

## DEVELOPING BREAKTHROUGH THERAPIES FOR RARE INFLAMMATORY DISEASES



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#### **OVERVIEW**

- Focus: rare, life-threatening, inflammatory/fibrotic diseases
- Resunab™: novel oral small molecule entering Phase 2 in
  - Cystic Fibrosis (CF)
  - Diffuse Cutaneous Systemic Sclerosis ("Scleroderma")
    - Fast Track Status granted by U.S. FDA
  - Dermatomyositis (DM)
- Data read out from Phase 2 studies in Q4 2016
- \$5MM Development Award from Cystic Fibrosis Foundation
- IP portfolio  $\rightarrow$  2033
- NASDAQ: CRBP



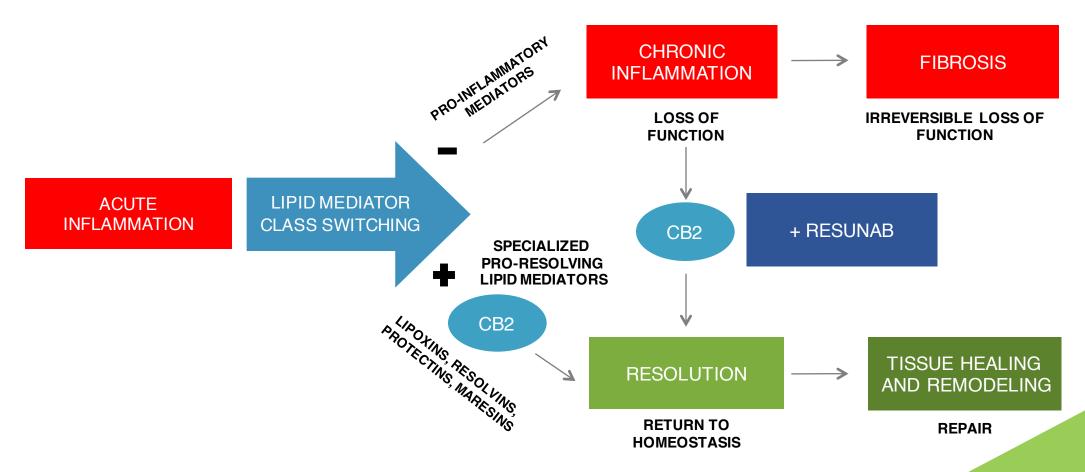
## THERAPEUTIC PIPELINE

INDICATION	PRE-CLINICAL	PHASE 1	PHASE 2	PIVOTAL STUDY
CYSTIC FIBROSIS (CF)		RESUNAB <sup>™</sup>		
SYSTEMIC SCLEROSIS (SCLERODERMA)		RESUNAB™		
DERMATOMYOSITIS (DM)		RESUNAB <sup>™</sup>		

POTENTIAL FUTURE INDICATIONS					
INDICATION	Patient numbers	Estimated market	Current therapies	Drawbacks	
LUPUS (SLE)	500 000 - 1.5MM	>\$3B	STEROIDS, mAbs	Side effects, poor efficacy	
IDIOPATHIC PULMONARY FIBROSIS (IPF)	70 000	> 1B	PIRFENIDONE	Limited efficacy: Intermune bought by Roche for \$8.5b(2014)	
OTHER CHRONIC INFLAMMATORY DISEASES	10 000 - 100 000	>\$10B	STEROIDS, mAbs	Side effects, poor efficacy	



# INNATE IMMUNE RESPONSES AND INFLAMMATION REQUIRE ACTIVE RESOLUTION TO RESTORE HOMEOSTASIS





#### **PUBLICATIONS**

ARTHRITIS & RHELIMATISM

Vol. 52, No. 12, December 2005, pp 3693–3697

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EDITORIAL

Eicosanoids in Scleroderma: Lung Disease Hangs in the Balance

Bruce D. Levy

cia

www.nature.com/corectapnecede/t

# Mechanisms of Disease: leukotrienes and lipoxins in scleroderma lung disease—insights and potential therapeutic implications

Otylia Kowal-Bielecka\*, Krzysztof Kowal, Oliver Distler and Steffen Gay

#### SUMMARY

Scleroderma interstitial lung disease (SLD) is a leading cause of morbidity and mortality in patients with systemic sclerosis. Although the pathogenesis of SLD is not clear, excessive fibrosis and inflammatory cell infiltration are the main histologic features of this disorder. Leukotrienes and lipoxins are two functionally different classes of lipogygenase-derived eicosanoids. Leukotrienes are potent proinflammatory mediators and directly and indirectly stimulate fibroblast chemotaxis, proliferation, and collagen synthesis. Lipoxins counter-regulate the proinflammatory actions of leukotrienes and activate resolution of the inflammatory response. In addition, lipoxins inhibit growth-factor-induced fibroblast proliferation and collagen synthesis. Studies using bronchoalveolar lavage have revealed that there is an overproduction of proinflammatory and profibrotic leukotrienes in the lungs of patients with SLD, and that leukotriene levels correlate with inflammatory indices within the lungs. Moreover, the increased levels of leukotrienes in these patients are not balanced by an upregulation of anti-inflammatory and antifibrotic lipoxins. Unopposed actions of leukotrienes might, therefore, induce chronic inflammation and fibrosis in the lungs of SLD patients. Accordingly, pharmacologic correction of a leukotriene-lipoxin imbalance using leukotriene inhibitors or lipoxin. analogs might be a new approach to the treatment of SLD. KEYWORDS leukotrienes, lipoxins, lipoxygenase, solero; erma interstitial lung

#### disease, systemic scierosis REVIEW CRITERIA

To identify relevant publications for indusion in this article we searched the PubMed database from the beginning of January 2000 through to the end of Ageil 2006 using the following search keywords: "systemic sclerosis," intensifial lung disease", 'lung fibrosis' and "fibrosis,' together with "liproxygranses", "Jenkotriene" and "liproxin", Both abstracts and papers were incinded in the search. In addition, delevant publications published before the beginning of January 2000 were identified by searching the reference lists of the articles found by the PubMed search. The search was limited to English January papers.

O Kowal-Bielecka is a Senior Fellow in the Department of Rheumatology and Internal Medicine, and K Kowal is a Senior Fellow in the Department of Altergology and Internal Medicine, Medical University in Biolystok, Biolystok, Delay C. Dieter Schrift in the Delay (1997).

#### INTRODUCTION

Scleroderma interstitial hung disease (SLD) is a frequent complication, and the leading cause of death, in systemic sclerosis. Histologically, SLD is characterized by infiltration of inflammatory cells and excessive fibrosis of the lung parenchyrna and alveoli, which leads to impaired gas exchange, restrictive ventilatory defects, and respiratory failure.1 Although the pathogenesis of interstitial lung disease is not fully understood, studies over the past 10 years point to early injury and inflammation that leads to dysregulated tissue repair and fibrosis. The mechanisms responsible for the progression of lung fibrosis are complex, and include fibroblast activation, alterations in immune regulation and response, chronic inflammation, and microvascular and epithelial injury.

A number of proinflammatory and profibrotic mediators have been implicated in the pathogenesis of interstitial lung disease, including cytokines, chemokines and growth factors, such as interleukin (IL) 4, IL-13, OC-chemokine ligand (CCL) 2 (also known as monocyte chemoattractant protein 1), transforming growth factor  $\beta$  (TGF- $\beta$ ), platelet-derived growth factor (PDGF), and many others. In addition to the well-established role of stimulatory pathways, the importance of natural counter-regulatory mechanisms, which are responsible for the preservation of tissue function through the limitation of inflammatory and fibrotic responses, is being recognized in the development of inter-

stitial lung disease. There is growing evidence that

EXTENDED REPORT

#### The 12/15-lipoxygenase pathway counteracts fibroblast activation and experimental fibrosis

Gerhard Krönke, <sup>1,2</sup> Nicole Reich, <sup>1</sup> Carina Scholtysek, <sup>1,2</sup> Alfrya Akhmetshina, <sup>1</sup> Stefan Uderhardt, <sup>1,2</sup> Pawel Zerr, <sup>1</sup> Katrin Palumbo, <sup>1</sup> Veronika Lang, <sup>1</sup> Clara Dees, <sup>1</sup> Oliver Distler, <sup>3</sup> Georg Schett, <sup>1</sup> Jörg H W Distler, <sup>1</sup>

ARSTRACT

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Background Idiopathic and inflammation-dependent fibrotic diseases such systemic sclerosis (SSc) impose

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#### **CHEST**

Translating Basic Research Into Clinical Practice

#### Eicosanoid Lipid Mediators in Fibrotic Lung Diseases\*

Ready for Prime Time?

Steeen K. Huang, MD; and Marc Peters-Golden, MD

Recognition of a pivotal role for excessnotes in both normal and pathologic fibroproliferation is long overdue. These lipid mediators have the ability to regulate all cell types and nearly all pathways relevant to fibrosic lung disorders. Abnormal fibroproliferation is characterized by an excess of profibrotic leukoutienes and a deficiency of annithrosic prostaglandins. The relevance of an etcessnood imbalance is perinent to diseases involving the parencipmal, airway and viscular compartments of the lung, and is supported by studies conducted both in humans and animal models. Given the lack of effective alternatives, and the existing and emerging options for therapeutic targeting of excessnotes, such treatments are ready for prime time.

(CHEST 2008; 133:1442-1450)

Key words airway remodeling; leukstrieues; prostaglandins; pulmonary fibrosis

Abbreviations: cAMP = cyclic adenosine monophosphate; cycLT = cyrteinyl leukotriene; COX = cyclosygenase; cycLT = cyrteinyl leukotriene receptor I; EP = E; prostanoid receptor; IL = interleukis; IP = I; prostanoid receptor; IL = interleukis; IP = I; prostanoid receptor; IP = IPV = thoughts polymonary fibrosit; SLO = S-bysogenase; LT = kolletitene; PC = prostaglanda; TCF = transforming growth fields; TA = T believ

As a result of both research advances and therafavored concepts regarding the pathobiology of pulmonary fibrosis have shifted from a central focus on inflammation to one of abnormal fibroproliferative responses to lung injury that result in tissue remodeling. I such responses are thought to involve the

Trum the Division of Pelmonary and Crkical Care Medicine, University of Mixingan Medical School, Ann Arbor, M.I. This work was performed at the University of Mixingan and funded by National Institutes of Health grant 799 HLS6402 from the National Heart, Lung, and Blood institute. Dr. Huang has supported by National Institutes of Health grant 732 HL97749. Dr. Huang the reported to the ACCP that no tegalization collision of the Control of

apoptotic loss of alveolar epithelial cells; recruitment, expansion, and activation of mesenchymal cells; and deposition of excess matrix proteins such as collagen, particularly by α-smooth muscle actinpositive myofibroblasts. These processes in turn are driven by a profibrotic milieu that is characterized by oxidant stress, growth factors such as transforming growth factor (TGF)-B, T-helper (Th) type 2 immune response polarization, and abnormalities in the coagulation cascade.1 Although the prototypic fibroproliferative lung diseases are diffuse disorders of the pulmonary parenchyma, such as idiopathic pulmonary fibrosis (IPF), many aspects of their pathobiology are shared by remodeling diseases involving other compartments of the lung. Examples include airway remodeling in patients with asthma and bronchiolitis obliterans, and vascular remodeling in nationts with

# Defective lipoxin-mediated anti-inflammatory ctivity in the cystic fibrosis airway

aristopher L Karp<sup>1</sup>, Leah M Flick<sup>1,8</sup>, Kiwon W Park<sup>2,8</sup>, Samir Softic<sup>1,8</sup>, Todd M Greer<sup>1</sup>, Raquel Keledjian<sup>3</sup>, ong Yang<sup>2</sup>, Jasim Uddin<sup>3</sup>. William B Guegino<sup>4</sup>, Sowsan F Atabani<sup>1</sup>, Yasmine Belkaid<sup>1</sup>, Yan Xu<sup>5</sup>.

ffrey A V CYSTIC FIBROSIS

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# Reduced 15-lipoxygenase 2 and lipoxin $A_4$ /leukotriene $B_4$ ratio in children with cystic fibrosis

Fiona C. Ringholz<sup>1</sup>, Paul J. Buchanan<sup>1</sup>, Donna T. Clarke<sup>1</sup>, Roisin G. Millar<sup>1</sup>, Michael McDermott<sup>2</sup>, Barry Linnane<sup>1,3,4</sup>, Brian J. Harvey<sup>5</sup>, Paul McNally<sup>1,2</sup> and Valerie Urbach<sup>1,4</sup>

Affiliations: 'National Children's Research Centre, Crumlin, Dublin, Ireland. 'Our Lady's Children's Hospital, Crumlin, Dublin, Ireland. 'Midwestern Regional Hospital, Limerick, Ireland. 'Centre for Interventions in Infection, Inflammation and Immunity [4i], Graduate Entry Medical School, University of Inverick, Limerick, Ireland. 'Molecular Medicine Laboratories, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin, Ireland. 'Institut National de la Santé et de la Recherche Médicale, U845, Faculté de Médecine Paris Descartes, Paris, France.

Correspondence: Valerie Urbach, National Children's Research Centre, Crumlin, Dublin 12, Ireland. E-mail; valerie.urbach@ncrc.ie

ABSTRACT Airway disease in cystic fibrosis (CF) is characterised by impaired mucociliary clearance, persistent bacterial infection and neutrophilic inflammation. Lipoxin A<sub>4</sub> (LXA<sub>4</sub>) initiates the active resolution of inflammation and promotes airway surface hydration in CF models. 15-Lipoxygenses (LO) plays a central role in the "class switch" of cicosanoid mediator biosynthesis from leukotrienes to lipoxins, initiating the active resolution of inflammation. We hypothesised that defective cicosanoid mediator class switching contributes to the failure to resolve inflammation in CF lung disease.

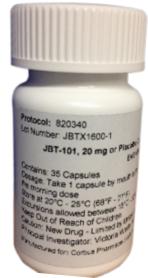
Using bronchoalveolar lavage (BAL) samples from 46 children with CF and 19 paediatric controls we demonstrate that the ratio of LXA<sub>4</sub> to leukotriene  $B_4$  (LTB<sub>4</sub>) is depressed in CF BAL (p<0.01), even in the absence of infection (p<0.001).

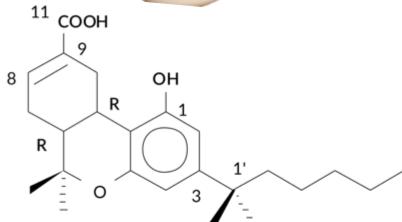
Furthermore, 15-LO2 transcripts were significantly less abundant in CF BAL samples (p<0.05). In control BAL, there were positive relationships between 15-LO2 transcript abundance and LXA<sub>4</sub>/LTB<sub>4</sub> ratio (p=0.01, r=0.66) and with percentage macrophage composition of the BAL fluid (p<0.001, r=0.82), which were absent in CF.

Impoverished 15-LO2 expression and depression of the LXA<sub>4</sub>/LTB<sub>4</sub> ratio are observed in paediatric CF BAL. These observations provide mechanistic insights into the failure to resolve inflammation in the CF lung.

## **RESUNAB™ (JBT-101, AJULEMIC ACID)**

- Oral small molecule (MW 400 Da) with once or twice a day dosing
- Preferentially binds and activates cells through CB2 > CB1 (Ki ratio12:1)
- Reduced penetration of blood-brain-barrier (30%)
- Safely tested in 126 subjects for up to 7 days
- Adverse events dose-dependent at ≥ 150 mg/day consistent with class
- Expected therapeutic doses of 5 mg/day (range 0.5 40 mg/day)
- 13-wk tox studies in rats and dogs support 3 month clinical testing
- CMC: 5 kg batches GMP material with 2 year stability
- FDA: Open IND in 3 clinical trials, Orphan and Fast Track status in SSc







## **CYSTIC FIBROSIS:**

CF is a life-threatening, genetic disease that primarily affects the lungs and digestive system. CF is characterized by chronic lung inflammation that leads to lung damage and fibrosis.

30,000 patients in the USA

75,000 patients worldwide in initial

40 YEARS

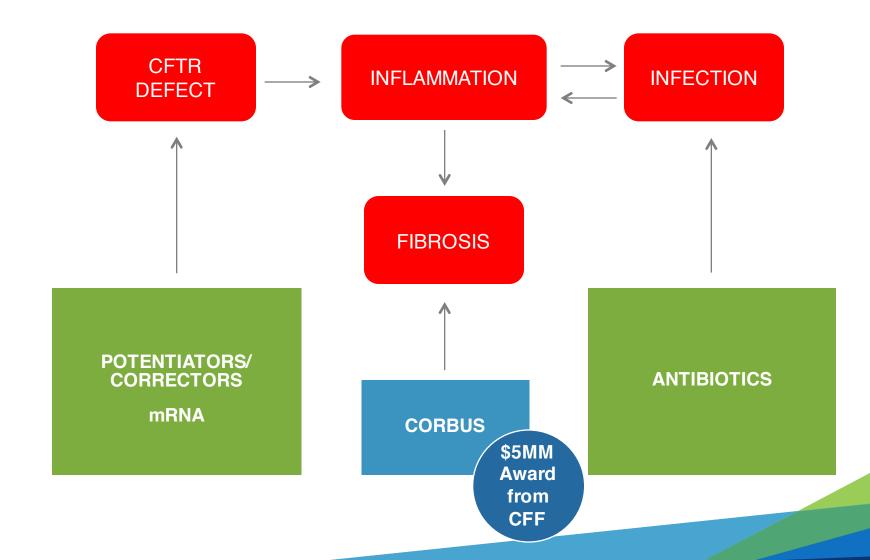
AVERAGE LIFE EXPECTANCY OF CF PATIENTS

## KEY TAKE-AWAYS

- Need for safe, chronic inflammation-targeting drug is unmet and recognized
- Inflammation and fibrosis
   play key role in CF morbidity
   and mortality
- Pharmacoeconomics are proven and favorable



# CORBUS IS UNIQUELY POSITIONED WITH RESUNAB TO RESOLVE INFLAMMATION IN CF





## **COMPETITIVE LANDSCAPE IN CF INFLAMMATION**

COMPANY	TARGET (DRUG)	STATUS
Celtaxsys	LTB4 inhibitor (CTX-4430)	Entering Phase 2
Boehringer Ingelheim	LTB4 receptor antagonist (BIIL 284 BS)	Failed in Phase 2 due to increased pulmonary exacerbations
Merck	CystLT inhibitor (Singulair)	Failed in Phase 2 for CF
AZ	LOX inhibitor upstream of LTB4 (Zyflo)	Never officially tested in CF but poor effect in asthma
J&J	Similar to Celltaxysis (JNJ-40929837)	Never tested in CF but failed in asthma Phase 2a









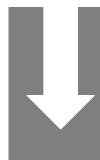




# RESUNAB FAVORS PRODUCTION OF SPMs & INHIBITS PRO-INFLAMMATORY MEDIATORS IMPORTANT IN CF

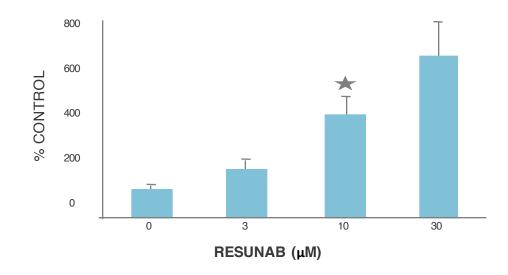
#### LIPOXIN A4

- Reduced in CF lungs
- Replacement therapy effective in animal models

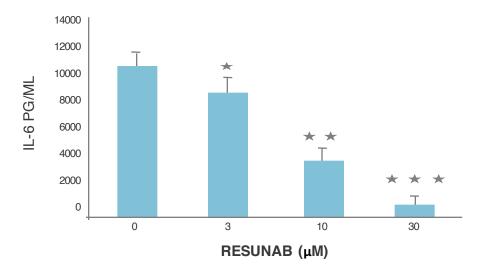


IL-6, IL-8, IL-1, Type I IFNs, TNFα

- Associated with worsening symptoms







IL-6 Monocyte-derived macrophages  $\pm$ Resunab, stimulated with LPS . \* p = 0.03, \*\* p = 0.01, \*\*\* p = 0.005 versus no Resunab1



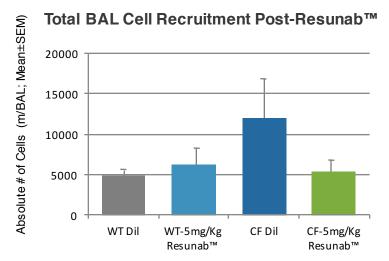
# RESUNAB RESOLVES LUNG INFLAMMATION IN PSEUDOMONAS AERUGINOSA INFECTED CF MOUSE MODEL

#### **DESIGN**

- Wild type or CFTR gut corrected mice
- All infected with Pseudomonas aeruginosa (10<sup>5</sup> viable-CFUs on agarose beads)
- Oral Resunab at 1 or 5 mg/kg bid starting 24 hours post infection
- Mice sacrificed on Day 10

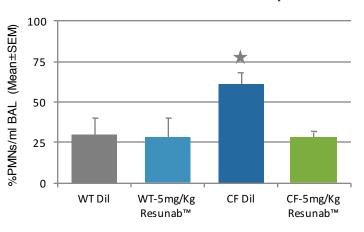
#### **RESULTS**

- Total BAL cells were increased at Day 10 in CF mice
- Resunab normalized the increase in BAL cells
- Resunab induced a shift from neutrophil-predominant to macrophage-predominant cells in the lungs of CF mice, consistent with resolution of inflammation

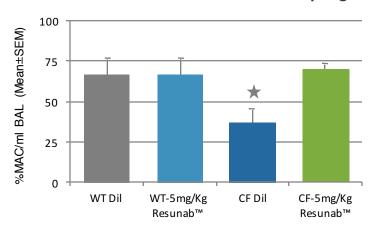




#### **Relative Number of Neutrophils**



#### **Relative Number of Alveolar Macrophages**





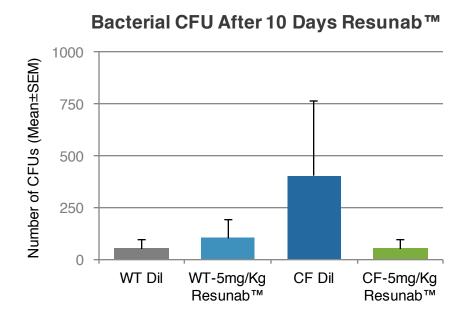
# RESUNAB ENHANCES RESOLUTION OF LUNG INFECTION IN CF MICE INFECTED WITH PSEUDOMONAS

#### **DESIGN**

- Wild type or CFTR gut corrected mice
- All infected with Pseudomonas aeruginosa (10<sup>5</sup> viable-CFUs on agarose beads)
- Oral Resunab at 1 or 5 mg/kg bid starting 24 hours post infection
- Mice terminated on Day 10

#### **RESULTS**

- Total CFUs were increased at Day 10 in CF mice
- Resunab normalized the increase in CFUs in the lungs of CF mice at Day 10, consistent with resolution of inflammation





# RESUNAB REDUCES WEIGHT LOSS AND IMPROVES SURVIVAL IN CF MICE INFECTED WITH PSEUDOMONAS

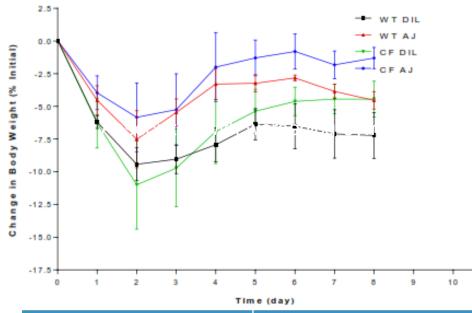
Change in Body Weight (% Initial)

#### **DESIGN**

- · Wild type or CFTR gut corrected mice
- All infected with Pseudomonas aeruginosa (10<sup>5</sup> viable-CFUs on agarose beads)
- Oral Resunab at 1 or 5 mg/kg bid starting 24 hours post infection
- Mice terminated on Day 10

#### **RESULTS**

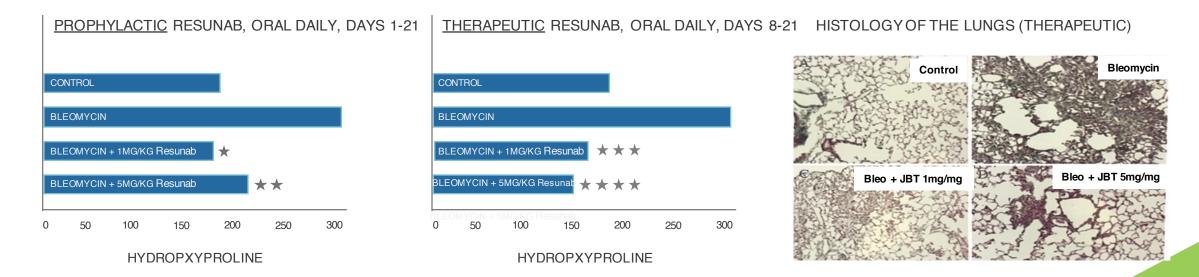
- Weight decreases during Pseudomonas lung infection in mice
- Resunab reduces weight loss in both wild type and CF mice
- Resunab improves survival rate in CF mice



GROUP	SURVIVAL RATE DAY 10
WT	5/5 (100%)
WT + Resunab	5/5 (100%)
CF	3/5 (60%)
CF + Resunab	5/5 (100%)

# PROPHYLACTIC AND THERAPEUTIC RESUNAB INHIBIT COLLAGEN DEPOSITION IN BLEOMYCIN-INDUCED LUNG FIBROSIS

- Bleomycin intratracheal injection, Day 1. Mice sacrificed after 21 days.
- Resunab by gavage, Days 1-21 (prophylactic) or Days 8-21 (therapeutic)



p = 0.002, p = 0.004, p = 0.004, p = 0.001, p = 0.0001, b = 0.00



#### **RESUNAB PLANNED CYSTIC FIBROSIS PHASE 2 TRIAL**

	Q1 2015	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016
IND open with FDA		$\checkmark$						
Study launches			X					
First patient dosed			*					
Study duration				X		X	X	
Last patient dosed							×	
Study data released								×

- Double blind randomized placebo control study in the US and EU
- Primary endpoints: Safety/tolerability
- Secondary endpoints: Pharmacokinetics and efficacy (FEV1, Lung Clearance Index, CFQ-R Respiratory Domain)
- Exploratory endpoints: Metabolipidomic profile for MOA, biomarkers of disease activity in blood and sputum, biomarkers of inflammation, and microbiota in the lungs
- Patient number: 70 adults with CF in ~20 sites US & EU
- Treatment duration: 3 months + 1 month follow-up
- Dose response: 1 mg/day, 5 mg/day, 20 mg/day and 2x20 mg/day





# SCLERODERMA

Chronic inflammatory disease causing fibrosis of skin and internal organs

70,000 patients in the usa **I I I I** 

80% FEMALE PATIENTS TATION

40-60 YEARS

AVERAGE AGE OF PATIENTS

# LUNG FIBROSIS COMMON CAUSE OF DEATH - 50% MORTALITY IN 10 YEARS

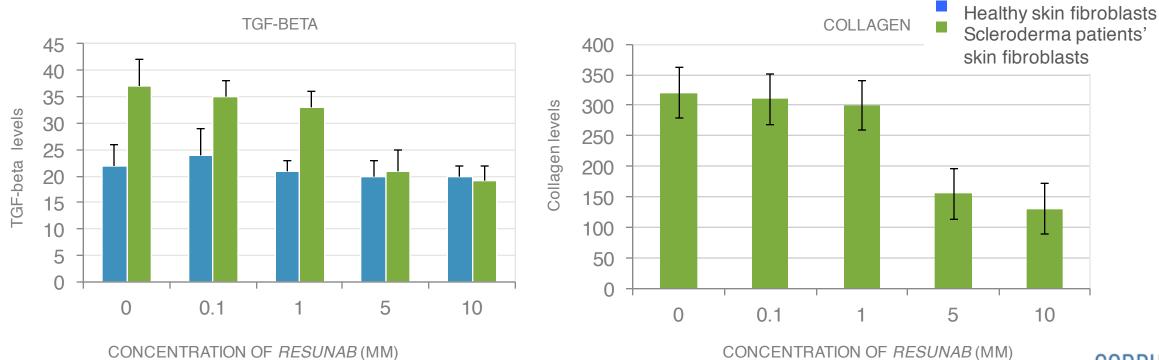
## KEY TAKE-AWAYS

- Current therapy involves steroids and immunosuppressive agents
- No effective and safe long-term therapy available
- No FDA approved drugs
- Pipelines often target Idiopathic Pulmonary Fibrosis (IPF) in conjunction with SSc

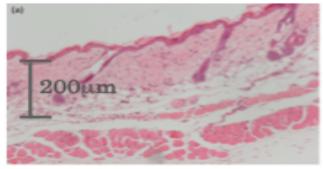


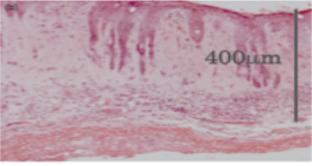
#### RESUNAB INHIBITS KEY FACTORS IN SCLERODERMA

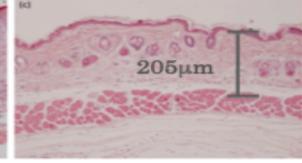
- TGF-beta plays key role in SSc progression (same in CF and IPF)
- Elevated TGF-beta levels associated with disease progression
- Strong Resunab efficacy data in SSc animal models
- Resunab reduces TGF-beta and collagen in skin fibroblasts from SSc patients



# RESUNAB INHIBITS SKIN THICKENING IN MOUSE SSC MODEL



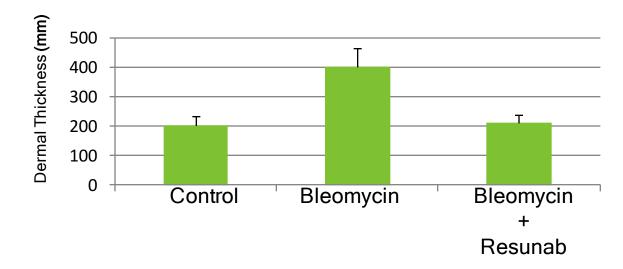




Healthy skin

Thick skin induced by Bleomycin

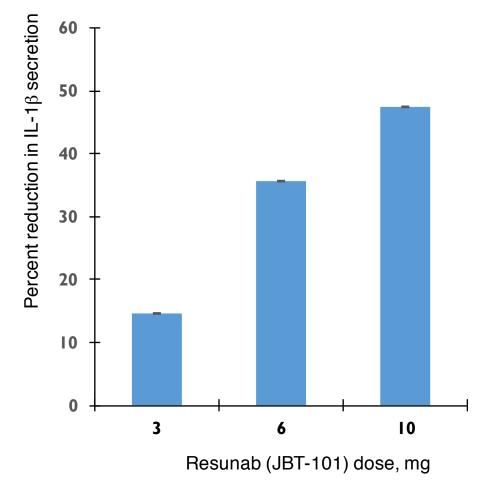
Near normal skin after oral *Resunab* taken once daily for four weeks





# PRELIMINARY EVIDENCE OF MOAIN HEALTHY HUMAN SUBJECTS

Three healthy volunteers received single doses of 3, 6, and 10 mg Resunab (JBT-101). Five hours following each dose, PBMC were isolated and stimulated with IL- $1\alpha$ , then IL- $1\beta$  secretion was measured after 18 hours incubation. Percent inhibition was determined relative to baseline values prior to JBT-101.





#### RESUNAB: PLANNED SSC PHASE 2 CLINICAL TRIAL

	Q1 2015	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016
IND open with FDA	$\checkmark$							
Study launch			$\checkmark$					
First patient dosed			×					
Study duration			X	×	×	×	×	
Last patient dosed							×	
Study data released								X

- Double blind placebo control randomized study in USA under IND from FDA
- Primary end points: Safety/tolerability + Change in clinical outcomes (CRISS)
- Secondary end points: Metabolipodomic profile + biomarkers of disease activity & inflammation + quality of life (QOL)
- Patient number: 36 adults with SSc at 8-10 US sites
- Treatment duration: 3 months + 1 month follow-up
- Dose response: 5mg/day, 20mg/day and 20mg/2Xday



DERMATOMYSITIS:
CRITICAL UNMET IN
RARE DISEASE



## DERMATOMYOSITIS

is a connective tissue disease characterized by inflammation of skin and muscles

25,000 patients in the USA

NO FDA

APPROVED THERAPIES
FOR DERMANTOMYSITIS

## KEY TAKE-AWAYS

- Treated with steroids and immunosuppressive therapies but with significant toxicities
- Phase 2 study in 22 patients underway at University of Pennsylvania
- NIH is funding the study
- Data read out expected in early 2017

#### **MANAGEMENT TEAM**



YUVAL COHEN PH.D
CHIEF EXECUTIVE OFFICER

Co-founder and former President of Celsus Therapeutics (CLTX) Expertise in developing anti-inflammatory drugs including for CF



MARK TEPPER PH.D,
PRESIDENT & CHIEF SCIENTIFIC OFFICER

Former VP USA Research & Operations, EMD Serono; Sr. Investigator, Bristol-Myers Squibb Key member of project teams which developed the following marketed drugs: Taxol® (Ovarian Cancer, 2000 peak sales of \$1.6B), Orencia® (RA, 2013 sales of \$1.4B), Rebif® (MS, 2013 sales of \$2.59B), Gonal-F® (Fertility, 2013 sales of \$815MM)



SEAN MORAN C.P.A. M.B.A. CHIEF FINANCIAL OFFICER

Former CFO: InVivo (NVIV), Celsion (CLSN), Transport Pharma, Echo Therapeutics (ECTE) & Anika Therapeutics (ANIK)



BARBARA WHITE M.D. CHIEF MEDICAL OFFICER

Board-certified Rheumatologist and clinical immunologist. Previously held positions in industry: SVP and Head, R&D for Stiefel a GSK company, VP and Head of Inflammation Clinical Development at UCB and MedImmune/AstraZeneca, and Director, Medical Affairs, Amgen



**SCOTT CONSTANTINE M.S.**Director, Clinical Operations

Expertise in CF and Pulmonary diseases trials. Former Director, Clinical Research & Operations of Insmed and Clinical Program Scientist at PTC Therapeutics (PTCT)



#### **BOARD OF DIRECTORS**

# YUVAL COHEN, PH.D. CHIEF EXECUTIVE OFFICER

# AMB. ALAN HOLMER CHAIRMAN OF THE BOARD

Former CEO of PhRMA (1996-2005)

Over two decades of public service in Washington, D.C. including Special Envoy to China (2007-2009)

Former board member Inspire Pharma

Chairman of the Board of the Metropolitan Washington, D.C. Chapter of the Cystic Fibrosis Foundation

#### **AVERY W. (CHIP) CAITLIN**

CFO Celldex Therapeutics (CLDX) since 2000
Raised over \$600MM financing
20 years experience in industry: Repligen (CFO)
and Endogen (CFO)

#### **DAVID HOCHMAN**

Managing Partner of Orchestra Medical Ventures Over 17 years of venture capital and investment banking experience

Former Managing Director of Spencer Trask Ventures, Inc. securing over \$420 million in equity capital

#### **RENU GUPTA, MD**

25 years of development, regulatory and senior management experience in the biopharm industry

Former CMO of Insmed, a specialty CF company and current advisor to the CEO

Former Vice President and Head of US Clinical Research and Development at Novartis (2003-2006)



#### **WORLD-CLASS SCIENTIFIC ADVISORS**

# ETHAN BURSTEIN, PH.D. ACADIA PHARMACEUTICALS INC.

Senior Director of Biosciences

# SUMNER BURSTEIN, PH.D. UMASS MEDICAL SCHOOL

Professor of Biochemistry and Pharmacology; inventor of Resunab

# JAMES CHMIEL, M.D. CASE WESTERN RESERVE MEDICAL SCHOOL

Professor Medicine, National PI on largest ever anti-inflammatory CF study

# DANIEL FURST, M.D. UCLA SCHOOL OF MEDICINE

Director of UCLA Scleroderma Program

# MICHAEL KNOWLES, M.D., PH.D. UNC CHAPEL HILL

Professor of Pulmonary and Critical Care Medicine

# CHARLES N. SERHAN, PH.D. BRIGHAM AND WOMEN'S HOSPITAL; HARVARD MEDICAL SCHOOL

Director of CET&RI; Professor of Anesthesia, Perioperative and Pain Medicine, Infection and Immunity

# ROBERT ZURIER, M.D. UMASS MEDICAL SCHOOL

Ex-Chair of Rheumatology



## FINANCIAL PROFILE I NASDAQ: CRBP

Stock Ticker:	NASDAQ: CRBP						
\$72 MM	Market capitalization	n as of 8/28/2015					
37,535,000	Common shares ou	tstanding after warrant e	exercises (called on 7/27	//2015)			
43,350,000	Fully diluted outstan	nding					
\$14.2MM	Cash as of 08/28/20	015 not including addition	nal \$3.8MM from CFF av	ward			
862,000	Average daily tradin	Average daily trading volume					
Q1 2015	Q2 2015	Q2 2015	Q3 2015	Q4 2016			
IND open with FDA for SSC/DM	Up-listed to NASDAQ \$5MM Award from CFF	IND open with FDA for CF	Start 3 clinical trials in CF, SSc and DM	Data Readout from CF, SSc			



## MILESTONES Q3+Q4 2015

ANTICIPATED DATE	MILESTONE
August 26 <sup>th</sup>	Completed warrant call:100% of callable warrants exercised
August 19 <sup>th</sup>	Fast Track status granted for systemic sclerosis
Aug 31st	Systemic sclerosis (SSC) Phase 2 clinical trial launched
Q3	Launch CF Phase 2 clinical trial
Oct 8-10	North American CF Conference: pre-clinical data presented
Oct 20-21	The 14th Annual BIO Investor Forum
Q4	All 3 Phase 2 clinical trials (CF, SSC and DM) are enrolling and dosing patients
Q4	Anticipated Orphan designation for CF
Q4	Anticipated Fast Track designation for CF



#### CONCLUSIONS

- Experienced, seasoned team with proven track record
- Lead Product Resunab is a novel, promising clinical stage oral drug
- Conducting Phase 2 trials in three separate rare diseases
- Data read out from Phase 2 trials in Q4 2016
- \$5MM Award from CFF and NIH funding for DM
- Near-term milestones can drive valuation



### **CONTACT US**

Corbus Pharmaceuticals Holdings, Inc.

617.963.0100 <u>info@corbuspharma.com</u> <u>www.corbuspharma.com</u>

100 River Ridge Drive Suite 103 Norwood, MA 02062

