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Nasdaq: VTGN

Pioneering neuroscience with nose-to-brain neurocircuitry

Forward-looking Statements

This presentation contains certain forward-looking statements that are within the meaning of federal securities laws. These forward-looking statements involve known and unknown risks that are difficult to predict and include all matters that are not historical facts. In some cases, you can identify forward-looking statements by the use of words such as “may,” “could,” “expect,” “project,” “outlook,” “strategy,” “intend,” “plan,” “seek,” “anticipate,” “believe,” “estimate,” “predict,” “potential,” “strive,” “goal,” “continue,” “likely,” “will,” “would” and variations of these terms and similar expressions, or the negative of these terms or similar expressions. Such forward-looking statements are necessarily based upon estimates and assumptions that, while considered reasonable by Vistagen Therapeutics, Inc. (Vistagen or the Company) and its management, are inherently uncertain. As with all pharmaceutical products, there are substantial risks and uncertainties in the process of development and commercialization and actual results or developments may differ materially from those projected or implied in these forward-looking statements. Among other things, there can be no guarantee that any of the Company’s drug candidates will successfully complete ongoing or, if initiated, planned or future clinical trials, receive regulatory approval or be commercially successful, or that the Company will be able to successfully replicate the result of past studies of its product candidates, including fasedienol, itruvone, PH80 or its other product candidates. Other factors that may cause such a difference include, without limitation, risks and uncertainties relating to delays in launching, conducting and/or completing ongoing and planned nonclinical studies and clinical trials, including PALISADE-3 and PALISADE-4 or additional Phase 2 clinical trials of itruvone or PH80; the period over which the Company anticipates its available financial resources will fund its operating expenses; the timing of completion of preclinical studies and clinical trials and related preparatory work required to apply for an maintain regulatory approval for any of the Company’s product candidates; the scope and enforceability of the Company’s patents, including patents related to the Company’s pherine product candidates and AV-101; fluctuating costs of materials and other resources and services required to conduct the Company’s ongoing and/or planned clinical and nonclinical trials; market conditions; the impact of general economic, industry or political conditions in the United States or internationally; and other technical and unexpected hurdles in the development, manufacture and commercialization of the Company’s product candidates. These risks are more fully discussed in the section entitled “Risk Factors” in the Company’s most recent Annual Report on Form 10-K for the fiscal year ended March 31, 2024, and in the Company’s most recent Quarterly Report on Form 10-Q for the quarter ended September 30, 2024, as well as discussions of potential risks, uncertainties, and other important factors in our other filings with the U.S. Securities and Exchange Commission (SEC). The Company’s SEC filings are available on the SEC’s website at www.sec.gov.

Given these uncertainties, you should not place undue reliance on these forward-looking statements, which apply only as of the date of this presentation and should not be relied upon as representing the Company’s views as of any subsequent date.

The Company explicitly disclaims any obligation to update any forward-looking statements other than as may be required by law. If the Company does update one or more forward-looking statements, no inference should be made that we will make additional updates with respect to those or other forward-looking statements. Be aware that our development and commercialization plans may change at any time, without public notice, based on the kinds of risk factors described above.

This presentation also contains estimates and other statistical data made by independent parties and by us relating to market size and growth and other data about our industry. These data involve numerous assumptions and limitations, and you are cautioned not to give undue weight to such estimates and data.

Investment Highlights

- Broad and diverse neuroscience pipeline
- Non-systemic, neurocircuitry-focused pherines with differentiated efficacy and safety
- Positive late-stage clinical studies across multiple neuroscience indications:
  - Social Anxiety Disorder – Phase 3
  - Major Depressive Disorder – Phase 2
  - Vasomotor Symptoms (Hot Flashes) due to Menopause – Phase 2
  - Premenstrual Dysphoric Disorder – Phase 2
  - Psychomotor Impairment due to Mental Fatigue – Phase 2
- Funded U.S. registration-directed Phase 3 program in Social Anxiety Disorder
- Multi-billion-dollar peak sales opportunities across multiple neuroscience programs
- Multiple partnership opportunities

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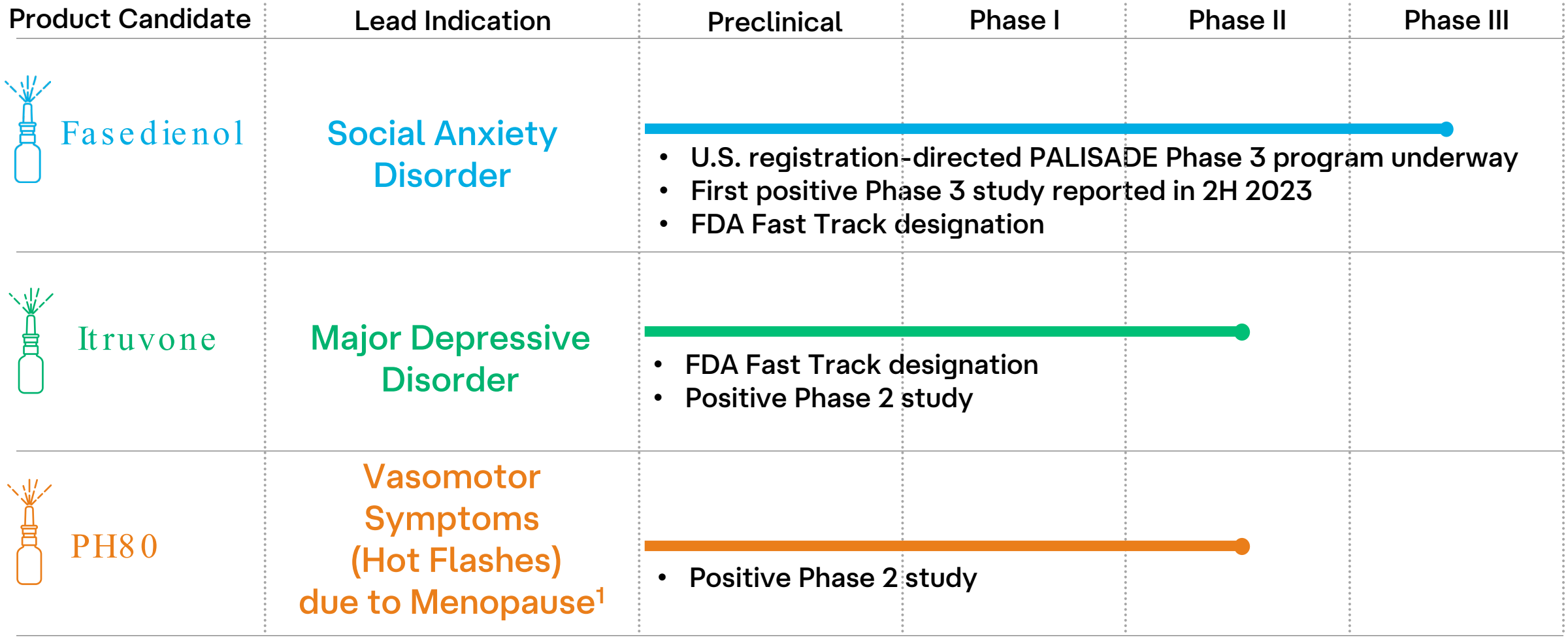
Lead Neuroscience Programs



1. Indicates ongoing U.S. IND-enabling studies to facilitate further Phase 2 clinical development in the U.S.

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Pherines

Pherines

A new class of neuroscience product candidates

- Nose-to-brain neurocircuitry-focused

- Non-systemic MOAs are differentiated from all FDA-approved drugs for target indications

- Rapidly activated neural connections regulate multiple areas of the brain

- Therapeutic effects without binding to neurons in the brain

- Favorable safety data observed in all clinical trials to date

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Main Areas of the Brain Regulated by Pherine Neurocircuits

Fasedienol for Social Anxiety

- NCNs (+)
- OB (+)
- AMY ($Fear_{OFF}$ neurons) (+)
- LC, RN, VTA, HYP (ant), BNST, PC (-)
- HYP (PVN-OXY) (+)

Ituruvone for Depression

- NCNs (+)
- OB (+)
- AMY ($Fear_{ON}$ neurons) (+)
- LC, RN, VTA, HYP (post), BNST, PC, STR (+)
- EA – HIPP (+)
- HYP (PVN-AVP) (+)

PH80 for Menopausal Hot Flashes

- NCNs (+)
- OB (+)
- AMY ($Fear_{OFF}$ neurons) (+)
- LC, RN, HYP (post), BNST, PC, STR (-)
- HYP (POA, AVP neurons) (-)
- HYP (ARC-INF-KNDy neurons) (-)
- HIPP (-)

(+): increase activity; (-): decrease activity

AMY: limbic amygdala	INF: infundibular area	PVN: paraventricular nucleus
ARC: arcuate nucleus	KNDy: kisspeptin-neurokinin B-dynorphin neurons	PC: prefrontal cortex
AVP: arginine vasopressin	LC: locus coeruleus	RN: raphe nucleus
BNST: bed nucleus of stria terminalis	NCNs: nasal chemosensory neurons	STR: striatum
EA: entorhinal area	OB: olfactory bulb	VTA: ventral tegmental area
HIPP: hippocampus	OXY: oxytocin	
HYP: hypothalamus	POA: preoptic area	

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Fasedienol

Acute Treatment of Social Anxiety Disorder

Social Anxiety Disorder

Chronic mental health disorder, onset often in adolescence, characterized by:

Debilitating emotional and physical symptoms in everyday social and performance situations

Emotional Symptoms

- Overwhelming fear
- Surges of anxiety
- Extreme self-consciousness
- Isolation leading to depression

Physical Symptoms

- Blushing / Sweating
- Trembling
- Nausea
- Fast heartbeat / Chest discomfort
- Shortness of breath / Dizziness

Meeting new people

Presenting at work or school

Public speaking

Interviewing for a job

Eating/drinking in front of others

Making a phone call

Source: ADAA Social Anxiety Brochure 2021

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Social Anxiety Disorder (SAD) Affects ~12% of U.S. Adults

Highly prevalent underserved need continues to grow

Treatable Patients

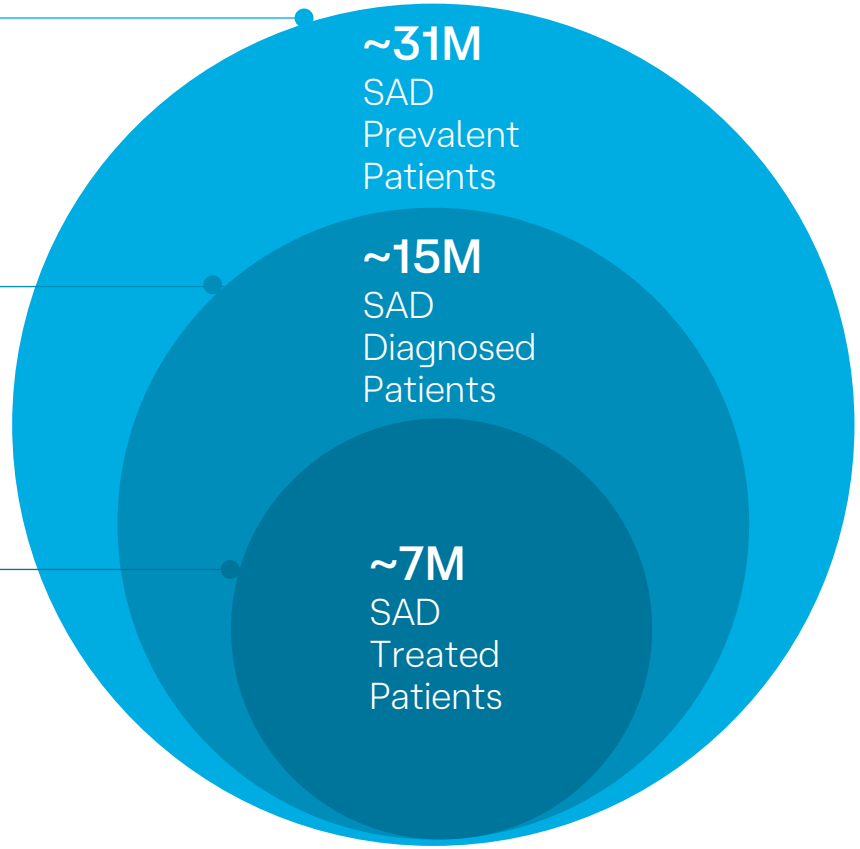
Patients suffering but unaware they may have SAD or not yet motivated to seek professional help

Underserved Patients

Patients unsatisfied with or unwilling to use current treatment options due to efficacy, side effects, or addiction potential

Existing Patients

Patients cycling through treatments, often unsatisfied with their current treatment options but without alternatives



Sources: Oracle Life Sciences. May 2024. U.S. National Health and Wellness Survey (NHWS), 2023, SAD.

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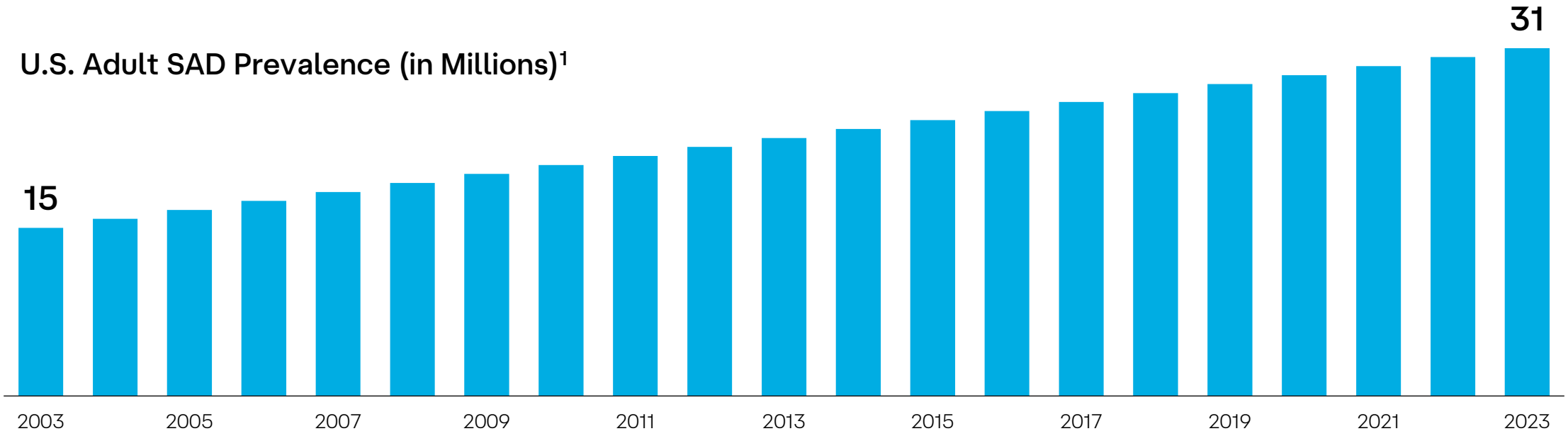
U.S. SAD Disease Burden

Prevalence of SAD continues to grow



Source: 1. NCS-R Survey, 2003; Kantar NHWS 2023, Internal Projections

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There is no FDA-approved Acute Treatment of SAD

Physicians' Preferred Product Profile for the acute treatment of SAD							
Preferred Product Candidate	Fast-acting	Non-systemic	No Long-term Side Effects	Non-sedating*	No Cognitive Impairment	No Withdrawal Syndrome	No Abuse Potential
	✓	✓	✓	✓	✓	✓	✓

Off-label acute treatment options fall short of Physicians' Preferred Product Profile							
Drug	Fast-acting	Non-systemic	No Long-term Side Effects	Non-sedating*	No Cognitive Impairment	No Withdrawal Syndrome	No Abuse Potential
Benzodiazepines[1]	✓	–	–	–	–	–	–
Beta-blockers[2]	✓	–	–	✓	–	–	✓

According to the 2023 WFSBP Guidelines for the treatment of anxiety disorders (Bandelow et el., 2023 World Journal of Biol. Psych.)
[1] Benzodiazepines can be combined with antidepressants in the first weeks of treatment before the onset of efficacy of the antidepressants; recommended second-line
[2] Beta-blockers are not recommended due to lack of demonstrated efficacy in double-blind, placebo-controlled trials

*Non-sedative hypnotic agents

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Fasedienol Brings New Optimism for SAD Patients

- Compelling rapid-onset efficacy and differentiated safety
- Potential to be the first FDA-approved acute treatment of SAD
- Patient-tailored administration, as needed, up to several times a day
- No observed systemic absorption or binding to neurons in the brain
- Not a ”benzo” – does not potentiate GABA or bind to abuse liability receptors
- Favorable tolerability profile, no evidence of abuse liability potential
- Multi-billion-dollar U.S. peak sales potential
- FDA Fast Track designation granted

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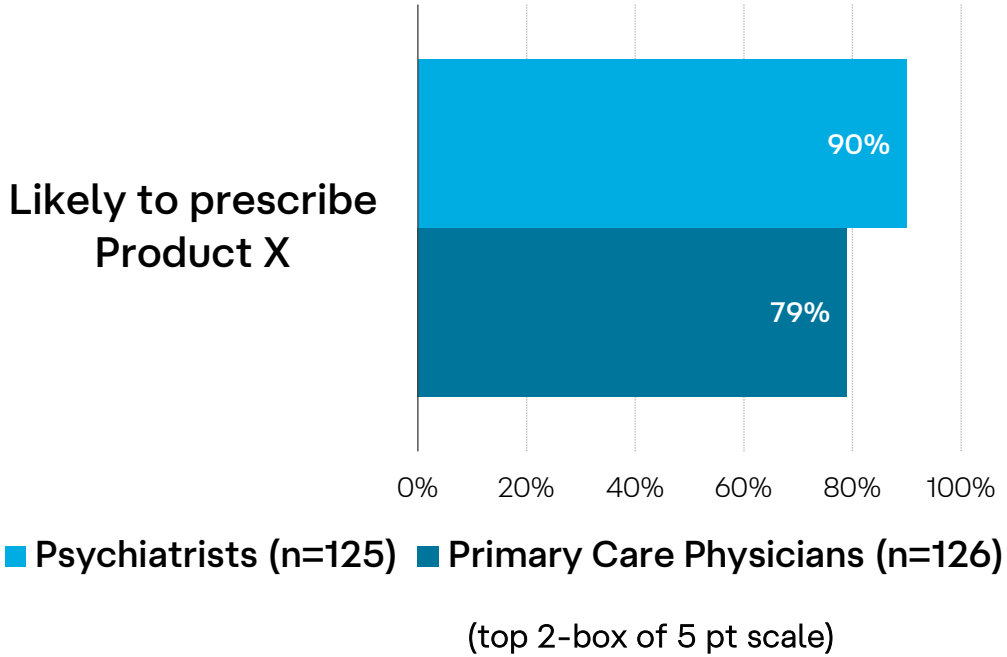
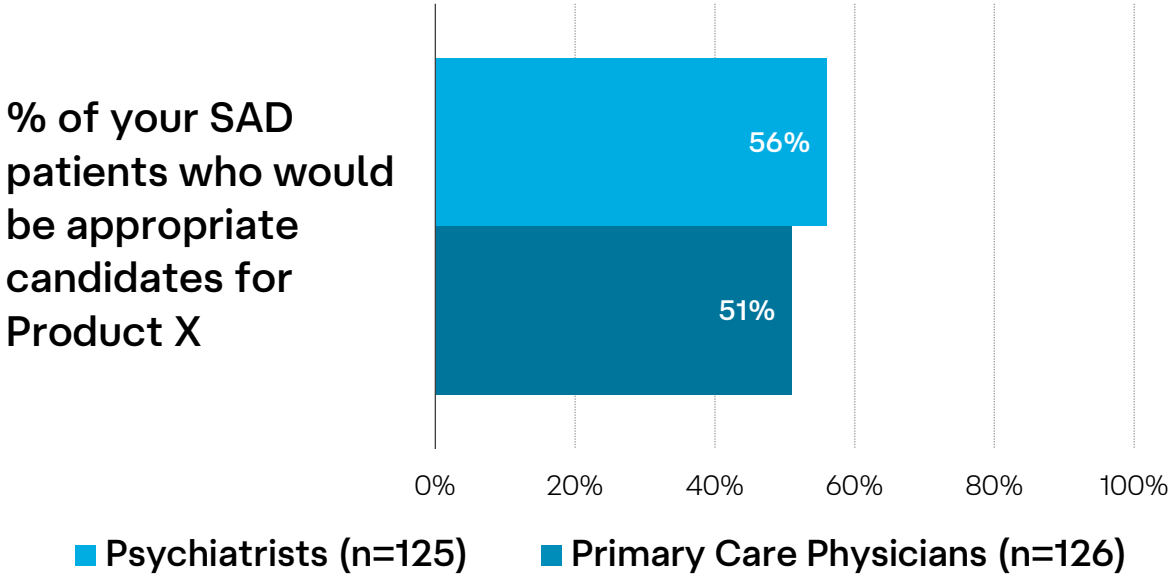
Psychiatrists and Primary Care Physicians Indicate High Intent to Prescribe a Product with Fasedienol's Profile and Note it Would Be Appropriate for the Majority of their SAD Patients





Sources: Vistagen Proprietary Market Research, Online Survey, Jan 2022 (n=251)

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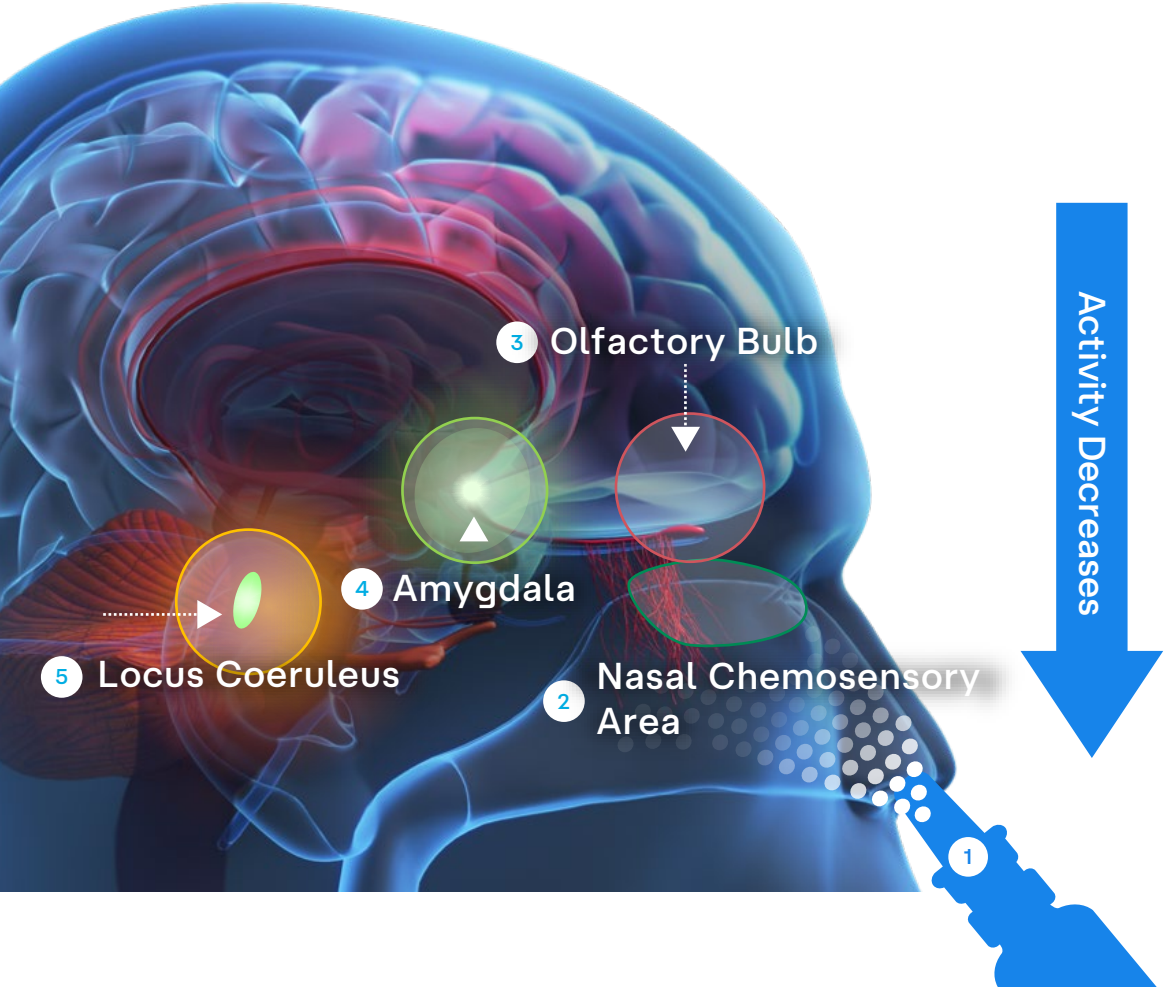
Fasedienol's Proposed Mechanism of Action

Differentiated from all current FDA-approved therapies for anxiety disorders



1. A microgram-level dose of fasedienol is administered intranasally
2. Fasedienol engages peripheral receptors in nasal chemosensory neurons (NCNs)
3. NCNs trigger olfactory bulb neurons (OBs)
4. OBNs stimulate inhibitory GABAergic "Fear Off" neurons in the limbic amygdala, the main fear and anxiety center of the brain
5. Stimulation of the limbic amygdala **DECREASES** activity of the sympathetic nervous system, which facilitates fear extinction activity of the limbic-hypothalamic system, as well as in other parts of the brain

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Sources: Monti L, and Liebowitz MR (2022). Neural circuits of anxiolytic and antidepressant pherine molecules. CNS Spectrums https://doi.org/10.1017/S109285292000190X

PALISADE-2 Phase 3 Trial for Acute Treatment of SAD

Public speaking challenge in a clinical setting

Study Design

U.S. randomized, double-blind, placebo-controlled, single-dose administration Phase 3 trial to evaluate the efficacy, safety, and tolerability of fasedienol for acute treatment of anxiety in adult subjects with SAD induced by a public speaking challenge in a clinical setting

I/E Criteria

Inclusion Criteria

+ SAD diagnosis; LSAS > 70
+ HAMD < 18 at screening
+ Normal olfactory function, Quick Olfactory Test if suspected necessary
+ No recent history of COVID-19

Exclusion Criteria

— Significant psychiatric illness, use of psychotropic medication
— Suicidal behavior
— Alcohol or substance use disorder
— Significant nasal pathology

Outcome Measures

Primary Endpoint

- Change in mean Subjective Units of Distress (SUDS) scores from baseline compared to placebo

Secondary Endpoint

- Individual responder rates based on Clinical Global Impression – Improvement (CGI-I)

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PALISADE 2 Phase 3 Top-line Efficacy Results

Positive results across all endpoints - primary, secondary, and exploratory

Met Patient-reported Primary Efficacy Endpoint	Met Clinician-reported Secondary Efficacy Endpoint	Met Patient-reported Exploratory Efficacy Endpoint
LS Mean SUDs change from baseline vs. placebo	CGI-I proportion of responders vs. placebo	PGI-C proportion of responders vs. placebo
p=0.015	p=0.033	p=0.003

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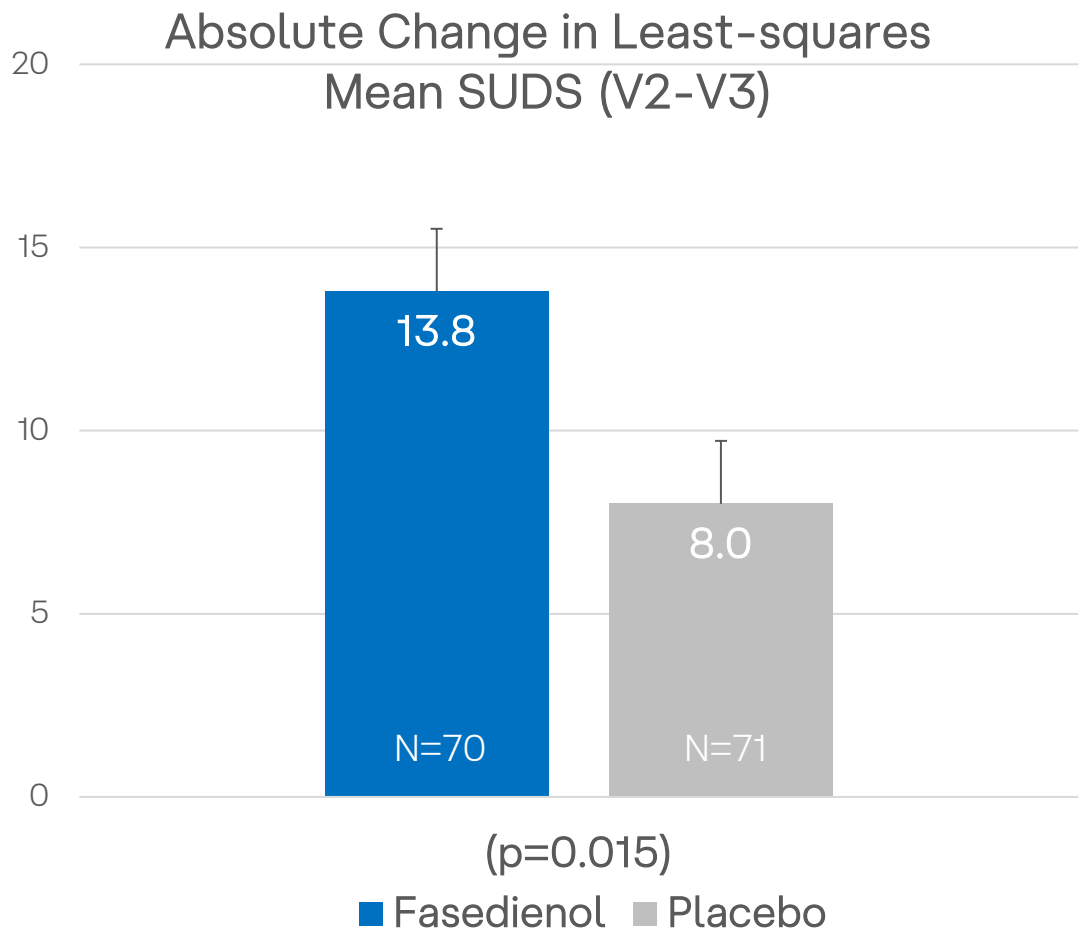
PALISADE-2 Primary Efficacy Endpoint (Patient-reported): Change in Least-squares Mean SUDS Scores

Met primary efficacy endpoint with a change from Baseline of 5.8 points better than placebo



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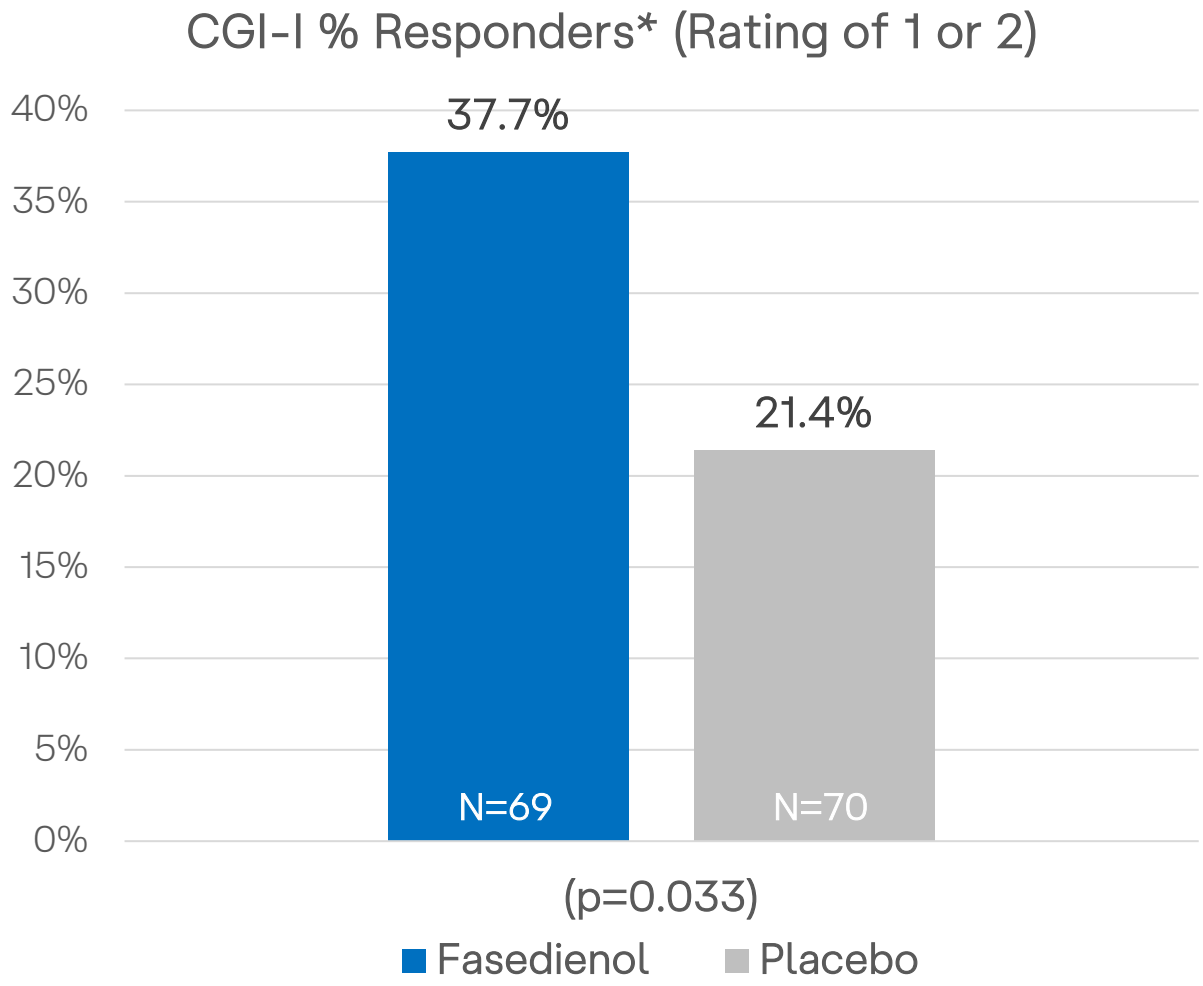
PALISADE-2 Secondary Efficacy Endpoint (Clinician-reported): CGI-I Responders vs. Placebo

Fasedienol responders 1.8 times greater than placebo



CGI-I Score

1 = Very Much Less Anxious
2 = Much Less Anxious
3 = A Little Less Anxious
4 = No Change
5 = A Little More Anxious
6 = Much More Anxious
7 = Very Much More Anxious

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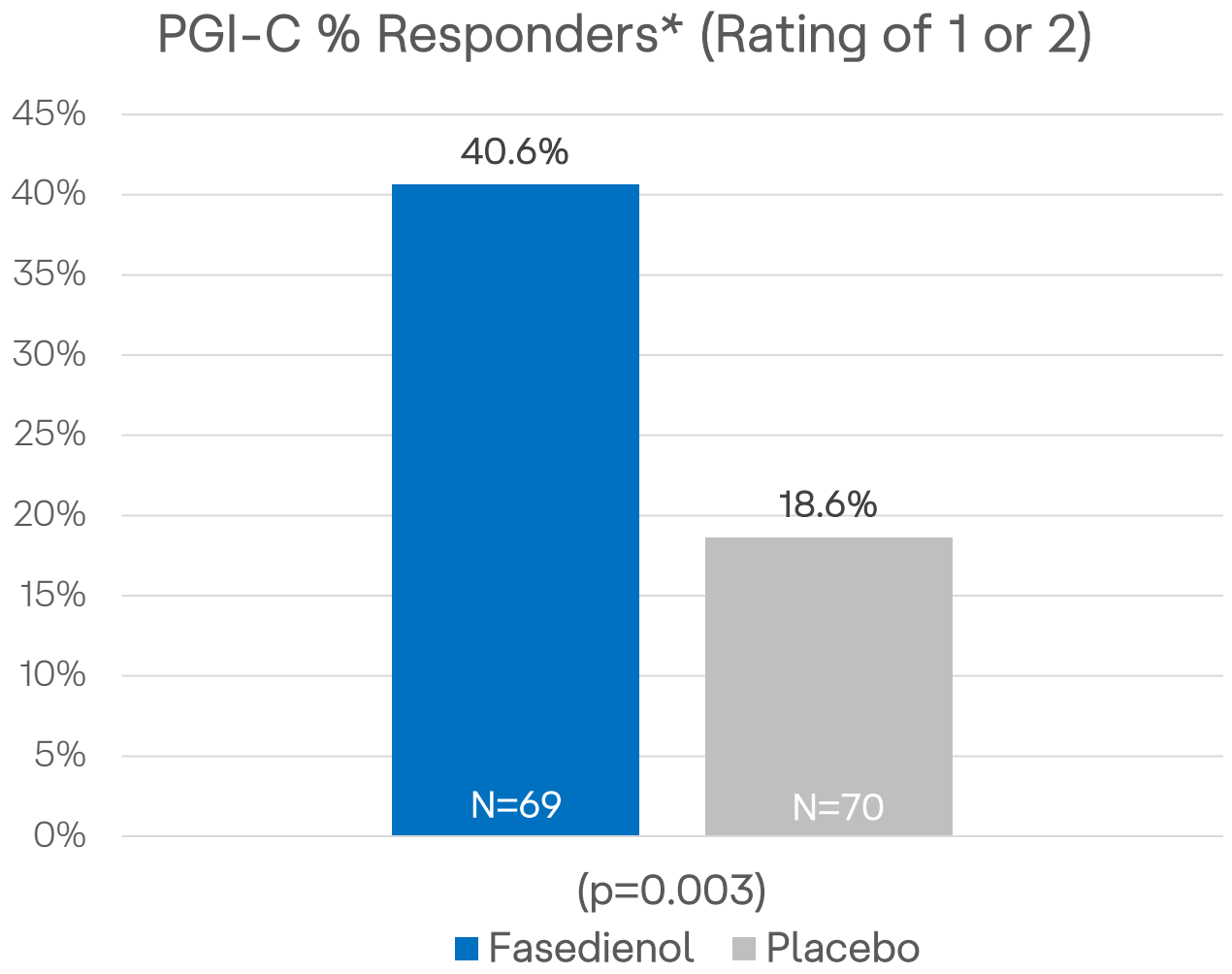
* In accordance with FDA-aligned, pre-specified statistical analysis plan, missing CGI-I values for one subject on placebo and one subject on fasedienol were not imputed for the ITT CGI-I responder analysis. The missing values resulted from site error and are considered missing at random.

PALISADE-2 Exploratory Endpoint (Patient-reported): PGI-C Responders vs. Placebo

Fasedienol responders 2.2 times greater than placebo



PGI-C Score

1 = Very Much Less Anxious
2 = Much Less Anxious
3 = A Little Less Anxious
4 = No Change
5 = A Little More Anxious
6 = Much More Anxious
7 = Very Much More Anxious

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* In accordance with FDA aligned, pre-specified statistical analysis plan, missing PGI-C values for one subject on placebo and one subject on fasedienol were not imputed for the ITT PGI-C responder analysis. The missing values resulted from site error and are considered missing at random.

PALISADE-2 Tolerability Profile

Fasedienol's favorable tolerability profile was consistent with results from all trials completed to date

No severe or serious adverse events were reported

Adverse events were infrequent and mild or moderate in severity

No discontinuations due to adverse events following the single dose of fasedienol

There were no treatment-emergent adverse events reported above a 2% occurrence, except pyrexia in the placebo group (2.49%)

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PALISADE Open Label Safety Study

Over 30,000 doses self-administered in daily life by 481 SAD patients

Design

Long-term self-administration of 3.2 µg of fasedienol as needed, up to 4 times per day prior to anxiety-provoking social and performance stressors in daily life, with a mean study duration of 4 months, and a maximum study duration of over 10 months

Results

- 56.8% of subjects reported at least one treatment-emergent adverse event (TEAE)
  - 54.9% of the subjects reported mild or moderate TEAEs
  - Only 1.9% of subjects reported severe TEAEs (only 2 of the severe TEAEs were deemed drug-related (headache and dysmenorrhea) and both were single, one-day occurrences that resolved without dose change or discontinuation)
- Other than headache (17.0% overall; 8.7% drug-related) and COVID-19 infection (11.4% overall; 0% drug-related), no TEAE occurred in more than 5.0% of subjects

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PALISADE-3 and PALISADE-4 Phase 3 SAD Trials with OLE*

Study Design

U.S. randomized, double-blind, placebo-controlled, single-dose administration Phase 3 trial to evaluate the efficacy, safety, and tolerability of fasedienol for acute treatment of anxiety in adult subjects with SAD induced by a public speaking challenge in a clinical setting

I/E Criteria

Inclusion Criteria

+ Female and male subjects; age 18-65
+ SAD diagnosis; LSAS ≥ 70; HAMD<18
+ Normal olfactory function determined by Quick Olfactory Test
+ Medical and psychiatric health

Exclusion Criteria

— Nasal swab within the past four weeks
— COVID-19 diagnosis + any residual symptoms within past 4 weeks
— Drug use (incl. cannabis), heavy use of alcohol, smoking, vaping
— Other primary psychiatric disorders; receiving CNS active medications

Outcome Measures

Primary Endpoint

- Change in mean Subjective Units of Distress (SUDS) scores from baseline compared to placebo

Secondary Endpoints

Individual responder rates based on:

- Patient Global Impression of Change
- Clinical Global Impression – Improvement

*OLE = Open Label Extension.

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Study Enhancements for PALISADE-3 and PALISADE-4

Designed to ensure high-quality enrollment, increase surveillance and rigorous adherence to the study protocol, and limit variability

- Increased Vistagen site-facing staff and reduced reliance on CRO surveillance
- Focused and recurring in-person training of clinical site personnel
- Expanded subject eligibility review at screening
- No mask-wearing during the public speaking challenge
- Treatment administration by clinical site healthcare provider
- No symptoms of Covid or recent nasal swabs

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Fasedienol U.S. Registration-directed Phase 3 Program

To complement PALISADE-2, Vistagen is conducting two additional PALISADE Phase 3 studies as part of its U.S. registration-directed PALISADE Phase 3 program for acute treatment of SAD

PALISADE-3 and PALISADE-4 Phase 3 Trials with Open-label Extension (OLE)

Design: Phase 3 Acute Treatment Public Speaking Challenge similar to PALISADE-2

Potential OLE: Up to 12 months

Target enrollment: Approximately 236 randomized in each study

Estimated top-line data readouts: 2025

Vistagen believes either PALISADE-3 or PALISADE-4, if successful, together with PALISADE-2, may establish substantial evidence of the effectiveness of fasedienol in support of a potential U.S. NDA submission to the FDA for the acute treatment of anxiety in adults with Social Anxiety Disorder

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Itruvone
Major Depressive Disorder

MDD is a Highly Prevalent and Unsatisfied Market

U.S.

21 million

Adults had at least one major depressive episode[1]

Global

280 million

People of all ages suffer from depression[2]

For many patients, the current standard of care for MDD is inadequate

Oral Antidepressants

- Often do not work; slow to work
  - Initial ADT effective in 1 of 3 patients[3]
- Significant potential side effects
  - Anxiety, weight gain, sexual dysfunction, insomnia, dizziness, nausea, vomiting, headache, sweating

Oral Atypical Antipsychotics

- Often do not work
- Significant potential side effects
  - Weight gain, stomach pain, tiredness, dizziness, tardive dyskinesia, headache, nervousness, restlessness, cognitive impairment

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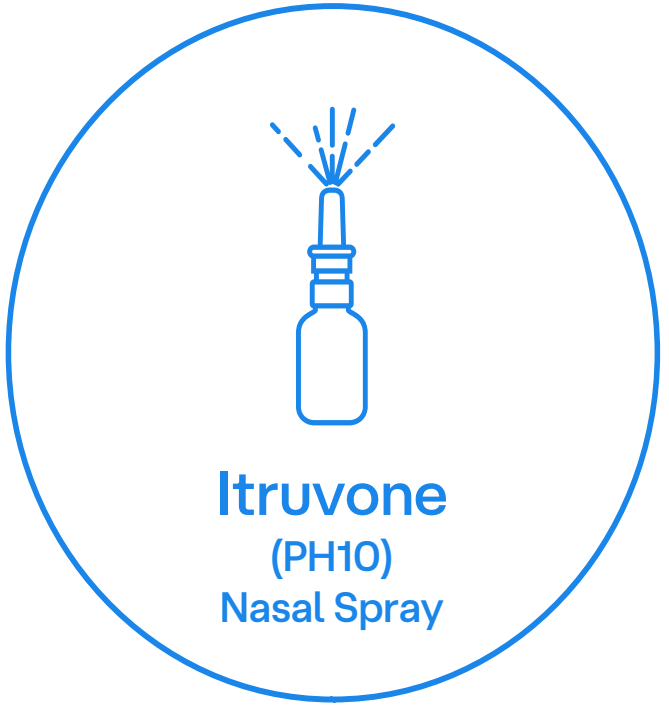
Sources: 1. National Institute of Mental Health, https://www.nimh.nih.gov/health/statistics/major-depression.shtml; 2. World Health Organization, https://www.who.int/news-room/fact-sheets/detail/depression; 3. Rush AJ, et al. Am J. Psychiatry. 2006, 163(11): 1905-1917 (STAR*D Study)

Itruvone has Potential to Transform Treatment of MDD

- Non-systemic, neurocircuitry-focused pherine MOA is differentiated from all FDA-approved depression therapies
- Designed for rapid-onset antidepressant effects
- Observed to be non-sedating, non-addictive
- Positive exploratory Phase 2A trial
- Well-tolerated in all clinical studies to date, no reports of weight gain or sexual side effects
- FDA Fast Track designation



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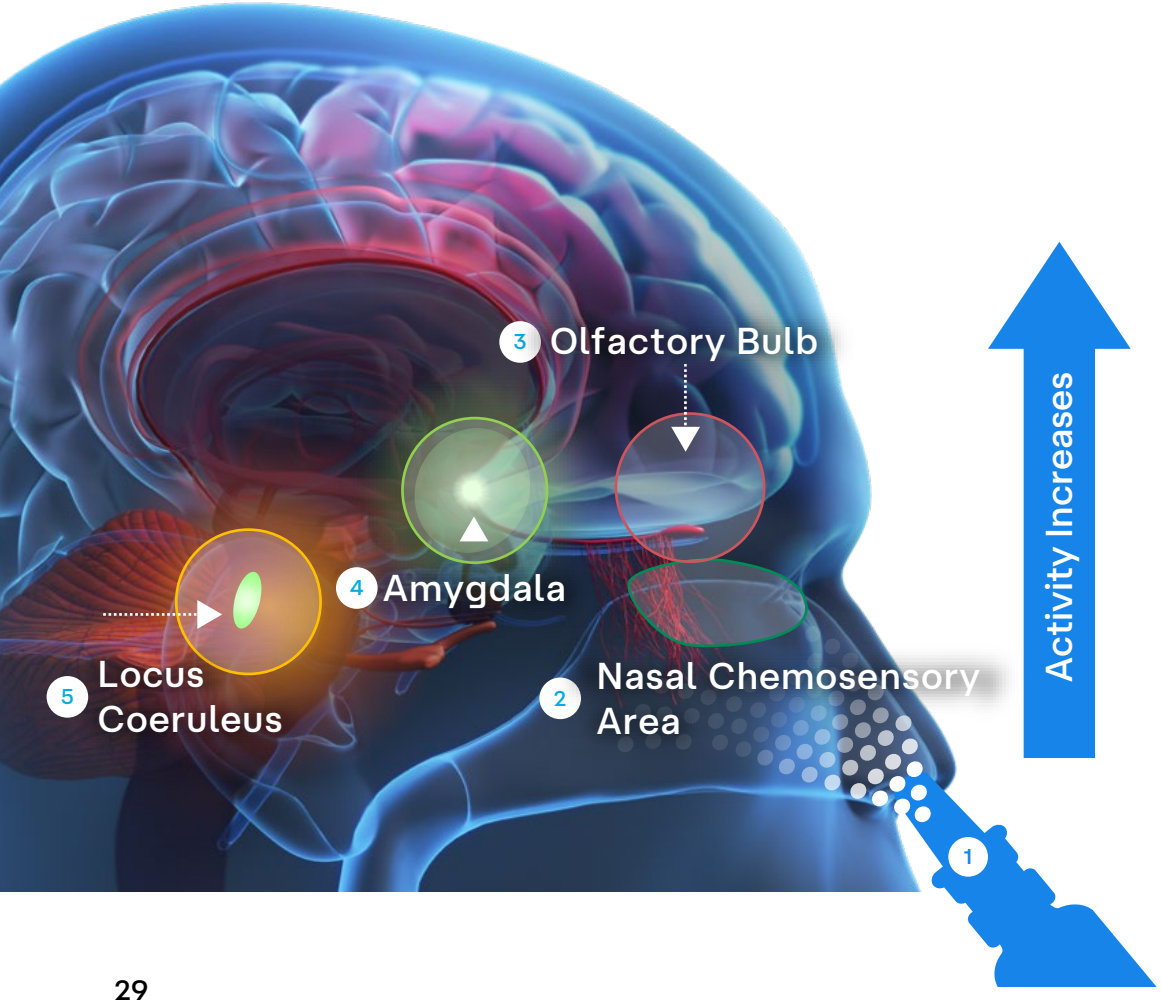
Itruvone's Proposed Mechanism of Action

Differentiated from all current pharmacological therapies for depression disorders



1. Microgram-level intranasal dose of itruvone is administered intranasally
2. Itruvone engages peripheral receptors in nasal chemosensory neurons (NCNs)
3. NCNs trigger subgroups of interneurons in the olfactory bulbs (OBs)
4. Neurons in the OBs then stimulate GABAergic and CRH neurons in the limbic amygdala
5. The stimulation of the limbic amygdala **INCREASES** the activity of the sympathetic autonomic nervous system and the release of catecholamines from the midbrain

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Sources: Monti L, and Liebowitz MR (2022). Neural circuits of anxiolytic and antidepressant pherine molecules. CNS Spectrums https://doi.org/10.1017/S109285292000190X

Itruvone Phase 2A Study in MDD

Design: Phase 2A randomized, double-blind, placebo-controlled, parallel design exploratory clinical study (n=30)

Dosing: 3.2 μg or 6.4 μg of itruvone or placebo i.n., 2 times per day for 8 weeks

Primary Endpoint: Change in HAMD-17 scores from baseline compared to placebo

Results:

- **6.4 μg dose significantly reduced depressive symptoms as early as one week based on HAMD-17 scores compared to placebo (p=0.022)**
- 3.2 μg dose showed a trend (p=0.101)
- Strong effect sizes for 3.2 μg and 6.4 μg vs. placebo at 1 week and at 8 weeks

Well-tolerated, no serious adverse events observed, no dissociative side effects, no reports of weight gain or sexual side effects

Rapid-onset antidepressant effects with itruvone observed in MDD study participants with minimal side effects

Sources: Monti, L., Nicolini, H., Liebowitz, M., & Hanover, R. (2019). "A Placebo Controlled Trial of PH10: Test of a New Rapidly Acting Intranasally Administered Antidepressant." *Br J Phar Med Res* 4(6): 2157-2168.

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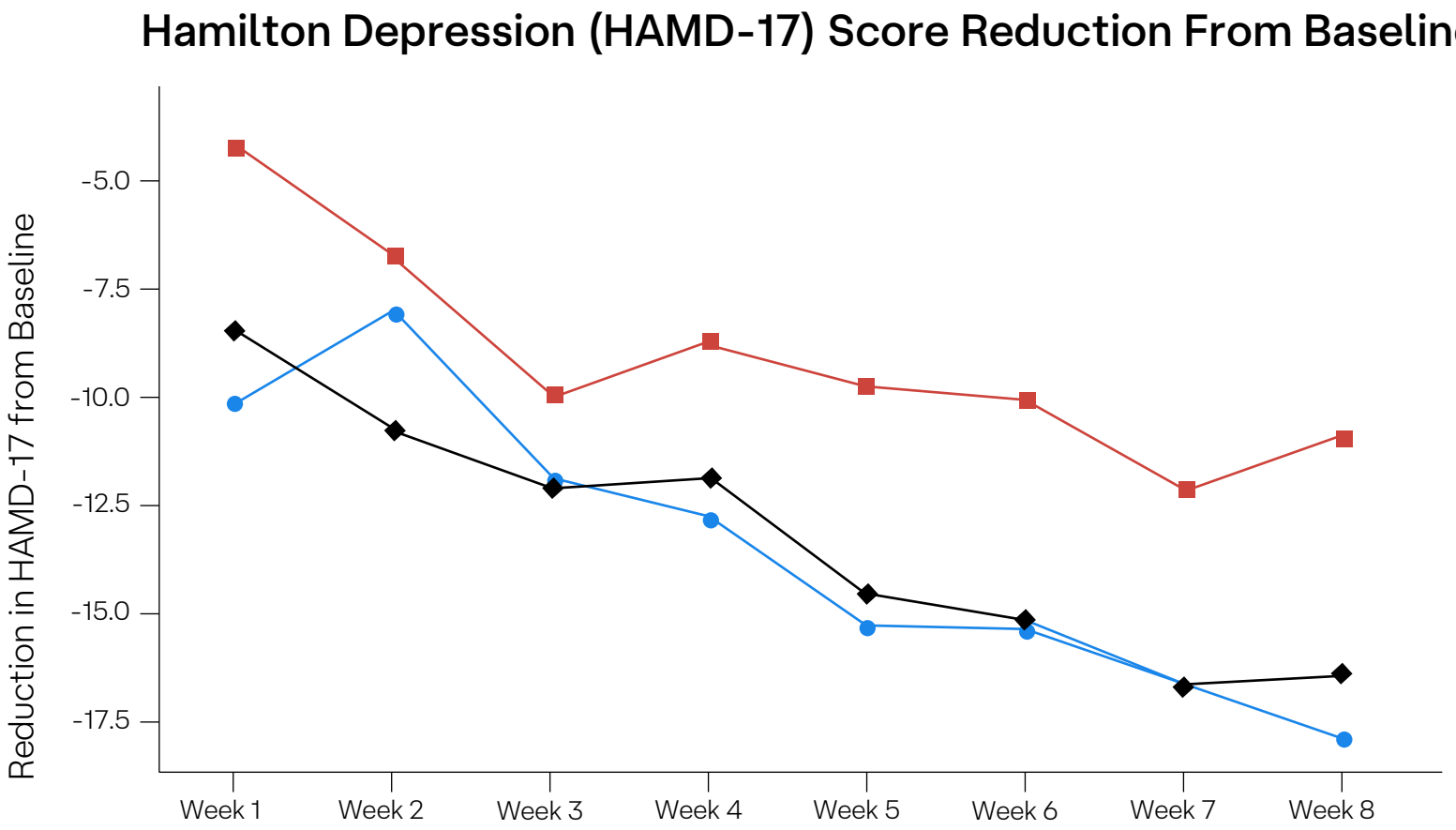
Ituruvone Phase 2A Study in MDD



6.4 µg dose produced rapid-onset and sustained antidepressant effects in MDD study participants with minimal side effects

Ituruvone Dose	HAMD-17 Score	p (itruvone vs placebo)	Cohen's D (Effect Size)
◆ 3.2 µg (Low Dose)	-16.3	0.101	0.74
● 6.4 µg (High Dose)	-17.8	0.022	0.95
■ Placebo	-10.9	--	--

Sources: Monti, L., Nicolini, H., Liebowitz, M., & Hanover, R. (2019). "A Placebo Controlled Trial of PH10: Test of a New Rapidly Acting Intranasally Administered Antidepressant." *Br J Phar Med Res* 4(6): 2157-2168.

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Itruvone Phase 2B Clinical Plan*

Planning for Phase 2B development of itruvone as a non-systemic monotherapy for MDD is underway

- **Potential Design:** U.S. randomized, double-blind, placebo-controlled, parallel study in male and female subjects (18 to 65 years old) with a confirmed diagnosis of moderate to severe MDD

- Outpatient self-administration of 6.4 µg (3.2 µg twice daily) itruvone nasal spray over a 6-week period

- **Potential Primary Efficacy Endpoint:** Change from Baseline to Day 42 in the HAMD-17 Rating Scale

*Potential initiation of this Phase 2B study is subject to FDA feedback and strategic considerations

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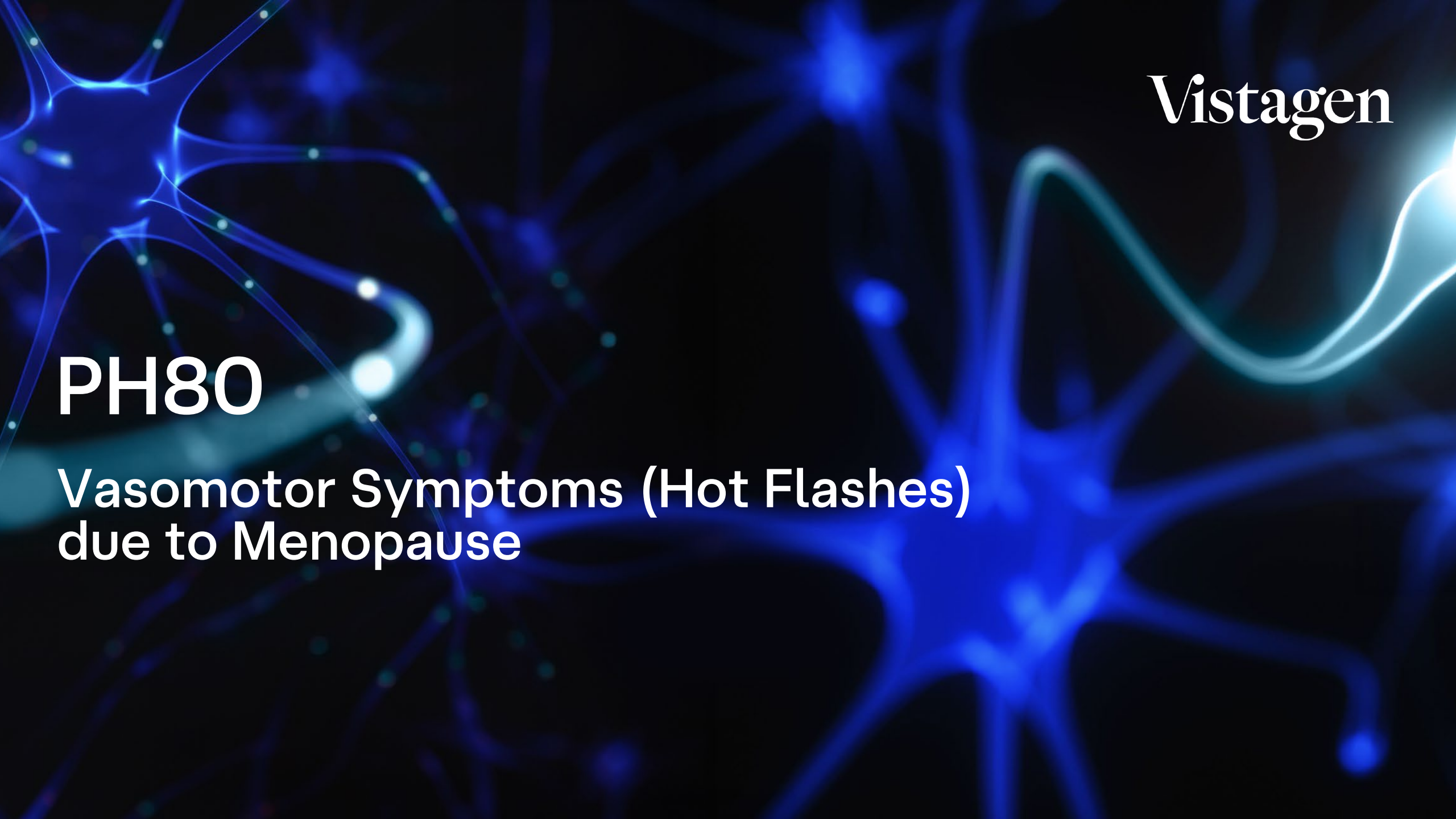
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PH80
Vasomotor Symptoms (Hot Flashes) due to Menopause

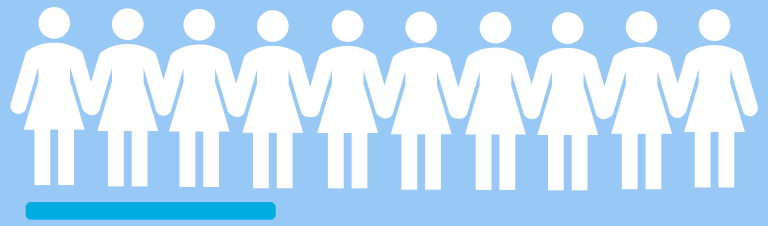
VMS (Hot Flashes): Highly Prevalent and Disrupt Daily Life

- Hallmark symptoms include sudden sensations of **heat, night sweats, flushed skin, anxiety, and chills lasting for several minutes**
- On average, symptoms persist for more than 7 years, however, **they may last for over a decade**
- Frequency and severity of hot flashes vary from person to person.
- **When severe, hot flashes can occur 20-30 times a day and significantly disrupt daily activities**

~27M women in the U.S.

~9M Suffering with severe form of hot flashes

40-65 years old Typical age group of women affected by hot flashes



Lowest prevalence rate (35%) in pre-menopause (40-50 years old)

Highest prevalence rate (75%) in peri-menopause (50-52 years old)

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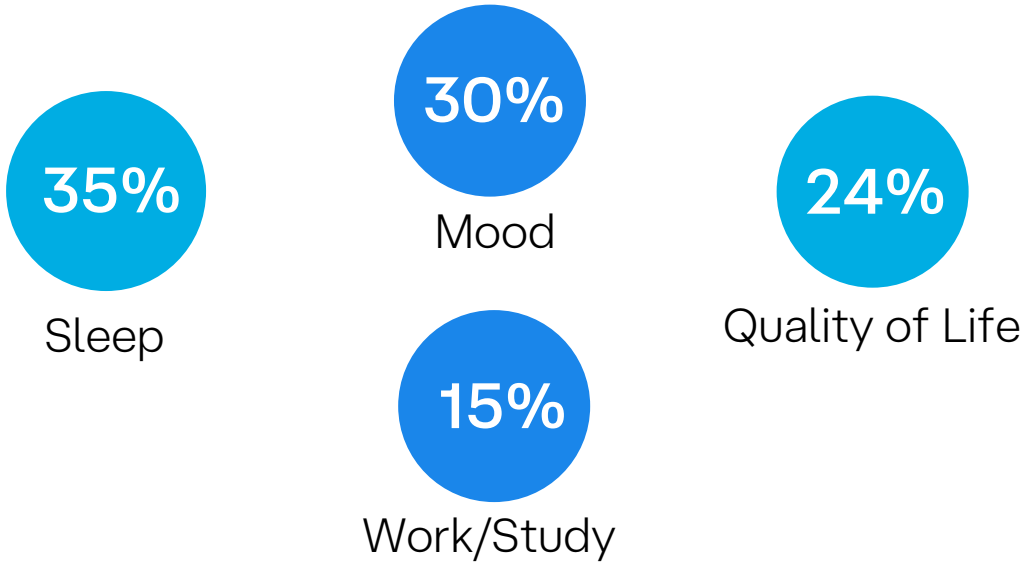
VMS (Hot Flashes): Highly Prevalent and Disrupts Daily Life

- Hot flashes can be a serious **physical burden on women and impact their quality of life and daily activities**
- In a patient and physician survey conducted in U.S. and EU, hot flashes have substantial impact on...



- Women with hot flashes may demonstrate an increased risk of cardiac disease and osteoporosis

Current Treatments

- First line treatment is **Hormonal Therapy**
  - Estrogen
  - Progesterone
  - Combination of both
- **SSRI/SNRIs are used as alternatives** to Hormone Therapy
  - Brisdelle (paroxetine)
  - Off label therapies such as venlafaxine, clonidine, gabapentin, and pregabalin
- Fezolinetant was recently approved but has a **liver damage warning** and a **significant monitoring burden**

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PH80 potential to transform treatment of VMS (Hot Flashes)

- Neurocircuitry-focused pherine MOA differentiated from all approved treatments
- Non-systemic and non-hormonal
- Rapid-onset potential to be taken as-needed to provide relief in the moment
- Potential for differentiated safety and tolerability advantages over currently approved hormonal and NK3 therapies
- Positive exploratory Phase 2A study (n=36); IND-enabling program to facilitate further Phase 2 development underway

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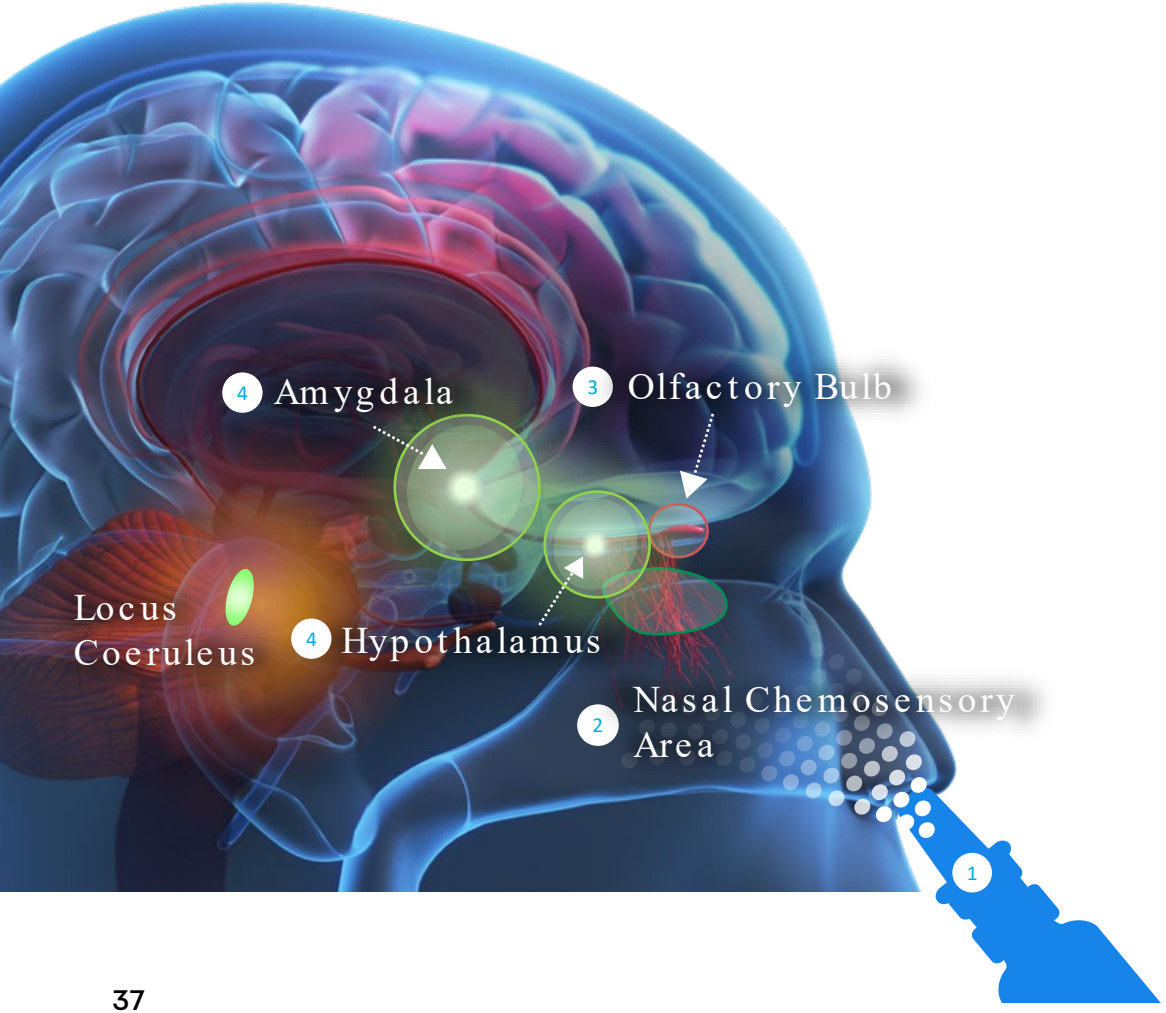
PH80's Novel Proposed Mechanism of Action

Differentiated from currently approved women's health therapies



1. Microgram-level intranasal dose of PH80 is administered
2. PH80 engages peripheral receptors in nasal chemosensory neurons (NCNs)
3. Once stimulated with PH80, NCNs then trigger subgroups of neurons in the olfactory bulbs (OBs)
4. Neurons in the OBs then stimulate neurons in the limbic amygdala and the hypothalamus

Activity Decreases

The stimulation of neurons in the limbic amygdala and the hypothalamus decreases the activity of the autonomic nervous system and decreases activation of the trigeminal-vascular neural circuits

Downstream effects potentially include:

- Decreased irritability;
- Decreased muscle tension;
- Reduced core body temperature; and
- Reduced feeling of internal heat

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PH80 Phase 2A Study in Menopausal Hot Flashes

Objective: Proof-of-principle evaluation of PH80 efficacy and tolerability for the management of vasomotor symptoms (hot flashes) due to menopause

Study Details: Randomized, double-blind, placebo-controlled, Phase 2A study. Participants self-administered PH80 (3.2 µg/dose) or placebo for 4 weeks up to 4 times daily with a dose at night if needed (up to 16 µg/day). Participants were followed up weekly during the treatment period

Participants: Menopausal women aged 45-60 (n=36) with ≥ 8 hot flashes of moderate to severe intensity per day on average for 1 week (≈ 56/week)

Outcome Measures: Daily ratings of the Number, Severity, Disruption in function (Bother), and Sweating associated with daily hot flashes, PGI-C, CGI-I, Safety, and Tolerability

Results: PH80 showed statistically and clinically significant improvement vs. placebo in the number and severity of hot flashes while also significantly reducing participant-reported disruption in function and sweating associated with hot flashes

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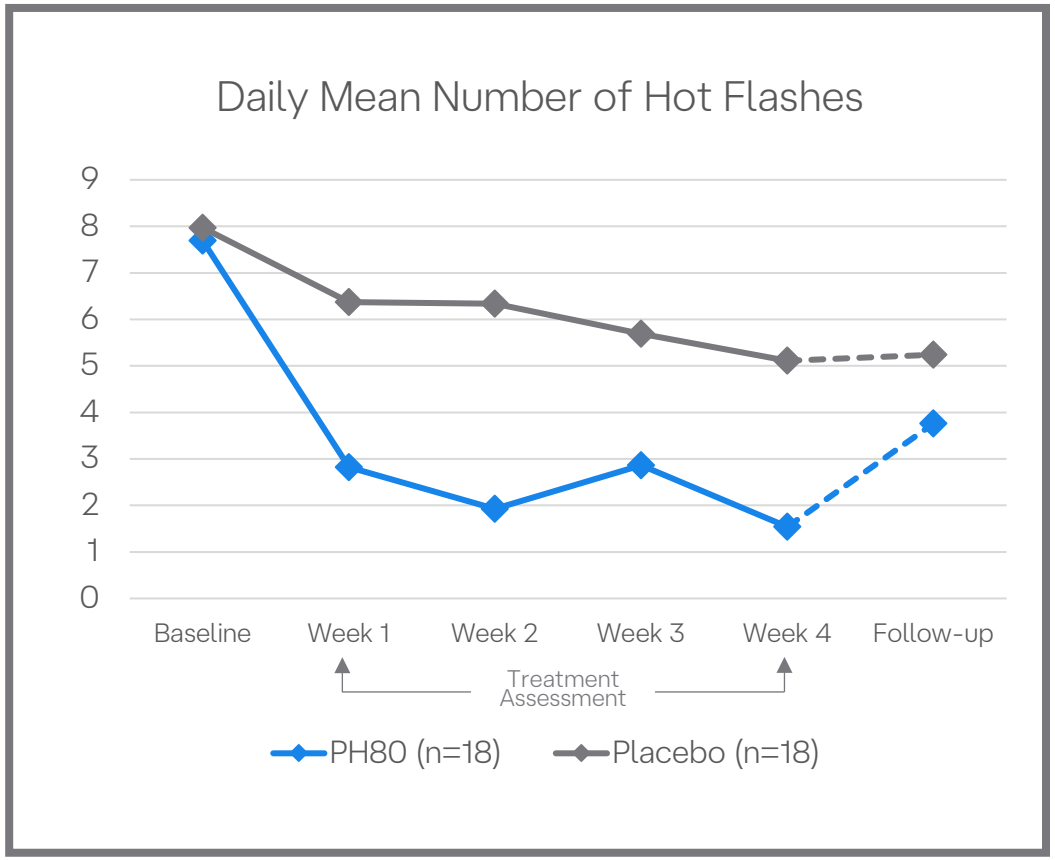
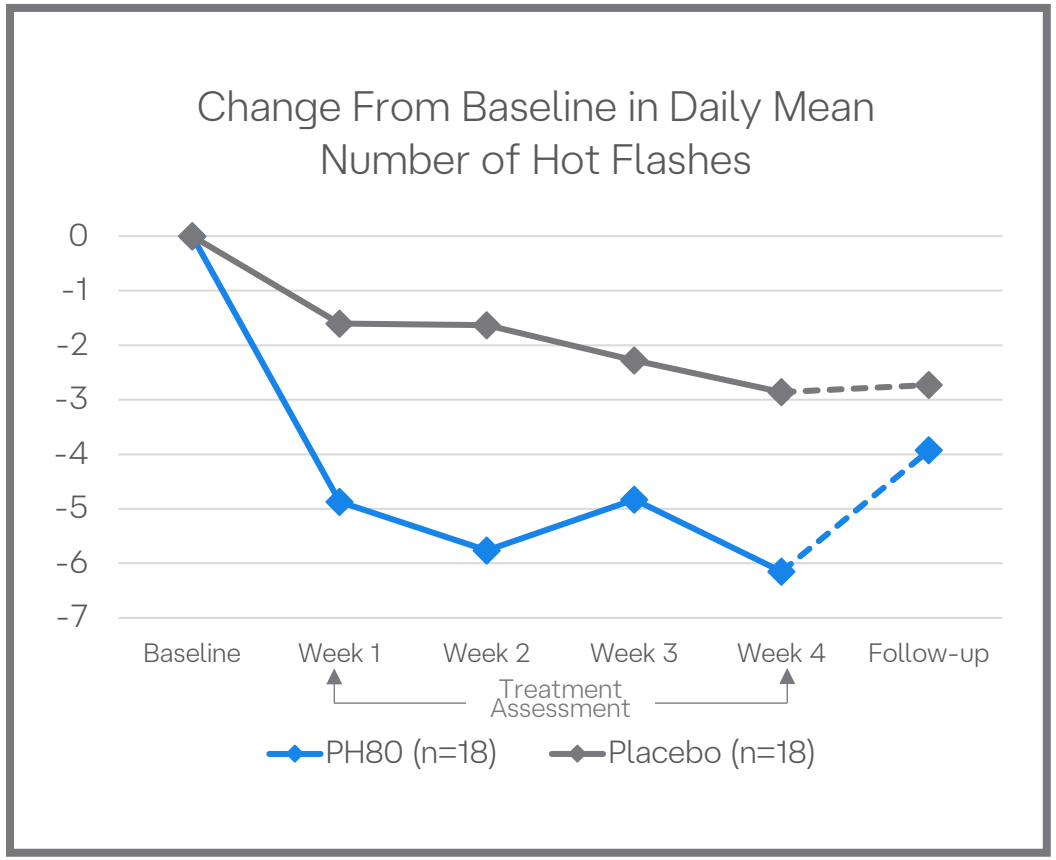
PH80 Phase 2A Study in Hot Flashes: Met Primary Efficacy Endpoint

Statistically and clinically significant improvement vs. placebo in the number of hot flashes at 1 week and maintained through 4 weeks of treatment (p<0.001)





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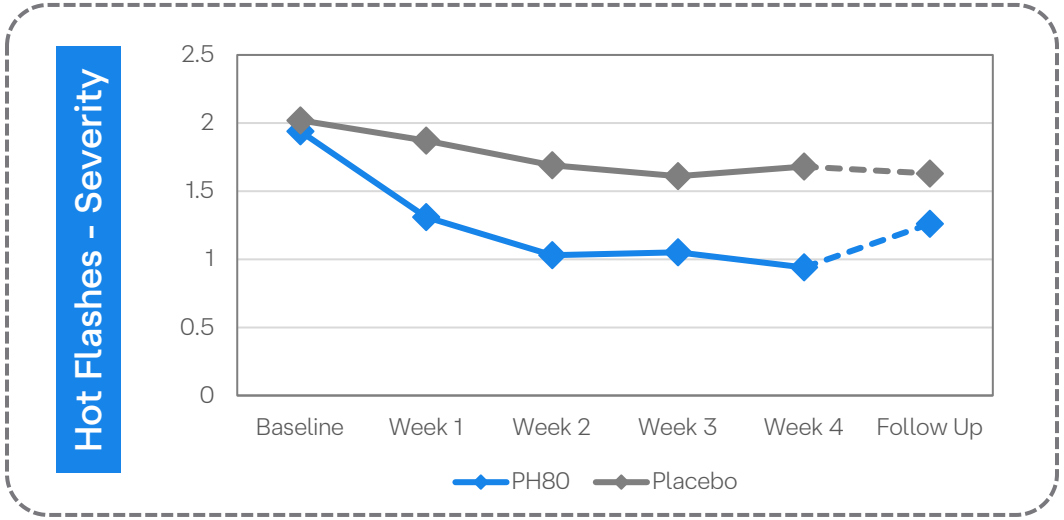
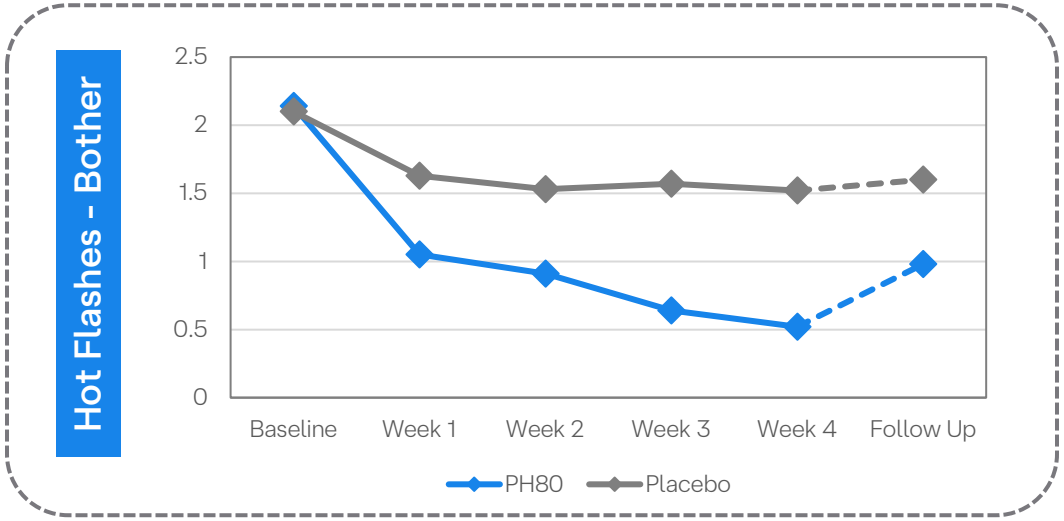
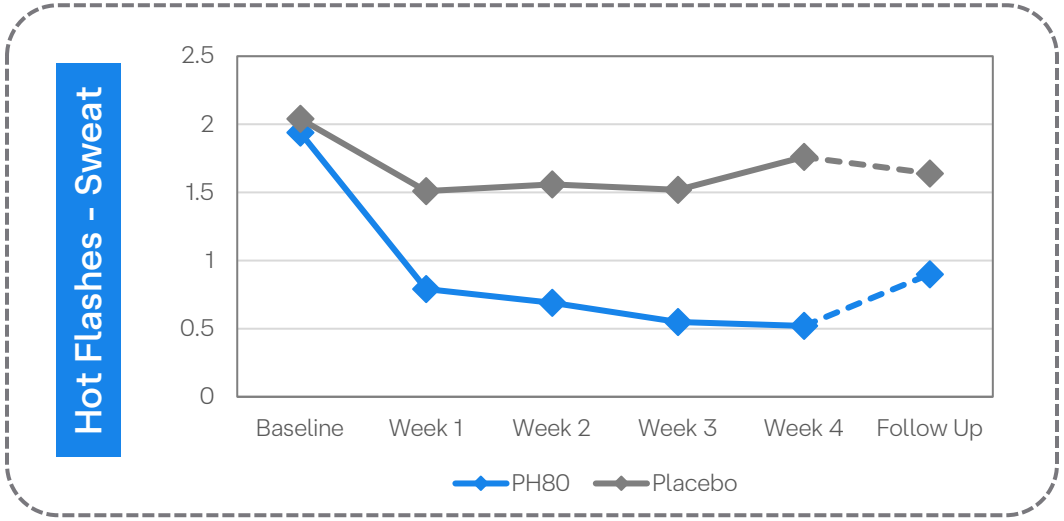
Source: Monti, L. et. al. (2024) PH80 Nasal Spray for Treatment of Vasomotor Symptoms (Hot Flashes) Associated with Menopause: Phase 2 Randomized, Controlled Study. The Menopause Society 2024 Annual Meeting.

PH80 Phase 2A Study in Hot Flashes: Met Secondary Efficacy Endpoint

Significantly reduced participant-reported severity, disruption in function (Bother), and sweating associated with hot flashes during the treatment period as compared with placebo







Source: Monti, L. et. al. (2024) PH80 Nasal Spray for Treatment of Vasomotor Symptoms (Hot Flashes) Associated with Menopause: Phase 2 Randomized, Controlled Study. The Menopause Society 2024 Annual Meeting.

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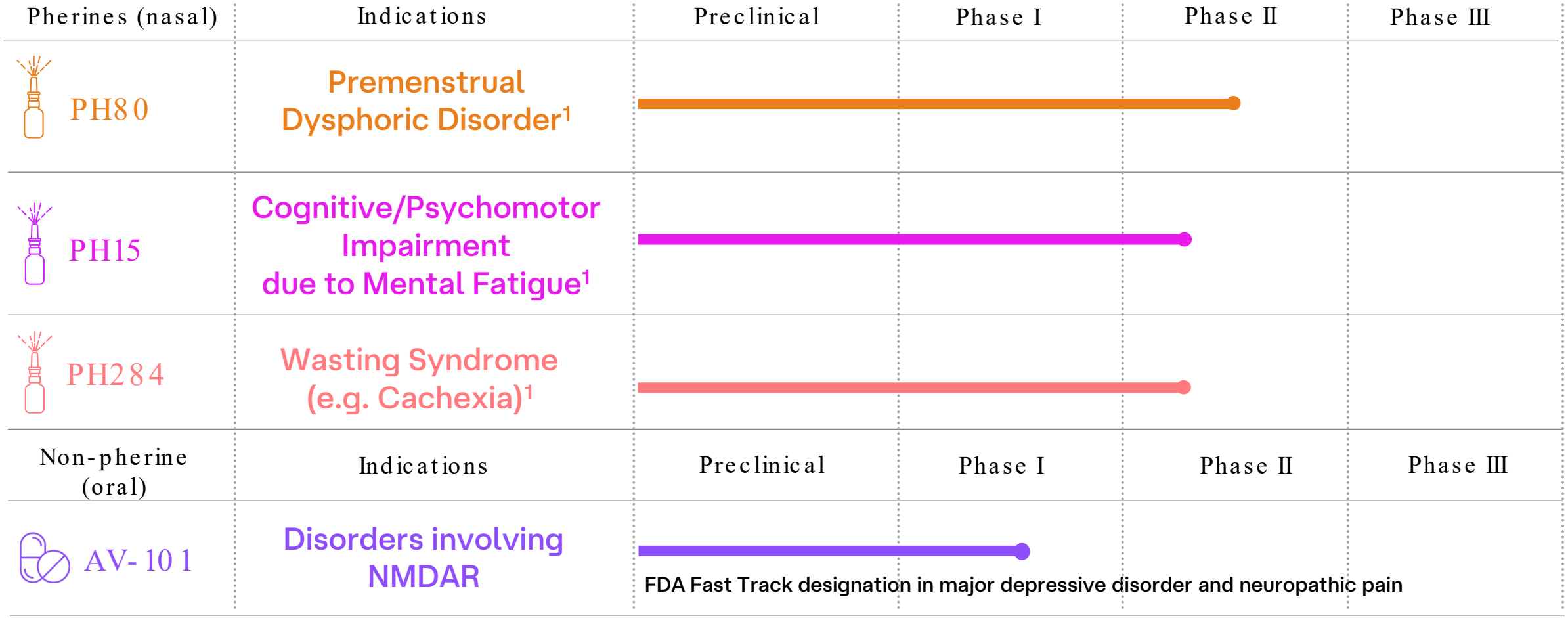
Additional Clinical-stage Neuroscience Product Candidates

Additional Clinical-stage Neuroscience Product Candidates



1. Indicates U.S. IND-enabling work necessary to facilitate further Phase 2 clinical development in the U.S.

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PH80

Premenstrual Dysphoric Disorder

PH80 Phase 2A Study in Premenstrual Dysphoric Disorder (PMDD)

Study Details: Randomized, double-blind, placebo-controlled, exploratory Phase 2A study. Subjects who did not respond to placebo at a screening visit returned after the onset of symptoms during the next menstrual cycle. At the second study visit, subjects were randomized to receive either 0.9 µg PH80 nasal spray or placebo, self-administered at home as needed, up to 4 times per day for 6 consecutive days

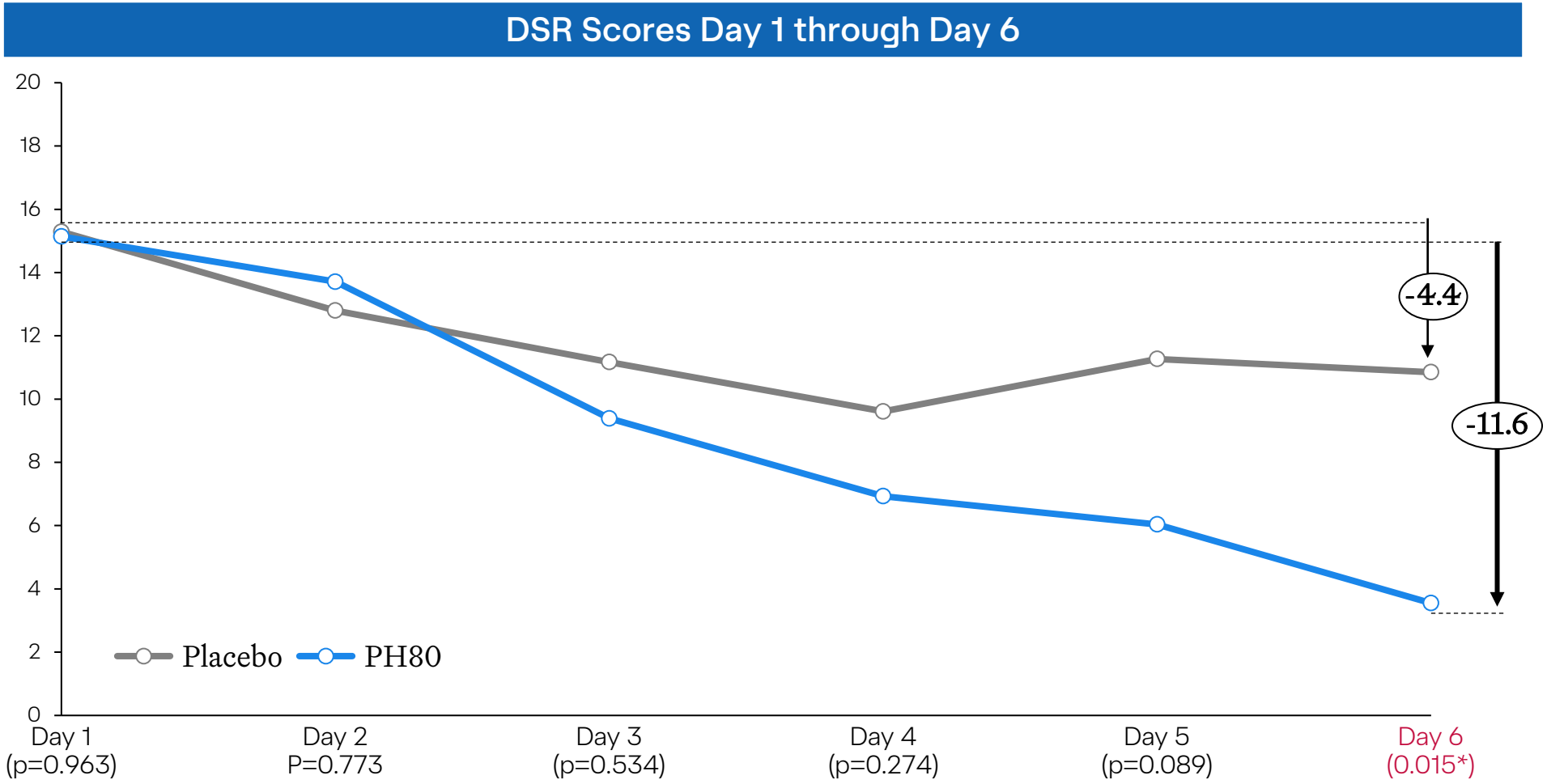
Participants: Women aged 18-40 (n=52) with at least 1 year of experiencing PMDD symptoms and Premenstrual Tension Scale (PMTS) score ≥ 10. Individuals with relevant pre-existing conditions or use of SSRIs were excluded

Outcome Measures: Penn Daily Symptom Report (DSR), Premenstrual Tension Scale (PMTS), PGI-C, CGI-I, Safety, and Tolerability

Results: PH80 showed statistically and clinically significant improvement vs. placebo in symptoms of PMDD at study endpoint after 6 days of treatment (during the critical days of the menstrual period) based on DSR (p=0.008) and PMTS (p=0.006) and was well-tolerated with no serious adverse events

PH80 Phase 2A Study in PMDD: Met Primary Efficacy Endpoint

Significant separation in PMDD DSR scores vs. placebo on Day 6 (p=0.015)



* Denotes Statistical Significance

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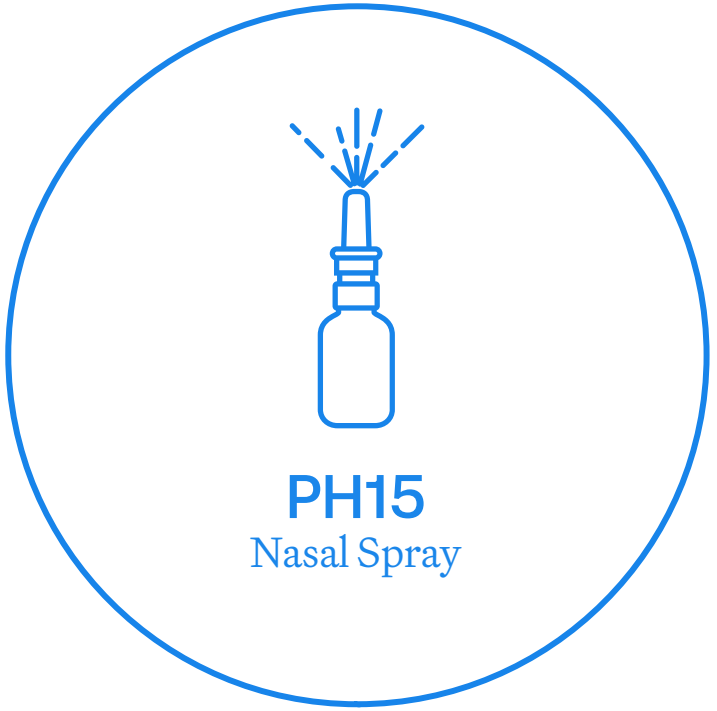
PH15

Acute Treatment of Cognitive/Psychomotor Impairment due to Mental Fatigue

PH15

Potential for improvement of cognitive and psychomotor impairment caused by mental fatigue

- Innovative, rapid-onset pherine product candidate
- User-friendly nasal spray, taken as needed for acute improvement of cognition due to mental fatigue
- Potential to provide rapid-onset and activation of brain areas through nose-to-brain neurocircuitry
- No systemic absorption or direct activity on neurons in the brain
- Novel and differentiated pherine MOA
- Potential new treatment to improve psychomotor impairment and potentially cognitive impairment due to mental fatigue from sleep deprivation



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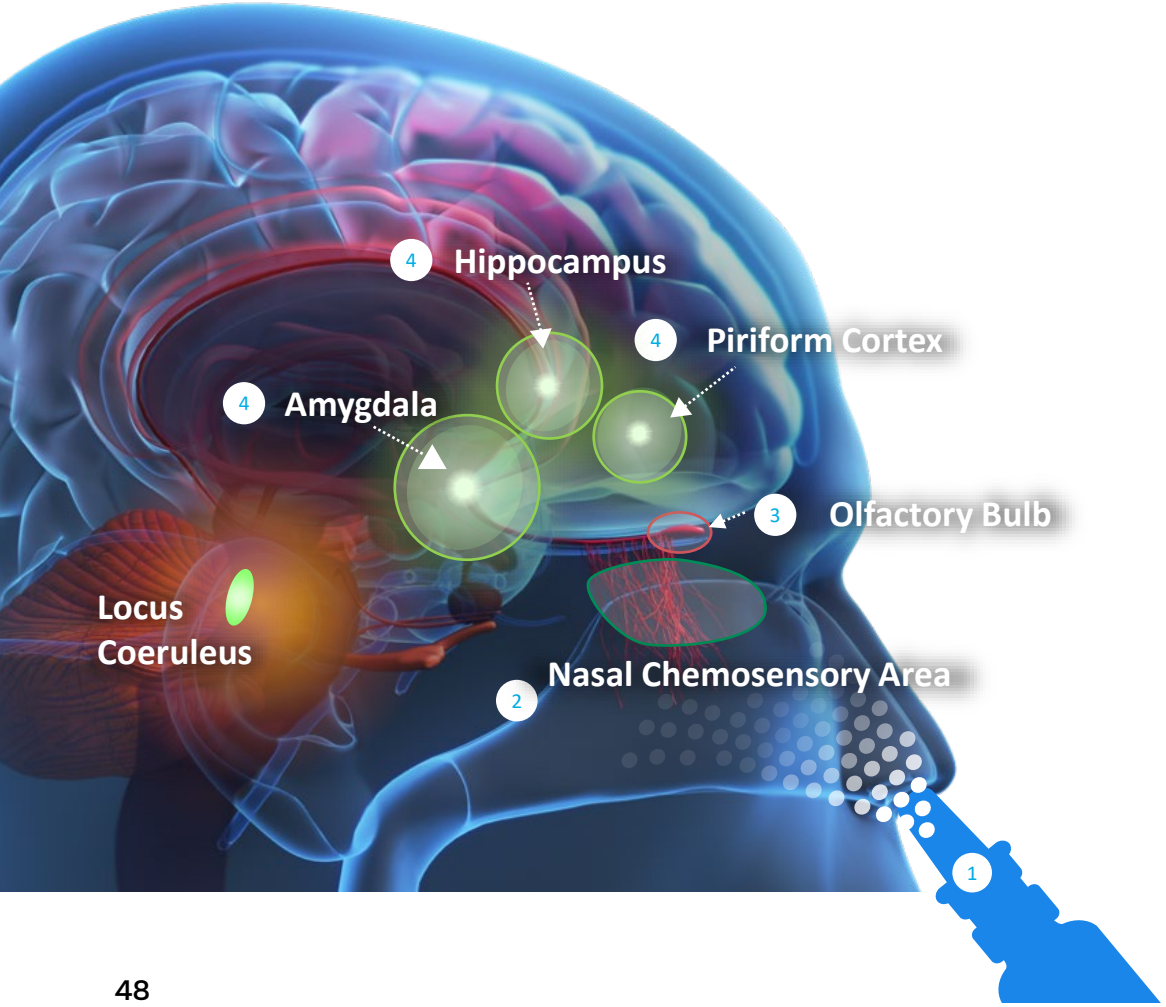
PH15 Novel Proposed Mechanism of Action

Differentiated from all currently approved cognition therapies



1. Microgram-level intranasal dose of PH15 is administered intranasally
2. PH15 engages peripheral receptors in nasal chemosensory neurons (NCNs)
3. NCNs then trigger subgroups of neurons in the olfactory bulbs (OBs)
4. Neurons in the OBs then directly stimulate neurons in several areas of the basal forebrain including the hippocampus, amygdala, and piriform cortex

Activity Increases

Increased activity in the hippocampus is responsible for improvement in cognitive function

Increased activity in the limbic amygdala in turn increases activity in the cerebral cortex, leading to improved psychomotor function

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PH15 Phase 2A Study for Improvement of Psychomotor Impairment Caused by Mental Fatigue

Objective: Explore efficacy, safety, and tolerability of intranasal administration of PH15 on psychomotor performance as measured by reaction time in sleep-deprived participants

Study Details: Randomized, double-blind, placebo-controlled, crossover Phase 2A pilot study. Participants were randomly administered PH15 (multiple 1.6 µg doses, total dose of 9.6 µg), placebo (nasal spray and oral), or caffeine (single 400 mg oral dose administered 1 hour before the session) in sequential sleep deprivation study sessions spaced one week apart. During each sleep deprivation session, participants received blinded treatments before the start of each of four testing periods, at 6:00 p.m., 9:00 p.m., midnight, and 3:00 a.m.

Participants: Ten healthy individuals

Outcome Measures: Reaction times to both isochronous (regular interval) and stochastic (random interval) "flash" light stimuli were computer-measured during each testing period as participants responded to the luminous stimuli

Results: During both isochronous and stochastic reaction time tests, administration of 1.6 µg PH15 nasal spray induced a significantly faster mean reaction time compared to placebo nasal spray across all time points ($p<0.001$). PH15 demonstrated a statistically significant improvement in reaction time compared to oral caffeine ($p<0.001$) for both reaction time tests during the testing periods at midnight and 3:00 a.m. when subjects were most fatigued

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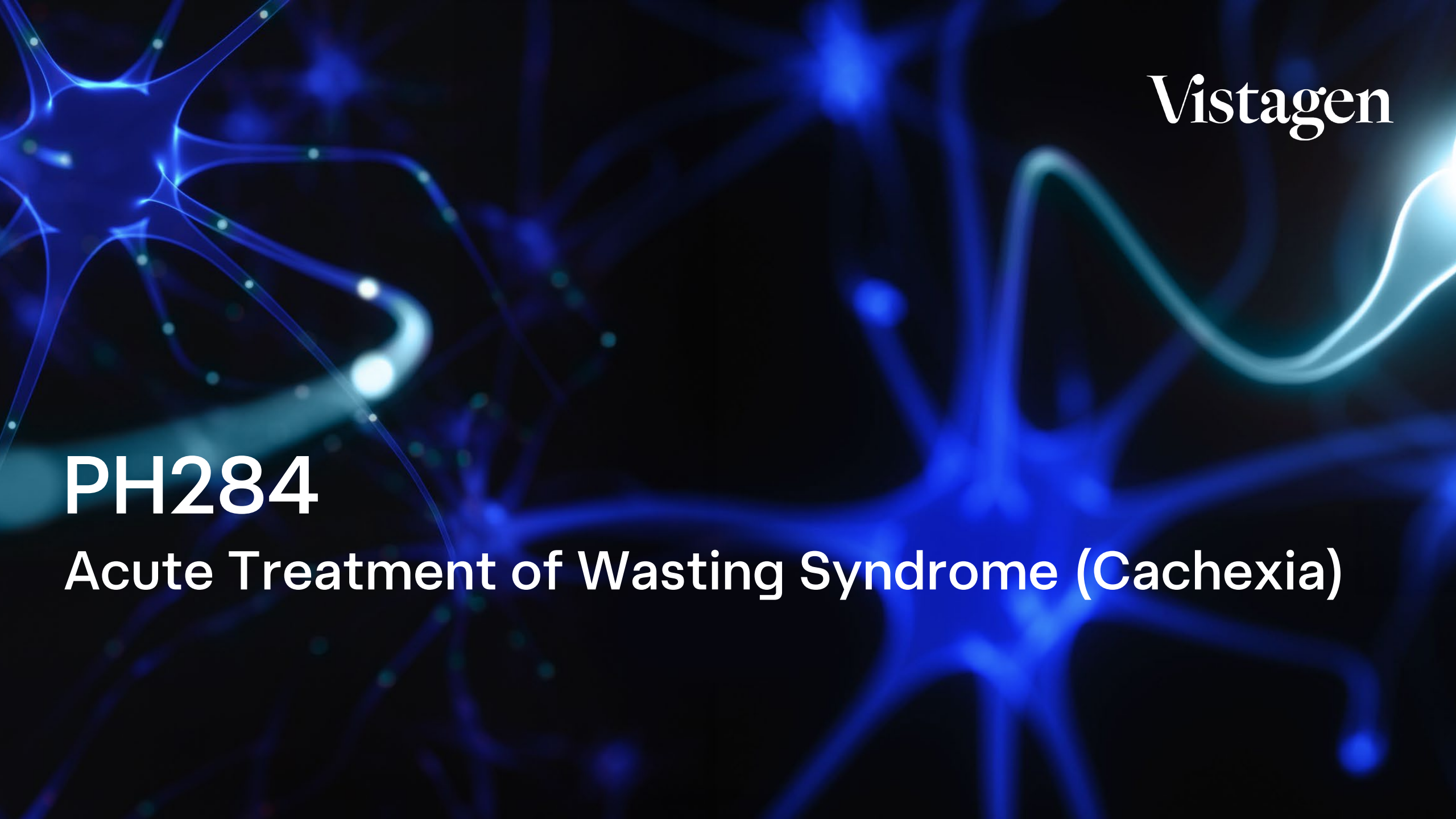

PH284

Acute Treatment of Wasting Syndrome (Cachexia)

PH284 Nasal Spray

Potential acute treatment for wasting syndrome (cachexia)

- Innovative, non-systemic neurocircuitry-focused pherine product candidate with rapid-onset potential for appetite enhancement
- Intranasal administration, taken before meals
- Potential to increase subjective feelings of hunger and caloric intake in patients diagnosed with wasting syndrome, a severe consequence of many chronic diseases and advanced cancer
- Favorable tolerability observed in studies completed to date

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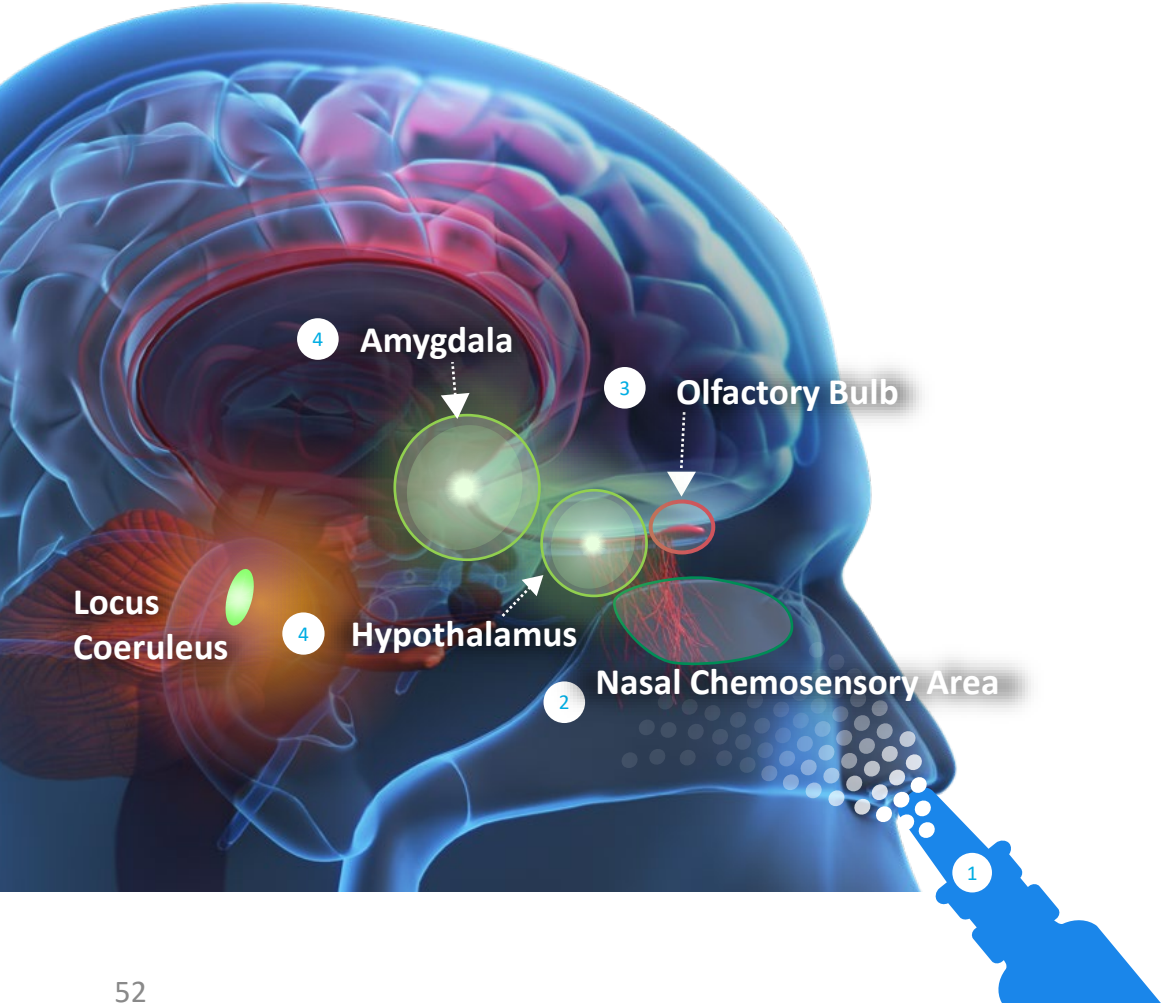
PH284 Novel Proposed Mechanism of Action

Differentiated from current treatment options



1. Microgram-level intranasal dose of PH284 is administered intranasally
2. PH284 engages peripheral receptors in nasal chemosensory neurons (NCNs)
3. Once stimulated with PH284, NCNs then trigger subsets of neurons in the olfactory bulbs (OBs)
4. Neurons in the OBs then stimulate neurons in the amygdala and the arcuate nucleus of the hypothalamus

Activity Increases

The stimulation of neurons in the arcuate nucleus of the hypothalamus increases activity of aguti-related peptide (AGRP) neurons and neuropeptide Y (NPY) neurons, which increase appetite and decrease energy expenditure

Both are key regulators of feeding, energy balance, and metabolic homeostasis

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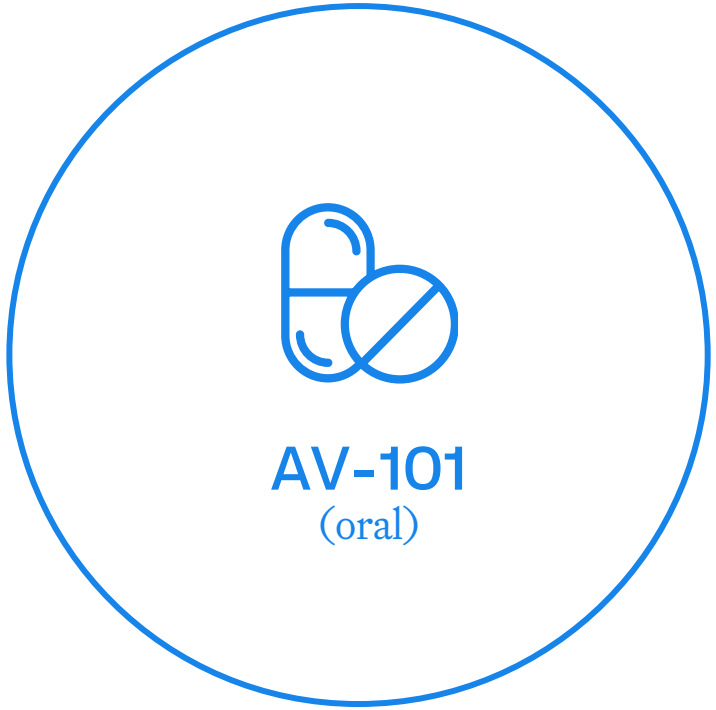
AV-101
Potential Collaborative Phase 2A Development

AV-101 for Multiple Neuroscience Disorders

Designed to inhibit (but not block) NMDA receptor activity

- Oral prodrug of 7-Cl-KYNA, a potent and selective full antagonist at the glycine site of the NMDA receptor
- Inhibition of the NMDA receptor, without fully blocking the receptor like ketamine and other NMDAR antagonists, is thought to reduce the side effect burden
- Well-tolerated in all clinical studies to date
- FDA Fast Track designations granted for adjunctive treatment of MDD and treatment of neuropathic pain



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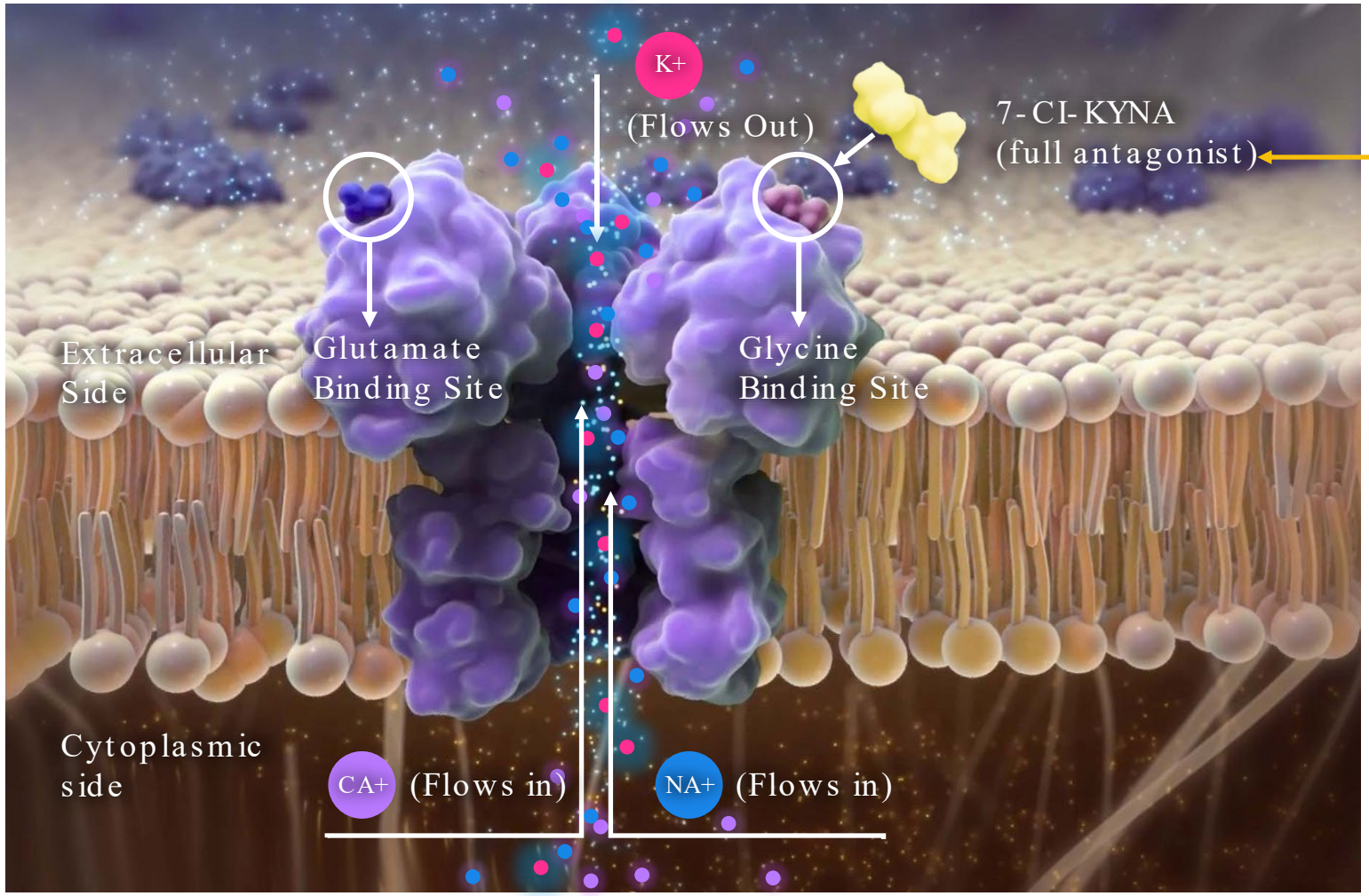
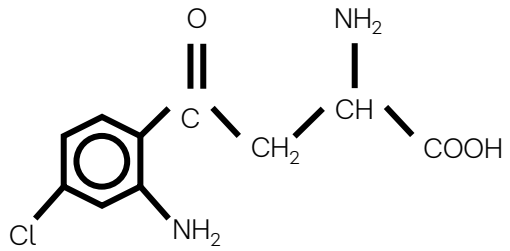
AV-101's Proposed Mechanism of Action

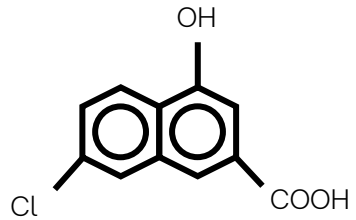


AV-101 - Oral Prodrug (4-Cl-KYN)



L-4-chlorokynurenine
(4-Cl-KYN) (oral delivery to CNS)

Activated  Astrocytes



AV-101 - Active Metabolite (7-Cl-KYNA)

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AV-101 for Multiple Neuroscience Disorders

Levodopa-Induced Dyskinesia

Associated with Parkinson's therapy

Neuropathic Pain

Potential partnering opportunities for Phase 2 clinical development

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Distinguished Clinical and Regulatory Advisors

Representing premier institutions and deep neuroscience and regulatory expertise

Maurizio Fava, M.D.

Professor of Psychiatry, Harvard Medical School; Director, Division of Clinical Research, Massachusetts General Hospital (MGH) Research Institute; and Executive Vice Chair of the Department of Psychiatry

Thomas Laughren, M.D.

Director (retired), U.S. Food and Drug Administration (FDA) Division of Psychiatry Products, Office of New Drugs, Center for Drug Evaluation and Research (CDER)

Michael Liebowitz, M.D.

Former Columbia University psychiatrist, director and founder of the Anxiety Disorders Clinic at the New York State Psychiatric Institute; current Managing Director of The Medical Research Network LLC

Sanjay Mathew, M.D.

Vice Chair for Research and Professor of Psychiatry and Behavioral Sciences at Baylor College of Medicine; Staff Psychiatrist at the Michael E. DeBakey VA Medical Center

Gerard Sanacora, Ph.D., M.D.

Professor of Psychiatry, Yale School of Medicine; Director, Yale Depression Research Program; Co-Director, Yale-New Haven Hospital Interventional Psychiatry Service

Mark Wallace, M.D.

Professor of Clinical Anesthesiology, Chair of the Division of Pain Medicine, Medical Director and Director at the University of California, San Diego

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