



FastForwardSM

General Fund

This project is funded by Fast Forward, LLC, a nonprofit organization established by the National Multiple Sclerosis Society in order to accelerate the development of treatments for MS. Fast Forward will accomplish its mission by connecting university-based MS research with private-sector drug development and by funding small biotechnology/pharmaceutical companies to develop innovative new MS therapies and repurpose FDA-approved drugs as new treatments for MS.

<i>Primary Investigator</i>	<i>Project Title</i>	<i>Amount to be Committed</i>
Scott Harbeson, PhD Drug Discovery, Basic Research Concert Pharmaceuticals Lexington MA	C-21191 for the Treatment of Spasticity and Neuropathic Pain Associated with Multiple Sclerosis	\$750,000 Term – 12 months

About the Company

Concert Pharmaceuticals is a clinical stage biotechnology company focused on applying the company's DCE Platform™ (deuterated chemical entity platform) to create novel and differentiated small molecule drugs. Concert's approach leverages decades of pharmaceutical and clinical experience to reduce the time, risk and expense needed to create important new medicines. The company has a broad research pipeline encompassing many therapeutic areas including antiviral disease, renal disease, and CNS disorders, among others. Founded in 2006, Concert has raised more than \$110 million of venture and institutional capital.



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Project Background & Goals

The disruption of nerve signals produces the primary symptoms of MS, which vary depending on where the damage has occurred. Two common symptoms of MS are pain (<http://www.nationalmssociety.org/about-multiple-sclerosis/what-we-know-about-ms/symptoms/pain/index.aspx>) and spasticity (<http://www.nationalmssociety.org/about-multiple-sclerosis/what-we-know-about-ms/symptoms/spasticity/index.aspx>), which refers to feelings of stiffness and a wide range of involuntary muscle spasms.

Benzodiazepine belongs to the group of medications called central nervous system (CNS) depressants, which slow down the nervous system by modulating GABA. GABA is a "neurotransmitter," one of a number of signaling molecules that nerve cells use to communicate with each other. Benzodiazepines are used in to treat pain, tremor, and spasticity in people with MS, but can cause people to become drowsy, dizzy, lightheaded, clumsy or unsteady.

C-21191 is a chemical cousin of a substance (L-838417) that showed early promise for having properties for treating spasticity and pain without the sedation and coordination problems that can be side effects of benzodiazepine. Eventually L-838417 did not turn out to have characteristics needed to bring it to human testing. Concert chemically modified L-838417 to create C-21191 with the aim of improving how it is absorbed by and retained in the body after being orally dosed.

With the support of Fast Forward, the team plans to complete a battery of preclinical toxicology, and pharmacology studies which are necessary before beginning clinical trials in people with MS. Concert also is planning C-21191's manufacturing and formulation development in preparation for future clinical trials.

This project can move forward the first human trials of a medication that may help to stop a painful symptom of MS in its tracks.