APPLICATION NOTE

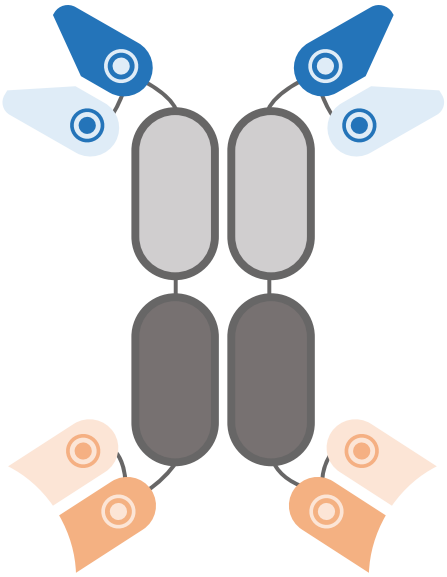
# Existing Antibodies Reinvented into Novel Bispecific Affinity Reagents

## THE PROBLEM:

A pharmaceutical company had been a long-time purchaser of antibodies to important oncology markers. The company was using these antibodies to study cell-to-cell interactions in order to find potential therapeutic targets. With the recent advancements in immune cell therapy, the company wanted to reinvent their methodology, increasing their chance of success. They needed the specificity of the old antibodies, but with targeting ability of a bispecific affinity reagent.

## THE PLAN:

Three main methods exist to produce bispecific antibodies: quadromas, chemical conjugation, and genetic recombination. Each provides different advantages. On this project the client needed the adaptability to quickly switch up the targets of interest. After discussion with development scientists the client and R&D Systems agreed upon genetic recombination as the best approach.



"Several challenges are encountered during the design and development of bispecific antibodies, all primarily associated with the structural attributes of the molecule. The ideal spatiotemporal context of the bispecific structure should be such that the two variable regions are able to bind to their respective targets with minimal steric hindrance and without significant loss of affinity. At the same time, the structure should also favor high-level expression of the bispecific with minimal co-expression of unassembled fragments, which in turn facilitates an efficient purification process. Along these lines, our functional bispecifics are derived by achieving conformational stability in combination with retention of specificity for the two intended targets."

-Cyrus Munshi, Ph.D.
Biotechnology Manager, Antibody Development

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## THE DELIVERY:

The hybridoma antibodies were first converted to the recombinant form using our platform technology. To ensure bioequivalency, the recombinant antibodies were compared with their hybridoma version for retention of activity. The client received a panel consisting multiple structural variations of each bispecific to test in their application. Highest performing reagents were selected for large scale-up. The client has greatly improved their screening methods, allowing them to get ahead of the competition in a very promising market.

**Global** bio-techne.com info@bio-techne.com TEL +1 612 379 2956 **North America** TEL 800 343 7475
**Europe | Middle East | Africa** TEL +44 (0)1235 529449 **China** info.cn@bio-techne.com TEL +86 (21) 52380373