

# Theranostic Approaches in Microbiology: A Paradigm Shift in Therapeutic and Diagnostic Advents †

Chuan Sean Tan <sup>1,\*</sup>, Hema Dharshini Anbarasu <sup>1</sup>, Si Jie Lee <sup>1</sup>, Andre Marceo Marcellus <sup>1</sup>

<sup>1</sup> School of Bioscience, Faculty of Medicine, Bioscience and Nursing, MAHSA University Bandar Saujana Putra, 41200, Selangor, Malaysia

\* Correspondence: [tanchuansean@gmail.com](mailto:tanchuansean@gmail.com);

† Presented at International e-Conference on Bioengineering for Health and Environment (ICBHE 2020)

**Received: 5.07.2020; Revised: 10.07.2020; Accepted: 12.07.2020; Published: 15.07.2020**

**Abstract:** Envisaging as one of the most revolutionary approaches in the medical world right now, the field of theranostics has gained a considerable amount of interest due to its novelty in synergizing two clinical goals, namely therapy and diagnosis. The aforementioned goals are of utmost importance in microbiological settings, as various pathogens are becoming more infectious and virulent as we speak (such as the infamous SARS-coronavirus). In the present review, the authors aimed to establish and acknowledge the various theranostic approaches in microbiology that are currently available in the existing literature. Particularly, the versatility and clinical strengths of theranostic nanoprobe, aggregation-induced emission luminous modified peptides, and theranostic contact lenses are discussed extensively, with a clear emphasis on their ability to diagnose and treat microbiological diseases *in-vivo* at the same time. Subsequently, the limitations and setbacks of such approaches will also be discussed, including their notable sophisticated test principles, economic factors, and lack of multidisciplinary control.

**Keywords:** Microbiology; Therapeutic; Diagnostic.

---

© 2020 by the authors. This article is an open-access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## Funding

This research received no external funding.

## Acknowledgments

This research has no acknowledgment.

## Conflicts of Interest

The authors declare no conflict of interest.