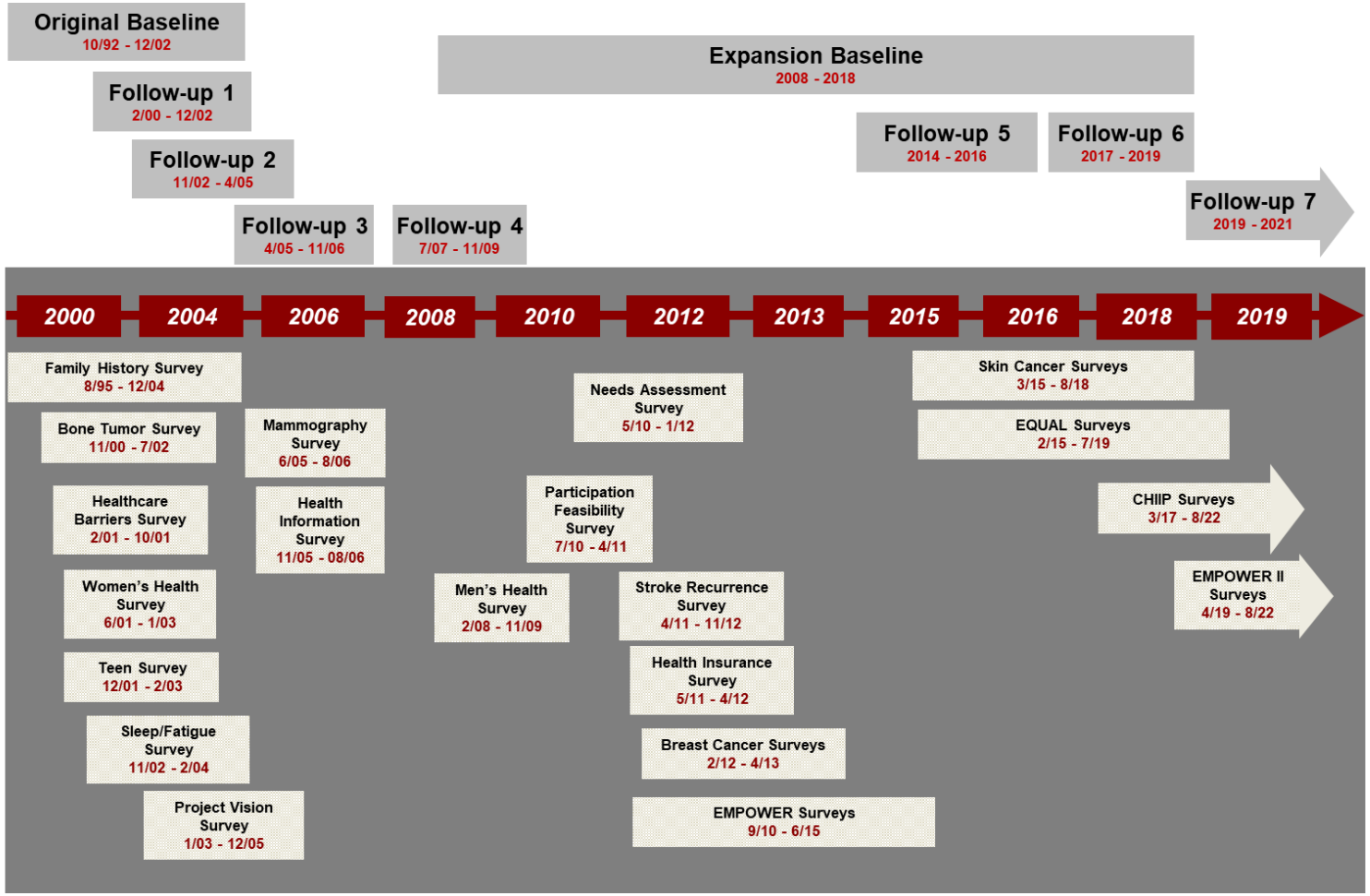
An NCI-funded resource

Cohort History

CCSS

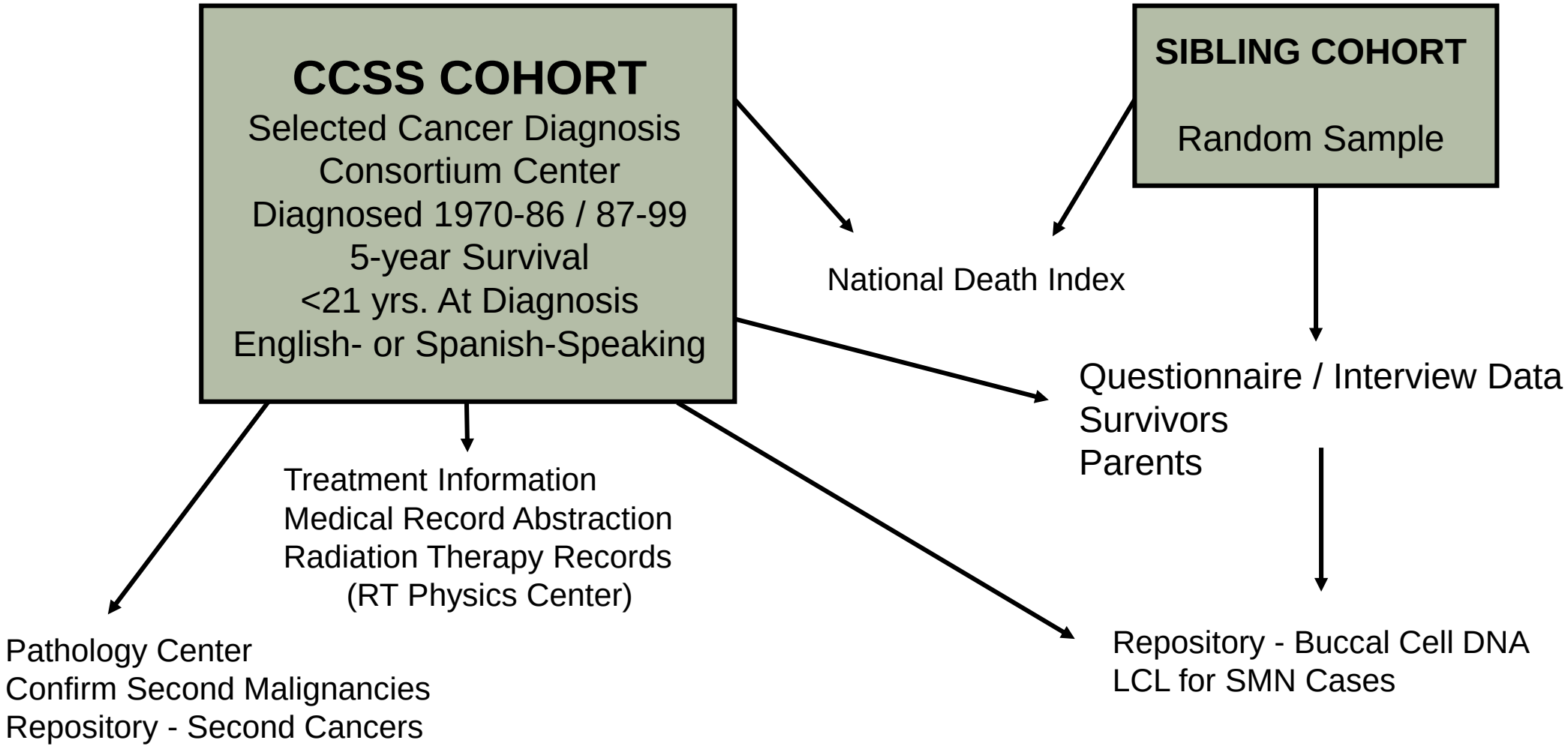
- Initially established 1994
- U01 Cooperative Agreement from NCI
- Later restructured as U24 resource
- Founding PI: Leslie Robison
- Succeeding PI: Greg Armstrong
- Transitioned from U. Minnesota to St. Jude in 2006

- For more info:
  - Robison et al, Med Pediatr Oncol 2002;38:229-39
  - Robison et al, J Clin Oncol 2009;27:2308-18



Study Overview

CCSS



Other Key Features

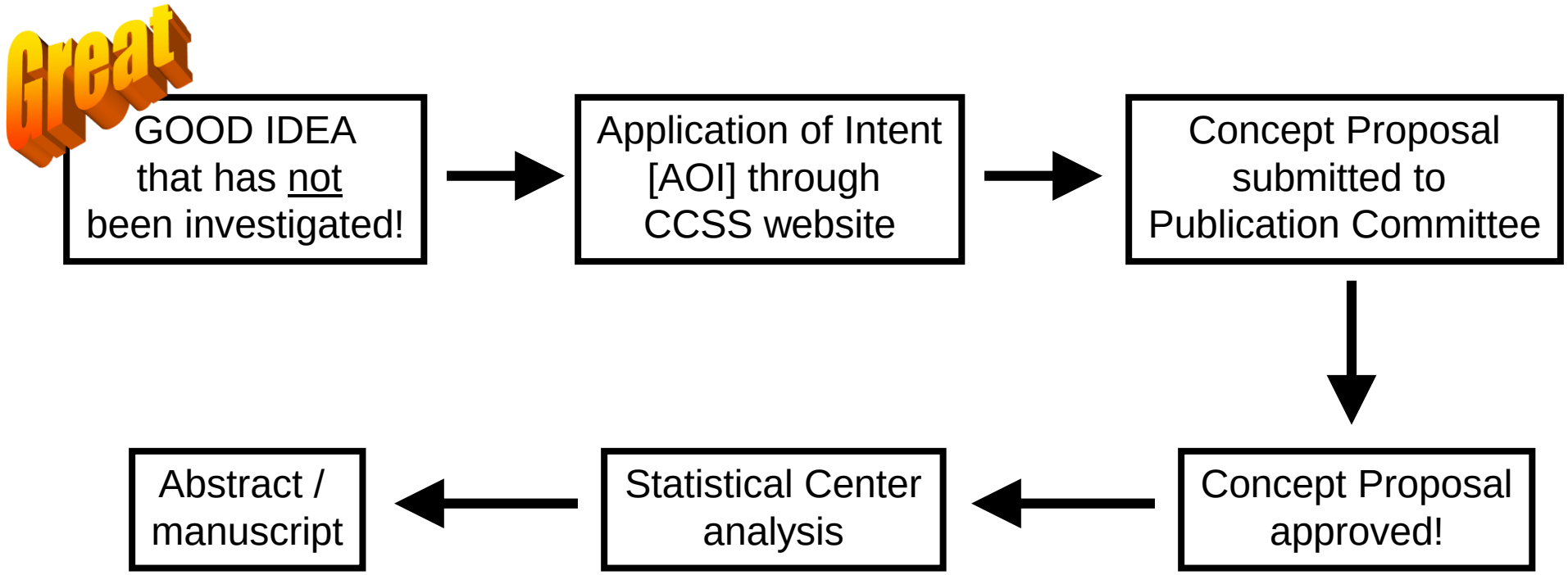
CCSS

- Retrospective & Prospective Cohort (original funding began in 1994)
  - Retrospectively assessed outcomes among original study participants diagnosed 1970-1986
  - Expanded cohort to include diagnosis years 1987-1999 starting ~2008 (so also retrospectively assessed outcomes)
  - Retrospective assessment included proxy responses (e.g., if died after reaching 5-yr survival)
  - Prospective ongoing ascertainment – currently finalizing "Follow-up 6" survey
  - Includes leukemias, lymphomas, CNS tumors, bone tumors, soft tissue sarcomas, Wilms tumors, neuroblastoma; *so does not include liver tumors, germ cell, retinoblastoma, and "adult" cancers…*
  - ~24k survivors have participated (out of ~35k eligible)

- Sibling comparison group
  - Random sample of families of survivors asked to participate, with sibling closest in age to survivor selected, with "pseudo" diagnosis date based on survivors' diagnosis date
  - ~5,000 siblings overall, not individually matched

Flowchart: Idea to Publication

CCSS



Step 1: Idea Generation

CCSS

- Check out the CCSS website
  - http://ccss.stjude.org/

- Make sure your idea is unique and feasible
  - List of published papers
  - Current active analyses (concept proposals)
  - List of proposed analyses (AOIs)

- Familiarize yourself with CCSS data
  - Will the available questionnaire data really be able to answer your research question?
  - Is the sample size sufficient?
  - Are you requesting biosamples? (more involved process)

Step 1: Understanding the Data

CCSS

- Self-reported questionnaire for 5-yr survivors & sibling cohorts
  - Medical & reproductive outcomes
  - Subsequent neoplasms
  - Health-related QoL & functional outcomes
  - Family history of cancer
  - Socioeconomic status (financial outcomes – FU6 pending)
- Chemotherapy, radiotherapy exposures
  - Medical records abstraction form (MRAF)
  - Doses available only for some but not all agents
- Surgeries (coding now nearly finalized)
- Biosamples (primarily DNA; some 2nd cancer samples) available for subset of survivors & siblings
  - Existing GWAS/WGS data available

Limited outcomes with secondary validation:

- SMN's
- Growth hormone deficiency (original cohort, baseline)

Not available generally:

- Physiologic data (except self-reported hgt/wgt)
- Lab data

Learn More | Develop a Study | Biospecimens | Public Access Data | Published Research | Tools & Documents

- Publications
- Reviews
- Abstracts
- Supplemental Information

Announcing the 2020 CCSS Career Development Awa

Application due date: October 1, 2019

Call for Applications

2019 CCSS Investigator Meeting, June 19-20

Get Meeting Agenda and Event Details

New Resource! Whole Genome Data for 3,000 survivors diagnosed 1987-1999 available for use and is accessible in the St. Jude Cloud.

Learn More

View Public Access Data Tables

Career Development Award

View What's New With CCSS

Newsletter

or the CCSS Newsletter to otifications, new ns and new abstracts that n added to the site.

Name *

Email *

I consent to receiving email communications. *

* = required field

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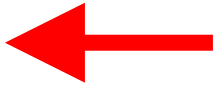
Publications

The table below is a list of CCSS Publications. You can search these publications by using one or both methods below:

1. You may click on a column heading (Author, Title, Journal, Year, Citation) to sort by that column.
2. Type in your search specifications by utilizing the "Filter" feature (dynamic search returns results from all columns as you type).

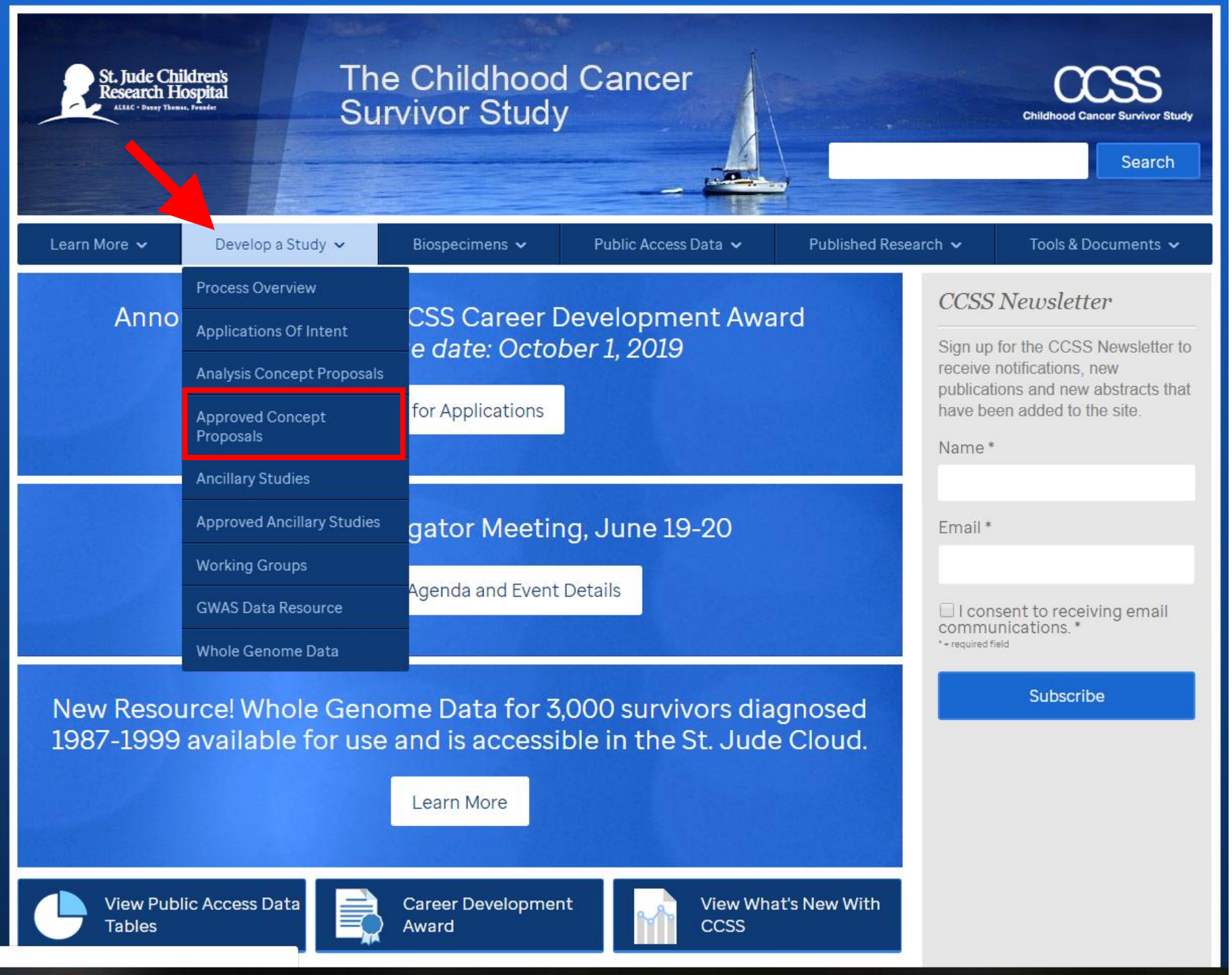
Filter:



Author	Title	Journal	Year	Citation
Ehrhardt MJ, Chen Y, Sandlund JT, Bluhm EC, Hayashi RJ, Becktell K, Leisenring WM, Metzger ML, Ness KK, Krull KR, Oeffinger KC, Gibson TM, Cairo MS, Gross TG, Robison LL, Armstrong GT, Yasui Y, Hudson MM, Mulrooney DA.	Late health outcomes following contemporary Lymphome Malin de Burkitt therapy for mature B-cell non-Hodgkin lymphoma: a report from the Childhood Cancer Survivor Study.	J Clin Oncol	2019	In Press
Dixon SB, Li N, Yasui Y, Bhatia S, Casillas JN, Gibson TM, Ness KK, Porter J, Leisenring WM, Robison LL, Hudson MM, Krull KR, Armstrong GT	Racial and ethnic disparities in neurocognitive, emotional and quality of life outcomes in survivors of childhood cancer: a report from the Childhood Cancer Survivor Study.	Cancer	2019	In Press

Related Information

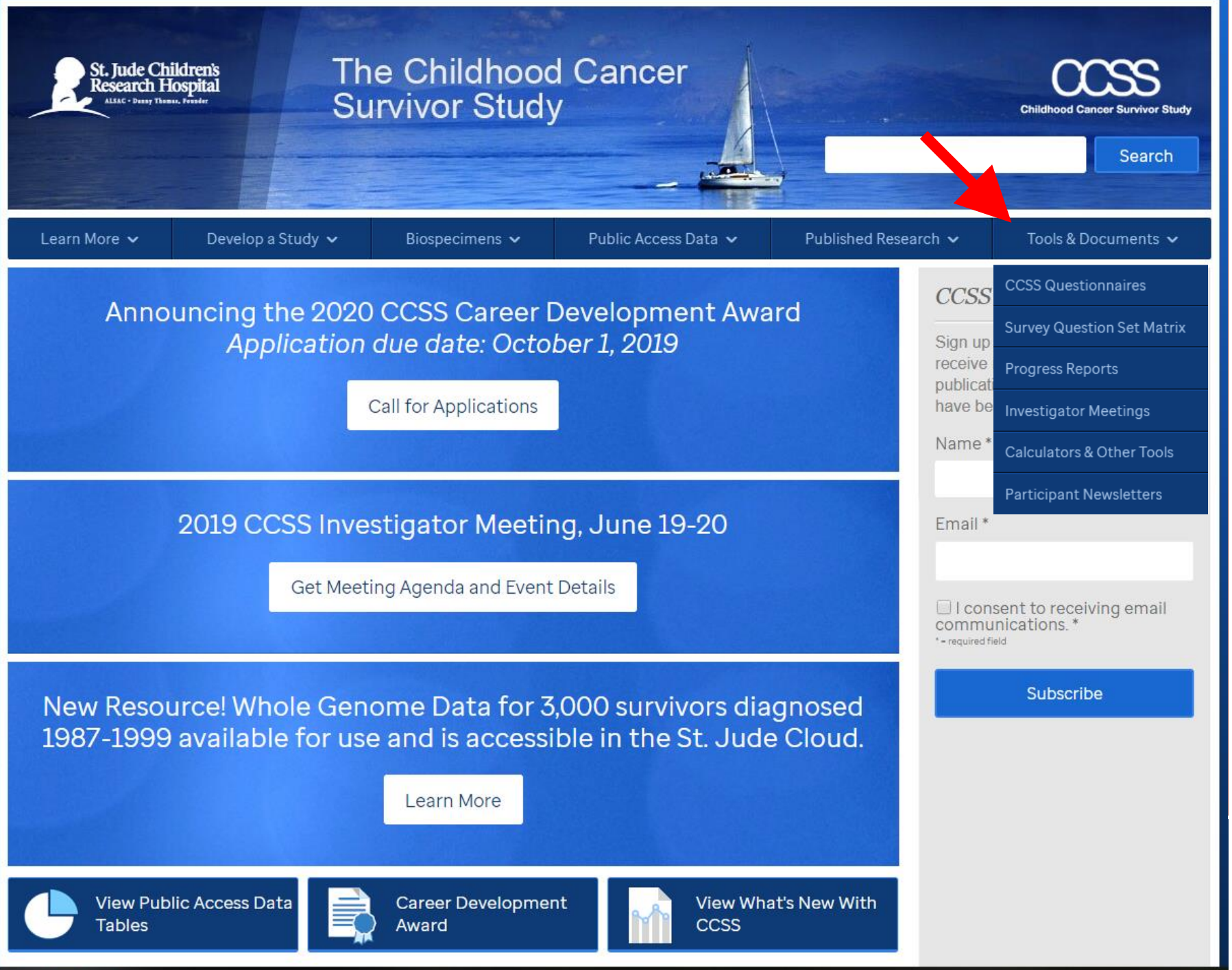
- Reviews
- Abstracts
- Supplemental Information



IMPORTANT TIPS

- Make sure there is not already someone with an approved concept focused on the same question you are interested in

- If there is an approved analysis similar (but not identical) to what you are interested in, you can also view & download the approved concept – can serve as a guide for your own proposal!



HEART AND CIRCULATORY SYSTEM

Have you ever been told by a doctor or other health care professional that you have, or have had. . .

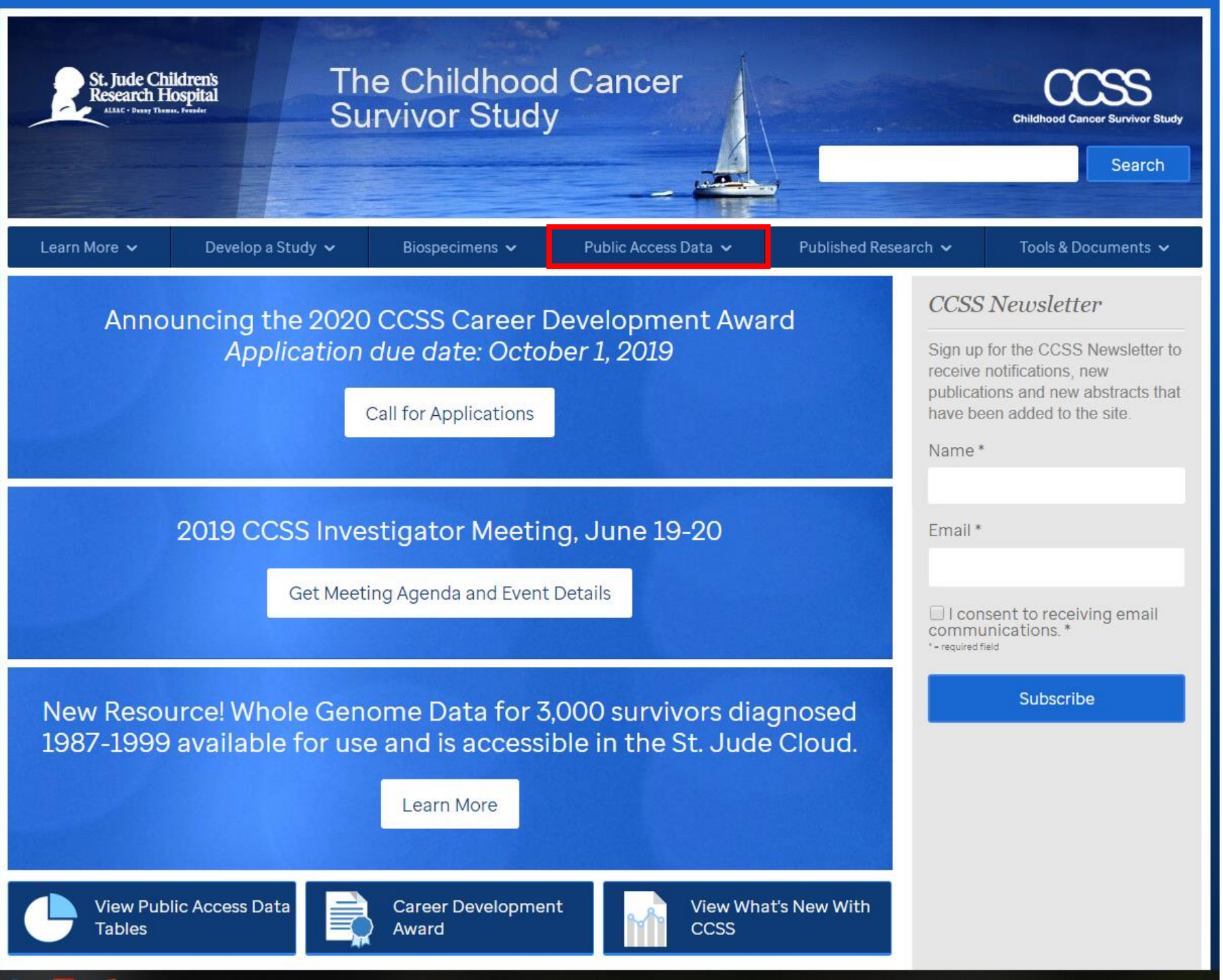
		No	Yes, and the condition is still present	Yes, but the condition is no longer present	Not sure	If yes, age at first occurrence
G1.	Congestive heart failure or cardiomyopathy (weak heart muscle)?	☐	☐	☐	☐	years ☐☐
G2.	A myocardial infarction (heart attack)?.	☐	☐	☐	☐	☐☐
G3.	Irregular heartbeat or palpitations, (Arrhythmia) requiring medication or follow-up by a doctor?	☐	☐	☐	☐	☐☐
G4.	Coronary heart disease?	☐	☐	☐	☐	☐☐

If yes, describe this problem.

G5.	Hypertension (high blood pressure) requiring medication?	☐	☐	☐	☐	☐☐

If yes, do you currently take hypertension medication?
☐ No ☐ Yes

Question group	Baseline 10/92 – 12/02	Baseline <18 10/92 – 12/02	Baseline Sibling 3/96 – 10/05	Baseline Sibling <18 3/96 – 10/05	Bone Tumors 11/00 – 7/02	Family History 8/99 – 12/04	Follow-Up 2000 2/00 – 12/02	Follow-Up 2000 Sibling 8/01 – 3/04	Follow-Up 2003 11/02 – 04/05	Follow-Up 2003 Sibling 3/04 – 10/06	Follow-Up 2003 Sibling w/Psychosocial 3/04 – 8/06	Follow-Up 2005 4/05 – 11/06	Follow-Up 2007 7/07 – 11/09	Follow-Up 2007 Sibling 7/08 – 12/09	Health Care Needs 2/01 – 10/01	Health Information Survey 11/05 – 8/06	Mammogram 5/05 – 08/06	Mammogram Sibling 6/05 – 04/06	Men's Health 0 2/06 – 11/09
Demographics	X	X	X	X			X	X	X	X	X		X	X			X	X	
Medical Care	X	X	X	X					X	X	X		X	X	X		X	X	
Medications	X	X	X	X			X	X	X	X	X		X	X					
Medical Conditions	X	X	X	X			X	X					X	X					
Brief Symptom Inventory-18 (BSI-18)	X		X						X	X	X		X	X					
Behavior Problems Index		X		X															
Pain/Anxieties/Fears (as a result of your/your brother's/sister's cancer, leukemia, tumor or similar illness, or its treatment)	X	X							X		X		X						
Cancer, Leukemia or Tumors	X	X	X	X			X	X	X	X	X	X	X	X					
Marital Status	X	X	X	X			X	X	X	X	X		X	X					
Offspring/Pregnancy History	X	X	X	X			X	X	X	X	X		X	X					
Smoking	X	X	X	X					X	X	X		X	X					
Alcohol	X	X	X	X									X	X					
Physical Activity	X	X	X	X					X	X	X		X	X					
Health Practices/Medical Screening Tests	X	X	X	X					X	X	X		X	X			X	X	
School History	X	X	X	X			X	X	X	X	X		X	X					
Employment History	X	X	X	X			X	X	X	X	X		X	X					
Family History Information (may include Genetic Conditions and Conditions Present at Birth)	X	X	X			X	X	X	X	X	X		X	X					
Genetic Conditions							X	X											
Conditions Present at Birth							X	X											
Insurance	X	X	X	X			X	X	X	X	X		X	X					
Religion	X	X	X	X															
Income	X	X	X	X					X	X	X		X	X					
Other Issues	X	X	X	X									X	X					
Future planning, updated address, and contact info	X	X	X	X			X	X	X	X	X	X	X	X					
Childhood Cancer Survivor Study-Neurocognitive Questionnaire (CCSS-NCQ)									X		X								
Profile of Mood States (POMS)																			
Alternative Medicine or Complementary Healing Techniques							X	X											
Dental Health									X	X	X								
Sun Sensitivity									X	X	X								
Radiation Treatment (2nd cancer)							X	X					X	X					
Chemotherapy Treatment (2nd cancer)													X	X					
Hospitalizations							X	X		X	X	X							
Internet related question(s)							X		X	X	X	X	X	X		X	X	X	
General Comments							X	X	X	X	X	X	X	X		X	X	X	
SF-36™ Health Survey									X	P	X								
SF-36v2™ Health Survey													P	P					
Posttraumatic Growth Inventory (PTGI)									X		X								
Cantril Ladder of Life									X		X								
Posttraumatic Stress Disorder Symptom Scale (PSS)									X		X								
Bone Health									X	X	X								
LTFU Newsletter									X						X				
Health Care Views															X		X	X	
Health and Experiences with Family and Friends															X		X	X	
Treatment Summary (patient indicates whether they have a treatment summary)									X						X		X		
Multidimensional Health Locus of Control (MHLC) Form A															X		X	X	
Health Information							X								X	X	X	X	
Pros and cons of mammography																	X	X	
Breast Cancer Risk																	X	X	
COPE																	P	P	
Short-Form Patient Satisfaction Questionnaire (PSQ-18)																			
Women's Health Questionnaire (WHQ)																			
Sexual Self-Schema Scale																			
Sexual Function/Intimacy																			
Puberty and Sexual Development																			
Fertility																			
Sperm Preservation																			
Perceptions-Infertility, low testosterone levels, sexual dysfunction																			
Testosterone Therapy																			
Erectile Dysfunction Therapy																			
Pittsburgh Sleep Quality Index (PSQI)																			
Epworth Sleepiness Scale																			
Fatigue/Sleeping							X	X											
Functional Assessment of Chronic Illness Therapy-Fatigue (FACT-F) (version 4)																			
Child Health and Illness Profile-Adolescent Edition (CHIP-AE)																			
Brief Index of Sexual Functioning for Women (BISF-W)																			
Quality of Life Scale/CANCER PATIENT/CANCER SURVIVOR					X														
Toronto Extremity Salvage Score (TESS)					X														
Reintegration to Normal Living Index (RNLI)					X														
International Index of Erectile Function Questionnaire (IIEF)																			
Menstrual History	X	X	X	X			X	X					X	X			X	X	



Public Access Data

- Detailed demographic & treatment info; ***are there likely enough exposures of interest?***
- Other outcomes
  - BMI
  - Chronic conditions
  - Pregnancy
  - Lifestyle factors
  - Education / insurance
  - Health status / QOL / symptoms
  - Cause specific mortality

Step 2: Submitting Your Idea

CCSS

- Verify that your general idea (specific aims) does not overlap with existing concept
  - Check yourself using CCSS website
  - Ask Working Group Chair

- Do you have or need a mentor?
  - Ideally someone with CCSS experience who can provide guidance & is available
  - Internally (at your institution)? If not, consider asking relevant Working Group Chair about potential external mentors

- Complete online AOI form
  - You should have existing knowledge of the literature informing your question
  - Have identified which Working Group the analysis should be assigned to
  - Proposed specific aims
  - Primary outcomes/exposures/covariates of interest

Project Title Creation of a risk score algorithm to predict individual risk of future serious cardiovascular disease

Planned research population (eligibility criteria) All CCSS participants potentially eligible for primary analysis. Individuals free of cardiovascular disease at baseline survey in secondary analyses.

Proposed specific aims 1. Create an easily applied algorithm based on available baseline cancer treatment and demographic factors to predict individual risk of future serious cardiovascular (CV) disease, both in terms of cardiac-related mortality, as well as selected self-reported cardiovascular disease outcomes. 2. Among individuals free of significant CV disease at the baseline survey, determine improvements in prediction after inclusion of available behavioral factors and underlying medical conditions known to increase subsequent CV disease risk. 3. Validate the prediction algorithm using updated data from the original CCSS cohort (follow-up 2007) and/or when data from the new expanded cohort are available. While components of risk scores will differ given the available CCSS data, this project proposes similar methodology as has been used to generate Framingham or other CV disease risk score models, e.g. using results of multivariate time-to-event analyses and receiver operating characteristic curves to determine the values of relevant coefficients and the most parsimonious model. Given the numbers of events and relative young age of the CCSS cohort, a model examining longer-term risk (e.g. 20-30 years) may be more appropriate and clinically relevant than the typical 10-year risk estimated by most current CV risk score algorithms. This proposal differs from existing CCSS CV outcome proposals in that it seeks to estimate individual-level as opposed to population-level risk, and to describe the cumulative effect of multiple potential cardiovascular risk factors as opposed to risk associated with single risk factors, adjusted for others.

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?

UNLIKELY TO BE RELEVANT TO NEW INVESTIGATORS

- Need for non-CCSS funding to complete
- Need for local (vs. CCSS) statistician to do the analysis
- Additional contact of participants
- Biological samples (use of existing genomic data is different)

Step 3: Concept Proposal

CCSS

- Notification of AOI acceptance usually occurs within 2 wks
  - AOI acceptance does not guarantee your project will happen, it just means there is no known overlap with an existing project

- Congratulations, your AOI can proceed – you can now write the full concept proposal!
  - Be aware of the timeline expected:
  - Initial rough draft / outline within 6 wks to working group chair
  - 6 mo to submit final proposal reviewed by co-investigators to “Publications” Committee (Scientific Review)

Step 3: Concept Proposal Elements

CCSS

- Title
- Working group & investigators
- Background & rationale (usually 1-2 pgs is more than sufficient)
  - Helps inform reviewers & statisticians of the context and demonstrates you have adequate contextual knowledge of the topic
- Specific Aims / Hypotheses (already part of your AOI)
- Make sure you emphasize what this new concept would add to the knowledge base… including how does it differ from prior CCSS studies (if relevant)
- Analysis Plan (hardest part)

Step 3: Concept Proposal – Analysis Plan

CCSS

- Outcome(s) of interest
- Subject population
- Key exploratory variables
- Methods / analytic plan
- Examples of specific tables / figures to be created as part of the analysis (may not necessarily end up in final manuscript)

Be as detailed as possible, including listing specific questionnaire elements if applicable.

STUDY TITLE

Predicting cardiovascular disease among childhood cancer survivors: creation and application of a risk score model

WORKING GROUP

Primary: Chronic Disease Working Group
Secondary: Epidemiology & Biostatistics

INVESTIGATORS

Name	*Institution*	*Specialty*
Eric Chow	Fred Hutchinson CRC	Pediatric Oncology
Greg Armstrong	St Jude CRH	Pediatric Oncology
William Border	Emory University	Pediatric Cardiology
Lillian Meacham	Emory University	Pediatric Endocrinology
Daniel Mulrooney	University of Minnesota	Pediatric Oncology, Internal Medicine
Kevin Oeffinger	Memorial Sloan Kettering	Family Medicine
Charles Sklar	Memorial Sloan Kettering	Pediatric Endocrinology
Yutaka Yasui	University of Alberta	Biostatistics

BACKGROUND & RATIONALE

Analyses from the CCSS have shown that among childhood cancer survivors, cardiovascular (CV) disease is an important contributor to late mortality (standardized mortality ratio = 7)[1] and morbidity[2]. Specific outcomes shown to be increased among survivors compared with siblings include myocardial infarction, congestive heart failure, pericardial disease, and valvular disease (hazard ratios [HRs] ranging from 5-6)[2]. Although overall CV mortality and serious morbidity remain rare (~1% cumulative mortality at 30 years[1]; 1.5-4% cumulative incidence of selected outcomes[2]) in this relatively young population (median age 27 years[2]), survivors also have been shown to be at increased risk for conditions that predispose towards future more serious CV disease in the general population, such as hypertension, dyslipidemia, and diabetes[3]. Selected survivor subsets also have been shown to be at increased risk of obesity[4,5]. Therefore, with continued follow-up, the prevalence and overall risk of CV disease is expected to increase disproportionately among survivors compared with siblings or age-adjusted population norms, at least for the next 10-20 years.

CCSS analyses devoted to CV outcomes published to date and/or in process (e.g. approved concept by Armstrong/Meacham currently under analysis) have primarily focused on population-level data, e.g. cumulative incidence(s) or the risk associated with single factors in multivariate models[1-3]. Such studies have identified differential risk associated with sex, age at diagnosis, race/ethnicity, physical activity, treatment era, and select treatment exposures such as higher anthracycline and chest radiation doses. However, the available data have never been analyzed with respect to predicting and discriminating risk on an individual level. With the aging of the CCSS cohort and an increased number of CV outcomes expected, we propose to use updated CCSS data (through Follow-up 2007) to estimate individual-level risk for overall and select CV outcomes, and to describe the cumulative effect of multiple potential CV risk factors in combination. Such an analysis may facilitate the creation of an easily applied, clinically relevant risk score designed to discriminate levels of future CV risk based on individual

characteristics, and thereby inform future health surveillance efforts. Given the overlap in risk factors and disease pathways but also realizing that important differences in pathophysiology exist, the proposed analysis also will examine whether a single risk score model would be useful in predicting global CV morbidity/mortality versus separate models for individual CV outcomes among childhood cancer survivors.

This proposal will employ similar methodology as has been used to generate Framingham[6] and other CV disease risk score models[7] that have been developed for the general population and have been found to be clinically applicable. Similar methodology also has been applied to cancer populations to predict other outcomes[8,9]. One difference between these studies and the proposed analysis will be our application of newer prediction methodology that takes better advantage of the prospective longitudinal follow-up data in the CCSS[10]. The other major difference for any CCSS-based effort versus existing CV risk scores will be the lack of physiologic data in CCSS. However, as the primary goal of this proposal is to define risk categories predictive of individual risk based on baseline treatment and demographic covariates, lack of information on subsequent blood pressure and laboratory values may be of less concern. However, our proposed secondary analysis will examine the effect of self-reported co-morbid conditions such as hypertension and dyslipidemia on our risk model(s). Results may provide additional impetus for future efforts to incorporate physiologic data into risk assessment and prediction of CV late effects for childhood cancer survivors.

SPECIFIC AIMS

1. Generate a prediction model based on proportional hazards models and a time-dependent receiver operating characteristic (ROC) curve approach to predict CV morbidity, mortality and selected individual CV outcomes (myocardial infarction, congestive heart failure, pericardial disease, valvular disease, and stroke) following childhood cancer treatment as associated with baseline treatment and demographic factors.
2. Among individuals free of selected CV outcomes at the time of the baseline survey, determine whether inclusion of available behavioral factors (e.g. inactive lifestyle, current tobacco use) and underlying medical conditions associated with increased CV risk (obesity, hypertension, dyslipidemia, diabetes) improve CV outcomes prediction.
3. Validate prediction model(s) created in Aims #1 and #2 by determining the discriminatory power and calibration of risk scores when applied to a subset of the CCSS cohort.

HYPOTHESES

1. Hazards will be increased for those who are: younger at time of initial cancer treatment, female, and exposed to greater cumulative doses of anthracyclines and/or chest radiotherapy.
2. A risk score model(s) can be devised that will discriminate between low, average, and high risk of CV outcomes in this population.
3. Inclusion of behavioral and co-morbid medical conditions, adjusted for current age, will improve discrimination as measured by AUC.

[TABLE 1: Multivariate hazard function coefficients (coeff) for covariates associated with each CV outcome of interest and corresponding risk score (if assigned).]

	Overall CV morbidity			CV mortality			Myocardial infarction			Congestive heart failure		
Covariate	Coeff	95% CI	Risk score	Coeff	95% CI	Risk score	Coeff	95% CI	Risk score	Coeff	95% CI	Risk score

	Pericardial disease			Valvular disease			Stroke		
Covariate	Coeff	95% CI	Risk score	Coeff	95% CI	Risk score	Coeff	95% CI	Risk score

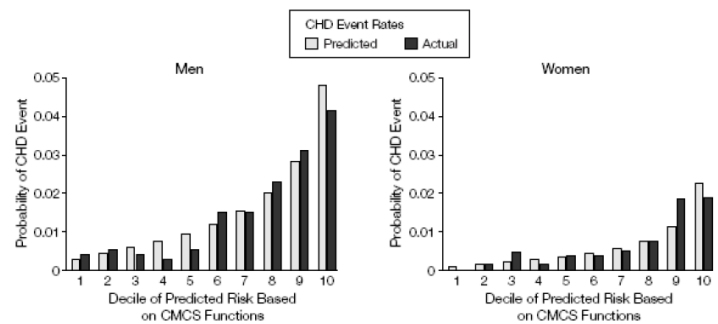
[TABLE 2: XX year cumulative incidence of CV outcomes, true-positive rates, and true-negative rates associated with each risk score category.]

Outcome	Low risk			Average risk			High risk		
	Cum. incid	True-positive rate	True-negative rate	Cum. incid	True-positive rate	True-negative rate	Cum. incid	True-positive rate	True-negative rate
Overall morbidity									
Mortality									
Myocardial infarction									
Congestive heart failure									

[FIGURE 4: Bar graphs delineating predicted vs. actual risks based on risk score predictions in the validation population.]

Example from Liu J, Hong Y, D'Agostino RB, et al. JAMA 2004;291:2591.

Figure 1. Ten-Year Prediction of CHD Events in CMCS Men and Women Using the CMCS Functions



CMCS indicates Chinese Multi-provincial Cohort Study. Coronary heart disease (CHD) events included coronary death and myocardial infarction.

Step 3: Concept Proposal

CCSS

- Other Tips
  - Early / upfront involvement of CCSS working group chair, statistician, and other parties (radiation dosimetry, pathology) to ensure feasibility
  - Use your mentor and the working group chair as a resource
  - Make sure you have time blocked out to get this done within the 6 wk / 6 mo timeline

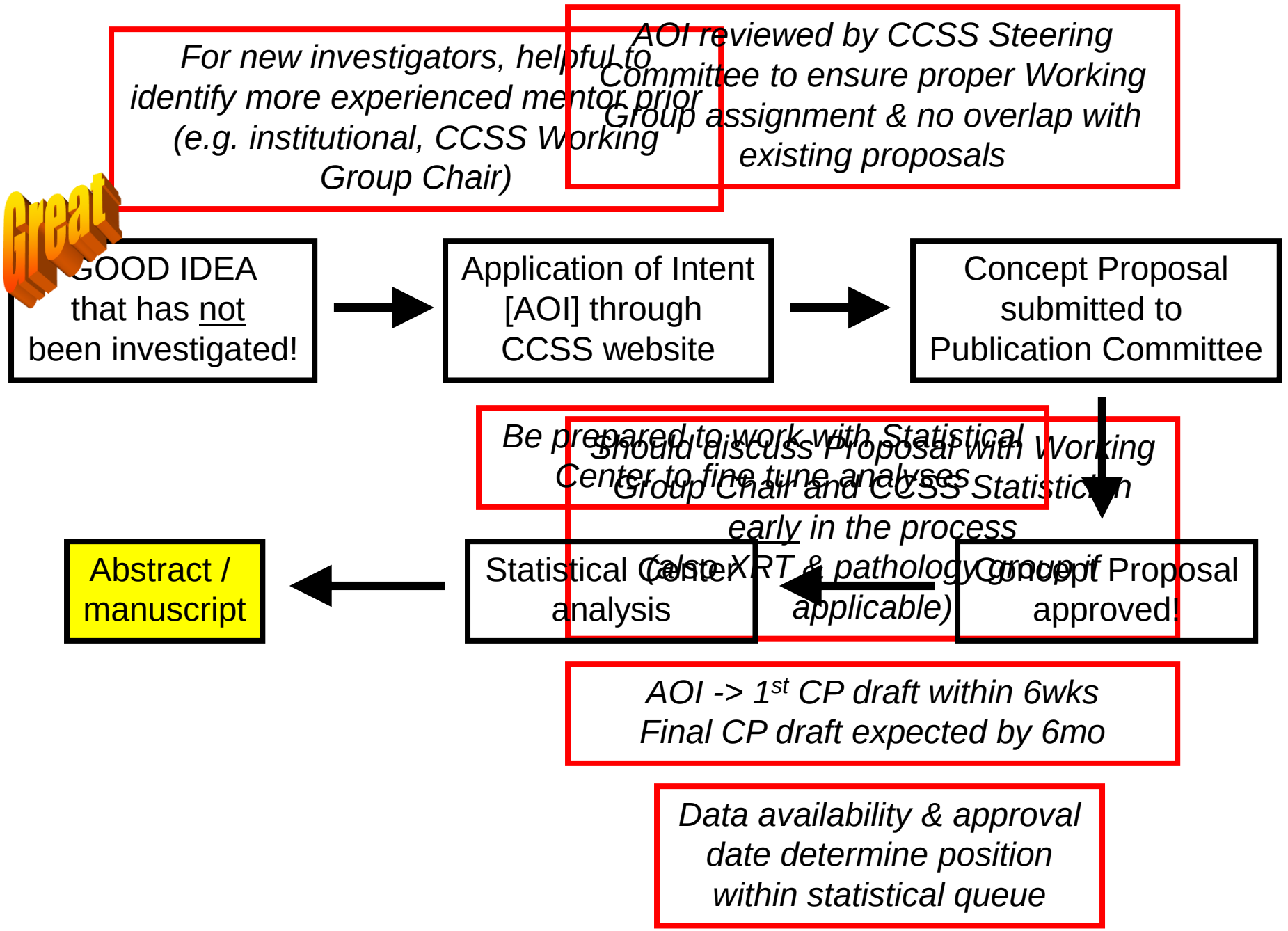
- After drafted – have mentor(s) & working group chair review before sending to all co-investigators
- When ready, send to Todd Gibson so that Publications Committee can then review it
  - Will usually be reviewed within a month
  - Will either approve, request revisions, or (rarely) defer or reject

Step 4: Analysis / Manuscript

CCSS

- Congratulations, your Proposal has been approved!
- Continue interaction with assigned CCSS statistician
  - Will enter queue… duration of wait depends on data needed, overall cohort priorities...
- Begin analysis
  - Helpful to identify potential abstract submission deadlines as goal to work towards
- Manuscript drafting

You're responsible and in charge of making it happen!


For new investigators, helpful to identify more experienced mentor prior (e.g. institutional, CCSS Working Group Chair)
AOI reviewed by CCSS Steering Committee to ensure proper Working Group assignment & no overlap with existing proposals
Great
GOOD IDEA that has not been investigated!
Application of Intent [AOI] through CCSS website
Concept Proposal submitted to Publication Committee
Be prepared to work with Statistical Center to fine tune analyses
Should discuss Proposal with Working Group Chair and CCSS Statistician early in the process
(also XRT & pathology group if applicable)
Abstract / manuscript
Statistical Center analysis
Concept Proposal approved!
AOI -> 1st CP draft within 6wks
Final CP draft expected by 6mo
Data availability & approval date determine position within statistical queue

Summary: Ingredients for Success

CCSS

- Good idea but also
  - Feasible within CCSS framework / data
  - Feasible given your own expertise / timeframe

- Persistence
  - You need to have protected time to shepherd this through
  - AOI -> CP -> Analysis -> Manuscript can take 1-2 yrs (best case scenario)
  - You're ultimately responsible and in charge of leading your project
  - Appropriate mentorship

Summary: Pitfalls to Avoid

CCSS

- Proposal dependent on future data not yet collated / collected
  - Maybe a great idea, but will this still fit your timeline?
  - This includes requesting new XRT dosimetry
- Proposal depends on external funding not yet obtained
  - More challenging for new investigator; most analyses of existing data should not require ancillary funding
- Incomplete understanding of statistical issues
  - Cohort has complex data structure; should have proposal reviewed early on by CCSS statistician(s)

CCSS 201… Ancillary Studies

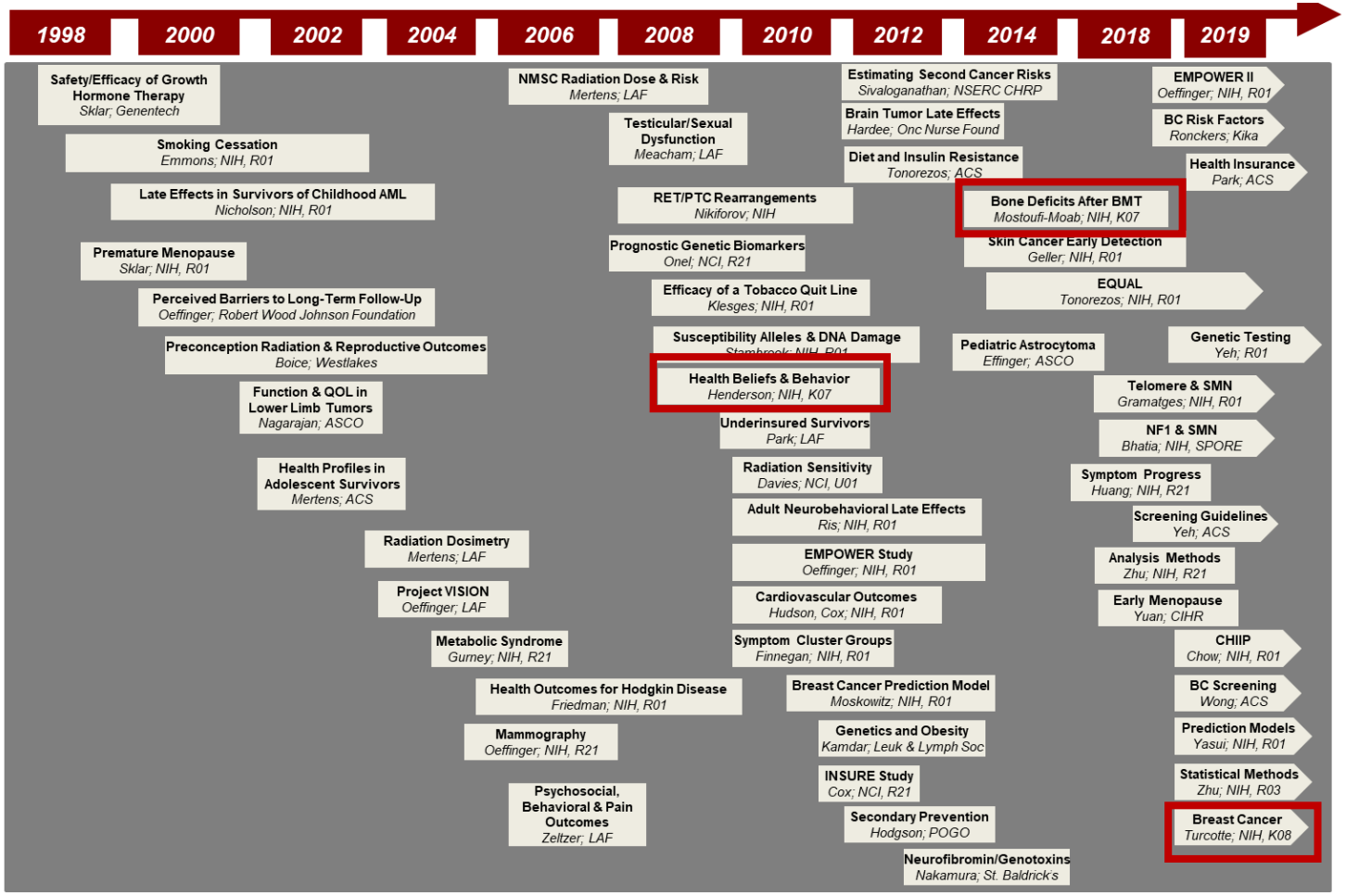
CCSS

- When extra data collection & external funding are required; includes potential mHealth studies
- Submit as AOI first; if approved, then develop ~3 page summary https://ccss.stjude.org/develop-a-study/ancillary-studies.html
- Requires review & approval by the Executive/Steering Committee prior to grant submission
  - If biologic specimens requested, Genetics WG will also require review, including by external panel to assess feasibility & to prioritize use of these limited specimens
  - Can ask for letter of support from CCSS; may need to involve select individuals as co-Is

CCSS 201… Ancillary Studies

CCSS

- Usually not the 1st study people do using CCSS (often do study w/ existing data)
- But CCSS has served as the platform for K-awards and similar CDAs



Childhood Cancer Survivor Study

An NCI-funded resource