

### DUBLIN-3 (BPI-2358-103):

A Global Phase 3 Trial with the Plinabulin/Docetaxel combination vs. Doc in 2nd/3rd Line NSCLC Patients with EGFR-wild type Progressing on a Prior Platinum-Based Regimen (NCT02504489)

September 2021 | NASDAQ: BYSI

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## Company Highlights (NASDAQ Ticker – BYSI)

Headquarter New York, NY Plinabulin for CIN, US NDA PDUFA November 30, 2021 **Committed to raising the standard** Lead Asset Plinabulin for NSCLC, est. NDA filing 1H 2022 of care for cancer patients with firstin-class treatments that improve **Partnerships:** Plinabulin in Greater China – Co-development & lives and clinical outcomes for Commercial Partnership with Hengrui millions of patients in need Subsidiary SEED Therapeutics (proprietary TPD Platform) \$800M partnership with Eli Lilly \$76.3 million as of June 30, 2021 + \$45 M from Hengrui Lead Asset Plinabulin: **Cash position** upfront and investment "A Pipeline in a Drug" CIN NSCLC 10 Triple I/O combo in multiple cancer

- Plinabulin + G-CSF for CIN Prevention Indication
- Breakthrough Designation (BTD) and NDA accepted with Priority Review from US

and China FDA

- DUBLN-3: Plinabulin + Docetaxel for 2<sup>nd</sup>/3<sup>rd</sup> line NSCLC, EGFR wild type
- Positive Topline Final phase 3 OS data reported in August 2021
- Late-breaking oral presentation of DUBLIN-3 data at ESMO on 9/20/2021

- Triple I/O combo in multiple cancer
   indications in early development,
   including 7 cancers at MD Anderson
- Efficacy data for phase 1 SCLC at ASCO 2021

### **Dublin-3 Study Investigator and Speaker at ESMO**



### **Dr. Trevor Feinstein**

**Dr. Trevor Feinstein** is board certified in medical oncology and hematology by the American Board of Internal Medicine. Dr. Feinstein graduated from University of Illinois medical school and completed his residence and fellowships at the University of Pittsburgh. He joined Piedmont Cancer Institute in 2011. He is a certified member of MD Anderson Cancer Network. He is a co-investigator on several peerreviewed research projects and actively involved in clinical trials focusing on improved therapies for various cancers. He is director of research at Piedmont Fayette Hospital. Dr. Feinstein has authored numerous publications and abstracts in Hematology and Oncology.



### BACKGROUND



### Severely Unmet Medical Need – 2nd/3rd Line NSCLC, EGFR Wild Type

• Phase 1A (study 100, dose escalation, n=38): NCT00322608 plinabulin monotherapy in various cancer (day 1, 8, 15 in 28 day per cycle), plinabulin 30 mg/m2 was selected;

 Phase 1B (study 101, phase 1B part, 2<sup>nd</sup>/3<sup>rd</sup> line NSCLC, n=13): NCT00630110

plinabulin (13.5 mg/m2, 20 mg/m2, or 30 mg/m2 on day 1 and 8) + docetaxel (75 mg/m2 on day 1) in 21 day per cycle.

- ✓ Plinabulin dose was selected to be 30 mg/m2 for RP2D;
- Phase 2 (study 101, 2<sup>nd</sup>/3<sup>rd</sup> line NSCLC, n=172): NCT00630110 plinabulin (2 doses at 20 mg/m2 or 30 mg/m2 on day 1 and 8) + docetaxel ( 75 mg/m2 on day 1) vs docetaxel (75 mg/m2, day 1) in 21 day per cycle, in 2<sup>nd</sup>/3<sup>rd</sup> line NSCLC.
- ✓ 30 mg/m2 plinabulin had better efficacy than 20 mg/m2.
- ✓ Superior Duration of response (DOR) in DP (30 mg/m2) vs D (p<0.05).</p>

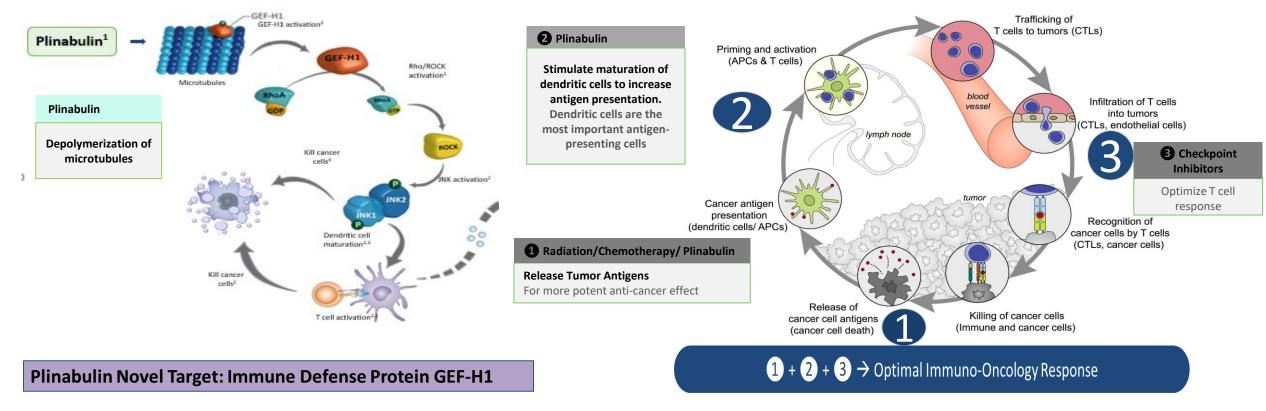
- □ Large patient population with limited treatment options
  - EGFR wild type: ~85% western NSCLC and ~70% of Asian NSCLC patients
  - With immunotherapies moved to first line, Docetaxel-based therapies are the mainstay therapy
  - TKIs are worse than docetaxel<sup>1</sup>
- Docetaxel-based Therapies (SOC)<sup>2</sup>
  - Limited efficacy
  - >40% severe neutropenia

# Since nivolumab was approved 6 years ago, no new agent with novel mechanism has been approved in this indication.

### **PLINABULIN : Durable Anticancer Activity MOA**

### Plinabulin: First-in-Class, Selective Immunomodulating Microtubule-Binding Agent (SIMBA)

- Plinabulin Induces Dendritic Cell Maturation (the most potent APC), a Key Step in Initiating Anti-Cancer Durable Response



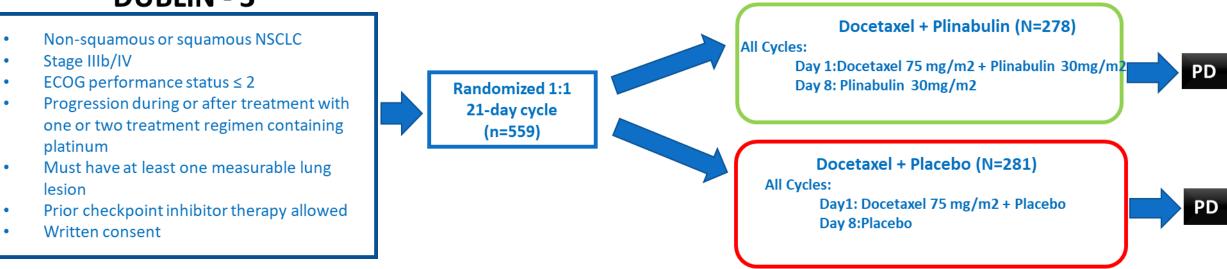
Note: <sup>1</sup> La Sala et al., 2019 Chem. <sup>2</sup> Kashyap et al., 2019 Cell Reports. <sup>3</sup> Zhang et al., 2006 Mol Cell Biol. <sup>4</sup> Singh et al., 2000 Am J Physiol; Ghosh et al., 2018 ACR Annual Conference; Blayney et al., Society of Leukocyte Biology. <sup>6</sup> Asensi et al., 2004 Infection and Immunity

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## **DUBLIN -3 STUDY OVERVIEW**

### Plinabulin/Docetaxel combination vs. Docetaxel (NCT02504489)

### **DUBLIN - 3**



- ✓ Primary endpoint: Overall Survival (OS)
- ✓ Secondary endpoints: ORR, PFS , Percent of patients with grade 4 neutropenia on C1D8, Month 24 OS rate, Month 36 OS rate , DoR , Q-TWiST, QoL, % patients who received docetaxel >8 cycles, >10 cycles, and >12 cycles

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## **Statistical Considerations**

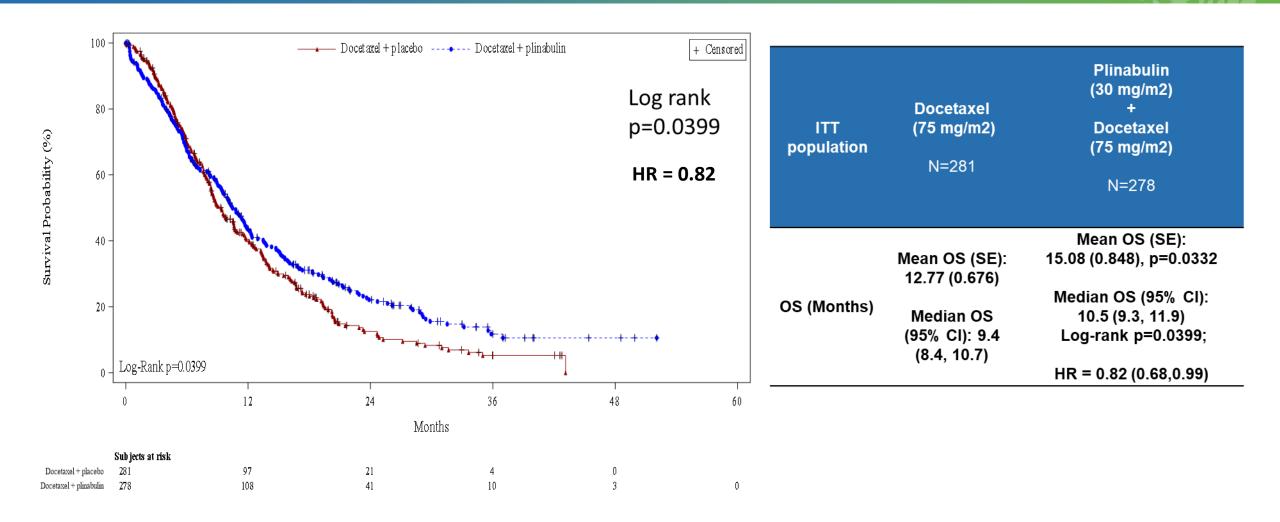
- Primary Endpoint: OS from randomization based on ITT population
- Planned Sample Size: Approximate 439 death events (approximately 554 patients to be enrolled) to
  provide 85% power to detect a treatment difference at two-sided significance level of 0.05 with two
  planned interim analyses (see below).
- **Two Planned Interim Analyses**: Two interim analyses were planned.
  - 1st: at 33% of death events (about 150 events) and 2<sup>nd</sup>: at 67% of death events (about 300 events).
- Planned Final Analyses: 439 death events reached.
  - Log rank 2-sided nominal p value (based on K-M OS curve) < 0.046 to be statistically significant;
  - Mean OS: restricted mean survival time method. 2-sided nominal p value < 0.05 to be statistically significant.

### **Baseline Characteristics**

	Docetaxel + placebo (N=281)	Docetaxel + Plinabulin (N=278)	Total (N=559)
Age (years)			
Median	60	61	61
Range	25,85	37,82	25,85
Sex, n(%)			
Male	207 (73.7%)	199 (71.6%)	406 (72.6%)
Tumor histology, n (%)			
Non-Squamous	178 (63.3%)	153 (55.0%)	331 (59.2%)
Squamous	100 (35.6%)	120 (43.2%)	220 (39.4%)
Missing	3 (1.1%)	5 (1.8%)	8 (1.4%)
ECOG, n(%)			
0	44 (15.7%)	40 (14.4%)	84 (15.0%)
1	225 (80.1%)	229 (82.4%)	454 (81.2%)
2	11 (3.9%)	9 (3.2%)	20 (3.6%)
Missing	1 (0.4%)	0 ( 0.0%)	1 (0.2%)
Line of prior therapy, n (%)			
First Line	216 (76.9%)	204 (73.4%)	420 (75.1%)
Second Line	65 (23.1%)	74 (26.6%)	139 (24.9%)
Geographic region, n(%)			
China	245 (87.2%)	243 (87.4%)	488 (87.3%)
ROW	36 (12.8%)	35 (12.6%)	71 (12.7%)

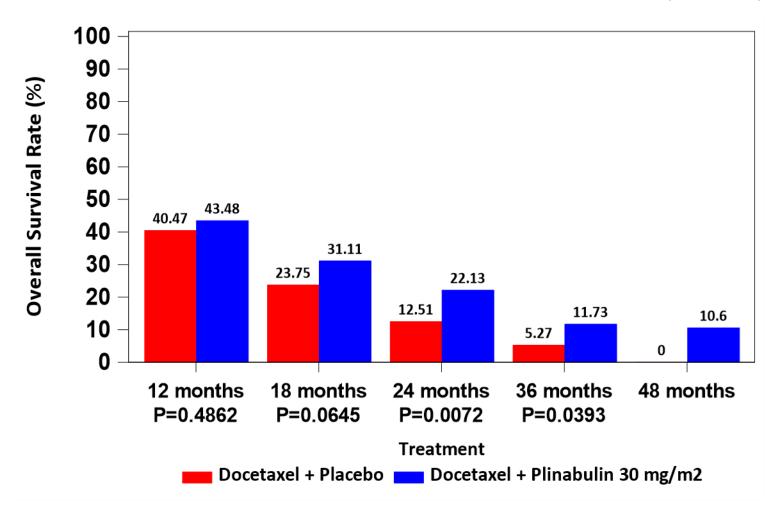
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## Met Primary Study Objective in Overall Survival (OS)

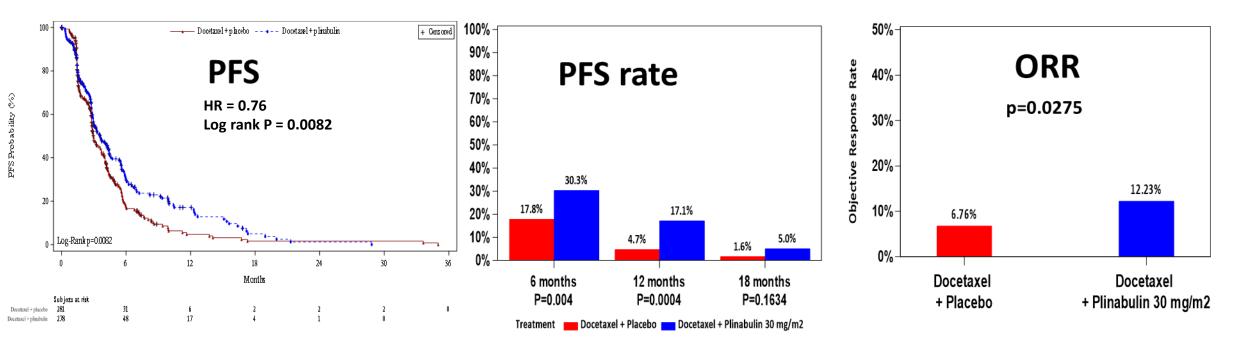


## Met Primary Study Objective in Overall Survival (OS)

Doubling of OS rate in 24 M, 36 M, and 48 M OS rate in DP (10.6%) vs. D (0%)



## Significant Improvement in PFS, Double ORR with Plinabulin



Secondary Endpoint (ITT population)	Docetaxel(75 mg/m2) N=281	Plinabulin (30 mg/m2) + Docetaxel (75 mg/m2) N=278
	Mean PFS (SE): 4.4 (0.3)	Mean PFS (SE): 6.0 (0.4); p=0.0062
PFS* (months or M)	Median PFS (95% Cl): 3.0 (2.8, 3.7)	Median PFS (95% Cl): 3.6 (3.0, 4.4), Log-rank p=0.0082; HR=0.76 (0.63, 0.93)

\*Investigator-Assessed



## **FOREST PLOT**

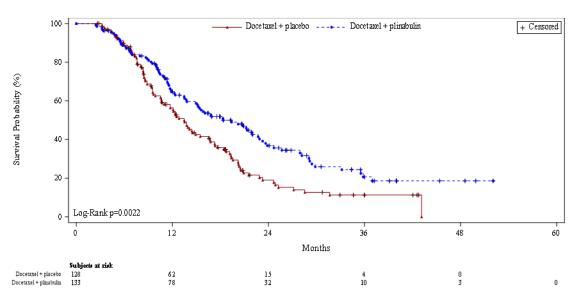


### Subgroup Analysis of Overall Survival - ITT Population

Subgroup	No.of Patien	is Hazard Ratio	95% CI of Hazard Rati	io
	D DP		HR Low High	h
Overall	281 278		0.822 0.681 0.99	1
Age				
<=M edian age(61 y ear	rs) 158 144		0.853 0.66 1.103	3
>M edian age(61 years	) 123 134		0.778 0.59 1.020	6
ECOG group				
0	44 40		0.488 0.288 0.82	7
1-2	236 238		0.913 0.746 1.110	6
Gender				
M en	207 199		0.82 0.658 1.022	2
Women	74 79		0.84 0.588 1.2	2
Smoking status				
Non-smoker	98 94		0.812 0.593 1.112	2
Smoker	146 151		0.849 0.653 1.104	4
Tumor stage				
IIIB	41 50		0.664 0.407 1.083	5
IV	236 224		0.865 0.704 1.062	2
		< Plinabulin Better Placebo Better >		
		0.0 0.5 1.0 1.5 2.0	2.5	

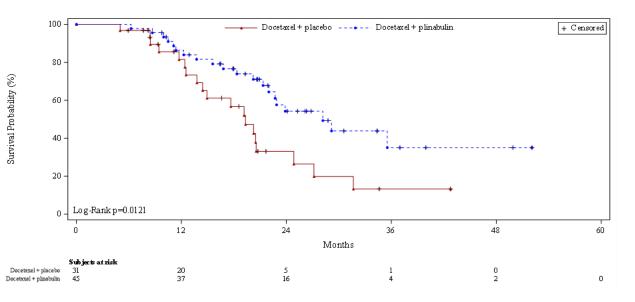
## Overall Survival for patients with ≥4 or ≥8 cycles

#### OS K-M Graph for treatment cycles >= 4 cycles



	Median OS	p value
D (n= 128)	13.5(10.68,16.54)	
DP (n= 133)	18.3(14.96,22.88)	HR=0.634; P = 0.0022

#### OS K-M Graph for treatment cycles >= 8 cycles



	Median OS	p value
D (n= 31)	19.3(13.77,24.85)	
DP (n= 45)	28.2(21.99,NA)	HR=0.453; P = 0.0121



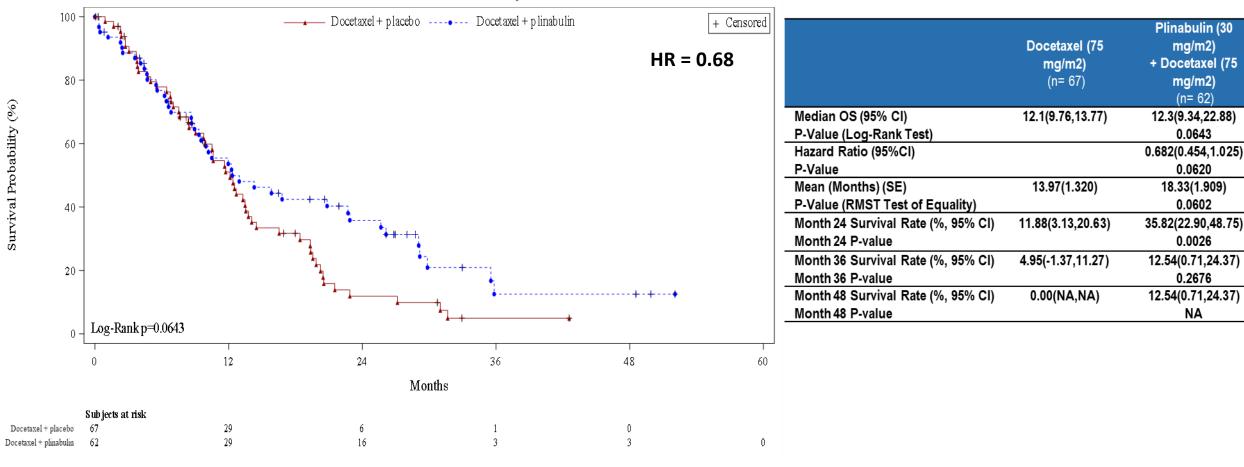
### **Baseline Characteristics for PD-1/PD-L1 Exposed Patients**

	Docetaxel + placebo (N=67)	Docetaxel + Plinabulin (N=62)	Total (N=129)
Age (years)			
Median	60	64	61
Range	28,85	45,82	28,85
Sex, n(%)			
Male	38 (56.7%)	42 (67.7%)	80 (62.0%)
Tumor histology, n (%)			
Non-Squamous	48 (71.6%)	33 (53.2%)	81 (62.8%)
Squamous	19 (28.4%)	29(46.8%)	48 (37.2%)
ECOG, n(%)			
0	10 (14.9%)	11 (17.7%)	21 (16.3%)
1	53 (79.1%)	47 (75.8%)	100 (77.5%)
2	4 (6.0%)	4 (6.5%)	8 (6.2%)
Line of prior therapy, n (%)			
First Line	33 (49.3%)	26 (41.9%)	59 (45.7%)
Second Line	34 (50.7%)	36 (58.1%)	70 (54.3%)
Geographic region, n(%)			
China	34 (50.7%)	34 (54.8%)	68 (52.7%)
ROW	33 (49.3%)	28 (45.2%)	61 (47.3%)



## **Beneficial Long Term Trend in PD-1/PD-L1 Exposed Patients**

K-M Overall Survival - PD-1/PD-L1 Exposed – DUBLIN-3\*

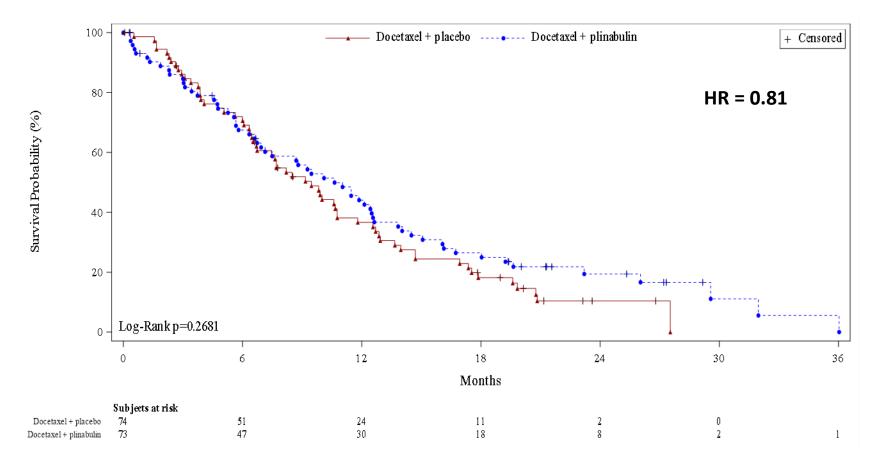




\* DUBLIN-3 – 103 Study with NSCLC (NCT02504489)

## Consistent Long Term Survival Benefit in Western pts vs ITT

#### K-M Overall Survival in Western patients - Pooled 101 and DUBLIN-3 study, in the Same Target Population

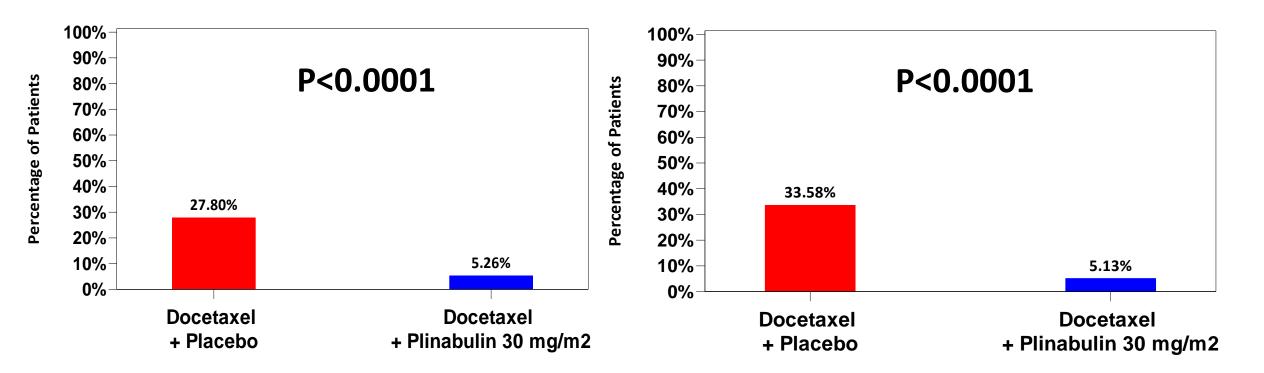




### Significant Reduction in Grade 4 Neutropenia Cycle 1 Day 8 and All Cycles Day 8

Grade 4 neutropenia, <u>Cycle 1</u> Day 8

Grade 4 neutropenia, <u>All Cycles</u> Day 8



### Safety: Well Tolerated and Lower Grade 3/4 AE Per Cycle

#### Safety: Treatment Related Adverse Events Reported >=10% Patients

	Docetaxel + (N=278) ;		Docetaxel+Plinabulin (30 mg/m²) (N=274) ; n (%)	
Preferred term	All Grade	Grade 3/4	All Grade	Grade 3/4
White blood cell count decreased	183(65.8%)	130(46.8%)	156(56.9%)	75(27.4%)
Neutrophil count decreased	186(66.9%)	144(51.8%)	134(48.9%)	81(29.6%)
Nausea	63(22.7%)	0	93(33.9%)	3(1.1%)
Diarrhea	47(16.9%)	2(0.7%)	101(36.9%)	23(8.4%)
Hypertension	9(3.2%)	3(1.1%)	85(31.0%)	47(17.2%)

#### Grade 3/4 Events per Patients per Year AE Analysis Adjusted for Cycle Number

Statistic	Docetaxel + Placebo	Docetaxel + Plinabulin
Total N	278	274
Number of Patients with Events, n(%)	215 ( 77.3)	204 ( 74.5)
Total number of Years	71.65	83.43
Total number of Events	791	824
Observed Event Rate per Year	11.04	9.88
Estimated Event Rate per Patient per Year (95% CI)	11.04 (10.30, 11.84)	9.88 (9.22, 10.57)
Rate Ratio vs Docetaxel + Placebo (95% CI)		0.89 (0.81, 0.99)
P-value vs Docetaxel + Placebo		0.0253



### Q-Twist - Quality-adjusted Time Without Symptoms of Disease and Toxicity

Quality of Life was assessed with validated tools (EORTC QLQ C30 and QLQ-LC13), and the Q-TWiST analysis integrating Efficacy, Safety and Quality of Life inputs (including EQ-5D HU QoL)

Q-TWIST - EQ-5D HU

Health State	Health State Utility	Docetaxel	Docetaxe	<b>Restricted Mean Difference</b>	RM P-Value	Docetaxel + Placebo	Docetaxel + Plinabulin	Difference	P-Value
		Restricted	+ Plinabulin						
		Mean	Restricted Mean						
						281	278		
тох	0.8267 (0.8187 to 0.8346)	0.86	0.81	0.05 (-0.20 to 0.30)	0.6973	0.71 (0.54 to 0.89)	0.67 (0.50 to 0.85)	0.04 (-0.17 to 0.25)	0.6974
TWIST	0.8533 (0.8467 to 0.8599)	3.56	5.14	-1.58 (-2.55 to -0.60)	0.0015	3.04 (2.50 to 3.57)	4.38 (3.64 to 5.12)	-1.35 (-2.18 to -0.52)	0.0015
REL	0.8051 (0.7724 to 0.8379)	8.35	9.13	-0.78 (-2.64 to 1.08)	0.4113	6.72 (5.65 to 7.79)	7.35 (6.09 to 8.61)	-0.63 (-2.13 to 0.87)	0.4118
QTWIST						10.47 (9.34 to 11.63)	12.40 (10.99 to 13.83)	-1.93 (-3.63 to -0.23)	0.0263

Improvement >18% in	Relative Gain to Q-TWiST	Relative Gain to OS Restricted Mean	Q-TWiST Gain
Q-Twist, which is	18.43%	15.11%	1.93
clinically meaningful.	(2.07% to 37.20%)	(1.72% to 30.63%)	
, ,	p-value=0.0393	p-value=0.0396	

### Dublin-3: Superior Efficacy (OS, PFS, ORR) and Significant Reduction in Grade 4 CIN (DP vs. D)

Primary Endpoint	Docetaxel (75 mg/m2) N=281	Plinabulin (30 mg/m2) + Docetaxel (75 mg/m2) N=278
OS (months)	Mean 12.77 (0.676)	15.08 (0.848); p=0.03 10.5 (9.3, 11.9), Log-rank p=0.0399
	Median 9.4 (8.4, 10.7)	HR = 0.82 (0.68 – 0.99)
Secondary Endpoint - Hierarchy Order		
ORR (%)	6.76%	12.23%; p=0.0275
PFS (months)	Mean 4.4 (0.3) Median 3.0 (2.8, 3.7)	6.0 (0.4); p=0.006 3.6 (3.0, 4.4), Log-rank p=0.008 HR = 0.76 (0.63, 0.93)
Grade 4 neutropenia, cycle 1 Day 8 (%)	27.8%	5.3%; p<0.0001
24 Month OS Rate (%)	12.5%	22.1%; p = 0.0072
36 Month OS Rate (%)	5.3%	11.7%; p = 0.0393
48 Month OS Rate (%) - exploratory	0%	10.6%; p value cannot be calculated
Q-TWiST <ul> <li>Relative Gain to Q-TWiST</li> </ul>	10.47 M (9.34, 11.63)	12.40 M (10.99, 13.83) 18.43% (2.07%, 37.20%); p=0.0393

### CONCLUSION



- Dublin-3 study met OS primary endpoint and key secondary endpoints: PFS and ORR.
- Plinabulin showed durable anti-cancer benefit in doubling 24 M, 36 M OS rate in Plinabulin + Docetaxel (DP) vs Docetaxel (D). OS rate at 48 M for DP at 10.6% vs D at 0%.
- DP is well tolerated, with lower grade 4 and grade 3/4 AE per patient per year in comparison to D arm. In addition, plinabulin protected bone marrow by significantly reducing grade 4 neutropenia of Docetaxel (28% to 5%, p<0.0001).
- Improvement >18% Q-twist (time with good QoL), which is clinically meaningful.

Plinabulin + Docetaxel has a favorable benefit/risk ratio, and has the potential of preferred 2nd/3rd line treatment for NSCLC with EGFR wild type.



## Acknowledgement



### This study was funded by BeyondSpring Pharmaceuticals, Inc.

- We would like to thank all the patients and their family for their participation and essential role in the study.
- We would also like to thank all the investigators and medical staff from around 60 sites in the US, China, and Australia and the study team for their contribution in the study.
- A special thank you to: Dr. Sun Yan at Cancer Hospital Chinese Academy of Medical Sciences China; Dr. Baohui Han at Shanghai Chest Hospital –China; Dr. Shi Yuankai at Cancer Hospital Chinese Academy of Medical Sciences – China; Dr. Chen Gongyan at Harbin Medical University Cancer Hospital – China; Dr. Yao Yu at The First Affiliated Hospital of Xi'an Jiaotong University – China; Dr. Hu Chunhong at The Second Xiangya Hospital – China; Dr. Trevor Feinstein at Piedmont Cancer Institute –US; Dr. Jimmy Ruiz at Wake Forest Baptist Health – US; Dr. Merrill Shum at Innovative Clinical Research Institute – US; Dr. Matthew Wong at Gosford Hospital – Central Coast Cancer Centre-Australia.



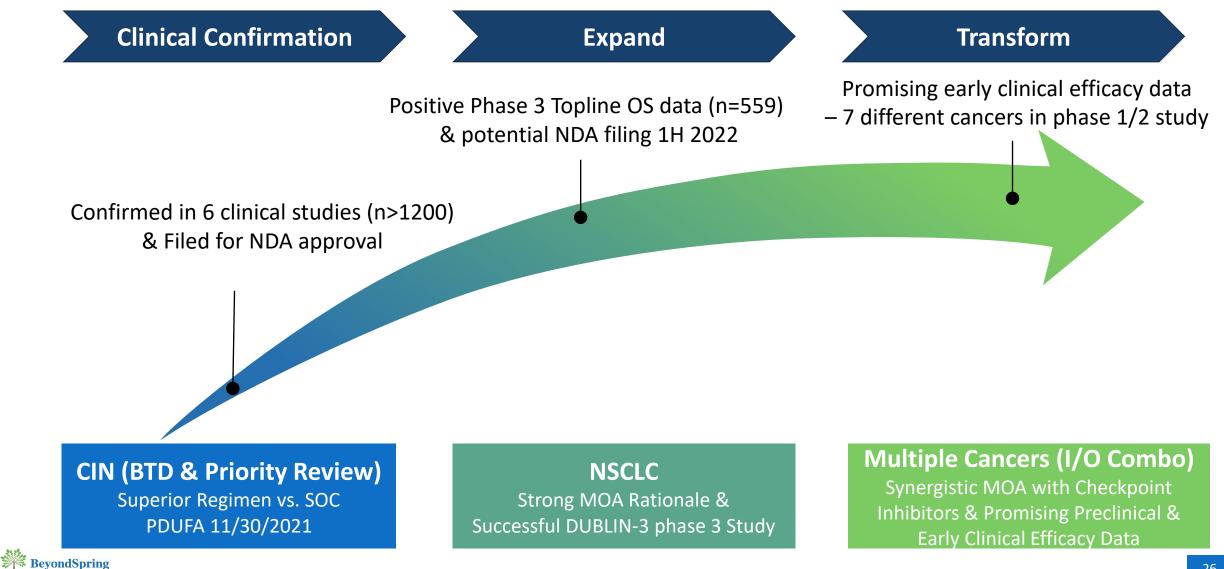
### Potential "Cornerstone" for IO Combos

PD-1/PD-L1 Inhibitors - \$30 B global annual sales		Potential to greatly expand the addressable market
Current Severe Unmet Medical Needs		Plinabulin Clinical Development
<ul> <li>PD-1/PD-L1 resistant patients need later line therapies</li> </ul>	+"Easy- to-use"	<ul> <li>Plinabulin + I/O + chemo/radiation</li> </ul>
<ul> <li>PD-1 + chemo double efficacy of PD-1, but with CIN risk</li> </ul>	APC Inducer	<ul> <li>Plinabulin is developed as a CIN prevention agent (pan cancer, pan chemo)</li> </ul>
• PD-1 or PD-1+CTLA-4 with high ir-SAE		<ul> <li>Plinabulin+PD-1+CTLA-4 in SCLC</li> </ul>
<ul> <li>PD-1/PD-L1 non-responsive tumor;</li> <li>Patients who cannot use PD-1/PD-L1</li> </ul>		<ul> <li>Plinabulin+ I/O + chemo/radiation</li> <li>Plinabulin + chemo</li> </ul>

### **Triple I/O Combo Development for Multiple Cancers**

	Indication / Target	Program	Trial Name / Collaborator	Commercial Rights	Status
Triple Combo IO (IIT)	SCLC Checkpoint naïve and checkpoint refractory patients	Plinabulin + Nivolumab (PD-1) + Ipilimumab (CTLA-4)	7 US sites, including Rutgers University as lead center (Big Ten)	Global	Phase 1 completed, Presenting at ASCO June 2021
	SCLC Checkpoint refractory patients	Plinabulin + Nivolumab (PD-1) + Ipilimumab (CTLA-4)	Big Ten Study	Global	Initiating Phase 2
	7 Cancers* PD-1/PDL1 failed pts	Plinabulin + PD- 1/PD-L1 + radiation	MD Anderson	Global	First patient dosed in 06/2021

### Plinabulin Franchise: "Pipeline in a Drug"







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