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Mereo BioPharma's Setrusumab Demonstrates Dose-Dependent Bone Building and Trend in Fracture Reduction in Phase 2b ASTEROID Study in Adults with Osteogenesis Imperfecta

Dose-Dependent and Statistically Significant Improvement in Areal Bone Mineral Density (BMD) Over Baseline at the Lumbar Spine, as Measured by DXA, Reaching 8.8% at 12 Months in Highest Dose Cohort (p<0.001); Improvement Consistent Across All OI Subtypes Represented in Study

Trend of Decrease in Fractures Observed in Highest Dose Cohort

Results Support Progression of Setrusumab into Pediatric Pivotal Study in OI as Planned

Setrusumab was Safe and Well-Tolerated; No Cardiac-Related Safety Concerns Observed in the Study

Conference Call Today at 8:00 a.m. EST / 1:00 p.m. GMT

London and Redwood City, Calif., November 11, 2019 - Mereo BioPharma Group plc (NASDAQ: MREO, AIM: MPH), "Mereo" or the "Company" or the "Group," today announces 12-month topline data from the Company's Phase 2b dose-ranging "ASTEROID" clinical study of setrusumab (BPS-804), an anti-sclerostin antibody, in adults with Type I, III or IV osteogenesis imperfecta (OI), a rare bone disease with no approved treatments. ASTEROID was the largest, prospectively-designed, interventional clinical study to be performed in this patient group.

The primary endpoint of the ASTEROID study was change in Trabecular Volumetric Bone Mineral Density (Tr vBMD) of the radius (wrist) over baseline after 12 months of treatment as measured by High Resolution peripheral Quantitative Computed Tomography (HR-pQCT). As a result of the unexpected high heterogeneity of the study patients' trabecular bone baseline values at the wrist (including both very low and very high trabecular bone at baseline as compared to the literature[1]), the primary endpoint was not met at any of the three setrusumab dose levels. HR-pQCT is a relatively new imaging technique that has not been used widely in clinical studies and was chosen in order to improve the understanding of the effect of setrusumab on the bone biology in OI patients, given it can measure both trabecular and cortical vBMD separately. Importantly, an increase in total vBMD at the wrist as measured by HR-pQCT (measuring cortical and trabecular together), a secondary endpoint of the study, was observed and reached statistical significance in the medium and high dose cohorts. Mean increases in total vBMD were 4.11% (p=0.004), 4.5% (p=0.028), and 0.58% (p=0.97) in the high, medium, and low dose cohorts, respectively. This suggests total vBMD increases were driven by the ability of setrusumab to increase cortical vBMD.

The study achieved its important secondary endpoint of increase in areal Bone Mineral Density (BMD) at the lumbar spine at 6 and 12 months over baseline using two-dimensional dual-energy X-ray absorptiometry (DXA), a well-established measurement tool of BMD (cortical + trabecular bone), reaching statistical significance in the high and medium doses cohorts at both 6 and 12 months with a clear dose-dependent response. Mean increases in areal BMD at the lumbar spine were 8.8% (p<0.001), 6.8 % (p<0.001), and 2.6% (p=0.057) in the high, medium, and low dose cohorts at 12 months, respectively. Moreover, increases in areal BMD were consistent across all OI subtypes (I, III or IV) represented in the study and improved with duration of treatment. Statistically significant changes in areal BMD were also observed by DXA at the femoral neck and total hip with mean increases of 3.1% (p=0.022) and 2.2% (P=0.011), respectively, at 12 months in the high dose cohort.

Although the ASTEROID study was not powered to show a difference in fracture rates, a trend of reduction in fractures was observed in the high dose cohort. Setrusumab was safe and well-tolerated in the study. There were no cardiac-related safety concerns observed in the study.

"These topline 12-month results from the ASTEROID study demonstrate a clear, dose-dependent, statistically significant bone building effect of setrusumab at multiple anatomical sites in adult OI patients irrespective of OI subtype," said Dr. Denise Scots-Knight, Chief Executive Officer of Mereo. "The DXA data clearly differentiate setrusumab from other therapeutic agents in OI types I, III and IV, such as teriparatide, where a 4.7% increase was observed at the lumbar spine at 12 months and where the effect was significantly lower in types III & IV versus type I OI patients[2]. Further, the DXA data also show a consistent improvement at 12 months in areal BMD at the lumbar spine compared to the open-label data set from the study that we first reported in May 2019 where a 3.5% change from baseline was observed seen at 6 months in the highest dose cohort."

Dr. Scots-Knight continued, "The trend of decrease in fractures observed in the high dose cohort is also particularly encouraging. Based on these data, we are excited to move forward with the preparations for our pivotal pediatric study in children with OI as originally planned, which will be based on a primary endpoint of fracture rate over a 12-month period. We believe setrusumab has the potential to become the first approved pharmacologic treatment for the OI patient community and would like to thank the investigators and patients for participating in the ASTEROID study, the largest ever completed interventional trial in adult OI."

"The technique of HR-pQCT is a relatively new and cutting-edge technology in bone research. We believe the HR-pQCT data from the ASTEROID study indicate a significant improvement in total vBMD that is driven by cortical changes, which differentiates setrusumab from existing bone-building agents," said Dr. Alastair MacKinnon, Chief Medical Officer of Mereo. "It is important to emphasize that it is not possible to build bone that does not already exist, which may be the case with some patients' trabecular bone at the wrist in this study given the variable HR-pQCT measurements of Tr vBMD. The total vBMD data together with the statistically significant and dose dependent improvement in areal BMD as measured by DXA, a well-established bone measurement technique, support the further development of setrusumab in pediatric patients, where the unmet medical need is most apparent."

"Taken in totality, the results from the ASTEROID study underscore the ability of setrusumab to function as a strong bone-building agent and potentially serve as a new therapeutic option for patients living with OI," said Jay R. Shapiro, MD, F.A.C.E, F.A.C.P, Former Director of the Bone and Osteogenesis Imperfecta Department at the Kennedy Krieger Institute. "The fracture rate reduction seen in the highest dose cohort with setrusumab is particularly encouraging and bodes well for future development in pediatric OI patients."

Phase 2b ASTEROID Study Design

ASTEROID was a 12-month, randomized, double-blind, Phase 2b dose-finding study in 112 adults diagnosed with type I, III or IV Osteogenesis Imperfecta and a confirmed COL1A1/COL1A2 mutation who have fractured over the previous 5 years. The primary endpoint of the study was the change over baseline in Tr vBMD of the wrist at 12 months, assessed using HR-pQCT. Change from baseline at 6 and 12 months for areal BMD at the lumbar spine, as measured by DXA, was an important secondary endpoint. Additional secondary endpoints included HR-pQCT parameters (such as total vBMD), bone biomarkers, patient reported outcomes (PRO) and quality of life measures. Fracture data were also collected throughout the duration of the study, although the trial was not statistically powered for fractures.

Patient Baseline Demographics

The study enrolled 112 adults (69 with type I, 28 with type IV and 15 with type III OI) at 27 clinical sites across the U.S. and Europe and randomized patients originally to one of four different blinded monthly dosing regimens of setrusumab: high, medium, low and placebo. The study was subsequently revised to convert the placebo arm into an open-label arm where patients received the high dose regimen of setrusumab. 6-month results from this open-label arm were reported in May 2019 and presented at the American Society of Bone Mineral Research (ASBMR) Annual Meeting in September 2019. Patients in the open-label arm of the study have not yet completed 12 months of treatment with setrusumab, therefore the topline 12-month results reported today are from the three-arm blinded portion of the study.

Patients in the trial had not been treated with bisphosphonates in the previous 3 months or other anabolic or anti-resorptive medications in the previous 6 months. 10 patients discontinued treatment with setrusumab in the blinded portion of the study.

Efficacy Endpoint Results

Patient baseline Tr vBMD HR-pQCT values ranged widely from 18.2 to 279 and changes did not show a dose response. As such, the study demonstrated mean changes in Tr vBMD of the wrist over baseline of 0.7% (±5.1), -0.8% (±4.2), and 0.61% (±2.8) in the high (n=27), medium (n=20), and low dose (n=22) cohorts, respectively. When combined with the change in cortical vBMD of the wrist, a dose-dependent percentage increase in total vBMD was observed (a secondary endpoint of the study), reaching statistical significance in the medium and high dose cohorts. Mean increases in total vBMD were 4.11% (p=0.004), 4.5% (p=0.028), and 0.58% (p=0.97) in the high, medium, and low dose cohorts, respectively, suggesting total BMD increases may be driven by the ability of setrusumab to increase cortical vBMD. The total vBMD increase in the high dose cohort was in-line with the open-label data reported in May 2019 and presented at ASBMR in September 2019, where an increase of 3.0% was observed at 6 months at the high dose.

The study achieved its important secondary endpoint of increase in areal BMD at the lumbar spine at 6 and 12 months over baseline using two-dimensional dual-energy X-ray absorptiometry (DXA) measurement, reaching statistical significance in the high and medium doses cohorts at both 6 and 12 months, with a clear dose-dependent response. The magnitude of areal BMD changes over baseline at the lumbar spine at 6 months in the blinded high-dose cohort was consistent with the previously reported 6-month data from the open-label arm of the study.

Table 1: Increase in areal BMD at the lumbar spine as measured by DXA by dose cohort

Dose Cohort	Mean % Change in Areal BMD at 6 months	P value at 6 months	Mean % Change in Areal BMD at 12 months	P value at 12 months
High (n=23)	+4.2%	p<0.001	+8.8%	p<0.001
Medium (n=17)	+3.61%	p=0.003	+6.8%	p<0.001
Low (n=21)	+1.52%	p=0.153	+2.6%	P=0.057

Increases in areal BMD as measured by DXA were also consistent across all OI subtypes represented in the study (types I, III & IV).

Table 2: Increase in areal BMD at the lumbar spine as measured by DXA by OI subtype in high dose group

OI Type in High Dose Cohort	Mean % Change in Areal BMD at 6 months	Mean % Change in Areal BMD at 12 months
Type I (n=17)	+4.1%	+8.6%
Type III & IV (n=6)	+5.4%	+9.8%

Statistically significant changes in areal BMD were also observed by DXA at the femoral neck and total hip with mean increases of 3.2% (p=0.022) and 2.3% (P=0.009), respectively, at 12 months in the high dose cohort.

Although the ASTEROID study was not statistically powered to show a difference in fracture rates, a trend of reduction in fractures was observed in the high dose cohort. Fractures in the study included both X-ray confirmed as well as those confirmed by a local radiologist dependant on the nature of the fracture.

Table 3: Percentage of patients with at least one fracture and occurrence rate per patient year

Dose Cohort	Percentage of patients experience >= 1 new fracture	Fractures per subject year
High (n=27)	15%	0.16
Medium (n=20)	35%	0.49
Low (n=22)	23%	0.39

Topline Safety Results

Topline 12-month safety results suggest setrusumab was safe and well tolerated in the ASTEROID study. The adverse event (AE) profile was balanced across the arms. There were 5, 8 and 4 serious treatment emergent adverse events (STEAEs) in the high, medium and low dose cohorts, respectively, three of which were initially recorded as treatment-related. Two events occurred in one patient, these were headache and hydrocephalus. The patient had a history of basilar invagination, subdural haematoma and subdural haemorrhage; the Neurologist and Data Monitoring Committee (DMC) concluded that the events were unlikely related to study drug. There was a temporary interruption to study drug but the patient restarted treatment and continued on study with no complications. The other SAE that was initially recorded as related was of anaphylactic reaction, which occurred 2 days following setrusumab infusion. This was the patient's 6th infusion. As the reaction was 2 days following the infusion and the patient had had 5 previous doses, it was determined that it was unlikely to be a drug reaction and the patient continued on therapy, without symptoms or signs with subsequent infusions. There were 9 AEs that were reported as potentially cardiac related, all were discussed with the DMC (including cardiology review), and none were concluded to represent a cardiovascular (CV) safety concern.

Next Steps

The Company plans to present detailed study results from ASTEROID, including additional secondary endpoint data, at an upcoming medical meeting or in a peer-reviewed publication.

81 patients who have completed 12-months of treatment in ASTEROID study have opted to continue into a 12-month extension "off therapy" portion to examine the off effect of setrusumab. Patients who continue in the extension portion have the option to receive 12 months of treatment with the bisphosphonate zoledronic acid (given at months 6 and/or 12). Patients will receive both DXA and HR-pQCT scans at 6 and 12 months after entering the extension portion.

In addition to evaluating setrusumab in adult OI patients, Mereo's Paediatric Investigation Plan (PIP) has been approved by the European Medicines Agency (EMA) and a study design has been agreed for a pivotal study in children with OI, based on a primary endpoint of fracture rate over a 12-month period. The pivotal study will be conducted in approximately 165 children aged 5 to <18 years old, with OI, initially in EU and Canada, with potential expansion into the U.S. following planned discussions with the U.S. Food and Drug Administration (FDA).

Conference Call Information

Mereo will host a live conference call and webcast today at 8:00 a.m. EST / 1:00 p.m. GMT. To participate in the conference call, please dial (866) 688-2942 (U.S.) or (561) 569-9224 (U.K./International). The conference ID number is 7187418. A live and archived webcast may be accessed by visiting the Investors sections of the Company's website at https://www.mereobiopharma.com/investors/results-reports-and-presentations/. The archived webcast will remain available on the Company's website for fourteen (14) days following the live call.

About Osteogenesis Imperfecta

Osteogenesis Imperfects (OI) is a rare genetic disorder that is characterized by fragile bones and reduced bone mass resulting in bones that break easily, loose joints and weakened teeth. In severe cases patients may experience hundreds of fractures in a lifetime. In addition, people with OI often suffer muscle weakness, early hearing loss, fatigue, curved bones, scoliosis, respiratory problems and short stature, leading to significant impacts on overall health and quality of life. The majority of cases of OI (estimated at approximately 90.0%) are caused by a dominant mutation in a gene coding for type I collagen, a key component of healthy bone. Current treatment of OI is supportive, focusing on minimizing fractures and maximizing mobility, but to date, there are no EMA or FDA approved treatments.

About Setrusumab

Setrusumab is a fully humanized monoclonal antibody that inhibits sclerostin, a protein which inhibits the activity of bone-forming cells. The mechanism of action of setrusumab could be particularly well suited for the treatment of OI and has the potential to become the first approved treatment option that could reduce fractures and improve OI patients' quality of life. In addition to evaluating setrusumab in adult OI patients, Mereo's Paediatric Investigation Plan (PIP) has been approved by the European Medicines Agency (EMA) and a study design has been agreed for a Phase 3 registration trial in children, based on a primary endpoint of fracture rate over a 12-month period. The pivotal study will be conducted in approximately 165 children aged 5 to <18 years old with OI, initially in EU and Canada.

Mereo has obtained orphan drug designation in OI for setrusumab in both the United States and the EU, in February 2017 setrusumab was accepted into the EMA's adaptive pathways program in the EU and, in November 2017 it was accepted into the EMA's Priority Medicines scheme (PRIME).

About Mereo BioPharma

Mereo BioPharma is a biopharmaceutical company focused on the development and commercialization of innovative therapeutics that aim to improve outcomes for patients with rare diseases. Mereo's strategy is to selectively acquire product candidates for rare diseases that have already received significant investment from pharmaceutical and large biotechnology companies and that have substantial preclinical, clinical and manufacturing data packages. Mereo's lead

rare disease product candidate, setrusumab, has completed a Phase 2b dose ranging study in adult patients with osteogenesis imperfecta ("OI"). Mereo's second lead product candidate, alvelestat, is being investigated in a Phase 2 proof-of-concept clinical trial in patients with alpha-1 antitrypsin deficiency ("AATD") with topline data expected in mid-2020.

Mereo's broader pipeline consists of four additional clinical-stage product candidates; acumapimod for the treatment of acute exacerbations of chronic obstructive pulmonary disease ("AECOPD"), leflutrozole for the treatment of hypogonadotropic hypogonadism ("HH") in obese men, navicixizumab for the treatment of platinum-resistant ovarian cancer, and etigilimab for patients with advanced or metastatic solid tumors.

Forward-Looking Statements

This document contains "forward-looking statements." All statements other than statements of historical fact contained in this presentation are forward-looking statements within the meaning of Section 27A of the United States Securities Act of 1933, as amended (the "Securities Act"), and Section 21E of the United States Securities Exchange Act of 1934, as amended (the "Exchange Act"). Forward-looking statements usually relate to future events and anticipated revenues, earnings, cash flows or other aspects of our operations or operating results. Forward-looking statements are often identified by the words "believe," "expect," "anticipate," "plan," "intend," "foresee," "should," "would," "could," "may," "estimate," "outlook" and similar expressions, including the negative thereof. The absence of these words, however, does not mean that the statements are not forward-looking. These forward-looking statements are based on the Company's current expectations, beliefs and assumptions concerning future developments and business conditions and their potential effect on the Company. While management believes that these forward-looking statements are reasonable as and when made, there can be no assurance that future developments affecting the Company will be those that it anticipates.

Factors that could cause actual results to differ materially from those in the forward-looking statements include risks relating to unanticipated costs, liabilities or delays; failure or delays in research and development programs; the safety and efficacy of the Company's product candidates and the likelihood of clinical data to be positive and of such product candidates to be approved by the applicable regulatory authorities; unanticipated changes relating to competitive factors in the Company's industry; risks relating to the Company's capitalization, resources and ownership structure, including as a result of circumstances affecting the Company's former principal shareholder; the availability of sufficient resources for company operations and to conduct or continue planned clinical development programs, including the Company's ability to continue as a going concern; the outcome of any legal proceedings; risks related to the ability to correctly estimate operating expenses; risks related to the ability to project future cash utilization and reserves needed for contingent future liabilities and business operations; risks related to the changes in market prices of the Company's ordinary shares; the Company's ability to hire and retain key personnel; changes in law or regulations affecting the Company; international, national or local economic, social or political conditions that could adversely affect the Company and its business; conditions in the credit markets; risks associated with assumptions the Company makes in connection with its critical accounting estimates and other judgments.

All of the Company's forward-looking statements involve risks and uncertainties (some of which are significant or beyond its control) and assumptions that could cause actual results to differ materially from the Company's historical experience and its present expectations or projections. The foregoing factors and the other risks and uncertainties that affect the Company's business, including those described in its Annual Report on Form 20-F, Reports on Form 6-K and other documents filed from time to time by the Company with the United States Securities and Exchange Commission (the "SEC") and those described in other documents the Company may publish from time to time should be carefully considered. The Company wishes to caution you not to place undue reliance on any forward-looking statements, which speak only as of the date hereof. The Company undertakes no obligation to publicly update or revise any of our forward-looking statements after the date they are made, whether as a result of new information, future events or otherwise, except to the extent required by law.

[1]Kocijan et al Osteoporos Int. Oct 2015; 2431-40

[2]Tsai et al JBMR Jan 2015; 39-45

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