bitBiome and Hal Alper, Ph.D., at The University of Texas at Austin sign joint research agreement on novel enzyme discovery and optimization for plastic degradation

TOKYO, October 31, 2023 — bitBiome, Inc., a biotechnology company unlocking the potential of our planet's microbes to power the future of the bioeconomy, and Hal Alper, Ph.D., McKetta Department of Chemical Engineering at The University of Texas at Austin, today announced a collaborative research agreement on the discovery of novel plastic degrading enzymes using bitBiome's microbial single-cell genome analysis technology and enzyme discovery platform technology.

Our planet is littered with over 7 billion tons of plastic waste—and growing. Less than 10% of it has been recycled, in part because recycling is a limited solution that requires significant energy and cannot be done everywhere. The use of enzymes as catalysts to process plastics are an increasingly promising solution to this global environmental challenge.

Under this joint research agreement, bitBiome will utilize their microbial single-cell genome analysis technology to search for novel bacterial species and enzymes with the capabilities to degrade plastics and other non-biodegradable components by evaluating the sequences of various composting site samples (both raw and post-enriched in bioplastics such as PHB and PLA). The overall goal will be to identify novel markers of composting capacity and key enzymatic functions that can be isolated and utilized synthetically to recover monomers and re-valorize this waste stream. Utilizing the expertise in Dr. Alper's laboratory, approaches such as bioinformatic analysis, comparative genomics, and genome mining will be conducted to identify key marker sequences and potentially novel enzyme efficiencies.

"We are extremely hopeful that our combined efforts will lead to the discovery and development of potentially valuable enzymes that can help in the global effort to tackle plastic waste," said Yuji Suzuki, CEO of bitBiome.

bitBiome's integrated platform is built on first-of-its-kind technology to individually sequence, catalog, and evolve microbial genomes from natural environments. To date, bitBiome has analyzed 1.3 billion genes with its proprietary microbial single-cell genome analysis technology, bit-MAP®, and has built its own proprietary database, bit-GEM, on the backbone of single-cell sequences of naturally derived microbes. bitBiome has also commercialized an enzyme discovery and engineering platform, bit-QED, which utilizes 3D protein structure prediction data from sequences in bit-GEM and automated robotic high throughput screening facilities. bitBiome 's platform makes it possible to search for

and engineer enzymes essential to the bioeconomy, in a timely and cost-efficient manner that was previously unobtainable.

Dr. Hal Alper's research at The University of Texas at Austin focuses on developing sustainable biotechnology through an emphasis on using the approaches of metabolic and cellular engineering, synthetic biology, and protein engineering. His research aims to use waste carbon sources as feedstocks to produce sustainable chemicals, fuels, materials, and pharmaceuticals.

Dr. Hal Alper commented, "We are very excited to start this exciting collaboration. Nature can provide great starting points for enzyme and strain engineering, and we anticipate identifying novel biological functions from these unique samples."

■About bitBiome, Inc.

bitBiome is a biotechnology company unlocking the full potential of our planet's microbes to power the future of the bioeconomy. bitBiome's platform is built on their proprietary single-cell microbial genome analysis technology, bit-MAP ®, which has enabled the creation of bit-GEM: an extensive and groundbreakingly diverse microbial database of over 1.3 billion sequences, sourced primarily from environmental samples and containing sequences not present in public databases. Leveraging their expertise in bioinformatics and machine learning, the company also offers a comprehensive enzyme discovery and engineering platform, bit-QED, which encompasses the identification, assessment, and modification of enzymes through wet lab evaluation and directed evolution. bitBiome is committed to improving existing biomanufacturing industries and creating new ones by delivering sequences and enzymes that cannot be found anywhere else. To learn more about bitBiome's platform and services, visit bitbiome.bio.

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