ARROWHEAD PHARMACEUTICALS

Fiscal 2017 Second Quarter Conference Call – Prepared Remarks

May 3, 2017

1:30 PM Pacific time

Operator

Ladies and gentlemen welcome to the Arrowhead Pharmaceuticals conference call. Throughout today's recorded presentation all participants will be in a listen-only mode. After the presentation, there will be an opportunity to ask questions. I will now hand the conference call over to Vincent Anzalone, Vice President of Investor Relations for Arrowhead. Please go ahead Vince.

Vince Anzalone

Good afternoon everyone. Thank you for joining us today to discuss Arrowhead's results for its fiscal 2017 second quarter ended March 31, 2017. With us today from management are president and CEO Dr. Christopher Anzalone, who will provide an overview of the quarter; Dr. Bruce Given, our chief operating officer and head of R&D, who will discuss our pipeline; and Ken Myszkowski, our chief financial officer, who will give a review of the financials.

Before we begin, I would like to remind you that comments made during today's call contain certain forward-looking statements within the meaning of Section 27(A) of the Securities Act of 1933 and Section 21(E) of the Securities Exchange Act of 1934. All statements other than statements of historical fact, including without limitation those with respect to Arrowhead's goals, plans, and strategies are

forward-looking statements. These include statements regarding our expectations around the development, safety and efficacy of our drug candidates, projected cash runway, and expected future development activities. These statements represent management's current expectations and are inherently uncertain. Thus, actual results may differ materially. Arrowhead disclaims any intent and undertakes no duty to update any of the forward-looking statements discussed on today's call.

You should refer to the discussions under risk factors in Arrowhead's annual report on Form 10-K and the Company's subsequent quarterly reports on Form 10-Q for additional matters to be considered in this regard, including risks and other considerations that could cause actual results to vary from the presently expected results expressed in today's call.

With that said, I'd like to turn the call over to Dr. Christopher Anzalone, President and CEO of the Company. Chris?

Chris Anzalone

Thanks, Vince. Good afternoon everyone and thank you for joining us today.

We had a highly productive quarter and continued to push our cardiovascular partnership with Amgen forward rapidly while advancing our own pipeline of new RNAi-based medicines toward the clinic. 2017 is an important building year for Arrowhead and we continue to be laser-focused on execution. We simply must be fast and we must be good. That means hitting aggressive timelines and performance goals on both the research *and* clinical development fronts and

demonstrating that we have a fully enabled RNAi therapeutics platform. Broadly speaking, that platform includes the following:

1. A new subcutaneously, or SubQ, administered, liver-targeted delivery system. This is a family of proprietary single-molecule structures where clusters of liver-tropic N-Acetylgalactosamine, or NAG, ligands are conjugated directly to highly modified RNAi triggers;
2. Our extra-hepatic delivery platform, which includes multiple designs and structures depending on the type of extra-hepatic tissue that is being targeted;
3. Various RNA stabilization chemistries and a set of sophisticated design processes that enable rapid development and optimization of RNAi triggers that can achieve deep and durable gene silencing without the need for an active endosomal escape component, such as our prior DPC delivery system.

This last component is about more than just proprietary technologies. It is also about a team that has demonstrated its ability to rapidly innovate and meet aggressive timelines. This was certainly true with the discovery and development programs of prior generation candidates ARC-520, ARC-521, and ARC-AAT, and we have only gotten better. It is impressive how quickly our team can now go from idea, to screening, to optimization, and ultimately to lead candidate selection. Then our program management, regulatory, and clinical development teams can take the next steps of designing and executing efficient manufacturing campaigns, GLP toxicology studies, regulatory submissions, and clinical studies.

We appreciate that much of our current work is happening behind the scenes with little visibility to those outside the company. Prior to discontinuing our clinical programs that utilized our DPC EX1 delivery vehicle last year, we were accustomed to having multiple clinical candidates that would read out at various

times. So, without current near-term clinical readouts, how do we demonstrate to you, our shareholders and analysts, all of the breakthrough work going on internally at Arrowhead?

We think the best way to do this is through an Analyst/R&D Day, during which we can provide a comprehensive view into what we have accomplished and a clinical timeline for future work. Our current plan for the event is to discuss the platform and our development process generally, and present preclinical data for multiple pipeline products. We also intend to provide some background information on the disease areas and give specific guidance about when we anticipate that our clinical programs will begin.

We will provide more information when the date is finalized, but expect this Analyst/R&D Day to occur in September. We have substantial data even now, and at that point we will indeed have much to discuss across multiple programs.

That may seem a ways off, but it's important to note that for hepatitis B and for alpha-1 liver disease, we are not starting from scratch. Indeed, our extensive prior experience gives us confidence in the potential of our next-generation candidates, ARO-HBV and ARO-AAT.

First, we believe there is now clinical validation for the use of RNAi against those two diseases, providing an important proof-of-concept that companies typically do not have at this stage of development.

Second, our preclinical work in both diseases, and particularly in HBV, give us a level of understanding of the diseases and RNAi-based intervention that will

inform our clinical programs and represent real competitive and strategic advantages.

Third, we have extensive experience running sophisticated multinational clinical studies in both areas and treated nearly 350 people across 17 countries between our prior HBV and AAT programs. We have deep relationships with the relevant investigators, experts, and foundations, and we are involved in the appropriate endpoint committees. This level of expertise and engagement is invaluable and will enable us to move quickly and efficiently once we re-enter the clinic.

Finally, and more broadly, RNAi is increasingly seen as a reliable biological mechanism. We believe that if you can get a potent RNAi trigger to the right tissue type and the right intracellular space in humans, then you can reasonably expect target gene knockdown that is, for the most part, consistent with that seen in rodent and primate studies. That has, generally, been our experience with ARC-520, ARC-521, and ARC-AAT, and consistent with results from others in the field. We are eager to get candidates that utilize our next generation, SubQ format into the clinic to confirm this same relationship holds with our new platform. We hope to, essentially, pick up where we left off with HBV and alpha-1 liver disease and move forward on other diseases rapidly and with confidence.

With that overview, I'd like to turn to Dr. Bruce Given, Arrowhead's COO and Head of R&D, to discuss our pipeline. Bruce.

Bruce Given

Thank you, and good afternoon everyone.

As Chris mentioned, we have a great deal of experience with HBV and alpha-1 liver disease from work that we did with ARC-520, ARC-521, and ARC-AAT. At the recent EASL International Liver Congress, we presented more of our clinical data from all three of these programs. We believe that these clinical data, collectively with additional non-clinical data that we have reported on previously, provide validation for the use of RNAi against HBV and alpha-1 liver disease. It was interesting to see how well received the data was by many of the liver experts in attendance.

We have shown that an RNAi therapeutic can do exactly what it is designed to do, which is knockdown the production and release of specific proteins involved with the respective diseases. This is important proof-of-concept and supports the continued advancement of ARO-HBV and ARO-AAT, Arrowhead's follow-on product candidates that utilize the company's next generation, subcutaneous format.

I would like to give a bit of detail about the specific data that was presented. I will start with HBV.

For ARC-520, we presented multiple dose data for the Heparc-2001 open label extension study. In this study, treatment naïve chronic HBV patients who previously received a single IV dose of 4 mg/kg ARC-520 and started daily entecavir on the same day were eligible to roll over into a long-term extension. 8 patients, 5 E-antigen negative and 3 E-antigen positive, were enrolled to receive 4 mg/kg ARC-520 once every 4 weeks while continuing their daily entecavir. Knockdown of viral DNA, S-antigen, core-related antigen, and E-antigen in E-positive patients, was measured at regular intervals.

In naïve E-antigen positive patients, where we now know to expect the best results with ARC-520, multi-dose treatment with ARC-520 further reduced S-antigen levels beyond what was seen after a single dose. The maximum reduction observed was 3.1 logs with a mean maximum reduction of 2.2 logs. As expected based on our ground-breaking chimpanzee work, E-antigen negative patients showed lower reductions in S-antigen. The maximum reduction observed was 1.4 logs with a mean maximum reduction of 0.7 logs. The responses in both of these groups are quite consistent with findings from our chimpanzee study demonstrating that a higher fraction of S-antigen was produced by integrated DNA as opposed to cccDNA in those who were negative for E-antigen.

These findings led us to develop ARC-521 to address patients that were less cccDNA driven. It included an RNAi trigger that was designed to be active against S-antigen produced by integrated DNA, and thus we predicted that ARC-521 would potentially show higher levels of S-antigen reduction in E-negative patients. The data presented at EASL from a phase 1/2 study of ARC-521, although incomplete due to the discontinuation of the clinical program, were consistent with this prediction and provides clinical validation for the need to address HBsAg from both sources. These, as well as other findings, were important and help us in the planning and development of ARO-HBV.

As a part of EASL and in satellite conferences, HBV remains a growing focus. It was rewarding to see the centrality of Arrowhead's work with ARC-520 in many presentations and how the field has so widely embraced the concepts regarding the importance of integrated DNA. It has caused the entire field to re-think the disease and consider the implications of these findings for future approval endpoints. This leadership by Arrowhead continues to provide us with broad access to HBV experts.

Turning to the liver disease associated with alpha 1 anti-trypsin deficiency, we also presented data from a Phase 1a/1b study of ARC-AAT at EASL. In this study 54 healthy volunteers and 11 patients with AATD were enrolled. Healthy volunteers received escalating doses of ARC-AAT from 0.38 mg/kg through 8 mg/kg and patients received 2 or 4 mg/kg prior to discontinuation of the program. At the highest dose a maximum reduction in serum AAT of 89.8% was observed, which we believe represents deep suppression of the liver produced AAT protein. Recall that we believe around 10% of production is from outside of the liver. The results in patients at equivalent doses indicate that patients with AATD and healthy volunteers responded similarly in terms of depth and duration of AAT knockdown. These results were presented in the heavily attended late breaker session at EASL and there was enthusiasm amongst this audience to see our return to clinical testing.

We believe these results, together with those from non-clinical studies presented at AASLD last fall that showed that treatment with ARC-AAT over time may improve liver health and prevent further damage, provide solid proof-of-concept for the use of an RNAi therapeutic against alpha-1 liver disease. We continue to use these learnings as we advance ARO-AAT towards the clinic.

I wanted to briefly mention the ongoing cardiovascular collaboration we have with Amgen, and specifically the ARO-LPa program. If you recall, that was the first publicly disclosed program to use our new subQ delivery. While we cannot give guidance on timing to enter the clinic, we can say that the pace of that collaboration has been rapid and Amgen has been a wonderful partner to work with. We see great potential there, as well as in the undisclosed target that we are working on with them.

In addition to ARO-HBV, ARO-AAT, and ARO-LPa there are several other programs that we are working on using both our liver targeted SubQ technologies and our extra-hepatic delivery. We expect to provide more color on some of those programs later this year as well as the technology platforms that enable them.

All of us in the R&D organization are excited about and proud of the work we're doing. We are enjoying another burst of creativity and productivity internally. We see Arrowhead as a leader in the science of HBV, AATD, and RNAi in general and we are very eager to share the great progress that we see our colleagues making every day.

With that overview, I'd like to turn the call over to Ken Myszkowski, Arrowhead's Chief Financial Officer?

Ken?

Ken Myszkowski

Thank you, Bruce, and good afternoon everyone.

As we reported today, our net loss for the three months ended March 31, 2017 was $6.0 million, or $0.08 per share based on 74.6 million weighted average shares outstanding. This compares with a net loss of $20.8 million, or $0.35 per share based on 59.8 million weighted average shares outstanding, for the three months ended March 31, 2016.

Revenue for the three months ended March 31, 2017 was $9.0 million, compared to $44 thousand for the three months ended March 31, 2016. This increase is driven by the upfront payments received from our collaboration agreements with Amgen, and these payments will be recognized as revenue over the next several quarters.

Total operating expenses for the three months ended March 31, 2017 were $15.1 million, compared to $21.3 million for the three months ended March 31, 2016. The decrease is driven by the discontinutation of the clinical trials related to our previous clinical candidates.

Net cash used by operating activities during the three months ended March 31, 2017 was $14.3 million, compared with net cash used of $14.8 million during the three months ended March 31, 2016. Cash usage was consistent between periods and we continue to close out our previous clinical trials and ramp up our discovery efforts.

Turning to our balance sheet, our cash and short-term investments combined totaled $86.6 million at March 31, 2017, compared to cash of $85.4 million at September 30, 2016. We invested $24.9 million in short-term corporate bonds that mature within the next 12 months. Our total cash and investments balance was comparative to our September 30, 2016 cash balance as the $30 million upfront payment received from Amgen offset cash used for operations.

Our common shares outstanding at March 31, 2017 were 74.8 million. No preferred shares were outstanding.

With that brief overview, I will now turn the call back to Chris.

Chris Anzalone

Thanks Ken.

While we would like to be back in the clinic right now with our next-generation subQ and extra-hepatic platforms, we know that the work we're doing is laying a foundation for a stronger Arrowhead in the future. We think the subQ route is more commercially viable than IV for most diseases and critically important for certain areas like cardiovascular disease. In addition, the depth and versatility of our RNAi technologies enable us to address conditions across therapeutic areas and pursue disease targets that are not otherwise accessible to other modalities. So, in the long-run we believe we are well positioned to create optimal RNAi therapeutics that help patients with diseases without adequate treatment options.

I want to thank all of you for joining us today and I look forward to providing more information about the date and content of our Analyst/R&D Day as we get closer to that time.

I would now like to open the call to your questions. Operator?

Operator

Operator opens the call to questions …