Aptose Biosciences Inc. Reports Results for Second Quarter 2017

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Introduction

Susan Pietropaolo

Investor Relations Rrepresentative, Aptose Biosciences

Good afternoon, and welcome to the Aptose Biosciences conference call to discuss financial and operational results for the second quarter ended June 30th 2017. I am Susan Pietropaolo of SMP Communications, the Investor Relations representative for Aptose Biosciences. Joining me on the call today are Dr. William G. Rice, Chairman, President and CEO, and Mr. Gregory Chow, Senior Vice-President and Chief Financial Officer. I will now turn the call over to Dr. Rice, Chairman, President and CEO of Aptose Biosciences, Dr. Rice?

Financial and Operational Results

Dr. William G. Rice

Chairman, President and CEO, Aptose Biosciences

Thank you, Susan. I would like to welcome everyone to our call for the second quarter ended June 30th 2017. In our last conference call, we established the groundwork for our activities with both of our hematology products, CG'806 and APTO-253. During the second quarter, we continued executing on the repositioning plan that we had articulated during the first quarter of this year. This included focusing our resources on advancing CG'806, an oral first-in-class pan-FLT3/BTK multi-kinase inhibitor being developed for patients with FLT3-driven AML and patients with certain B-cell malignancies, in parallel, making modest investments to bring APTO-253 back to the clinic and gaining a more profound understanding of its mechanism of action. On today's call, I will update you on both of these compounds and talk about some of the compelling research and development activities that are driving us forward.

Mr. Greg Chow, our Chief Financial Officer then will discuss our financials and then we will open the call for your questions.

CG'806

So first let us talk about CG'806 or '806 as I will refer to it. As a reminder, '806 is a small molecule first-in-class pan-FLT3 and pan-BTK multi-kinase inhibitor that we believe can become an effective and well-differentiated treatment for patients with acute myeloid leukemia or AML and for certain B-cell malignancies. We have been conducting extensive research activities to characterize the ability of '806 to potently inhibit the wild type and all the mutant forms of FLT3 and of BTK. It truly is well-differentiated from other molecules already commercialized and molecules in development. To conduct such studies, we established collaborations with groups at MD Anderson Cancer Center, Oregon Health & Science University, Ohio State University and the University of California San Diego, which are among the nation's leading research teams in hematology.

CG'806 studies

During the second quarter, data for '806 were presented in two poster presentations at the 2017 AACR Hematologic Malignancies meeting held in Boston. In the study conducted at the University of Texas MD Anderson Cancer Center, '806 demonstrated superior potency relative to competitive agents against AML cells driven by various mutant forms of FLT3, and achieved complete elimination of AML FLT3 ITD tumors in the absence of toxicity in a murine model.

A second poster highlighted studies conducted at Oregon Health & Science University under the auspices of the Beat AML Initiative. They demonstrated the ability of '806 to potently kill primary malignant cells in samples from patients with various hematologic malignancies, including AML, CLL and others. The data presented was the first public disclosure for the differentiating properties of '806 and the posters can be viewed at the publications and presentations section of the Aptose website.

In addition, now we have conducted extensive cell-based research on target interactions and range of action properties of '806 with various types of AML cells and various forms of B-cell malignancies. Regarding AML, we found that picomolar to low nanomolar concentrations of '806 kill AML cells that have wild type FLT3 or FLT3 with the ITD mutation or FLT3 with mutations in the RGD loop of the tyrosine kinase domain active site or in the gatekeeper region. Moreover, we determined that '806 kills the cells by acting on different kinases and different pathways depending on the status of FLT3 in the AML cells.

We also found that '806 demonstrates a positive interaction for killing of AML cells when combined with cytotoxic agents and with certain targeted agents in development, indicating that '806 plays well in the sandbox with other agents, and it may serve as a potential combination partner for many other drugs in order to create drug cocktails that boost the effective treatment of AML patients. So, this data supports development of '806 for AML patients with the FLT3 ITD, as well as the wild type FLT3 and FLT3 harboring mutations in the tyrosine kinase domain and housekeeping domain.

BTK and CG'806

Likewise, we investigated the mechanism of action of B-cell malignancy cells as the literature teaches that over-expression of BTK is a key driver of survival in those cancer cells.

First, we found that '806 exerts unexpected potency of cell killing. Indeed, '806 exerts an in vitro IC50 against various B-cell malignancy cell lines that is a thousand-fold greater in potency than ibrutinib.

Secondly, we investigated the impact of 806 on the wild type and C41S forms of BTK. As reminder, ibrutinib and other covalent BTK inhibitors act on a cysteine residue in the active site of BTK to inhibit the enzyme (that is the cysteine residue at the 481 position, referred to as the C481 residue), and treatment of patients with such covalent inhibitor drugs can result in drug resistance, often caused by mutations of the cysteine at the C481 residue to a Serine, becoming C41S. In the cells with the C481S mutation, the target for the covalent inhibitors no longer exists and the cell becomes resistant to such covalent inhibitors.

However, CG'806 is a non-covalent inhibitor and continues to inhibit the C481S mutant form of BTK, just as well as it does the wild type BTK. Indeed, we solved the crystal structures of '806 with wild type BTK and with the C481S mutant form of BTK, and we determined that the

presence or absence of the cysteine 481 residue is irrelevant to 806 because the 481 residue is sufficiently distant in space that it does not affect '806, that is docked into the active site of BTK. This suggests that '806 has the potential to overcome resistance to ibrutinib and other covalent inhibitors. Taken together, the research on B-cell malignancies revealed the ability of 806 to kill a broad range of cells, indicating that '806 should be developed for patients harboring the C481S mutant form of BTK that are resistant to ibrutinib and other covalent BTK inhibitors, as well as patients that are refractory or intolerant to ibrutinib and other covalent inhibitors. Said more succinctly, we believe '806 can have application in B-cell malignancies well beyond merely the C41S population.

Abstracts to ASH Annual Meeting 2017

All of this research has yielded compelling results about '806, its mechanism of action, its unique properties, its differentiation from competitor agents and its potential roles for treatment of a broad range of AML patients and B-cell malignancy patients, all of which we expect to discuss in more detail at the ASHE Annual Conference that will be held in Atlanta this December. In fact, we, along with our collaborators, have submitted five abstracts on CG'806 to ASH.

Development Activities

Oral therapeutic

Now regarding the development activities of '806, I want to remind you that we are developing '806 as an oral therapeutic. Recently, we have made significant strides in the manufacture and formulation of '806. You may recall that I mentioned on several occasions that we licensed '806 at an early stage and we were forced to create a chemical-synthetic route that is scalable to manufacture kilogram quantities of '806. Plus, I mentioned that we had contracted with three different CMOs to optimize the very challenging chemistry required to synthesize this simple chemical structure. I now am delighted to report that we finally have solved the synthetic route, and can now scale the manufacture of API.

Moreover, we are now manufacturing a batch of API which will be used for our planned dose range finding toxicology study. This is a major step forward for '806. Plus, I had mentioned that we were performing a series of formulation studies to identify one or more formulations that can be taken to clinical trials. Again, I am happy to report that we now have completed such studies and have identified a formulation that we plan to take to formal preclinical development and into first-in-human studies. This is another major step forward for '806.

Regarding the clinical timelines, Aptose expects to initiate the first clinical trial of '806 in 2018. As we move through the pre-IND studies and gain a more accurate estimation of the timing of events, we will come back to you and provide greater granularity regarding the exact timing of our IND and our Phase I trial with '806, and I will remind you that we plan to develop 806 as a therapeutic option for patients with AML that house different forms of FLT3 and with patients with B-cell malignancies that are resistant, refractory or intolerant to ibrutinib and other covalent BTK inhibitors, and I truly look forward to providing those updates to you on '806 in the future.

Patent Status

Regarding intellectual property around 806, as we mentioned in our press release issued earlier today, we received, on August 4th 2017, a notice from the U.S. PTO stating that our U.S. patent application is allowed for issuance as a patent. The allowed application claims numerous compounds including the '806 compound, pharmaceutical compositions comprising '806 compound, the methods of treating various diseases caused by abnormal or uncontrolled activation of protein kinases. Please note that the Notice of Allowance is not a grant of patent rights, and although it is uncommon, the U.S. PTO can withdraw the allowed application from issuance. Again, this is another major step forward for us and we will continue seeking to expand the IP estate for '806. So, all in all, we delivered a significant progress on the '806 to build a strong foundation for its clinical development.

APTO-253

So now let's turn our attention to APTO-253 or '253, as I will refer to it. '253 remains an exciting and viable product candidate in our pipeline. You will recall that we had planned to return '253 to the clinic during the first quarter of this year, but we experienced a manufacturing setback at the end of 2016 that led to instability of the intended clinical supply. Since then, we have conducted preliminary root cause studies to identify the cause of the failed stability test from the drug product manufacturing campaign of late 2016, and we believe we have identified the primary reason for the setback.

Formal root cause and corrective action studies are now underway and we hope to complete these shortly. If successful, and I emphasize if, then we plan to manufacture a new clinical supply, place it on stability testing and report the findings to the FDA. Presentation of the data to the FDA will not occur during this third quarter of 2017. But we are hopeful that the clinical hold can be removed in the near future, so we can return '253 to the clinic. Again, we are hopeful, but cannot provide guarantees at this point.

Research activities – Mechanism of Action

Meanwhile, we also continued research activities on '253. Our research on the mechanism of action of '253 suggests it may have a broad anticancer application across hematologic malignancies in certain solid tumor indications. Although '253 was originally designed, described as an inducer of the KLF4 gene, we have determined that '253 works upstream of KLF4 and actually inhibits expression of the c-Myc oncogene, which is widely known as a major driver of cancer cell proliferation. In addition, we now have identified the intracellular form of the drug which acts as the active form of '253. Then we determined the ability of the active form of '253 to engage a defined cellular target. This recently identified targeting agent can explain the effect on c-Myc, as well as other mechanistic events that are caused by '253.

In fact, this line of research also allowed us to identify a synthetic lethal interaction between '253 and a population of cancers with specific mutations. Finally, we evaluated '253 in hundreds of AML patient samples through a collaboration with the Beat AML Initiative. In these studies, we determined the IC50 and we performed RNA seq gene expression analysis on each sample. These data suggest we may have identified a gene expression profile that may aid in the selection of the most sensitive patients for clinical trials. We, along with our collaborators, have submitted two abstracts on '253 for presentation at the upcoming ASH Annual Conference in December bringing out total number of submitted abstracts to seven.

These abstracts along with the two posters that were presented in May highlight the significant scientific research that we in our collaborations have conducted this year on both '806 and '253. We look forward to sharing that research with you at ASH.

I will now turn the call over to our Chief Financial Officer, Mr. Greg Chow who will review the results of the quarter.

Second Quarter Review

Mr. Greg Chow

Chief Financial Officer, Aptose Biosciences

Cash and Cash Equivalents

Canadian and U.S. dollars

Thank you, Bill, and good afternoon everyone. Just a quick reminder that our reporting currency is in Canadian dollars. At June 30, 2017, we had $14.2 million Canadian dollars or $10.9 million U.S. dollars in cash, cash equivalents and investments compared to $12 million Canadian dollars or $9 million U.S. dollars at March 31st 2017. During the quarter, we utilized approximately $3.6 million of cash in our operating activities and raised net proceeds of $6.1 million through the company's At-The-Market program. We had no revenues during the quarter.

Research and development expenses

Research and development expenses were $1.5 million for the quarter compared to $3.3 million for the quarter ended June 30, 2016. This decrease is due to reduced expenditures related with APTO-253, the termination of the LALs / Moffitt collaboration and the one-time option fee payment to CrystalGenomics in the prior comparative quarter. General and administrative expenses for the quarter were $1.8 million versus $2.3 million for the quarter ended June 30, 2016. This decrease was primarily due to lower salaries and a result of the company's cost-containment initiatives resulting in lower travel, consulting and rent costs.

For the reasons mentioned above our net loss for the quarter decreased to $3.2 million or $.15 per share compared to $5.6 million or $.46 per share for the quarter ended June 30, 2016. More detailed information can be found in our filings on EDGAR and SEDAR.

I will now turn the call back over to Dr. Rice.

Q&A

Dr. William Rice: Thank you, Greg. I would like to open the call for questions.

John Newman (Canaccord): Hi, guys. Good afternoon, thanks for taking my questions. I just had two this afternoon. The first one is on 806, Bill, I wondered if you could discuss the BTK activity versus the FLT3 activity, if you see those two as complementary, if you see activity towards one target as perhaps more instrumental than the other in terms of the potential efficacy of the drug? Then on '253, I just wondered if you could discuss whether ultimately the intention there could be to partner the program or if you are still potentially looking to continue that development in-house? Thanks.

Dr. William Rice: All right, thanks, John. Thanks for coming on and asking the questions. The first one is a very interesting question. Let us talk about '806 and its activity against BTK versus FLT3. When you said complementary, it is actually an interesting situation because if you look across – I think I have mentioned we looked at all these different types AML cell lines and in patient samples, whether they have the FLT3 wild type, ITD, tyrosine kinase domain, housekeeping mutations, and across all of these, you might think they are driven by FLT3, but they are not.

We are going to be presenting some of these data at ASHE, but what we see is that depending on the genetic background of the AML cells, they may be using FLT3-driven pathway, BTK-driven pathways, aurora-driven pathways. What we are able to do is look in all these different cell lines and we are able to see which kinases are effected by '806, which pathways are effected, and we see very different types of cell killing depending on the status of the FLT3, and ironically in a number of the AML cells, you see that BTK contributes as part of the pathway.

The same is true for B-cell malignancies, so what we do is we look across all these different B-cell malignancy cell lines. I think we have looked at 12 to 15 at this point and whether they are driven by over-expression of BTK, but the cell death does not always correlate with that, with inhibiting BTK. We see effects on hitting BTK, FLT3, auroras, a variety of other kinases and pathways across the B-cell malignancies. A good example is when we look at B-cell malignancy cell lines, if we compare to ibrutinib, ibrutinib will knock out the BTK down around 1 nanomolar, but it does not kill the cells up until around 3 to 10 micromolar, so 3,000 to 10,000-fold difference in that killing. It is not necessarily always related to BTK.

Whereas we are able to kill the cells around 1 to 10 nanomolar, so we might be 3,000 to 6,000 times more potent than ibrutinib, but it is because we inhibit the BTK wild type and C481S, as well as those kinases that are operative in the B-cell malignancies, but you just do not hear about it. Again, a lot of those data are going to hopefully come out at ASH. We see inhibiting FLT3 and BTK, as well as a couple of the other oncogenic kinases as critical to the activity of this drug and the application to broad patient populations in the AML and B-cell malignancies. That is '806. If you have further questions on that one, please come back.

In terms of '253, our primary focus at this point is to try to get that compound positioned to come back into the clinic. We have made great strides quietly in terms of determining what was the root cause of the setback in the manufacturing, and if all goes well, we should be able to present our data to the FDA and manufacture a new drug product, then move it back to the clinic. It actually has increased in prominence to us because we now understand how the drug is working. We know the molecular target. We know the active form of the drug, and then we even have this synthetic lethal, so it opens up entirely new populations of cancer patients to us.

In the near future, I have to assume we will be taking this on our own, but as the data begins to emerge, we clearly will look at partnering opportunities into the future because it is difficult for a small company to run two molecules simultaneously, especially since '806 has such broad activity for multiple indications. Does that answer your question?

John Newman: Great, thanks. Then just one additional question for Greg, just on the financial side. Greg, can you talk about your cash runway given your current balance, but

also whether or not there would be any flexibility there depending on, for example, clinical results for '806, if you could prioritize that program and perhaps push the cash runway out a bit more by spending a little less on your other clinical activities? Thanks.

Greg Chow: Thanks, John, for the question. Right now, with our current cash balance and with our current burn rate, we have cash out to Q3 of next year. We can certainly dial back some of the activities on some of the other things. Say if '253 continues to be delayed, we can dial things back there. Our focus right now is '806, but we are starting to make a lot of progress on '253. We still have capacity on the ATM program that we have in place, about $4 million. That additional $4 million at the current rate would get us out to December of next year. We do have some runway. We have some toggles internally where we can increase the cost containment efforts and definitely extend the runway.

John Newman: Great, thanks very much.

Peter Stavropoulos (Rodman & Renshaw): Hi, how are you doing? This is Pete Stavropoulos calling on behalf of Joe Pantginis. I have one quick question about the manufacturing of '806. I was wondering if the company is still considering routes of synthesis for '806 or are you guys set on the current synthesis protocol?

Dr. William Rice: I am sorry, I really could not hear. Are we set on what synthesis of '806?

Peter Stavropoulos: Are you set on the current synthesis protocol or do you have alternative protocols that you are still considering?

Dr. William Rice: We have identified a synthetic route now that allows us to scale up, so I mean, again, that was a major step. Out of all the steps in the synthesis, we had one particular step that was causing us difficulty for months, but we found a modification of that one particular step that increased the yield of that one step more than approximately tenfold. Now we do have a synthetic process that clearly allows for kilogram amounts of this drug to be made. We are moving forward, but you know any company as we go into the future, we will continue in parallel to continue to develop the chemical synthesis pathway. If we find something that is cheaper, better, more robust into the future, we will definitely go for that, as long as the impurity profiles are consistent and it does not set us back. We have the pathway. We feel confident we can manufacture the drug, but we will always seek to improve into the future. That is true with the synthesis of API as well as the formulation.

Peter Stavropoulos: Great, thank you very much and congratulations on all the progress.

Dr. William Rice: Thank you. All right, well, thank you everyone for joining us today. I would like to thank our shareholders for your support, our employees and collaborators for their hard work and innovation and we look forward to speaking with all of you again. Just as a reminder, we will be attending the Canaccord Genuity Conference in Boston later this week, and additional conferences during the remainder of the year. For those attending such conferences, we look forward to seeing you there. Thank you again.

[END OF TRANSCRIPT]