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Letter to Editor Open Access

Systems Biology Solutions to Challenges in Marine Biotechnology

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Letter to Editor

The utilisation of marine bio resources as the objective or source of biotechnological applications is known as marine biotechnology. Despite several accomplishments in marine biotechnology, there are still significant gaps in our basic understanding of marine science that must be addressed before it can be completely used. Instead of classical reductionism, systems biology focuses on intricate interconnections within biological systems using a holistic perspective. Marine ecosystems provide an excellent baseline for developing integrative and systems biology techniques since they have varied levels of order at different sizes. However, with the exception of a few pioneering applications in marine ecology, the systems biology approach to marine science is still in its infancy, and marine biotechnology cannot yet profit from its benefits. The systems biology concept was offered as a new motivator toward finding answers to the great problems of marine biotechnology because of its inherent holistic philosophy and trans disciplinary character.

Many biotechnological breakthroughs have already resulted in successes in the fields of food security (in the form of new vaccines and molecular-based diagnostics), human health (biomedical, pharmaceutical, and nutraceutical applications with bioactive compounds), fisheries (the development of molecular markers that help avoid overfishing, etc.), environmental recovery or restoration (i.e., marine organism-based bioremediation), and energy (by the use of marine organisms to produce sustainable and renewable energy). Marine biotechnology has already aided in increasing output, reducing antibiotic usage, and improving fish welfare. Marine biotechnology has made important contributions to human health through biomedical, pharmacological, and nutraceutical applications. Some marine species possess or create bioactive or structural substances that can be utilised to treat pain, inflammation, cancer, and other ailments, as well as as novel materials for wound dressings and tissue regeneration.

Despite several accomplishments in marine biotechnology, there are still significant gaps in our basic understanding of marine science that must be addressed before it can be completely used. Understanding the role of biodiversity and the impact of global change in maintaining the functionality of ecosystems; understanding relationships between disturbances caused by human behaviour and ecosystems; assessing marine ecosystems' health; recovering ecosystem structure and functioning through restoration; conserving, protecting, and managing the seas using ecosystem based management; and conserving, protecting, and managing the seas using ecosystem based management Microbial consortia engineering is a method for putting together microbial consortia by allowing, promoting, or enforcing interactions between different cell populations.

The goal is to take use of individual microorganisms' skills as well as their interactions to produce advantageous system-level emergent features such as increased productivity, stability, or metabolic functioning. Because multi-scale artificial microbial consortia require a priori understanding of each population's natural eco-physiology, fostering knowledge of marine ecosystems will speed up progress. The application of systems biology techniques to marine biotechnology is known as marine systems biology. Marine ecosystems, with their many levels of structure at various sizes, are an excellent standard for developing systems biology methodologies. The systems biology approach may deliver a breakthrough in marine biotechnology in the near future, and it should be viewed as the new driver for marine biotechnology [1-5].

References

1. Bai M, Yuan J, Kuang H (2020) Generation of a multiplex mutagenesis population via pooled CRISPR-Cas9 in soya bean. Plant biotechnol J 18: 721-731.
2. Bao A, Chen H, Chen L (2019) CRISPR/Cas9 - mediated targeted mutagenesis of GmSPL9 genes alters plant architecture in soybean. BMC Plant Biol 19: 1-12.
3. Barrangou R, Fremaux C, Deveau H (2007) Horvath CRISPR provides acquired resistance against viruses in prokaryotes Science. 315: 1709-1712.
4. Beying N, Schmidt C, Pacher M (2020) CRISPR–Cas9-mediated induction of heritable chromosomal translocations in Arabidopsis. Nature plants 6: 638-645.
5. Braatz J, Harloff H, Mascher M (2017) CRISPR-Cas9 targeted mutagenesis leads to simultaneous modification of different homoeologous gene copies in polyploid oilseed rape (Brassica napus). Plant Physiol 174 : 935-942.

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