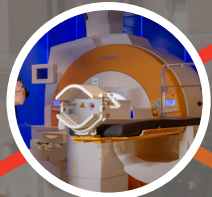


Image-Guided Cancer Therapy Research Program

FY 2022 Program Update

THE UNIVERSITY OF TEXAS
**MDAnderson
Cancer Center**

Making Cancer History®



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Many of these photos were taken prior to the COVID-19 pandemic

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A Note from IGCT Director: Dr. Kristy Brock



Hello and Happy New Year! I hope that you were able to take some time to relax and reflect on the amazing accomplishments achieved in 2022. As we slowly start to decrease our work-from-home time, it has been great to see many of you “in person” at MD Anderson – and meet some of you for the first time! The new year is always a great

time to reflect on the successes of the past year and set goals for the year to come. This annual report highlights some of the incredible success that our 83 IGCT faculty and incredible staff have achieved. A few items of note: The IGCT staff is growing! Please check out the last few pages of the report for some of the new faces as well as a list of the resources that IGCT can provide. Our IGCT Seminars and Workshops have continued to expand over the past year and now offer CME credit. All seminars are recorded and available on-demand at www.mdanderson.org/IGCT. If you have any suggestions – or would like to present, yourself – please reach out! One of our biggest accomplishments this year was being awarded an NCI T32 training grant. This will allow us to train, in a multi-disciplinary environment, future academic leaders in image-guided radiation oncology, interventional radiology, image-guided surgery, correlative pathology, imaging science, and medical physics. Finally, a huge thank you to Dr. Kari Brewer Savannah, Program Director for the IGCT, without whom, this success would not be possible! I look forward to another exciting year of addressing clinical challenges and translating innovative science to patient care!

Best,
Kristy K Brock

A Note from IGCT Program Director: Kari Brewer Savannah, PhD

Happy New Year! As I look back on a productive FY 2022 and ahead to the new year, I am grateful for each of the IGCT staff, investigators, and leaders that help to drive the vision and mission of the IGCT forward. We are excited to have welcomed nine Investigators to the IGCT in FY 2022, and to have accepted the first IGCT T32 fellow to our new NCI T32 training



grant. In line with the addition and expansion of many collaborations and projects in FY 2022, we added three new IGCT personnel to serve as resources and provide support for IGCT investigators in the areas of computational science and image contouring/annotation. Through the generous support of the institutional capital equipment program, we have added a CryoJane Tape Transfer System to support work on the Xerra CFT machine. Lastly, we are happy to share that IGCT seminars and workshops are now eligible for CME credits, and that they are now available for on demand playback via MS Stream. Cheers to a wonderful year.

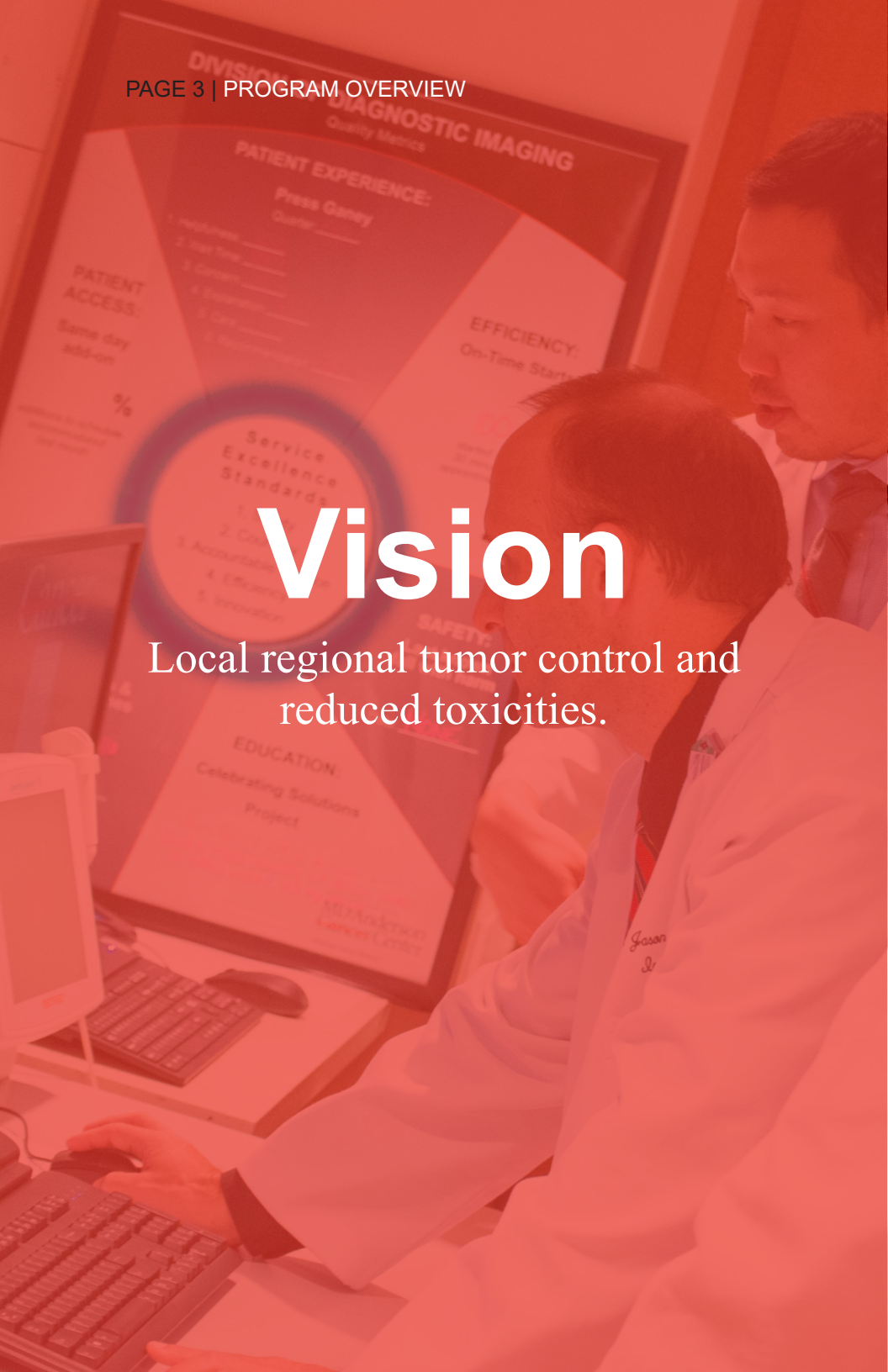
Regards, *Kari Brewer Savannah*

FY 2022 IGCT Program Highlights:

- IGCT seminars and workshops are now eligible for CME credits; they are also available to view on demand from the IGCT website.
- The IGCT T32 Training Program was funded by the National Cancer Institute and accepted its first trainee.
- IGCT investigators were awarded >20 new grants, including large, multidisciplinary P01 and T32 training grants.
- The IGCT hosted 12 seminars and 3 workshops with record attendance at these events, with record attendance from faculty, research staff, and trainees spanning >40 diverse departments and 13 divisions/operational areas at MD Anderson.
- Nine investigators were welcomed to the IGCT along with several new research staff in FY 2022.

Vision

Local regional tumor control and reduced toxicities.



Mission

Empower multidisciplinary teams of physicians and scientists to address clinical challenges and technology barriers enabling the translation of innovative science directly to patient care.

Program Overview

The Image Guided Cancer Therapy Research Program’s vision to harness the synergy of multidisciplinary teams has enabled the acceleration of innovation and its translation to the clinical environment. The program relies heavily on the expertise of its members - interventional and diagnostic radiologists, imaging scientists, medical physicists, surgeons, radiation oncologists, pathologists, and more. Through increased ‘clinical problem’ focused interactions clinical limitations are identified, solutions designed, and clinical trials initiated. These initiatives make strides towards improving patient care.

In 2022, we expanded our original trio of strategic priorities to add a fourth priority that is focused on mentorship.



Kristy K. Brock, PhD, DABR, FAAMP
Director



Clifton D. Fuller, MD, PhD, DABR
Medical Director, Radiation Oncology Branch



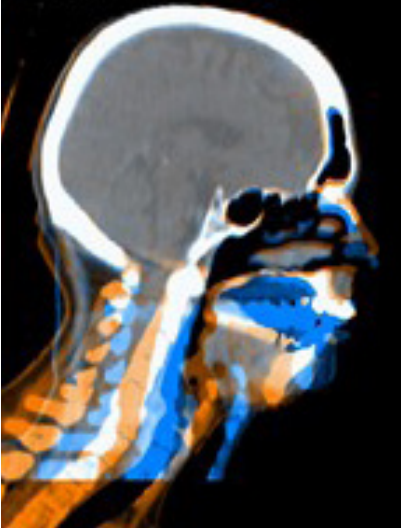
Bruno C. Odisio, MD, DABR
Medical Director, Interventional Radiology Branch



Kari Brewer Savannah, PhD
Program Director



Jeffrey S. Weinberg, MD, FAANS, FACS
Medical Director, Surgical Oncology Branch



Strategic Goals

1. Develop and validate novel imaging to identify and target the tumor while avoiding normal tissue.
2. Advance in-room integration of imaging to reduce uncertainties in executing the planned intervention.
3. Demonstrate a significant improvement in the local control and quality of life of cancer patients through image guided cancer therapy.
4. Provide mentorship in developing multi-disciplinary research and grant writing.



RADIOLOGY

BIOSTATISTICS

IMAGING
PHYSICS

CANCER SYSTEMS
IMAGING

RADIATION ONCOLOGY

PATHOLOGY

SURGERY

RADIATION PHYSICS

INTERVENTIONAL
RADIOLOGY

NUCLEAR
MEDICINE

PULMONARY
MEDICINE

Imaging Physics

James A. Bankson, PhD
 Richard R. Bouchard, PhD
 Kristy K. Brock, PhD
 David T. Fuentes, PhD
 John D. Hazle, PhD
 Ken-Pin Hwang, PhD
 Kyle A. Jones, PhD
 Cheenu S. Kappadath, PhD
 Rick R. Layman, PhD
 Ho-Ling A. Liu, PhD
 Jingfei Ma, PhD
 Osama R. Mawlawi, PhD
 Tinsu Pan, PhD
 Jeffery H. Siewerdsen, PhD
 Konstantin V. Sokolov, PhD
 Jason R. Stafford, PhD
 Jia Wu, PhD

Cancer Systems Imaging

H. Charles Manning, PhD
 Mark D. Pagel, PhD
 David Piwnica-Worms, MD, PhD
 C. Chad Quarles, PhD

Nuclear Medicine

Yang Lu, MD, PhD
 Gregory C. Ravizzini, MD

Pathology

Alejandro Contreras, MD, PhD
 Savitri Krishnamurthy, MD
 Anirban Maitra, MBBS

Interventional Radiology

Rony Avritscher, MD
 Stephen R. Chen, MD
 Erik N. K. Cressman, MD, PhD
 Sanjay Gupta, MD
 Peiman Habibollahi, MD
 Bruno C. Odisio, MD
 Rahul A. Sheth, MD
 Alda L. Tam, MD, MBA

Pulmonary Medicine

Roberto F. Casal, MD
 George A. Eapen, MD
 David E. Ost, MD, MPH

Biostatistics

Suprateek Kundu, PhD

Radiation Oncology

Joe Y. Chang, MD, PhD
 Caroline C. Chung, MD
 Steven J. Frank, MD
 Clifton D. Fuller, MD, PhD
 Amol J. Ghia, MD
 Emma B. Holliday, MD
 Ann H. Klopp, MD, PhD
 Eugene J. Koay, MD, PhD
 Albert C. Koong, MD, PhD
 Lilie L. Lin, MD
 Steven H. Lin, MD, PhD
 Jack Phan, MD, PhD
 Chad Tang, MD
 James W. Welsh, MD

Radiation Physics

Sam Beddar, PhD
 Laurence E. Court, PhD
 David A. Jaffray, PhD
 Radhe Mohan, PhD
 Mohamed R. Salehpour, PhD
 Gabriel O. Sawakuchi, PhD
 Jihong Wang, PhD
 Jinzhong Yang, PhD

Surgery

Justin E. Bird, MD
 Hop S. Tran Cao, MD
 Anne M. Gillenwater, MD
 Niel D. Gross, MD
 Katherine A. Hutcheon, PhD
 Stephen Y. Lai, MD, PhD
 Frederick F. Lang, MD
 Jeffrey E. Lee, MD
 Jeffrey N. Myers, MD, PhD
 Yon Son Betty Kim, MD, PhD
 Ravi Rajaram, MD
 Gregory P. Reece, MD
 Laurence D. Rhines, MD
 David C. Rice, MB, BCh
 Andrew G. Sikora, MD, PhD
 Claudio E. Tatsui, MD
 Jean-Nicholas Vauthey, MD
 Jeffrey S. Weinberg, MD

Radiology

Myrna C.B. Godoy, MD, PhD
 Jason Michael Johnson, MD
 Gaiane M. Rauch, MD, PhD
 Dawid Schellingerhout, MB, ChB
 Aradhana M. Venkatesan, MD

CPRIT & NIH Funding Granted to IGCT Investigators in FY 2022

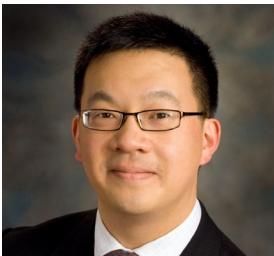
IGCT Investigator	Department	Grant/Role	Grant Title
C. Chad Quarles, PhD	Cancer Systems Imaging	NCI R01 Multi-PI	Establishing the clinical utility of a consensus DSC-MRI protocol
C. Chad Quarles, PhD	Cancer Systems Imaging	CPRIT	Recruitment of established investigators (RR22038)
Marty D. Pagel, PhD	Cancer Systems Imaging	NCI R43 Multi-PI	Novel multispectral optoacoustic tomography contrast agents for evaluation of early response to radiation therapy
Ann M. Gillenwater, MD	H&N Surgery	NIDCR R01 Multi-PI	Deep learning microscope for slide-free and digital histology
Stephen Y. Lai, MD, PhD Kostia V. Sokolov, PhD	H&N Surgery Imaging Physics	NCI R21 Multi-PI	Radiosensitization of thyroid cancer by cancer cell specific reduction of gold ions
Jeffrey Myers, MD, PhD Andrew Sikora, MD, PhD	H&N Surgery H&N Surgery	NIDCR R01 Multi-PI	Functional roles of GOF TP53 mutations in metastasis and immunosuppression of head and neck cancers
Andrew Sikora, MD, PhD	H&N Surgery	NCI R01 Multi-PI	Targeting head and neck cancer cells and the adverse tumor microenvironment with a novel small-molecule STAT3 inhibitor
Kristy K. Brock, PhD	Imaging Physics	NCI P01 Core Co-Lead	Core 2: Translational biospecimens and imaging biomarkers
Kristy K. Brock, PhD Gregory P. Reece, MD	Imaging Physics Plastic Surgery	NIBIB R01 Multi-PI	Enhanced Biomechanical Modeling of the Breast for Women's Health
Kristy K. Brock, PhD Stephen Y. Lai, MD, PhD C. Dave Fuller, MD, PhD	Imaging Physics H&N Surgery Radiation Oncology	NCI T32 Multi-PI	Image Guided Cancer Therapy T32 Training Program
David T. Fuentes, PhD	Imaging Physics	NCI R21	Characterization of endovascular ablative therapies with computational modeling

IGCT Investigator	Department	Grant/Role	Grant Title
Ho-Ling Anthony Liu, PhD	Imaging Physics	NCI R01 Multi-PI	A comprehensive clinical fMRI software solution to enable mapping of critical functional networks and cerebrovascular reactivity in the brain
Kostia V. Sokolov, PhD	Imaging Physics	NCI T32 renewal Multi-PI	Interdisciplinary Translational Pre/Postdoctoral Program in Cancer Nanotechnology
Kostia V. Sokolov, PhD	Imaging Physics	NCI R01 Multi-PI	In situ cancer cell specific biomineralization to overcome nanoparticle delivery barriers and sensitize pancreatic cancer to radiotherapy
Jia Wu, PhD	Imaging Physics	NCI R01 Multi-PI	Radioimmunogenomic habitat phenotypes to predict efficacy of neoadjuvant immunotherapies on non-small cell lung cancer
Steven J. Frank, MD	Radiation Oncology	NEI R41 & supplemental Funding Multi-PI	Rusalatide acetate (TP508) mitigation of genotoxic radiation damage in human lens epithelial cells Supplemental Funding
Eugene J. Koay, MD, PhD David T. Fuentes, PhD	Radiation Oncology Imaging Physics	NCI R01 renewal Multi-PI	Early detection of hepatocellular carcinoma
Eugene J. Koay, MD, PhD Kristy K. Brock, PhD	Radiation Oncology Imaging Physics	NCI P01 Project Lead Project Co-Lead	Project 1: Understanding normal tissue toxicity to identify patients most likely to benefit from proton therapy
Steven H. Lin, MD, PhD	Radiation Oncology	NCI P01 Project PI	Project 2: Radiation-induced lymphopenia: Understanding predictive modeling and developing photon and proton-based mitigation strategies
Caroline Chung, MD	Radiation Oncology	CPRIT Multi-PI	Imaging-informed, biophysical computational modeling to forecast tumor progression in gliomas
Laurence E. Court, PhD Rick R. Layman, PhD	Radiation Physics Imaging Physics	CPRIT Multi-PI	Automated image quality assessment for AI applications in cancer treatment
Radhe Mohan, PhD	Radiation Physics	NCI P01 Multi PI	Integrating patient-specific clinical and biological factors towards individualizing utilization of proton and photon radiation therapy

Featured IGCT Investigator Grants in FY 2022



James A. Bankson, PhD
Imaging Physics



Stephen Lai, PhD
Head and Neck Surgery



Vlad C. Sandulache, MD, PhD
Baylor College of Medicine

Leveraging Hyperpolarized MRI for Precision Oncology Approaches in Head and Neck Cancer

Following the successful launch of their first-in-human hyperpolarized MRI for thyroid cancer studies in FY 2021, Drs. Bankson, Lai, and Sandulache joined together once more to submit an NCI R01 that leverages the technology for precision oncology in head and neck cancer. The project seeks to provide a method for real-time metabolic imaging using hyperpolarized MRI to assess tumor response to genotoxic stress induced by cisplatin in head and neck squamous cell carcinoma. In doing so, it will establish hyperpolarized MRI as a non-invasive imaging modality able to predict response to treatment, which will be a noteworthy first step towards a precision oncology approach. Congratulations to the investigators on this impactful work and to their funded R01 that is slated to begin in early FY 2023.



Caroline Chung, MD
Data Impact and Governance



David Hormuth, PhD
University of Texas at Austin

Imaging-Informed, Biophysical Computational Modeling to Forecast Tumor Progression in Gliomas

Dr. Caroline Chung at MDACC partnered with Dr. David Hormuth of UT Austin Oden Institute to submit a CPRIT grant that seeks to develop and validate a mathematical model and clinical-computational framework to predict and spatially-map more aggressive and treatment-resistant regions to enable personalized treatment for patients receiving radiation therapy for gliomas. The proposal leveraged preliminary data from their previous work sponsored by a collaborative initiative through MDACC, the Oden Institute, and Texas Advanced Computing Center. Their CPRIT

collaboration integrates multiparametric magnetic resonance imaging data with mechanism-based mathematical modeling to predict disease response, enabling physicians to forecast tumor behavior and enable predictive adaptive radiotherapy delivery for maximized tumor control. Congratulations to Drs. Chung and Hormuth on the CPRIT funding awarded in February 2022.

Featured IGCT Investigator Grants in 2022



Rahul Sheth, MD
Interventional Radiology

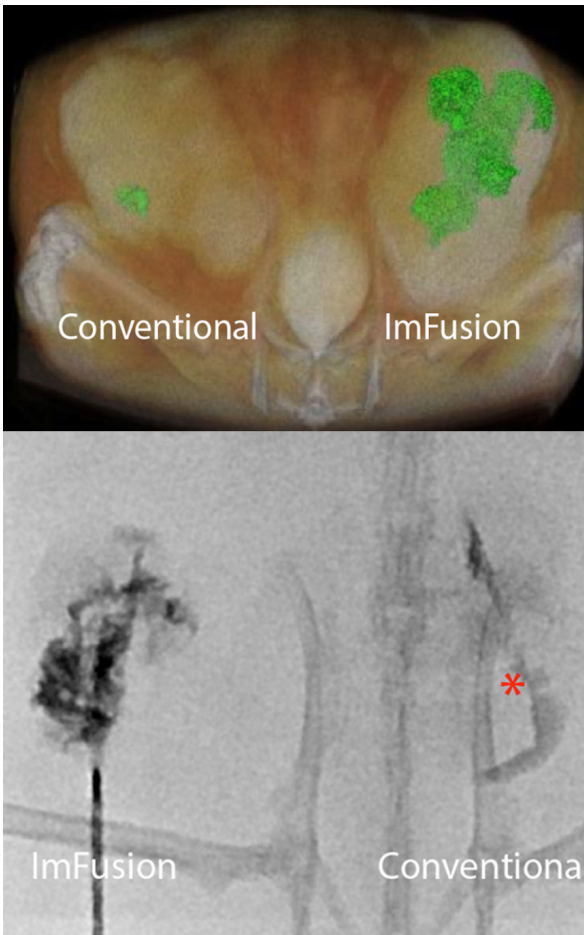
An Image-Guided Immunotherapy and Hyperthermia Delivery Device to Overcome Barriers to Tumor Immunity for Advanced Hepatocellular Carcinoma

Gaps in knowledge regarding intratumoral delivery of immunotherapies and microenvironment priming lead Dr. Rahul Sheth to pursue research on an innovative, multi-modality image-guided approach to maximize tumor immunity in the treatment of hepatocellular carcinoma patients. His research will evaluate a novel intratumoral drug delivery system with an adjustable, electrically insulating sleeve specifically designed for intratumoral delivery of immunotherapies (the ImFusion system). The system allows for controlled drug delivery and radiofrequency-mediated intratumoral hyperthermia generation to prime the tumor microenvironment for immune activation. This work represents a significant expansion of the use of hyperthermia in locoregional therapies to its application as a potential immune primer. Having scored favorably, NIH award of funding for this project is anticipated in FY 2023. Congratulations to Dr. Sheth on this outstanding research and anticipated R01 funding.

“I am very much looking forward to continuing collaborations with IGCT in the new year. IGCT’s expertise in pre-, intra-, and post-procedural image guidance is second to none, and there are multiple exciting projects I can’t wait to work on together.”

Rahul Sheth, MD

Associate Professor, Department of Interventional Radiology



Featured IGCT Research



Surgical Data Science and Surgineering Programs

Dr. Siewerdsen launched the Surgical Data Science (SDS) Program and Surgineering Lab at UT MD Anderson in July 2022. The SDS Program aims to gain new insights on factors affecting variability in surgical outcome and to build deep predictive models based on the capture and curation of conventionally ephemeral, multi-modality data generated in the OR. The SDS Program also employs systems engineering approaches for Surgical Process Modeling (SPM) approaches to gain rigorous, statistical insight on procedural workflow and identify opportunities for improvement and optimization. Recognizing that such quantitative approaches to surgical systems and data are vital to advancing the quality and value of surgery in decades ahead, Dr. Siewerdsen formed the Surgineering Lab to support activities in development and translation at UT MD Anderson. The Surgineering Lab features advanced systems for image-guided surgery, including intraoperative CT, cone-beam CT, endoscopy, and surgical guidance and navigation in forms that mirror a realistic Operating Room (OR) and will form an important proving ground and home base for translational research. Dr. Siewerdsen and his team of Surgineers bring expertise in imaging science, surgical technology, image analytics, surgical robotics, deep learning, and regulatory science to tackle challenges in OR workflow, technology integration, and surgical data science.



“The Surgineering Lab extends the capabilities of the IGCT Program for interdisciplinary collaborations in surgery. Dr. Brock’s leadership of the IGCT Program was the spark that helped to ignite interest in creating such a lab with cutting-edge technologies that mimic a clinical OR co-located among IGCT resources. The Surgineering and Surgical Data Science Programs fit naturally with ongoing research in the IGCT, where imaging is recognized as one of the most vital forms of technology and data streams in the operating room.”

Jeffrey H. Siewerdsen, PhD
Professor, Department of Imaging Physics
Director, Surgical Data Science Program, Institute for Data Science in Oncology

Featured IGCT Research



Gregory P. Reece, MD
Professor, Plastic Surgery



Kristy K. Brock, PhD
Professor, Imaging Physics

Enhanced Biomechanical Modeling of the Breast for Womens Health

Drs. Greg Reece and Kristy Brock are partnering with Dr. Michael Sacks (Biomedical Engineering, UT Austin) for an NIBIB R01-funded multidisciplinary research study. The team is leveraging complex biomechanical modeling, machine learning, structural engineering, and correlative pathology to create a structurally accurate computer model of the breast that is a faithful reproduction of the anatomy. Their overall vision is to improve the accuracy of the model such that it can be used as a reliable tool in the diagnosis and management of breast cancer, in surgeon education and training, in patient education for better shared decision making, and in

clothing design, especially for women in the post mastectomy recovery period. They aim to improve the model by determining the anatomical and biomechanical characteristics of the fascial support system of the breast, understanding the sensitivity of the patient specific parameters across the population, and validating the translation of these models, with their inherent uncertainties, into the patient-specific setting. Drs. Brock and Reece have leveraged many IGCT resources for this project, including extensive use of the Xerra CFT and CryoJane tape transfer system for correlative pathology.



“Collaborating with the IGCT team for the first time made the grant writing process an organized and efficient experience because of their exceptional project management skills, professional experience and pleasant personalities. For instance, they introduced us to an alternative grant format that helped us focus our thoughts, which facilitated grant writing in record time.

While much of our work together lays ahead of us, I know that their insight, cutting edge imaging technology, and modeling abilities will prove invaluable as we work to complete the grant.”

Gregory P. Reece, MD
Professor, Department of Plastic Surgery

Featured IGCT Research



Bruno C. Odisio, MD
Associate Professor,
Interventional Radiology

Stereotactic Liver Ablation with Intra-Arterial CT Hepatic Arteriography and Ablation Confirmation Software Assessment (STEREOLAB)

Dr. Odisio’s STEREOLAB trial leverages advances in stereotactic guidance used at MD Anderson in neurosurgery and for high-precision liver ablation therapy in the interventional radiology setting. The trial will also employ intra-arterial CT hepatic arteriography and ablation confirmation software to better visualize and assess ablation margins, respectively. The trial hopes to significantly reduce the rates of local tumor progression following colorectal liver metastasis ablation through its innovative protocol. To the best of our knowledge, this study represents the first trial using stereotactic guidance for liver ablation in the United States. Dr. Odisio and his IGCT Collaborators, Drs. Claudio Tatsui and Jeffrey Weinberg (Neurosurgery), and Drs. Kristy Brock and Kyle Jones (Imaging Physics), anticipate enrollment of their first patient during the Spring of 2023. Additional information about the trial can be found at [clinicaltrials.gov \(NCT #05361551\)](https://clinicaltrials.gov/ct2/show/study/NCT05361551).

“Through the IGCT Research Program, I was able connect with colleagues from the Neurosurgery Department to translate the use of stereotactic imaging guidance for the treatment of liver tumors, which we will evaluate soon under a sponsored clinical trial.”

Bruno C. Odisio, MD
Associate Professor, Department of Interventional Radiology

Image Guided Cancer Therapy

T32 Training Program

**MPIs/Program Directors: Kristy K. Brock, PhD (Imaging Physics)
Stephen Lai, MD, PhD (Head and Neck Surgery) C. Dave Fuller,
MD, PhD (Radiation Oncology)**

The **IGCT T32 Training Program** provides integrated, cross-disciplinary research and training needed for tomorrow's pioneering researchers to advance image guided cancer therapy (surgery, interventional and diagnostic radiology, radiation oncology, and correlative pathology).

Program Overview

- Cross-disciplinary & mentoring and support from established clinician scientists and investigators
- Personalized and adaptable training plan to fit your career goals
- Immersive multi-disciplinary research
- Clinical shadowing with IGCT faculty in key image guided cancer therapy areas
- Scientific & grant writing training with faculty guidance and mentoring to help the trainee achieve independent funding (e.g., NIH K-awards)
- Professional development and knowledge building writing development opportunities:
 - IGCT courses
 - Seminar series
 - Journal club
 - Clinical trials & clinical research training

Eligibility

- PhD, MD, or MD/PhD (or equivalent; within 3 years of degree or completion of clinical residency program)
- Strong desire and interest to pursue research in image guided cancer therapies
- US citizen or permanent resident (NIH requirement)

How to Apply

Interested candidates may submit an application to include the below documents via the link provided below:

- CV
- Research/Interest statement
- Adversity/Diversity statement
- Contact information for three referees to provide letters of reference

[Click here to apply today!](#)

To learn more, visit <http://www.mdanderson.org/IGCT-T32> or email us at IGCT-T32@mdanderson.org.

Investigators Joining IGCT in FY 2022



Peiman Habibollahi, MD

Assistant Professor

Department of Interventional Radiology



Katherine A. Hutcheson, PhD

Professor

Department of Head & Neck Surgery



Yon Son (Betty) Kim, MD, PhD

Professor

Department of Neurosurgery



Savitri Krishnamurthy, MD

Professor

Department of Pathology



Jeffrey H. Siewerdsen, PhD
Professor
Department of Imaging Physics



Laurence D. Rhines, MD
Professor
Department of Neurosurgery



Gregory P. Reece, MD
Professor
Department of Plastic Surgery



Ravi Rajaram, MD
Assistant Professor
Department of Thoracic & Cardiovascular
Surgery



C. Chad Quarles, PhD
Professor
Department of Cancer Systems Imaging

IGCT Seminars and Workshops

The IGCT holds monthly seminars and workshops featuring internal and external speakers that are focused on image guided cancer therapy research and clinical applications. IGCT seminars and workshops are attended by faculty, research staff, and trainees from more than 40 diverse departments across 14 divisions/operational areas at MD Anderson. Starting in FY 2022, seminars and workshops were recorded and are available on demand to all MD Anderson employees via link on our IGCT website. In late FY 2022, our seminar series and workshops were approved for Continuing Medical Education (CME) credits, which we are excited to now offer to attendees.

FY 2022 IGCT Seminars		
  September 20, 2021	<p>Anirban Maitra, MBBS - Professor, Dept. of Pathology; <i>Scientific Director</i>, Ahmed Center for Pancreatic Cancer Research, MDACC</p> <p>Eugene J. Koay, MD, PhD - Associate Professor, Dept. of GI Radiation Oncology, MDACC</p> <p>Manoop S. Bhutani, MD - Professor, Dept. of Gastroenterology, Hepatology, and Nutrition; <i>Director</i>, Endoscopic Research and Development, MDACC</p>	<p>"Pancreatic Cancer Therapy: Advances & Challenges, Radiomics Prediction in Treatment Response, and Endoscopic Guided Therapies"</p>
 October 4, 2021	<p>Iwan Paolucci, PhD - Postdoctoral Fellow, Dept. of Interventional Radiology, MDACC</p>	<p>"Stereotactic Image-Guided Surgery - An Introduction for Non-Engineers"</p> <p>Part 1 of 2 in a lecture series.</p>
 October 18, 2021	<p>Iwan Paolucci, PhD - Postdoctoral Fellow, Dept. of Interventional Radiology, MDACC</p>	<p>"Stereotactic Image-Guided Ablation of Malignant Liver Tumors - From Bench to Bedside"</p> <p>Part 2 of 2 in a lecture series.</p>

FY 2022 IGCT Seminars

	<p><u>Vinodh A. Kumar, MD</u> - Associate Professor, Dept. of Neuroradiology, MDACC <i>"Introduction to Pre- and Intra-Operative MRI"</i></p> <p><u>Sujit S. Prabhu, MD</u> - Professor, Dept. of Neurosurgery, MDACC <i>"Intra-Operative Direct Cortical Simulation for Functional Mapping"</i></p> <p><u>Kyle R. Knoll, PhD</u> - Assistant Professor, Dept. of Neuro-Oncology, MDACC <i>"Assessment of Neurocognitive Function and Outcome"</i></p> <p><u>Ho-Ling Anthony Liu, PhD</u> - Professor, Dept. of Imaging Physics, MDACC <i>"Technical Challenges in Functional MRI"</i></p>	<p><i>"Functional Mapping for Brain Tumor Surgery"</i></p>	
<p>November 4, 2021</p>	<p><u>S. Cheenu Kappadath, PhD</u> - Associate Professor, Dept. of Imaging Physics, MDACC <i>"Updates on Y90-Radioembolization Dosimetry and Dose-Response"</i></p> <p><u>Gregory C. Ravizzini, MD</u> - Associate Professor, Dept. of Nuclear Medicine, MDACC <i>"Current Status of Prostate Theranostics"</i></p> <p><u>H. Charles Manning, PhD</u> - Professor, Dept. of Cancer Systems Imaging, MDACC <i>"Emerging Opportunities in Theranostics Research"</i></p>	<p><i>"Theranostics: Current Status and Emerging Opportunities at MD Anderson"</i></p>	
	<p>December 6, 2021</p>	<p><u>Cynthia Rudin, PhD</u> - Professor, Dept. of Computer Science, Electrical and Computer Engineering, and Statistical Science; <i>Director</i>, Prediction Analysis Lab, Duke University</p>	<p><i>"Interpretable Neural Networks for Computer Vision: Clinical Decisions that are Computer-Aided, not Automated"</i></p>
	<p>January 19, 2022</p>	<p><u>Pallavi Tiwari, PhD</u> - Assistant Professor, Dept. of Biomedical Engineering, Case Western Reserve University</p>	<p><i>"Artificial Intelligence and Computational Imaging: Opportunities for Precision Medicine"</i></p>
	<p>February 14, 2022</p>	<p><u>Søren M. Bentzen, PhD</u> - Professor, Dept. of Epidemiology and Public Health; Professor, Dept. of Radiation Oncology; <i>Division Director</i>, Biostatistics and Bioinformatics, University of Maryland School of Medicine</p>	<p><i>"Seeing is Believing - But Where's the Evidence"</i></p>
	<p>March 29, 2022</p>		

IGCT Seminars and Workshops

FY 2022 IGCT Seminars

  <p>April 11, 2021</p>	<p>Ignacio I. Wistuba, MD - Professor, Dept. of Translational Molecular Pathology, MDACC <i>"MD Anderson Moon Shot APOLLO Platform"</i></p> <p>Alda L. Tam, MD - Professor, Dept. of Interventional Radiology, MDACC <i>"Image-Guided Research Biopsies: Best Practices"</i></p>	<p><i>"Advances in Image Guided Biopsy"</i></p>
 <p>May 19, 2021</p>	<p>Toby C. Cornish, MD, PhD - Associate Professor, Dept. of Pathology, School of Medicine, University of Colorado - Anschutz Medical Campus</p>	<p><i>"Quantitative Analysis of Ki67, a Prognostic Biomarker in Gastroenteropancreatic Neuroendocrine Tumors"</i></p>
    <p>June 1, 2022</p>	<p>Caleb O'Connor, MS - Medical Physics Assistant, Dept. of Imaging Physics, MDACC</p> <p>Yuan-Mao (Gary) Lin, MD - Postdoctoral Fellow, Dept. of Interventional Radiology, MDACC</p> <p>Iwan Paolucci, PhD - Postdoctoral Fellow, Dept. of Interventional Radiology, MDACC</p> <p>Bruno C. Odisio, MD - Associate Professor, Dept. of Interventional Radiology, MDACC</p>	<p><i>"Anatomical Modeling to Improve the Precision of Image Guided Liver Ablation: A COVER-ALL Clinical Trial Update"</i></p>
 <p>August 9, 2022</p>	<p>2022 Awardees:</p> <p>Best Design & Graphics Award – Rachel Ivy <i>(Mentor: Dr. Caroline Chung)</i></p> <p>Best Overall Presentation – Yining Zha <i>(Mentor: Dr. Kristy Brock)</i></p> <p>Best Potential for Clinical Impact – Ella Aldridge <i>(Mentor: Dr. Kate Hutcheson)</i></p>	<p><i>"IGCT Summer Undergraduate Student Showcase"</i></p>

FY 2022 IGCT Workshops

"Getting Started with AI - Day 1 - AI Resources and Tools"**November 11, 2021****"An XNAT Overview"****Caroline Chung, MD** - Vice President and Chief Data Officer, MDACC**"Using Docker for AI Research"****John Wood, MS** - Computational Scientist, Dept. of Imaging Physics, MDACC**"Enterprise Data Science Environments"****James Lomax, MS** - Data Scientist, MD Anderson**"HPC at MD Anderson"****Bradley Broom, PhD** - Professor, Dept. of Bioinformatics and Computational Biology, MD Anderson**"Texas Advanced Computing Center (TACC)"****William (Joe) Allen, PhD** - Research Associate, Texas Advanced Computing Center, University of Texas at Austin**"AI Tools, Tips, and Tricks"****Brian M. Anderson, PhD** - Medical Physics Resident, University of California-San Diego**"Getting Started with AI - Day 2 - Leveraging Resources and Tools for Research in AI"****November 12, 2021****Bastien Rigaud, PhD** - Postdoctoral Fellow, Morfeus Lab, Dept. of Imaging Physics, MDACC**Raji Muthusivarajan, PhD** - Postdoctoral Fellow, Fuentes Lab, Dept. of Imaging Physics, MDACC**Jia Wu, PhD** - Assistant Professor, Dept. of Imaging Physics, MDACC**Callistus Nguyen, PhD** - Computational Scientist, Court Lab, Dept. of Radiation Physics, MDACC**Ankit B. Patel, PhD** - Assistant Professor, Dept. of Neuroscience, Baylor College of Medicine; Assistant Professor, Electrical and Computer Engineering, Rice University**John Wood, MS** - Computational Scientist, Dept. of Imaging Physics, MDACC

IGCT Seminars & Workshops

FY 2022 IGCT Workshops

"Navigating Team Science - Day 1: Building the Right Teams"

March 1, 2022

*Opening Remarks given by **Peter WT Pisters, M.D.** -
President of MD Anderson*

"Building Strong Team Foundations"

Darrell Simmons, BA, JD - Leadership Practitioner,
Leadership Institute, MDACC

"Building Collaborative Research Teams"

Andrew Futreal, PhD - Professor and Chair, Dept. of
Genomic Medicine; Vice President for Strategic Translational
Research Programs, MDACC

"Successful Team Science Collaborations: U54 Grants"

Eugene J. Koay, MD, PhD - Associate Professor, Dept. of
Radiation Oncology, MDACC

"Successful Team Science Collaborations: P01 Grants"

C. Dave Fuller, MD, PhD - Associate Professor, Dept. of
Radiation Oncology; Research Director, Radiation
Oncology, MDACC

"Successful Team Science Collaborations: Multi- Institutional Clinical Trials"

Jennifer K. Litton, MD - Professor, Dept. of Breast Medical
Oncology; Vice President of Clinical Research, MDACC

"Successful Team Science Collaborations: SPORE Grants"

Juan Fueyo, MD - Professor, Dept. of Neuro-
Oncology, MDACC

FY 2022 IGCT Workshops

**"Navigating Team
Science - Day 2:
Resolving Conflict and
Working Through
Challenging Discussions"**

March 2, 2022

"Ideal Team States: What if Reality Isn't Ideal?"

Dustin E. Bennett, BA - *LI Training Specialist, Leadership Institute, MDACC*

"Conflict Resolution in Team Science"

Scott B. Cantor, PhD - *Professor, Dept. of Health Services Research; Ombudsman, MDACC*

"Challenges in Team Science and Steps to Resolution"

Anirban Maitra, MBBS - *Professor, Depts. of Pathology and Translational Molecular Pathology; Scientific Director, Ahmed Pancreatic Cancer Center; Deputy Division Head for Academic Science, MDACC*

"Authorship Conflicts"

Varsha Gandhi, PhD - *Professor and Chair Ad Interim, Dept. of Experimental Therapeutics, MDACC*

Panel Discussion: Resolving Conflicts and Working Through Challenging Discussions

MD Anderson Panelists:

Dustin E. Bennett, BA - *LI Training Specialist, Leadership Institute*

Scott B. Cantor, PhD - *Professor of Health Services Research & Ombudsman*

Anirban Maitra, MBBS - *Professor of Pathology & Translational Molecular Pathology; Scientific Director, Ahmed Pancreatic Cancer Center; Deputy Division Head for Academic Science*

Varsha Gandhi, PhD - *Professor and Chair Ad Interim of Experimental Therapeutics*

Robert C. Bast, Jr., MD - *Vice President for Translational Research*

Stephen Y. Lai, MD, PhD - *Professor of Head & Neck Surgery*

Caroline Chung, MD - *Vice President and Chief Data Officer*

James A. Bankson, PhD - *Professor of Imaging Physics*

Rebecca M. Howell, PhD - *Professor of Radiation Physics*

Ann H. Klopp, MD, PhD - *Professor of Gynecologic Oncology*

IGCT Seminars & Workshops

FY 2022 IGCT Workshops

“Deformable Image Registration Workshop - Day 1: Fundamentals of Deformable Image Registration”

May 18, 2022

“Fundamentals of DIR and Similarity Metrics”

William (Sandy) Wells, PhD - Professor, Dept. of Radiology, Brigham and Women’s Hospital and Harvard University

“Demons Algorithms”

Gregory C. Sharp, PhD – Associate Professor and Medical Physicist, Dept. of Radiation Oncology, Massachusetts General Hospital

“Free-Form Deformable Algorithms”

Jamie McClelland, PhD – Associate Professor, Dept. of Medical Physics and Bioengineering, University College London

“Fluid-Flow and Elastic Algorithms”

Gary E. Christensen, PhD - Professor, Depts. of Electrical and Computational Engineering and Radiation Oncology, University of Iowa

“Deep Learning-Based Algorithms”

Jayashree Kalpathy-Cramer, PhD – Associate Professor, Dept. of Radiology, Massachusetts General Hospital and Harvard University

“Biomechanical Model-Based Algorithms”

Kristy K. Brock, PhD - Professor, Dept. of Imaging Physics, MDACC

FY 2022 IGCT Workshops

**“Deformable Image
Registration Workshop -
Day 2: Successes and
Future Work in
Deformable Image
Registration”**

May 19, 2022

“Physician’s Perspectives”

Cynthia Menard, MD – Head – Radiation Oncology Service, CHUM; Professor, Université de Montréal

“Brain”

Michael Miga, PhD - Professor, Depts. of Biomedical Engineering and Radiology, Vanderbilt University

“Spine”

Jeffrey H. Siewerdsen, PhD - Professor, Dept. of Biomedical Engineering, Johns Hopkins University

“Head and Neck”

Jan-Jakob Sonke, PhD - Professor, Dept. of Radiation Oncology, Netherlands Cancer Institute

“Lung”

Geoff Hugo, PhD - Professor, Dept. of Radiation Oncology, Washington University School of Medicine in St. Louis

“Liver”

Jon S. Heiselman, PhD – Postdoctoral Research Scholar, Memorial Sloan Kettering Cancer Center

“Pelvis”

Bastien Rigaud, PhD – Research Scientist, University of Rennes

Our IGCT Staff and Resources are Growing



Austin Castelo, BS joined the IGCT in Spring 2022 as an Associate Systems Analyst. Austin is a graduate from the University of California, Santa Barbara, where he earned a BS in Financial Mathematics and Statistics. Austin brings significant strengths in computational sciences, AI model

development, computer vision/image analysis, application container development, and statistics. IGCT-related projects Austin contributes to include AI model development for segmentation of the liver for the COVERALL trial, deformable image registration of the brain during neurosurgery, and streamlining data sharing efforts as part of a core for a P01.



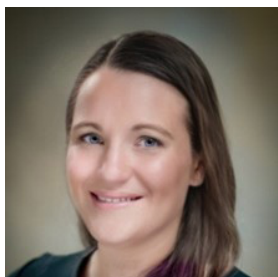
Mais Al Taie, MD, PhD joined IGCT as a Research Investigator in the Spring of 2022. Dr. Al Taie received her PhD in Radiology and Oncology from Tokyo Medical and Dental University and her MD from the University of Mustansiriyah in Iraq. Dr. Al Taie's projects include manual and AI

algorithm-based contouring and assessment of liver images towards developing robust AI segmentation algorithms and vessel annotation detection on CT and ultrasound images toward the development of a deep learning model for vessel identification.



Nihil Patel, MS joined the IGCT as a Research Assistant II in October 2022. Nihil is a graduate from the University of Houston, where he earned an MS in Computer Science. Prior to joining the IGCT, Nihil served as a research intern at Baylor College of Medicine and at Gottingen University. Nihil's primary

project is to retrain the Morfeus Lab's deep learning CT segmentation algorithms on newer data with the eventual goal of evaluating their performance on MR images via transfer learning. Nihil brings coding, scripting, AI algorithm development, and computational sciences skills to his work in the IGCT Program.



Kari Brewer Savannah, PhD joined the IGCT in Fall 2020 and serves as the Program Director. Dr. Savannah holds a BS in Chemistry from Hillsdale College and a PhD in Biochemistry and Biomedical Sciences from the MD Anderson UTHealth GSBS. She previously served as Assistant Professor at the University of Texas at Brownsville and

Houston Baptist University. Dr. Savannah has significant experience in the design, management, and assessment of research training programs, educational programming, and in initiatives to expand diversity, equity, and inclusion for underrepresented minorities in STEM fields. Dr. Savannah brings a strong background in research administration, scientific project management, and program management to her role in the IGCT. Dr. Savannah manages large, multidisciplinary scientific projects, assists in multi-investigator grant preparation and management, and manages IGCT classified staff.



Caleb O'Connor, MS joined the IGCT as a Physics Assistant in Summer 2021. Caleb earned his BS and MS in Physics from the University of Louisiana at Lafayette. In his role in the IGCT, Caleb works on scripting automation of existing algorithms for clinical research and deployment, building pipelines, image analysis and registration, and in many

additional computational areas.



Emma McCollum, BS joined the IGCT as a Research Assistant I in June of 2021. Emma is a graduate from Washington University in St. Louis, where she earned a BS in Biomedical Engineering. Emma's projects include assessing accumulated dose delivery of intensity modulated photon therapy in prostatic adenocarcinoma patients

and ongoing collaborations with Dr. Justin Bird and the Surgery Innovation Program at MD Anderson. Prior to joining the IGCT full time, Emma spent summers in 2019 and 2020 as an undergraduate researcher with IGCT.



Androniki Mitrou, MS joined the IGCT as a Physics Assistant in Fall 2021 after completing her MS in Medical Physics at the University of Massachusetts Lowell. Her projects include dose accumulation using deformable image registration in head and neck cancer patients and correlative pathology. She has expertise in image

analysis and registration, anatomical modeling, building pipelines and many other computational areas.

How Can the IGCT Help You as an IGCT Investigator?



Have a small project or piece of a grant that requires a computational scientist, scripting, or other tasks but can't justify hiring a full FTE? Tap in to IGCT resources to fill these needs!

Please contact the IGCT Program (IGCTR@mdanderson.org) or reach out to IGCT Director Dr. Kristy Brock to learn more about IGCT-based resources or discuss options and resource availability.

- Medical image annotation and contouring
- Image analysis
- Image registration
- Anatomical modeling
- Finite element models and analysis
- Coding and scripting
- AI algorithm development
- Scaling code/building pipelines
- Application container development
- Computational science needs

To learn more about the Image Guided Cancer Therapy Program at MD Anderson Cancer Center, please visit our website at www.mdanderson.org/IGCT or email us at igctr@mdanderson.org.

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~~Cancer~~ Center

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