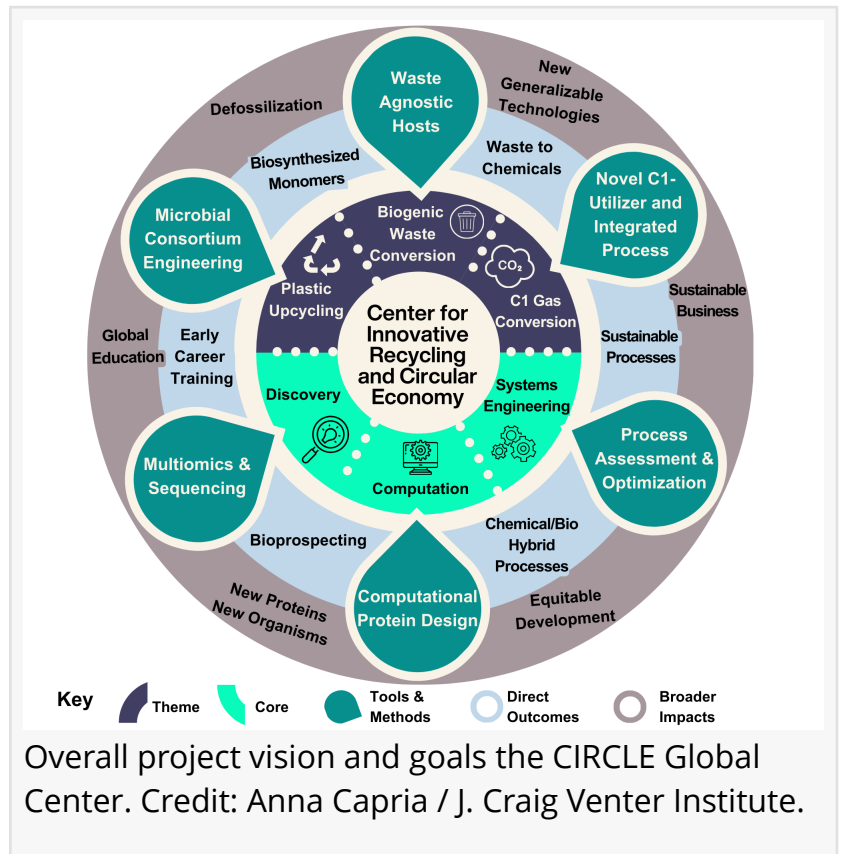


# J. Craig Venter Institute awarded 5-year, \$5M grant to lead Center for Innovative Recycling & Circular Economy (CIRCLE)

*CIRCLE is one of the six new NSF Global Centers focused on advancing bioeconomy research to solve global challenges*

LA JOLLA, CA, UNITED STATES, October 2, 2024 /EINPresswire.com/ -- [J. Craig Venter Institute \(JCVI\) has been awarded a 5-year, \\$5M grant](https://www.einpresswire.com/news/2024/10/02/j-craig-venter-institute-jcvi-has-been-awarded-a-5-year-5m-grant-to-lead-the-u.s.-national-science-foundation-nsf-center-for-innovative-recycling-and-circular-economy-circle-through-their-global-centers-program) to lead the U.S. National Science Foundation (NSF) Center for Innovative Recycling and Circular Economy (CIRCLE) through their Global Centers program. CIRCLE is an ambitious international partnership with funding agencies in the U.S., Canada, Republic of Korea, and the United Kingdom, jointly supporting use-inspired research addressing global challenges through the bioeconomy. JCVI Professor Tae Seok Moon, Ph.D. will lead the global CIRCLE effort.



CIRCLE will focus on addressing the pressing issues of air pollution reduction, agricultural and food waste treatment, and plastic waste disposal through disruptive solutions—challenges that transcend national borders and require a multidisciplinary approach. By addressing these global challenges through international collaboration and innovative research, CIRCLE aims to make a significant impact on human health and the environment.

Dr. Moon commented, “Global problems cannot be solved by one person, one institute, or one nation. They should be addressed by international collaborations. Our CIRCLE Global Center has more than 40 academic principal investigators from 18 academic institutions as well as 16 companies from at least six nations focused on solving waste issues, pollution, climate crisis, and sustainable material and chemical production.”

This diverse international team will leverage expertise in chemistry, computational and systems



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*Tae Seok Moon, Ph.D.*

biology, microbiology, metabolic engineering, and bioprocess engineering to achieve the program’s overarching goal of developing solutions to current waste problems. The team will focus on scalable solutions for “waste-stream valorization”—the process of taking waste products and giving them renewed economic value through recycling or upcycling. Another aim is to provide sustainable solutions for the commercially viable production of energy, chemicals, and materials.

The scientific aims will focus on developing three core technologies: 1) multi-omics-based bioprospecting to discover new enzymes, gene regulators, and organisms for waste valorization, 2) predictive computational approaches to enable forward engineering of proteins and strains for biomanufacturing, and 3) techno-economic analysis (TEA), life cycle analysis (LCA), and risk assessment to develop commercially viable bioprocesses for waste valorization. These core technologies will be validated for generalizability, scalability, and sustainable bioproduction through three waste streams: mixed plastics, C1 gases (e.g., carbon monoxide and dioxide), and biogenic wastes (e.g., food, agricultural, and paper/cardboard waste).

In addition to scientific output, CIRCLE is committed to training the next generation of scientists and engineers. The Center will offer unique interdisciplinary training opportunities in synthetic biology, systems biology, multi-omics, bioinformatics, computational biology, chemistry, systems engineering, risk assessment, TEA/LCA, and chemical engineering. CIRCLE will also engage the global community through multiple outreach activities, providing free education to ensure the sustainability and broad impact of its innovative approaches.

Academic investigators and key personnel for CIRCLE in the United States include Christopher Dupont, Ph.D. (JCVI), Lucy Stewart (JCVI), Anna Capria (JCVI), Jikai Zhao, Ph.D. (Kansas State University), Reza Zadegan, Ph.D. (North Carolina A&T State University), Sunkyoo Park, Ph.D. (NC State University), Kai Lan, Ph.D. (NC State University), Saurav Datta, Ph.D. (Keck Graduate Institute), Gargi Ghosh, Ph.D. (Keck Graduate Institute), and Anum Glasgow, Ph.D. (Columbia University).

This Center is jointly supported by NSF, the Natural Sciences and Engineering Research Council and the Social Sciences and Humanities Research Council of Canada, the National Research Foundation of Korea, and UK Research and Innovation through [NSF award #2435184](#).

### [About J. Craig Venter Institute](#)

The J. Craig Venter Institute (JCVI) is a not-for-profit research institute in Rockville, Maryland and La Jolla, California dedicated to the advancement of the science of genomics; the understanding of its implications for society; and communication of those results to the scientific community,

the public, and policymakers. Founded by J. Craig Venter, Ph.D., JCVI is home to approximately 120 scientists and staff with expertise in human and evolutionary biology, genetics, bioinformatics/informatics, information technology, high-throughput DNA sequencing, genomic and environmental policy research, and public education in science and science policy. JCVI is a 501(c)(3) organization. For additional information, please visit [www.jcvi.org](http://www.jcvi.org).

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