



SCIENTISTS DEFINE RESEARCH PROGRAMMING AT SPRI

SPRI TEAM MARKS GROWTH IN PHDS AND MDS

In 2015, Steadman Philippon Research Institute (SPRI) opened its Center for Regenerative Sports Medicine, now the Linda & Mitch Hart Center for Regenerative and Personalized Medicine (CRPM). This new programming broadened the institute's scope, and also introduced some new scientists to the organizations. Drs. Johnny Huard and Sudheer Ravuri joined SPRI in a half-time capacity, and Dr. Scott Tashman became director of Biomedical Engineering—also part time. All told, there were 1.5 PhDs on staff full-time at SPRI.

In 2019, Drs. Huard and Tashman joined SPRI in a full-time capacity (Dr. Ravuri did so in 2017). Over the next few years, SPRI continued to grow its staff of scientists and researchers. Now, there are ten PhDs and two MDs employed by SPRI full-time. Nine of these professional scientists work in SPRI's CRPM and Clinical Trials team and three work in the Department of Biomedical Engineering. SPRI's scientists and physicians account for 20% of the institute's total workforce and represent a 700% growth in scientists from 2015. Of the 12 PhDs and MDs employed by SPRI today, more than half are international, representing Canada, India, China, Japan and Colombia.

A SMALL INSTITUTE WITH IMPACT

SPRI has grown in its programming and scientists, but has remained a small institution, with just 58 full-time staff across its science teams and administration. The organization has seven clinical trials underway in partnership with The Steadman Clinic, seven active National Institutes of Health (NIH) grants, six research projects funded through two Department of Defense (DoD) contracts, alongside industry- and foundation-funded projects. SPRI remains an organization powered by philanthropy, which fuels the pipeline of clinical trials, federal awards and other funding.

Now bolstered by a dozen professional scientists on staff, SPRI continues to perform cutting-edge research, publish manuscripts, and submit for additional awards. In this issue of *SPRI News*, we'll look at some new research being conducted at SPRI, and how harnessing an imaging tool provides new insights for each SPRI team.

A CLINICAL IMAGING DEVICE BECOMES A CELEBRATED RESEARCH TOOL AT SPRI

ULTRASOUND SYSTEM PROVIDES NEW PERSPECTIVE IN RESEARCH PROGRAM

A key initiative within SPRI's Department of Biomedical Engineering (BME) in 2021 was a formal integration with the Department of Imaging Research. For years, the two departments worked closely, but full integration enabled more synergy across the team's laboratories and made it easier for scientists to work cross-disciplinarily between Biomotion, Robotics and Advanced Imaging. Research Scientist Lauren Watkins, PhD leads the imaging research efforts at SPRI, harnessing advanced imaging technology not only as a diagnostic tool, but also as a way to validate treatments and therapies across SPRI's research departments.

ULTRASOUND SYSTEMS IN BME

One of the tools Dr. Watkins uses in her research is a state-of-the-art clinical ultrasound system, which is being used in several BME projects including in the Robotics and Biomotion labs. Researchers in the Robotics lab use ultrasound imaging to measure how far the meniscus protrudes under load in cadaveric specimens, both in healthy cases and in tears and repairs. The Biomotion team uses ultrasound combined with its video-motion analysis technology to look at meniscus behavior in different positions. This technique allows researchers a different perspective than what can be observed in traditional magnetic resonance imaging (MRI), which typically looks at the meniscus when the person is stationary and lying down.

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APPLYING ULTRASOUND TO REGENERATIVE MEDICINE

In addition to using ultrasound in Robotics and Biomotion, SPRI uses the tool to investigate the efficacy of regenerative medicine treatments. For example, BME is working on two shoulder studies that use ultrasound to examine the rotator cuff. Because advanced clinical ultrasound systems can measure blood flow after rotator cuff tears and repairs, they can help provide information about how the shoulder is healing, and see how regenerative medicine therapies may have improved healing and recovery for patients.





Athlete Screening at the Academy

ELITE BALLET DANCERS PARTICIPATE IN SPRI SCREENING

For years, SPRI has conducted athlete screening through its Center for Outcomes-Based Orthopaedic Research (COOR). As many sports are prone to the development of femoroacetabular impingement (FAI) and other hip injuries due to athlete movement, special focus has been given to the “hip at risk.” Many hip conditions are not diagnosed until after the injury has become painful and requires medical intervention, making medical screening an imperative tool to identify these conditions earlier in their development.

CLINICAL EVALUATION EACH YEAR

The ballet screening program is led by SPRI Chair Dr. Marc Philippon, and centers on pre-professional dancers aged 13–20 in an elite regional dance company. The five-year program includes an annual screen comprised of a clinical ultrasound exam and physical exam. Each year, the team will track the dancers and record data from the screens. Thirty dancers participated in the first screen of the program.

PROGRAM GOALS

Special attention in this program will be given to the development of FAI. Ultrasound technology is used to examine the hip joint, allowing clinicians to notice any changes in shape or signs of impingement before the athlete experiences pain or discomfort. Early detection helps identify what athletes are at risk and what may be causing their risk, ultimately leading athletes and their coaches to modify their activities to diminish their injury risk and prolong their athletic careers.

ADVANCED IMAGING ACROSS SPRI'S PROGRAMS

The COOR ballet screening study represents another example of how clinical ultrasound systems can be used to provide important research perspectives for SPRI. From Biomedical Engineering to Regenerative Medicine and Outcomes Research, this advanced imaging technology is making significant impact in SPRI's research.

FOR MORE INFORMATION ABOUT OUR RESEARCH AND HOW YOU CAN SUPPORT SPRI, PLEASE CONTACT VP OF DEVELOPMENT LEE JONES AT LJONES@SPRIVAIL.ORG.



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