**Non-Confidential Summary**

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**Market Need:** Schizophrenia is a severe mental illness with disturbances in thinking, perception, emotions, social behavior, coupled with hallucinations and delusions. The global lifetime prevalence of schizophrenia is estimated at 4 per 1000. In the US, 0.6% of the population was diagnosed with schizophrenia in 2007. Direct and non-direct healthcare costs were $30.3 billion in 2002 in the US, and $2.02 billion in Canada, in 2004. The global schizophrenia therapeutics market was valued at $6.7 billion in 2010, and is expected to reach $7.3 billion by 2018.

Current therapeutics, such as Zyprexa, Risperdal, and Seroquel are used to treat schizophrenia, but have a host of undesirable side effects, such as weight gain, altered glucose and lipid metabolism, sedation, confusion, and social withdrawal. In fact, 74% of patients discontinue use within 18 months of therapy due to either poor tolerability or incomplete efficacy. Therefore, there is an unmet need for more effective therapeutics.

**Technology Description:** Our researchers have shown that two key proteins, the dopamine D2 receptor (D2R) and the protein “disrupted in schizophrenia 1” (DISC1), form a protein-protein interaction complex (Figure 1). D2R-DISC1 complex formation has been shown to contribute to the pathophysiology of schizophrenia. The D2R-DISC1 complex is significantly enhanced in schizophrenia preclinical models and in human postmortem brains of patients suffering from schizophrenia.

Through the characterization of the protein-protein interaction, we have developed a peptide that specifically interferes with this coupling; leading to the development of a breakthrough therapy capable of delivering enhanced affinity, efficacy, and a superior side effect profile.

**Stage of Development:**
- Administration of an interfering peptide that disrupts the D2R-DISC1 complex significantly reduced schizophrenic symptoms in both drug induced schizophrenic preclinical models, and in a genetic mutant preclinical model.
  - More interestingly, administration of this interfering peptide did not induce catalepsy, a severe side effect of the typical antipsychotics.
- We are starting the identification of small molecules mimicking the functional effect of our peptides.

**Advantages:**
- Small peptide, CNS targeting, with a novel and highly specific mechanism of action.
- Positive preclinical data using both genetic mutant and drug induced schizophrenia models.
- Does not induce catalepsy, a strong predictor of acute extrapyramidal side effects of antipsychotic medications.
- Our interference peptide selectively inhibits the aberrant interaction between D2R-DISC1.
  - Does not interfere with normal physiological functions associated with the D2 receptor.
- Safety & Toxicity – Agents that selectively inhibit interaction are likely to be safer than receptor antagonists.

**Notable Publication:**

**Intellectual Property:**
Patent issued in the United States.

**Business Opportunity:** CAMH is seeking a partner to complete pre-clinical development and to launch clinical trials that would employ either peptides or small molecule approaches. We are also interested in testing propriety compounds provided by pharmaceutical companies.