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## The Development of Novel Therapeutics for Sickle-Cell Disease

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Poster Presentation P10

**THE DEVELOPMENT OF NOVEL THERAPEUTICS FOR  
SICKLE-CELL DISEASE**

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Sickle-cell disease has been widely studied since the disorder was first described early in the 20<sup>th</sup> century. It is caused by a mutation in the gene coding for adult hemoglobin which leads to protein aggregation. The aggregated protein changes the shape of red blood cells and causes severe pain, fatigue and organ damage in afflicted individuals. Despite the fact that the molecular basis for sickle cell disease was first discovered in 1957 and its molecular mechanism has been described in detail, no effective treatment has thus been discovered.

As a novel approach to treating this ailment, our research focuses on the discovery of molecules that can bind to sickle-cell hemoglobin and disrupt protein polymerization. Our initial studies have focused on peptides and peptidomimetics (oligomers which mimic peptides) due to their great diversity and ease of synthesis through solid phase techniques. In fact, others have recently shown small peptides derived from hemoglobin are capable of disrupting the interaction. Using a combination of rational design and screening approaches, we hope to discover new therapeutic agents and help treat this devastating disease.