Exclusive Opportunity

Trk Receptor Agonists for the Treatment of Neurodegenerative Diseases

Emory Tech IDs: 07048, 07142, 08014, 08015, 08016

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Market Opportunity

Chronic and Acute Neurodegenerative Diseases

- Alzheimer’s Disease
  5.1M Americans affected
  $7.8 billion worldwide market by 2010

- Parkinson’s Disease
  1.5M Americans affected
  $4.0 billion worldwide market by 2010

- Stroke
  700,000 Americans/year
  $62 billion cost of care in U.S. for 2007
Therapeutic Target – TrkA Receptor

- Alzheimer’s Disease: NGF improves neuronal function and cognitive behavior in aged rats
- NGF protein is a poor therapeutic candidate
  - Failed clinical trial: undesirable side effects
  - High cost, instability, unfavorable route of admin.
- TrkA receptor remains a valid target

NGF → TrkA

Differentiation/apoptosis in development
Neuronal growth/synaptic function
Novel Cell-Based Apoptotic Assay

Spectrum Collection Library (2000 compound library)

SN56 cell
Cytoplasm

Add Compound

Treat with STS – Induces apoptosis

Add MR(DEVD)2 - Apoptotic cells are red

First Selected compounds

Screening p-Akt, p-ERK level: second selected compounds

Screening effect on PC12 neurite out growth
# TrkA Agonist Compound Pipeline

## Gambogic Acid Family

<table>
<thead>
<tr>
<th>Compound</th>
<th>Development Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gambogic Amide</td>
<td>Proof-of-principle of efficacy completed</td>
</tr>
<tr>
<td>Gambogic Acid Derivative</td>
<td>Synthesis in progress, proof-of-principle to follow</td>
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## Repurposed Therapeutic

<table>
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<tr>
<th>Compound</th>
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<tr>
<td>Compound X</td>
<td>Proof of principle of efficacy in progress</td>
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Gambogic Amide: Proof-of-Principle

Gambogic amide decreases infarct volume in an MCAO animal model

Source: (2007) PNAS 104:16329-16334
Intellectual Property

- Two provisional applications filed covering gambogic amide and additional derivative (2007)
- Claims address
  - Chemical and pharmaceutical compositions
  - Methods of use
  - Screening assay
Development and Future Plans

- Validation of GA derivative and repurposed drug
- IP assessment underway for repurposed therapeutic
- Braegen Pharmaceuticals – Top 10 semi-finalist in SEBIO Bio/Plan Competition
- Initial business plan and strategy completed
- GRA Phase I Grant: $25K
- Application for STTR award