

### **3D Modeling Downstream Effects of Aripiprazole Binding to the D2 Dopamine Receptor**

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The drug aripiprazole is an antipsychotic that has gained popularity for its ability to be used to treat schizophrenia without many side effects. It is considered a partial agonist of the D2 dopamine receptor, a G-protein coupled receptor (1). Aripiprazole alters receptor function by acting on different G proteins. It acts as a partial agonist when binding to the dopamine D2 receptor, and for Galpha i/o signaling (1). Oppositely, aripiprazole acts as an antagonist for Gβγ signaling. When aripiprazole binds to a D2 receptor, it results in inhibition of adenylyl cyclase, and other downstream events (1). We modeled the functional selectivity of aripiprazole at the D2 receptor and its corresponding signaling pathways. Using pipe cleaners and 3D printers, we made prototypes of the G protein-coupled receptor and associated downstream pathways. Our final model was represented in TinkerCAD software.