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Editorial

Introducing *Targets*: A Journal for Bio-Detection and Therapy

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Targets are the essential elements in bio-detection and therapy. It provides important supports for the development of chemistry, life science, biomedicine, material science, environment science and the related multidiscipline. Its significance has been shown in different fields such as new drug development, disease diagnosis and early warning, life process study, food and environment safety monitoring, quality control of products, forensic medicine, and even anti-terrorism, etc. This direction benefits from the achievements in other frontier fields for its quick development and has become one of the focuses and research frontiers that most attract the attention of scientific and technological workers.

Targets for bio-detection cover anything from small molecules to peptides, glycans, nuclear acids, protein, and even cells. Target detection plays important roles in physiological processes, such as cellular growth and apoptosis, disease development and progression. It is usually performed in homogeneous solution, on chemical or biosensor surface, in cellular environment [1] and in vivo, and includes two main modes, the "always-on" mode that shows signal all the time and relies on targeted accumulation and metabolize to show signal at specific position [2], and the activatable mode that changes electrochemical or optical signals upon the recognition interaction [3]. The detection techniques include electrochemistry, fluorescence, luminescence, Raman spectroscopy, mass spectroscopy, etc. The detection specificity and sensitivity are two important performances. The former depends on the targeting recognition to produce the signal change, and the latter can be improved through integrating different signal amplification strategies based on nanotechnology and molecular biotechnology. Meanwhile, targeted therapy is a class of treatment methods that aim at the identified diseased sites at the cellular and molecular level, which can be a protein molecules or gene fragments usually not expressed or rarely expressed in normal cells. Corresponding therapeutic drugs can be designed for specifically recognizing these diseased sites [4,5]. When drugs enter the body, they will specifically select these sites to combine and act, so that the diseased cells can specifically killed without affecting or only rarely damaging normal tissue cells around the diseased tissue. Therefore, molecular targeted therapy is also known as "biological missile", and the safety and tolerability of targeted therapy are excellent, and the toxic and side effects are very small. Targeted therapy includes chemotherapy using chemotherapeutic drugs [6], photoresponsive therapy using photosensitizers to produce a large amount of singlet oxygen in the target cells or tissue under light irradiation [7,8], gene therapy through introducing exogenous normal genes into target cells [9], immune therapy through artificially enhancing or suppressing the immune function of the body with specific molecules, microbial agents or cells to kill the diseased cells or tissue, etc. It relies on the similar principle, which loads chemical and biological therapeutic agents in delivery carriers to activate therapeutic effect via the targeting recognition of a certain biomarker [10].

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Citation: Ju, H.; Liu, Y. Introducing *Targets*: A Journal for Bio-Detection and Therapy. *Targets* **2023**, *1*, 1–3. https://doi.org/10.3390/targets1010001

Received: 8 July 2022
Accepted: 12 August 2022
Published: 18 August 2022

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Targets (ISSN 2813-3137) [11] will provide a new platform for researchers and industry experts to publish their work. It is an open-access and peer-reviewed journal with rapid publication, and aims to provide our community with high-quality contributions in a broad range of topics. It will allow your peers to access your research without delay. The scope for *Targets* submission involves but not limits to discovering novel molecules as diagnostic biomarkers and therapeutic targets, establishing new bionic recognition systems for biosensing and bioimaging, developing novel approaches for biomarker detection, related biological interaction monitoring and targeted therapy, designing new signal amplification strategies for biosensing and cellular or in vivo imaging, utilizing molecular recognition for single molecule or single cell analysis, elucidating new pathways or mechanisms for disease development and progression, and synthesizing smart nanomaterials for activatable imaging and responsive drug release. Contributions to specialist topics such as high-performance detection technologies and computational, statistic and bioinformatic methods for weak interaction study, and instrumentation development, improvement and miniaturization with targeting recognition for bioanalysis are also welcome.

We invite high-quality submissions in various forms including original research articles, review papers, viewpoint sets and short communications, and hope that you will join us in helping to make the journal a success.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Zeng, Y.; Dou, T.T.; Ma, L.; Ma, J.W. Biomedical Photoacoustic Imaging for Molecular Detection and Disease Diagnosis: "Always-On" and "Turn-On" Probes. *Adv. Sci.* **2022**, *9*, 2202384. [CrossRef] [PubMed]
2. Li, J.J.; Cheng, F.F.; Huang, H.P.; Li, L.L.; Zhu, J.J. Nanomaterial-based Activatable Imaging Probes: From Design to Biological Applications. *Chem. Soc. Rev.* **2015**, *44*, 7855–7880. [CrossRef] [PubMed]
3. Wu, X.F.; Wang, R.; Kwon, N.; Ma, H.M.; Yoon, J.Y. Activatable Fluorescent Probes for in situ Imaging of Enzymes. *Chem. Soc. Rev.* **2022**, *51*, 450–463. [CrossRef] [PubMed]
4. Tian, J.W.; Ding, L.; Ju, H.X.; Yang, Y.C.; Li, X.L.; Shen, Z.; Zhu, Z.; Yu, J.S.; Yang, C.J. A Multifunctional Nanomicelle for Real-time Targeted Imaging and Precise Near-Infrared Cancer Therapy. *Angew. Chem. Int. Ed.* **2014**, *53*, 9544–9549. [CrossRef] [PubMed]
5. Ovais, M.; Guo, M.Y.; Chen, C.Y. Tailoring Nanomaterials for Targeting Tumor-Associated Macrophages. *Adv. Mater.* **2019**, *31*, 1808303. [CrossRef] [PubMed]
6. Ijas, H.; Shen, B.X.; Heuer-Jungemann, A.; Keller, A.; Kostiainen, M.A.; Liedl, T.; Ihalainen, J.A.; Linko, V. Unraveling the Interaction between Doxorubicin and DNA Origami Nanostructures for Customizable Chemotherapeutic Drug Release. *Nucleic Acids Res.* **2021**, *49*, 3048–3062. [CrossRef] [PubMed]
7. Cheng, Y.H.; Cheng, H.; Jiang, C.X.; Qiu, X.F.; Wang, K.K.; Huan, W.; Yuan, A.; Wu, J.H.; Hu, Y.Q. Perfluorocarbon Nanoparticles Enhance Reactive Oxygen Levels and Tumour Growth Inhibition in Photodynamic Therapy. *Nat. Commun.* **2015**, *6*, 8785. [CrossRef] [PubMed]
8. Zhang, Y.; Chen, W.W.; Zhang, Y.; Zhang, X.B.; Liu, Y.; Ju, H.X. Near-Infrared Photo-Switched MicroRNA Amplifier for Precise Photodynamic Therapy of Early Stage Cancers. *Angew. Chem. Int. Ed.* **2020**, *59*, 21454–21459. [CrossRef] [PubMed]
9. Ren, K.W.; Liu, Y.; Wu, J.; Zhang, Y.; Zhu, J.; Yang, M.; Ju, H.X. A DNA Dual Lock-and-key Strategy for Cell-Subtype-Specific SiRNA Delivery. *Nat. Commun.* **2016**, *7*, 13580. [CrossRef] [PubMed]
10. Zhang, Y.; Chen, W.W.; Zhang, X.B.; He, Y.L.; Liu, Y.; Ju, H.X. Activating DNA Nanomachine via Computation across Cancer Cell Membrane for Precise Therapy of Solid Tumor. *J. Am. Chem. Soc.* **2021**, *143*, 15233–15242. [CrossRef] [PubMed]
11. *Targets* Home Page. Available online: https://www.mdpi.com/journal/targets (accessed on 16 June 2022).

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