



# Research & Development



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## XP23829

Program/ Potential Indication	Pre- Clinical	Phase 1	Phase 2	Phase 3	NDA Filed
<b>XP23829</b>					
<b>Psoriasis</b>	████████████████████				
<b>Relapsing Forms of MS</b>	████████████████████				

Discovered by XenoPort, XP23829 is a patented, oral product candidate that utilizes prodrug technology for efficient absorption into the body. Once absorbed, XP23829 is rapidly converted to monomethyl fumarate (MMF), a fumaric acid ester compound that has shown immuno-modulatory and neuroprotective effects in cell-based systems and preclinical models of disease. XenoPort currently holds all rights to this product candidate.

XP23829 is currently being studied in a Phase 2 clinical trial in patients with moderate-to-severe chronic plaque-type psoriasis and may have potential as a treatment for relapsing-forms of multiple sclerosis (MS). Dimethyl fumarate (DMF), which is also a fumaric acid ester compound and a prodrug of MMF, has been shown to be effective in the treatment of patients with relapsing forms of MS and has achieved positive results in clinical trials in patients with psoriasis. In XenoPort's preclinical psoriasis and multiple sclerosis animal studies comparing molar equivalent doses of DMF and XP23829, XP23829 demonstrated greater improvements in efficacy endpoints as compared to DMF. Toxicology studies conducted in two species showed that XP23829 caused less stomach irritation when compared to DMF. Preclinical data suggests that XP23829 may have the potential for consistent and predictable absorption, improved gastrointestinal (GI) tolerability and less flushing compared to DMF.

### Psoriasis

Psoriasis is the most common autoimmune disease in the United States. Plaque psoriasis, a chronic inflammatory skin disease, accounts for 80-90% of all psoriasis patients and appears as raised, red patches covered with a silvery white buildup of dead skin cells, typically found at the elbows, knees, scalp and genital area. Psoriasis is associated with comorbid conditions, including depression, arthritis, diabetes, hypertension, metabolic syndrome and cardiovascular events, and has a major impact on health-related quality of life, affecting daily activities of 60% of patients with moderate-to-severe psoriasis.

It is estimated that psoriasis affects 2% of the population worldwide, including approximately 6 million people in the United States, and that 20-30% of psoriasis patients have moderate-to-severe psoriasis. Although psoriasis can affect all age groups, the onset of psoriasis tends to peak between the ages of 20 and 30 and between ages 50 and 60.

### Relapsing Forms of MS

MS is a chronic and progressive inflammatory neurodegenerative disease in which the body's immune system attacks the myelin protein that insulates neuronal axons. The disease typically strikes in young adulthood and because it is progressive in nature, disability accumulates over time and can lead to permanent impairment of mobility, cognition and the ability for self care.

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## Clinical Trial Information



The U.S. National Institutes of Health provides a Web site of many current and past clinical trials. To view information about XenoPort's clinical trials, please go to [www.clinicaltrials.gov](http://www.clinicaltrials.gov).

This icon indicates a link to an external site.

Symptoms presented by patients who are diagnosed with MS include tingling, numbness, weakness or loss of balance and blurred vision. As the disease progresses, additional symptoms include muscle spasms, sensitivity to heat, fatigue, changes in thinking or perception and difficulty in walking. Well-defined criteria that are both sensitive and specific have been developed for the reliable diagnosis of MS. A diagnosis requires both neurological symptoms as well as the observation of new T2 or gadolinium-enhancing lesions on an MRI brain scan. The patient may be diagnosed with relapsing forms of MS after they experience a subsequent attack, followed by a remission of symptoms. This classification represents approximately two-thirds of the patients with a diagnosis of MS. A typical course of the disease involves progressively more frequent relapses of symptoms resulting in greater levels of disability after each relapse.

According to the National Multiple Sclerosis Foundation, there are estimated to be 400,000 people with MS in the United States. More than two-thirds of MS patients are women and relapsing forms of the disease accounts for approximately 65% of MS patients. Most people are diagnosed between the ages of 20 and 50, although MS can occur in young children and significantly older adults.

