|  |
| --- |
| Antibody-Based Novel Drug Research and Industrialization |
| Contact person: ZHOU Jie | Email: zhoujie127@zju.edu.cn |
| 研究背景（400字）（Research background）: Under the national innovation driven development strategy and "Made in China 2025", the need for development of novel biotechnology and novel drugs is urgent. In order to promote the development of biopharmaceutical industry in China, Zhejiang University decided to create internal multidisciplinary collaboration. College of Pharmaceutical Sciences, School of Medicine, College of Life Sciences, College of Chemical and Biological Engineering and Institute of Translational Medicine thus set up a scientific Alliance of antibody-based novel drug research and industrialization.The Alliance aims to serve the construction of pharmaceutical science and novel biotechnology, the integration of internal resources, the establishment of collaborative innovation and the promotion of resource sharing in China, especially to work with Chinese pharmaceutical industry to accelerate the transformation of scientific and technological achievements. |
| 主要研究方向和进展（Main research topics and progress）: According to the development of biopharmaceutical drugs, we choose the three following directions as key research fields:1. key techniques of protein biosynthesis:

The conception of antibodies and antibody drug conjugates is limited by several scientific issues such as antibody affinity and the efficacy of antibody drug conjugates. In order to break through the bottleneck, antibody drugs and second generation of genetic engineering drugs are two important fields. This direction has a huge market value.1. key techniques for evaluating the drug safety

At present, there is no complete platform for biopharmaceutical safety evaluation in Zhejiang Province. In this direction, we will establish the key techniques on the pharmacodynamics, pharmacokinetics and safety evaluation, including creation of different disease animal model for in vitro and in vivo evaluation. 1. key techniques of biopharmaceutical delivery system

Because of complex structure, high molecular weight and instability of protein, formulation technology of protein-based drugs is facing great challenges. We focus on studying the stability of protein, polypeptide and gene drugs, and keep exploring slow and controlled releasing technology and delivery system, such as oral or mucosal administration. |
| 成员及所在单位（Member and college）: The Alliance is composed of College of Pharmaceutical Sciences, School of Medicine, College of Life Sciences, College of Chemical and Biological Engineering and Institute of Translational Medicine. Professor YANG Bo from College of Pharmaceutical Sciences is the Chief Scientist of the Alliance. 12 principles investigators and their teams participate (Please refer to biopharma.zju.edu.cn for detailed information). Famous Chinese Pharmaceutical enterprises such as Hisun Pharmaceutical Co. Ltd, Zhejiang Medicine Co. Ltd and Newsummit Biopharma (Shanghai) have been cooperative partners of the Alliance.  |
| 代表性成果（Representative achievements）:1. A total of 119 scientific research projects are in progress with a total amount of 151.7 million RMB since foundation of the Alliance. 2. Several major national scientific projects were obtained including 4 national key research and development programs, 7 “13th Five-Year Plan” Novel Drug R&D Major Projects, 3 Key Projects of National Natural Science Foundation with total research funds of 28.4 million RMB. 3. Altogether 130 papers were published recently, with a total impact factor of 647.7 (average IF=5.14), in which 7 papers have an IF >10, 44 papers have an IF >5. Papers were published in famous scientific journals such as Nature, Science Translational Medicine, ACS and Advanced Materials. 4. 19 patents were authorized and 9 patent applications were submitted. 5. The Alliance got 50 million RMB from Hangzhou Economic and Technological Development Area for setting up Zhejiang University (Hangzhou) Innovation Medicine Research Institute and building Hangzhou Eastern Medical Town. 6. A novel molecular (AL58805) got clinical trial permission by CFDA (Registration Number: CXHL1700107, CXHL17001076). 7. In response to " Belt and Road” Initiative, the Alliance applied and founded China-Indonesia National Biotechnology Joint Laboratory with Indonesia Agency for the Assessment and Application of Technology (BPPT) and University of Indonesia. 8. The Alliance has hosted 7 large international and national conferences in order to promote the academic exchange in various fields of novel drug research and development, and to cultivate major international cooperation projects. 9. The Alliance has invited 16 famous foreign scientists, including William Wilson (the Royal Academy of Engineering, New Zealand), LE Xiaochun (University of Alberta, Royal Academy of Sciences, Canada) and HYEON Taeghwan (deputy editor of the JACS, Seoul University, Korea), to give seminar to young researchers and graduate students. |