Bank of America Merrill Lynch Health Care Conference

May 16th, 2017

Jon Stonehouse, *President & Chief Executive Officer*

BioCryst Pharmaceuticals, Inc.

Forward-looking statement

BioCryst's presentation may contain forward-looking statements, including statements regarding future results, unaudited and forward-looking financial information and company performance or achievements. These statements are subject to known and unknown risks and uncertainties which may cause our actual results, performance or achievements to be materially different from any future results or performances expressed or implied in this presentation. You should not place undue reliance on the forward-looking statements. For additional information, including important risk factors, please refer to BioCryst's documents filed with the SEC and located at http://investor.shareholder.com/biocryst/sec.cfm

BIOCRYST PHARMACEUTICALS, INC.

BioCryst's strategy is to develop oral drugs for rare diseases

Drug discovery through structure-based design

- BCX7353 and 2nd Gens
- Lead optimization underway for two additional rare disease targets

Significant supporting capital from antiviral programs

- RAPIVAB® (peramivir injection) and Galidesivir externally funded
- Stockpiling and voucher potential

Help patients lead normal lives

BioCryst Pharmaceuticals, Inc.

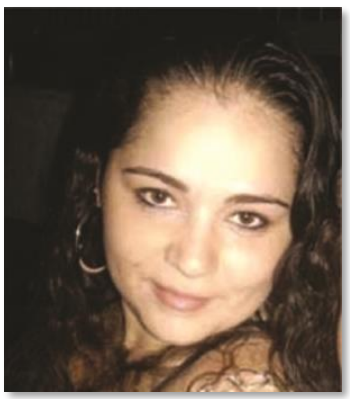
BioCryst's pipeline

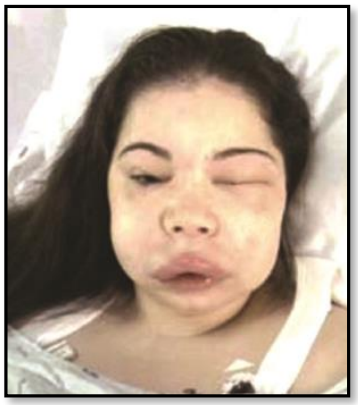
	Lead optimization	Pre-clinical	Ph 1	Ph 2	Ph 3	Filed	Approved
STRATEGY: Develop oral therapies for life-threatening, rare diseases							
BCX7353 – Oral (Prophylactic HAE)							
BCX7353 – Oral Liquid Formulation (Acute HAE)							
Second generation kallikrein inhibitors (HAE & Other Indications)							
Rare disease 1							
Rare disease 2							
SUPPORTING ASSETS: Externally funded, potential for significant capital infusions							
RAPIVAB® (peramivir injection)*							
Galidesivir (broad spectrum antiviral) I.M.							
Galidesivir (broad spectrum antiviral) I.V.							

*licensed to Seqirus, Shionogi and Green Cross

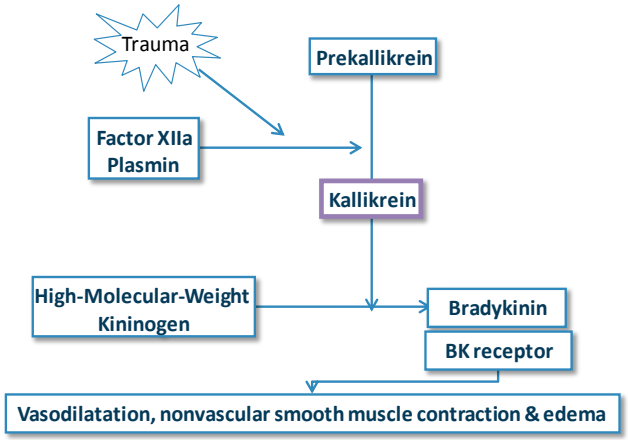
BioCryst Pharmaceuticals, Inc.

First target in strategy: Hereditary angioedema (HAE) is a high-need, high-value disease





Unpredictable, debilitating, potentially life-threatening swelling attacks



Contact activation pathway is unbalanced based on genetic deficiency of C1 inhibitor (C1-INH)

- Rare (estimated global prevalence of 1:50K)
- Growing US market ($1.2B, 30% growth in 2015)
- Significant global upside as paradigm shifts to attack prevention

High-value, growing market on track to exceed $2.0B globally

- Plasma-derived C1-INH (chronic and acute, infusion)
- Androgen steroids (chronic, oral)
- Bradykinin inhibitor (acute, injection)
- Kallikrein inhibitor (acute, injection)

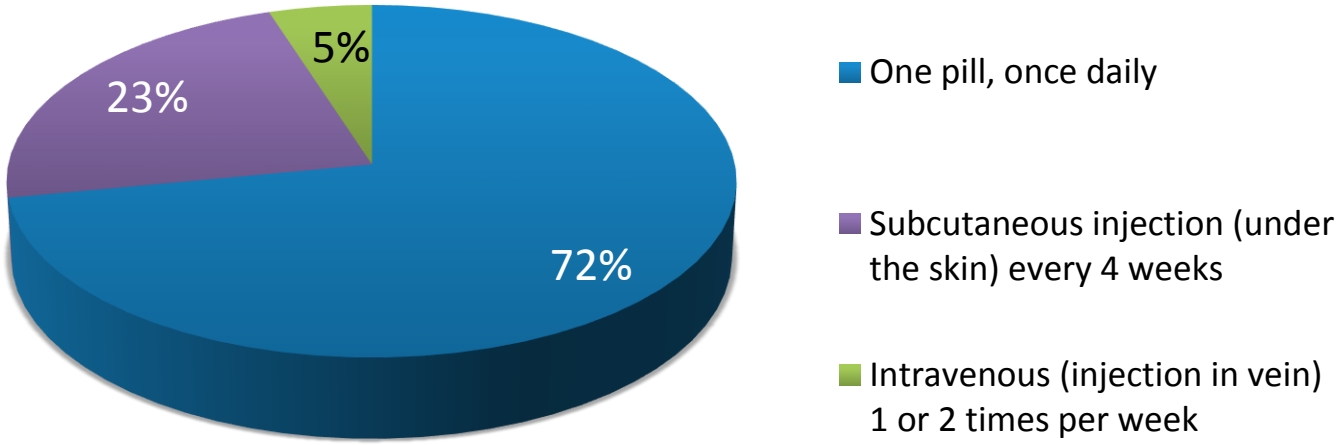
Current standard of care therapies are injected/infused

Images obtained from www.haeimages.com
Market estimates based on analyst reports, earnings reports, and market data

BioCryst Pharmaceuticals, Inc.

Patients with HAE overwhelmingly prefer convenient oral therapy

Preferred route of administration among US HAE patients currently taking prophylactic therapy (N=83)



Question: Which medication would you prefer assuming each is equally safe and effective and costs the same amount per year?

Source: BioCryst Proprietary Quantitative Market Research Study with Patients, 2016.

BioCryst Pharmaceuticals, Inc.

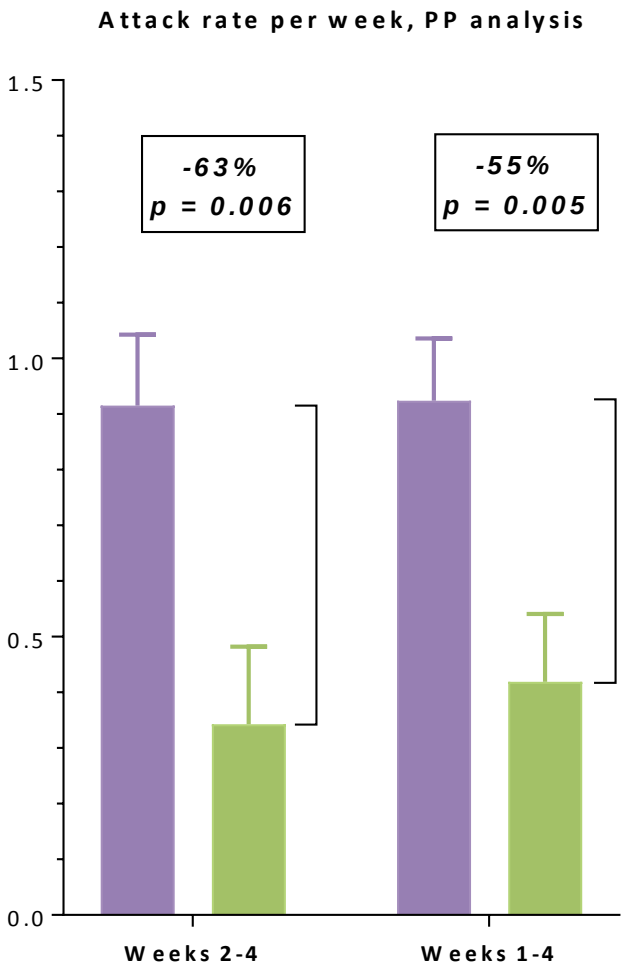
APeX-1 Interim analysis: Rate of overall confirmed attacks

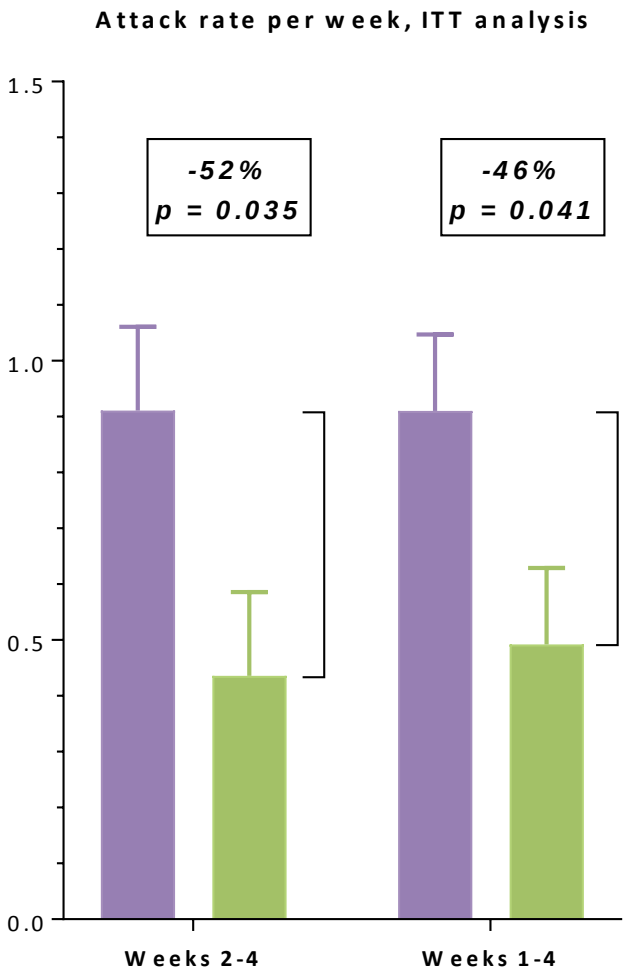
Treatment	n	LS mean[1] Attacks per Week	Difference vs Placebo	Percentage Reduction vs Placebo	p-Value vs Placebo
Effective dosing period (Week 2-4) – PP Population					
BCX7353 350 mg	11	0.343	-0.572	63%	0.006
Placebo	13	0.915			
Effective dosing period (Week 2-4) – ITT Population					
BCX7353 350 mg	14	0.436	-0.474	52%	0.035
Placebo	14	0.911			

[1] Least squares mean calculated using an ANCOVA model with qualifying attack rate as covariate

BioCryst Pharmaceuticals, Inc.

APeX-1 Interim analysis: Overall angioedema attack rate

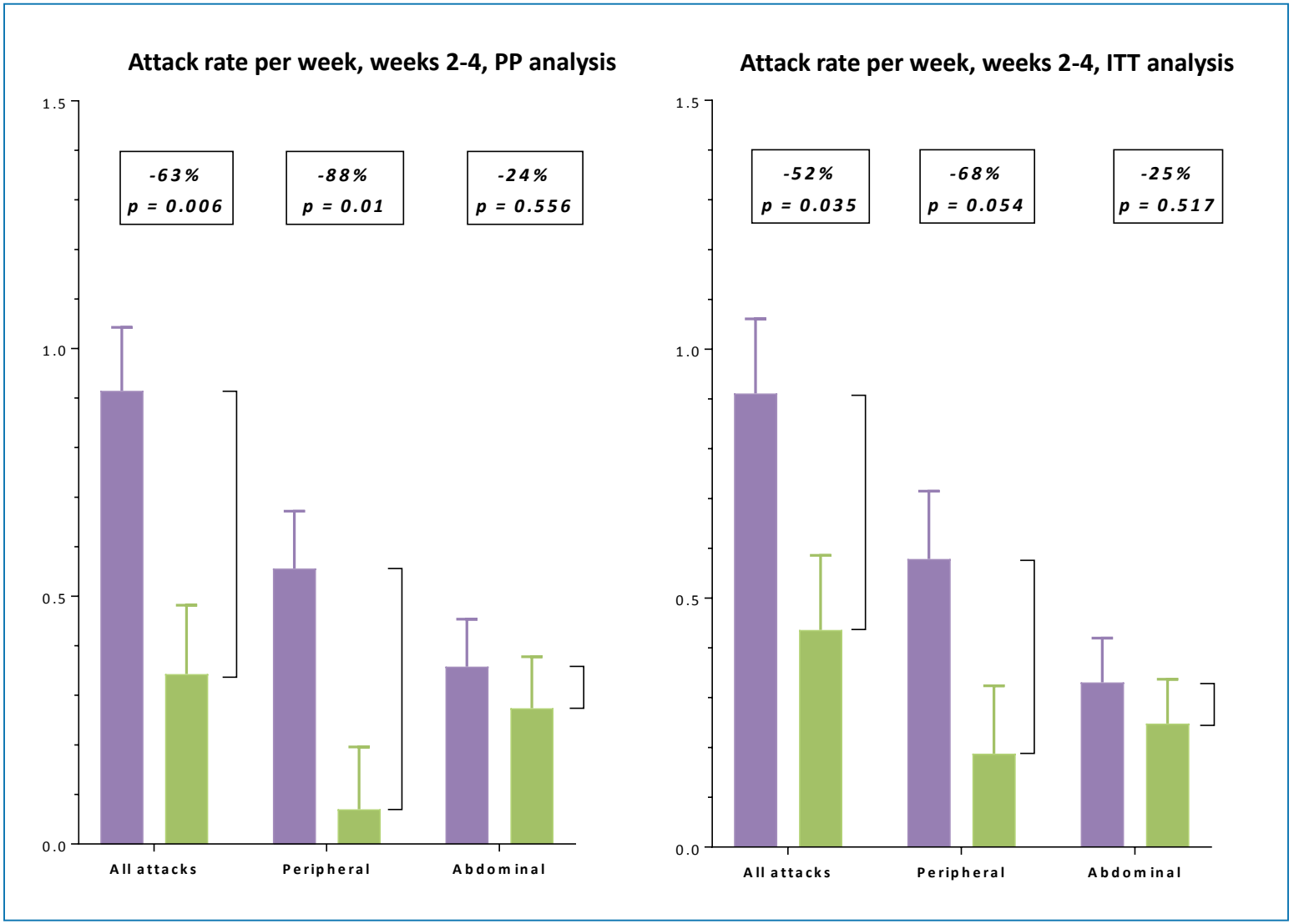




BCX7353
Placebo

BioCryst Pharmaceuticals, Inc.

APeX-1 Interim analysis: Angioedema attack rates by pre-specified anatomical location



APeX-1 Interim analysis: Angioedema attacks by anatomical category

	Peripheral		Mixed		Abdominal	
Effective dosing period (Week 2-4) – Per Protocol Population						
	Attacks	**Subjects**	**Attacks**	**Subjects**	**Attacks**	**Subjects**
BCX7353	**2**	2	**2**	1	**7**	5
Placebo	**22**	9	**12**	7	**2**	1
% Change vs Placebo	**-91%**		**-83%**		**+250%**	
Effective dosing period (Week 2-4) – ITT Population						
BCX7353	**6**	3	**3**	2	**7**	5
Placebo	**25**	10	**12**	7	**2**	1
% Change vs Placebo	**-76%**		**-75%**		**+250%**	

Clear imbalance in attack reduction by location. Subjects may not have been able to distinguish between BCX7353-related GI events and early signs of an abdominal attack.

Post- hoc analysis

BioCryst Pharmaceuticals, Inc.

BCX7353 Phase 1 Daily dosing: Adverse events occurring in >1 subject

	Placebo	BCX7353			Placebo	BCX7353
Dosing regimen	***Once daily for 7 days***				***Once daily for 14 days***	
Dose	**--**	**125mg**	**250mg**	**500 mg**	**--**	**350mg**
N	6	10	10	10	2	10
Subjects (%) reporting an AE	2 (33.3)	2 (20.0)	2 (20.0)	7 (70.0)	2 (100.0)	8 (80.0)
Total number of AEs	2	5	6	22	2	21
Nature of AE						
Diarrhea	0	1 (10.0)	0	5 (50.0)	0	0
Flatulence	0	0	0	2 (20.0)	0	0
Abdominal pain	0	0	1 (10.0)	1 (10.0)	0	3 (30.0)
Abdominal distension	0	0	0	1 (10.0)	0	1 (10.0)
Dyspepsia	0	0	0	0	0	2 (20.0)
Epigastric discomfort	0	0	0	0	0	2 (20.0)
Nausea	0	0	0	1 (10.0)	0	1 (10.0)
Dizziness	0	1 (10.0)	0	1 (10.0)	0	1 (10.0)
Headache	0	1 (10.0)	0	1 (10.0)	0	1 (10.0)
Upper Resp Tract Infection	0	0	0	0	0	2 (20.0)

Presented October 8, 2015

BioCryst Pharmaceuticals, Inc.

APeX-1 Interim analysis: Analysis of gastrointestinal symptoms in the subject diary

AE or symptom	Reported as AE		Reported as attack-related symptoms			
			Mixed peripheral + abdominal attack category [1]		Abdominal-only attack category [1]	
	BCX7353 (n=14)	Placebo (n=14)	**BCX7353 (n=14)**	Placebo (n=14)	**BCX7353 (n=14)**	Placebo (n=14)
Abdominal pain	1 (7.1%)	0	**1 (7.1%)**	5 (35.7%)	**7 (50.0%)**	3 (21.4%)
Nausea	1 (7.1%)	0	**1 (7.1%)**	5 (35.7%)	**4 (28.6%)**	2 (14.3%)
Vomiting	1 (7.1%)	0	**0**	0	**1 (7.1%)**	1 (7.1%)

[1] Includes all subject-reported attacks, including those rejected by expert adjudication committee. Multiple reports of the same event in the same subject are only tabulated once

BioCryst Pharmaceuticals, Inc.

APeX-1 Interim analysis: Days with any angioedema symptoms recorded in the subject diary, by anatomical category

Treatment	Study Day																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
BCX7353																													
BCX7353																													
BCX7353																													
BCX7353																													
BCX7353					A																								
BCX7353															A														
BCX7353																											P	P	
BCX7353																	P			A	A								
BCX7353					A		A																			A			
BCX7353		P	P		M	M																							
BCX7353								M	M	M												M	M						
BCX7353			A	A	A			A	A	A																	A	A	
BCX7353					A	A	A	A	A							A	A							A	A				
BCX7353	P						P					P		M	M		P				P		P	P					
Placebo																P	P												
Placebo														A	A													A	
Placebo		P	P	P	P																								
Placebo				M											M						M				M				
Placebo						A	A	A														P	P	P					
Placebo													P	P		P	P						P	P					
Placebo						A										P	P									M	M	M	
Placebo							P				P	P					P	P	P	P									
Placebo															P	P	P			P	P	P	P	P					
Placebo		M					P	P			P						P					M				P	P		
Placebo	P	P					M	M	M	M	M					M					M	M	M						
Placebo							P	P				M	M	M			P	P	P			P	P				M	M	
Placebo			M	M			M		M	M			P	P	P						P	P				P	P		
Placebo				P	P			P	P			P				P				P		P	P		M	M		P	P

A Abdominal only

M Mixed

P Peripheral only

Post-hoc analysis including all days with any symptoms recorded by subjects as attack of HAE.
Analysis of ITT population, adjudicated attacks.
Study subjects (rows) in each treatment group ordered by increasing number of days with symptoms.

BioCryst Pharmaceuticals, Inc.

APeX-1 Interim analysis: Days with unequivocal angioedema symptoms recorded in the subject diary, by anatomical category

Treatment	Study Day																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
BCX7353																													
BCX7353																													
BCX7353																													
BCX7353																													
BCX7353																													
BCX7353																													
BCX7353																													
BCX7353																													
BCX7353																													
BCX7353																	P												
BCX7353																											P	P	
BCX7353		P	P		M	M																							
BCX7353								M	M	M												M	M						
BCX7353	P						P					P		M	M		P				P		P	P					
Placebo																													
Placebo																P	P												
Placebo																						P	P	P					
Placebo		P	P	P	P																								
Placebo				M											M						M				M				
Placebo																P	P									M	M	M	
Placebo													P	P		P	P						P	P					
Placebo							P				P	P					P	P	P	P									
Placebo															P	P	P			P	P	P	P	P					
Placebo		M					P	P			P						P					M				P	P		
Placebo	P	P					M	M	M	M	M					M					M	M	M						
Placebo							P	P				M	M	M			P	P	P			P	P				M	M	
Placebo			M	M			M		M	M			P	P	P						P	P				P	P		
Placebo				P	P			P	P			P				P				P		P	P		M	M		P	P

M Mixed

P Peripheral only

Post- hoc analysis excluding any attacks with only abdominal symptoms.
Analysis of ITT population, adjudicated attacks.
Study subjects (rows) in each treatment group ordered by increasing number of days with symptoms

BioCryst Pharmaceuticals, Inc.

BCX7353 APeX-1 interim analysis: Safety summary

Category	BCX7353 (n=14)	Placebo (n=14)
Number of Subjects with any Serious AE, n (%)	0	0
Number of Subjects with Drug-Related AE of Grade 3 or Grade 4, n (%)	0	0
Number of Subjects with AE Leading to Discontinuation from Study Drug, n (%)	2 (14.3)	0
Non- drug-related, n (%) Pre-existing liver disorder (improved from baseline, but persisting)	1 (7.1)	0
Drug-related, n (%) Gastroenteritis (unrelated) with liver disorder (related) (elevated ALT 1.9x ULN, GGT 5.4x ULN and ALP 1.6x ULN, with normal AST and bilirubin)	1 (7.1)	0
Treatment-Emergent Adverse Events occurring in ≥2 subjects overall, n (%)		
Nasopharyngitis (common cold) Diarrhea Flatulence Fatigue	3 (21.4) 4 (28.6) 2 (14.3) 2 (14.3)	4 (28.6) 2 (14.3) 0 0
Clinically significant changes in clinical chemistry, hematology or urinalysis, n (%)		
ALT elevation > 3X ULN (ALT 3.9 x ULN, AST 1.8 xULN, GGT10.7 X ULN) *Pre-existing colitis, hepatic steatosis (fatty liver), > 20 years androgen use until 3 years prior to study, Baseline increase in liver enzymes*	1 (7.1)	0

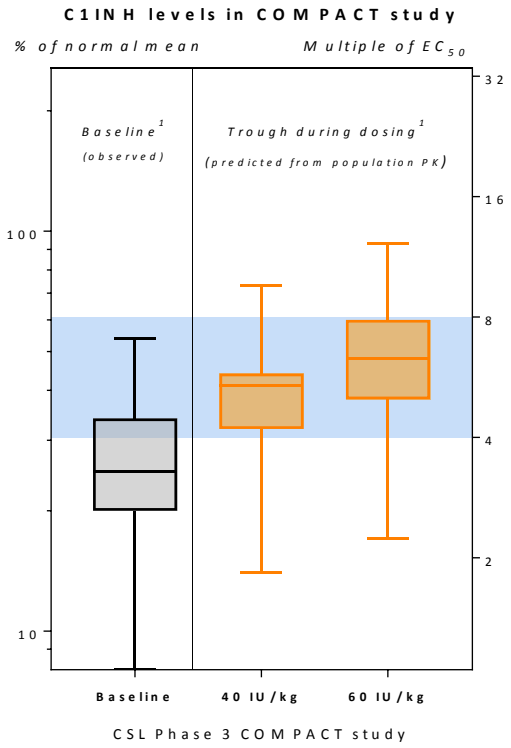
BioCryst Pharmaceuticals, Inc.

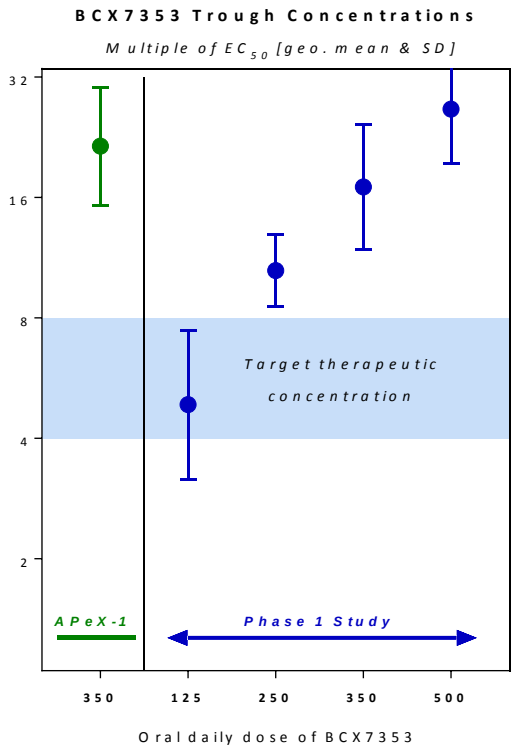
Exposure comparisons and population PK modeling support evaluation of lower doses of BCX7353

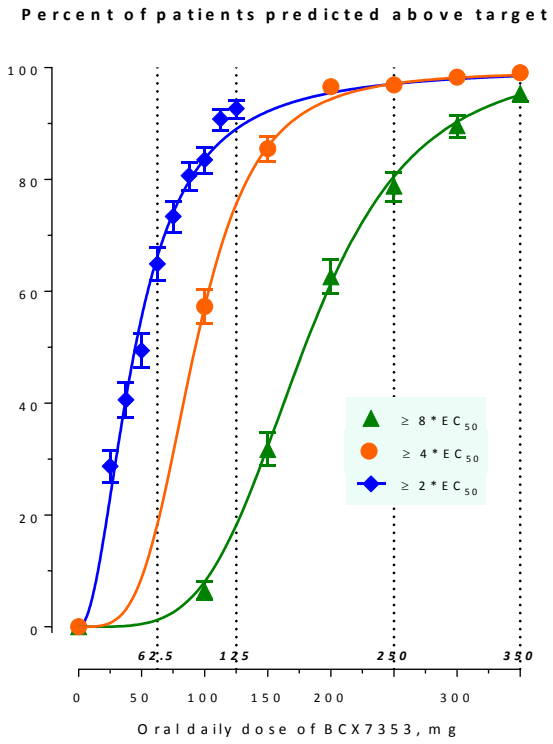
CSL-830 Phase 3 study

BCX7353 APeX-1 & Phase 1

PK Modeling







C1INH levels at baseline and after SC dosing with CSL-830[1]

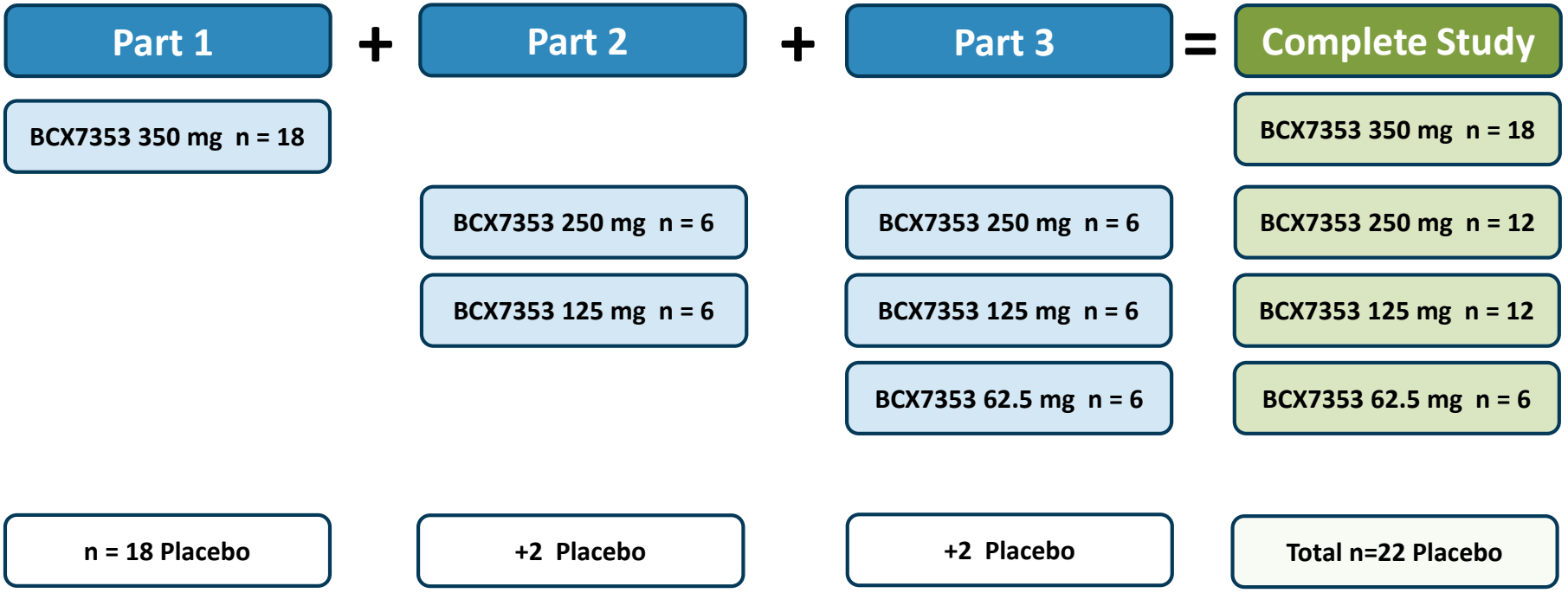
BCX7353 plasma concentrations at 24 hours post-dose

Monte Carlo simulation: 1000 subjects per data point

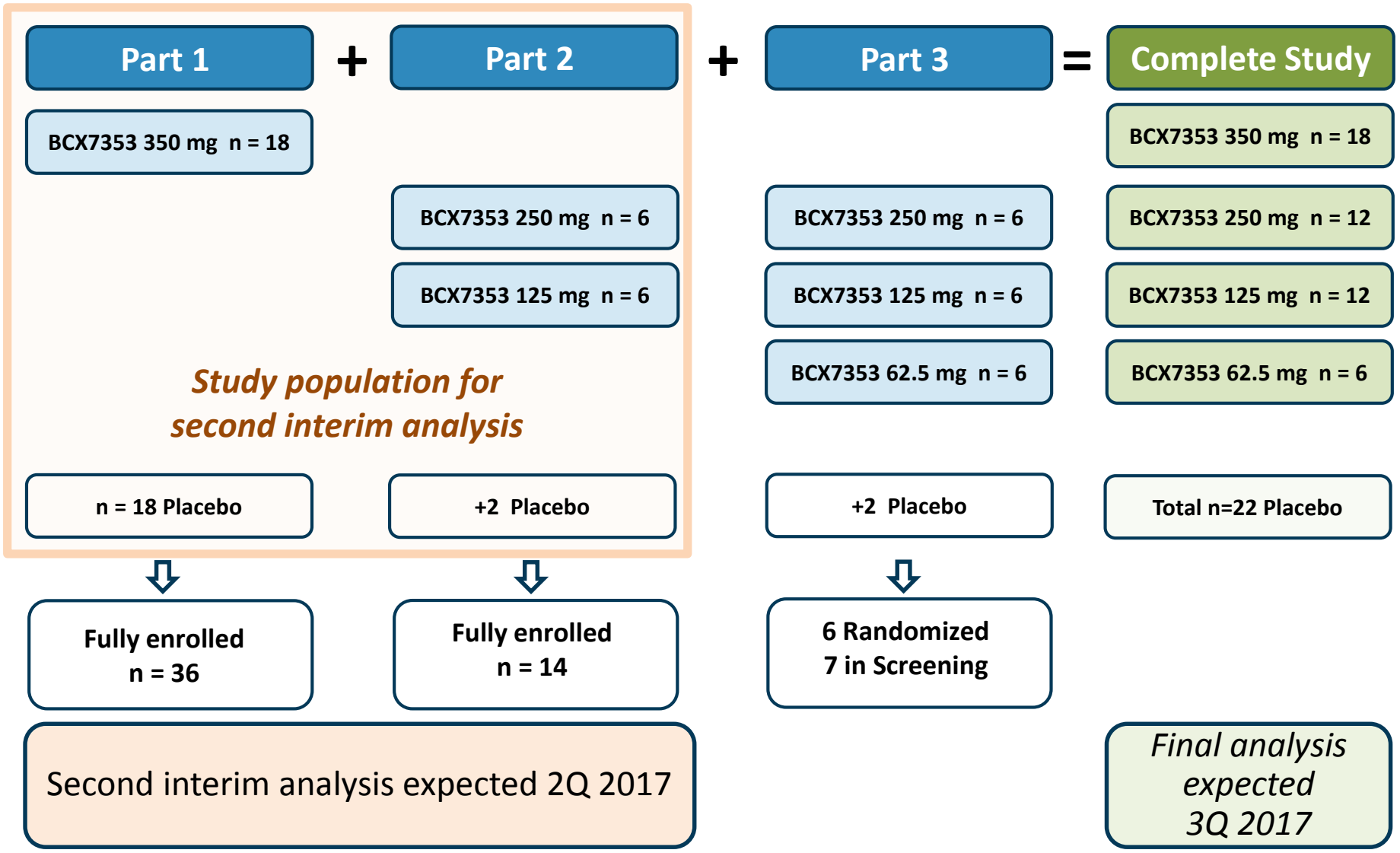
[1] Longhurst, H. et al. N Engl J Med 376, 1131-1140 (2017). Box plots represent median, 25th and 75th percentiles, minimum and maximum values. CSL-830 and BCX7353 data are from distinct clinical trials and no head to head study has been conducted.

BioCryst Pharmaceuticals, Inc.

APeX-1


Part 1
+
Part 2
+
Part 3
=
Complete Study
BCX7353 350 mg n = 18
BCX7353 350 mg n = 18
BCX7353 250 mg n = 6
BCX7353 250 mg n = 6
BCX7353 250 mg n = 12
BCX7353 125 mg n = 6
BCX7353 125 mg n = 6
BCX7353 125 mg n = 12
BCX7353 62.5 mg n = 6
BCX7353 62.5 mg n = 6
n = 18 Placebo
+2 Placebo
+2 Placebo
Total n=22 Placebo

APeX-1: update

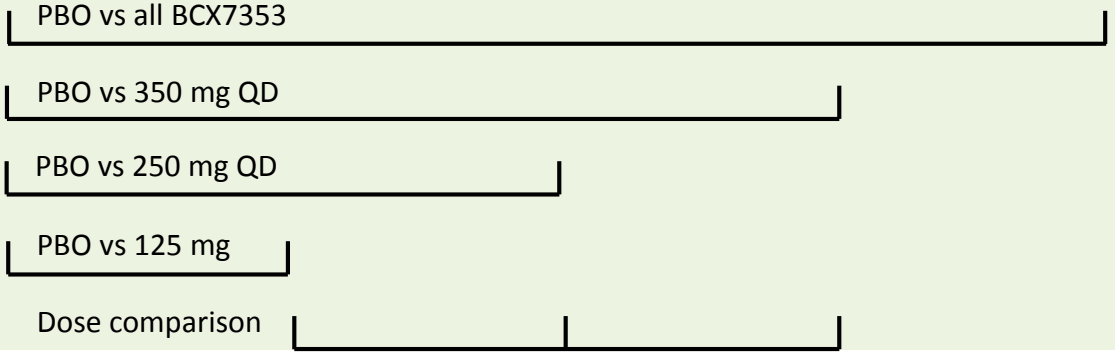


APeX-1 trial second interim analysis plan

- Scope of analyses will be similar to the first interim analysis:
  - Subject demographics
  - Efficacy
  - Safety
  - PK
  - Kallikrein inhibition

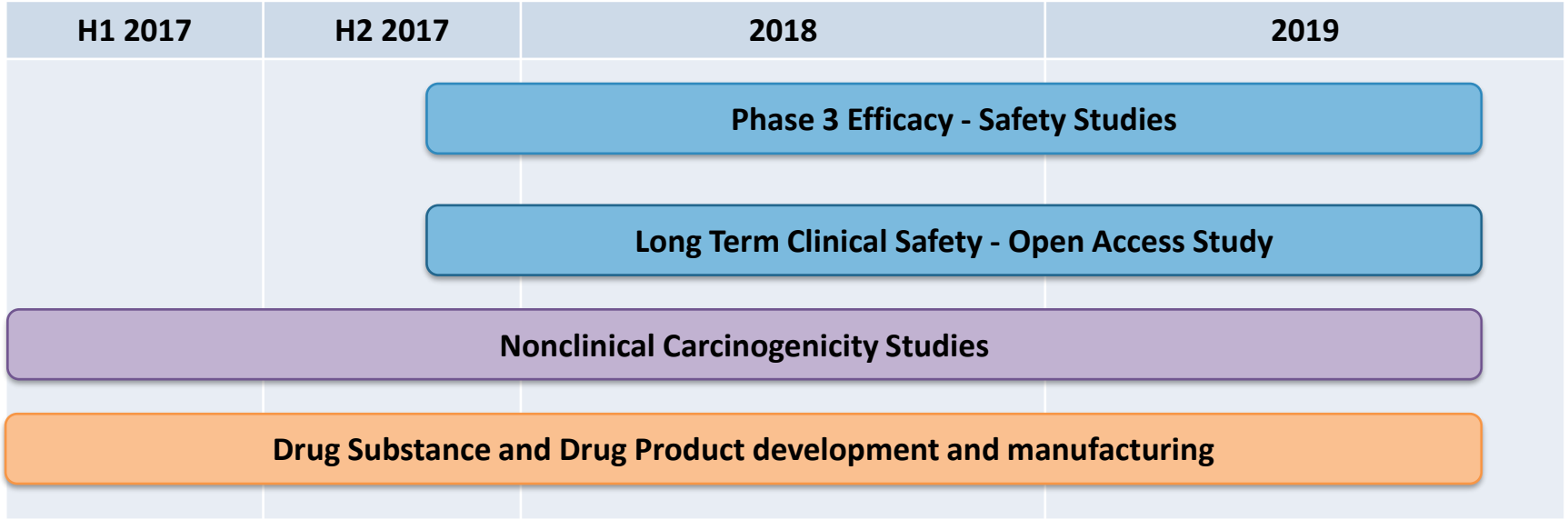
	Placebo	125 mg QD BCX7353	250 mg QD BCX7353	350 mg QD BCX7353	All BCX7353
Planned N	*20*	*6*	*6*	*18*	*30*

Comparisons of interest



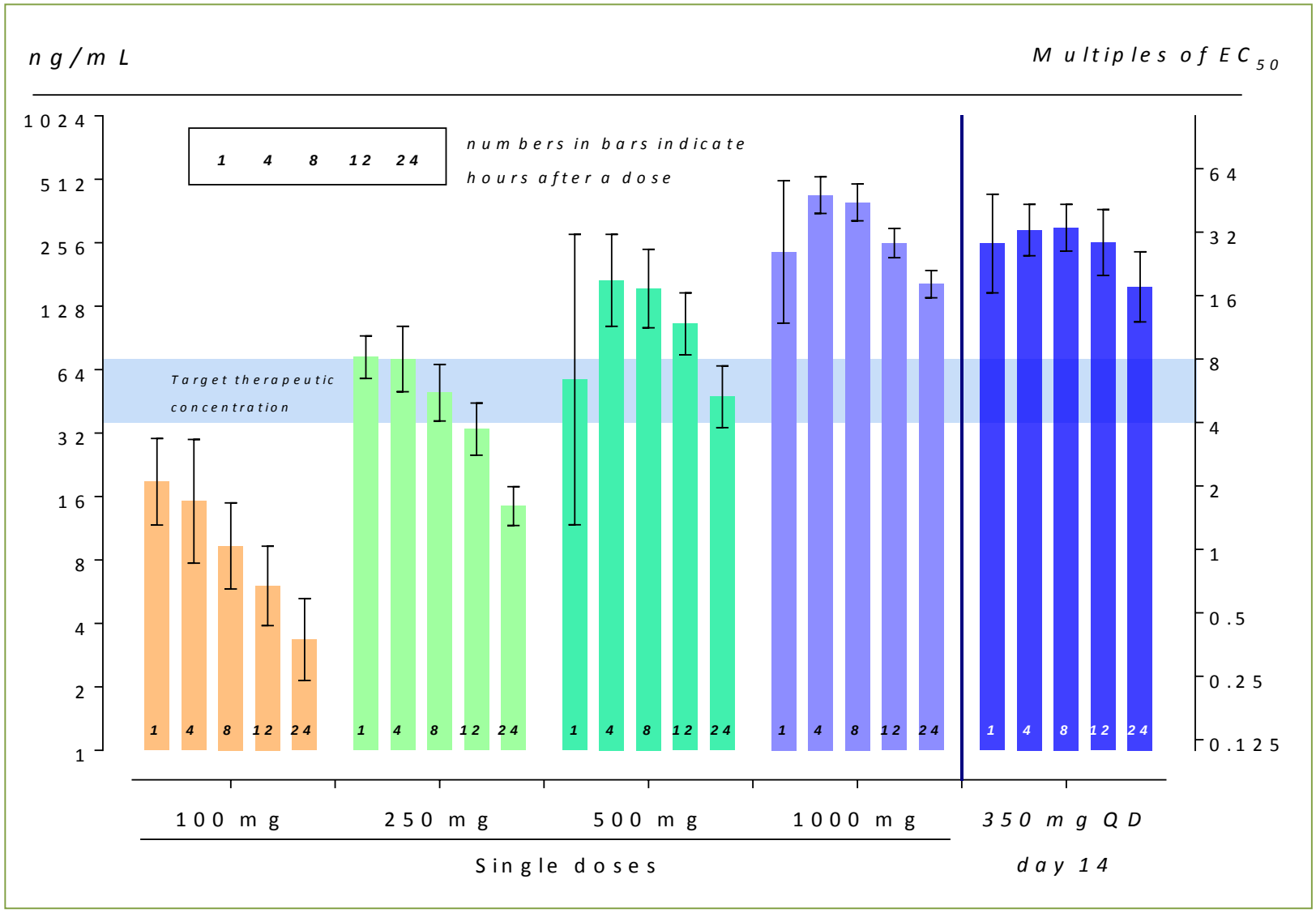
BCX7353 Remaining activities after APeX-1

Estimated timing of key activities to support NDA/MAA filing

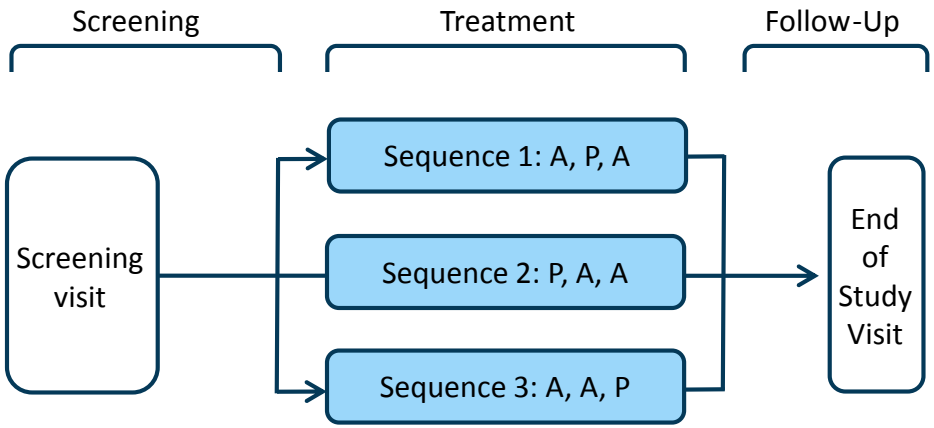


BioCryst Pharmaceuticals, Inc.

Phase 1 PK data support evaluation of BCX7353 for treatment of angioedema attacks



ZENITH-1 trial design



Part 1: BCX7353 Dose Level 1 n = 12 - 36 + Part 2: BCX7353 Dose Level 2 n = 12 + Part 3: BCX7353 Dose Level 3 n = 12 = Total n = 36 - 60

- The ZENITH-1 trial will evaluate the potential for an oral liquid formulation of BCX7353 to treat acute angioedema attacks
- Each subject is intended to have 3 attacks treated with blinded study drug
  - 2 with BCX7353 (A) and 1 with Placebo (P)
- Primary efficacy endpoint: proportion of subjects with improved or stable composite visual analog scale (VAS) score at 4 hours post-dose

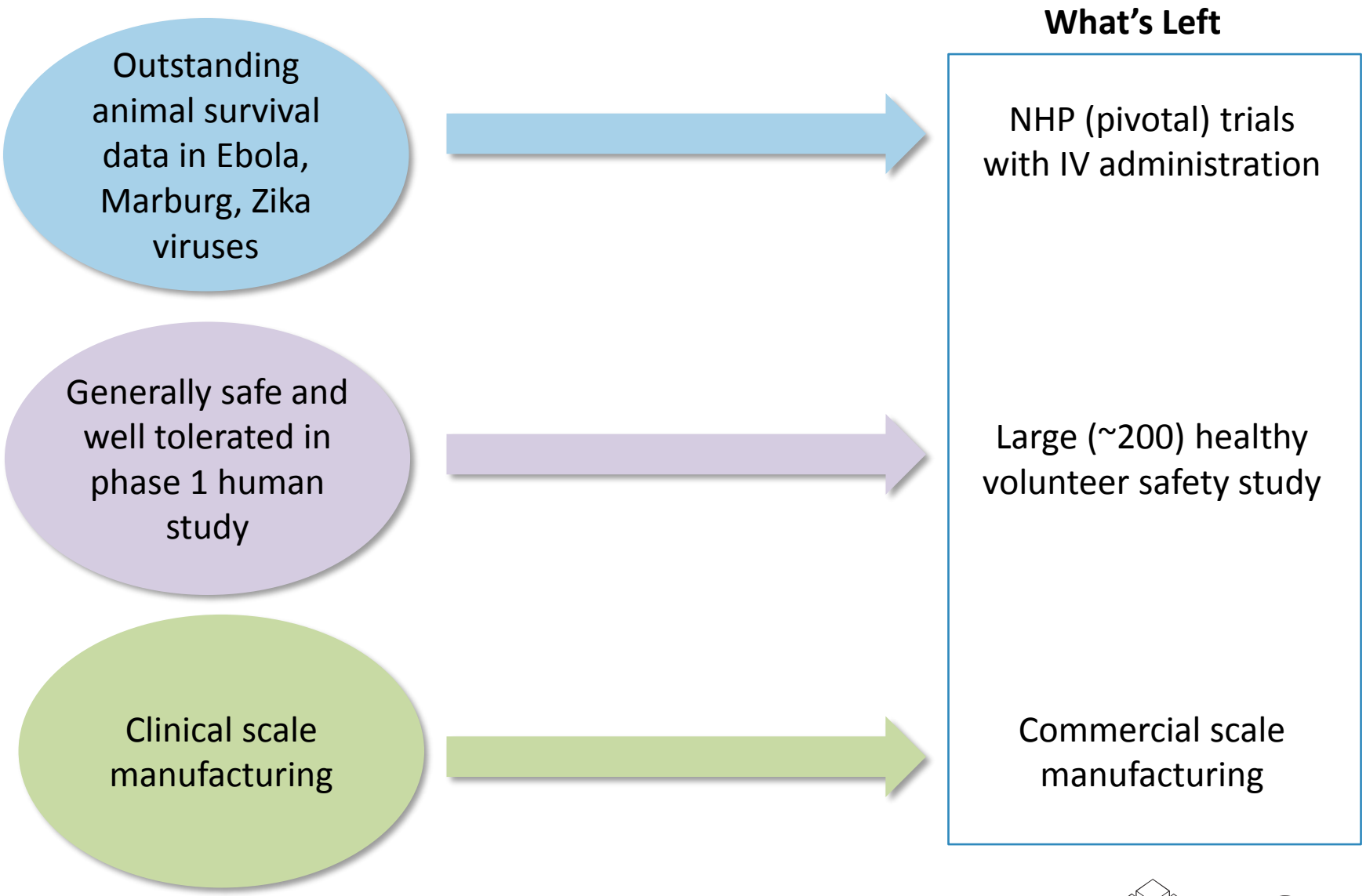
Antiviral programs are externally funded, generating $400M to date with the potential for significant future capital infusions

Antiviral Program	Indication	Development funding	Additional capital infusions
	First and only one-dose IV treatment for influenza	Over $200M US Government funding to support development and approval	• Over $90M in milestones and royalty monetization • Over $25M in Government stockpiling (Japan/US)
Galidesivir (BCX4430)	• Ebola is lead indication • Broad-spectrum activity observed in Zika, Marburg and several other virus families	Approximately $80M US Government contract development funding	• Potential for Government stockpiling prior to FDA approval • Potentially eligible for FDA priority review voucher upon approval

Broad-spectrum activity increases attractiveness of Galidesivir for Government stockpiling

BioCryst Pharmaceuticals, Inc.

Galidesivir path to stockpiling and NDA



BioCryst Pharmaceuticals, Inc.

Stockpiling and Voucher Comparables

Precedent highly pathogenic countermeasures

Product	Pathogen	Company	Doses	Cost
BioThrax vaccine	Anthrax	Emergent BioSolutions	29M	$691M
Raxibacumab antitoxin (CY '13)	Anthrax	GSK	60K	$193M
AbThrax antibody	Anthrax	HGS (now GSK)	65K	$326M
Botulimun antitoxin	Botulism	Cangene	200K	$427M
MVA vaccine	Smallpox	Bavarian Nordic	20M	$505M
ACAM2000 vaccine (CY '08)	Smallpox	Acambis	>72M	$425M-$660M
ST-246 antiviral	Smallpox	Siga	1.7M	$433M

Precedent voucher purchases

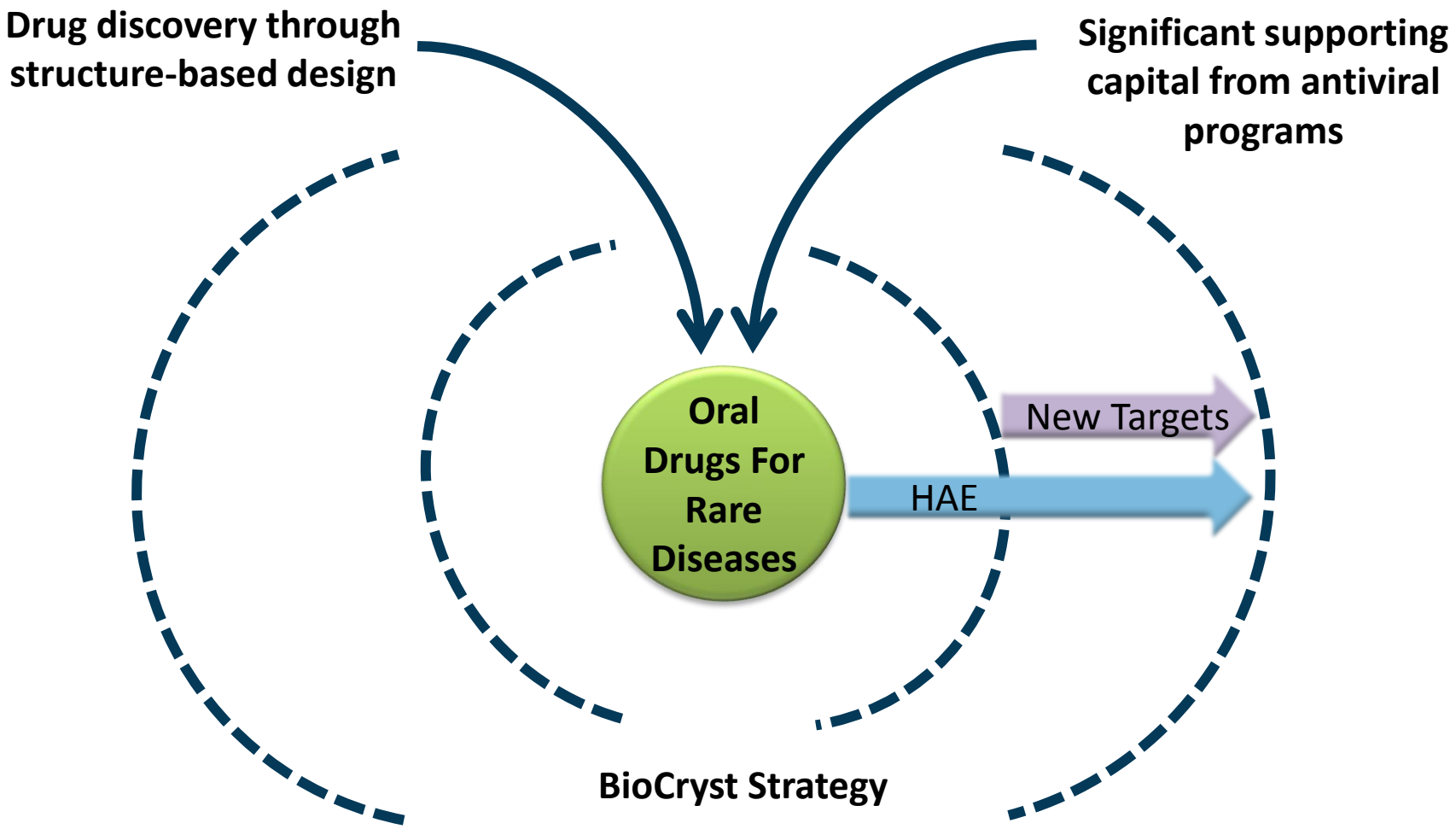
Disease	Drug	Seller (Buyer)	Price
Morquio A syndrome	Vimizim (elosulfase alfa)	BioMarin (Sanofi)	$67.5M
Leishmaniasis	Impavido (miltefosine)	Knight (Gilead)	$125M
High-risk neuroblastoma	Unituxin (dinutuximab)	United Therapeutics (Abbvie)	$350M
Rare bile acid synthesis disorders	Cholbam	Retrophin (Sanofi)	$245M

Stockpiling data from FY2014 Budget for Public Health and Social Services Emergency Fund, pg 116
http://www.hhs.gov/budget/fy2014/fy2014-phssef.pdf

Voucher data sourced from public reports

BioCryst Pharmaceuticals, Inc.

Building a company to generate expanding and sustainable value



Cash position & 2017 guidance (in millions)

Cash & investments at December 31, 2016	$65
Cash & investments at March 31, 2017	**$105**
Senior Credit Facility	$23

Guidance for 2017:

Operating cash utilization	$30 – 50
Operating expenses[#]	$53 – 73

[#] Excludes equity-based compensation.

BioCryst Pharmaceuticals, Inc.