

# Spring Summit

The Meeting in the Millyard Agenda  
June 19 – 20, 2019 | Manchester, NH



## Tuesday, June 18 *PRE CONFERENCE WORKSHOPS (Members Only)*

| Time                | Topic  |
|---------------------|--|
| 10:30 am – 11:30 am | <i>Check in</i>  |
| 11:00 am – 12:30 pm | <b>Foundry Demo Tours</b><br>-Automated Control Concepts ( <i>Lab Owl</i> )<br>-DEKA ( <i>Integrator</i> )<br>-FESTO Life Tech ( <i>Vial Thaw Gantry</i> )<br>-GE Healthcare ( <i>Sepax</i> )<br>-PBS Biotech ( <i>Bioreactor</i> )<br>-Rockwell Automation<br>-Thermo Fisher ( <i>Rotea</i> ) |
| 12:30 pm – 1:00 pm  | <i>Lunch</i>   |
| 1:00 pm – 1:30 pm   | <b>Lunch Discussion</b><br><b>DOD Manufacturing Institutes Driving Next Generation Manufacturing</b><br>Tracy Frost<br>Department of Defense<br><i>Director, DoD Manufacturing Technology (ManTech)</i>  |
| 1:30 pm – 1:45 pm   | <b>Opening Remarks</b><br>Tom Bollenbach<br>ARMI   BioFabUSA<br><i>Chief Technology Officer</i>  |
| 1:40 pm – 2:45 pm   | <b>Report Outs from Technology Working Groups</b>  |
| 2:45 pm – 3:00 pm   | <i>Break</i>   |
| 3:00 pm – 5:00 pm   | <b>Breakout Working Sessions 1-5</b>   |
| 5:30 pm – 8:30 pm   | <b>A Night at the Ballpark</b><br>Speaker/Member Reception<br><i>Attendees will join ARMI   BioFabUSA at The New Hampshire Fisher Cats Minor League Baseball game.</i>   |

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**Wednesday, June 19** *SUMMIT DAY ONE*

| <b>Time</b>                | <b>Topic</b>  |
|----------------------------|---|
| <b>7:30 am – 8:30 am</b>   | <i>Registration / Check In<br/>Light Breakfast</i>  |
| <b>8:30 am 8:45 am</b>     | <b>Welcome, Opening Remarks</b><br>Gray Chynoweth<br>ARMI   BioFabUSA<br><i>Chief Membership Officer</i>  |
| <b>8:45 am 9:15 am</b>     | <b>Dean Kamen Address</b><br>ARMI   BioFabUSA<br><i>Acting Chief Executive Officer &amp; Chairman of the Board</i>  |
| <b>9:15 am – 9:35 am</b>   | <b>Keynote Session</b><br><i>TBA</i>  |
| <b>9:35 am – 9:55 am</b>   | <b>Quality by Design: Removing Risk Early</b><br>Ryan Downs, MPR <i>Vice President &amp;</i><br>Maria Pascale, MPR <i>Engineer</i>  |
| <b>9:55 am – 10:05 am</b>  | <i>Break</i>  |
| <b>10:05 am – 11:25 am</b> | <b>Raw Materials</b><br><i>Session One</i><br><br><b>High Throughput Robotic System for Quality Control in Cell Manufacturing</b><br>Cell X Technologies<br>George F Muschler, MD<br><i>Professor of Orthopedic Surgery</i><br><br><b>A quantitative Inline Monitoring Platform for Cellular Regenerative Medicine Products</b><br>Vascugen<br>Dr. Matthew George<br><i>Sr. Scientist</i><br><br><b>Development of a Scalable and Cost-Effective Stem Cell Manufacturing Platform</b><br>Pluistyx<br>Brian Hawkins<br><i>Chief Technology Officer</i> |

| Time                | Topic   |
|---------------------|---|
| 11:25 am – 12:35 pm | <p><b>Cell Culture and Harvest</b><br/><i>Session Two</i></p> <p><b>Large Scale Expansion of MSCs</b><br/>Rooster Bio<br/>Taby Ahsan<br/><i>Director of Analytical Development</i></p> <p><b>Exponential pluripotent stem cells production and differentiation into cardiomyocytes</b><br/>Texas Heart Institute<br/>Doris A. Taylor, Ph.D<br/><i>Director, Regenerative Medicine Research</i></p> <p><b>Single Use BioSettler for Harvesting and Washing Cells and Organoids</b><br/>Sudhin Biopharma<br/>Dhinakar S. Kompala<br/><i>Chairman &amp; CEO</i></p>  |
| 12:35 pm – 1:35 pm  | <i>Lunch</i>  |
| 1:35 pm – 2:45 pm   | <p><b>Scaffold Fabrication</b><br/><i>Session Three</i></p> <p><b>Fabrication of Scalable Platforms for Bioprinted Tissues</b><br/>Cellink<br/>Patrick Thayer<br/><i>Chief Applications Officer</i></p> <p><b>Development of Scalable Scaffolds, Biomaterials, and Matrices</b><br/>Nanofiber<br/>Kevin Nelson<br/><i>Process Development Engineer</i></p> <p><b>Tissue Origami for Template-Guided Mineralization</b><br/>Umass Lowell<br/>Gulden Camci-Unal<br/><i>Assistant Professor</i></p> <p><b>Gelatin as a Novel Nanofiber Material for Cell Scaffolding</b><br/>Dipole Materials Inc.<br/>James Dolgin<br/><i>Director of Product Development</i></p> |
| 2:45 pm – 3:00 pm   | <i>Break</i>  |

| <b>Time</b>              | <b>Topic</b>   |
|--------------------------|--|
| <b>3:00 pm – 4:00 pm</b> | <p><b>Tissue Maturation and Bioreactor Culture</b><br/><i>Session Four</i></p> <p><b>Foundry Integration Project</b><br/>DEKA<br/>Stu Jacobson<br/><i>Regenerative Medicine Team Leader</i></p> <p><b>Tissue Manufacturing Bioreactors: Are We There Yet?</b><br/>ST3 Development Corporation<br/>Sandy Williams<br/><i>President and Founder</i></p>  |
| <b>4:00 pm – 4:30 pm</b> | <i>Break</i>   |
| <b>4:30 pm – 5:30 pm</b> | <p><b>Preservation, Packaging &amp; Transport</b><br/><i>Session Five</i></p> <p><b>Naturally inspired approach to the preservation of multicellular system</b><br/>University of Minnesota<br/>Dr. Allison Hubel<br/><i>Professor, College of Science and Engineering</i></p> <p><b>Via Freeze Product Discussion</b><br/>GE Healthcare<br/>John Morris<br/><i>Asymptote, part of GE Healthcare, CEO</i></p> <p><b>A Multiscale Simulation Framework for Autologous Engineered Tissue Products Manufacturing</b><br/>Georgia Institute of Technology<br/>Kan Wang<br/><i>Research Engineer II</i></p> |
| <b>5:30 pm – 5:50 pm</b> | <b>Day One Wrap-Up</b>   |
| <b>6:00 pm – 8:00 pm</b> | <p><b>BioFab &amp; Brews</b><br/><i>Attendees will join ARMI   BioFabUSA at The Currier Museum in Manchester, NH where they will have an opportunity to network with peer companies and potential collaborators as well as try our signature Brew.</i></p>   |

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**Thursday, June 20** *SUMMIT DAY TWO*

| <b>Time</b>                | <b>Topic</b>   |
|----------------------------|--|
| <b>7:30 am - 8:45 am</b>   | <b>Member Breakfast</b><br><i>Project Briefings</i>  |
| <b>8:45 am - 9:15 am</b>   | <i>Registration / Check In</i><br><i>Light Breakfast</i>   |
| <b>9:15 am - 9:30 am</b>   | <b>Opening Remarks</b>   |
| <b>9:30 am - 10:00 am</b>  | <b>Keynote   Regenerative Patch Technology - From the Lab to Fabrication and Testing</b><br>Regenerative Patch Technologies<br>Jane Lebkowski<br><i>President of R&amp;D</i>   |
| <b>10:00 am - 10:20 am</b> | <b>Keynote   DoD Modernization Priorities - Biotechnology, Synthetic Biology and Applied Genomics</b><br>Department of Defense<br>Dr. J. Ben Petro<br><i>Acting Director, Human Systems</i>  |
| <b>10:20 am - 11:20 am</b> | <b>Quality by Design Principles/Effective Process Development Activities</b><br><i>Session Six</i><br><br><b>Importance and Impact of Deep Cell Characterization on Tissue Engineering</b><br>Georgia Institute of Technology<br>Carolyn Yeago<br><i>Associate Director of Research</i><br><br><b>Agnostic Closure of the Production Environment for Scalable Quality</b><br>Biospherex<br>Alicia D. Henn PhD MBA<br><i>Chief Scientific Officer</i><br><br><b>Quality by Design: Accelerating Patient Access to Novel Biomedical Products</b><br>CAI<br>Charlie Maher<br><i>Executive Director, Performance and Reliability</i> |

| Time                | Topic  |
|---------------------|--|
| 11:20 am – 12:00 pm | <p><b>Advancing Regenerative Medicine with New Data Sets and Autonomous Intelligence Panel</b><br/> <i>Session Seven</i></p>   |
| 12:00 pm – 1:00 pm  | <p><i>Lunch</i></p>  |
| 1:00 pm – 2:40 pm   | <p><b>ARMI   BioFabUSA Funded Projects</b><br/> <i>Session Eight</i></p> <p><b>A Single-Use Scalable Cell Expansion Bioreactor for Regenerative Medicine Applications</b><br/>                     Southwest Research Institute<br/>                     Jian Ling<br/> <i>Institute Scientist of Department of Pharmaceuticals and Bioengineering</i></p> <p><b>Generalized Biomanufacturing Platform for Perfused Tissues</b><br/>                     Advanced Solutions Life Sciences<br/>                     James Hoying<br/> <i>Chief Scientist</i></p> <p><b>Development of a Modular Bioprinting Platform for Automated Biofabrication of Diverse Tissue Engineered Constructs</b><br/>                     University of Virginia<br/>                     Rachel Bour<br/> <i>Ph.D. Student, Christ Lab</i></p> <p><b>Novel Method for Quantifying the Effects of Cryomedia on Engineered Tissues</b><br/>                     Worcester Polytechnic Institute<br/>                     Jonian Grosha<br/> <i>Ph.D. Student</i></p> <p><b>Subzero temperature preservation of Whole Beating Mouse Hearts with Subsequent Heterotopic Transplant</b><br/>                     X-Therma<br/>                     Mark Kline, Ph.D.<br/> <i>Co-Founder &amp; CTO</i></p> <p><b>A Bioreactor for Large-Scale Culture of Anchorage-Dependent Cells with Hollow Microcarriers</b><br/>                     Notre Dame<br/>                     Glen Niebur<br/> <i>Professor</i></p> |

| Time              | Topic   |
|-------------------|---|
|                   | <p><b>Rapid Fire Talks</b><br/><i>Session Nine</i></p> <p><b>Oxygen Imaging as A Quality Control Tool in Tissue Manufacturing</b><br/>O2M Technologies<br/>Mrignayani Kotecha<br/>CEO</p> <p><b>Preservation and Transport Methods for Complex Cell-Based Materials</b><br/>Tissue Testing Technologies<br/>Kelvin Brockbank<br/>CEO</p> <p><b>Continuous and Non-Invasive pH Monitoring of Various Biologics</b><br/>Blood Cell Storage<br/>Steve Geelhood<br/>Business Director</p> |
| 2:40 pm – 3:00 pm | <b>Summit Wrap Up &amp; Closing Remarks</b>   |



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**CellScale** was founded in 2005 with the goal of making custom mechanical test systems developed at the University of Waterloo available to other researchers. The first system was a biaxial test system to better understand the relationship between glaucoma and scleral stiffness. To accomplish the research goals, it was necessary to develop mounting techniques that were appropriate for this tough and rubbery material. It was also necessary to develop digital image correlation-based analysis tools to verify the specimen's strains. This project laid the basis for what is now the BioTester.

The second system was a micro-scale uniaxial test system that was used to study the driving forces behind tissue remodeling during the embryogenesis of axolotls. Due to the small forces and displacements involved, cantilever-based microwire force transducers were developed and paired with a micro-resolution actuator. The techniques used in this project led to the development of the MicroSquisher.

Over the years CellScale has expanded our line of mechanical testing products, launched a line of bioreactors, and built many custom solutions. We are grateful to the many academic and industry researchers we have had the honour of working with over the years. In the future, we look forward to continuing to develop new technologies and equipment that will drive research and ultimately impact the health and wellbeing of us all.

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