Targeting Head and Neck Squamous Cell Carcinomas through Isobutyldeoxynyboquinone Activation of NQO1-Mediated Cytotoxicity

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Poly(ADP-ribosyl)ation is an important post-translational modification responsible for regulating DNA damage repair, transcription, chromatin structure, and telomere maintenance. Despite PAR being recognized as a valid target for anticancer therapy, modulation and measurement of PAR metabolism remains challenging. Here we report the design and synthesis of a substrate analogue for an enzyme responsible for regulating PAR metabolism. This substrate enabled the development and execution of a high-throughput screen for inhibitors of this enzyme.

A Systematic Investigation of Bis(oxazoline) Ligands for the Copper-Catalyzed Asymmetric Aziridination of Alkenes

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Chemoinformatics is a complementary alternative to quantum mechanical calculations because: (1) no mechanistic information about the desired transformation is necessary, (2) steric and electrostatic properties are quantified for thousands of candidate molecules and (3) the suitability of a given candidate can be quantified by correlating calculated properties and experimental data. The purpose of this research is (1) to generate an in silico library of ligands for rapid reaction development and (2) to prove the utility of this method by optimizing a general method for asymmetric aziridination. Using our computational methodology, representative ligands were selected from an in silico library of bis(oxazoline)s, and these were then synthesized and screened for activity. A statistical model was then developed to select catalysts from the in silico library predicted to be most selective for the desired transformation.