Avidity Biosciences Reports Positive Data Demonstrating AOC 1044 Delivers Unprecedented Concentrations of PMO in Muscle Following a Single Dose in Healthy Volunteers from Phase 1/2 EXPLORE44™ Trial for Duchenne Muscular Dystrophy

AOC 1044 delivered up to 50-times greater concentrations of PMOin skeletal muscle following a single dose compared to peptide conjugated PMOs in healthy volunteers

AOC 1044 was well tolerated, demonstrated statistically significant exon 44 skipping compared to placebo of up to 1.5% in healthy volunteers after a single dose of 10 mg/kg and increased exon skipping in all participants

Avidity plans to provide first look at AOC 1044 data in people living with DMD44 in 2H 2024

SAN DIEGO, Dec. 13, 2023 /PRNewswire/ -- Avidity Biosciences, Inc. (Nasdaq: RNA), a biopharmaceutical company committed to delivering a new class of RNA therapeutics called Antibody Oligonucleotide Conjugates (AOCs™), today announced positive AOC 1044 data in healthy volunteers from the Phase 1/2 EXPLORE44™ clinical trial for the treatment of Duchenne muscular dystrophy mutations amenable to exon 44 skipping (DMD44). AOC 1044 delivered unprecedented concentrations of phosphorodiamidate morpholino oligomers (PMO) in skeletal muscle with up to 50-times greater concentrations of PMO in skeletal muscle following a single dose compared to peptide conjugated PMOs in healthy volunteers. AOC 1044 was well tolerated, demonstrated statistically significant exon 44 skipping compared to placebo of up to 1.5% in healthy volunteers after a single dose of 10 mg/kg AOC 1044 and increased exon skipping in all participants. Avidity plans to provide a first look at AOC 1044 data in people living with DMD44 in 2H 2024.

AOC 1044 is designed to deliver PMO to skeletal muscle and heart tissue to specifically skip exon 44 of the dystrophin gene to enable dystrophin production. AOC 1044 has been granted Orphan Designation by the U.S. Food and Drug Administration (FDA) and the European Medicines Agency (EMA), and Fast Track Designation by the FDA. AOC 1044 is the first of multiple AOCs the company is developing for DMD.

"We are excited with the early data set of AOC 1044 demonstrating unprecedented delivery of therapeutic oligonucleotide in skeletal muscle and consistent exon skipping in healthy volunteers," said Sarah Boyce, president and chief executive officer. "We are rapidly advancing AOC 1044 and look forward to sharing data in people living with DMD44 in 2024. Data from our clinical programs continue to reinforce the broad and disruptive potential of our AOC platform for the treatment of high burden muscle diseases like DMD, DM1 and FSHD."

Phase 1/2 EXPLORE44 Healthy Volunteer Data

- AOC 1044 delivered unprecedented, dose-dependent increases in PMO concentrations in skeletal muscle following a single dose of 5 mg/kg or 10 mg/kg, providing up to 50-times greater concentrations of PMO in skeletal muscle when compared to a single dose of peptide conjugated PMOs in healthy volunteers.
- AOC 1044 produced statistically significant exon 44 skipping compared to placebo of up to 1.5% in healthy volunteers after a single dose of 10 mg/kg AOC 1044 at Day 29. AOC 1044 increased exon skipping in all participants.
- AOC 1044 was well tolerated in healthy volunteers. All treatment-emergent adverse events in participants dosed with AOC 1044 were mild to moderate. There were no symptomatic hemoglobin changes, no hypomagnesemia and no renal events.

In addition to AOC 1044, Avidity is also advancing AOC 1001 in the MARINA open-label extension (MARINA-OLE™) study for people living with myotonic dystrophy type 1 (DM1) and AOC 1020 in the Phase 1/2 FORTITUDE™ trial for the treatment of facioscapulohumeral muscular dystrophy (FSHD).

The EXPLORE44™ Phase 1/2 Trial of AOC 1044
The EXPLORE44 trial is a randomized, placebo-controlled, double-blind, Phase 1/2 clinical trial to evaluate AOC 1044 in healthy volunteers and participants with DMD mutations amenable to exon 44 skipping (DMD44). EXPLORE44 will evaluate the safety, tolerability, pharmacokinetics, and pharmacodynamic effects of single and multiple ascending doses of AOC 1044 administered intravenously. EXPLORE44 is expected to enroll approximately 40 healthy volunteers and 24 participants with DMD44, ages seven to 27 years old. The EXPLORE44 trial will assess exon skipping and dystrophin protein levels in participants with DMD44. Participants with DMD44 will have the option to enroll into an extension study. For more information about the EXPLORE44 trial, visit the EXPLORE44 study website or visit http://www.clinicaltrials.gov and search for NCT05670730.

About Duchenne muscular dystrophy (DMD)
Duchenne muscular dystrophy (DMD) causes a lack of functional dystrophin that leads to stress and tears of muscle cell membranes, resulting in muscle cell death and the progressive loss of muscle function. The dystrophin protein maintains the integrity of muscle fibers and acts as a shock absorber through its role as the foundation of a group of proteins that connects the inner and outer elements of muscle cells. People living with DMD suffer from progressive muscle weakness that typically starts at a very young age. Over time, people with Duchenne will develop problems walking and breathing, and eventually, the heart and respiratory muscles will stop working. Those living with the condition often require special aid and assistance throughout their lives and have significantly shortened life expectancy. While there are treatments approved to treat people with DMD, there remains a very high unmet need. DMD is a monogenic, X-linked, recessive disease that primarily affects males, with one in 3,500 to 5,000 boys born worldwide having Duchenne.

About AOC 1044
AOC 1044 is designed to deliver phosphorodiamidate morpholino oligomers (PMOs) to skeletal muscle and heart tissue to specifically skip exon 44 of the dystrophin gene to enable dystrophin production in people living with Duchenne muscular dystrophy with mutations amenable to exon 44 skipping (DMD44). DMD is characterized by progressive muscle degeneration and weakness due to alterations of a protein called dystrophin that protects muscle cells from injury during contraction. AOC 1044 consists of a proprietary monoclonal antibody that binds to the transferrin receptor 1 (TfR1) conjugated with a PMO targeting exon 44. In a preclinical model of DMD, a murine active AOC produced durable exon skipping and functional dystrophin protein in skeletal muscle and heart tissue following a single intravenous dose. AOC 1044 is currently in Phase 1/2 development as part of the EXPLORE44™ trial for the treatment of DMD mutations amenable to exon 44 skipping.

About Avidity
Avidity Biosciences, Inc.'s mission is to profoundly improve people's lives by delivering a new class of RNA therapeutics - Antibody Oligonucleotide Conjugates (AOCs™). Avidity is revolutionizing the field of RNA with its proprietary AOCs, which are designed to combine the specificity of monoclonal antibodies with the precision of oligonucleotide therapies to address targets and diseases previously unreachable with existing RNA therapies. Utilizing its proprietary AOC platform, Avidity demonstrated the first-ever successful targeted delivery of RNA into muscle and is leading the field with clinical development programs for three rare muscle diseases: myotonic dystrophy type 1 (DM1), Duchenne muscular dystrophy (DMD) and facioscapulohumeral muscular dystrophy (FSHD). Avidity is broadening the reach of AOCs with its advancing and expanding pipeline including programs in cardiology and immunology through internal discovery efforts and key partnerships. Avidity is headquartered in San Diego, CA. For more information about our AOC platform, clinical development pipeline and people, please visit www.aviditybiosciences.com and engage with us on LinkedIn and X.

Forward-Looking Statements
Avidity cautions readers that statements contained in this press release regarding matters that are not historical facts are forward-looking statements. These statements are based on the company's current beliefs and expectations. Such forward-looking statements include, but are not limited to, statements regarding: the characterization of data associated with AOC 1044 in healthy volunteers; the impact of such data on the advancement of AOC 1044; the pipeline of AOCs Avidity is developing for DMD; the goals of the EXPLORE44™ trial and the dosages of AOC 1044 to be administered therein; the number and type of participants to enroll in the EXPLORE44 trial; an extension study for EXPLORE44 participants; expectations related to the EXPLORE44 trial and AOC 1044; the anticipated timing of release of data from the EXPLORE44 trial; the need for treatments for people with DMD; plans for the progression of clinical programs for AOC 1001, AOC 1044 and AOC 1020 and the timing thereof; the potential of Avidity's product candidates to treat rare diseases and Avidity's efforts to bring them to people suffering from applicable diseases; the potential of AOCs to target a range of different cells and tissues beyond the liver, and to treat cardiac and immunological diseases; Avidity's position in the RNA field; and Avidity's plans to expand its AOC platform and to invest in its pipeline programs.

The inclusion of forward-looking statements should not be regarded as a representation by Avidity that any of these plans will be achieved. Actual results may differ from those set forth in this press release due to the risks and uncertainties inherent in Avidity's business and beyond its control, including, without limitation: additional healthy volunteer data related to AOC 1044 that continues to become available may be inconsistent with the data produced as of the date hereof, and further analysis of existing data and analysis of new data may lead to conclusions different from those established as of the date hereof; AOC 1044 data in people living with DMD44 may not meet Avidity's expectations; unexpected adverse side effects to, or inadequate efficacy of, Avidity's product candidates that may delay or limit their development, regulatory approval and/or commercialization, or may result in clinical holds which may not be timely lifted (if at all), recalls or product liability claims; Avidity is early in its development efforts; Avidity's approach to the discovery and development of product candidates based on its AOC platform is unproven, and the company does not know whether it will be able to develop any products of commercial value; potential delays in the commencement, enrollment, data readouts and completion of preclinical studies or clinical trials; the success of its preclinical studies and clinical trials for the company's product candidates; Avidity's dependence on third parties in connection with preclinical and clinical testing and product manufacturing; Avidity may not realize the expected benefits of its collaborations; regulatory developments in the United States and foreign countries; Avidity could exhaust its available capital resources sooner than it currently expects and fail to raise additional needed funds; and other risks described in Avidity's Annual Report on Form 10-K for the fiscal year ended December 31, 2022, filed with the Securities and Exchange Commission (SEC) on February 28, 2023, and in subsequent filings with the SEC. Avidity cautions readers not to place undue reliance on these forward-looking statements, which speak only as of the date hereof, and the company undertakes no obligation to update

such statements to reflect events that occur or circumstances that arise after the date hereof. All forward-looking statements are qualified in their entirety by this cautionary statement, which is made under the safe harbor provisions of the Private Securities Litigation Reform Act of 1995.

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