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### **A tetravalent antibody designed to prevent and treat all SARS-CoV-2 variants**

Vaccines and antibodies are important therapeutics for preventing and treating covid-19. However, the continuous emergence of SARS-CoV-2 variants of concern poses a threat to the efficacy of existing vaccines and neutralizing antibodies. Indeed, the majority of the therapeutic antibodies that potently neutralized earlier, less-mutated SARS-CoV-2 variants such as Alpha, Gamma, and Delta do not neutralize the heavily mutated Omicron BA.1 and BA.2 variants. Using Apexigen's APXiMAB platform, we designed and developed a tetravalent antibody, APX901, that binds to the RBD of SARS-CoV-2 with high affinity ( $K_d = 5.1 \times 10^{-10} M$ ) at four epitopes that are located at the top face and the inner face of the RBD. The tetravalency and multiple epitopes enable APX901 to achieve broader and more potent blocking and neutralization of not only Alpha, Gamma, Delta, but also and more importantly Omicron BA.1 and BA.2 variants. In addition to broad and potent blocking and neutralization activities to all SARS-CoV-2 variants tested, APX901 was

engineered to have an extended half-life and a desirable developability profile. The unique design and characteristics of the tetravalent antibody APX901 allow it to broadly block and neutralize known and emerging SARS-CoV-2 variants and to offer an innovative solution for the prevention and treatment of covid-19 infections.

#### **Speaker Biography**

George Huang is the Head of Antibody Discovery, Principal Scientist at Apexigen, where he leads the APXiMAB antibody discovery and engineering platform to discover and develop differentiated best-in-class therapeutic antibodies for Apexigen's pipeline projects. Previously, he was a Senior Scientist at AbbVie leading protein engineering projects in the areas of antibody humanization, engineering of novel antibody formats, and antibody developability characterizations. George received his PhD in Biochemistry and Cell Biology from Rice University and conducted post-doctoral research at the University of Texas Health Science Center at Houston, in the area of Cell Biology and Antibody Engineering.

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