

## Advancing Stem Cell Technology at Celavie Biosciences

Celavie Biosciences LLC is a private, emerging-growth company that develops stem cell-based therapies for the treatment of Parkinson’s disease and other disorders of the central nervous system.

We believe Celavie stem cells carry humanity’s best hope for curing many of the world’s most devastating conditions. The unmet medical needs for these conditions are significant, as these diseases result in loss of basic function or mortality. The need will only grow as populations rise. We envision a future where there is less pain and suffering from degenerative neurological disease and trauma, with improved quality of life for patients across the globe, and the ultimate eradication of neurological disease.

Our mission is to deliver effective new restorative treatments for degenerative diseases like Parkinson’s disease and other disabling disorders for which there are no cures.

## Catalyzing the Natural Healing Power of Cells

We are improving lives and restoring hope by changing the paradigm of stem cell technology. Auguring the next generation of regenerative medicine, the foundational theory of Celavie’s technology is that undifferentiated cells will:

- Migrate to the site of the disorder;
- Read the micro-environment into which they are transplanted;
- Multiply and differentiate according to the disorder;
- Mature into multiple cell types that address the deficiency in its entirety; and,
- Restore function and structure.

Using the latest technological breakthroughs, Celavie can produce large banks of undifferentiated cells with uniform qualities utilizing closed-system bioreactors. The cells are grown in a specialized patented medium that allows them to maintain their sterility and genetic stability over the course of the manufacturing process.

Veterinary subsidiary Celavet uses the same standardized and controlled production methods to establish equine, canine, and feline stem cell lines as those used by Celavie Biosciences in the manufacture of human cells. Stem cell lines from different species all express standard stem cell characteristics and are available to address pathologies in their respective species. Research in one area leads to innovations in others.

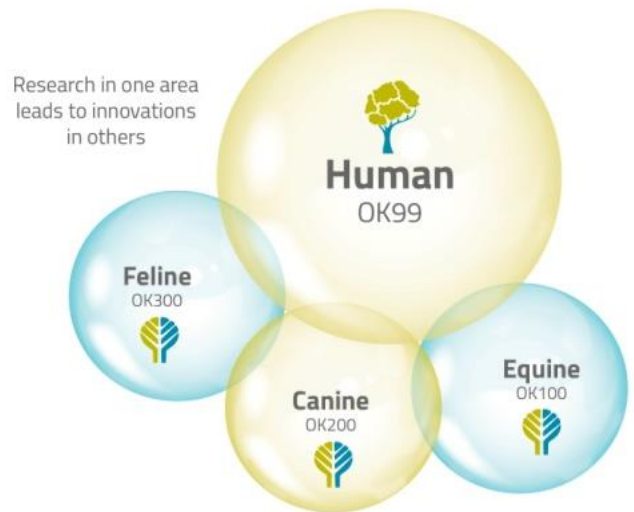
When required for treatment, our cells are thawed, reintroduced to the transportation medium, and shipped to the clinical location overnight. Our technology allows for commercial-scale production and banking of our cells. A single cell line can lead to 13 million therapeutic doses.

## Significant Potential Global Impact

Global demand for regenerative medicine is growing. Expert thinking around effective treatments for Parkinson’s disease, which affects an estimated 16.1 million people globally, is changing. The market need for therapies addressing Parkinson’s is projected to grow from \$2.1 billion in 2014 to over \$3.2 billion in 2021 (GBI Research). Characteristics of desirable therapies have shifted from short-acting to long-acting, symptomatic, dopamine-related treatments. Since Celavie and Celavet’s stem cell technology could effectively address many human and veterinary disorders, the potential addressable market is significant.

## Cutting-Edge Research

Four Banks of Cultured Stem Cell Lines



**\$67.6 billion**

Estimated size of global regenerative medicine market by 2020

Source: Market Research Reports 2014

Celavie has reached a pivotal turning point on our path to market. Building on the positive reputation and research results of our veterinary subsidiary Celavet, we have achieved a measurable level of success with mammalian studies. Our ongoing clinical trials, which meet the highest international safety standards, substantiate the healing capacity of Celavie’s pluripotent cells.

A Phase I trial on seven patients in Mexico has not revealed any lasting adverse effects or complications over a period of more than two years. Protocol for a larger controlled single-blinded randomized trial in US is in progress. Preparation of materials for IND application is in progress.

Celavet is working to restore function in orthopedic conditions of large and small animals, with noticeable tissue repair observed in trials conducted on nearly 500 horses at veterinary centers around the country.



Celavet received approval from the [Center for Veterinary Medicine \(CVM\)](#) for its donor selection criteria and product characterization of its equine OK100 stem cells. These approvals are a critical step towards further studies of the OK100 stem cells’ effectiveness for the treatment of tendinitis (e.g., tendon injuries, bowed tendons, etc.) in horses. Celavet’s R&D team is accumulating evidence that Celavet stem cells are hypo- or non-immunogenic and do not cause an immune response.

**Bilateral stereotactic injection of Celavie stem cells during Phase I trial surgery at Hospital Angeles del Pedregal, Mexico City**

Celavie cells are being injected into the putamen bilaterally with a proprietary stereotactic needle designed to deliver stem cells to specific sites in the brain.

### The Celavie and Celavet Team

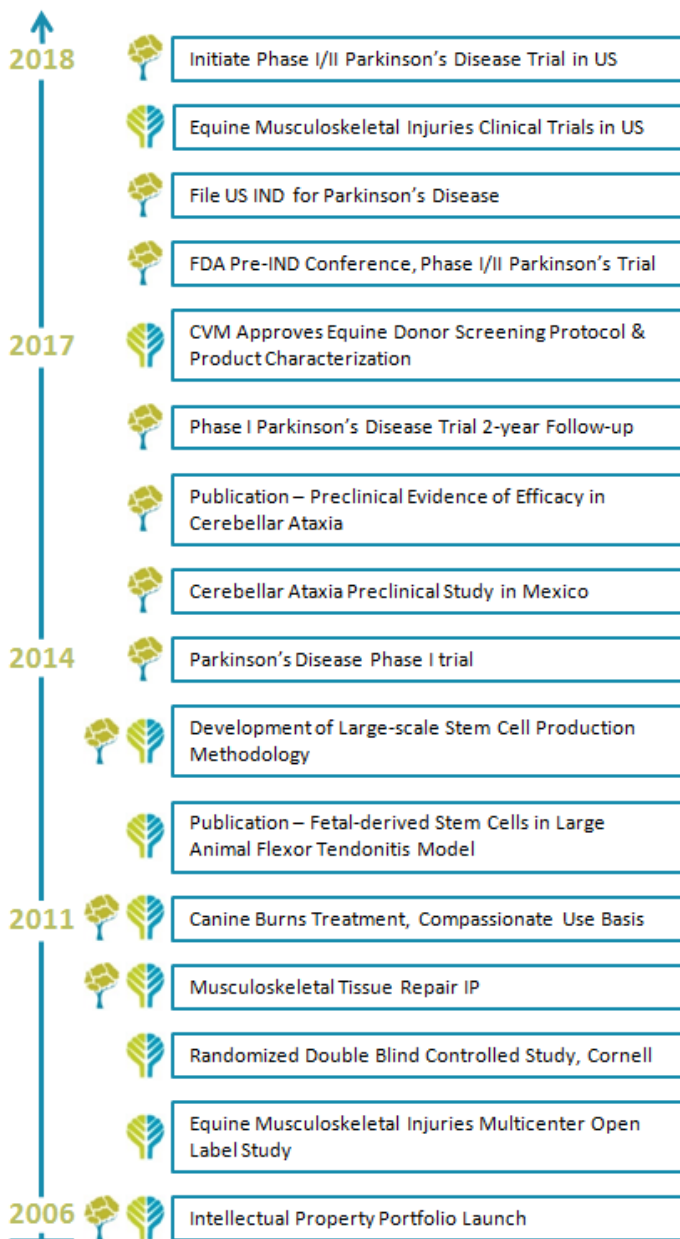
Celavie has assembled a powerhouse executive team and key relationships with world-class advisors in R&D and the commercialization of pharmaceutical products and medical technologies, both human and veterinary.

Celavie Bioscience’s CEO and President [Sandy Solmon](#) founded the company in 2006 and has funded it since inception. Sandy is a dynamic entrepreneur widely recognized for innovation, cutting-edge research, philanthropy, anticipating market trends, launching products, and scaling a global business.

The scientific team, led by [Oleg Kopyov](#), MD, PhD, has been instrumental in the research and development of neurosurgical treatments for brain diseases.

Our cells are not a last resort for the hopeless but a first line of treatment for the hopeful. At Celavie Biosciences, we envision a future in which the scourge, suffering and wasted

## Celavie Biosciences Milestones



human potential caused by the global burden of disease has been eliminated through the power of science, leadership, collaboration and compassion.

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