New COVID-19 sa-mRNA Results from CSL and Arcturus Therapeutics Demonstrate Longer Duration of Immunity Compared to Conventional COVID-19 mRNA Vaccine Booster

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Study conducted by Meiji Seika Pharma in Japan

- *Short communication follows previously published data in The Lancet Infectious Diseases demonstrating Immunological Non-Inferiority to Wuhan Strain and Superior Immunogenicity to Omicron BA.4/5 Variant Compared to First-Generation mRNA Vaccine Booster*
- *New data demonstrates continuous advantage of sa-mRNA over conventional mRNA vaccine in terms of duration of immune response*
- *These results follow approval of the world's first sa-mRNA COVID-19 vaccine for adults by Japan Ministry of Health, Labor and Welfare in November 2023*

KING OF PRUSSIA, Pa. & SAN DIEGO--(BUSINESS WIRE)--Feb. 5, 2024-- Global biotechnology leader CSL (ASX:CSL; USOTC:CSLLY) and Arcturus Therapeutics (Nasdaq: ARCT) today announced the results of a follow-up analysis of a Phase 3 study evaluating a booster dose of ARCT-154, the world's first approved self-amplifying messenger RNA (sa-mRNA) COVID-19 vaccine, compared to a conventional mRNA COVID-19 vaccine. ARCT-154 was administered at one-sixth the dose of Comirnaty® (5 µg vs 30 µg, respectively).

The new analysis at 6 months post-vaccination shows that ARCT-154 induces a longer immune response as compared to Comirnaty for both the original Wuhan strain and Omicron BA.4/5 variant and an advantage in antibody persistence.

“These results further support sa-mRNA’s differentiating attribute to provide prolonged protection against COVID-19 at lower doses,” said Jonathan Edelman, M.D., Senior Vice President, Vaccines Innovation Unit, CSL. “Protecting the global public from viral respiratory diseases remains a top priority for us, and we look forward to continuing to collect and share data at the twelve-month post-booster mark.”

“This data, coupled with the initial Phase 3 results and approval in Japan late last year, show that this innovative vaccine technology has the potential to provide significant advancements over conventional mRNA vaccines including prolonged protection at lower doses,” said Pad Chivukula, Ph.D., Chief Scientific Officer of Arcturus Therapeutics.

ARCT-154 Six-Month Data Report

This randomized, double-blind, active-controlled study, conducted at 11 sites in Japan assessed the immunogenicity of ARCT-154 and Comirnaty® at one, three- and six-months post-booster. Participants who displayed seropositivity for SARS-CoV-2 N-protein on Days 1, 29, 91 or 181 were considered indicative of recent COVID-19 infection and therefore, were progressively excluded from the analysis, leaving 332 and 313 participants in ARCT-154 and Comirnaty® groups, respectively, eligible for inclusion at the six-month immunogenicity evaluation.

At baseline, participants in both groups had similar geometric mean titers (GMTs) surrogate virus neutralizing antibodies against Wuhan-Hu-1 strain (GMT ratio was 0.94 (95% CI 0.78-1.13)). One-month post-booster, the ARCT-154 group displayed a higher immune response with GMT of 5390 (95% CI 4899-5931, n = 378) compared to Comirnaty® group with GMT of 3738 (95% CI 3442-4060, n = 367), and a GMT ratio of 1.44 (95% CI 1.27–1.64).

Three months post-booster GMTs were 5928 (95% CI 5414–6491, n = 369) and 2899 (2648–3175, n = 356), with a higher GMT ratio of 2·04 (1·80–2·32). Day 91 titers were equal to or greater than Day 29 titers in 205 of 369 (55·6% [95% CI 50·3–60·7]) ARCT-154 recipients, but in only 108 of 356 (30·3% [25·6–35·4]) Comirnaty® recipients. Due to different rates of antibody waning, by Day 181 GMTs were 4119 (95% CI 3723–4557, n = 332) and 1861 (1667–2078, n= 313) in ARCT-154 and Comirnaty® groups, respectively, maintaining a GMT ratio of 2·21 (1·91–2·57) between vaccine groups. GMTs against Wuhan-Hu-1 remained numerically higher 180 days after ARCT-154 than those observed 28 days after the Comirnaty® booster.

The same pattern of superior immunogenicity and slower decline in Omicron BA.4/5 neutralizing antibodies was observed: GMTs were comparable at baseline (GMT ratio of 0.94 (95% CI 0.71-1.26), and increased to 2125 (95% CI 1841–2453) vs. 1624 (1418–1858) at Day 29 after ARCT-154 and Comirnaty®, then waned to 1892 (1646–2175) and 888 (764–1031), respectively, at Day 91. Between Days 29 and 91 titers were stable or increased in 128 of 369 (34·7% [95% CI 29·8–39·8]) ARCT-154 recipients, compared with 36 of 356 (10.1% [7·2–13·7]) in the Comirnaty® group. The difference in neutralizing activity against Omicron BA.4/5 was maintained to Day 181 when GMTs were 1119 (95% CI 960–1305) and 495 (413–595), with a GMT ratio of 2·26 (1·78–2·86) in favor of ARCT-154.

About sa-MRNA

mRNA vaccines help protect against infectious diseases by providing a blueprint for cells in the body to make a protein to help our immune systems recognize and fight the disease. Different from standard mRNA vaccines, self-amplifying mRNA vaccines instruct the body to make more mRNA and protein to boost the immune response.

About CSL

CSL (ASX:CSL; USOTC:CSLLY) is a global biotechnology company with a dynamic portfolio of lifesaving medicines, including those that treat hemophilia and immune deficiencies, vaccines to prevent influenza, and therapies in iron deficiency and nephrology. Since our start in 1916, we have been driven by our promise to save lives using the latest technologies. Today, CSL – including our three businesses: CSL Behring, CSL Seqirus and CSL Vifor – provides lifesaving products to patients in more than 100 countries and employs 32,000 people. Our unique combination of commercial strength, R&D focus and operational excellence enables us to identify, develop and deliver innovations so our patients can live life to the fullest. For inspiring stories about the promise of biotechnology, visit CSLBehring.com/Vita and follow us on Twitter.com/CSL. For more information about CSL, visit www.CSL.com.

About Arcturus Therapeutics

Founded in 2013 and based in San Diego, California, Arcturus Therapeutics Holdings Inc. (Nasdaq: ARCT) is a global late-stage clinical mRNA medicines and vaccines company with enabling technologies: (i) LUNAR® lipid-mediated delivery, (ii) STARR® mRNA Technology (sa-mRNA) and (iii) mRNA drug substance along with drug product manufacturing expertise. Arcturus developed the first self-amplifying messenger RNA (sa-mRNA) COVID vaccine in the world to be approved. Arcturus has an ongoing global collaboration for innovative mRNA vaccines with CSL Seqirus, and a joint venture in Japan, ARCALIS, focused on the manufacture of mRNA vaccines and therapeutics. Arcturus' pipeline includes RNA therapeutic candidates to potentially treat ornithine transcarbamylase deficiency and cystic fibrosis, along with its partnered mRNA vaccine programs for SARS-CoV-2 (COVID-19) and influenza. Arcturus' versatile RNA therapeutics platforms can be applied toward multiple types of nucleic acid medicines including messenger RNA, small interfering RNA, circular RNA, antisense RNA, self-amplifying RNA, DNA, and gene editing therapeutics. Arcturus' technologies are covered by its extensive patent portfolio (over 400 patents and patent applications issued in the U.S., Europe, Japan, China, and other countries). For more information, visit www.ArcturusRx.com. In addition, please connect with us on Twitter and LinkedIn.

About Meiji Seika Pharma Co., Ltd.

Meiji Seika Pharma, since it launched penicillin in 1946, has been providing efficacious and high-quality pharmaceutical products such as therapeutics and vaccines for infectious diseases, therapeutics for central nervous system diseases as well as generic drugs in response to various medical needs. As a leading company in the field of infectious diseases, we are strengthening our platform for infection control and prevention with vaccines and antimicrobial agents.

Arcturus Forward Looking Statements

This press release contains forward-looking statements that involve substantial risks and uncertainties for purposes of the safe harbor provided by the Private Securities Litigation Reform Act of 1995. Any statements, other than statements of historical fact included in this press release, are forward-looking statements, including those regarding plans to collect and share additional data and analyses and the potential of the sa-mRNA technology to provide advancements over conventional mRNA vaccines. You should not place undue reliance on such forward-looking statements. These statements are only current predictions or expectations, and are subject to known and unknown risks, uncertainties, and other factors, including those discussed under the heading "Risk Factors" in Arcturus' most recent Annual Report on Form 10-K, and in subsequent filings with, or submissions to, the SEC, which are available on the SEC's website at www.sec.gov. Except as otherwise required by law, Arcturus disclaims any intention or obligation to update or revise any forward-looking statements, which speak only as of the date they were made, whether as a result of new information, future events or circumstances or otherwise.

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