October 9, 2012

Data from Investigator-Initiated Phase 2 Study of Eculizumab (Soliris®) in Patients with Severe Relapsing Neuromyelitis Optica (NMO) Presented at the American Neurological Association (ANA) Annual Meeting

-- Study in 14 Patients Shows Eculizumab Significantly Reduced Frequency of Attacks in Patients with Severe Relapsing NMO --

CHESHIRE, Conn.--(BUSINESS WIRE)-- Alexion Pharmaceuticals, Inc. (Nasdaq: ALXN) today announced that researchers have presented data from a single-arm, open-label, investigator-initiated Phase 2 study of eculizumab (Soliris®) as an investigational therapy in 14 patients with severe, relapsing neuromyelitis optica (NMO), a life-threatening, ultra-rare neurological disorder. The study met its primary efficacy endpoint with high degrees of clinical and statistical significance. Clinically and statistically significant improvements were also observed in key secondary endpoints. Data were presented today at a Scientific Symposium Oral Session at the American Neurological Association annual meeting in Boston, Mass.[1]

NMO is a devastating, life-threatening, ultra-rare neurological disease that leads to severe weakness, paralysis, respiratory failure, loss of bowel and bladder function, blindness and premature death.[2-4] In patients with NMO, uncontrolled complement activation causes destruction of myelin-producing cells, leading to severe damage to the central nervous system (CNS), including the spinal cord and optic nerve.[5-7] Patients with NMO have a life-long exposure to the uncontrolled complement activation due to chronic autoimmune attack, and most patients experience an unpredictable, relapsing course of disease with cumulative disability, as each attack adds to the neurologic disability.[3,8,9] Fifty percent of relapsing NMO patients have been reported to sustain permanent severe disability, including paralysis and blindness, within 5 years of disease onset.[10] Most NMO-related deaths result from respiratory complications from NMO attacks[10,11]; in one report, 30% of patients died within 5 years of disease onset.[10]

Eculizumab is approved in over 40 countries as a treatment for patients with paroxysmal nocturnal hemoglobinuria (PNH) and in the United States and European Union for patients with atypical hemolytic uremic syndrome (aHUS). PNH and aHUS are both debilitating and life-threatening ultra-rare disorders caused by chronic, uncontrolled complement activation. Eculizumab is not approved for the treatment of NMO in any country and was used in the reported study on an investigational basis.

"NMO is a debilitating and potentially life-threatening disease in which attacks of inflammation of the spinal cord and eye nerves can lead to paralysis, blindness, and death. If we can completely stop such attacks in NMO, we can prevent disability and provide patients the opportunity for significantly improved outcomes," said study investigator Sean J. Pittock, M.D., Professor of Neurology and Co-director of the Neuroimmunology Laboratory at the Mayo Clinic in Rochester, Minn. "In this study, eculizumab was associated with a substantial reduction in the number of attacks in patients with severe relapsing NMO, including those who were refractory to several immunosuppressive agents. Additionally, eculizumab-treated patients showed evidence of overall disease improvement, which supports a central role for uncontrolled complement activation in NMO. We look forward to further investigations of eculizumab as a potential therapy for patients with severe and refractory NMO."

"This investigator-initiated study suggests that eculizumab, by inhibiting the activation of terminal complement, blocks the underlying disease mechanism that leads to progressive and severe disability in patients with severe relapsing NMO," said Stephen P. Squinto, Ph.D., Executive Vice President, Head of Research and Development at Alexion. "Based on the results from this study, Alexion expects to participate in a series of discussions with researchers and regulators to design a company-sponsored clinical study to further evaluate the potential of eculizumab as a therapy for severe and refractory NMO."

About the Study

The single-arm, open-label, Phase 2 trial was conducted at two Mayo Clinic sites to investigate the safety and efficacy of eculizumab in patients with severe relapsing NMO. The 12-month study enrolled 14 women (median age: 41 years; range: 18-67 years) who received a 600-milligram (mg) weekly dose of eculizumab for the first 4 weeks, followed by a 900-mg dose at Week 5, and a 900-mg maintenance dose every 2 weeks thereafter. Prior to study enrollment, all patients had experienced two or more disease relapses in the preceding 6 months or three such attacks in the preceding year (with at least one of those relapses occurring in the prior 6 months); six of the 14 patients continued to experience relapses despite chronic immunosuppressive therapy.[1]

The study achieved its primary efficacy endpoint with high levels of clinical and statistical significance: a decline in the median annualized attack rate from three attacks per patient pre-eculizumab treatment to zero attacks per patient during 12 months of chronic eculizumab treatment ($p < 0.0001$). After 12 months of treatment, 86% (12 of 14) of these severely affected patients were completely attack-free. Two of the 14 patients had single "possible" relapses as reported by the study investigators. One of those two patients had back pain only less than 30 hours after the first dose of eculizumab, without clinical or radiological evidence of myelitis (inflammation of the spinal cord). The second of these two patients, while experiencing a urinary tract infection, also reported new onset of visual blurring (without pain) with reduction in visual acuity, which returned to baseline after intravenous immunoglobulin (IVIG) treatment. The study investigators suggested that this event might have actually been what they term a non-disease-related "pseudo-exacerbation."[1]

Eculizumab was associated with significant improvements in key secondary endpoints. The median expanded disability status scale (EDSS) score improved from 4.3 pre-treatment to 3.5 after 12 months of treatment with eculizumab ($p < 0.01$). Importantly, all patients experienced either improvement or stability in all key outcome measures, including EDSS, ambulatory function as measured by the Hauser Ambulation Index, and visual function as measured by visual acuity.[1]

Eculizumab appeared to be well-tolerated in the study, with the three most common adverse events being headache, nausea, and dizziness. One patient was successfully treated for a meningococcal sepsis infection and resumed eculizumab treatment within the trial. One patient died of a myocardial infarction (heart attack) approximately 4 months after completing treatment with eculizumab; this event was deemed unrelated to eculizumab. During the first three months following the protocol-specified termination of eculizumab treatment, two patients, while continuing to receive immunosuppressive treatment, experienced three severe relapses.[1]

About Neuromyelitis Optica (NMO)

Neuromyelitis optica (NMO, also known as Devic's disease) is a severe, ultra-rare neurological disorder characterized by chronic autoimmune attack leading to life-long exposure to uncontrolled complement activation that causes destruction of myelin-producing cells, leading to severe damage to the central nervous system (CNS), including the spinal cord and optic nerve.[5-8,12] As a result, patients with NMO develop transverse myelitis (inflammation of the spinal cord), which causes severe muscle weakness, numbness, and sometimes paralysis of the arms and legs, and optic neuritis (inflammation of the optic nerve), which causes eye pain and vision loss. Transverse myelitis can additionally cause respiratory failure, sensory disturbances and loss of bladder and bowel control.[2-4]

Within five years of disease onset, 50% of relapsing NMO patients sustain permanent, severe disability, including paralysis and blindness.[10] Most NMO-related deaths result from respiratory complications from NMO attacks[10,11]; in one report, 30% of patients died within 5 years of disease onset.[10]

The relapsing form of NMO primarily affects women.[13] There are no approved treatments for the disease. Current management focuses primarily on using immunosuppression in an attempt to reduce the frequency and severity of attacks.

About Soliris

Soliris is a first-in-class terminal complement inhibitor developed from the laboratory through regulatory approval and commercialization by Alexion. Soliris is not approved for the treatment of patients with NMO in any country. Soliris is approved in the US, European Union, Japan and other countries as the first and only treatment for patients with paroxysmal nocturnal hemoglobinuria (PNH), a debilitating, ultra-rare and life-threatening blood disorder, characterized by complement-mediated hemolysis (destruction of red blood cells). Soliris is also approved in the US and the European Union as the first and only treatment for patients with atypical hemolytic uremic syndrome (aHUS), a debilitating, ultra-rare and life-threatening genetic disorder characterized by complement-mediated thrombotic microangiopathy, or TMA (blood clots in small vessels). Soliris is indicated to inhibit complement-mediated TMA. The effectiveness of Soliris in aHUS is based on the effects on TMA and renal function. Prospective clinical trials in additional patients are ongoing to confirm the benefit of Soliris in patients with aHUS. Soliris is not indicated for the treatment of patients with Shiga-toxin *E. coli*-related hemolytic uremic syndrome (STEC-HUS). Alexion's breakthrough approach in complement inhibition has received the pharmaceutical industry's highest honors: the 2008 Prix Galien USA Award for Best Biotechnology Product with broad implications for future biomedical research and the 2009 Prix Galien France Award in the category of Drugs for Rare Diseases. More information including the full prescribing information on Soliris is available at www.soliris.net.

Important Safety Information

The US product label for Soliris includes a boxed warning: "Life-threatening and fatal meningococcal infections have occurred in patients treated with Soliris. Meningococcal infection may become rapidly life-threatening or fatal if not recognized and treated early. Comply with the most current Advisory Committee on Immunization Practices (ACIP) recommendations for

meningococcal vaccination in patients with complement deficiencies. Immunize patients with a meningococcal vaccine at least 2 weeks prior to administering the first dose of Soliris, unless the risks of delaying Soliris therapy outweigh the risk of developing a meningococcal infection. (See Serious Meningococcal Infections (5.1) for additional guidance on the management of meningococcal infection.) Monitor patients for early signs of meningococcal infections and evaluate immediately if infection is suspected. Soliris is available only through a restricted program under a Risk Evaluation and Mitigation Strategy (REMS). Under the Soliris REMS, prescribers must enroll in the program (5.2). Enrollment in the Soliris REMS program and additional information are available by telephone: 1-888-soliris (1-888-765-4747)."

In patients with PNH, the most frequently reported adverse events observed with Soliris treatment in clinical studies were headache, nasopharyngitis (runny nose), back pain and nausea. Soliris treatment of patients with PNH should not alter anticoagulant management because the effect of withdrawal of anticoagulant therapy during Soliris treatment has not been established. In patients with aHUS, the most frequently reported adverse events observed with Soliris treatment in clinical studies were hypertension, upper respiratory tract infection, diarrhea, headache, anemia, vomiting, nausea, urinary tract infection, and leukopenia. Please see full prescribing information for Soliris, including boxed WARNING regarding risk of serious meningococcal infection.

About Alexion

Alexion Pharmaceuticals, Inc. is a biopharmaceutical company focused on serving patients with severe and ultra-rare disorders through the innovation, development and commercialization of life-transforming therapeutic products. Alexion is the global leader in complement inhibition and has developed and markets Soliris® (eculizumab) as a treatment for patients with PNH and aHUS, two debilitating, ultra-rare and life-threatening disorders caused by chronic uncontrolled complement activation. Soliris is currently approved in more than 40 countries for the treatment of PNH, and in the United States and the European Union for the treatment of aHUS. Alexion is evaluating other potential indications for Soliris and is developing four other highly innovative biotechnology product candidates, which are being investigated across eight severe and ultra-rare disorders beyond PNH and aHUS. This press release and further information about Alexion Pharmaceuticals, Inc. can be found at: www.alexionpharma.com.

[ALXN-G]

Safe Harbor Statement

This news release contains forward-looking statements, including statements related to anticipated clinical development, regulatory and commercial milestones and potential health and medical benefits of Soliris® (eculizumab) for the potential treatment of patients with severe and relapsing neuromyelitis optica. Forward-looking statements are subject to factors that may cause Alexion's results and plans to differ from those expected, including for example, decisions of regulatory authorities regarding marketing approval or material limitations on the marketing of Soliris for its current or potential new indications, and a variety of other risks set forth from time to time in Alexion's filings with the Securities and Exchange Commission, including but not limited to the risks discussed in Alexion's Quarterly Report on Form 10-Q for the period ended June 30, 2012 and in our other filings with the US Securities and Exchange Commission. Alexion does not intend to update any of these forward-looking statements to reflect events or circumstances after the date hereof, except when a duty arises under law.

References

[1] Pittock SJ, McKeon A, Mandrekar JN, Weinshenker BG, Lucchinetti CF, Wingerchuk DM. Pilot clinical trial of eculizumab in AQP4-Ig-G-positive NMO. Presented at the 2012 annual meeting of the American Neurological Association, Boston, MA, October 9, 2012: Abstract T1826.

[2] Wingerchuk DM, Lennon VA, Lucchinetti CF, Pittock SJ, Weinshenker BG. The spectrum of neuromyelitis optica. *Lancet Neurol.* 2007;6(9):805-15.

[3] Wingerchuk DM. Diagnosis and treatment of neuromyelitis optica. *Neurologist.* 2007;13(1):2-11.

[4] Wingerchuk DM, Weinshenker BG. Neuromyelitis optica. *Curr Treat Options Neurol.* 2008;10(1):55-66.

[5] Jarius S, Wildemann B. AQP4 antibodies in neuromyelitis optica: diagnostic and pathogenetic relevance. *Nat Rev Neurol.* 2010;6:383-92.

[6] Hinson SR, Romero MF, Popescu BFG, et al. Molecular outcomes of neuromyelitis optica (NMO)-IgG binding to aquaporin-4 in astrocytes. *Proc Nat Acad Sci.* 2012;109(4):1245-50.

[7] Hinson SR, Pittock SJ, Lucchinetti CF, et al. Pathogenic potential of IgG binding to water channel extracellular domain in neuromyelitis optica. *Neurology.* 2007;69:2221-31.

[8] Tuzun E, Kurtuncu M, Turkoglu R, et al. Enhanced complement consumption in neuromyelitis optica and Behcet's disease patients. *J Neuroimmunol.* 2011;233(1-2):211-5.

[9] Kuroda H, Fujihara K, Takano R, et al. Increase of complement fragment C5a in cerebrospinal fluid during exacerbation of neuromyelitis optica. *J Neuroimmunol.* 2012; pii: S0165-5728(12)00275-5.

[10] Wingerchuk DM, Hogancamp WF,O'Brien PC, Weinshenker BG. The clinical course of neuromyelitis optica (Devic's syndrome). *Neurology* 1999 Sep 22;53(5):1107-14.

[11] Kitley J, Leite MI, Nakashima I, et al. Prognostic factors and disease course in aquaporin-4 antibody-positive patients with neuromyelitis optica spectrum disorder from the United Kingdom and Japan. *Brain.* 2012;135(Pt 6):1834-49.

[12] Mata S, Lolli F. Neuromyelitis optica: an update. *J Neurol Sci.* 2011;303(1-2):13-21.

[13] Wingerchuk DM. Neuromyelitis optica. *International MS Journal* 2006;13 2): 42—50.

Alexion Pharmaceuticals, Inc.
Irving Adler, 203-271-8210
Executive Director, Corporate Communications
or
Media
Alexion Pharmaceuticals, Inc.
Kim Diamond, 203-439-9600
Director, Corporate Communications
or
Investors
Rx Communications
Rhonda Chiger, 917-322-2569

Source: Alexion Pharmaceuticals, Inc.

News Provided by Acquire Media