VIA EDGAR
Securities and Exchange Commission
Division of Corporation Finance
100 F Street, N.E.
Washington, D.C. 20549-4628

Attention: Jeffrey Riedler
Johnny Gharib
John Krug
Daniel Greenspan

Re: Arrowhead Research Corporation
Form 10-K
Filed December 20, 2011
File No. 000-21898

Ladies and Gentlemen:

Set forth below is the response of Arrowhead Research Corporation, a Delaware corporation (the "Company"), to the comment letter, dated March 16, 2012 (the "Comment Letter"), of the staff of the Division of Corporation Finance (the "Staff") of the Securities and Exchange Commission (the "Commission") to the Company's Form 10-K (File No. 000-21898) (the "Form 10-K"). The Form 10-K was filed with the Commission on December 20, 2011.

For reference purposes, the Staff's comments as reflected in the Comment Letter are reproduced in bold and the corresponding responses of the Company are shown below the comments.

Form 10-K, filed December 20, 2011

Cyclosert Technology & CRLX101 (Formerly IT-101), page 6

1. **We note that you have included as an exhibit your license agreement with Cerulean Pharma, Inc. Please revise your disclosure to describe the material terms of this agreement including, but not limited to, duration, termination provisions, obligations or rights to defend, other material obligations that must be met to keep the agreement in place, aggregate potential milestone payments, and a range of royalty payments not to exceed ten percent, e.g. "single digits," "teens," "twenties," etc.**

RESPONSE TO COMMENT 1

We confirm that for future periods we will revise the disclosure to read substantially as follows:

Cyclosert Technology & CRLX101 (Formerly IT-101)

The other linear cyclodextrin-based drug delivery platform, Cyclosert, was designed by Calando's scientists for the delivery of small molecule drugs. Cyclosert provides many of the

same benefits as the RONDEL system. In December 2008, Calando completed a Phase I trial with IT-101, a conjugate of Calando's linear cyclodextrin polymer and Camptothecin, a potent anti-cancer drug, with a positive safety profile and indications of efficacy.

On June 23, 2009, Calando entered into a transaction with Cerulean related to Cyclosert and IT-101 (the "Cerulean Transaction"). In the Cerulean Transaction, Calando granted Cerulean an irrevocable, perpetual, royalty bearing worldwide license with the right to sublicense, under certain patent rights and know-how in the field of human diseases solely in order to solely: (a) conduct research and development on Calando's Linear Cyclodextrin System, including making improvements thereto, in order to research and commercialize Calando's clinical asset IT-101 (now known as "CRLX101"), as well as certain other products in which no therapeutic agent is specifically defined (the "Cerulean Products"); (b) research, develop, make, have made, use, market, offer to sell, distribute, sell and import CRLX101 and Cerulean Products; and (c) use, copy, modify and distribute certain Calando Know-How for those purposes. Calando retained all rights with respect to products in which a therapeutic agent is a (i) tubulysin, (ii) cytolysin, (iii) second generation epothilone or (iv) nucleic acid (hereinafter "Calando Products").

The Cerulean Transaction also involved the sale and assignment by Calando of certain patents directed to Cyclosert and CRLX101 (the "Cerulean Assigned Patents") to Cerulean. Cerulean then granted back to Calando an exclusive, irrevocable, perpetual, royalty free, worldwide license, with the right to grant sublicenses, under the Cerulean Assigned Patents solely to the extent necessary to research and commercialize products in which each therapeutic agent is a cytolysin, tubulysin, second generation epothilone or any nucleic acid.

As such, Calando retains the rights to its RONDEL siRNA delivery platform, as well as the siRNA-based Calando products, CALAA-01 and CALAA-02.

The Cerulean Transaction resulted in an initial payment to Calando of $2.4 million. Cerulean is obligated to pay development milestone payments of up to $2.75 million if CRLX101 progresses through clinical trials and receives marketing approval. If approved, Calando is also entitled to receive up to an additional $30 million in sales milestone payments, plus single digit royalties on net sales. Should Cerulean sublicense CRLX101 to a third party, Calando shall receive a percentage of any sublicensing income at rates between 10% and 40%, depending on the stage of the drug's development at the time of sublicensing.

Cerulean will further pay development milestone payments of up to $3 million for each Cerulean Product that progresses through clinical trials and receives marketing approval. If Cerulean Products are approved, Calando is entitled to receive up to an additional $15 million in sales milestone payments, plus single digit royalties on net sales. Should Cerulean sublicense a Cerulean Product to a third party, Calando shall receive a percentage of any sublicensing income at a rate in the tens.

The terms of the agreements of the Cerulean Transactions are tied to the expiration of certain Calando-controlled patent rights and Cerulean Assigned Patents. Cerulean may terminate the agreements on thirty (30) days' notice and unless there is a drug safety concern, would be obligated to re-assign the CRLX101 IND back to Calando and provide it with an exclusive license thereto under the Cerulean Assigned Patents. Calando is responsible for the costs associated with prosecution of the patents it controls and has licensed to Cerulean.

Intellectual Property, page 7

2. Please expand the discussion concerning your material patents or groups of patents to identify the jurisdiction(s) where you have obtained patent protection, identify the products, product candidates, or technology that are dependent on the patent(s) or groups of patents, and disclose when the patents expire.

RESPONSE TO COMMENT 2

We confirm that for future periods we will revise the disclosure to read substantially as follows:

In total, we currently control approximately 155 issued patents (including European validations) and 292 patent applications. The pending applications have been filed throughout the world, including, for example, in the United States, Argentina, Australia, Brazil, Canada, Chile, China, Europe, Arab States of the Gulf, Israel, India, Japan, Republic of Korea, Mexico, Peru, Philippines, Russian Federation, Singapore, Thailand, Taiwan and Venezuela.

Calando controls an intellectual property portfolio of patents directed to certain linear cyclodextrin polymers and related technology (the "Linear Cyclodextrin System"). The portfolio is directed to both RONDEL and Cyclosert. In June 2009, Calando sold and assigned to Cerulean certain patents ("Cerulean Assigned Patents") directed toward linear cyclodextrin polymers conjugated to drugs. Additionally, Calando granted Cerulean an exclusive license under its rights to the Linear Cyclodextrin System to develop and commercialize CRLX101 and Cerulean Products. Calando retained rights to use the Linear Cyclodextrin System to develop drugs in which a therapeutic agent is (i) a nucleic acid (e.g., siRNA), (ii) a second generation epothilone, (iii) tubulysin or (iv) cytolysin (collectively, the "Calando Products").

The issued patents include approximately 55 patents directed to the RONDEL™ and CYLCOSERT™ drug delivery platforms. Included in these 55 patents are approximately 34 patents covering linear cyclodextrin copolymers utilized in RONDEL™ and CYCLOSERT™, issued in the United States, Europe (Austria, Belgium, Switzerland, Germany, Denmark, Spain, Finland, France, the United Kingdom, Greece, Ireland, Israel, Italy, Luxembourg, Monaco, Netherlands, Portugal, Sweden), Australia, Brazil, Canada, China, Cyprus, Japan, Republic of Korea, Mexico, Russian Federation, Singapore and South Africa. Approximately 14 patents are directed to inclusion complexes and drug-cyclodextrin complexes utilized in the RONDEL™ and CYLCOCERT™ platforms. These patents have issued in the United States, Australia, China, Israel, Japan, Republic of Korea, Russian Federation, Singapore, Taiwan and South Africa. Approximately seven additional patents issued in the United States, and Europe (Austria, Switzerland, Germany, France and the United Kingdom) are directed to supramolecular complexes containing therapeutic agents.

Calando also owns a U.S. issued patent (in addition to 15 patents in Europe, i.e., Austria, Belgium, Switzerland, Germany, Denmark, Spain, Finland, France, the United Kingdom, Hungary, Italy, Netherlands, Poland and Sweden) directed to the siRNA active ingredient in CALAA-01, as well as a U.S. patent directed to the siRNA active ingredient of CALAA-02.

We also control patents covering our homing peptide platform, including approximately 18 patents. Approximately five of these patents are United States patents and the remaining are European patents validated in Belgium, Switzerland, Germany, Spain, France, the United Kingdom, Ireland, Greece, Italy, Netherlands, Portugal, Sweden and Turkey. These patents are directed to ADIPOTIDE™, our treatment for obesity and related metabolic disorders.

In addition, we control approximately 11 patents directed to our dynamic polyconjugate (DPC) drug delivery platform. These patents have issued in the United States, Australia, Canada, India, Mexico, Russia and South Africa. We also control approximately 41 patents directed to hydrodynamic nucleic acid delivery which issued in the United States, Australia and Europe (Austria, Belgium, Switzerland, Germany, Denmark, Spain, Finland, France, the United Kingdom, Hungary, Ireland, Italy, Netherlands and Sweden).

The additional approximately 13 patents are directed to various precursors to our DPC delivery platform, and other membrane active polymers, as well as additional drug and gene delivery methodologies and carriers (e.g., lipid- and micelle-based systems).

The approximate year of expiration for each these various groups of patents are set forth below in the following table.

Patent Group	Estimated Year of Expiration
RONDEL™ and CYCLOCERT™	
Linear cyclodextrin copolymers	2018
Inclusion complexes	2021
Drug-cyclodextrin complexes	2024
Supramolecular complexes containing therapeutic agents	2019
CALAA-01	
Patent directed to RRM2 siRNAs	2028
CALAA-02 Patent directed to HIF-2 alpha (EPAS1) siRNAs	2030
Adipotide™ Targeting moieties and conjugates	2021
Dynamic polyconguates (DPC) Various iterations	2027
Hydrodynamic delivery Various iterations	2015

Calando has licensed patents from Alnylam relevant to siRNA therapeutics for both CALAA-01 and CALAA-02. Calando has out licensed to R&D Biopharmaceuticals GmbH, the use of the linear cyclodextrin system for delivering second generation synthetic epothilone drugs. Calando has also out-licensed to Tube Pharmaceuticals GmbH, the use of the linear cyclodextrin system for delivering tubulysin and cytolysin.

The RNAi and nanoparticle drug delivery patent landscapes are complex and rapidly evolving. As such, we may need to obtain additional patent licenses prior to commercialization of our lead drug candidates.

Our Approach to the Treatment of Obesity, page 8

3. **We note that you have included as an exhibit your patent and technology license agreement with the Board of Regents of the University of Texas System. Please revise your disclosure to describe the material terms of this agreement including, but not limited to, duration, termination provisions, obligations or rights to defend, other material obligations that must be met to keep the agreement in place, aggregate potential milestone payments, and a range of royalty payments not to exceed ten percent, e.g. "single digits," "teens,", "twenties," etc. If the duration of the agreement is conditioned on the expiration of a patent, please provide the name of the patent and its expiration date.**

4. **Please revise your disclosure to describe Ablaris Therapeutics Inc.'s material patent or groups of patents, identify the jurisdiction(s) where Ablaris obtained patent protection, identify the products, product candidates, or technology that are dependent on the patent(s) or groups of patents, and disclose when the patents expire.**

RESPONSE TO COMMENTS 3 AND 4

We confirm that for future periods we will revise the disclosure to read substantially as follows:

Our Approach to the Treatment of Obesity

Ablaris' lead compound, Adipotide ™, includes a targeting moiety which allows it to bind to a receptor expressed by the endothelial cells lining the blood vessels of white adipose (fat) tissue. This targeting technology was developed by Drs. Wadih Arap and Renata Pasqualini at the University of Texas MD Anderson Cancer Center (UTMDACC) in Houston, Texas.

This targeting moiety was discovered using a technique in which a randomly generated phage display library of peptides was injected into an animal, and sequences that homed to white fat were isolated and amplified. The targeting moiety was fused to an apoptotic agent. This apoptosis-inducing peptidomimetic has not been shown to have an effect on mammalian cells in systemic circulation, but it induces cell death upon internalization by targeted endothelial cells through the disruption of their mitochondrial membranes. Because adipose tissue requires a continuous turnover of new capillaries to supply oxygen and maintain storage capacity, targeted destruction of these blood vessels leads to the gradual resorption of adipose tissue and corresponding weight loss in treated animals (the "UTMDACC Technology").

In December 2010, we obtained an exclusive world-wide license from UTMDACC related to Adipotide technology (the "UTMDACC License"). The UTMDACC license granted us a royalty-bearing, exclusive right (with the right to sublicense) under certain UTMDACC patents to develop and commercialize certain products in the fields of: 1) therapeutics, diagnostics and research services that both (i) incorporate peptides that specifically target adipose tissue, and (ii) are used to treat, diagnose or research solely either (a) obesity, overweight and/or (b) metabolic conditions related to, caused by and/or associated with obesity and overweight, e.g., diabetes; and 2) cancer therapies, diagnostics and research products associated with a specific targeting moiety. We also have rights to certain improvements to the UTMDACC technology arising in the lab of Drs. Wadih Arap and Renata Pasqualini ("UTMDACC Improvements").

In consideration for the license, we paid UTMDACC an upfront fee of $2 million and pay annual fees initially equal to $50,000 increasing up to a maximum of $100,000, with such annual fees creditable against milestone payments.

Development milestone payments of up to $8.3 million for each UTMDCC licensed product that progresses through clinical trials and receives U.S. marketing approval are required. Additional EU and Japanese approval milestone payments are in the low single digit million dollar range. Royalty payments on net sales of UTMDACC licensed products are in the low single digit range. Should we sublicense or partner a UTMDACC licensed product, UTMDACC would receive partnering fee percentages in the range of single digits to the twenties, depending on the stage of development of the partnered UTMDACC licensed product.

The term of the UTMDACC License is linked to the last to expire patents licensed therein or 15 years if a licensed product contains only licensed know how. We are obligated to actively and effectively attempt to commercialize the UTMDACC Technology and submit to UTMDACC a Phase II clinical trial protocol within two (2) years of obtaining an approved IND. We are also obligated to commence a Phase II clinical trial within four (4) years and a Phase III clinical trial within seven (7) years of approval of an IND. However, we may obtain yearly extensions of time upon the payment of an increasing fee in the range of tens of thousands of dollars up to several hundred thousand dollars. We also have diligence obligations with respect to any UTMDACC Improvements later added to the license. The UTMDACC license shall automatically terminate if we file for bankruptcy or are unable to pay our bills as they come due.

The Company hereby acknowledges that (i) the Company is responsible for the adequacy and accuracy of the disclosure in its filing, (ii) Staff comments or changes to disclosure based on Staff comments does not foreclose the Commission from taking any actions with respect to the Company's filing, and (iii) it is the Staff's position that the Company may not assert Staff comments as defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

If you should have any questions about this letter or require any further information, please call the undersigned at (626) 304-3400 or Ryan Murr at (415) 315-6300.

Sincerely,

Christopher Anzalone, Ph.D.
Chief Executive Officer

cc: Ryan Murr, Esq. (Ropes & Gray LLP)