

# 7 THINGS TO KNOW ABOUT LIMBITLESS SOLUTIONS



**LIMBITLESS SOLUTIONS** is a UCF direct support organization and 501(c)(3) non-profit dedicated to empowering individuals using technology and interdisciplinary efforts to address accessibility issues for a more inclusive future. The program was founded in 2014 by Knights at the University of Central Florida (UCF) to empower children with high functioning, art-infused prosthetics without financial burden. Leveraging 3D printing, Limbitless developed custom muscle flex actuated bionic arms. In 2020, Limbitless announced an expansion of impact to include adults, specifically veterans and first responders.

Limbitless' student research and development programs cultivate experiences for over 50 undergraduate students a year, providing opportunities to engage in internship and research experiences, professional development, and mentoring programs. Limbitless represents the ingenuity and agility of Knights to design solutions to problems when working together.

## 1 Innovation

Accessibility technology research toward new bionics and beyond is the focus at Limbitless, with two experimental medical devices in clinical trials around the country. Innovative manufacturing and design reduced costs for the bionics by 80% and are equipped with Bluetooth to pair with a smartphone for rapid calibration and training.



## 2 National Recognition

Limbitless has been nationally recognized for its efforts every year since its inception. Robert Downey Jr. and the Bill & Melinda Gates Foundation have both recognized the program's impact following meeting the 'bionic kids'. In 2020, Limbitless was recognized on national news networks for their support of rapid manufacturing for hospitals' COVID-19 response.

## 3 Global Impact

Limbitless staff and students have spoken at the United Nations 4 times in the past three years. Sarah Kelliher is the first UCF undergraduate student to hold this honor in her panel discussion highlighting the intersectionality of gender and disability.

## 4 K-12 Engagement

Empowering undergraduates to inspire central Florida K-12 students has led to exciting full day 'field trips' to the laboratory for STEAM experience. Activities to engage the creativity of high school students based on concepts for bionic technology development including: computer programming, electronics, artistic design, and problem-solving. Hands-on activities develop STEAM (Science, Technology, Engineering, Art, and Math) concepts through the unique lens of community impact and biomedical engineering, with virtual components now available.

## 5 Partnerships

Limbitless continues to create partnerships with industry. Partnerships with design software companies Autodesk and Adobe have empowered student creativity for design. Hands-on work with manufacturing equipment, supported by 3D printer manufacturer Stratasys brings these designs to life. Partnerships with hospitals across the nation have been critical to translate the design work to national clinical trials, providing bionics to patients through research studies.

## 6 Video Games

Limbitless creates smartphone-based video games to train users to control their bionic. Affiliated faculty work with students to design fun and engaging training experiences to teach the bionic arm gesture controls hidden in the simulation. Partner brands including Halo, League of Legends, Cyberpunk 2077, and Assassin's Creed have enabled inspiration for designs for the removable cosmetic covers.



## 7 Interdisciplinary

Every semester UCF undergraduate students from 9+ different colleges work, learn and gain experience in the unique interdisciplinary lab environment focused around bionics. The student programs at Limbitless Solutions are a unique opportunity for students to collaborate across disciplines for participatory project-based learning in preparation for their profession. Internships include a variety of majors - from biomedical research, engineering, fine and digital art, game design, public relations, business to education - for a uniquely collaborative experience. Students work with staff and mentors from industry to gain real-world career experience.

## Undergraduate Research and Internships

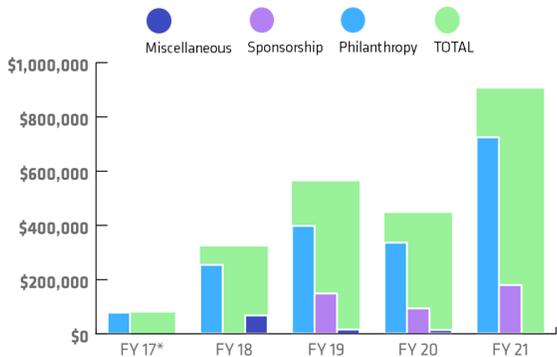
Limbitless Solutions provides undergraduate students with hands-on experience throughout their college experience. The interdisciplinary nature of the work gives students from across the university, from engineering to studio art and every major in between, the opportunity to engage in multidisciplinary problem solving. Collaborative experiences focused on accessibility and design are desired by the industry for job placement.



\*Data for Spring 2021

## Limbitless Solutions Funding

The organization funds research and development through grants, sponsorships, and philanthropy, with UCF support for administration and staffing. Since becoming a direct support organization in 2017, Limbitless Solutions has seen revenue growth of more than 10x.

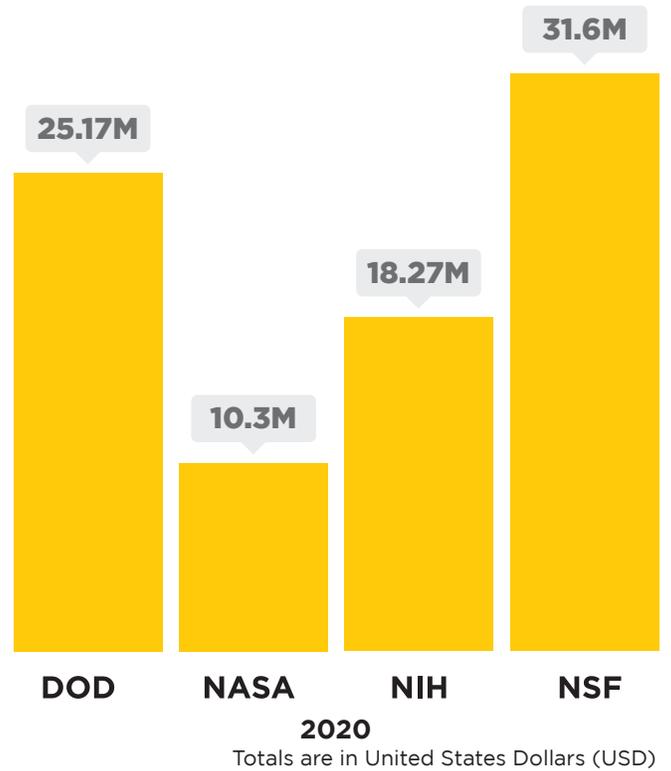


\*FY21 data incomplete at time of printing

FOR MORE INFORMATION VISIT [RESEARCH.UCF.EDU](https://RESEARCH.UCF.EDU)

## OFFICE OF RESEARCH BY THE NUMBERS

### KEY FUNDING SOURCES



Department of Defense
National Aeronautics and Space Administration
National Institutes of Health
National Science Foundation

## UCF Office of Research and College of Graduate Studies

The University of Central Florida (UCF) is one of the largest universities in the nation with more than 68,000 students, including 10,000 graduate students pursuing degrees in more than 220 graduate programs. UCF is classified as a very high research activity institution according to The Carnegie Foundation of Advancement of Teaching.

The Office of Research fosters the creation of intellectual capital that can solve today's pressing problems, improve the quality of life, and provide an engine for economic growth. The Office serves as the official liaison among researchers and government and commercial sectors. UCF's strength in innovation and research propelled the university to \$204.5 million in funding in FY 2020. We are known for many things, but are internationally recognized for our College of Optics and Photonics and our Institute of Simulation and Training.

UCF is home to 13 colleges developing the next generation of scientists, engineers and technology leaders with critical thinking skills and hands-on research skills to tackle any problem.