Fourth Quarter & Full Year 2017 Earnings Call
Corporate Update & Financial Results

February 27, 2018

Forward Looking Statements

These materials contain forward-looking statements, including statements regarding future results, performance or achievements of BioCryst, and statements regarding the expected benefits of the transactions contemplated by the Agreement and Plan of Merger dated as of January 21, 2018 by and among BioCryst, Idera Pharmaceuticals, Inc. ("Idera") and the other parties thereto (the "merger agreement" and such transactions, the "merger"). These statements involve known and unknown risks, uncertainties and other factors which may cause BioCryst's actual results, performance or achievements to be materially different from any future results, performances or achievements expressed or implied by the forward-looking statements. These statements reflect our current views with respect to future events and are based on assumptions and are subject to risks and uncertainties. Given these uncertainties, you should not place undue reliance on these forward-looking statements. Some of the factors that could affect the forward-looking statements contained herein include: that developing any drug candidate may take longer or may be more expensive than planned; that ongoing and future preclinical and clinical development of candidates may not have positive results; that BioCryst may not be able to enroll the required number of subjects in planned clinical trials of product candidates; that the Company may not advance human clinical trials with product candidates as expected; that the FDA and EMA may require additional studies beyond the studies planned for product candidates, or may not provide regulatory clearances which may result in delay of planned clinical trials, or may impose a clinical hold with respect to such product candidate, or withhold market approval for product candidates; that the Company may not be able to continue development of ongoing and future development programs; that such development programs may never result in future products; that the merger may not be completed on the terms set forth in the merger agreement within the expected time period; that the merger may involve unexpected costs or liabilities; that the announcement of the merger may result in disruption to our business or affect our ability to retain and hire key personnel and maintain business relationships; or that the anticipated benefits of the merger or other commercial opportunities may not be fully realized or may take longer than expected to realize. Please refer to the documents BioCryst files periodically with the Securities and Exchange Commission, specifically BioCryst's most recent Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, and Current Reports on Form 8-K, all of which identify important factors that could cause the actual results to differ materially from those contained in BioCryst's projections and forward-looking statements.

Agenda

- Introduction and 2017 Highlights

  Jon Stonehouse – President, Chief Executive Officer

- Financial Update: Strong Balance Sheet to Drive Growth

  Thomas Staab – Senior Vice President, Chief Financial Officer

- Update on Proposed Merger with Idera Pharmaceuticals, Inc.

  Jon Stonehouse – President, Chief Executive Officer

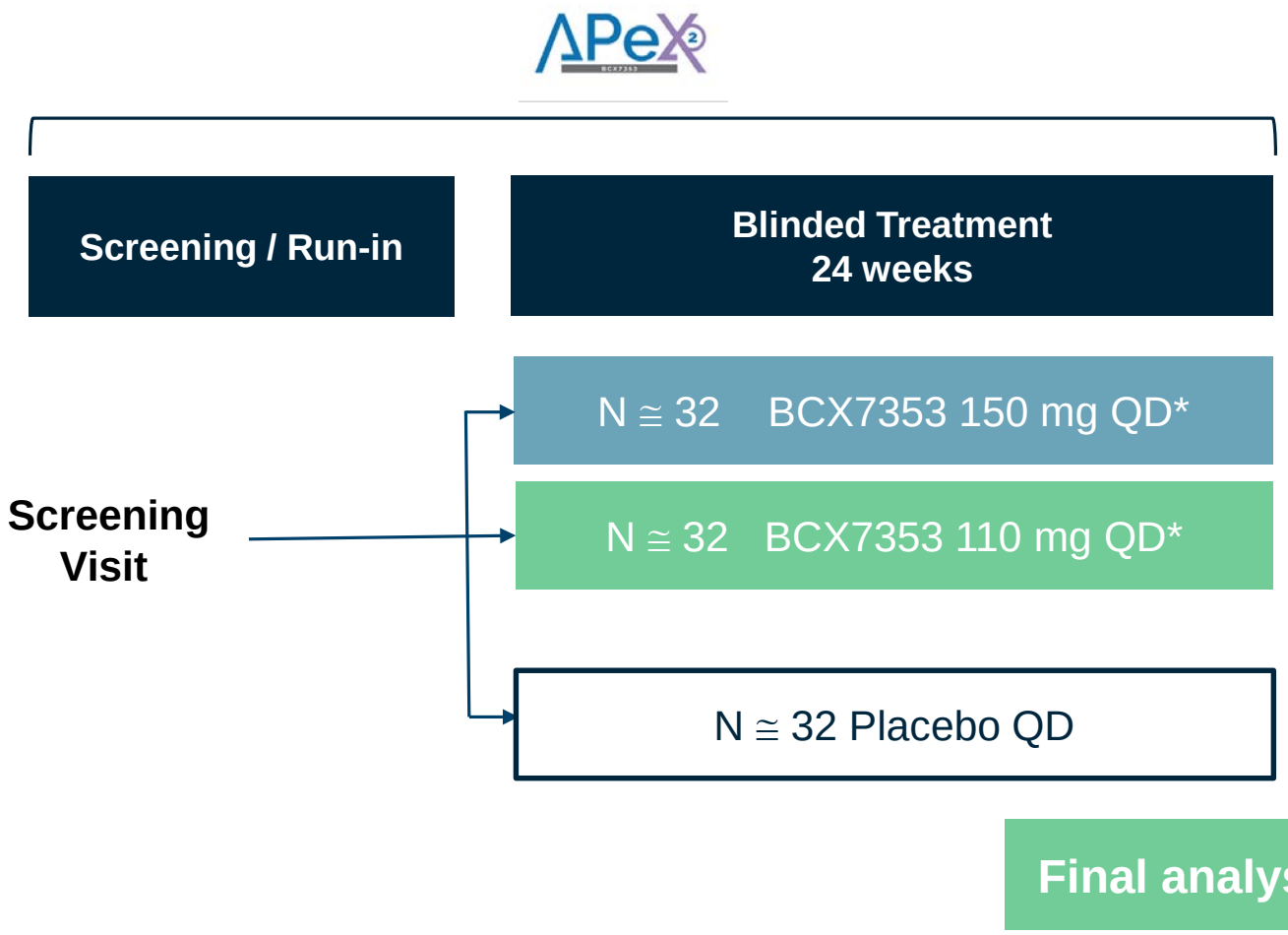
- Clinical Review and Synergistic Discovery Engines

  William Sheridan, MB BS – Senior Vice President, Chief Medical Officer

- Summary and Q&A

Introduction and 2017 Highlights

APeX-2: Phase 3 Trial Design

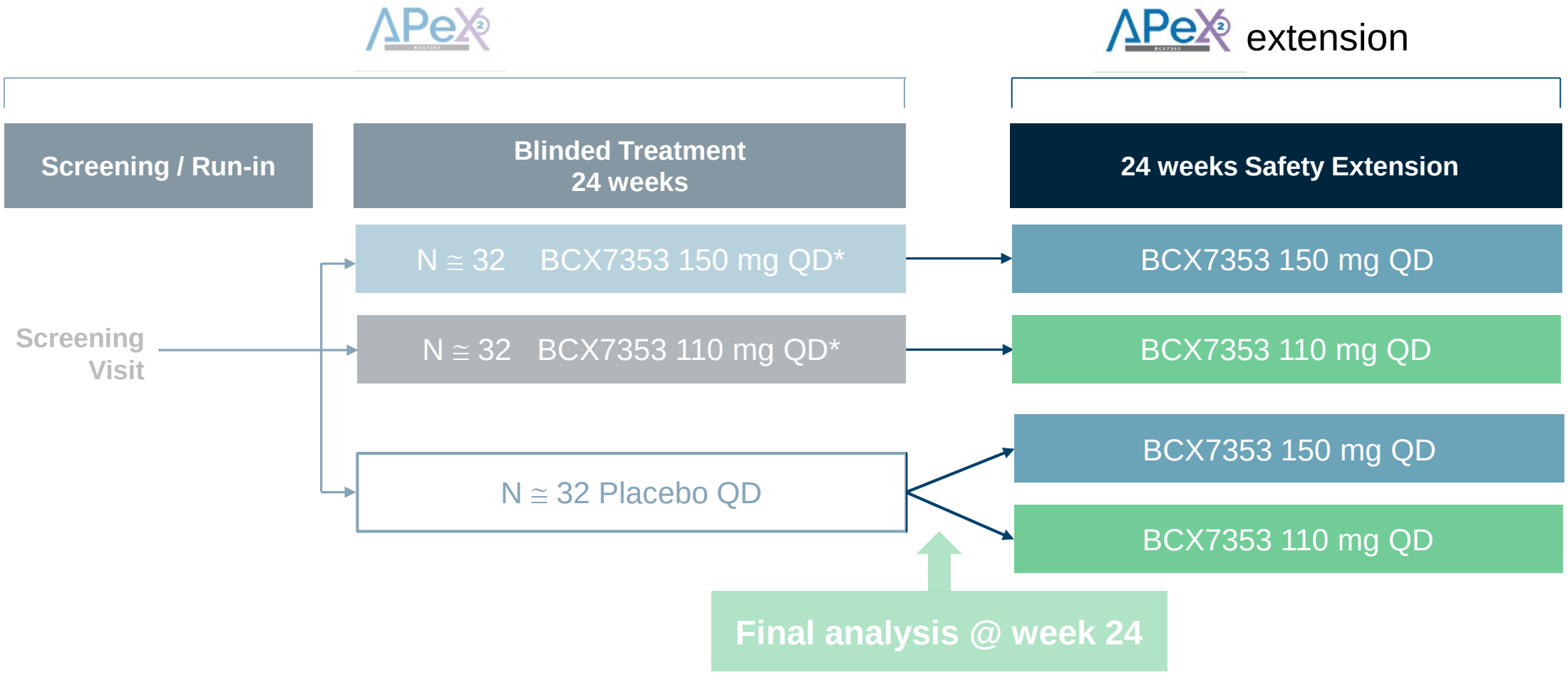


- Primary endpoint at Week 24:
  - Rate of Investigator-confirmed HAE attacks through entire treatment period
- Study powered at >90% to detect a ≥50% reduction in attack rate over placebo

Final analysis @ week 24

*Doses in Phase 2 APeX-1 were shown as the dihydrochloride salt:
150 mg = 175 mg dihydrochloride salt; 110 mg = 125 mg dihydrochloride salt

APeX-2: Phase 3 Trial Design – Safety Extension



*Doses in Phase 2 APeX-1 were shown as the dihydrochloride salt:
150 mg = 175 mg dihydrochloride salt; 110 mg = 125 mg dihydrochloride salt

APeX-S: Long-term Safety Study Design

48 Weeks Treatment

N ≅ 80 BCX7353 150 mg QD

N ≅ 80 BCX7353 110 mg QD

Analyses as needed for regulatory submissions

- Endpoints:
  - Long term safety of BCX7353
  - Durability of response
  - Quality of Life
- APeX-1 subjects eligible

- Safety database:
  - Up to 100 subjects at each dose level
  - Combination of APeX-2 extension and APeX-S

*Doses in Phase 2 APeX-1 were shown as the dihydrochloride salt:
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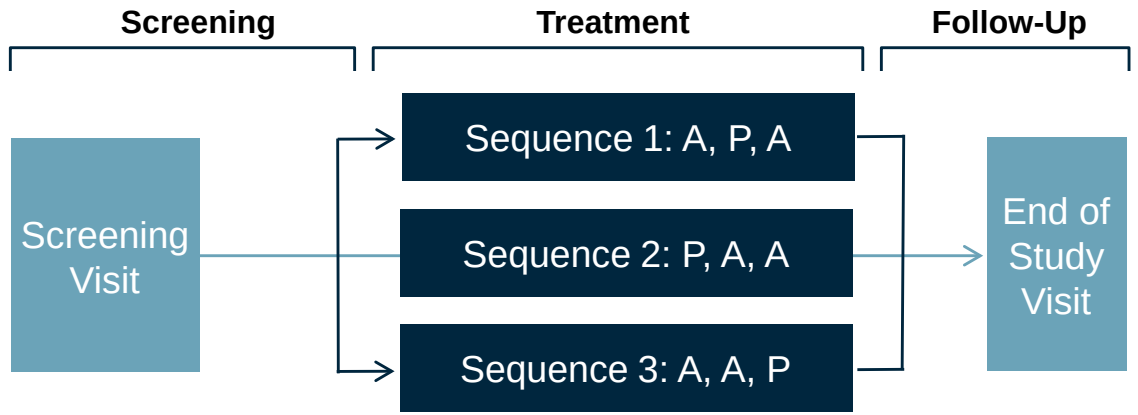
ZENITH-1: Phase 2 Trial Design – Oral Liquid



Part 1: BCX7353 750 mg single doses n = 12 - 36	+	Part 2: BCX7353 500 mg single doses n = 12	+	Part 3: BCX7353 250 mg single doses n = 12	=	Total n = 36 - 60

Primary Efficacy Endpoint:

- Proportion of subjects with either improved or stable composite visual analog scale (VAS) score at 4 hours post-dose.

Fibrodysplasia Ossificans Progressiva (FOP)

Devastating Disease; No Treatments Available

Rare disease that **affects approximately 1 in 2 million people** worldwide

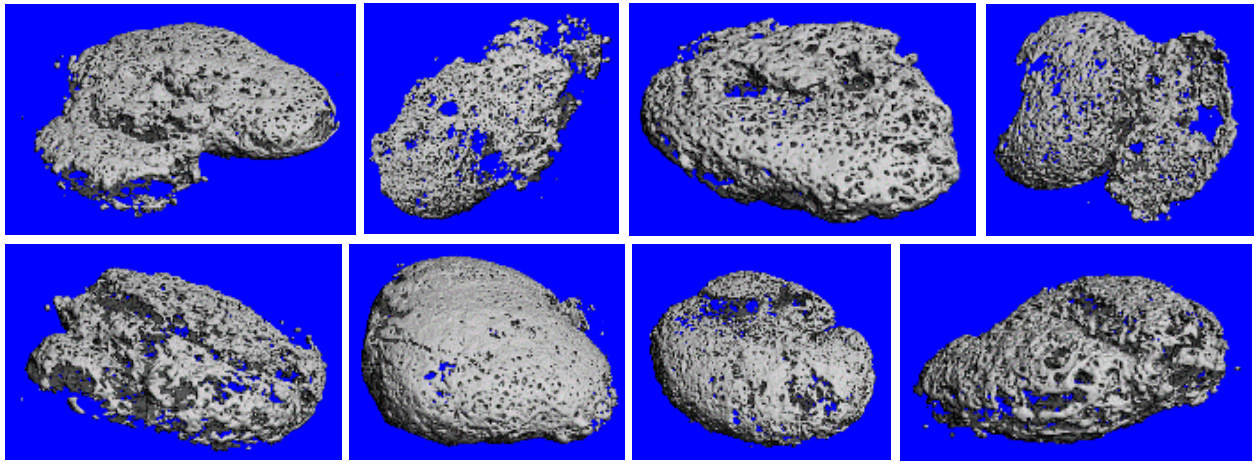
Irregular formation of bone or ossification in muscles, tendons or soft tissue

Currently no approved treatments for FOP

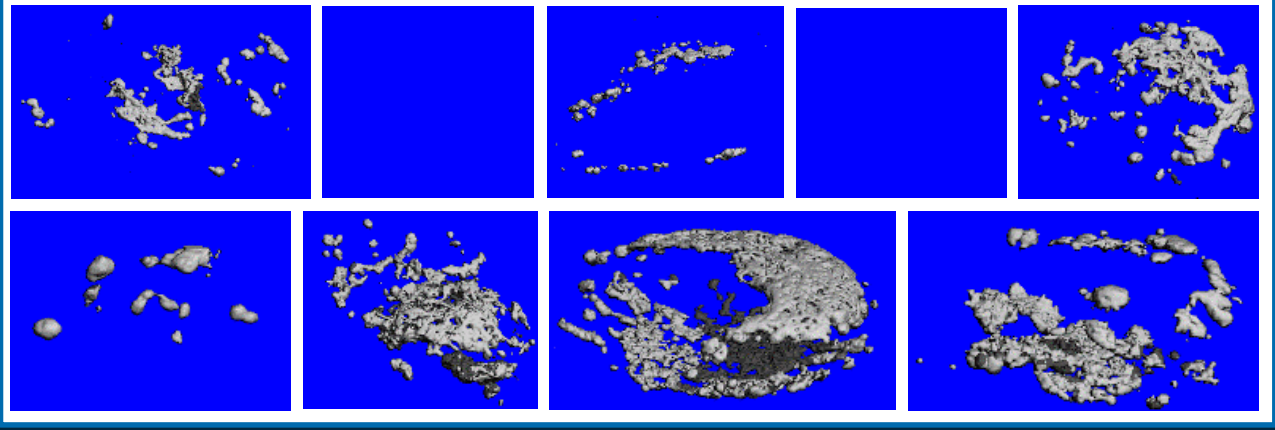
Results in loss of function, deformities and **a severely disabling condition**

Advancing ALK2 Inhibitor Program for FOP

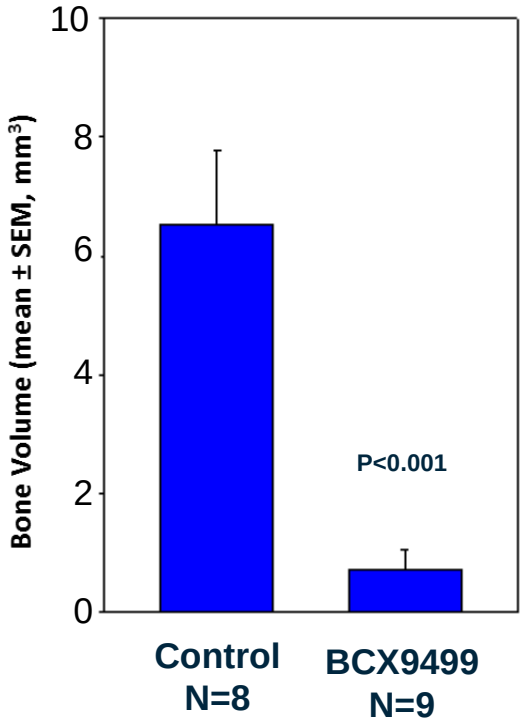
Control Vehicle



BCX9499 Treated 30mg/Kg BID



89% Reduction in Bone Formation Compared to Control Vehicle



Micro computed tomography scans of heterotopic bone induced by subcutaneous implantation of matrigel mixed with rhBMP9 and cardiotoxin.

Financial Update:
Strong Balance Sheet to Drive Growth

Fourth Quarter Operating Results

(in thousands, except per share amounts)	Q4 2017	Q4 2016	Change Q4 2017 vs Q4 2016
Revenues:			
Product Sales	$ -	$ 2,269	(100%)
Royalty revenue	**3,291**	3,662	(10%)
Collaborative and other R&D	**599**	3,052	(80%)
Total revenues	**3,890**	8,983	(57%)
Expenses:			
Cost of products sold	**-**	2,297	(100%)
Research and development	**16,924**	12,158	39%
General and administrative	**4,698**	2,561	83%
Royalty	**129**	155	(17%)
Total operating expenses	**21,751**	17,171	27%
Loss from operations	**(17,861)**	(8,188)	118%
Interest and other income, net	**478**	98	388%
Interest expense	**(2,231)**	(2,131)	5%
Gain on foreign currency derivative	**71**	5,718	(99%)
Net loss	**$ (19,543)**	$ (4,503)	334%
Net loss per share - Basic & Diluted	**$ (0.20)**	$ (0.06)	233%
Net operating cash utilization	**$ 10,125**	$ 9,200	10%
Weighted average shares outstanding	**98,402**	73,764	

Cash Position & 2018 Guidance (In millions)

Cash & investments at December 31, 2016	$65
Cash & investments at December 31, 2017	**$159**
Senior Credit Facility	$23
FY 2018 GUIDANCE(on a stand-alone basis)	
Operating cash utilization	**$67 – 90**
Operating expenses[#]	**$85 – 110**

[#] Excludes equity-based compensation.

Update on Proposed Merger with Idera Pharmaceuticals, Inc.

BioCryst & Idera Boards Carefully Evaluated Strategic Options

- Engaged, Well-Advised Boards
  - BioCryst and Idera Boards comprised of highly experienced directors with extensive industry knowledge
  - BioCryst Board of Directors met numerous times over last two years to discuss value enhancing opportunities for BioCryst
  - Both Boards retained financial and legal advisors to assist in the evaluation
- Reviewed Alternative Value Enhancing Strategies
- BioCryst and Idera Boards Engaged in Discussions with Numerous Potential Partners

Both Boards Determined Merger Made Strategic Sense and is a Unique Opportunity to Enhance Stockholder Value

Robust Pipeline

- 2 Phase 3 orphan-designated programs with compelling data
- 2 additional Phase 2 rare disease programs
- 9 total rare disease programs
- 4 supporting asset programs

Synergistic Discovery Engines

- Significant experience with 2 distinct engines
- Expands number of rare disease targets beyond standalone capabilities
- Creates opportunities for differentiation in the market

Financial Strength

- $30 million in annual pre-tax cost synergies expected by year three after closing
- ~$243 million net cash balance*
- Opportunities to add cash through partnering and other programs

Complementary Leadership

- Proven commercial team; launched 1st prophylactic HAE product
- Extensive clinical development experience

* Unaudited pro-forma cash balance as of December 31, 2017

Clinical Review and Synergistic Discovery Engines

Phase 3 Programs Create Financially Strong Foundation to Support Robust, Rare Disease Focused Pipeline

IMO-2125
PD-1 Refractory Melanoma in Combination with ipilimumab

- Novel agent designed to induce abscopal anti-tumor immune response
- Robust and durable clinical and translational data generated
- Opportunity to improve I/O outcomes with CPIs across multiple tumor types
- Multi billion dollar opportunity, along with data, driving strategic interest in partnering

Compelling Data driving 2 Phase 3 programs

Strong cash flow opportunities from commercializing and partnering

BCX7353
Prophylactic HAE

- Once a day oral (capsule)
- Competitive attack rate reduction 73%
- Safety & tolerability similar to placebo at most effective dose
- $2 billion projected global market opportunity
- Phase 3 ready

Synergistic Discovery Engines with Enhanced Development Opportunities

- Ability to leverage both structure-guided small molecule design and nucleic acid/oligonucleotide chemistry within one organization
  - Combination therapy of small molecule and oligo may create more effective and potentially unique treatments for rare diseases
  - Combining technologies expands number of rare disease targets that can be advanced into development
- Testable hypotheses
  - Small molecule-oligonucleotide conjugates targeted to specific tissue types
  - Combination therapeutics with small molecules and oligos exploiting two different mechanisms of action

Opportunity: Expanded Disease Targets and Potentially Unique Treatments

Summary

Solid Capital Position & Meaningful Operational Synergies

- ~$243 million net cash balance*
  - Capital for continued clinical development through next major milestone events and into Q3 2019
  - Capital for commercial launch planning and preparation
  - Multiple options for non-dilutive capital through renegotiating our debt, cash from in the money warrants and government stockpiling
  - Opportunities to generate larger amounts of non-dilutive capital through partnering in the near term and commercializing in the long term
- Projected $20 million in cash synergies in year two and approximately $30 million in annual pre-tax cost synergies expected in year three after closing
  - Facilities consolidation: Headquarters to Exton, PA; research center to Birmingham, AL
  - Expense consolidation over time expected to create additional cost savings and benefits

Strong Combined Financial Profile with Opportunities to Generate Non-Dilutive Capital

* Unaudited pro-forma cash balance as of December 31, 2017

Combination with Idera Creates Substantial Value

- ✓ A **unique player in rare diseases,** with scale and strengthened competitive position
- ✓ More opportunities for success through **diversified late-stage pipeline,** variety of early stage programs and supporting assets
- ✓ Synergistic **discovery engines** with enhanced development opportunities, including through joint small molecule and oligo treatments
- ✓ Best-in-class people, facilities and **commercial know-how in rare diseases**
- ✓ Increased financial **strength and flexibility** through significant cost synergies and opportunities to generate non-dilutive capital

Thank you…
Questions and Answers

February 27, 2018