Total Cancer Care & ORIEN

Shelley Tworoger, PhD

Associate Center Director and Division Chief

Population Science

PI, Total Cancer Care Protocol

Agenda

Total Cancer Care at Moffitt

ORIEN

Agenda

- Total Cancer Care at Moffitt

- ORIEN

TCC Guiding Principles

Total Cancer Care® aims to:

- **Engage** patients & their families in research as part of their clinical care
- **Build** a robust (bio)repository using common SOPs to enhance scientific collaboration
- **Adapt** to ever-evolving scientific priorities to collect unique data and tissue for PI- or program-driven observational research

Core Elements of TCC

Consent/ Specimens

Follow & recontact

Collect & use excess tissue

Data sharing

Participant Engagement

Online consenting

Newsletter/ Web stories

Patient Advisory Council

HRI-LIMS Linkage

Connect EHR, billing, registry, samples, etc.

Detailed pathological annotation

TCC Governance

TCC Executive Committee

Chair: Tworoger

Representation from:
- Each CCSG Program
- Disease-based CoEs
- Pathology
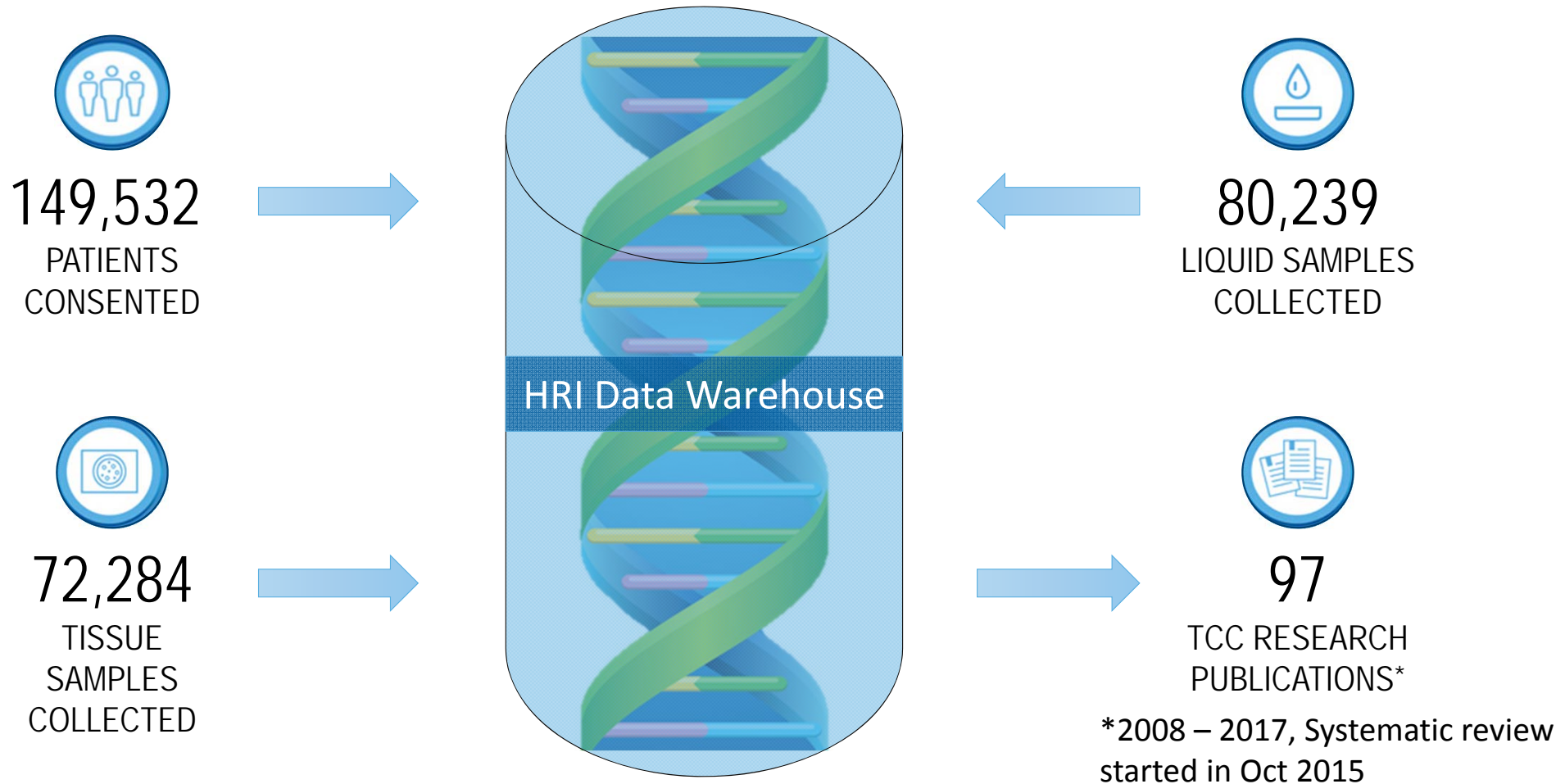- Solid & Heme clinicians

Faculty Advisory Committee

Chair: Tworoger

Strategic Operations Committee

Chair: Siegel

TCC is a Large Institutional Biorepository

149,532
PATIENTS CONSENTED

72,284
TISSUE SAMPLES COLLECTED

HRI Data Warehouse

80,239
LIQUID SAMPLES COLLECTED

97
TCC RESEARCH PUBLICATIONS*

*2008 – 2017, Systematic review started in Oct 2015

TCC supports CCSG Program Research

5 CCSG Programs

12 Clinical Departments

4 Centers of Excellence/ Institutes

6 Shared Resources

High Impact Publications
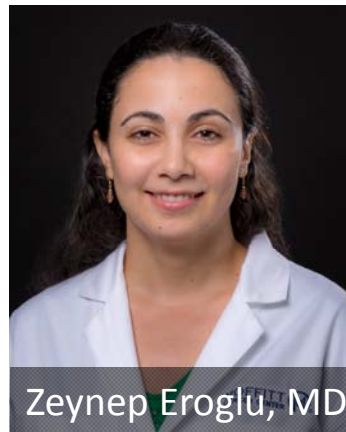
Zeynep Eroglu, MD

High response rate to PD-1 blockade in desmoplastic melanomas

Zeynep Eroglu[1,2]*, Jesse M. Zaretsky[1]*, Siwen Hu-Lieskovan[1]*, Dae Won Kim[2,3], Alain Algazi[4], Douglas B. Johnson[5], Elizabeth Liniker[6], Ben Kong[7], Rodrigo Munhoz[8,9], Suthee Rapisuwon[10], Pier Federico Gherardini[11], Bartosz Chmielowski[1], Xiaoyan Wang[1], I. Peter Shintaku[1], Cody Wei[1], Jeffrey A. Sosman[5]†, Richard W. Joseph[12], Michael A. Postow[8,9], Matteo S. Carlino[6,7,13], Wen-Jen Hwu[3], Richard A. Scolyer[6,13,14], Jane Messina[2], Alistair J. Cochran[1], Georgina V. Long[6,13,15] & Antoni Ribas[1]
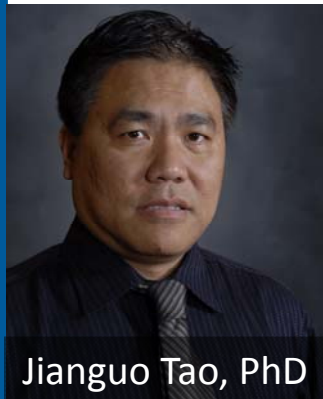

Jianguo Tao, PhD

ARTICLE

Unification of *de novo* and acquired ibrutinib resistance in mantle cell lymphoma

Xiaohong Zhao[1,*], Tint Lwin[1,*], Ariosto Silva[2], Bijal Shah[3], Jiangchuan Tao[4], Bin Fang[5], Liang Zhang[6], Kai Fu[7], Chengfeng Bi[7], Jiannong Li[8], Huijuan Jiang[9], Mark B. Meads[3], Timothy Jacobson[2], Maria Silva[2], Allison Distler[3], Lancia Darville[5], Ling Zhang[1,4], Ying Han[10], Dmitri Rebatchouk[11], Maurizio Di Liberto[12], Lynn C. Moscinski[4], John M. Koomen[1], William S. Dalton[3], Kenneth H. Shain[1,3], Michael Wang[6], Eduardo Sotomayor[13,**] & Jianguo Tao[1,3,4,**]

Brian Ruffell, PhD

Article

Cancer Cell

TIM-3 Regulates CD103^{+} Dendritic Cell Function and Response to Chemotherapy in Breast Cancer

Graphical Abstract
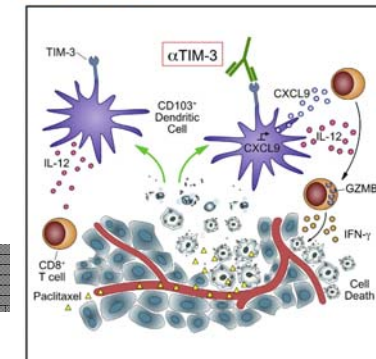
Authors
Álvaro de Mingo Pulido, Alycia Gardner, Shandi Hiebler, ..., Matthew F. Krummel, Lisa M. Coussens, Brian Ruffell

Correspondence
brian.ruffell@moffitt.org

In Brief
de Mingo Pulido et al. show that intratumoral CD103^{+} dendritic cells (DCs) highly express TIM-3. Anti-TIM-3 antibody promotes CXCL9 expression by these DCs, which enhances the function of CD8^{+} T cells, thereby improving paclitaxel's therapeutic activity in breast cancer models.
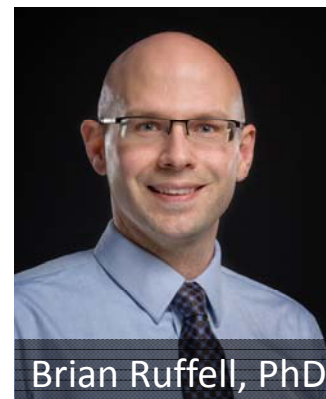
High Impact Publications

Eric Padron, MD

Articles

Clonal haemopoiesis and therapy-related myeloid malignancies in elderly patients: a proof-of-concept, case-control study

Nancy K Gillis PharmD [a, b, f], Markus Ball PhD [c], Qing Zhang MD [c], Zhenjun Ma PhD [d], YuLong Zhao PhD [c], Sean J Yoder MS [e], Maria E Balasis BS [c], Tania E Mesa BS [e], David A Sallman MD [c], Prof Jeffrey E Lancet MD [c], Prof Rami S Komrokji MD [c], Prof Alan F List MD [c], Prof Howard L McLeod PharmD [a, b], Prof Melissa Alsina MD [c], Rachid Baz MD [c], Kenneth H Shain MD [c], Dana E Rollison PhD [a, b], Dr Eric Padron MD [c] ✉

Javier Torres-Roca, MD

Articles

A genome-based model for adjusting radiotherapy dose (GARD): a retrospective, cohort-based study

Jacob G Scott MD [a, b], Anders Berglund PhD [c], Prof Michael J Schell PhD [c], Ivaylo Mihaylov PhD [f], William J Fulp MS [c], Binglin Yue MS [c], Eric Welsh PhD [c], Jimmy J Caudell MD [a], Kamran Ahmed MD [a], Tobin S Strom MD [a], Eric Mellon MD [a], Puja Venkat MD [a], Prof Peter Johnstone MD [a], Prof John Foekens MD [g], Prof Jae Lee PhD [c], Prof Eduardo Moros PhD [a], Prof William S Dalton MD [d], Steven A Eschrich PhD [c] ... Dr Javier F Torres-Roca MD [a, e] ✉

High Impact Publications

Hatem Soliman, MD

Ken Shain, PhD, MD

nature
nature COMMUNICATIONS
Cancer Cell
THE LANCET Oncology
Breast Cancer RESEARCH
Cancer Research

Prabhakaran *et al. Breast Cancer Research* (2017) 19:71
DOI 10.1186/s13058-017-0864-z

Breast Cancer Research

RESEARCH ARTICLE   Open Access

Evaluation of invasive breast cancer samples using a 12-chemokine gene expression score: correlation with clinical outcomes

Sangeetha Prabhakaran[1], Victoria T. Rizk[2], Zhenjun Ma[1], Chia-Ho Cheng[1], Anders E. Berglund[1], Dominico Coppola[1], Farah Khalil[1], James J. Mulé[1] and Hatem H. Soliman[1*]

Integrated Systems and Technologies: *Mathematical Oncology*

Cancer Research

An *Ex Vivo* Platform for the Prediction of Clinical Response in Multiple Myeloma

Ariosto Silva[1], Maria C. Silva[1], Praneeth Sudalagunta[1], Allison Distler[2], Timothy Jacobson[1], Aunshka Collins[2], Tuan Nguyen[2], Jinming Song[3], Dung-Tsa Chen[4], Lu Chen[4], Christopher Cubitt[5], Rachid Baz[2], Lia Perez[6], Dmitri Rebatchouk[7], William Dalton[8], James Greene[9], Robert Gatenby[10], Robert Gillies[1], Eduardo Sontag[9], Mark B. Meads[2,11], and Kenneth H. Shain[2,11]

High Impact Publications

nature

nature COMMUNICATIONS

Cancer Cell

THE LANCET Oncology

Breast Cancer RESEARCH

Cancer Research

Molecular Cancer Therapeutics

Leukemia & Lymphoma

Ernst Schonbrunn, PhD

Javier Pinilla-Ibarz, MD

Small Molecule Therapeutics

Molecular Cancer Therapeutics

Potent Dual BET Bromodomain-Kinase Inhibitors as Value-Added Multitargeted Chemical Probes and Cancer Therapeutics

Stuart W. Ember[1], Que T. Lambert[2], Norbert Berndt[1], Steven Gunawan[1], Muhammad Ayaz[3], Marilena Tauro[4], Jin-Yi Zhu[1], Paula J. Cranfill[1], Patricia Greninger[4], Conor C. Lynch[5], Cyril H. Benes[4], Harshani R. Lawrence[1,3], Gary W. Reuther[2], Nicholas J. Lawrence[1], and Ernst Schönbrunn[1]

ORIGINAL ARTICLE: CLINICAL

Association between immunoglobulin heavy-chain variable region mutational status and isolated favorable baseline genomic aberrations in chronic lymphocytic leukemia

Jose D. Sandoval-Sus[a*], Julio C. Chavez[b*], Samir Dalia[c], Syeda Mahrukh Hussnain Naqvi[d], Chetasi Talati[a], Lisa Nodzon[b], Mohamed A. Kharfan-Dabaja[e] and Javier Pinilla-Ibarz[b]

[a]H. Lee Moffitt Cancer Center and Research Institute, University of South Florida, Tampa, FL, USA; [b]Department of Malignant Hematology, H. Lee Moffitt Cancer Center and Research Institute, Tampa, FL, USA; [c]Mercy Clinic Oncology and Hematology, Joplin, MO, USA; [d]Department of Biostatistics and Bioinformatics, H. Lee Moffitt Cancer Center and Research Institute, Tampa, FL, USA; [e]Department of Blood and Marrow Transplantation, H. Lee Moffitt Cancer Center and Research Institute, Tampa, FL, USA

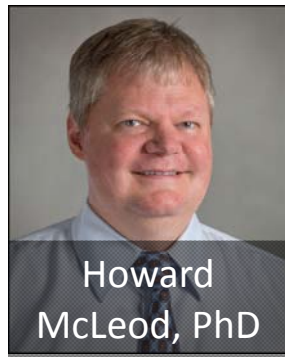# High Impact Publications

nature

nature COMMUNICATIONS

Cancer Cell

THE LANCET Oncology

Breast Cancer RESEARCH

Cancer Research

Molecular Cancer Therapeutics

Leukemia & Lymphoma

Howard McLeod, PhD

Oncotarget

JOURNAL OF INVESTIGATIVE DERMATOLOGY

Research Paper

Tumor exome sequencing and copy number alterations reveal potential predictors of intrinsic resistance to multi-targeted tyrosine kinase inhibitors

Nancy K. Gillis[1,2,3], Daniel M. Rotroff[4], Tania E. Mesa[5], Jiqiang Yao[6], Zhihua Chen[6], Michael A. Carulli[7], Sean J. Yoder[5], Christine M. Walko[1,2], Jamie K. Teer[8] and Howard L. McLeod[1,2]

JOURNAL OF INVESTIGATIVE DERMATOLOGY

Letter to the Editor

Incidence and Triggers of Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis in a Large Cancer Patient Cohort

Nancy K. Gillis [1, 2, 3], J. Kevin Hicks [1, 2], Gillian C. Bell [4], Ashley J. Daly [1], Peter A. Kanetsky [1], Howard L. McLeod [1, 2]

Impact: Supporting Junior Faculty

Jenny Permuth, PhD
Cancer Epidemiology Program
Assistant Member

- Pilot funding
- Targeted TCC consent of eligible patients
- SOP development
- Pilot consenting "healthy" controls

- State of Florida Infrastructure grant
- Extend study to 17 other sites in FL
- Collect 750 patients over 3 years

- 2nd percentile R01
- Multidisciplinary collaborations
- 2-year award from M2Gen to extend to ORIEN sites

Impact: Supporting Large Grants

Myeloma SPORE
PI: Sullivan

Skin SPORE
PI: Sondak/ Smalley

Ovarian P01
PI: Tworoger

Disparities P01
PI: TBD

Lung P01
PI: Flores

LLS SCOR
PI: Cleveland

Prostate P01
Site PI: Park/Sellers

U54 with Ponce HSU,
PI: Sullivan/ Wright

Ovarian U19
PI: Sellers

EDRN
PI: Heine/ Gillies/ Schabath

TOTAL CANCER CARE®

Submitted/planned grants

Funded/on-going grants
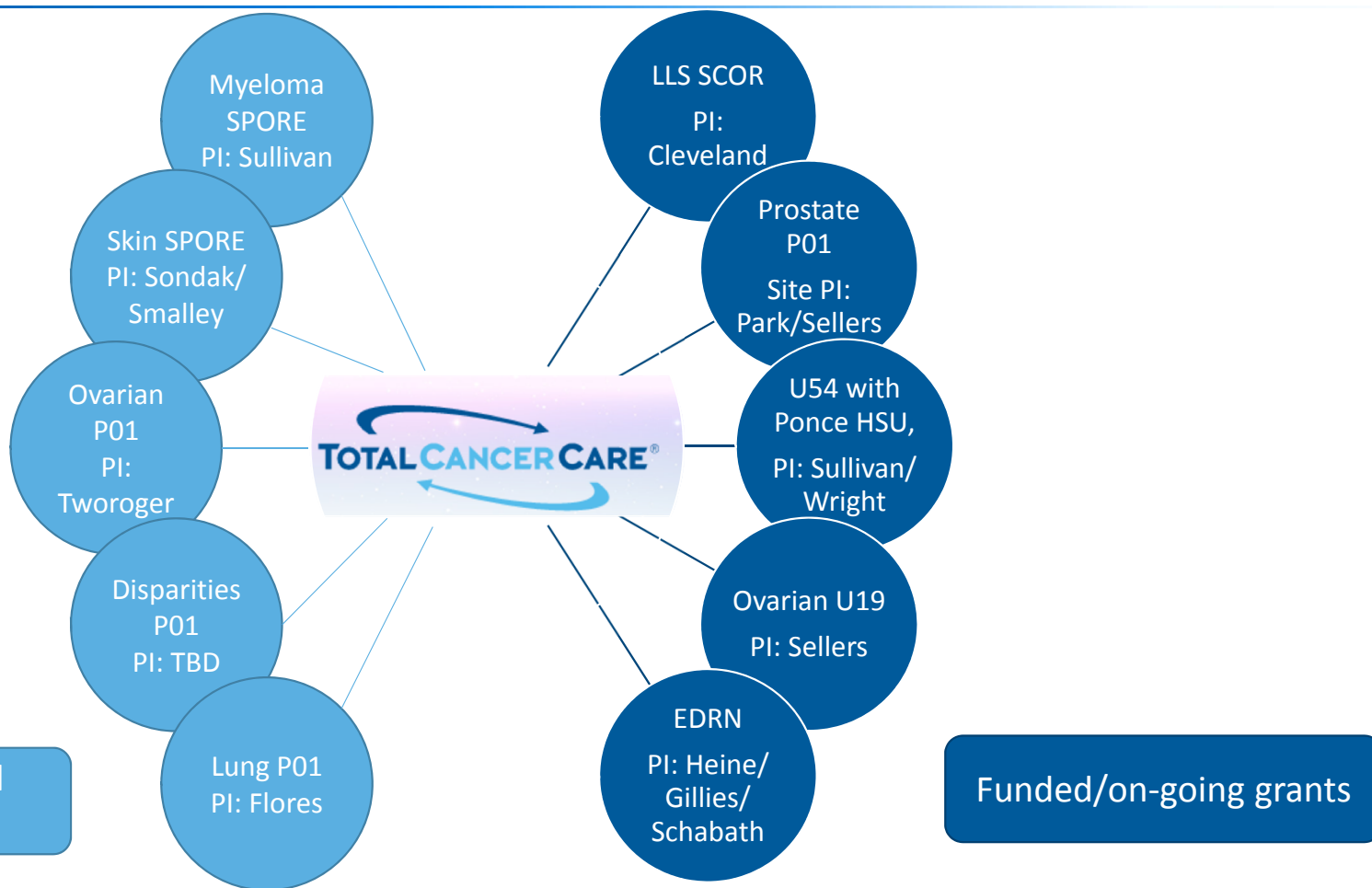
TCC: Extending our Impact

Transformative	• Rapid protocol deployment to partner sites • Large-scale liquid biopsy initiative	
Adjacent	• PI-directed biobanking initiatives • Targeted populations with deep phenotyping (e.g., serial samples, PROs) • Enhanced data and sample sharing	
Core	• Consenting & specimen acquisition • Patient-participant engagement • HRI – LIMS linkage	
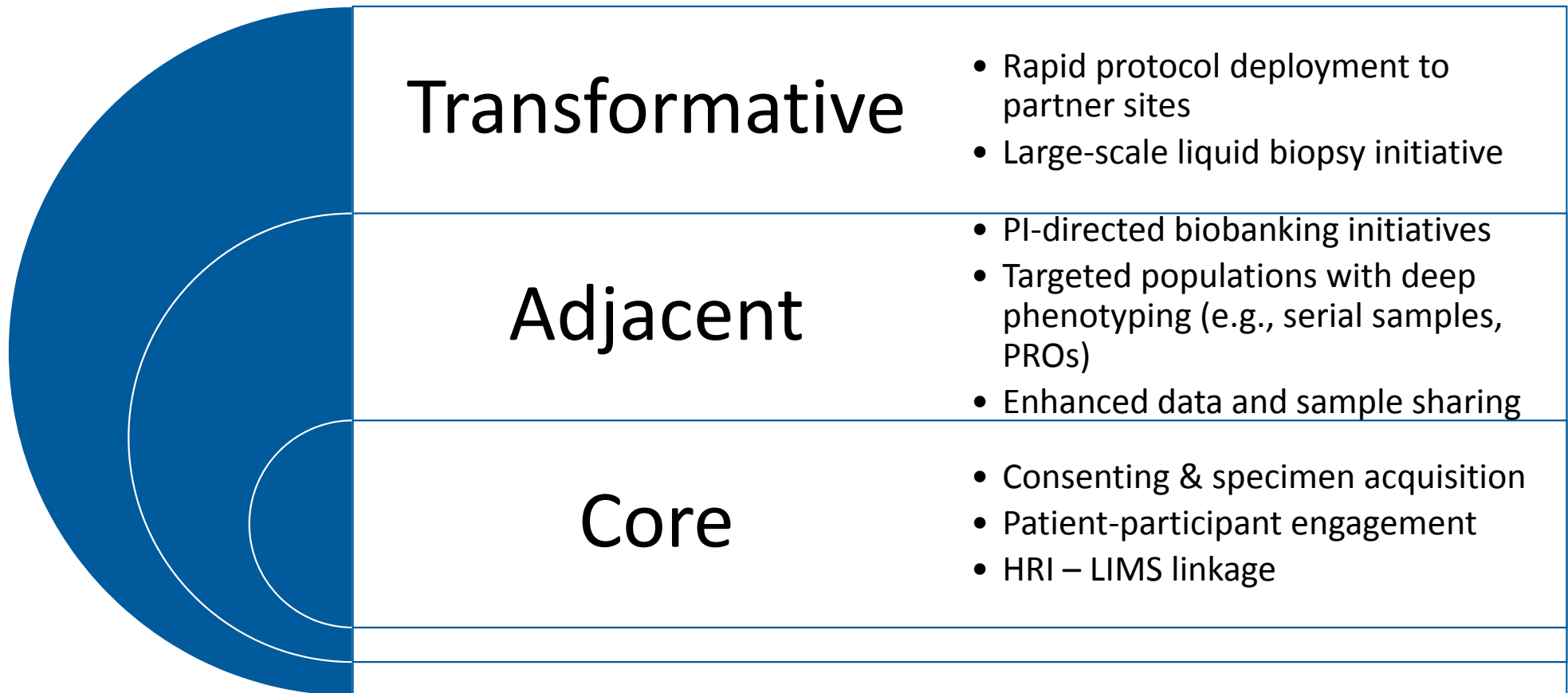
Agenda

Total Cancer Care at Moffitt

ORIEN

ORIEN Overview

ORIEN
Total Cancer Care

TCC Protocol

- Ensure quality and consistency of data
- Link clinical and molecular data in a unified database
- Engage patients directly for research over the course of their lives

Mission
Accelerate the discovery and delivery of personalized medicine
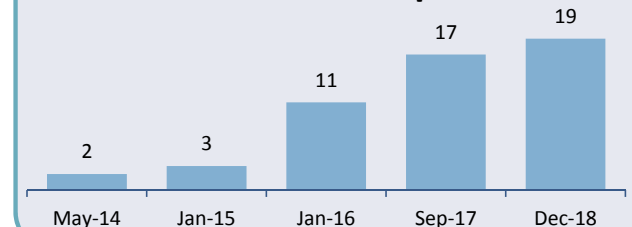
ORIEN

- Encourage collaboration and inclusiveness across leading cancer center communities
- Provide near real-time access to longitudinal patient data
- Establish trusted collaborative relationships

ORIEN Sites

ORIEN
Total Cancer Care
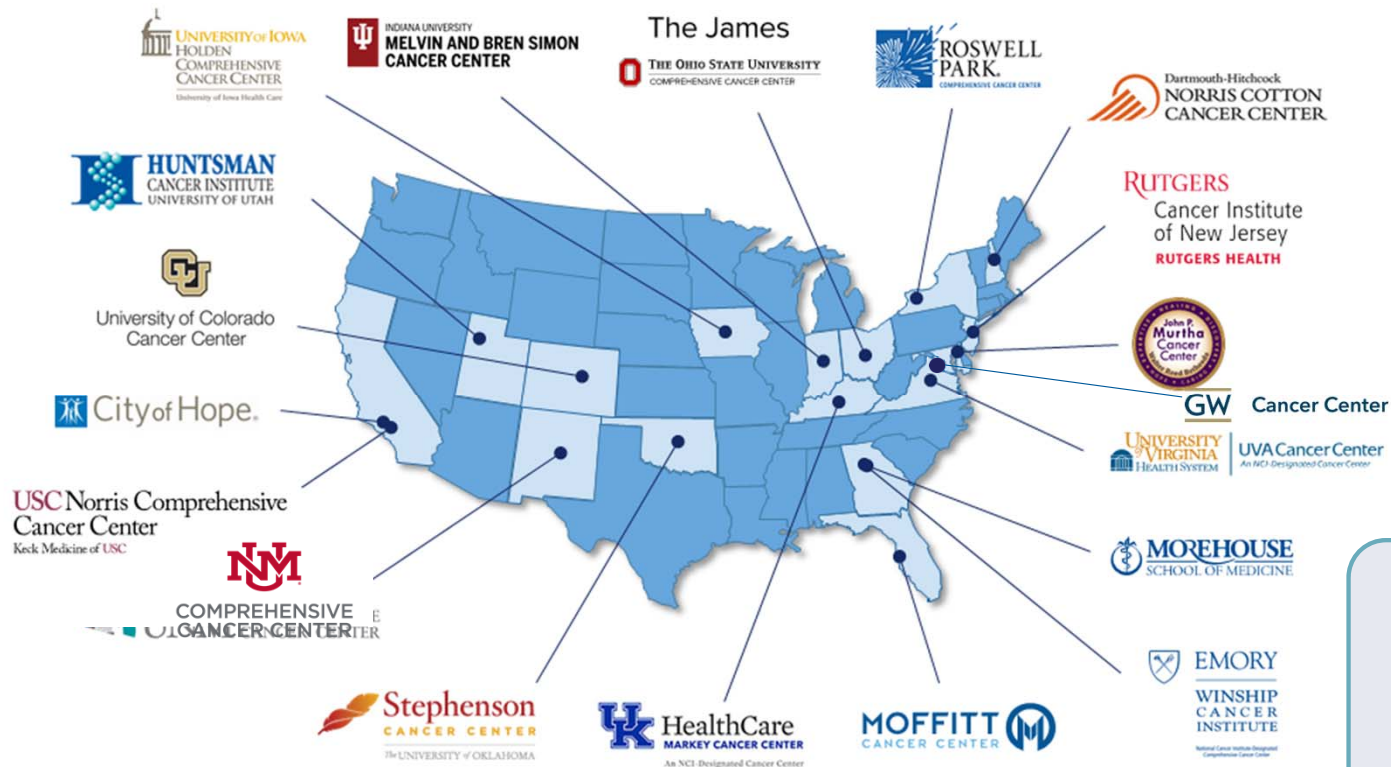
ORIEN Membership Growth
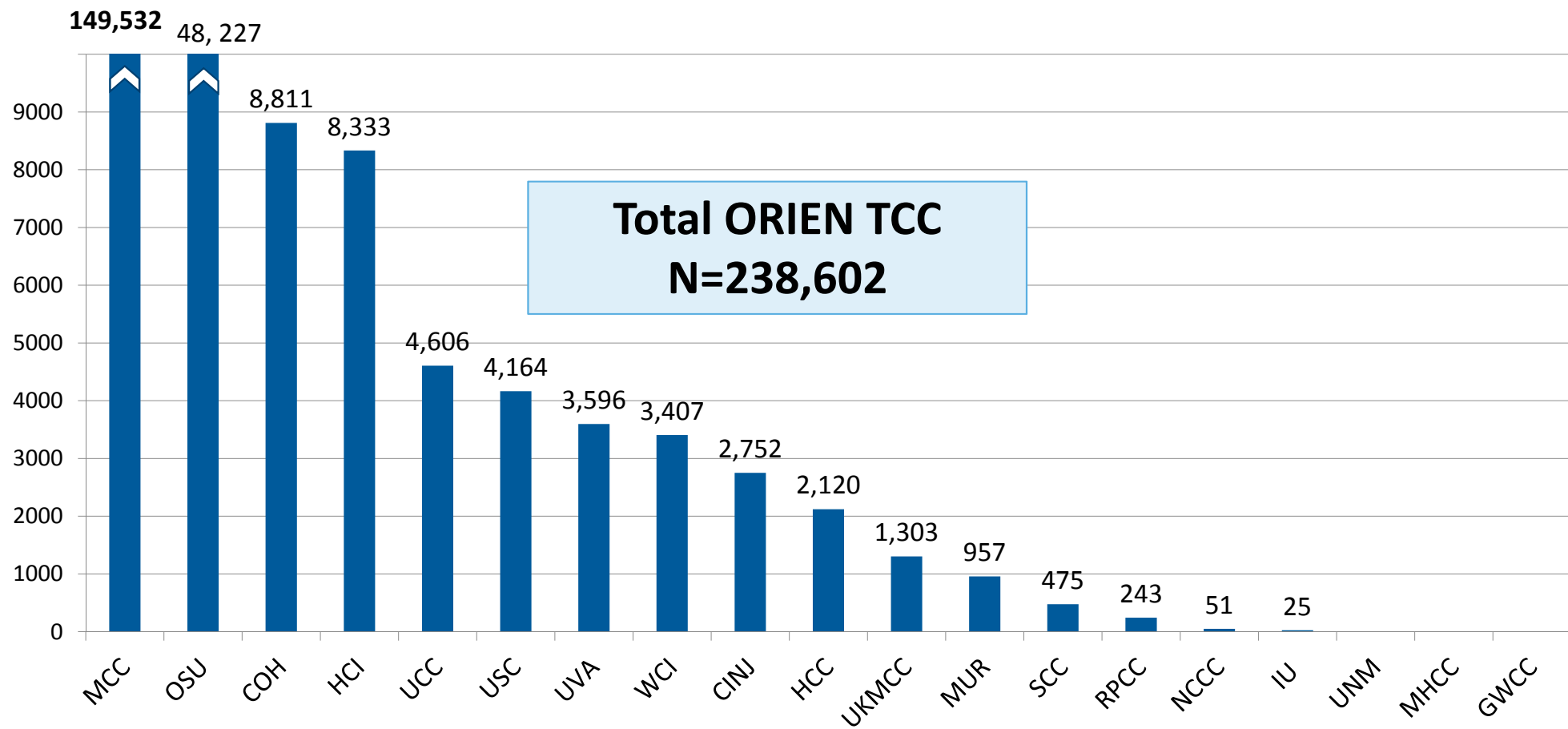
May-14	Jan-15	Jan-16	Sep-17	Dec-18
2	3	11	17	19

What is ORIEN Avatar™?

A research program under the TCC protocol to maintain surveillance of cancer patients with high risk diseases in support of the greater TCCP objectives

All Patients Seen at ORIEN Institutions
- Patients for TCC Protocol

Patients Consented to Total Cancer Care
- Biospecimens
- Data
- Future research

Patients eligible for ORIEN Avatar
- Late stage and/or high risk cancers
- Specimens for molecular analysis
- Deep clinical data
- Match patients to clinical trials
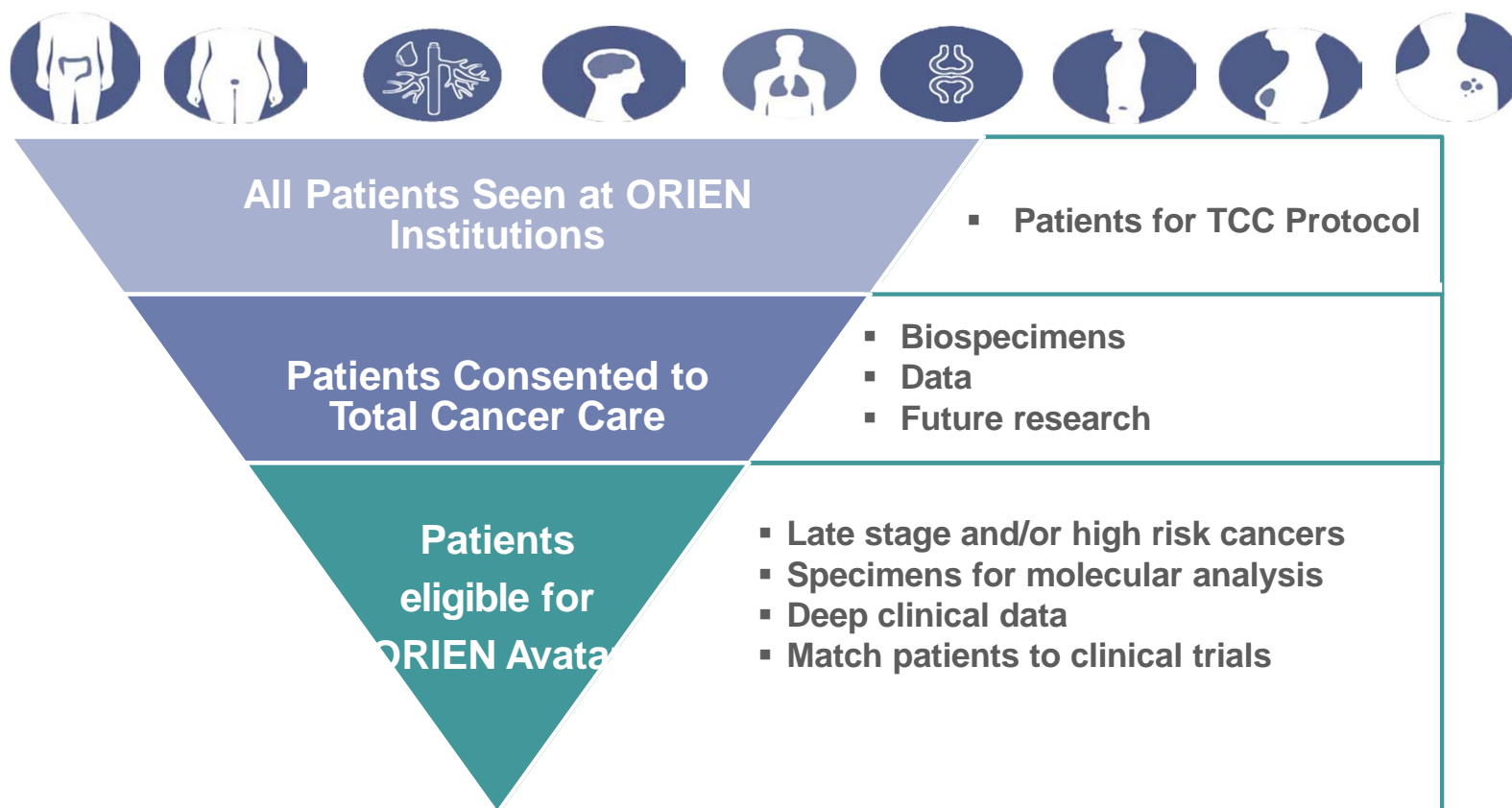
ORIEN Avatar Summary

Total Cancer Care (ORIEN)

- Central laboratory for sequencing across ORIEN

- Research grade molecular data

- Abstraction of clinical outcomes

- Raw data returned to each site

- ORIEN-wide target of 15,000 samples

- ORIEN Clinical Trial Network

	All ORIEN	**Moffitt**
Tumor whole exome seq. (300X)	8042	2911
Germline whole exome seq. (100x)	6604	1711
Tumor RNA seq. (100 mil. reads)	4584	2635
Clinical abstraction	9658	3178
Avatar	8157	2650

As of 1/17/19

ORIEN-based Awards

ORIEN Total Cancer Care

- MM SPORE
  PI: Sullivan
- Lung SPORE
  PI: Flores
- Chemo-induced nausea R01
  PI: Jim
- Colon Cancer in Hispanics
  PI: Schmit
- DOD Melanoma
  PI: Smalley
- Thyroid Cancer
  PI: Chung
- Renal Cell GWAS
  PI: Manley
- Micro-biome
  PI: Pierce
- Pancreatic ORIEN NOVA
  PI: Permuth
- AML ORIEN NOVA
  PI: Bejanyan

Submitted/planned grants

Funded/on-going grants
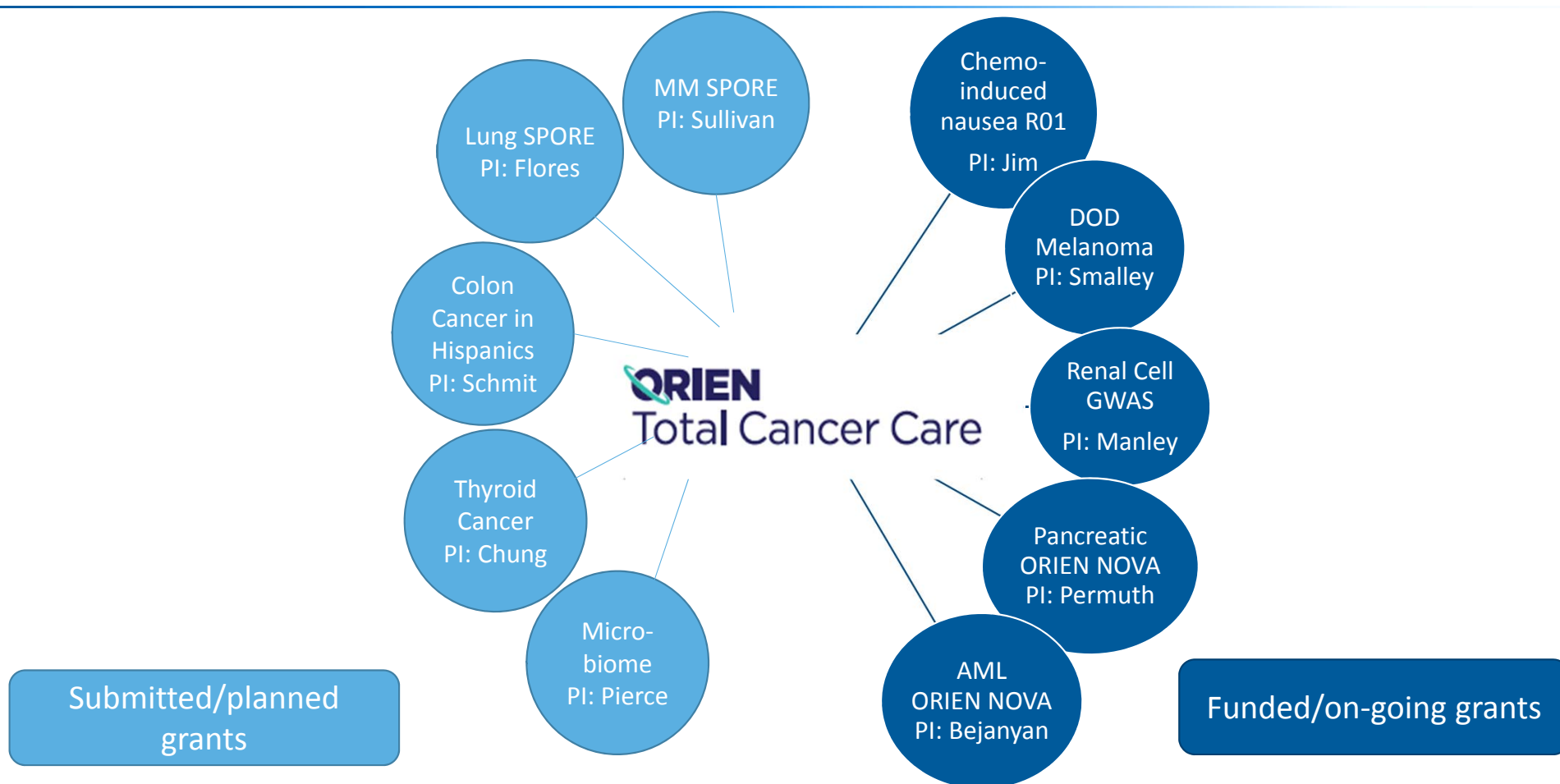
Use of ORIEN Avatar Data for MM SPORE Application

Dan Sullivan,
MD

- All Projects utilizes Moffitt Avatar data (N>644 patients) for predictive biomarker development leading to phase I trials
- Anticipate molecular data on 200 MM samples/year (SPORE trials and non-SPORE)
- Integration of Avatar data with Moffitt's innovative _Ex Vivo_ Mathematical Malignancy Advisor (EMMA) drug sensitivity test
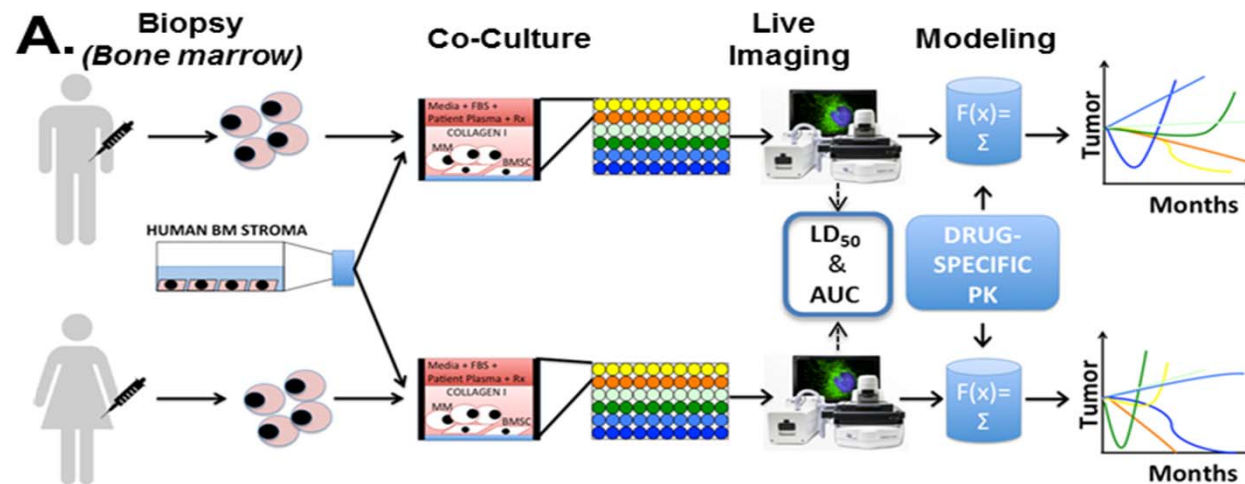
Questions

1. Where should we highlight TCC/ORIEN as a key research platform in the CCSG application?

2. How do we set expectations in the CCSG application about the impact of ORIEN, given that most ORIEN sites are new and it takes time for data to mature?

Data Science Update

Dana E. Rollison, PhD

Associate Center Director and Division Chief

Vice President, Chief Data Officer

MOFFITT CANCER CENTER

TO CONTRIBUTE TO THE PREVENTION AND CURE OF CANCER

Agenda

- Faculty recruitment

- Moffitt Analytics Platform: The Next Generation

Agenda

- Faculty recruitment

- Moffitt Analytics Platform: The Next Generation

Joseph "Ross" Mitchell, PhD

Previous Positions

- Professor of Radiology, Mayo Clinic, Phoenix, AZ
- Professor of Radiology & Biomedical Engineering, University of Calgary, Canada
- Founding Scientist, Calgary Scientific, Inc.
- Fellow, Alberta Machine Intelligence Institute, University of Alberta, Canada

Education and training

- MSc, Computer Science, U of Regina & Alan Blair Cancer Clinic, Regina SK, Canada
- PhD, Medical Biophysics, Western U, London ON, Canada
- Postdoc, Department of Radiology, London HSC, London ON, Canada

Methodological research

- Quantifying multiscale competitive landscapes of clonal diversity in glioblastoma (U01 CA220378). 09/2017-08/2022. Role: MPI
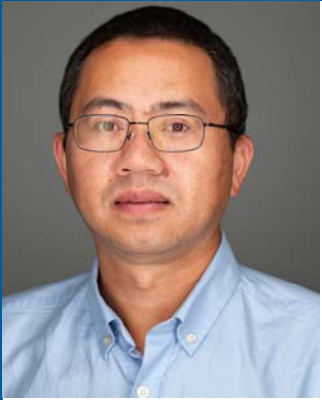
Collaborative research

- Artificial intelligence, machine learning, deep learning
- Medical imaging, radiomics, time/frequency analysis, signal & image processing

- Artificial Intelligence Officer
- Senior Member
- Department of Biostatistics & Bioinformatics
- Joined: January 2019

New Faculty

Qianxing "Quincy" Mo, PhD
- From Baylor
- Associate Member
- Department of Biostatistics & Bioinformatics
- Cancer Biology & Evolution Program
- Joined: July 2018

Naomi Brownstein, PhD
- From Florida State
- Assistant Member
- Department of Biostatistics & Bioinformatics
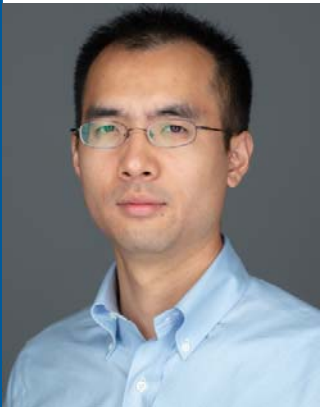- Program to be determined
- Joined: January 2019

Mingxiang Teng, PhD
- From Dana Farber
- Assistant Member
- Department of Biostatistics & Bioinformatics
- Cancer Biology & Evolution Program
- Joined: October 2018

Aik-Choon Tan, PhD
Vice-Chair, Biostatistics & Bioinformatics

Joins Moffitt Spring 2019

Previous Position

- Associate Professor, Department of Medicine, U of Colorado, Denver

Education and training

- PhD in computer science/bioinformatics from University of Glasgow
- Postdoc, Johns Hopkins Sidney Kimmel Cancer Center

Research Interests

- Translational bioinformatics and cancer systems biology, primarily by developing computational and statistical learning methods for the analysis & integration of high-throughput cancer "omics" data in understanding & overcoming treatment resistance mechanisms in cancer
- Currently working on 3 interconnected research themes:
  - Developing and Validating Predictive Biomarkers for Personalized Medicine
  - Overcoming Treatment Resistance

IMO Faculty Member, TBD

Winners of the IMO Workshop 2018:
- "Designing and evaluating evolutionary therapies for advanced progressive thyroid cancer"
- Team lead: Joel Brown, PhD, Senior Member, IMO

- Assistant or Associate Member

- Expertise of new faculty member should:
  - Complement expertise of other Integrated Mathematical Oncology (IMO) faculty
  - Align with clinical areas of collaboration

- Promising candidate interviewed in Jan 2019

Agenda

○ Faculty recruitment

● Moffitt Analytics Platform: The Next Generation

IMPACT 2028: Digital Care & Discovery Accelerator

Curated Data Marts Advancing Discovery

New data sources to be combined with data from the Health & Research Informatics Platform (HRI)	Examples of Curated Clinical Data Marts (CCSG Program alignment)			
	Precision Medicine (CBMM)	Imaging/ Radiomics (CE, CBE)	Immuno-oncology (IMM)	Payer Strategies (HOB)
Molecular data	X	X	X	X
Curated drug data	X	X	X	X
NLP for pathology data	X	X	X	X
Image "bank"	X	X	X	
Abstracted data on outcomes (Avatar, Flatiron)	X	X	X	X
Disease-specific abstracted outcomes	X	X	X	X
Patient reported symptoms, quality of life	X	X	X	X

Research & Clinical Molecular Data Integration

Sequence Type	Panel Description	# Samples
Research grade (TCC):		
Merck RNA	Gene expression profiles for TCC tumor tissues (2006-2012)	16,000
Merck DNA	NGS for tumor tissues collected for TCC (2006-2012)	3,380
BMS DNA	NGS for tumor tissues collected for TCC (2012-2014)	750
Avatar DNA/RNA	Tumor and germline DNA, tumor RNA for TCC/Avatar patients (2016-present)	> 1,700
Clinical grade:		
Pierian Solid	TruSight Tumor 26 (2014-2017, 26 genes): targeted sequencing panel for solid tumors	> 3,350
Pierian Solid	Moffitt STAR (2017-present, 170 genes): NGS targeting DNA and RNA from same FFPE sample	> 4,500
PierianDx Myeloid	TruSeq Myeloid (2014-2016), 32 genes),TruSight Myeloid (2016-present, 54 genes)	> 6,300
Foundation Solid	FoundationOne (2016-2018), 324 genes), FoundationOne CDx (2018-present, 325 genes): genomic profile for solid tumors	> 1,400
Foundation Heme	FoundationOne Heme (2016-present, 437 genes for DNA, 265 for RNA): genomic profile for hematologic malignancies and sarcomas	> 740

TCC BMS & Merck DNA (March)

PierianDx Solid (October)

Foundation Solid (June)

Jan 2019 — Dec 2020

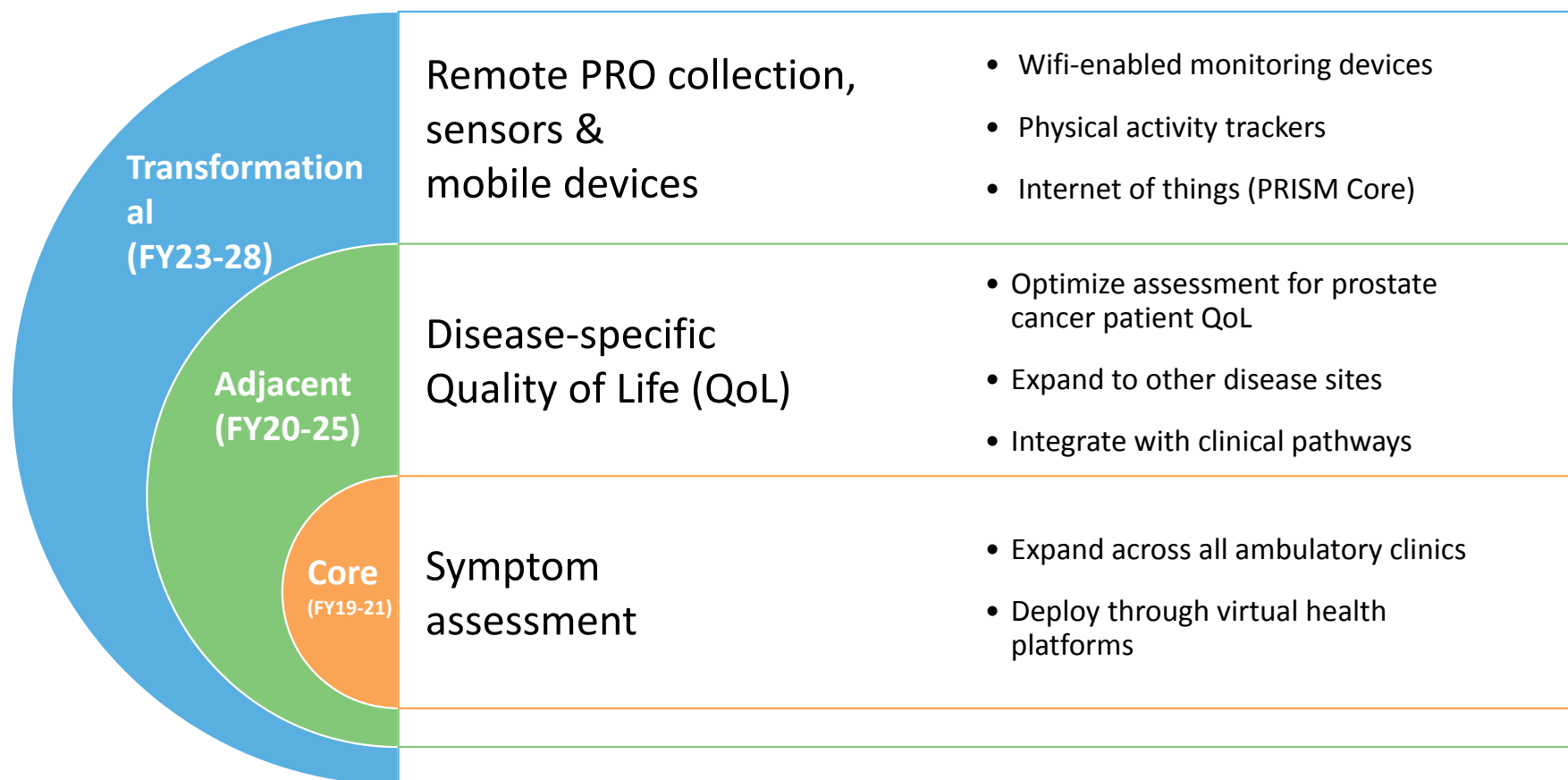Moffitt STAR (June)

PierianDx Myeloid (March)

Foundation Heme (October)

Curated Data Marts Advancing Discovery

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NLP for pathology data	X	X	X	X
Image "bank"	X	X	X	
Abstracted data on outcomes (Avatar, Flatiron)	X	X	X	X
Disease-specific abstracted outcomes	X	X	X	X
Patient reported symptoms, quality of life	X	X	X	X

IMPACT 2028: Roadmap for Patient-Reported Data

|		
Transformational (FY23-28)	Remote PRO collection, sensors & mobile devices	• Wifi-enabled monitoring devices • Physical activity trackers • Internet of things (PRISM Core)
Adjacent (FY20-25)	Disease-specific Quality of Life (QoL)	• Optimize assessment for prostate cancer patient QoL • Expand to other disease sites • Integrate with clinical pathways
Core (FY19-21)	Symptom assessment	• Expand across all ambulatory clinics • Deploy through virtual health platforms

Curated Data Marts Advancing Discovery

New data sources to be combine with HRI data	Examples of Curated Clinical Data Marts (CCSG Program alignment)			
	Precision Medicine (CBMM)	Imaging/ Radiomics (CE, CBE)	Immuno-oncology (IMM)	Payer Strategies (HOB)
Molecular data	X	X	X	X
outcomes				
Patient reported symptoms, quality of life	X	X	X	X

How will we build these curated data marts?

Health & Research Informatics: The Next Generation
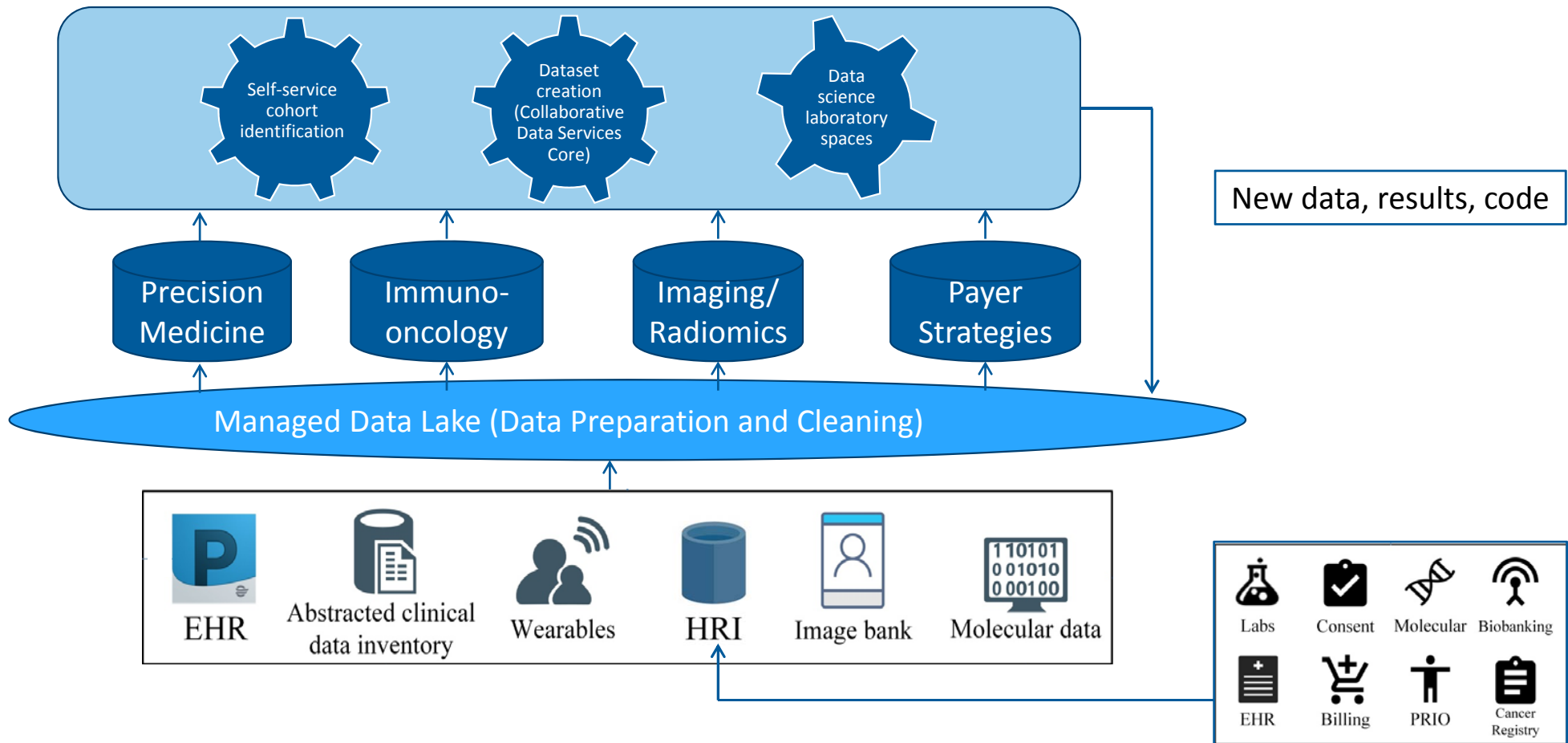
Questions

- How do we showcase our next-gen analytics platform in the CCSG?

- Considering the development of the next-gen platform will be phased over several years, how do we highlight both its current and future value?

Scientific Director,
Biostatistics & Biomedical Informatics Shared Resource

Brook Fridley, PhD

- **Recruited from U of Kansas Cancer Center in 2017**
- **Chair & Senior Member, Biostatistics & Bioinformatics Department**
- **Collaborative research interests focused on the genomic basis of cancer, pharmacogenomics & precision medicine**
- **Co-I on multiple grants including a U54**
- **Co-PI of T32 (pending)**
- **Currently supporting 6 active clinical trials**
- **Over 235 peer-reviewed publications**
  - **26 1st authored, 22 senior authored**

Biostatistics and Bioinformatics Shared Resource (BBSR)

Brooke L. Fridley, PhD

Scientific Director

Chair and Senior Member, Department Biostatistics and Bioinformatics (Bio2)

Cancer Epidemiology Program Member

TO CONTRIBUTE TO THE PREVENTION AND CURE OF CANCER

Benefits to Merging the BC & CIC

- Contemporary science is very **integrated**

- Fosters **multidisciplinary teams** supporting projects through **single entry point**

- Enhances **career development** for faculty and staff through exposure to different types of projects

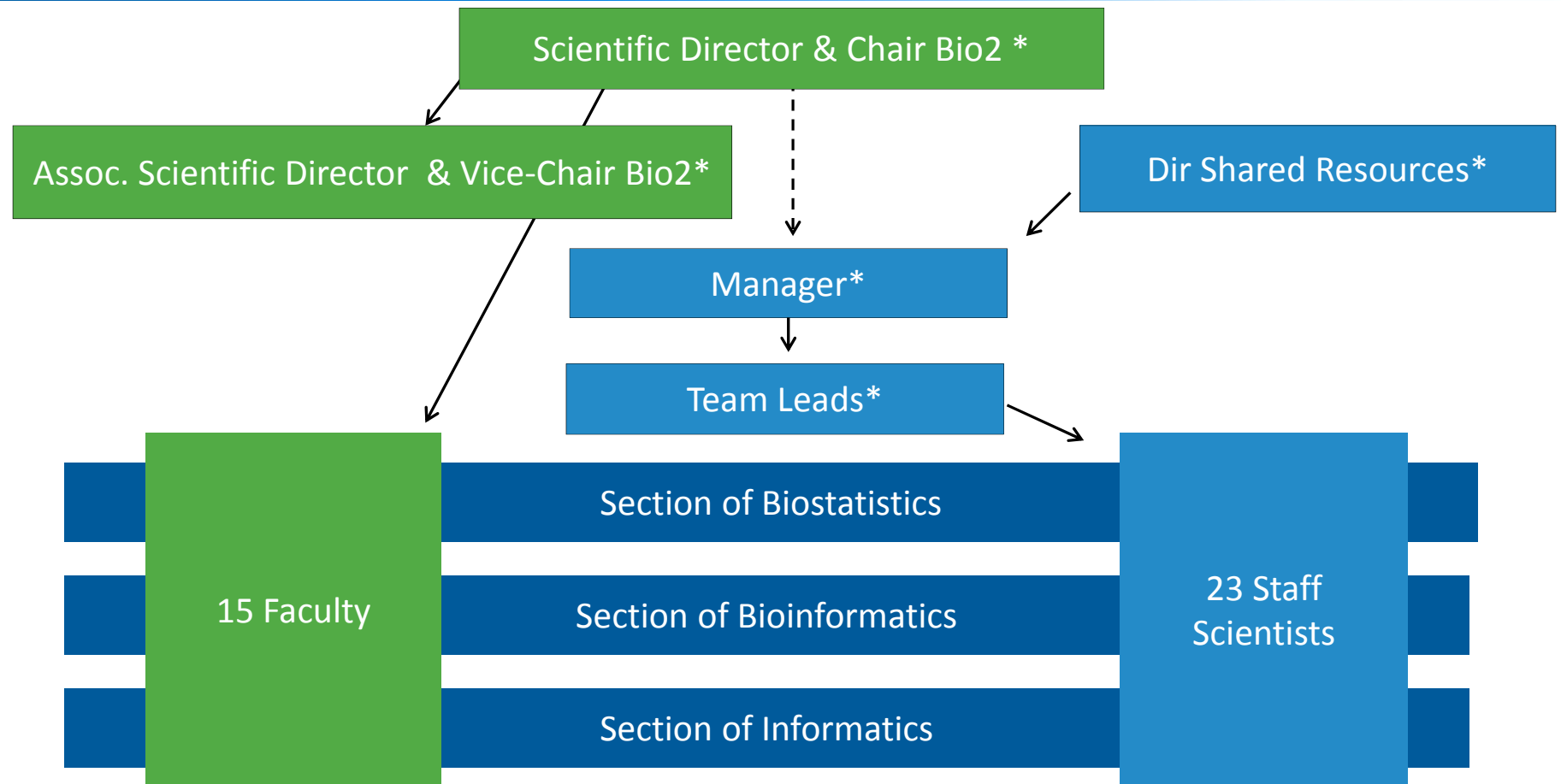- Builds on the **model established** in merging the two departments

Goal of the BBSR

- To provide **exceptional**, **comprehensive**, **multidisciplinary** and **collaborative data science expertise**, with a focus on **reproducible research**.

CCSG Working Specific Aims

Aims:

1. To provide **study design**, feasibility assessment, and sample size/power estimation for research projects, protocols, and grant applications

2. To provide biostatistical, bioinformatics, and informatics **analysis expertise** for the completion of research projects and protocols

3. To develop and **support research enabling technologies, pipelines, and computational tools** to facilitate the timely and accurate completion of research projects in a reproducible manner

4. To **educate** students, fellows, and faculty members at Moffitt on study design, data collection, and computational analysis aspects used in the completion of cancer research projects

Biostatistics & Bioinformatics Shared Resource (BBSR)

Scientific Director & Chair Bio2 *

Assoc. Scientific Director & Vice-Chair Bio2*

Dir Shared Resources*

Manager*

Team Leads*

15 Faculty

Section of Biostatistics

Section of Bioinformatics
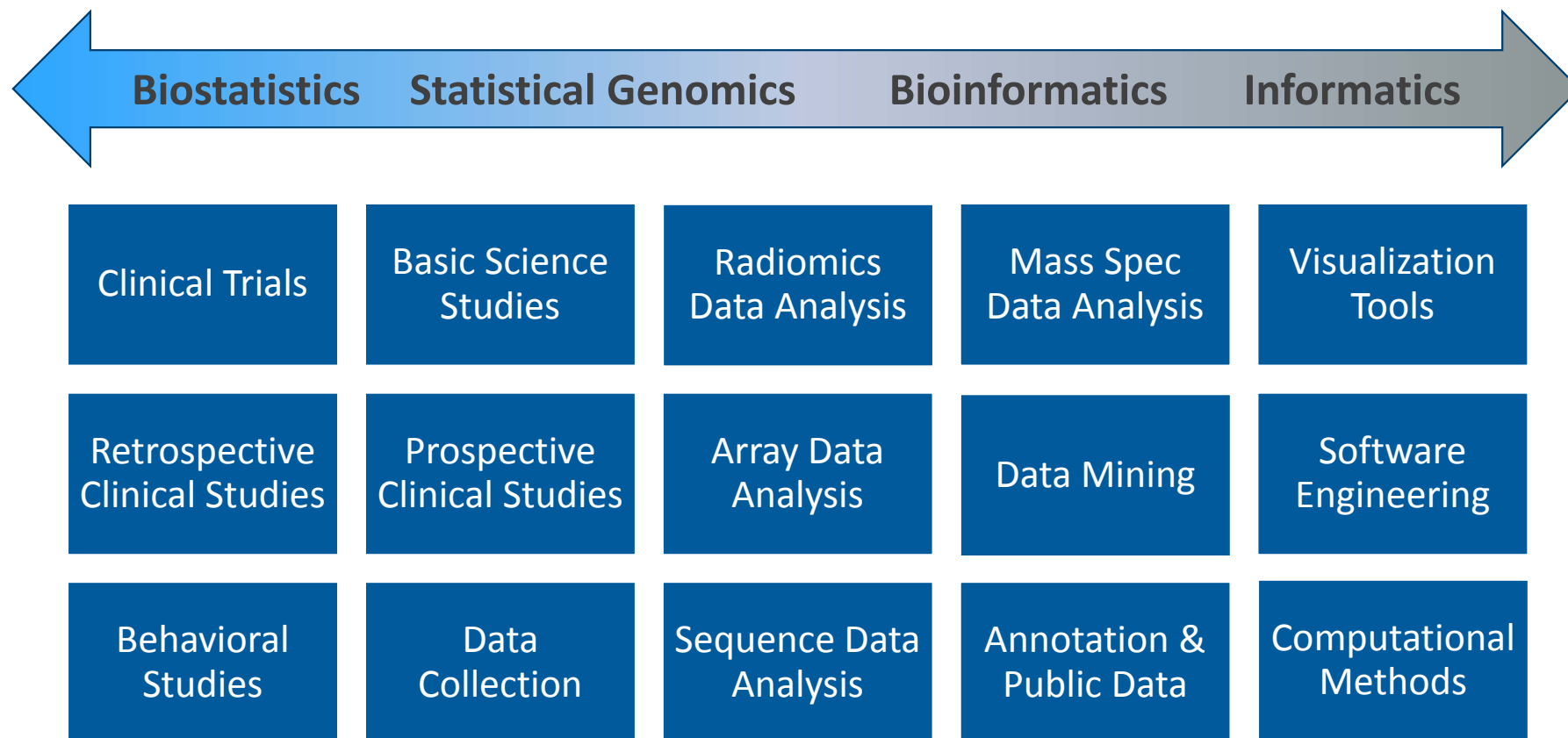
Section of Informatics

23 Staff Scientists

*BBSR Leadership Team

BBSR Advisory Committee

- John Koomen, PhD (Chair) (CBMM)

- Rachid Baz, MD (CBMM)

- Jhanelle Gray, MD (CBMM)

- Doug Cress, PhD (CBE)

- Clement Gwede, PhD, MPH, RN (HOB)

- Anna Giuliano, PhD (CE)

- TBN (IMM)

Current Types of Research Collaborations

← Biostatistics   Statistical Genomics   Bioinformatics   Informatics →

Clinical Trials	Basic Science Studies	Radiomics Data Analysis	Mass Spec Data Analysis	Visualization Tools
Retrospective Clinical Studies	Prospective Clinical Studies	Array Data Analysis	Data Mining	Software Engineering
Behavioral Studies	Data Collection	Sequence Data Analysis	Annotation & Public Data	Computational Methods

Utilization

Type of Research Project	FY 2018	FY 2019 *	Projected % Change
General Projects	301		
Project PIs	106		
Investigator Initiated Clinical Trials (IITs)	33		
IIT PIs	22		
GME Fellow Projects	58		
GME Fellows	33		
Total # Projects	392		
Total # of PIs	161		

* July 2018 – Jan 2019

Utilization

Type of Research Project	FY 2018	FY 2019 *	Projected % Change
General Projects	301	258	
Project PIs	106	95	
Investigator Initiated Clinical Trials (IITs)	33	24	
IIT PIs	22	19	
GME Fellow Projects	58	47	
GME Fellows	33	30	
Total # Projects	392	329	
Total # of PIs	161	144	

* July 2018 – Jan 2019

Utilization

Type of Research Project	FY 2018	FY 2019 *	Projected % Change
General Projects	301	258	47%
Project PIs	106	95	54%
Investigator Initiated Clinical Trials (IITs)	33	24	24%
IIT PIs	22	19	50%
GME Fellow Projects	58	47	40%
GME Fellows	33	30	58%
Total # Projects	392	329	44%
Total # of PIs	161	144	53%

* July 2018 – Jan 2019

Reproducible Research

Topic	Solution	Status	
		On-going	Completed
Organization	Standardized folder structure on network drive and creation of a BBSR GitLab page		X
Version Control	Git	X	
Documentation	Rmarkdown reports, README files	X	
Pipelines for NGS	RNA-Seq, DNA-Seq, ChIP-Seq	X	X
Standardized Analysis	R functions, SAS Macros	X	X
Visualization Tools for Researchers	R Shiny Apps	X	X
Documentation	2nd Person Code Review	X	

Educational Activities

- BIOS 101: Introduction to Biostatistics (Spring)
- New BIOS 102: Introductory Biostatistics Workshop with JMP (Spring)
- Genome Data Analysis Course (Fall)
- Bio-Data Club (monthly)
- Informal training and mentoring
- T32 Applications
- Yearly Workshops
- Drop-in consulting center (monthly)

Photo from Computational Reproducible Research Workshop by Keith Baggerly held May 31, 2018

Service

- CCSG
  - Scientific Review Committee (SRC)
  - Protocol Monitoring Committee (PMC)

- Institutional
  - High performance computing (HPC) Steering Committee
  - TCC and HRI Committees
  - Research Application Domain Council

Questions

- Thoughts on the proposed Aims?

- What questions might come from CCSG reviewers regarding the creation of BBSR?

- Any issues / areas that we should proactively address prior to the CCSG submission?

BBSR Team

Scientific Director,
Participant Research, Interventions, and Measurement Core

Brian D. Gonzalez, PhD

- **Recruited from Rutgers in 2016**

- **Assistant Member, Health Outcomes & Behavior**

- **Research focuses on reducing the burden of quality of life issues (e.g., sleep disturbance, cognitive impairment) in cancer patients and survivors**

- **PI of K01; Co-I on Gateway Foundation grant**

- **Over 30 peer-reviewed publications**

- **Member, Society of Behavioral Medicine Board of Directors**

Survey Methods Core Update

Brian D. Gonzalez, PhD

Assistant Member

TO CONTRIBUTE TO THE PREVENTION AND CURE OF CANCER

Recent feedback

- 2016 CCSG score: "Exceptional"
  - Decreased use
  - Most users are HOB members

- 2018 EAC report
  - Expand services
    - Custom databases
    - Integrate data from multiple sources
  - Internal assessment on future directions/scope

# Changes to SMC

SMC
Task Force

Changes to SMC

SMC
Task Force → CLC, REX →
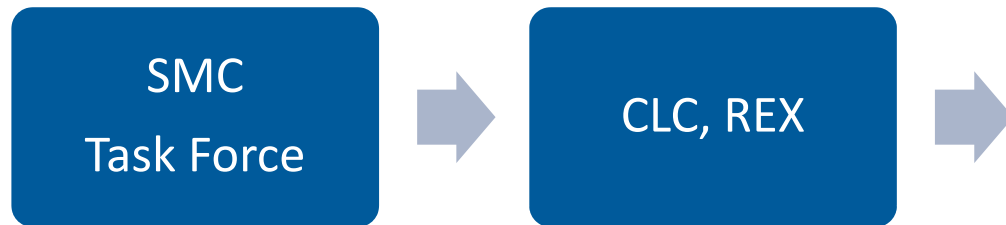
Changes to SMC

SMC Task Force

- Continue existing services

- Add new methodologic expertise

- Collect PRIO data

- Concierge services

- Rebrand to emphasize new offerings

- Restructure core

SMC Task Force

- Continue existing services

- Add new methodologic expertise

- Collect PRIO data

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- Rebrand to emphasize new offerings

- Restructure core

My research

- Personalized medicine approach to quality of life
- Biobehavioral risk factors for quality of life
  - Genetic, clinical, psychological, behavioral
- Developing personalized interventions
  - mHealth apps
- Collecting PRIO data
  - Automated databases to collect PROs
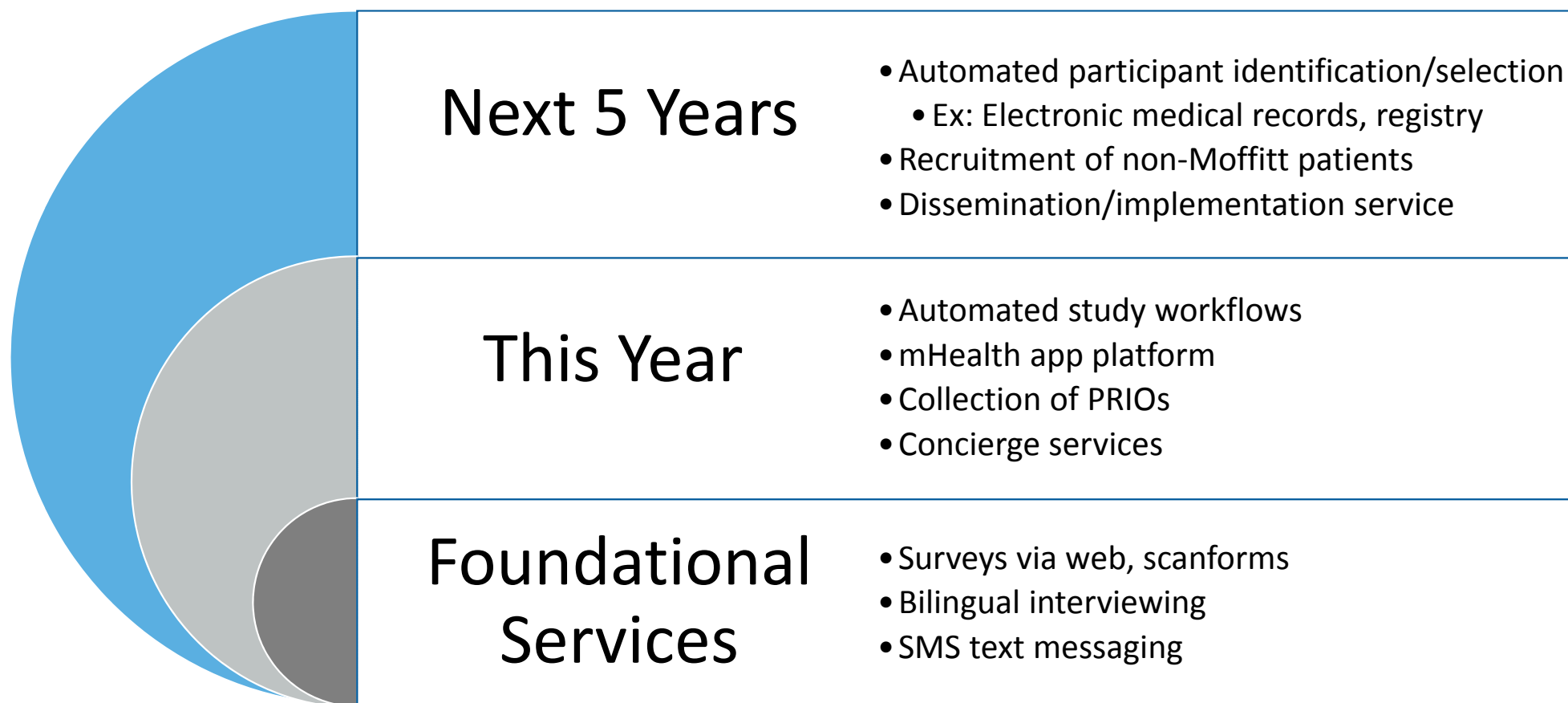 - Wearable sensors to analyze sleep, circadian rhythms
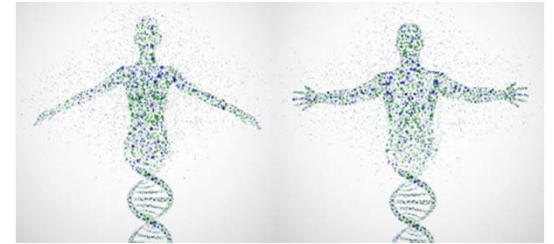
SMC Task Force

✓• Continue existing services

✓• Add new methodologic expertise

✓• Facilitate collection of PRIOs

• Concierge services

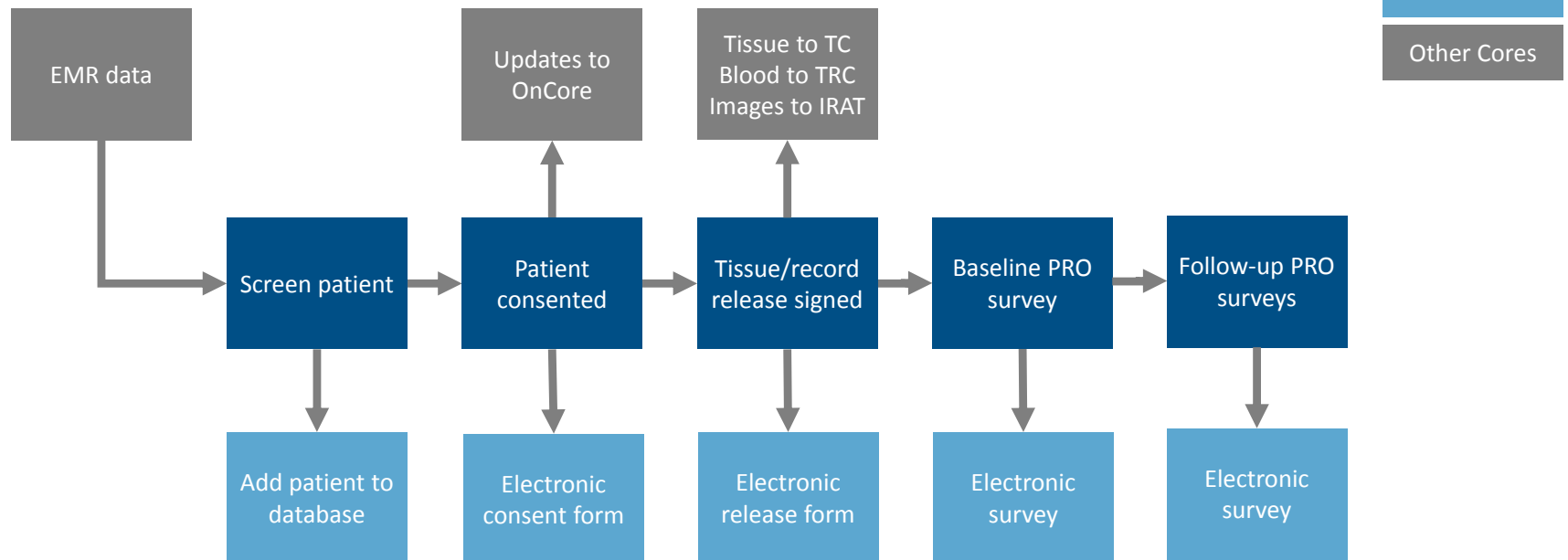• Rebrand to emphasize new offerings

• Restructure core

Rebranding core

**Participant Research, Interventions, and Measurement (PRISM) Core**

Vision for PRISM Core

Next 5 Years
- Automated participant identification/selection
  - Ex: Electronic medical records, registry
- Recruitment of non-Moffitt patients
- Dissemination/implementation service

This Year
- Automated study workflows
- mHealth app platform
- Collection of PRIOs
- Concierge services

Foundational Services
- Surveys via web, scanforms
- Bilingual interviewing
- SMS text messaging

Supporting R01-equivalent projects

FL Pancreas Collaborative (PI: Jennifer Permuth, PhD)

Supporting R01-equivalent projects

FL Pancreas Collaborative (PI: Jennifer Permuth, PhD)
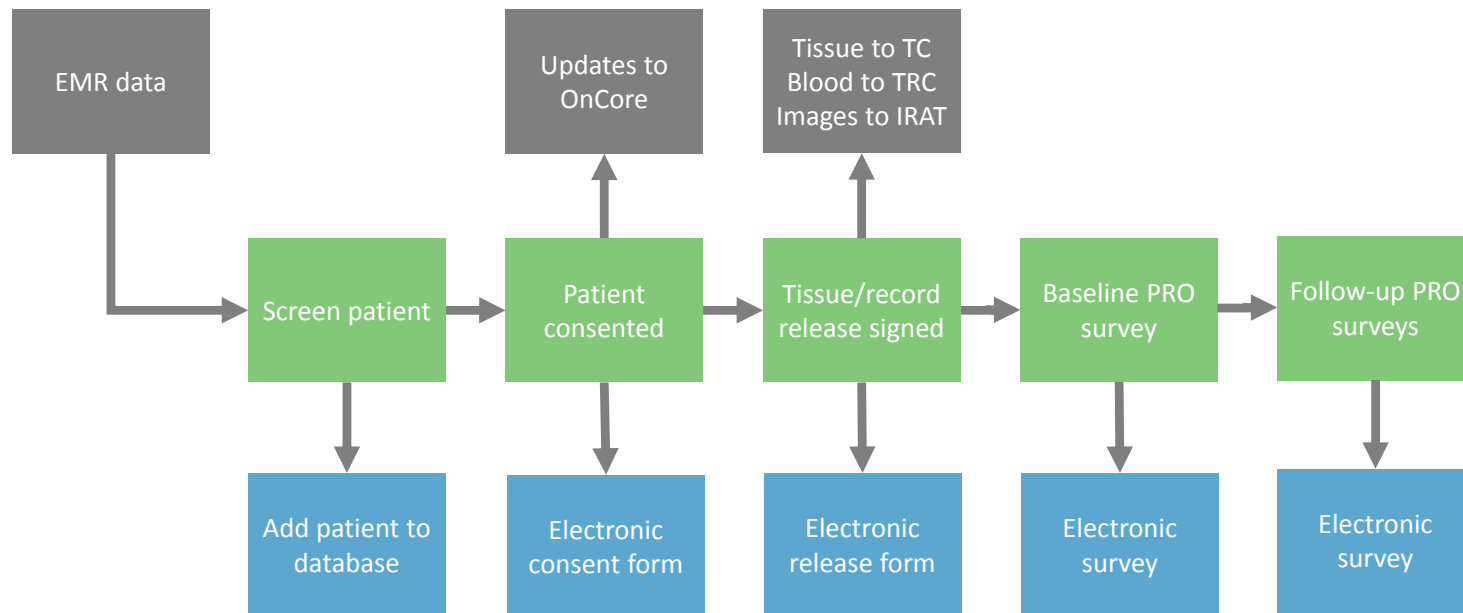
Action plan

1. Personnel
   - Hire Core Manager
2. Concierge services
   - Audio transcription, text translation
3. Establish *institutional* licenses for software
   - Automated study management, mHealth app platform
4. Train PRISM Staff to deliver new services
5. Demonstrate new services to faculty
6. Extend collaborations with CDS and BBSR

Aims

Previous aims	Proposed aims
1. Consult with potential users on the selection and implementation of existing survey tools and/or the design of new applications and approaches	1. Consult with users on existing intervention & measurement tools and the design of new applications & approaches
2. Support members by providing high-quality survey-related services utilizing the scannable and web-based applications operated by the SMC	2. Support members by providing high-quality PRIO-related services through applications operated by the PRISM core
3. Educate and train investigators and staff on qualitative research methods and resource tools	3. Educate and train investigators and staff on participant-centered research services

Clinical Science

Daniel Sullivan, MD, MS

Associate Center Director, Clinical Science

Agenda

- Clinical Trial Accrual & Activation Time Lines

- Clinical Research Growth at Moffitt

- Changes in PRMS

- ORIEN Clinical Research

- Clinical Research Retreats

Agenda

- Clinical Trial Accrual & Activation Time Lines

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Clinical Intervention Trial Accrual by Sponsor Type

CY	Institutional	Industry	Externally Peer Reviewed	National	Total
2016	229	569	20	82	**900**
2017	336	620	26	63	**1045**
2018	**426**	629	**60**	76	**1191**

Diversity Accrual: <u>All</u> Intervention Trials

CY	African American/ Black		Hispanic/Latino		Women	
2016	152	7.8%	222	11.4%	997	51.1%
2017	116	6.7%	149	8.6%	883	51.2%
2018	88	4.9%	253	14.0%	944	52.2%

- AA/Black patients are 6.0% of cancer cases in our catchment area and 5.2% of patients seen at Moffitt
- H/L patients are 5.0% of cancer cases in our catchment area and 7.3% of patients seen at Moffitt
- Women are 47.0% of cancer cases in our catchment area and 47.5% of patients seen at Moffitt

Diversity Accrual: Clinical Intervention Trials

CY	African American/ Black		Hispanic/Latino		Women	
2016	45	5.0%	67	7.4%	424	47.1%
2017	62	5.9%	78	7.5%	477	45.6%
2018	57	4.8%	103	8.7%	595	50.0%

- AA/Black patients are 6.0% of cancer cases in our catchment area and 5.2% of patients seen at Moffitt
- H/L patients are 5.0% of cancer cases in our catchment area and 7.3% of patients seen at Moffitt
- Women are 47.0% of cancer cases in our catchment area and 47.5% of patients seen at Moffitt

Minority Clinical Research Committee

- Sub-Committees
  - Catchment Area Research (Vadaparampil, Springer, Green)
  - Moffitt Clinical Research Education (Moffett, Soliman)
  - Clinical Research (Sullivan, Gray)
- Support of Intervention Trials Addressing Minority Disparities
  - Prostate cancer
    - Two trials: validation of Decipher test and intervention trial with predictive biomarkers (Yamoah)
    - Adaptive clinical intervention trial (Zhang)
  - Allogeneic HSCT (Pidala, Bajanyan, Elmariah)
  - Supportive care: In-patient glucose control (Pabbathi)
- VAH Partnerships for Trials
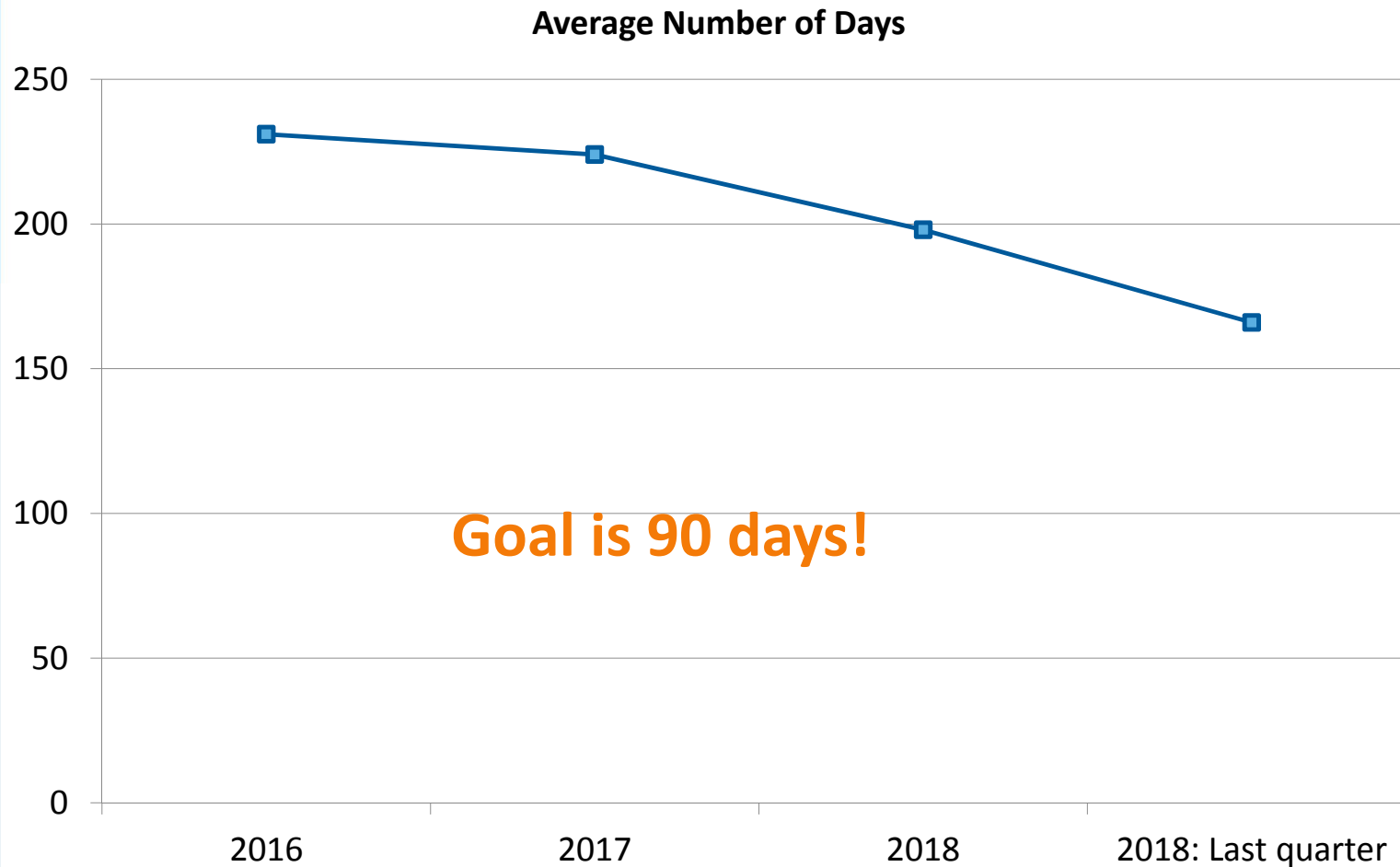
Clinical Intervention Accrual By Federal Sponsors

			NCTN						Total	
	SWOG	NRG	ECOG-ACRIN	Alliance	BMT CTN	CITN	NCIC	UM1	#	%
2016	38	23	4	4	11	1	5	20	106	(11.8%)
2017	30	9	3	6	12	3	0	26	89	(8.5%)
2018	24	6	11	16	20	0	0	58	135	(11.4%)

All Intervention Trial Accrual by Program (CY 2018)

	Treatment	Supportive Care	Prevention	Total
CBMM	944	6	23	973
IMM	208	0	16	224
CBE	9	0	0	9
HOB	4	81	52	137
CE	26	0	439	465
Total	1,191	87	530	1,808

Clinical Intervention Trial Activation Trends: 2016 - 2018

Average Number of Days

Goal is 90 days!

250

200

150

100

50

0

2016   2017   2018   2018: Last quarter

Activation Timeline Strategies

- Task Forces in focused areas

  - Regulatory: Increased startup support (3.0 FTEs)

  - Calendar/Pharmacy:

    - Realigned calendar build with CT Finance Office (outsourced to Oncore)

    - FTE for pharmacy order sets.

  - Trial Operations

    - Expectations checklist rolled out to sponsors

    - Increased start-up support (3.0 FTEs)

- Dashboard tool in process for better tracking of trials (Insights-Forte)

Agenda

- Clinical Trial Accrual & Time Lines
- Clinical Research Growth at Moffitt
- Changes in PRMS
- ORIEN Clinical Research
- Clinical Research Retreats

Clinical Research on Moffitt Campuses

- Magnolia Campus
  - CRU 4,100sf
  - 16 Rx stations (9 chairs + 7 beds)
  - IDS to 3rd floor hospital
  - Solmaz Sahebjam, MD, Leader Phase 1 Program
- Shultz Outpatient Clinic on the McKinley Campus
  - CRU (5 chairs + 3 beds)
  - Hung Khong, MD, Medical Director
- Moffitt at International Plaza
  - 40,000sf
  - 24 SOC infusion chairs
  - Pharmacy update

Magnolia Campus

Moffitt at International Plaza

Shultz Outpatient Clinic

Clinical Research Growth Plans: Infrastructure

- Clinical Research Units
  - Expand CRU space at Magnolia & extend hours (16 → 21 Rx stations)
  - Expand capacity at McKinley (ACLS facility)
  - Extend research capabilities to MIP (~50% Magnolia capacity)
- Investigational Drug Services space & FTE expansion (all CRUs)
- Outsourcing services
  - EmergingMed.com (clinical trial navigator)

Clinical Research Growth Plans: Partnerships

- Memorial Hospital West (malignant heme & cellular therapy)

- VAHs

  - James Haley VA

  - Bay Pines VA

- BayCare (radiation oncology trials)

- Advent Health

Agenda

○ Clinical Trial Accrual & Time Lines

○ Clinical Research Growth at Moffitt

● **Changes in PRMS**

○ ORIEN Clinical Research

○ Clinical Research Retreats

Major Changes for PRMS

- **Scientific Review Committee**

  - First ever multi-institutional SRC (ORIEN)

  - Modified definition of quorum to >50% of members present

  - Added members with specific expertise

- **Protocol Monitoring Committee**

  - Expanded membership and role of PMC to include the review of all monitoring reports & audit reports

- **Feasibility Review of Clinical Intervention Trials**

PMC & SRC Membership

	PMC	SRC Holly	SRC Magnolia
Members	**12**	**18**	**20**
Senior	4	7	1
Associate	4	3	14
Assistant	2	7	4
N/A	2	1	1
Expertise			
Med Onc/Heme	3	5	6
Surgeon	2	3	2
Radiation Oncologist	**1**	**2**	**3**
Radiologist	0	1	1
Biostatistician	3	2	2
Pharmacist	1	1	1
Pathologist	**0**	**2**	**2**
BMT	1	0	2
Basic Scientist	**0**	**2**	**2**
Nurse	1	0	0

Agenda

- Clinical Trial Accrual & Time Lines

- Clinical Research Growth at Moffitt

- Changes in PRMS

- **ORIEN Clinical Research**

- Clinical Research Retreats

ORIEN Clinical Trials Network:
# Commitment to Expedited Trial Activation

IRB, scientific review, contracting and budget discussions are being centralized and harmonized across ORIEN Member sites to ensure rapid activation of trials

Item	Description
Single IRB ✓	▪ ORIEN Members using single IRB (WIRB)
Single SRC ✓	▪ ORIEN operates a single SRC, approved by NCI and hosted at Moffitt
Single Trial Budget	▪ ORIEN goal to centralize budgets for clinical trials
Single Master Trial Agreement ✓	▪ ORIEN & M2Gen developed a Master Clinical Trials agreement

ORIEN Clinical Trials Network Workflow

- Detailed process in place

- Goal for trial activation is 90 days
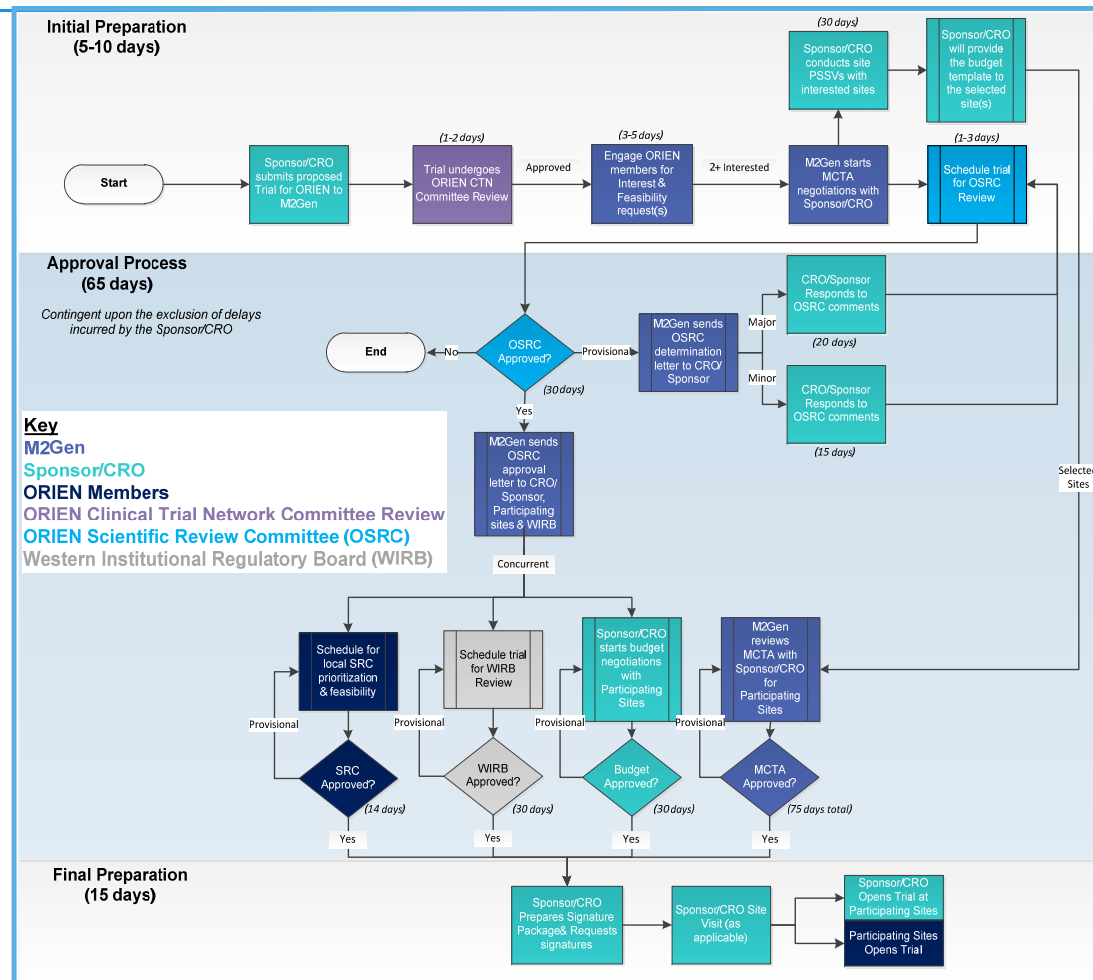
ORIEN Clinical Trials

Trial Status	Number
Open	3 (2 IIT)
Pending/In Development	6 (1 IIT)
Moffitt Participation	2 (open) 4 (pending)

- Using ORIEN Avatar data to enrich for eligible patients
- For example:
  - BRCA 1/2 mutations in OC
  - HRAS mutations in H&N Ca
  - PDL-1 in NSCLC umbrella trial
  - WT TP53 in NHL trial
  - CD19+ B-cell NHL trial

Agenda

- Clinical Trial Accrual & Time Lines

- Clinical Research Growth at Moffitt

- Changes in PRMS

- ORIEN Clinical Research

- **Clinical Research Retreats**

Clinical Research Retreat (July 20, 2018)

Building on Success and Best Practices

- Jeff Lancet: **Heme Program**
- Fred Locke: **ICE-T Program**
- Brian Czerniecki: **Multi-D Breast Program**
- Lou Harrison: **Radiation Oncology**
- Bob Gatenby: **Evolution and Cancer Treatment**
- Scott Antonia: **Thoracic Program & Trial Lead**
- Solmaz Sahebjam: **Phase 1 Trials**

- **Optimizing Clinical Trial Portfolio**

- **Maximizing Impactful Trials**

- ✓ **3 actionable strategies**
- ✓ **Deployable in 6-12 months**
- ✓ **Focus on strategies that are within our control**

Work Groups Developed Strategies

One Highest Priority Strategy at Each Level

Faculty	Program	Institutional
Educator/Investigator Expectations	Optimize Clinical Trial Lead	Optimize Trials Across Moffitt Locations
McIver	Lancet	Sullivan
Czerniecki/Khushalani	Gray/Sahebjam	Soliman/Locke

Exec Sponsor

Strategy Leads

Phase 1 Program Retreat (September 28, 2018)

- 25 attendees

- 3 work groups

  - Develop Phase 1 core leadership team

  - Reformat Phase 1 meeting

    - Integrate CBMM meeting & medical oncology grand rounds

  - Phase 1 clinical trial activation

- Phase 1 fellowship program

Comprehensive Summary

	Campus Specific			Trial Activation	CR Retreat	Phase 1 Retreat	Trial Expansion
	Magnolia	McKinley	MIP				
Short Term (≤ 6 m)	Complete space plans	Code team active	Complete space plans	(170 d)	Final output WG 1 & 2	Reformat meeting	At MHS, Bay Care
Intermediate (6 m – 1 yr)	Expansion complete (+ IDS)	Pharmacy complete	Limited accrual on trials; pharmacy	Average 140 d	Ongoing WR 3	Core team operational	At VA, (Advent Health)
Long term (1 – 2 yr)	Extend hours?		Open CRU	Average ~90d	Ongoing WR 3	Activation 90 d	

Questions

- Is target of 10% intervention trial accrual on Federally sponsored trials adequate?

- Is target of >40% intervention trial accrual on IITs appropriate?

- Is 90 days <u>average</u> for clinical intervention trial accrual realistic?

- Concerns about prioritizing Phase 1 trial activation?