6-2018-4545 | Platform Technology To Synthesize Natural Compounds for the Treatment of Neurological Conditions and other Disorders

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| Category | LifeSciences and BioTechnology |
| Keywords | Natural compounds, Synthetic compounds, Neurodegenerative disorders |
| Current development stage | For Pharmaceutical development: TRL4 - POC & Safety of candidate drug formulation is demonstrated in defined animal model |

## Background

Tricyclic angularly-fused ring structures are a desirable trait found in natural origin drugs. Significant interest exists to mass-producing these structures via a synthetic process, but unfortunately, access to these target molecules and their structural analogues is hindered by their multistep synthesis.

Our technology is able to synthesize tricyclic angularly-fused natural products in a rapid and efficient manner that overcomes the existing hurdles of this process.

## Our Innovation

We have developed a novel method to synthesize tricyclic angularly-fused compounds from a simple precursor via controlled cascade cyclization. These synthesized compounds can serve as potential drugs to a variety of disorders, mimicking the effects of natural origin biochemical compounds.

One of those compounds, the family of methylene-cycloalkylacetate-based molecules (MCAs, modulate neuronal cell properties. They operate as acceptable pharmacophores for development of novel neurotropic (neurite outgrowth inducing) lead compounds.

Our findings indicate that the alkene element, integrated within the cycloalkylacetate core, is indispensable for neurotropic activity. These discovered lead compounds can be improved upon to develop a neurotropic drug for the treatment of neurodegenerative disorders.

## Technology

- A library of novel synthetic compounds with similar therapeutic effects to natural origin drugs
- Specific synthetic compounds that have neurotropic activity
- POC in animal models of Alzheimer's, Parkinson's, Traumatic Brain and Peripheral Nerve Injuries

## Opportunity

- Screening a library of novel synthetic compounds which mimic the activity of natural origin compounds for various indications
- A unique family of methylene-cycloalkylacetate-based molecules (MCAs) that could treat a variety of neurodegenerative disorders. The MCA drug can be successfully constructed through the simple and straightforward sequence of synthetic transformations from commercially available starting materials.

## Additional Reading

Methylene-Cycloalkylacetate (MCA) Scaffold-Based Compounds as Novel Neurotropic Agents.; Lankri D, Haham D, Lahiani A, Lazarovici P, Tsvelikhovsky D.

ACS Chem Neurosci. 2018 Apr 18;9(4):691-698. doi: 10.1021/acschemneuro.7b00473. Epub 2017 Dec 29.

## Patent Status

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