2023 Regenerative Medicine Essentials Course & World Stem Cell Summit

June 5–9, 2023

Sponsored by the NC Biotech Meeting Grant

North Carolina Biotechnology Center
Welcome to the 2023 RME & WSCS

On behalf of the course organizing committee and a prominent group of course instructors, we welcome all to the Wake Forest Institute for Regenerative Medicine’s (WFIRM) 10th Annual Regenerative Medicine Essentials: From the Fundamentals to the Future course, which is held in conjunction with the 20th edition of the World Stem Cell Summit.

Often referred to as the next evolution of modern health care, the regenerative medicine field touches many disciplines -- from clinical care and engineering to basic science and bioethics. We initiate this unique co-joined event with the RME “core curricula.” The 3-day RME course, taught by leading experts in the field, addresses the multidisciplinary nature of regenerative medicine and provides attendees a firm foundation in this exciting field, insight into the current state of the field encompassing applications, challenges and a prognostic glance to the future.

Our primary objective is to provide an all-inclusive review of various aspects of RM including background material, key scientific components of the RM field, ethical, economic, educational, workforce and other issues important to RM, along with expanded opportunities to network and meet leading professionals in the field. Participants are able to move “beyond the essentials” as they are also able to participate in the range of sessions and activities associated with the 20th Edition of the World Stem Cell Summit.

In partnership with the Regenerative Medicine Foundation, the WFIRM organizing committee has put together a dynamic and informative course that covers the “essential” topics, fundamental principles and current progress in tissue engineering and regenerative medicine, including stem cells and cell therapy, biomaterials, technology-based tissue engineering and enabling technologies, as well as regulatory, ethical, economic issues critical to the field. Our instructors, including faculty from WFIRM as well as distinguished, prominent experts in the field from industry, academia and the government who join from across the globe, provides attendees a strong foundation along with insights into future directions and potential applications of tissue engineering and regenerative medicine.

We hope this distinctive, co-joined virtual event will further interactions among basic scientists engaged in discovery and development, translational researchers who bring laboratory discoveries to the clinical forefront, clinicians and those engaged with funding, regulatory and commercialization endeavors, and further broaden and facilitate interactions with future leaders in the field who join as students.

We look forward to an exciting, enjoyable and productive experience for all.

Anthony Atala, MD
Director, WFIRM
RME 2023 Course Director

Joan F. Schanck, MPA
Chief Education Program Officer, WFIRM
RME 2023 Course Co-Director
Welcome to World Stem Cell Summit 2023

On behalf of the Regenerative Medicine Foundation (RMF), I welcome you to RMF’s “official course”— the annual Regenerative Medicine Essentials: From the Fundamentals to the Future. We believe the course is a perfect platform for advancing the RMF mission to accelerate regenerative medicine to improve health and deliver cures.

Here at RMF, we recognize that the power of collaboration grows in a nonlinear fashion. One plus one is more than two, and one plus one plus one is much, much more than three — offering explosively positive and unpredictable possibilities. By attending this course, you will expand your knowledge in a totally immersive experience and gain personal connections and collaborations. Be open to all opportunities presented.

Interact with the outstanding interdisciplinary faculty and the superlative researchers of our host institution, the Wake Forest Institute for Regenerative Medicine, led by our treasured friend, Dr. Anthony Atala. We are here for you. Open to your questions and points of view.

This week I urge you to network with fellow attendees. Break bread, make new friends and remember to collect those opportunities.

In my journey, I have found Winston-Salem to be one of the most collegial places on the planet. This week, I assure you, it’s the best place to learn about the future of medicine!

Cordially,

Bernard Siegel, JD
Executive Director, Regenerative Medicine Foundation
Founder & Chair, World Stem Cell Summit
With Special Thanks and Recognition

**Organizing Committee**

Anthony Atala, MD  
*RME 2023 Course Director, Director, WFIRM*

Bernard Siegel, JD  
*RME 2023 Course Co-Director, Executive Director, Regenerative Medicine Foundation*

Joan F. Schanck, MPA  
*RME 2023 Course Co-Director, Chief Education Program Officer, WFIRM*

Karri Campbell Adams, EdD, MSL  
*Director, Educational Technologies and Global Education, WFIRM*

Callie Allen  
*Education and Outreach Coordinator, WFIRM*

Tracy Criswell, PhD  
*Associate Professor, WFIRM*

Bonnie Davis  
*Chief Communications Officer, WFIRM*

Joseph Dawson  
*Director of Communications, RMF*

Emily Gregg  
*Director of Marketing, WFIRM*

Kevin McMahon  
*Website Developer, RMF*

Joe Krieger  
*President/Founder, Boston BioLife*

Eve Herold  
*Director of Policy Research and Education, Healthspan Action Coalition*

Melissa King  
*Chief Operating Officer and Founding Board Member, Healthspan Action Coalition*

Lindsey Schwab  
*Director of Community Relations, Innovation Quarter*

James Patterson  
*Director of Marketing and Communications, Innovation Quarter*

Jason Kaplan  
*Associate Vice President, Wake Forest School of Medicine*

Isaac Perry  
*Head of Biotech and Life Science Ecosystem Development, Innovation Quarter*

Nancy Johnston  
*Executive Director, Piedmont Triad Office, North Carolina Biotechnology Center*

Ethanie Good  
*Director of Marketing and Communications, Greater Winston-Salem, Inc.*
With Special Thanks and Recognition

**RME 2023 Career Perspectives Committee**
Damian Chance Hutchins  
PhD Candidate

Dariya Lizanets  
PhD Candidate

Timothy Dobroski  
PhD Candidate

Anastasiya Gorkun  
Research Fellow

Olivia Latham  
PhD Candidate

Siyuan Claire Li  
PhD Candidate

Oluwaseun Babatunde  
PhD Candidate

**WFIRM Lab Tours**
James Yoo, MD, PhD,  
Professor, WFIRM

Tara Jones,  
Research Lab Manager, WFIRM

Luana Sueko Peres-Damjanovic  
Research Lab Technician, WFIRM

Naresh Mahajan  
Clinician, WFIRM

Trang Simon  
Research Lab Technician, WFIRM

Dariya Lizanets  
Graduate Student, WFIRM

Katie Benson  
Research Lab Technician, WFIRM

**Other Contributors**
Ernie Lookabill  
Financial Analyst, WFIRM

Norma Zayas  
WFIRM
MODERN
Science-based, risk-based, evidence-based, modular, closed, bio-optimized, bio-safe, automation ready, smart ready, data rich, space efficient, cost effective, and sustainable.

ON DEMAND
Equipment-based GMP bio-production system, independent of cleanrooms and other brick-&-mortar, can be built/delivered/installen/validated within weeks to months, in clinics or pharma factories.

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MODULAR
Closes any production process: large or small, simple or complex, manual or automated. Easily reconfigures to accommodate any changes, improvements, equipment, automation, or scale up/out as needed. Easily disassembles to move and reassemble in different location.

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BIOMANUFACTURING
GMP or GLP production of cells-as-product, cells-as-substrate, organs, organelles, organoids, tissue, exosomes, microbiome, plant, insect, synthetic biologics, etc. Multi-modal or massively parallel. Centralized or distributed or mobile.

www.biospherixmedical.com
Mobile App
The RME Course has a mobile application utilizing the Yapp platform. The app contains the agenda, speaker information and much more. Visit https://my.yapp.us/J2S2EV on your mobile device to be directed to download.

We’re Social!
Like, follow, and connect with us on social media. Follow along, post pictures, and ask questions.

@WFIRMnews @RegenerativeMedicineFoundation
@WFIRMnews @WSCSummit

JOIN THE COALITION!
“The Healthspan Action Coalition is a global movement… We are translating ideas into action.”

www.HealthspanAction.org info@HealthspanAction.org
Internet Access
Connect to IQGuest and accept terms.

Transportation
Complimentary transportation between host hotels - Kimpton and Hampton Inn- and Innovation Quarter (WFIRM, Bowman Gray Center for Medical Education, and BioTech Place) is provided by ABC Door2Door, adhering to the following schedule:

Monday, June 5th-8th, 7:30am - 9:30am and 4:00pm - 6:30pm
From Innovation Quarter to hotels and return service

Friday, June 9th, 7:30am - 9:30am and 12:00pm - 2:00pm
From Innovation Quarter to hotels and return service

Wednesday and Thursday, June 7th and 8th, 2:00pm - 4:00pm,
Shuttle from Biotech Center/Bowman Gray to WFIRM Lab Tours
Loops every 15-20 minutes
Visitor Information
Bowman Gray Center for Medical Education
475 Vine Street
Winston-Salem, NC 27101

Wake Forest BioTech Place
575 Patterson Ave.
Winston-Salem, NC 27101

Registration & Check-In

Bailey Park
Wednesday Night Southern BBQ

Faster Transition of New Therapies to Market

Delivering on the promise of regenerative medicine requires significant progress in manufacturing to scale up technologies and make them affordable.

Making this progress a reality is the focus of the Regenerative Medicine Development Organization (ReMDO) - a non-profit organization that manages a consortium of more than 60 industry and academic members. The ultimate goal is to accelerate the transition of regenerative medicine technologies to the global market.

http://remdo.org
Parking Information

Venue Parking
Parking is available for free in the P8 lot located behind the building. Paid parking is also available across the street in the Link parking deck for $1/30min or $9/day.
With Special Thanks to our Sponsors

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Competent assistance for your project

Meet us at RME and World Stem Cell Summit June 5-9, 2023

For information and samples please contact us!
Email: collagenase@nordmark-biochemicals.com
Phone: +49 4122 712 560
www.nordmark-biochemicals.com

Stem Cells Translational Medicine

Submit, search, share, and shape the future

Stem Cells Translational Medicine, the official journal partner of the Regenerative Medicine Foundation, publishes high impact articles and concise reviews related to the clinical translation of all types of stem cells, tissue engineering, and regenerative medicine manufacturing and therapies.

www.StemCellsTM.com
Career Perspectives
Sessions & Overflow

RME Sessions
June 5-7

Career Perspectives
Sessions & Overflow

ReMDO/RegMIC
Meeting June 6

Bowman Gray Center for Medical Education
Fifth Floor
Stay an Extra Day: Places to Visit

Old Salem Museums and Gardens
900 Old Salem Rd., Winston-Salem, NC
www.oldsalem.org
Enjoy a self-guided walking tour of the historic town, an 18th-century Moravian village of Old Salem Museums and Gardens.

Reynolda House Museum of American Art
2250 Reynolda Rd., Winston-Salem, NC
www.reynoldahouse.org
American art, decorative arts and costumes that transport visitors into the era of the early 20th century near shops and restaurants.

Downtown Arts District & Shopping
400-700 Trade St., Winston-Salem, NC (and surrounding areas)
Downtown/Trade Street District has restaurants, retail shops, residences, business offices, and more located in this eclectic area.

Stay an Extra Day: Places to Eat

Sweet Potatoes
529 Trade St.,
336-727-4844

Yamas Mediterranean Street Food
624 W 4th St,
336-842-5668

Quanto Basta
680 West 4th St.,
336-893-6144

Krankies
211 East 3rd St.,
336-722-3016

Famous Toastery
770 Liberty View
336-306-9023

6th & Vine
209 W. 6th St.,
336-725-5577

The Katherine
401 N. Main St.,
336-761-0203

Six Hundred
450 Patterson Ave.,
336-283-6754

Six Hundred's coconut shrimp

Yamas' falafel bowl
AR³T REGENERATIVE REHABILITATION SESSION  TUE. JUN 6

3:50 pm to 3:55 pm: Kaitlin Geran, Spaulding Rehabilitation Hospital
Regenerative Rehabilitation: An Introduction

3:55 pm to 4:15 pm: Shang Song, PhD, University of Arizona
A Regenerative Rehabilitation Approach with Electrical Stimulation and Stem Cell Therapy for Neural Recovery

4:15 pm to 4:35 pm: Kai Wang, PhD, Harvard Medical School
Improving Aged Muscle Regeneration Using Bioengineering Approaches

4:35 pm to 4:55 pm: Christopher Nagelli, PhD, Mayo Clinic
Gene Delivery for Articular Cartilage Repair: A Look Towards a Regenerative Rehabilitation Approach

4:55 pm to 5:05 pm: Moderated Panel

WHAT IS AR³T
A multi-institutional network of laboratories supporting state-of-the-art research in the domains of tissue plasticity and regeneration, mechanobiology, and physical therapeutics

NIH-FUNDED RESOURCE CENTER
Supporting the development of Regenerative Rehabilitation by providing research collaborations and educational opportunities, and supporting technology development

RESEARCH AREAS
Biomaterials, Bioengineering, Stem Cells, Cellular Therapeutics, Mechanotransduction, Mechanosensitive, Biomarkers, Microtissue Systems, Animal Models, Gene Therapy, Imaging

RESEARCH SUPPORT & EDUCATION
- Pilot Grants: up to $150,000 is distributed each year
- Annual International Symposium on Regenerative Rehabilitation
- Webinar series
- List of publications and resources
- Advanced Training Courses

AR³T is supported by NICHD, NIBIB, and NINDS of the NIH under award number P2CHD086843
An ecosystem to support life science companies of all stages

From startup to scale-up to growth stage to mature companies, our life sciences ecosystem in the Innovation Quarter features space, resources and programming to support companies at any stage. With co-working and shared lab space, dedicated wet labs and full scale office plates, we have space to meet your needs.

Visit innovationquarter.com or contact us at innovationquarter@wakehealth.edu
**Anthony Atala MD**  
Director, Wake Forest Institute for Regenerative Medicine

**Joan Schanck MPA**  
Chief Education Program Officer, Wake Forest Institute for Regenerative Medicine

**Mahendra Rao MD, PhD**  
CEO, Implants Therapeutics

**Graca Almeida-Porada MD, PhD**  
Professor, Wake Forest Institute for Regenerative Medicine

**Jeanne Loring PhD**  
Director, Center for Regenerative Medicine, Dept. of Molecular Medicine, Scripps Research

**Scott Hollister PhD**  
Chair, Pediatric Technology; Associate Chair, Translational Research; Professor, Dept. of Biomedical Engineering, Georgia Institute of Technology and Emory University

**Tony Mikos PhD**  
Professor, Bioengineering and Chemical and Biomolecular Engineering, Rice University
Young Min Ju PhD
Assistant Professor, Wake Forest Institute for Regenerative Medicine

Sang Jin Lee PhD
Professor, Wake Forest Institute for Regenerative Medicine

Robert Newman PhD
Professor, Dept. of Biology, North Carolina A&T State University

Frank Marini PhD
Professor, Wake Forest Institute for Regenerative Medicine

Charles Gersbach PhD
Professor, Dept. of Biomedical Engineering & Surgery, Duke University
Peter Marks MD, PhD
Director, Center for Biologics Evaluation and Research, FDA

Arnold Caplan PhD
Professor, Biology; Director of the Skeletal Research Center at Case Western Reserve University

Josh Maxwell PhD
Assistant Professor, Wake Forest Institute for Regenerative Medicine

Victoria Weis PhD
Assistant Professor, Wake Forest Institute for Regenerative Medicine

James Yoo MD, PhD
Professor and Chief Operations Program Officer, Wake Forest Institute for Regenerative Medicine

Sean Murphy PhD
Associate Professor, Wake Forest Institute for Regenerative Medicine

Pamela Yelick PhD
Professor, Dept. of Orthodontics; Director, Division of craniofacial and Molecular Genetics; Director, Genetics Program, Tufts Graduate School of Biomedical Sciences
Karen Christman PhD
Professor, Dept. of Bioengineering, Sanford Consortium for Regenerative Medicine; Associate Dean for Faculty, Jacobs School of Engineering, University of California San Diego

Steve Bauer PhD
Chief Regulatory Science Affairs Program Officer, Wake Forest Institute for Regenerative Medicine

David Williams DSc, FREng, FLSW
Chairman and Director, Strait Access Technologies, South Africa; Emeritus Professor, Wake Forest Institute for Regenerative Medicine
DAY 2

Allen Comer PhD
Senior Director of Research, Mallinckrodt Pharmaceuticals

Kaitlin Geran
Research Program Manager, Alliance for Regenerative Rehabilitation Research and Training (AR3T)

Shang Song PhD
Assistant Professor of Biomedical Engineering, University of Arizona

Christopher Nagelli PhD
Assistant Professor, Physical Medicine and Rehabilitation, Mayo Clinic

Kai Wang PhD
Fellow, University of Pittsburgh

Academic research grants. Loans for startups. Workforce development initiatives. And more. NCBiotech’s programs accelerate the growth of North Carolina’s life sciences sector. | ncbiotech.org

North Carolina Biotechnology Center.
Amanda Wright
Co-Founder and Chief of Site Operations, Javara Research

Abla Creasy PhD
Vice President, Therapeutics Development, CIRM

Joshua Hare MD
Professor of Medicine, Molecular and Cellular Pharmacology, University of Miami; Director, Interdisciplinary Stem Cell Institute

Nancy King JD
Professor, Wake Forest School of Medicine and WFIRM; Co-Director, Center for Bioethics, Health and Society and Graduate Program in Bioethics, Wake Forest University

Loran Solorio PhD
Manager, Product Research Engineering, Cook Biotech

Lili Yang PhD
Associate Professor, Dept. of Microbiology, Immunology & Molecular Genetics, University of California, Los Angeles
Doris Taylor PhD  
CEO, Organamet Bio, Inc.

Shay Soker PhD  
Professor, Wake Forest Institute for Regenerative Medicine

Joshua Hunsberger PhD  
Chief Technology Officer, ReMDO; Executive Director, Regenerative Medicine Manufacturing Society

Randy Yerden  
CEO, BioSpherix Medical, div. of BioSpherix, Ltd.

John Schiel PhD  
Institute for Bioscience and Biotechnology Research, National Institute of Standards and Technology

Kersti Alm PhD  
CSO, Phase Halographic Imaging (PHI)
Mark Wolff, PhD
Advisory Industry Consultant, SAS Global IoT Division

Gary Green EdD
Chief Workforce Development Officer, ReMDO; Assistant Professor, Wake Forest Institute for Regenerative Medicine

Tracy Criswell PhD
Associate Professor, Wake Forest Institute for Regenerative Medicine

Russ Read
Executive Director, National Center for the Biotechnology Workforce

Celeste Carter PhD
Program Director, Division of Undergraduate Education, National Science Foundation

Kathleen O’Neil-Smith MD, FAARM
Clinician, Treat Wellness, LLC

Angeli Akey MD, FACP
Clinician, North Florida Integrative Medicine
How Oracle Health is changing the future of healthcare

Creating human-centric experiences to advance health

Oracle made healthcare our top priority because it affects everyone at one time or another. Improving health, enhancing the experience, reducing costs, and accelerating research have become our goals.

For more information contact:
Amanda Meling: amanda.meling@oracle.com
Dr. Robert Schaut: robert.schaut@oracle.com
## PROGRAM AT A GLANCE

### DAY 1 | JUNE 5

#### SESSION 1: PLURIPOTENT STEM CELLS & PROGENITORS

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker</th>
<th>Room</th>
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</thead>
<tbody>
<tr>
<td>11:00-11:15am</td>
<td>Discussion Panel</td>
<td>John Jackson PhD</td>
<td>BGCME 5107</td>
</tr>
<tr>
<td>11:25-11:45am</td>
<td>3D Printing of Synthetic Resorbable Materials for Tissue Engineering Scaffold</td>
<td>Scott Hollister PhD</td>
<td>BGCME 5107</td>
</tr>
<tr>
<td>11:45am-12:05pm</td>
<td>Injectable and 3D-Printable Hydrogels for Tissue Engineering</td>
<td>Tony Mikos PhD</td>
<td>BGCME 5107</td>
</tr>
<tr>
<td>12:05-12:25pm</td>
<td>Synthetic and Natural Biodegradable Biomaterials for Cardiovascular Tissue Engineering Applications</td>
<td>Young Min Ju PhD</td>
<td>BGCME 5107</td>
</tr>
<tr>
<td>12:25-12:40pm</td>
<td>Discussion Panel</td>
<td>Thomas Shupe PhD</td>
<td>BGCME 5107</td>
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#### SESSION 2: BIOMATERIALS

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#### SESSION 3: ENABLING TECHNOLOGIES

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<th>Session</th>
<th>Speaker</th>
<th>Room</th>
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<tbody>
<tr>
<td>1:45-2:05pm</td>
<td>3D Printing Technologies for Functional Tissue and Organ Replacement</td>
<td>Sang Jin Lee PhD</td>
<td>BGCME 5107</td>
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<tr>
<td>2:05-2:25pm</td>
<td>Imaging and Regenerative Medicine</td>
<td>Frank Marini PhD</td>
<td>BGCME 5107</td>
</tr>
<tr>
<td>2:25-2:45pm</td>
<td>Genome Engineering Technologies for Regenerative Medicine</td>
<td>Charles Gersbach PhD</td>
<td>BGCME 5107</td>
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</tbody>
</table>
PROGRAM AT A GLANCE

DAY 1

SESSION 3: ENABLING TECHNOLOGIES

2:45-3:05pm An Integrated MOE-based Microfluidic Systems for Real-Time Detection of Signaling Dynamics and Metabolomics Profiles

Robert Newman PhD

3:05-3:20pm Discussion Panel

Moderator: Frank Marini PhD

Break


Anthony Atala MD, Director of WFIRM

DAY 2

JUNE 6

SESSION 4: CELLULAR THERAPIES

9:00-9:10am Welcome and Introduction to Plenary

Anthony Atala MD

9:10-9:45am FDA Efforts to Advance Cell and Gene Therapy Development

Peter Marks PhD

10:00-10:20am MSCs Are NOT Stem Cells

Arnold Caplan PhD

10:20-10:40am Cellular Therapies and the Heart

Josh Maxwell PhD

10:40-11:00am Placental-derived Stem Cells for Necrotizing Enterocolitis

Victoria Weis PhD

WSCS Day 2: BioTech Place Atrium
### SESSION 4: CELLULAR THERAPIES

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<tr>
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<tbody>
<tr>
<td>11:00-11:15am</td>
<td>Discussion Panel</td>
<td>BGCME 5107</td>
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<tr>
<td>Moderator:</td>
<td>Josh Maxwell</td>
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<tr>
<td>Break</td>
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### SESSION 5: TISSUE ENGINEERED MEDICAL PRODUCTS

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<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>11:30-11:50am</td>
<td>Considerations for Developing Tissue Engineered Medical Products</td>
<td>BGCME 5107</td>
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<tr>
<td>James Yoo MD, PhD</td>
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<tr>
<td>11:50am-12:10pm</td>
<td>Animal Models and Strategies for Craniomaxillofacial Defect Repair</td>
<td>BGCME 5107</td>
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<tr>
<td>Pamela Yelick PhD</td>
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<tr>
<td>12:10-12:30pm</td>
<td>Injectable Biomaterials for Translational Regenerative Engineering</td>
<td>BGCME 5107</td>
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<tr>
<td>Karen Christman PhD</td>
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<tr>
<td>12:30-12:50pm</td>
<td>Human Lung Organ Tissue Equivalents for Disease Modeling and Drug Discovery</td>
<td>BGCME 5107</td>
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<tr>
<td>Sean Murphy PhD</td>
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<tr>
<td>12:50-1:10pm</td>
<td>Discussion Panel</td>
<td>BGCME 5107</td>
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<tr>
<td>Moderator:</td>
<td>James Yoo</td>
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<tr>
<td>Lunch</td>
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### SESSION 6: REGULATORY, PROCESS DEVELOPMENT & MANUFACTURING

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<th>Time</th>
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<tbody>
<tr>
<td>2:15-2:35pm</td>
<td>Innovation in Product Testing and Manufacturing for Regenerative Medicine Product Development</td>
<td>BGCME 5107</td>
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<tr>
<td>Steve Bauer PhD</td>
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### PROGRAM AT A GLANCE

#### DAY 2  JUNE 6

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
<th>Venue</th>
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</thead>
<tbody>
<tr>
<td>2:35-2:55pm</td>
<td>Improved Characterization of Stem Cell Based Regenerative Medicine Products</td>
<td>Jeanne Loring PhD</td>
<td>5107</td>
</tr>
<tr>
<td>2:55-3:15pm</td>
<td>International Perspectives on the Interplay Between Regulation and Ethics</td>
<td>David Williams DSc</td>
<td>5107</td>
</tr>
<tr>
<td>3:15-3:35pm</td>
<td>StrataGraft: Discovery, Development, and Approval</td>
<td>Allen Comer PhD</td>
<td>5107</td>
</tr>
<tr>
<td>3:35-3:45pm</td>
<td>Discussion Panel</td>
<td>Moderator: Steve Bauer PhD</td>
<td>5107</td>
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#### Break

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<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:55-4:00pm</td>
<td>Intro to Regenerative Rehabilitation</td>
<td>Kaitlin Geran</td>
<td>5107</td>
</tr>
<tr>
<td>4:00-4:20pm</td>
<td>A Regenerative Rehabilitation Approach with Electrical Stimulation and Stem Cell Therapy for Neural Recovery</td>
<td>Shang Song PhD</td>
<td>5107</td>
</tr>
<tr>
<td>4:20-4:40pm</td>
<td>Improving Aged Muscle Regeneration Using Bioengineering Approaches</td>
<td>Christopher Nagelli PhD</td>
<td>5107</td>
</tr>
<tr>
<td>4:40-5:00pm</td>
<td>Gene Delivery for Articular Cartilage Repair: A Look Towards A Regenerative Rehabilitation Approach</td>
<td>Kai Wang PhD</td>
<td>5107</td>
</tr>
</tbody>
</table>
SESSION 7: AR3T - ALLIANCE FOR REGENERATIVE REHABILITATION
RESEARCH & TRAINING

5:00-5:15pm Discussion Panel
Moderator: Kaitlin Geran

Break

Concurrent Young Scientist Perspectives Session

4:00-5:15pm Career Perspectives Session I: RM Research Careers with L. Yang PhD, S. Song PhD, A. Sharma PhD
Organizers: D. Hutchins, D. Lizenets, T. Leach, A. Gorkun, O. Latham, S. Clair L, O. Babutunde, T. Criswell, PhD

DAY 3
JUNE 7

SESSION 8: CLINICAL TRIALS & BIOETHICS

8:30-8:50am Regenerative Medicine: The New Distruptor in the Role of Clinical Trials
Amanda Wright

8:50-9:10am Advancing the Regenerative Medicine Ecosystem in California and Worldwide
Abla Creasey PhD

9:10-9:30am TBC: Cariomyopathy and Heart Failure Clinical Trials
Joshua Hare MD

9:30-9:45am Bioethics and Regenerative Medicine: Fundamentals for the Future
Nancy King JD

9:45-10:00am Discussion Panel
Moderator: Nancy King

Break
### SESSION 9: COMMERCIALIZATION

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker/Title</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>10:15-10:35am</td>
<td>Early Considerations in the Development and Commercialization of Advanced Tissue Repair</td>
<td>Loran Solorio PhD</td>
<td>BGCME 5107</td>
</tr>
<tr>
<td>10:35-10:55am</td>
<td>Stem Cell-Engineered “Off-The-Shelf” CAR-iNKT Cells for Cancer Immunotherapy</td>
<td>Lili Yang PhD</td>
<td>BGCME 5107</td>
</tr>
<tr>
<td>10:55-11:15am</td>
<td>Commercialization from Cells to Organs: What I see now 25 years later</td>
<td>Doris Taylor PhD</td>
<td>BGCME 5107</td>
</tr>
<tr>
<td>11:15-11:35am</td>
<td>Discussion Panel</td>
<td>Moderator: Shay Soker PhD</td>
<td>BGCME 5107</td>
</tr>
</tbody>
</table>

#### SESSION 10: ReMDO/RegMIC & NEXT GENERATION BIOMANUFACTURING

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker/Title</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:15-1:25pm</td>
<td>Building an Advanced Biomanufacturing Ecosystem</td>
<td>Joshua Hunsberger PhD</td>
<td>BGCME 5107</td>
</tr>
<tr>
<td>1:25-1:35pm</td>
<td>National Strategy for Advanced Biomanufacturing: a NIST perspectives</td>
<td>John Schiel PhD</td>
<td>BGCME 5107</td>
</tr>
<tr>
<td>1:35-1:45pm</td>
<td>Modular On Demand Biomanufacturing</td>
<td>Randy Yerden</td>
<td>BGCME 5107</td>
</tr>
<tr>
<td>1:45-1:55pm</td>
<td>Real Time Digital Holography for Industrial Biomanufacturing Quality Control</td>
<td>Kersti Alm PhD</td>
<td>BGCME 5107</td>
</tr>
</tbody>
</table>
SESSION 10: ReMDO/RegMIC & NEXT GENERATION BIOMANUFACTURING

1:55-2:05pm Advanced Computing for Data Processing and Optimization
Mark Wolff PhD

2:05-2:25pm Discussion Panel
Moderator: Joshua Hunsberger

SESSION 11: REGENERATIVE MEDICINE AND WORKFORCE DEVELOPMENT

2:40-2:50pm Connecting the Dots: An Educational Ecosystem for Regenerative Medicine
Gary Green EdD

2:50-3:00pm WFIRM's Training Ecosystem: Past, Present, Future
Joan Schanck MPA

3:00-3:10pm Graduate Education in Tissue Engineering and Regenerative Medicine
Tracy Criswell PhD

3:10-3:20pm Required Elements for Training and Education of the Regenerative Medicine Skilled Technical Worker & Non-Technical Worker
Russ Read

3:20-3:30pm The Federal Government Role in Advancing and Supporting Regenerative Medicine
Celeste Carter PhD

3:30-3:40pm AAR Training Physicians in Regenology: Part I
Kathleen O'Neil-Smith MD
## DAY 3 JUNE 7

### SESSION 11: REGENERATIVE MEDICINE AND WORKFORCE DEVELOPMENT

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>3:40-3:50pm</td>
<td>AAR Training Physicians in Regenology: Part 2, Angeli Akey MD, FACP</td>
<td>BGCME 5107</td>
</tr>
<tr>
<td>3:50-4:00pm</td>
<td>Discussion Panel, Moderator: Gary Green</td>
<td>BGCME 5107</td>
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**Break**

**Concurrent Young Scientist Perspectives Session**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:00-5:15pm</td>
<td>Career Perspectives Session II: Non-Research Careers, J. Milan PhD, P. Marks PhD, J. Marchibroda, MBA</td>
<td>BGCME 5203</td>
</tr>
</tbody>
</table>

Organizers: D. Hutchins, D. Lizanets, T. Leach, A. Gorkun, O. Latham, S. Clair L, O. Babutunde, T. Criswell, PhD

**Southern BBQ Event**

Bailey Park
5:15-6:30pm

### Option and Limited Lab Tours of WFIRM

Tours conducted from 2:00-3:00 and 3:00-4:00pm, Wednesday June 7th and Thursday June 8th. Limited to two groups of 30 for each day. Max is 120 total. Sign-up available online or at the registration table until capacity is reached.
### Proposed Schedule and Agenda Topics: Times are EST.

#### Wednesday, June 7, 2023

<table>
<thead>
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<tbody>
<tr>
<td>8:45 AM</td>
<td>9:00 AM</td>
<td>0:15</td>
<td>Opening Comments; Bernard Siegel, JD</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>9:45 AM</td>
<td>0:45</td>
<td>HT: Keynote - How ARPA-H will Accelerate Transformative Biomedical Breakthroughs; Amy Jenkins, PhD</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>9:45 AM</td>
<td>10:00 AM</td>
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<td>Umbilical Cord Blood Use in Children with Cerebral Palsy; Jessica M. Sun, MD</td>
<td>Classroom</td>
</tr>
<tr>
<td>9:45 AM</td>
<td>10:15 AM</td>
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<td>HT: Why US Companies are Conducting Cell Therapy Clinical Trials Outside the US; Moderator: Desiree Cox, MD, PhD; Panel: Desiree Cox, MD, PhD, Michael Hage, MD, Kyle Cetrulo</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>10:15 AM</td>
<td>10:45 AM</td>
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<td>HT: Overview of Japanese Regenerative Medicine Regulations from a US Company Perspective; Kyle Cetrulo</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>10:15 AM</td>
<td>10:45 AM</td>
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<td>Huntington’s Disease: A Patient Ambassador’s Journey; Frances Saldafia</td>
<td>Classroom</td>
</tr>
<tr>
<td>10:45 AM</td>
<td>11:00 AM</td>
<td>0:15</td>
<td>Break</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>11:15 AM</td>
<td>0:15</td>
<td>Patient Advocacy: The Emily Whitehead Story: The Power of Narrative in Patient Advocacy; George Eastwood, Emily Whitehead Foundation</td>
<td>Classroom</td>
</tr>
<tr>
<td>11:15 AM</td>
<td>11:30 AM</td>
<td>0:30</td>
<td>HT: Video; How Regenerative Medicine Will Save Contact Sports; Haime Garza</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>11:15 AM</td>
<td>11:45 AM</td>
<td>0:30</td>
<td>Patient Advocacy; Keith March, MD, George Eastwood</td>
<td>Classroom</td>
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<tr>
<td>11:45 AM</td>
<td>12:15 PM</td>
<td>0:30</td>
<td>HT: Video; World Compass for Commercializing, Manufacturing and Marketing Cell &amp; Gene Therapies; Josh Lovell</td>
<td>Classroom</td>
</tr>
<tr>
<td>12:15 AM</td>
<td>1:00 PM</td>
<td>0:45</td>
<td>LUNCH</td>
<td>Biotech Place Atrium</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>1:15 PM</td>
<td>0:15</td>
<td>Patient Advocacy: Sickie Cell Advocacy &amp; Update; Adrienne Shapiro</td>
<td>Classroom</td>
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<tr>
<td>1:00 PM</td>
<td>1:30 PM</td>
<td>0:30</td>
<td>HT: Adipology: Can Business Translate the Promise of Adipose Tissue from Bench to Bedside?; Graham Parker, PhD and Adam Katz, Keith March, MD, PhD</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>1:15 PM</td>
<td>1:30 PM</td>
<td>0:15</td>
<td>Patient Advocacy: Cystic Fibrosis: How Far We’ve Come, Siri Vaeth</td>
<td>Classroom</td>
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<tr>
<td>1:30 PM</td>
<td>2:00 PM</td>
<td>0:30</td>
<td>HT: US Policy &amp; Regulation: An Update; Michael Druckman, JD and Janet Marchibroda</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>2:45 PM</td>
<td>0:30</td>
<td>Keynote - Tissue Engineering, Applicability of Different Cell Types; Tony Atala, MD</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>2:45 PM</td>
<td>3:15 PM</td>
<td>0:30</td>
<td>Patient Advocacy: Getting Into the News; Stephanie Dainow, Lifespan.is</td>
<td>Classroom</td>
</tr>
<tr>
<td>2:45 PM</td>
<td>3:15 PM</td>
<td>0:30</td>
<td>Bond for Life: Targeting the Stem Cell Vascular Niches in Aging and Tissue Regeneration; Shiri Guri-Cohen, PhD</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>3:15 PM</td>
<td>3:45 PM</td>
<td>0:30</td>
<td>Understanding Capitol Hill: Advocates and Lobbyists; Janet Marchibroda</td>
<td>Classroom</td>
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<tr>
<td>3:45 PM</td>
<td>4:15 PM</td>
<td>0:30</td>
<td>Patient Advocacy: Video; Building Coalitions as a Positive Change Agent; William Remak, HSAC</td>
<td>Classroom</td>
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<tr>
<td>3:55 PM</td>
<td>4:15 PM</td>
<td>0:30</td>
<td>Break</td>
<td>Biotech Place, Atrium</td>
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<tr>
<td>4:15 PM</td>
<td>5:00 PM</td>
<td>0:45</td>
<td>Break</td>
<td>Classroom</td>
</tr>
<tr>
<td>4:45 PM</td>
<td>5:15 PM</td>
<td>0:30</td>
<td>Plasmapheresis for Longevity and Age-Related Disorders; Dobri Kiprov</td>
<td>Biotech Place, Atrium</td>
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<tr>
<td>4:15 PM</td>
<td>4:45 PM</td>
<td>0:30</td>
<td>The Past, Present and Future of Extracellular Vesicles Therapy; Mehdi Ahamdi Delghani, PhD, Sartorius</td>
<td>Biotech Place, Atrium</td>
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<tr>
<td>4:45 PM</td>
<td>5:15 PM</td>
<td>0:30</td>
<td>The AGE Aging Clock in the Extracellular Matrix and Lens; Vincent Monnier, MD, MSc</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>5:15 PM</td>
<td>6:00 PM</td>
<td>0:45</td>
<td>Panel Discussion and Ask Them Anything; Moderator: Jyothi Devakumar, PhD; Panelists: Tony Atala MD, Shiri Guri-Cohen PhD, Dobri Kiprov MD, Mehdi Ahamdi Delghani PhD, Vincent Monnier MD, MSc</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>5:00 PM</td>
<td>6:30 PM</td>
<td>1:30</td>
<td>BBQ Event in Bailey Park</td>
<td>Classroom</td>
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### WSCS DAY 4: 06/08/23

<table>
<thead>
<tr>
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<th>End</th>
<th>Duration</th>
<th>Title</th>
<th>Location</th>
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<tbody>
<tr>
<td>9:15 AM</td>
<td>10:15 AM</td>
<td>1:00</td>
<td>HT: SPACE Panel #1: Stem Cell Frontiers: Commercial Space Stations and the Future of Regenerative Medicine</td>
<td>Classroom</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>9:45 AM</td>
<td>0:45</td>
<td>Keynote - Neurobiology Strategies and the Current State-of-the-Art Methods; Evan Snyder, MD, PhD, FAAP</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>10:15 AM</td>
<td>11:15 AM</td>
<td>1:00</td>
<td>HT: SPACE Panel #2: Stem Cell Science on the International Space Station: Disease Models, Stem Cell Therapies and Tissue Engineering</td>
<td>Classroom</td>
</tr>
<tr>
<td>9:45 AM</td>
<td>10:15 AM</td>
<td>0:30</td>
<td>Integrated Epigenomics Reveal Dysregulated Chromatin Landscapes in Aged Hematopoietic Stem Cells; Isabel Beerman, PhD</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>11:15 AM</td>
<td>12:15 PM</td>
<td>1:00</td>
<td>HT: SPACE Panel #3: Stem Cell Frontiers: Transitioning from the International Space Station to Commercial Space Stations at the End of the Decade</td>
<td>Classroom</td>
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<tr>
<td>10:15 AM</td>
<td>10:45 PM</td>
<td>0:30</td>
<td>Quantum Healthy Longevity for all: Connecting Healthy People, Healthy Planet and Healthy Growth; Tina Woods MBA</td>
<td>Biotech Place, Atrium</td>
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</tbody>
</table>
### WSCS DAY 4: 06/08/23

**Proposed Schedule and Agenda Topics. Times are EST.**

**Thursday, June 8, 2023**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>9:15:00 AM</td>
<td>10:15:00 AM</td>
<td>1:00</td>
<td>HT: Panel Discussion: A Roadmap to Precision Medicine; Moderator: Florina Gobel, Center for Contemporary Sciences. Participants: Ayaah Akhtar, Dane Gobel, Other TBD</td>
<td>Classroom</td>
</tr>
<tr>
<td>12:15:00 PM</td>
<td>1:00:00 PM</td>
<td>0:45</td>
<td>Panel Discussion and Ask Them Anything ; Moderator: Iyothi Devakumar, PhD; Panelists: Evan Snyder MD, PhD, Isabel Beerman, PhD, Keshav Singh; Gregory Brewer PhD, Tina Woods MBA</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>1:00:00 PM</td>
<td>2:00:00 PM</td>
<td>1:00</td>
<td>LUNCH</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>2:00:00 PM</td>
<td>2:45:00 PM</td>
<td>0:45</td>
<td>Keynote - Longevity and Human Trials; Brian Kennedy, PhD</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>2:00:00 PM</td>
<td>2:30:00 PM</td>
<td>0:30</td>
<td>HT: Repositioning of Advanced Therapies in the Post-COVID Era; Jane Andrews, PhD, Cell Bridge Strategies, LLC Founder &amp; CEO</td>
<td>Classroom</td>
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<tr>
<td>2:30:00 PM</td>
<td>3:00:00 PM</td>
<td>0:30</td>
<td>HT: How to Position Your Startup for the Sequence of Fundraising: Family &amp; Friends, Angel, Series A, Series B; Neil Kellen, Cell Bridge Strategies, LLC</td>
<td>Classroom</td>
</tr>
<tr>
<td>3:00:00 PM</td>
<td>4:00:00 PM</td>
<td>1:00</td>
<td>HT: the Emerging Discipline of Regenerative Surgery; Vijay Saradhi Gorantla, MD, PhD</td>
<td>Classroom</td>
</tr>
<tr>
<td>4:00:00 PM</td>
<td>4:45:00 PM</td>
<td>0:45</td>
<td>HT: The Role of Mitochondria in Aging and Reproductive Longevity; Keshav Singh, PhD</td>
<td>Classroom</td>
</tr>
<tr>
<td>2:45:00 PM</td>
<td>3:15:00 PM</td>
<td>0:30</td>
<td>Break</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>4:45:00 PM</td>
<td>5:15:00 PM</td>
<td>0:30</td>
<td>The Role of Nonprofits and Coalitions: A Case Example; Melissa King MBA</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>5:15:00 PM</td>
<td>6:00:00 PM</td>
<td>0:45</td>
<td>Panel Discussion and Ask Them Anything; Moderator: Iyothi Devakumar, PhD; Brian Kennedy PhD, Ellen Heber-Katz PhD, Mike West PhD, Melissa King</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>6:00:00 PM</td>
<td>6:45:00 PM</td>
<td>0:45</td>
<td>HT: The Emerging Discipline of Regenerative Surgery; Vijay Saradhi Gorantla, MD, PhD</td>
<td>Classroom</td>
</tr>
<tr>
<td>6:45:00 PM</td>
<td>7:15:00 PM</td>
<td>0:30</td>
<td>Break</td>
<td>Biotech Place, Atrium</td>
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<tr>
<td>7:15:00 PM</td>
<td>8:00:00 PM</td>
<td>0:45</td>
<td>Panel Discussion and Ask Them Anything; Moderator: Iyothi Devakumar, PhD; Brian Kennedy PhD, Ellen Heber-Katz PhD, Mike West PhD, Melissa King</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>8:00:00 PM</td>
<td>9:00:00 PM</td>
<td>1:00</td>
<td>HT: The Future of Stem Cells: Commercial Space Stations and the Future of Regenerative Medicine</td>
<td>Classroom</td>
</tr>
</tbody>
</table>

*AGENDA IS SUBJECT TO CHANGE* Last Updated 05-24-23 at 4:33pm

### WSCS DAY 5: 06/09/23

**Proposed Schedule and Agenda Topics. Times are EST.**

**Friday, June 09, 2023**

<table>
<thead>
<tr>
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<th>End</th>
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<th>Title</th>
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<tbody>
<tr>
<td>9:00:00 AM</td>
<td>10:00:00 AM</td>
<td>1:00</td>
<td>The History of Patient Advocacy: From Stem Cells to the Future</td>
<td>Classroom</td>
</tr>
<tr>
<td>9:00:00 AM</td>
<td>12:00:00 AM</td>
<td>3:15</td>
<td>TBD</td>
<td>Classroom</td>
</tr>
<tr>
<td>10:00:00 AM</td>
<td>10:30:00 AM</td>
<td>0:30</td>
<td>Topic TBD: Evan Snyder, MD, PhD, FAAP</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>10:30:00 AM</td>
<td>11:45:00 AM</td>
<td>1:15</td>
<td>Town Hall of Attendees &amp; Stakeholders, WSCS</td>
<td>Biotech Place, Atrium</td>
</tr>
<tr>
<td>11:45:00 AM</td>
<td>12:15:00 PM</td>
<td>0:30</td>
<td>TBD</td>
<td>Biotech Place, Atrium</td>
</tr>
</tbody>
</table>

**WE THANK THE WINSTON-SALEM HOST COMMITTEE**