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**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION**  
Washington, D.C. 20549

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**FORM 8-K**

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**CURRENT REPORT  
Pursuant to Section 13 or 15(d)  
of the Securities Exchange Act of 1934**

Date of Report (Date of earliest event reported): **July 9, 2020**

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**CYCLERION THERAPEUTICS, INC.**  
(Exact name of registrant as specified in its charter)

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Massachusetts  
(State or other jurisdiction of  
incorporation)

001-38787  
(Commission File  
Number)

83-1895370  
(IRS Employer  
Identification Number)

**301 Binney Street**  
**Cambridge, Massachusetts 02142**  
(Address of principal executive offices, including Zip Code)

Registrant's telephone number, including area code: **(857) 327-8778**

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

<u>Title of each class</u>	<u>Trading Symbol(s)</u>	<u>Name of each exchange on which registered</u>
Common Stock, no par value	CYCN	The Nasdaq Stock Market LLC (Nasdaq Global Select Market)

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter). Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

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## **Item 2.02 Results of Operations and Financial Condition.**

As described in Item 7.01 below, on July 9, 2020, Cycleron Therapeutics, Inc. (the “Company”) released a corporate slide presentation. The presentation included preliminary information that, as of June 30, 2020, the Company’s unaudited cash, cash equivalents and restricted cash balance was approximately \$61 million and that the Company anticipates that this amount will be sufficient to fund planned operating expenses and capital expenditure requirements into the second half of 2021.

The foregoing information constitutes unaudited and preliminary estimates that (i) represent the most current information available to management as of the date of the presentation, (ii) are subject to completion of financial closing and procedures that could result in significant changes to the estimated amounts, and (iii) do not present all information necessary for an understanding of the Company’s financial condition as of, and its results of operations for the quarter ended June 30, 2020. Accordingly, undue reliance should not be placed on such estimates.

The information set forth in this Item 2.02 is being furnished pursuant to Item 2.02 of Form 8-K and shall not be deemed “filed” for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), or otherwise subject to the liabilities of that section, and it shall not be deemed incorporated by reference in any filing under the Securities Act of 1933, as amended (the “Securities Act”), or under the Exchange Act, whether made before or after the date hereof, except as expressly provided by specific reference in such a filing.

## **Item 7.01 Regulation FD Disclosure.**

On July 9, 2020, the Company released a corporate slide presentation that included the following updates:

- **Central Nervous System: IW-6463**
  - o Dosing has been completed in the ongoing IW-6463 translational pharmacology clinical study. Topline study data are expected in late summer 2020.
  - o The Company anticipates initiating two parallel exploratory Phase 2 studies of IW-6463 to evaluate safety and a variety of efficacy measures, including engagement of CNS biomarkers using novel trial designs in Mitochondrial Encephalomyopathy, Lactic Acidosis and Stroke-like Episodes (MELAS) and Alzheimer's disease with vascular features (ADv). These studies are designed to de-risk and direct future development in CNS diseases.
- **Sickle cell disease: olinciguat**
  - o The seventy subjects enrolled in the olinciguat Phase 2 STRONG SCD study in patients with sickle cell disease have completed their dosing period.
  - o Topline study results are expected in late Q3 2020.
- **Praliguat out-licensing**
  - o The Company remains in ongoing discussions to out-license global rights to praliguat, its oral once-daily systemic sGC stimulator.
  - o In those discussions, the Company has expanded beyond cardiometabolic disorders to additional indications in which sGC stimulators have shown efficacy.
  - o Cycleron can offer no assurances on the prospects or timing of any partnership or licensing transactions generally, or specifically on praliguat.

A copy of the corporate slide presentation is attached hereto as Exhibit 99.1 and is incorporated by reference into this Current Report on Form 8-K. The presentation is also posted to the Company’s website, [www.cycleron.com](http://www.cycleron.com). The Company plans to use its website to disseminate future updates to the presentation and may not necessarily file or furnish a Form 8-K alerting investors if the presentation is updated.

In addition, the Company hosted a webcast investor event on July 9, 2020 from 8:15 a.m. to 9:30 a.m. Eastern Time focused on IW-6463, the Company's investigational, orally administered, once-daily CNS-penetrant sGC stimulator designed for the treatment of serious CNS diseases. A copy of the webinar presentation materials is attached hereto as Exhibit 99.2 and is incorporated by reference to this Current Report on Form 8-K. The presentation is also posted to the Company's website, [www.cyclerion.com](http://www.cyclerion.com).

The information set forth in and incorporated by reference into this Item 7.01 is being furnished pursuant to Item 7.01 of Form 8-K and shall not be deemed "filed" for purposes of Section 18 of the Exchange Act or otherwise subject to the liabilities of that section, and it shall not be deemed incorporated by reference in any filing under the Securities Act or under the Exchange Act, whether made before or after the date hereof, except as expressly provided by specific reference in such a filing.

By filing this Current Report on Form 8-K and furnishing the information in and incorporated by reference into this Item 7.01, the Company makes no admission as to the materiality of Item 7.01 in this report or the presentations available on the Company's website. The information contained in the presentations is summary information that is intended to be considered in the context of the Company's filings with the Securities and Exchange Commission (the "SEC") and other public announcements that the Company makes, by press release or otherwise, from time to time. The Company undertakes no duty or obligation to publicly update or revise the information contained in this report, although it may do so from time to time as its management believes is appropriate or as required by applicable law. Any such updating may be made through the filing of other reports or documents with the SEC, through press releases, by updating its website or through other public disclosure.

**Item 9.01 Financial Statements and Exhibits**

(d)

<u>Exhibit No.</u>	<u>Description</u>
<a href="#">99.1</a>	<a href="#">Corporate Update Presentation dated July 9, 2020.</a>
<a href="#">99.2</a>	<a href="#">CNS Update Presentation dated July 9, 2020.</a>

**SIGNATURES**

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

**Cyclerion Therapeutics, Inc.**

Dated: July 9, 2020

By: /s/ William Huyett

Name: William Huyett

Title: Chief Financial Officer

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SCD and CNS:  
creating breakthrough treatments  
harnessing the power of soluble guanylate cyclase (sGC)

Corporate Overview  
July 9, 2020

## Safe Harbor Statement

This presentation contains forward-looking statements. Any statements contained in this presentation that are not historical facts may be deemed to be forward looking statements. Words such as “anticipate,” “believe,” “potential,” “expect,” “may,” “will,” “should,” “could,” “plan,” “estimate,” “target,” “project,” “contemplate,” “intend,” “future,” “will,” “predict,” “continue,” and the negative of these terms and similar expressions are intended to identify these forward-looking statements.

These forward-looking statements are based on Cycleron’s current expectations, projections and trends, are only predictions and involve known and unknown risks and uncertainties that could cause actual results to differ materially from those expressed or implied in such statements. Investors are cautioned not to place undue reliance on these forward-looking statements, which include but are not limited to statements about possible or assumed future results of operations; preclinical, clinical and non-clinical studies, the interpretation of data therefrom and the ability to replicate findings from such studies; business strategies, research and development plans, collaborations, partnerships, out-licensing (including without limitation with respect to praliciguat), regulatory activities and any timing thereof; competitive position, potential growth or commercial opportunities; the clinical potential, application, commercialization or potential markets of or for any proposed products; the anticipated timing of release of data from any clinical trials; and the size and design of those clinical trials.

Applicable risks and uncertainties include those listed under the heading “Risk Factors” and elsewhere in our most recent Form 10-K filed with the SEC on March 12, 2020, and in our subsequent SEC filings, including our Quarterly Report on Form 10-Q filed with the SEC on May 4, 2020. These forward-looking statements speak only as of the date of this presentation, and we undertake no obligation and do not intend to update these forward-looking statements.

## Creating value from pioneering approaches to SCD and CNS



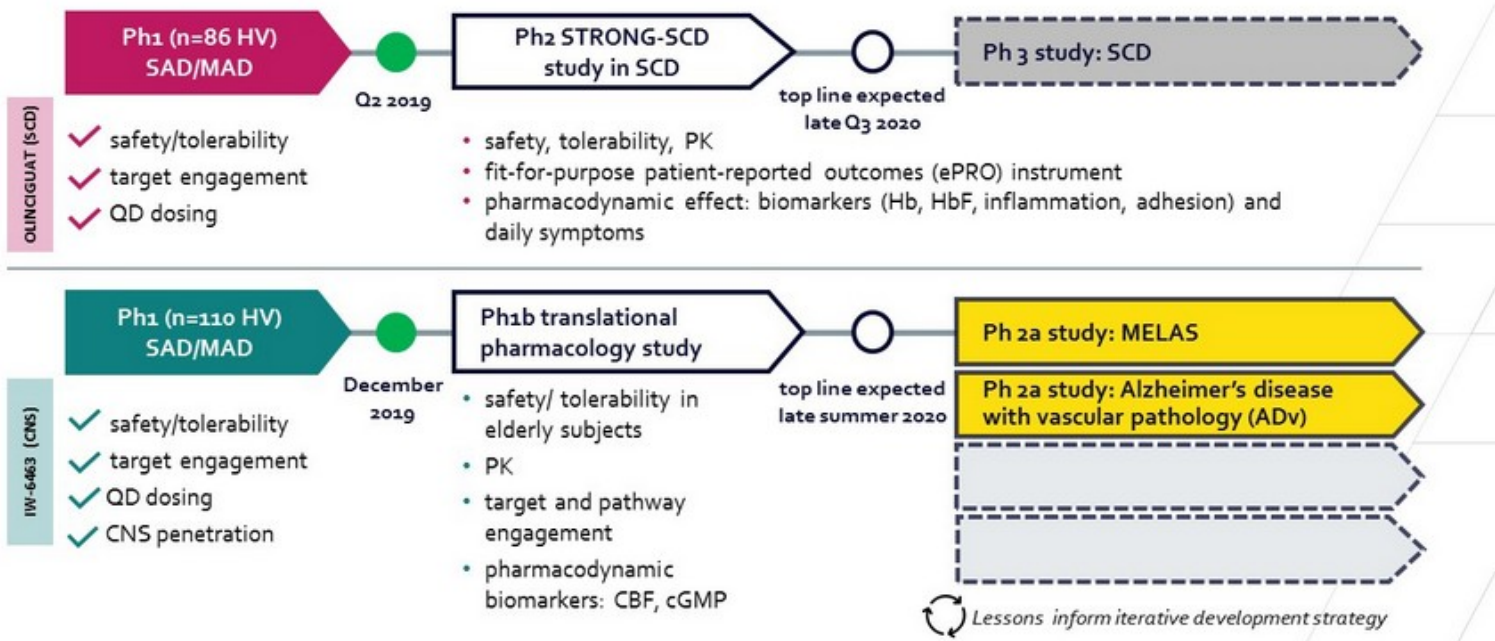
Two priority disease areas creating multiple potential ways to win in sickle cell and CNS

- genetically and phenotypically defined populations with high unmet need
- harness power, signaling precision of sGC
- biomarker-guided fast-to-POC trials underway
- supported by discovery platform
- attractive to investors and partners

**Innovative sGC platform for the NO-sGC-cGMP pathway**

- multi-dimensional pharmacology well-suited to disease biology
- molecules tailored to the tissues relevant to the disease
- wholly owned IP
- validated class

# Clinical program snapshot



## Oliceriguat: potential to raise the standard of care for sickle cell disease patients



- potential for broad clinical utility in SCD
- multi-dimensional mechanism that offers both upstream and downstream pharmacology
- 70 patients enrolled; dosing completed
- TL expected late Q3 2020
- Ph3 long-lead items underway: CMC, protocols, global ad board, regulatory plans
- plan to develop and commercialize ourselves, but partnerships will be considered



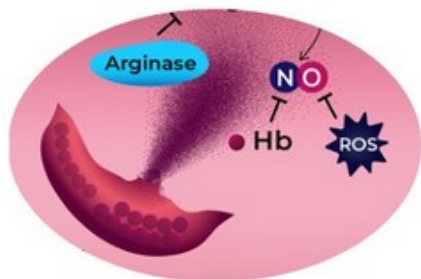
## Potential for broad clinical utility



- newly approved therapies each target a single clinical domain...
- ...olinciguat has the potential to improve four
- daily symptoms and end-organ protection remain unaddressed, decreasing QoL and increasing mortality
- further improvement in anemia and/or VOC possible with olinciguat alone or as add-on therapy serving broad SCD patient population

## Olinciguat: potential upstream and downstream interventions

Increased hemolysis leads to reduced nitric oxide state



sGC stimulation may restore deficient nitric oxide signaling

### Upstream

- increased HbF may lead to reduced proportion of sickled RBCs<sup>1</sup>

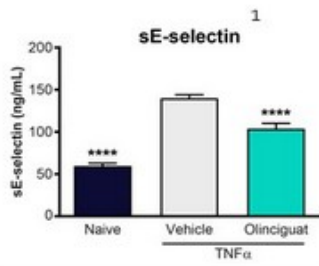
### Downstream

- improved blood flow
- decreased vascular inflammation & cell adhesion
- improved endothelial integrity

1. Conran, N., & Torres, L. (2019). cGMP modulation therapeutics for sickle cell disease. *Experimental Biology and Medicine*, 244(2), 132–146.

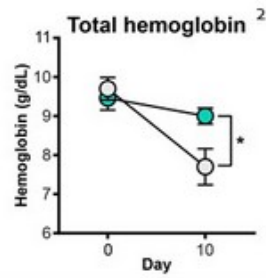
# Preclinical data support clinical investigation

## INFLAMMATION



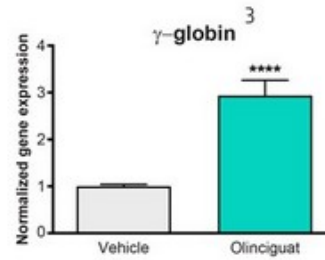
Lower levels of vascular inflammatory markers and improved vascular function in mouse models of inflammation†

## ANEMIA



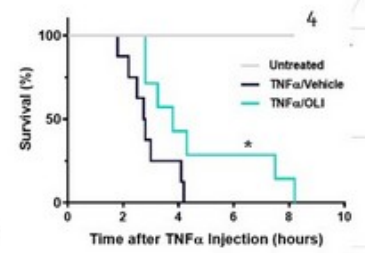
Decrease in progression of hemolytic anemia in Townes SCD mouse model

## FETAL HEMOGLOBIN



Higher mRNA expression of the gamma-globin subunit of fetal hemoglobin in cultured cells

## SURVIVAL

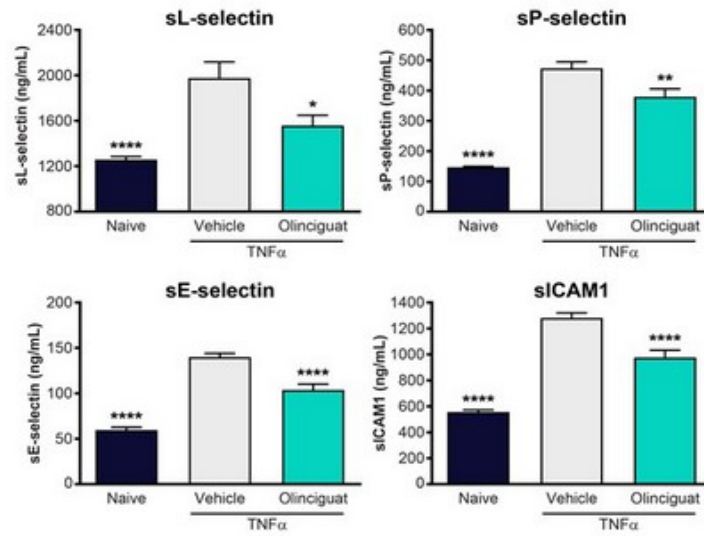


Olinciguat extended survival in TNFα challenge Berkeley SCD mouse model

† Adhesion can occlude microcirculation and lead to painful VOC and other serious complications; 1. \*\*\*\*  $p < 0.0001$  vs TNFα-vehicle, 1h predose olinciguat followed by treatment with TNFα in normal mice; 2. \*  $p < 0.05$ ; 3. \*\*\*\*  $p < 0.0001$  vs vehicle Treatment of K562 cells with vehicle or olinciguat for 7 days in cell culture, 4 \*  $p < 0.05$  vs TNFα-vehicle, work done collaboratively with the laboratory of Paul Frenette (Albert Einstein), HU did not show benefit to survival



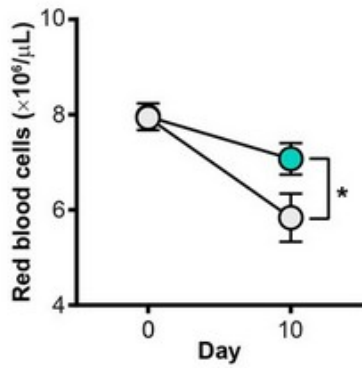
# Lower expression of cellular adhesion molecules associated with olinciguat treatment in preclinical model†



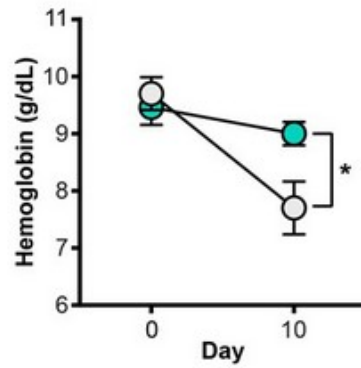
1h pre-dose olinciguat followed by treatment with TNFα in normal mice

## In a preclinical model of SCD, progression of hemolytic anemia was ameliorated in olinciguat treated Townes mice

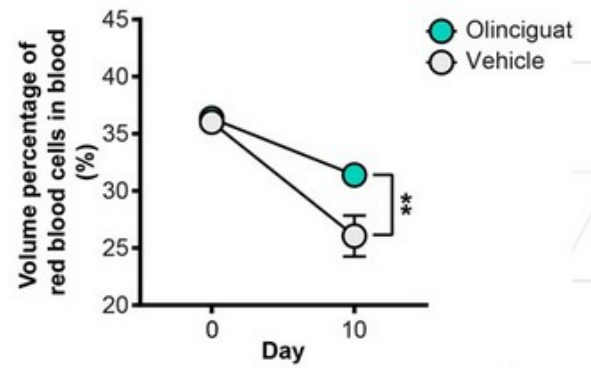
Red blood cell count



Total hemoglobin

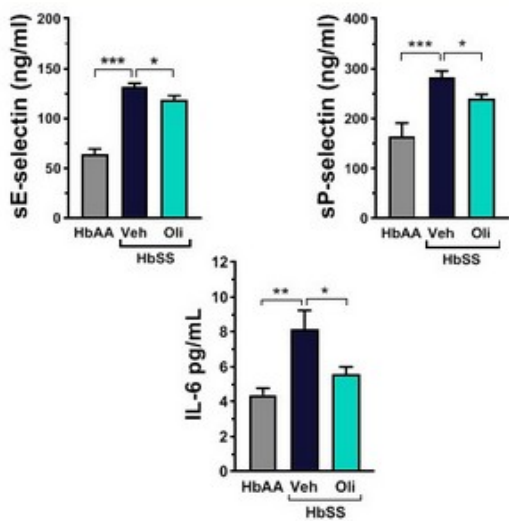


Hematocrit

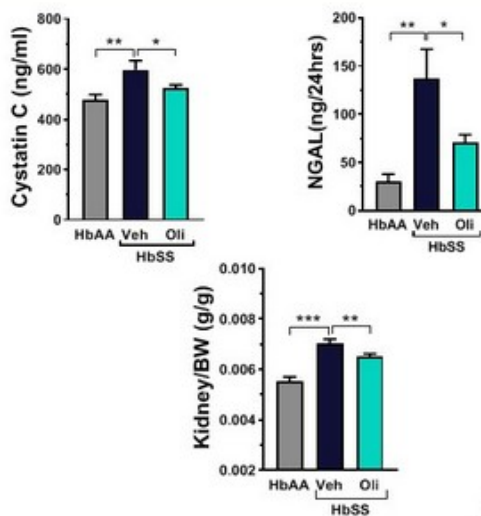


# Olinciguat decreased biomarkers of inflammation, endothelial activation and renal injury in Townes SCD mice after 8 weeks of treatment

## Endothelial Activation and Inflammation



## Renal Injury



\*p<0.05, \*\*p<0.01, \*\*\*p<0.001

# Olinciguat Phase 1: target engagement, PK, safety, QD dosing

## PHASE 1 (completed)

## Results

### Phase 1 design

- 5 Ph1 studies including:
  - SAD
  - MAD
  - clinical pharmacology
- 125 healthy volunteers
- age range 18-57
- standard safety
- PK
- 8 dose levels tested

GOALS  
ACHIEVED



- linear, predictable PK; consistent with QD dosing
- determined well tolerated dose range
- evidence of target engagement and proof of pharmacology (cGMP elevation, blood pressure)
- well tolerated at all dose levels, no safety signals or discontinuations due to drug-related adverse events (AE)
- balanced tissue: plasma distribution

# STRONG SCD

**Oliceriguat phase 2  
trial designed to  
support rapid  
advancement**

**Topline results  
expected  
late Q3 2020**

## Structure

- 70 patients enrolled in all SCD genotypes, aged 16 – 70
  - placebo controlled, double blind
  - 4 dose levels
  - 12-week treatment
- 

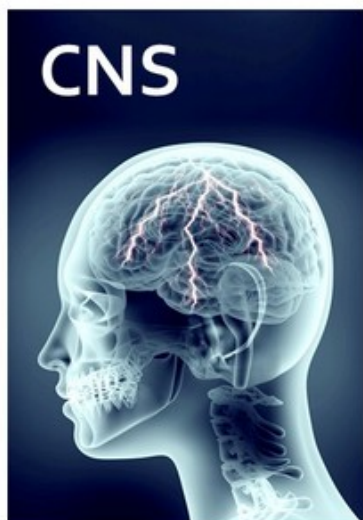
## Objectives

- assess safety and tolerability
  - confirm PK profile in SCD patients
  - development of the CYCN fit-for-purpose patient-reported outcomes (ePRO) instrument
  - signs of pharmacodynamic effect: biomarkers (Hb, HbF, inflammation, adhesion) and daily symptom effects
- 

## Insights for Phase 3 design

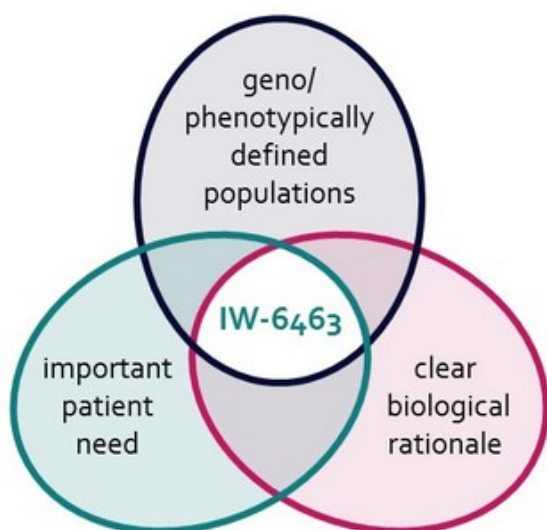
- endpoint selection based on results (biomarkers and ePRO)
- determine study sample size and dose(s)

## Our strategy: target identifiable populations with important unmet needs



- targeting the untapped NO neurotransmitter pathway by sGC stimulation
- initial two indications are characterized by strong biological rationale, targeted patient populations, enormous unmet patient need, lack of approved therapies, and biomarker-based development
- MELAS
  - genetically defined rare disease
  - most common mitochondrial disease, >90% have neurological symptoms (stroke-like episodes, dementia, epilepsy, vision loss)
  - identifiable patients with no approved treatment
- Alzheimer's disease with vascular pathology (ADv)
  - intersection of Alzheimer's and vascular dementias
  - well-defined subset of patients, ~2M patients in the US
  - no approved therapies to treat vascular pathology of Alzheimer's disease
- discovery research engine focused on expanding CNS platform
- exploring R&D collaboration to support pursuit of the best opportunities

## Our approach: intersection of patients and biology



### Raising the odds of success:

- pursue multiple indications in parallel
- leverage biomarkers to drive development
- implement nimble trials with leading edge investigators and imaging analytics
- investigate a strategic R&D partnership to explore full potential of sGC in the CNS



# sGC stimulators: potential to be next druggable neurotransmitter system

## Successfully drugged neurotransmitter systems

### GABAergic

- Valium® (1963)
- Ambien® (1992)

### Dopaminergic

- Levodopa (1970)
- Risperdal® (1993)

### Adrenergic/Serotonergic

- Amitriptyline (1961)
- Prozac® (1987)
- Paxil® (1992)

### Cholinergic

- Scopolamine (1979)
- Aricept® (1996)

### Glutamatergic

- Ketamine (1970)
- Namenda® (2003)

## Nitric oxide

- IW-6463



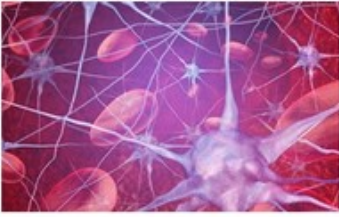


# IW-6463 demonstrates in preclinical studies beneficial effects in four important domains of neurodegenerative diseases

## IMPROVE

### Cerebral Blood Flow

Increased blood flow in areas associated with memory and arousal by fMRI BOLD imaging



## ENHANCE

### Cellular Bioenergetics

Increased ATP and restored gene expression in cells from patients with mitochondrial diseases



## REDUCE

### Neuro-inflammation

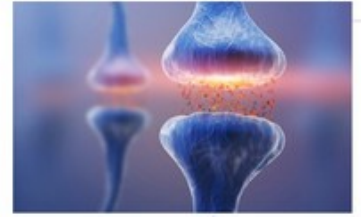
Decreased markers of LPS-induced neuroinflammation (ICAM<sub>1</sub>, VCAM<sub>1</sub>, IL6) *in vitro*



## IMPROVE

### Neuronal Function

Enhanced memory performance & spine density in aged animals; increased LTP in neurodegenerative disease models



# IW-6463 preclinical results support potential broad use in CNS treatment

IMPROVE

Cerebral  
Blood Flow

ENHANCE

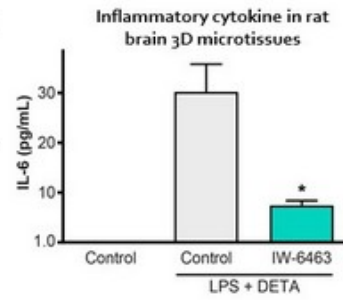
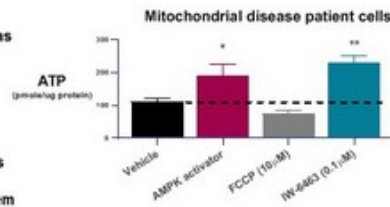
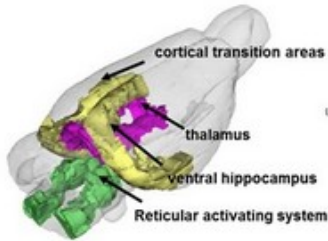
Cellular  
Bioenergetics

REDUCE

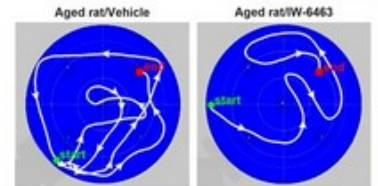
Neuro-  
inflammation

IMPROVE

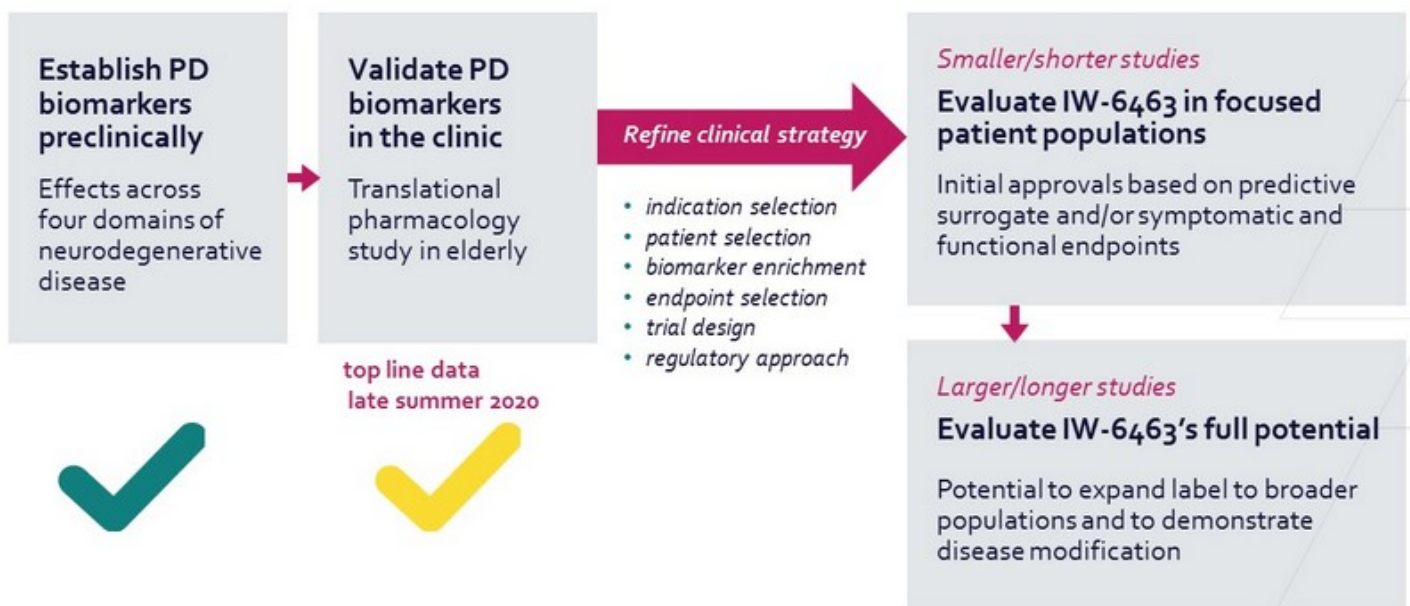
Neuronal  
Function



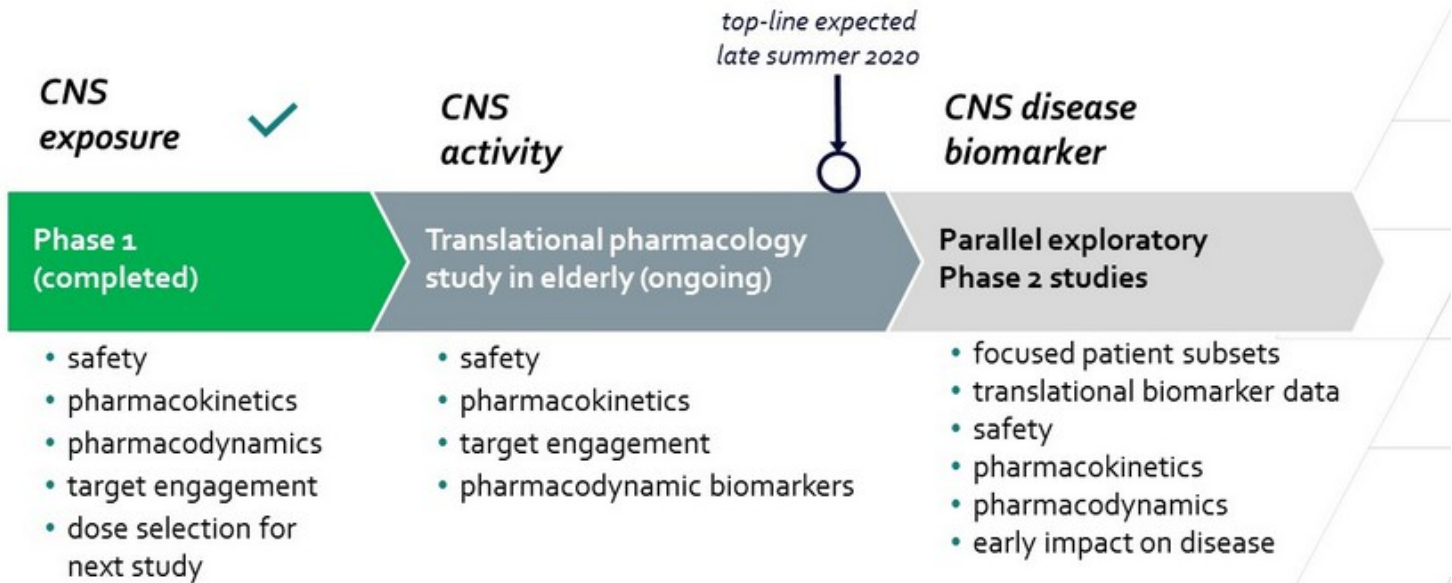
Maze performance in aged rats



# Translational approach from discovery to approval and beyond



# Biomarker-driven IW-6463 early clinical development strategy



## IW-6463 Phase 1: CNS exposure, target engagement, PK, and safety

### PHASE 1 (completed)

### Results

#### Study design

- three stages:
  - SAD
  - MAD
  - food interaction
- 110 healthy volunteers
- age range 18-63
- standard safety
- PK (blood & CSF)
- wide dose range tested

GOALS  
ACHIEVED



- identified safe and well-tolerated dose levels with steady-state CNS exposure in therapeutic target range\*
- linear, predictable PK; consistent with QD dosing
- CNS exposure confirmed
- evidence of target engagement (blood pressure)
- well tolerated at all dose levels, no safety signals
- may be taken with or without food

## Translational study design: pharmacodynamic biomarkers and safety



Assessing safety, PK and target engagement in CNS (cGMP)

Top line data expected late summer 2020

### IMPROVE

#### Cerebral Blood Flow

- MRI arterial spin labeling (ASL)

### ENHANCE

#### Cellular Bioenergetics

- brain metabolism via magnetic resonance spectroscopy (MRS)

### REDUCE

#### Neuro-inflammation

- cytokines, adhesion molecules

### IMPROVE

#### Neuronal Function

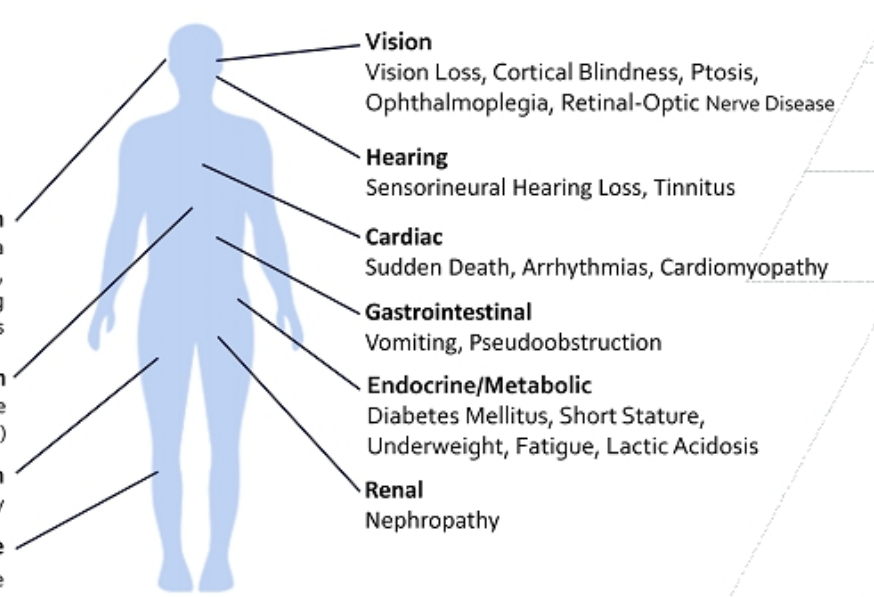
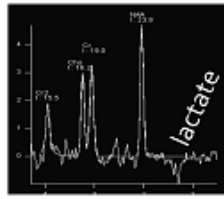
- qEEG
- measures of cognition and behavior (NeuroCart®)



# Mitochondrial Encephalomyopathy, Lactic Acidosis, & Stroke-like Episodes (MELAS)

genetically defined orphan disease, serious CNS & multi-system problems, no approved treatments

## SYMPTOM OVERVIEW



**Central Nervous system**  
Strokes, Stroke-like Episodes (SLEs), Ataxia (Imbalance), Epilepsy (Seizures), Migraine, Headaches, Cognitive Impairment, Learning Disability, Dementia, Mood disorders

**Autonomic Nervous System**  
Dysautonomia, Temperature Intolerance, Heart Rate Instability (POTS)

**Peripheral Nervous System**  
Peripheral Neuropathy

**Skeletal muscle**  
Muscle weakness, myopathy, exercise intolerance

# MELAS: Strong supportive data for NO-sGC-cGMP pathway involvement

## SCIENTIFIC RATIONALE FOR INDICATION AND PATIENT SELECTION

### Clinical precedence for NO-sGC-cGMP pathway

- L-Arginine (NO precursor) recommended for acute and chronic treatment

### Pathophysiology

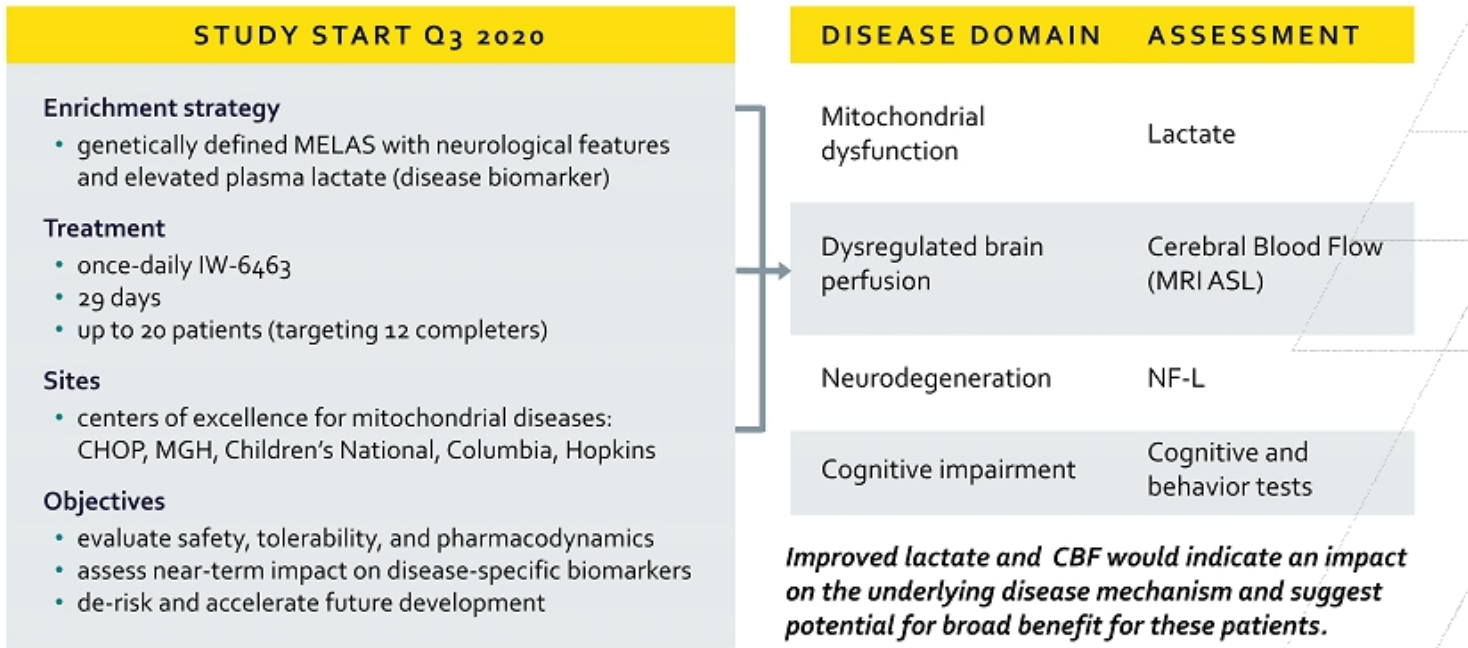
- CNS metabolic dysfunction, elevated lactate, decreased NO
- CNS vascular pathology - impaired blood flow, inflammation, endothelial dysfunction, small vessel disease

### IW-6463 pharmacology

- CYCN preclinical data suggest IW-6463 improves mitochondrial function and cerebral blood flow



# Ph 2a: open-label study of IW-6463 in patients with MELAS



# AD with vascular pathology (ADv) – focused mixed dementia subset

Defined population well suited for treatment with IW-6463

## DISEASE RATIONALE FOR PATIENT SELECTION

### Pathophysiology

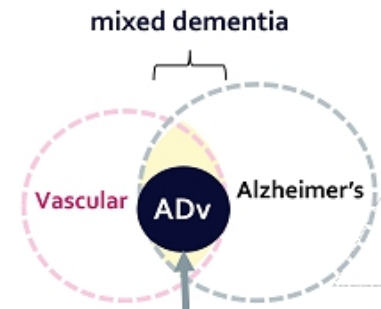
NO dysregulation, endothelial cell loss, impaired blood flow, vascular leakage, inflammation, neuronal dysfunction, and neuronal loss are major contributing factors to rapid disease progression

### Standard of care

No approved therapies to treat vascular dementia.  
AD therapies offer limited benefits; not disease modifying

### Pharmacology

Our preclinical data suggests IW-6463 has potential to improve cerebral blood flow, endothelial health, neuroinflammation, and cellular energetics as well as prevent neurodegeneration

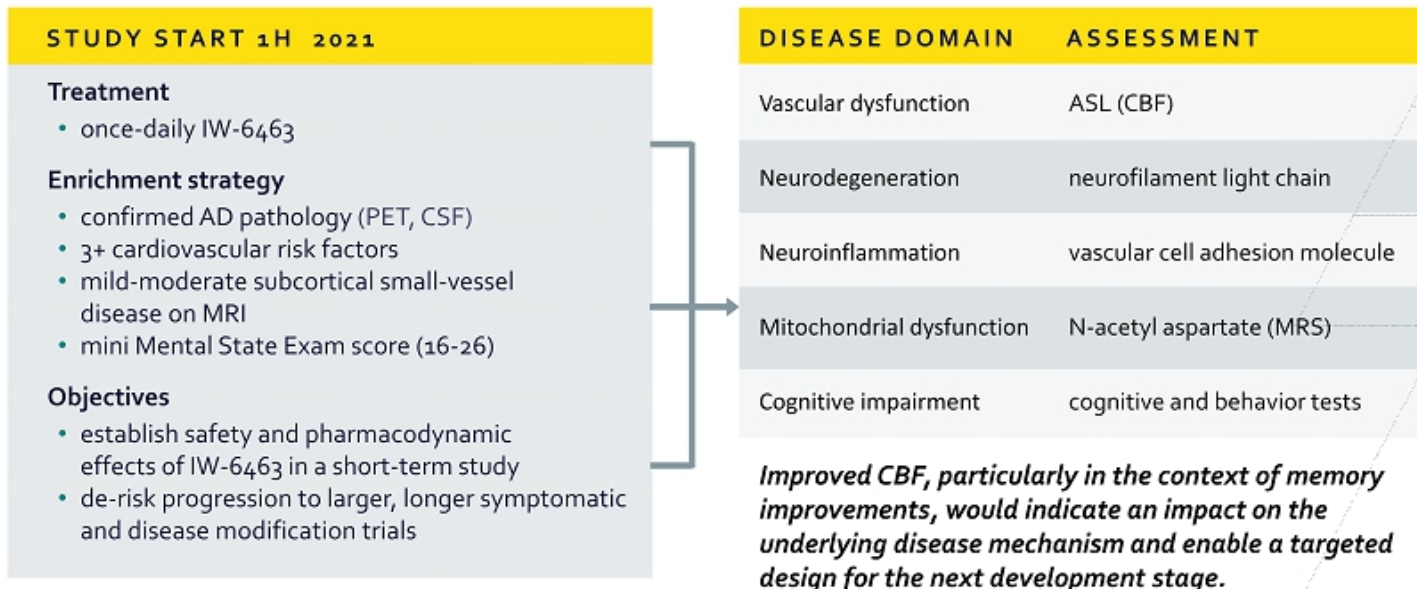


### Target population

ADv: an identifiable subset of mixed dementia patients with:

- AD pathology **AND**
- sub-cortical vascular disease **AND**
- CV risk factors

## Ph 2a study of IW-6463 in ADv: emerging design



## Building our company: the science, the pipeline and the team

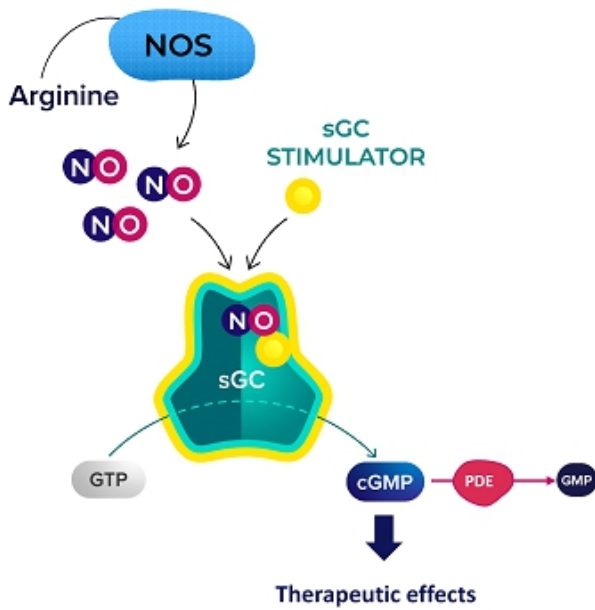


- sGC stimulators: powerful intervention in a genetically and clinically validated pathway
- a wholly owned pipeline of differentiated molecules
- exploring partnerships across programs; praliguat out-licensing scope expanded
- experienced leadership team with a distinctive track record of innovative drug discovery and development
- starting Q3 2020 with ~\$61M cash\*; supports our priorities into second half of 2021
- limited disruption from Covid-19



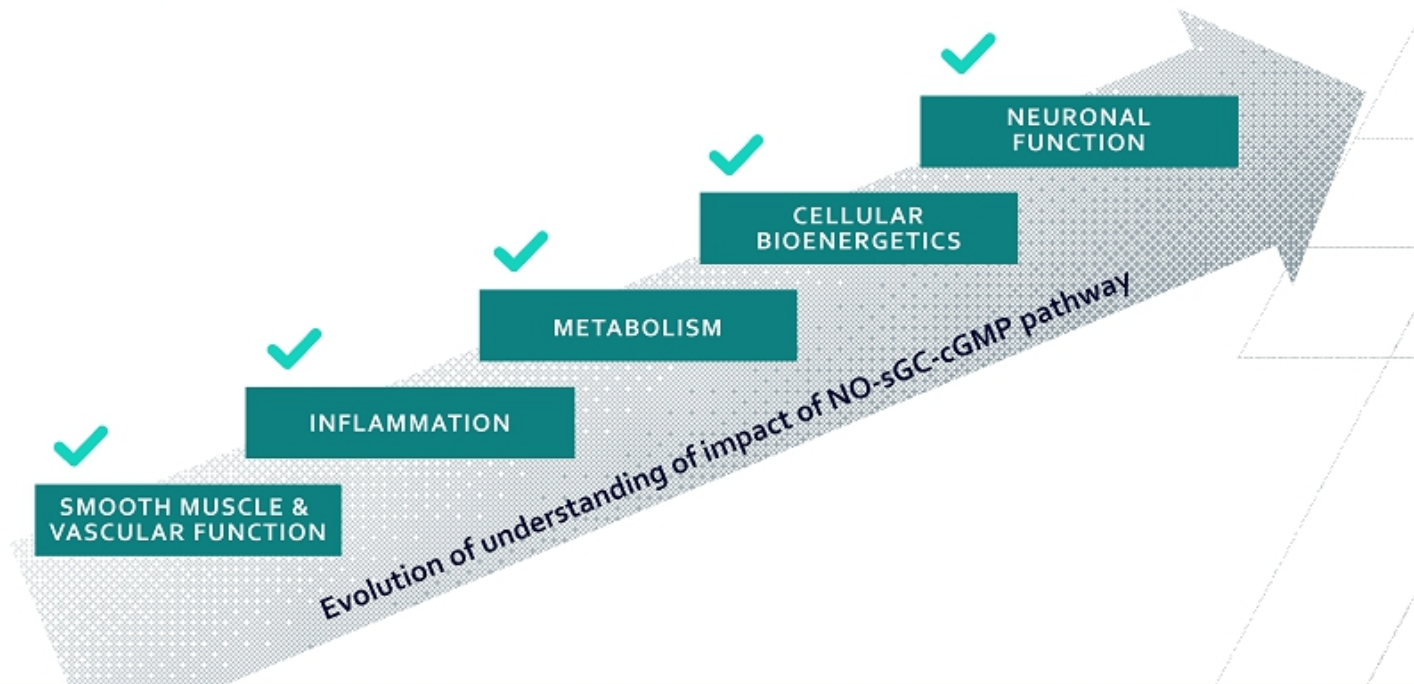
\* Preliminary, unaudited unrestricted cash, cash equivalents and restricted cash balance as of June 30, 2020

## sGC stimulators: ideal intervention in a genetically and clinically validated pathway



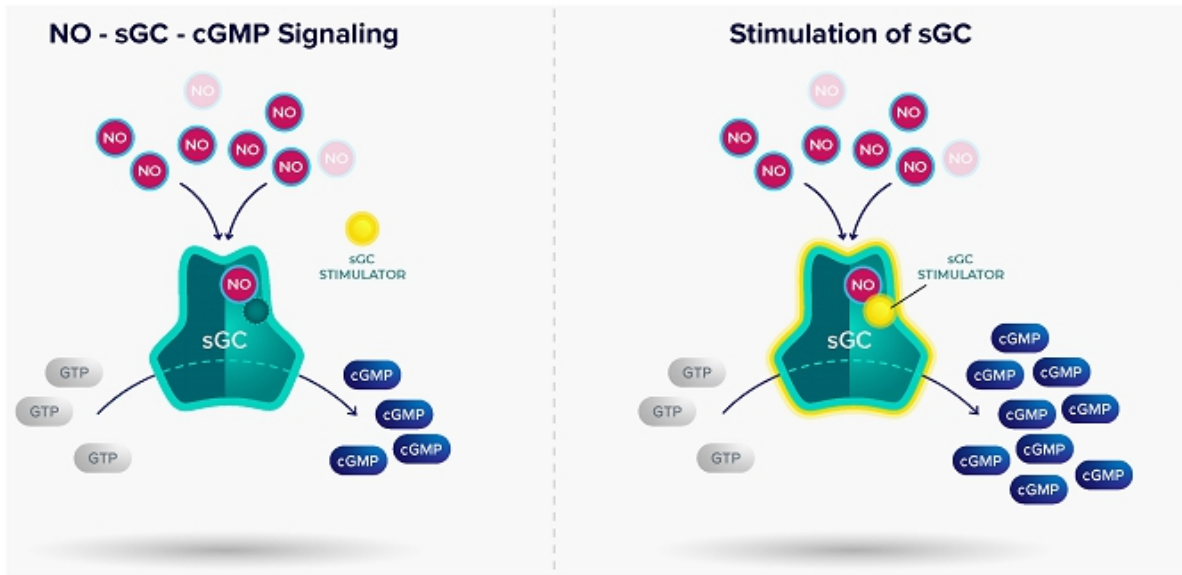
- **multiple successful drugs target the NO-sGC-cGMP pathway for the treatment of CV diseases**  
NO donors, PDE5 inhibitors, sGC stimulators
- **NO-sGC-cGMP pathway plays central role in CNS diseases**  
Network analysis delivers z-scores for CNS diseases similar to validated CV diseases
- **sGC: optimal target for pathway intervention**  
Broadly expressed in CNS, amplifies endogenous signaling, increases cGMP levels at the source with no attenuation of response

## Broad impact in the NO-sGC-cGMP pathway

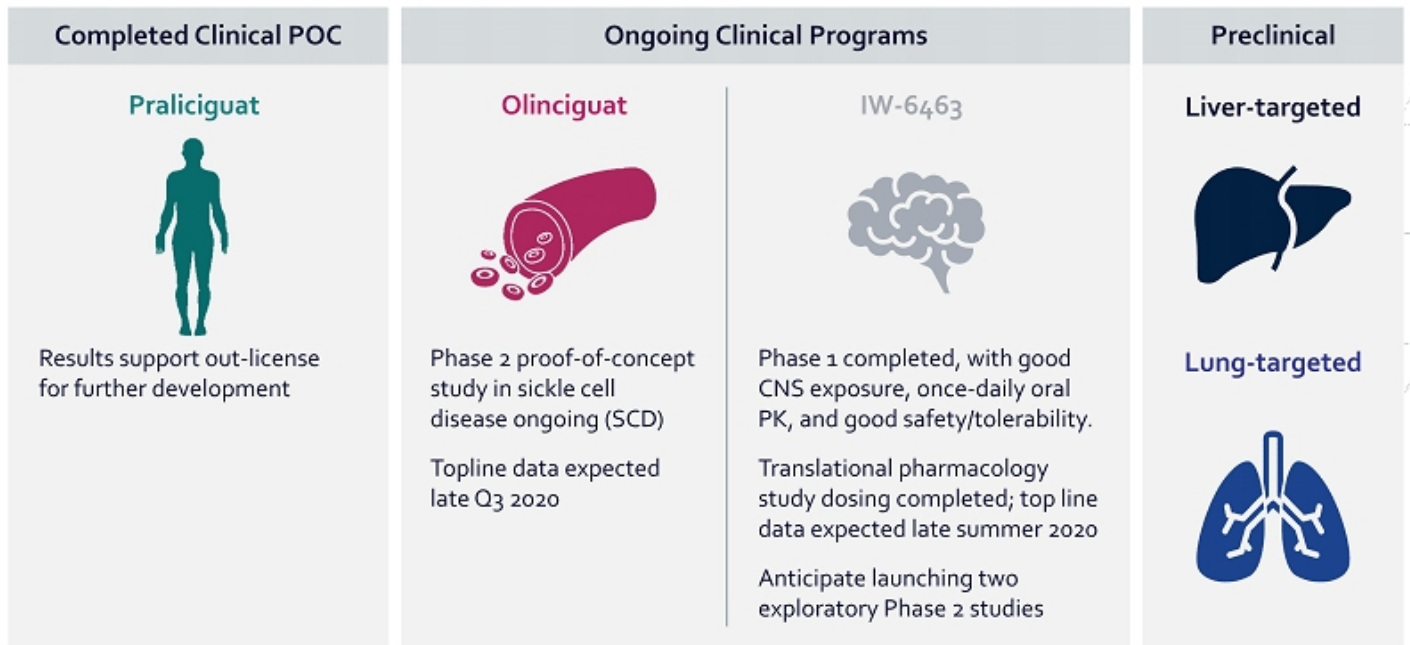




# sGC stimulators are positive allosteric modulators that enhance NO-sGC-cGMP signaling



## A wholly owned pipeline of differentiated molecules





## Praliguat out-licensing discussions ongoing with expanded scope

### Data support further development

- promising DN results:
  - UACR reductions on top of standard of care
  - reductions in blood pressure, HbA1c, total and LDL cholesterol
  - favorable safety profile, consistent with previous studies
  - attractive dosing and PK relative to others in class
- VICTORIA results further validate cardiometabolic potential of the class and suggest potential for praliguat as a cardio metabolic therapeutic

### Out-licensing discussions ongoing

- continuing discussions to out-license global rights to praliguat
- expanded the scope of its out-licensing discussions beyond cardiometabolic disorders to include additional indications where sGC stimulators have shown efficacy
- no assurances on the prospects or timing of any partnership or licensing transactions--generally or specifically on praliguat

## Experienced team and successful leadership

- distinctive track record of innovative drug discovery/development (e.g.--CELEBREX<sup>®</sup>, KALYDECO<sup>®</sup>, LINZESS<sup>®</sup>, LUNESTA<sup>®</sup>, OPDIVO<sup>®</sup>, ORKAMBI<sup>®</sup>, YERVOY<sup>®</sup>)
- successful sGC/cGMP drug hunters; deep knowledge of nitric oxide (NO)-cGMP pathway
- broad experience in creating strong organizations and commercializing products





SCD and CNS:  
creating breakthrough treatments  
harnessing the power of soluble guanylate cyclase (sGC)

Corporate Overview  
July 9, 2020

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Delivering impact in CNS diseases

Investor webinar  
July 9, 2020

## Safe Harbor Statement

This presentation contains forward-looking statements. Any statements contained in this presentation that are not historical facts may be deemed to be forward looking statements. Words such as “anticipate,” “believe,” “potential,” “expect,” “may,” “will,” “should,” “could,” “plan,” “estimate,” “target,” “project,” “contemplate,” “intend,” “future,” “will,” “predict,” “continue,” and the negative of these terms and similar expressions are intended to identify these forward-looking statements.

These forward-looking statements are based on Cycleron’s current expectations, projections and trends, are only predictions and involve known and unknown risks and uncertainties that could cause actual results to differ materially from those expressed or implied in such statements. Investors are cautioned not to place undue reliance on these forward-looking statements, which include but are not limited to statements about possible or assumed future results of operations; preclinical, clinical and non-clinical studies, the interpretation of data therefrom and the ability to replicate findings from such studies; business strategies, research and development plans, collaborations, partnerships, out-licensing (including without limitation with respect to praliciguat), regulatory activities and any timing thereof; competitive position, potential growth or commercial opportunities; the clinical potential, application, commercialization or potential markets of or for any proposed products; the anticipated timing of release of data from any clinical trials; and the size and design of those clinical trials.

Applicable risks and uncertainties include those listed under the heading “Risk Factors” and elsewhere in our most recent Form 10-K filed with the SEC on March 12, 2020, and in our subsequent SEC filings, including our Quarterly Report on Form 10-Q filed with the SEC on May 4, 2020. These forward-looking statements speak only as of the date of this presentation, and we undertake no obligation and do not intend to update these forward-looking statements.

# Welcome to Cycleron's CNS discussion

## INDEPENDENT EXPERTS

### Marni J. Falk, M.D.

*University of Pennsylvania  
Professor of Human Genetics; The  
Children's Hospital of Philadelphia  
(CHOP), Director of the  
Mitochondrial Medicine Frontier  
Program*

### Eric E. Smith, MD, MPH, FRCPC, FAHA

*University of Calgary  
Professor of Neurology  
Kathy Taylor Chair in  
Vascular Dementia,  
Cumming School of Medicine*

## CYCLERION LEADERS



**Andy Busch, PhD**  
Chief Innovation Officer



**Mark Currie, PhD**  
President and Chief  
Scientific Officer



**Cheryl Gault**  
Head of Strategy &  
Corporate Development



**Peter Hecht, PhD**  
Chief Executive Officer



**Christopher Winrow, PhD**  
Senior Director, Clinical  
Development – Neuroscience  
Program Lead



**Christopher Wright, MD, PhD**  
Chief Medical Officer



## Pioneering therapeutics in SCD and CNS

### Sickle Cell Disease (SCD)

- upstream + downstream pharmacology
- 70 patients enrolled; dosing completed
- top line expected end Q3 2020







### Central Nervous System (CNS)

- potential to be next druggable neurotransmitter system
- IW-6463: oral, QD drug
- first CNS-penetrant sGC stimulator in development
- top line expected end of summer 2020












## Cyclerion: delivering impact in CNS

1	Now is the time: value in CNS	
2	sGC and CNS: scientific and clinical basis for CNS therapies	
3	Translational pharmacology study: demonstrating CNS activity	
4	Clinical direction in CNS: important indications that yield early answers	

## Objectives for today

1	Now is the time: value in CNS		How Cycleron can create value in CNS
2	sGC and CNS: scientific and clinical basis for CNS therapies		Discuss the broad therapeutic potential of sGC stimulators in CNS
3	Translational pharmacology study: demonstrating CNS activity		Describe the rich yield of data and its implications (data due late summer)
4	Clinical direction in CNS: important indications that yield early answers		Discuss our first indications: focused patient populations, biomarker-based development

# Cyclerion: delivering impact in CNS

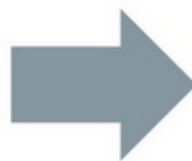
1	<b>Now is the time: value in CNS</b>		 <ul style="list-style-type: none"><li>• growing patient populations and evolving science creates opportunity</li><li>• we believe our approach can raise the odds of success</li><li>• translational pharmacology data (due late summer) are expected to demonstrate CNS activity</li></ul>
2	sGC and CNS: scientific and clinical basis for CNS therapies		
3	Translational pharmacology study: demonstrating CNS activity		
4	Clinical direction in CNS: important indications that yield early answers		

## Capturing potential in a high reward therapeutic area

- rapidly growing patient population, lack of approved therapies, important unmet need
- quickly evolving science: genetic insights and technologies
- valued by investors and industry partners
- Cycleron is the innovator of sGC in the CNS

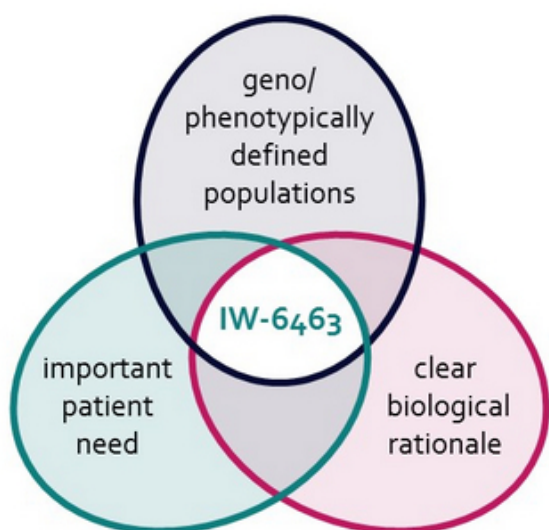
### We've learned from industry history

- understanding disease biology is critically important
- adequate CNS exposure is essential
- identifying translational CNS biomarkers is key



Now is  
the time

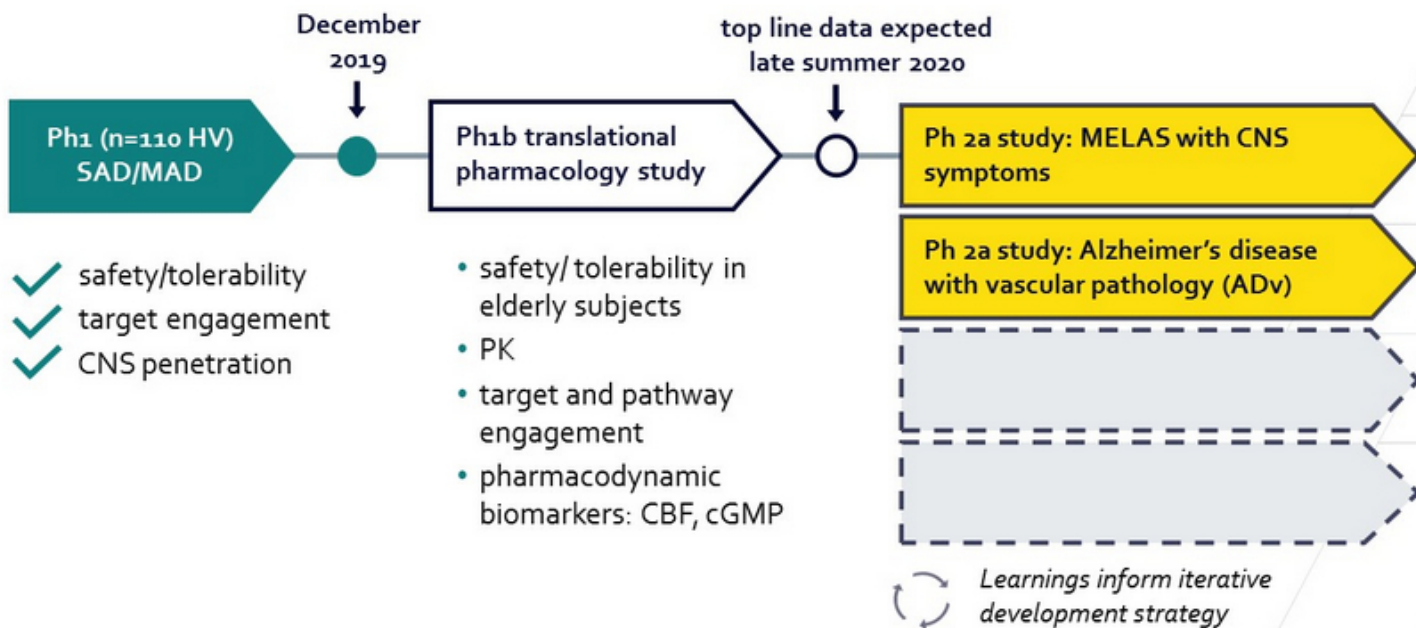
## Our approach: intersection of patients and biology



### Raising the odds of success:

- pursue multiple indications in parallel
- leverage biomarkers to drive development
- implement nimble trials with leading edge investigators and imaging analytics
- investigate a strategic R&D partnership to explore full potential of sGC in the CNS

# IW-6463 biomarker-guided development in focused patient populations



## sGC and CNS: scientific and clinical basis for CNS therapies

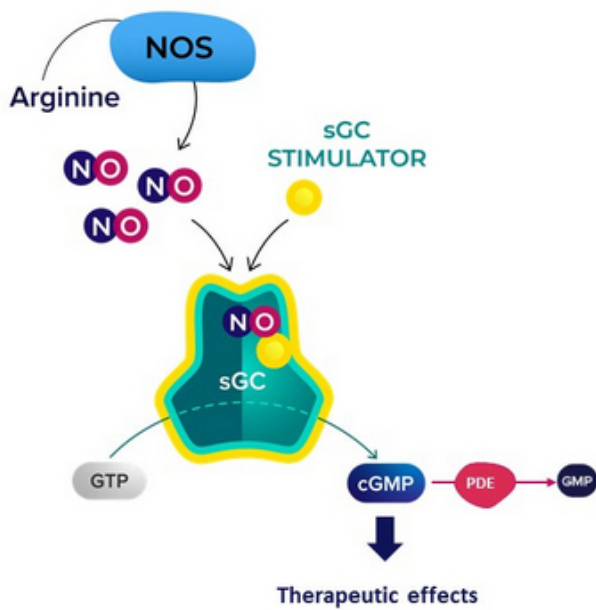
1	Now is the time: value in CNS	
2	<b>sGC and CNS: scientific and clinical basis for CNS therapies</b>	
3	Translational pharmacology study: demonstrating CNS activity	
4	Clinical direction in CNS: important indications that yield early answers	

- sGC stimulators are clinically validated in several diseases
- sGC/NO pathway identified as drug target for CNS diseases using systems biology approach
- IW-6463 active in four domains: cerebral blood flow, cellular bioenergetics, neuro-inflammation, neuronal function





## sGC stimulators: ideal intervention in a genetically and clinically validated pathway



**Multiple successful drugs target the NO-sGC-cGMP pathway for the treatment of CV diseases**  
NO donors, PDE5 inhibitors, sGC stimulators

**NO-sGC-cGMP pathway plays central role in CNS diseases**  
Network analysis delivers z-scores for CNS diseases similar to validated CV diseases

**sGC: optimal target for pathway intervention**  
Broadly expressed in CNS, amplifies endogenous signaling, increases cGMP levels at the source with no attenuation of response

## Growing appreciation of the role of NO-sGC-cGMP pathway in CNS disease



sGC: a central regulator of brain physiology

✓  
SMOOTH MUSCLE & VASCULAR FUNCTION

✓  
INFLAMMATION

✓  
METABOLISM

✓  
CELLULAR BIOENERGETICS

✓  
NEURONAL FUNCTION

Evolution of understanding of impact of NO-sGC-cGMP pathway

# sGC stimulators: potential to be next druggable neurotransmitter system

## Successfully drugged neurotransmitter systems

### GABAergic

- Valium® (1963)
- Ambien® (1992)

### Dopaminergic

- Levodopa (1970)
- Risperdal® (1993)

### Adrenergic/Serotonergic

- Amitriptyline (1961)
- Prozac® (1987)
- Paxil® (1992)

### Cholinergic

- Scopolamine (1979)
- Aricept® (1996)

### Glutamatergic

- Ketamine (1970)
- Namenda® (2003)

## Nitric oxide

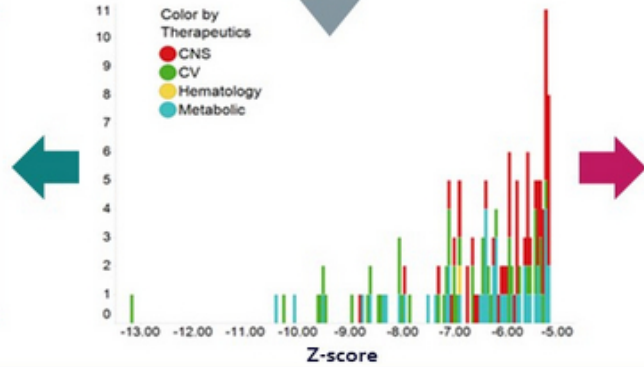
- IW-6463



# NO-sGC-cGMP pathway: From validated cardiometabolic diseases to CNS disease validation



- Cardiometabolic Diseases**
- hypertension\*
  - diabetic nephropathy\*
  - heart failure\*
  - arteriosclerosis
  - diabetes\*
  - PAH\*
  - sickle cell anemia



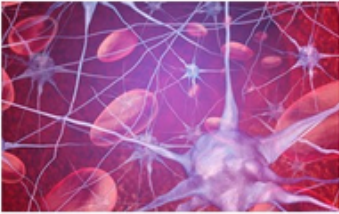
- CNS Diseases**
- Alzheimer's disease
  - cognitive impairment
  - stroke
  - bipolar disorder
  - schizophrenia
  - depression
  - Huntington's disease

# IW-6463 demonstrates in preclinical studies beneficial effects in four important domains of neurodegenerative diseases

## IMPROVE

### Cerebral Blood Flow

Increased blood flow in areas associated with memory and arousal by fMRI BOLD imaging



## ENHANCE

### Cellular Bioenergetics

Increased ATP and restored gene expression in cells from patients with mitochondrial diseases



## REDUCE

### Neuro-inflammation

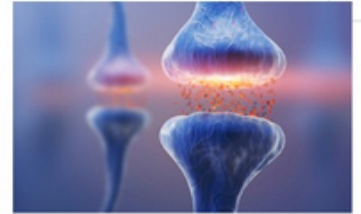
Decreased markers of LPS-induced neuroinflammation (ICAM<sub>1</sub>, VCAM<sub>1</sub>, IL6) *in vitro*



## IMPROVE

### Neuronal Function

Enhanced memory performance & spine density in aged animals; increased LTP in neurodegenerative disease models



## Attractive nonclinical profile supports clinical development




- IW-6463 demonstrates pharmacological activity across four distinct domains in multiple preclinical models
- preclinical results support straightforward translation into the clinic
- CNS exposure and target engagement demonstrated in multiple species
- no evidence of CYP enzyme inhibition and IW-6463 not a P-gp substrate
- nonclinical toxicology profile consistent with other sGC stimulators in development



**Advance  
to clinical  
development**



# Translational pharmacology study: confirming CNS activity

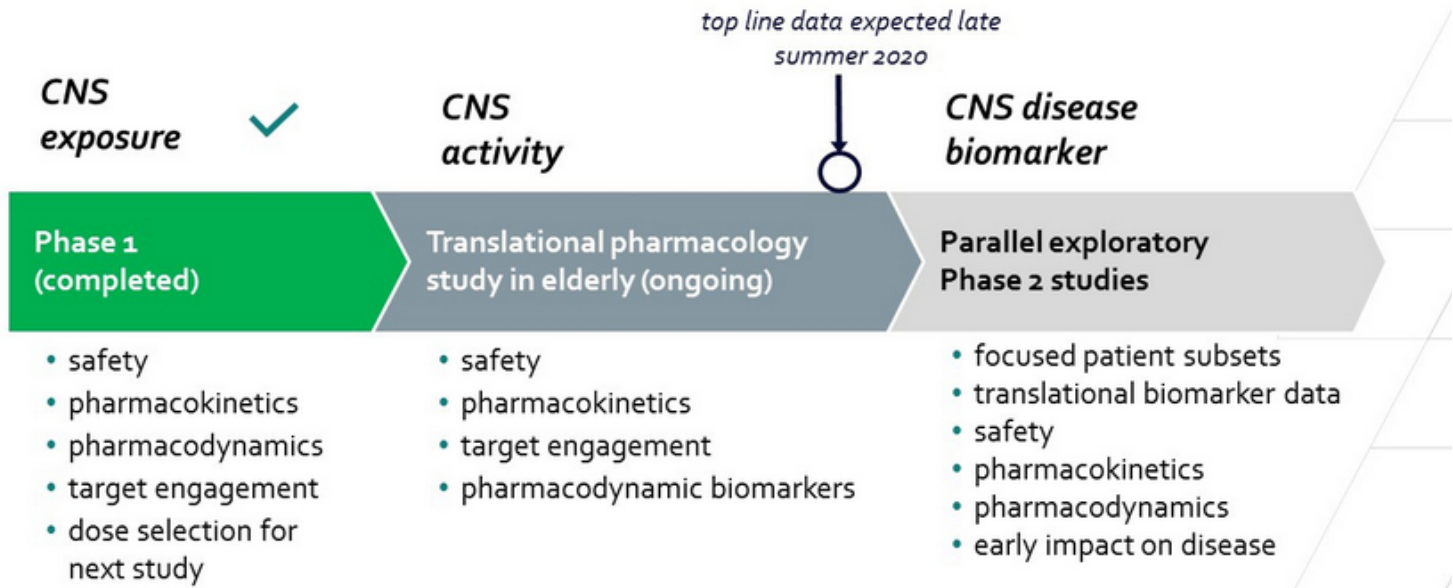
1	Now is the time: value in CNS	
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4	Clinical direction in CNS: important indications that yield early answers	

- rational indication selection approach for CNS diseases
- phase 1 GO – identified well-tolerated doses achieving the desired CNS exposure
- elderly translational pharmacology study focused on CNS target engagement (late summer)





# Biomarker-driven IW-6463 early clinical development strategy



## IW-6463 Phase 1: CNS exposure, target engagement, PK, and safety

### PHASE 1 (completed)

### Results

#### Study design

- three stages:
  - SAD
  - MAD
  - food interaction
- 110 healthy volunteers
- age range 18-63
- standard safety
- PK (blood & CSF)
- wide dose range tested

GOALS  
ACHIEVED



- identified safe and well-tolerated dose levels with steady-state CNS exposure in therapeutic target range\*
- linear, predictable PK; consistent with QD dosing
- CNS exposure confirmed
- evidence of target engagement (blood pressure)
- well tolerated at all dose levels, no safety signals
- may be taken with or without food

## Translational study design: pharmacodynamic biomarkers and safety



Assessing safety, PK and target engagement in CNS (cGMP)

Top line data expected late summer 2020

### IMPROVE

#### Cerebral Blood Flow

- MRI arterial spin labeling (ASL)

### ENHANCE

#### Cellular Bioenergetics

- brain metabolism via magnetic resonance spectroscopy (MRS)

### REDUCE

#### Neuro-inflammation

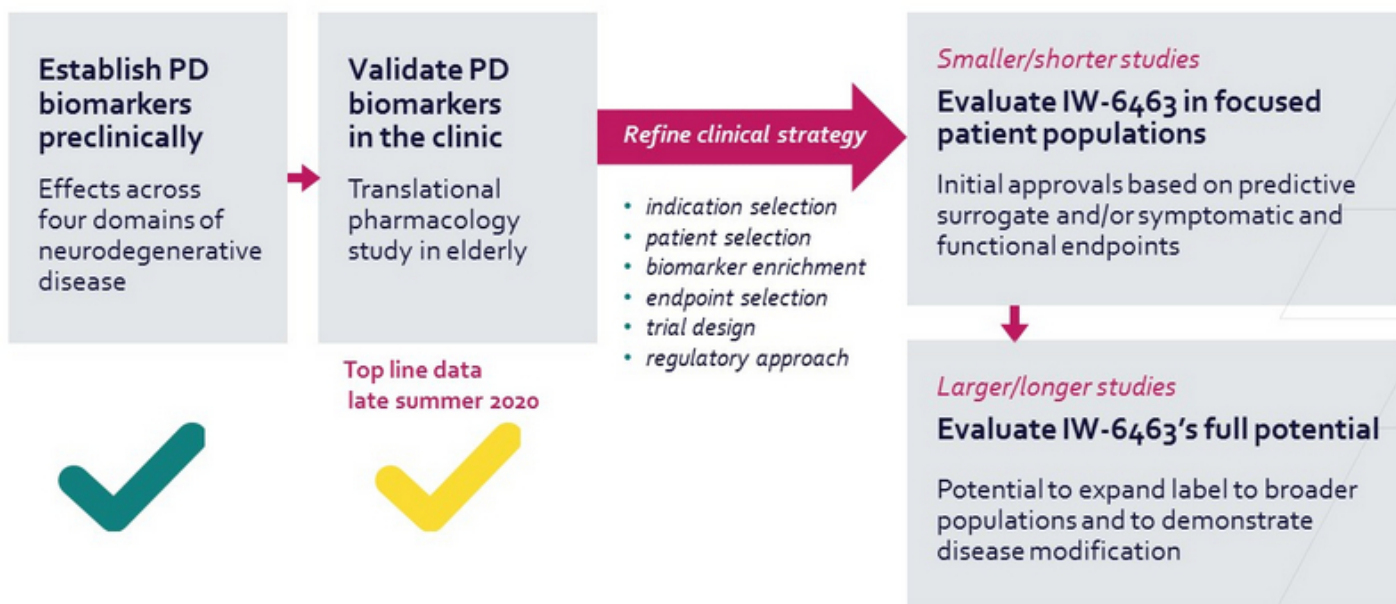
- cytokines, adhesion molecules

### IMPROVE





#### Neuronal Function

- qEEG
- measures of cognition and behavior (NeuroCart®)

# Translational approach from discovery to approval and beyond



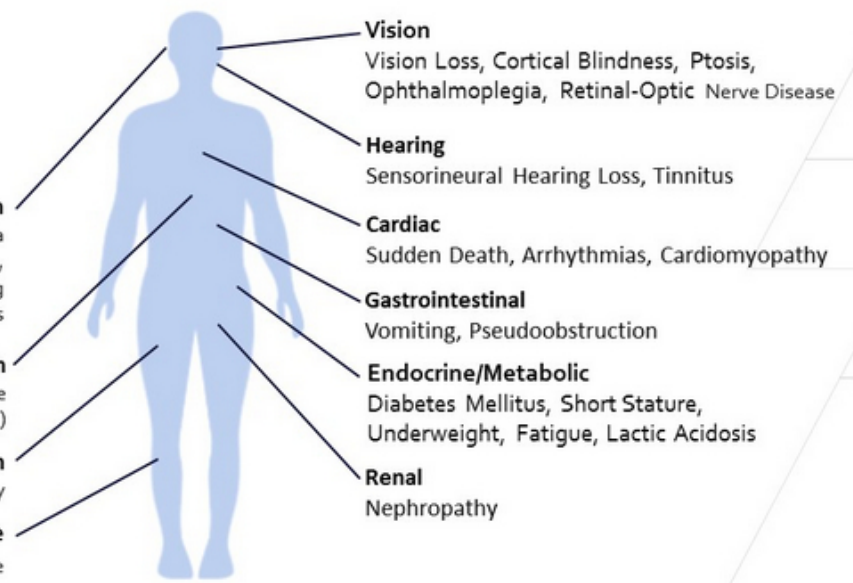
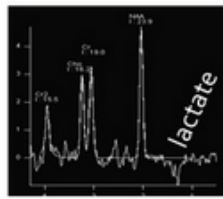
## Clinical direction in CNS: important indications that yield early answers

1	Now is the time: value in CNS		<ul style="list-style-type: none"><li>• MELAS and ADv trials designed to uncover meaningful CNS biomarker engagement</li><li>• approach efficiently de-risks &amp; allows quick progression to the next development stages</li></ul>
2	sGC and CNS: scientific and clinical basis for CNS therapies		
3	Translational pharmacology study: demonstrating CNS activity		
4	<b>Clinical direction in CNS: important indications that yield early answers</b>		

# Mitochondrial Encephalomyopathy, Lactic Acidosis, & Stroke-like Episodes (MELAS)

genetically defined orphan disease, serious CNS & multi-system problems, no approved treatments

## SYMPTOM OVERVIEW



### Central Nervous system

Strokes, Stroke-like Episodes (SLEs), Ataxia (Imbalance), Epilepsy (Seizures), Migraine, Headaches, Cognitive Impairment, Learning Disability, Dementia, Mood disorders

### Autonomic Nervous System

Dysautonomia, Temperature Intolerance, Heart Rate Instability (POTS)

### Peripheral Nervous System

Peripheral Neuropathy

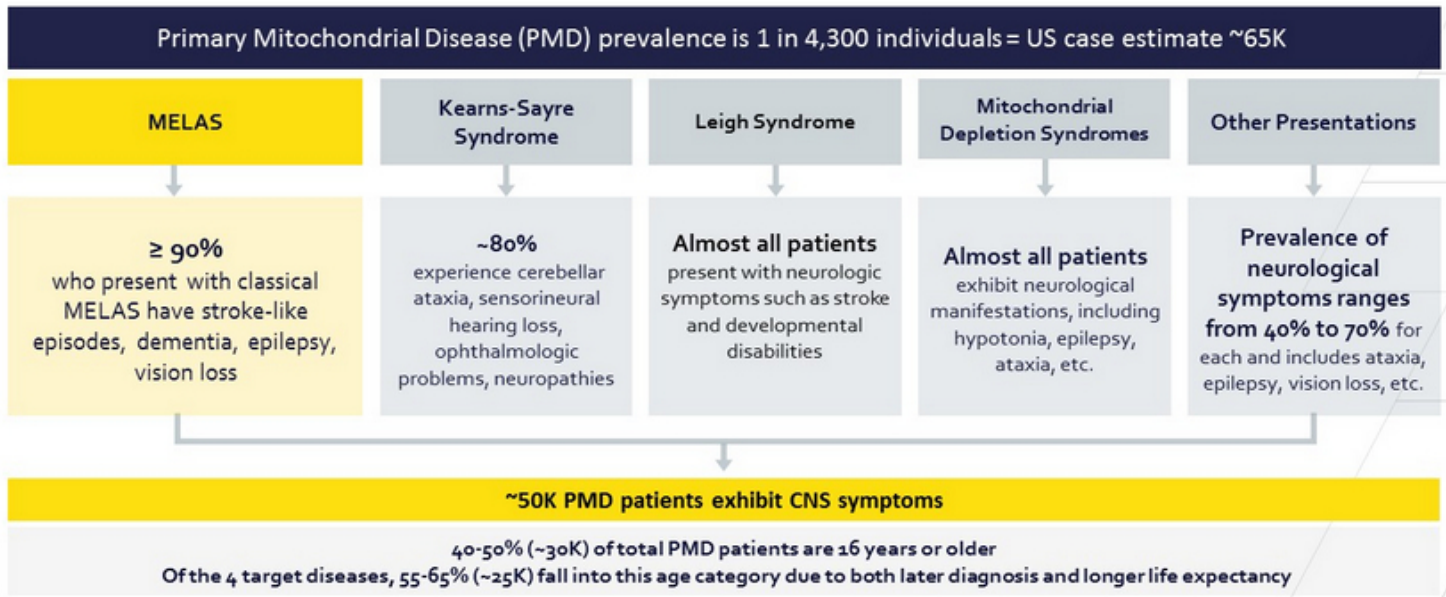
### Skeletal muscle

Muscle weakness, myopathy, exercise intolerance



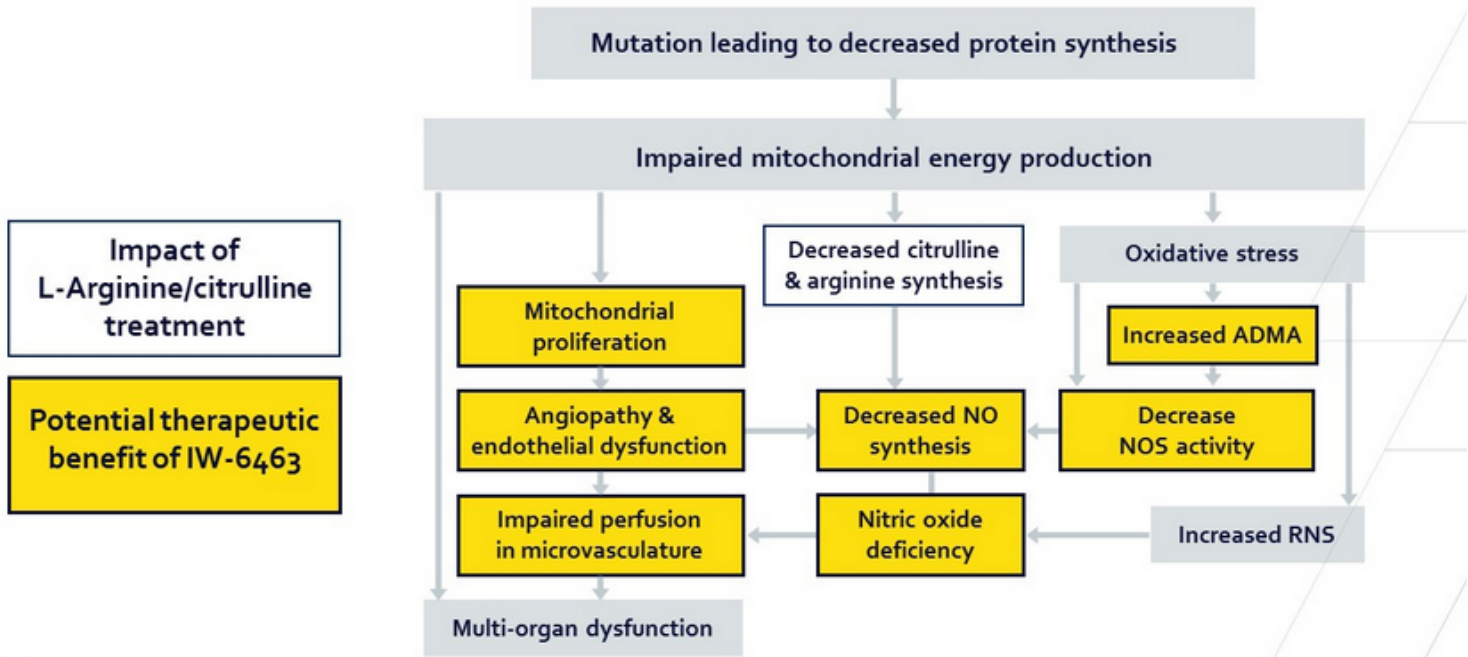
# Focused MELAS trial population for trials; potential for broader use

## US prevalence of mitochondrial disease and CNS symptoms





# IW-6463: potentially impacts MELAS pathophysiology at multiple points



# MELAS: strong supportive data for NO-sGC-cGMP pathway involvement

## SCIENTIFIC RATIONALE FOR INDICATION AND PATIENT SELECTION

### Clinical precedence for NO-sGC-cGMP pathway

- L-Arginine (NO precursor) recommended for acute and chronic treatment

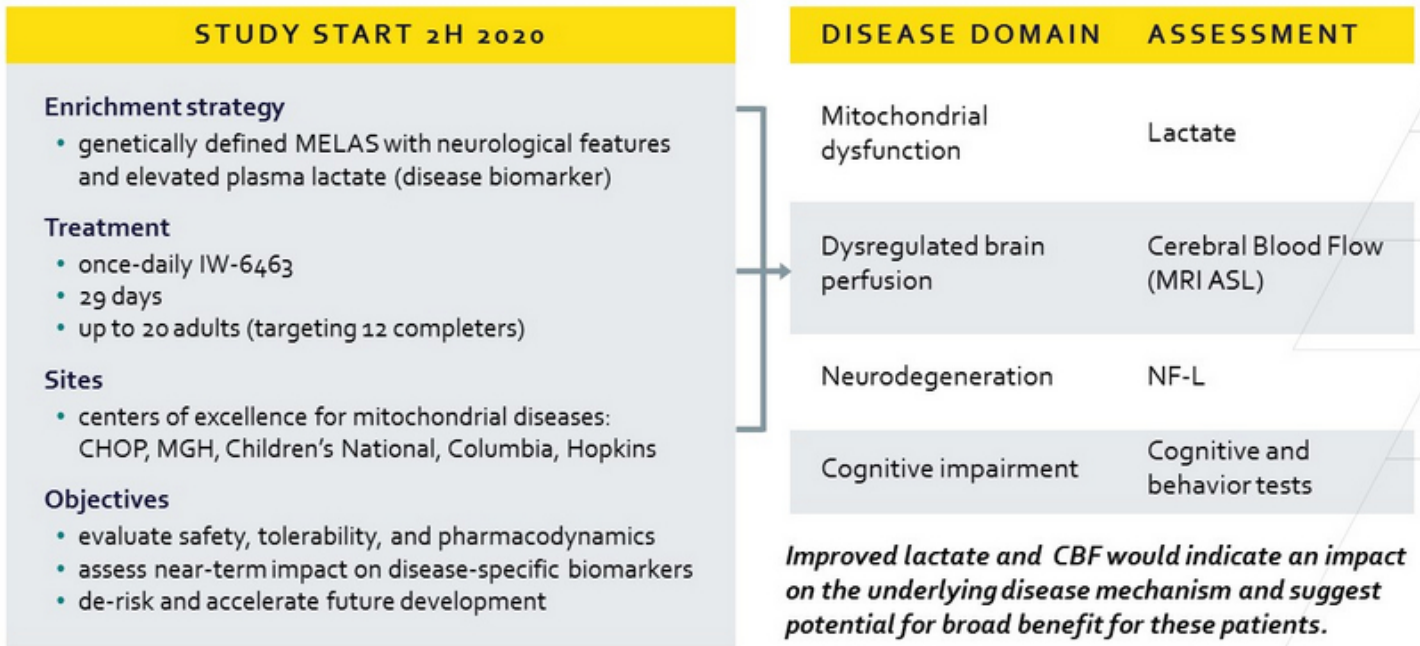
### Pathophysiology

- CNS metabolic dysfunction, elevated lactate, decreased NO
- CNS vascular pathology - impaired blood flow, inflammation, endothelial dysfunction, small vessel disease

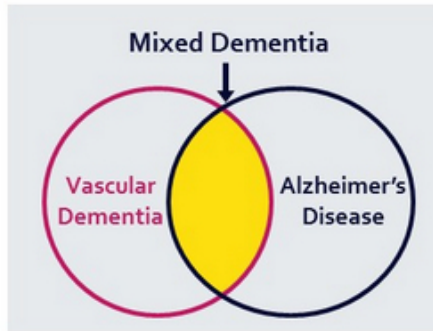
### IW-6463 pharmacology

- CYCN preclinical data suggest IW-6463 improves mitochondrial function and cerebral blood flow

# Ph 2a: open-label study of IW-6463 in patients with MELAS



# Vascular pathology in dementia – clinical perspective

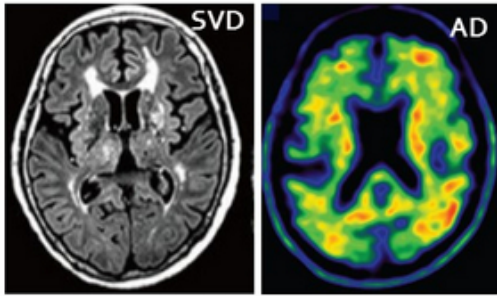


## PATIENT PRESENTATION & CHARACTERISTICS

- AD & vascular dementia - two most common dementias
- pure forms exist, but vascular pathology widely prevalent in AD
- mixed dementia = broad area of overlap
- subcortical small vessel disease (SVD) in a significant portion
- mixed dementia patients more rapidly progressive disease, higher symptom severity

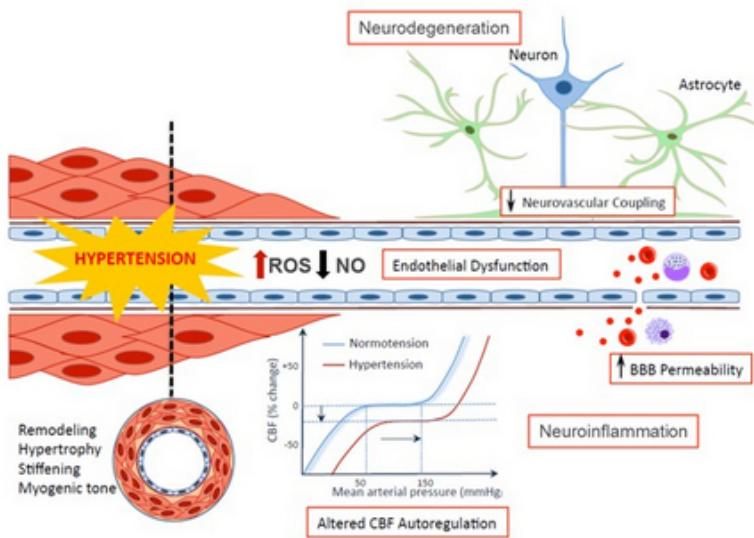
## UNMET NEED

- ~2M US patients; incidence increasing with aging
- symptomatic treatment for AD – modest, brief benefit
- no disease-modifying therapies, none targeting the vasculature



Dementia type	Pathophysiology
Alzheimer's	<ul style="list-style-type: none"> <li>• neurofibrillary tangles</li> <li>• amyloid plaques</li> </ul>
Vascular	<ul style="list-style-type: none"> <li>• impaired brain blood flow</li> </ul>
Mixed Dementia	<ul style="list-style-type: none"> <li>• combination of the above</li> </ul>

# Vascular pathology: a key contributor to dementia



## SUPPORTIVE EVIDENCE

- risk factors and common comorbidities: DM, HTN, HL, Smoking, CAD
- ApoE risk partly mediated by endothelial dysfunction and BBB breakdown
- brain ischemic changes present in dementia, including AD; possibly independent disease progression risk factor
- vasculature implicated in a-beta brain clearance, a process that fails in AD



# AD with vascular pathology (ADv) – focused mixed dementia subset

Defined population well suited for treatment with IW-6463

## DISEASE RATIONALE FOR PATIENT SELECTION

### Pathophysiology

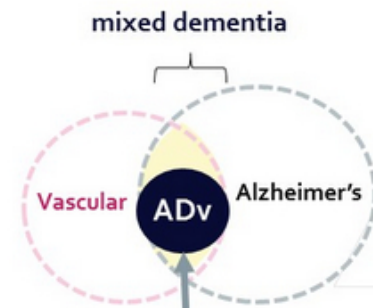
NO dysregulation, endothelial cell loss, impaired blood flow, vascular leakage, inflammation, neuronal dysfunction, and neuronal loss are major contributing factors to rapid disease progression

### Standard of care

No approved therapies to treat vascular dementia.  
AD therapies offer limited benefits; not disease modifying

### Pharmacology

Our preclinical data suggest IW-6463 has potential to improve cerebral blood flow, endothelial health, neuroinflammation, and cellular energetics as well as prevent neurodegeneration

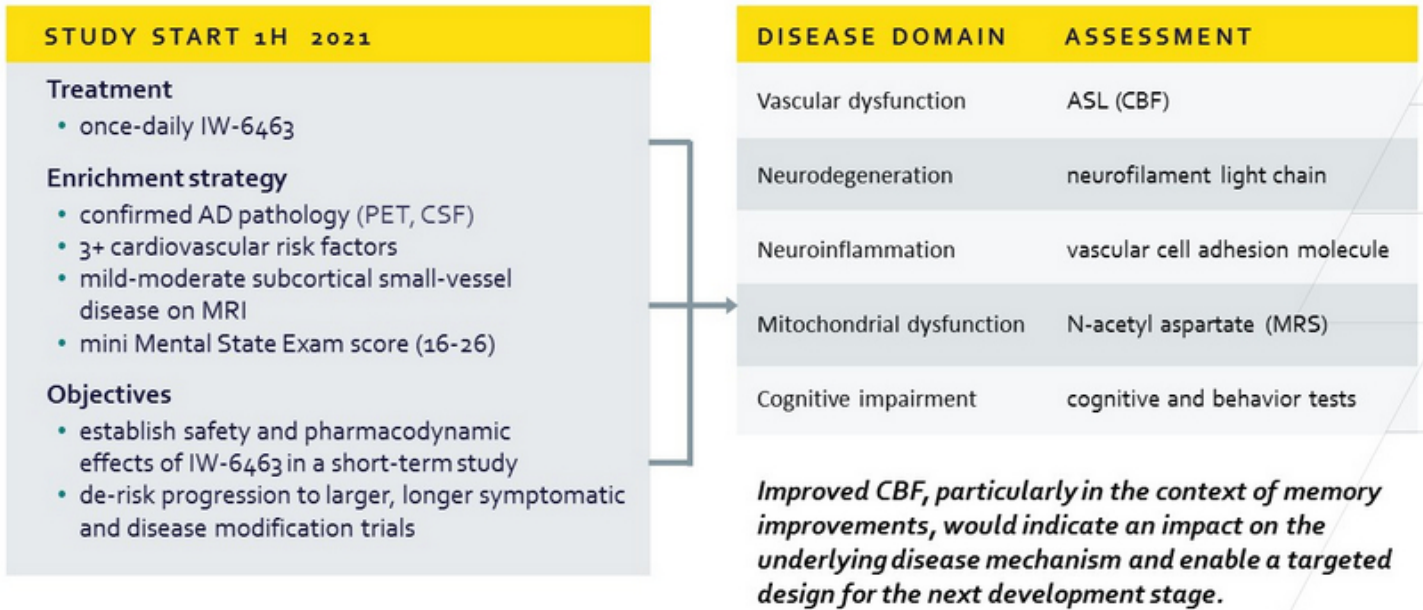


### Target population

ADv: an identifiable subset of mixed dementia patients with:

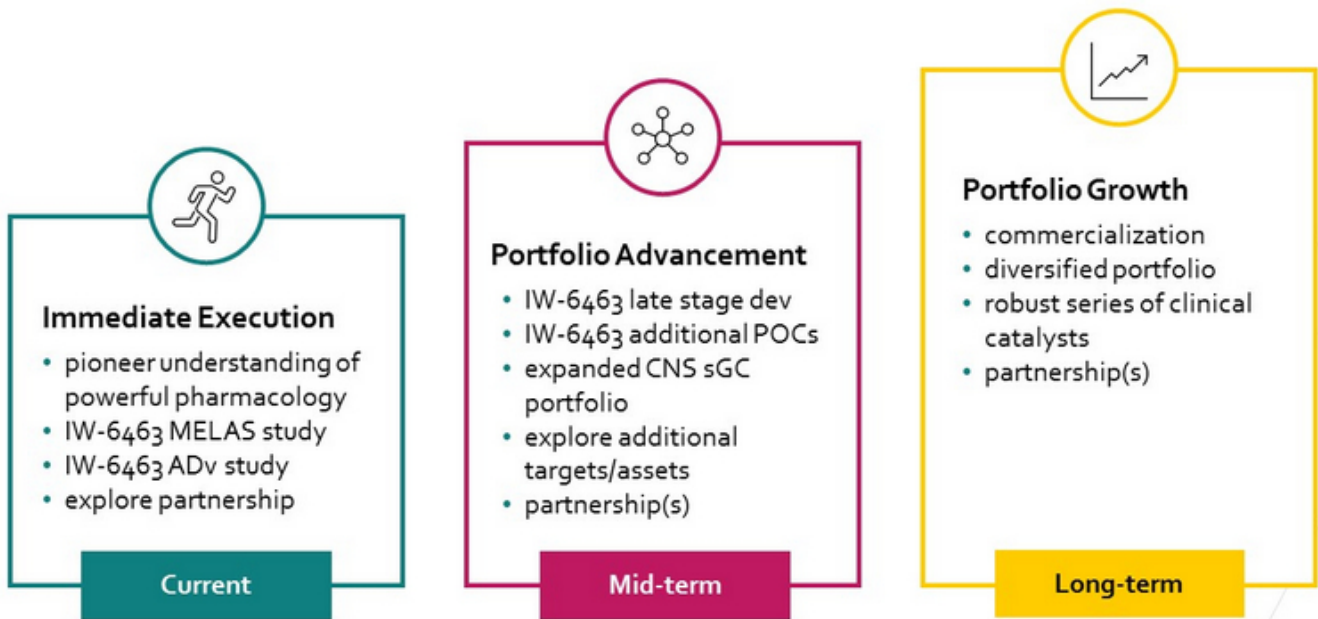
- AD pathology **AND**
- sub-cortical vascular disease **AND**
- CV risk factors

## Ph 2a study of IW-6463 in ADv: emerging design

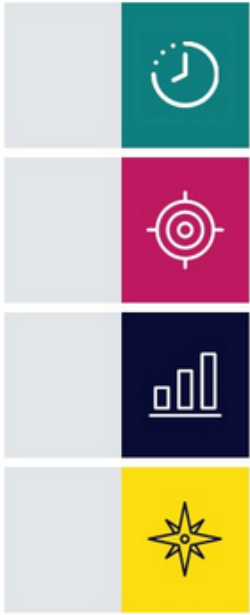




## Committed to building CNS as a core therapeutic area



## Thank you for joining



- powerful platform for potential CNS therapies
- adaptive, risk-reducing, development approach
- seasoned drug development leaders with specialized scientific advisors
- multiple ways to win: SCD and CNS
- ownership base of long-term investors and employees

# Questions





Delivering impact in CNS diseases

Investor webinar  
July 9, 2020

## Citations

Page	Topic	Citation
25	MELAS epidemiology	Sources: 1. J Neurol. 2016; 263: 179–191; US population estimated at 327.2 million; 2. Brain. 2003; 126(5): 1231–1240; 3. NIH Genetics Home Reference; 4. NCBI GeneReviews; 5. Neurotherapeutics. 2013 Apr; 10(2): 186–198
26	MELAS MOA	El-Hattab, AW et al, 2016
30	Vascular pathology	<ul style="list-style-type: none"> <li>• Smith and Markus. New Treatment Approaches to Modify the Course of Cerebral Small Vessel Diseases (Stroke. 2020;51).</li> <li>• Bakker, Erik NTP et al. Lymphatic clearance of the brain; perivascular, paravascular and significance for neurodegenerative diseases. Cell Molec Neurobiol 36.2 (2016): 181-194.</li> <li>• Venturelli, Ben Aisa et al, (Cur Med Chem, 2016, 23, 2770-2788. Targeting NO/cGMP Signaling in the CNS for Neurodegeneration and Alzheimer's Disease).</li> <li>• Montagne et al, (Nature, 581, 7 May 2020. APOE4 leads to blood-brain barrier dysfunction predicting cognitive decline).</li> <li>• Iadecola C et al. (Vascular Cognitive Impairment and Dementia: JACC Scientific Expert Panel. J Am Coll Cardiol. 2019;73(25):3326-44.).</li> <li>• Coutu JP, et al. (Two distinct classes of degenerative change are independently linked to clinical progression in mild cognitive impairment. Neurobiol Aging. 2017; 54:1-9.).</li> </ul>