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

FORM 8-K

CURRENT REPORT
PURSUANT TO SECTION 13 OR 15(d) of the SECURITIES EXCHANGE ACT OF 1934

Date of Report (Date of earliest event reported): February 13, 2025

Vistagen Therapeutics, Inc.
(Exact name of registrant as specified in its charter)

Nevada	**000-54014**	**20-5093315**
(State or other jurisdiction of incorporation)	*(Commission File Number)*	*(IRS Employer Identification Number)*

343 Allerton Ave.
South San Francisco, California 94080
(Address of principal executive offices)

(650) 577-3600
(Registrant's telephone number, including area code)

Not Applicable
(Former name or former address, if changed since last report)

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:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.001 per share	VTGN	Nasdaq Capital Market

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (17 CFR 230.405) or Rule 12b-2 of the Securities Exchange Act of 1934 (17 CFR 240.12b-2)

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 ☐

Item 2.02 Results of Operations and Financial Condition.

On February 13, 2025, Vistagen Therapeutics, Inc. (the "*Company*") issued a press release announcing financial results for its fiscal year 2025 third quarter ended December 31, 2024. A copy of the press release is being furnished as Exhibit 99.1 to this Current Report on Form 8-K.

Item 7.01 Regulation FD Disclosure.

On February 13, 2025, the Company began utilizing a new corporate presentation, a copy of which is attached to this Current Report on Form 8-K as Exhibit 99.2.

Disclaimer.

The information contained in this Current Report on Form 8-K and Exhibits 99.1 and 99.2 attached hereto are intended to be furnished 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, nor shall such information be deemed incorporated by reference in any filing under the Securities Act of 1933, as amended, or the Exchange Act, except as expressly set forth by specific reference in such a filing.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits Index

Exhibit No.	Description
99.1	Press Release issued by Vistagen Therapeutics, Inc., dated February 13, 2025, furnished herewith
99.2	Vistagen Therapeutics, Inc. Corporate Presentation, dated February 2025, furnished herewith
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

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 thereunto duly authorized.

Vistagen Therapeutics, Inc.

Date: February 13, 2025

By: */s/ Shawn K. Singh*

Shawn K. Singh
President and Chief Executive Officer

Exhibit 99.1

Vistagen

Vistagen Reports Fiscal Year 2025 Third Quarter Financial Results and Corporate Update

Fasedienol U.S. registration-directed PALISADE Phase 3 Program for acute treatment of social anxiety disorder progressing with ongoing PALISADE-3, PALISADE-4 and Repeat Dose trials

Vistagen highlights clinical-stage pipeline with five novel pherine product candidates with positive efficacy signals and potential to transform standards of care for multiple high prevalence indications

SOUTH SAN FRANCISCO, Calif. — (BUSINESS WIRE) — February 13, 2025 — Vistagen (Nasdaq: VTGN), a clinical-stage biopharmaceutical company pioneering neuroscience with nose-to-brain neurocircuitry to develop and commercialize a new class of intranasal product candidates called pherines, today reported financial results for its fiscal year 2025 third quarter ended December 31, 2024, and provided a corporate update.

"We had a very productive quarter, with both PALISADE-3 and PALISADE-4 advancing towards expected top-line results later this year," said Shawn Singh, President and Chief Executive Officer of Vistagen. "We are also pleased to report positive results from an exploratory Phase 2A trial of PH284 in cancer cachexia. PH284 is our fifth neurocircuitry-focused pherine product candidate with a positive efficacy signal and differentiated safety, and this announcement underscores the breadth and diversity of our pherine pipeline. As always, we remain optimistic about the potential of our product candidates to transform standards of care and address multiple significant unmet needs. We continue to believe that 2025 has the potential to be a monumental year, between multiple anticipated data readouts for fasedienol in acute treatment of social anxiety disorder and further advancement of additional pherine product candidates for treatment of major depressive disorder and menopausal hot flashes."

Neuroscience Pipeline Highlights

- Fasedienol PALISADE-3 and PALISADE-4 Phase 3 trials for the acute treatment of social anxiety disorder (SAD) progressing to produce top-line results in 2025.
- Initiated fasedienol Phase 2 Repeat Dose Study for the acute treatment of SAD.
- Announced positive results from an exploratory Phase 2A study of PH284 in cancer cachexia.

Vistagen is also continuing:

- Ongoing U.S. Investigational New Drug Application (IND)-enabling program for PH80, designed to support its planned submission of a U.S. IND to build on a previously reported positive exploratory Phase 2A studies of PH80 in women's health indications and facilitate further Phase 2 clinical development of PH80 in the U.S. as a potential novel non-hormonal, non-systemic treatment option for millions of women affected by vasomotor symptoms (hot flashes) due to menopause.
- Preparations and planning for Phase 2B development of itruvone as a potential novel non-systemic, stand-alone treatment for major depressive disorder, without the weight gain, sexual side effects, and safety concerns associated with currently available depression therapies.

Financial Results for Fiscal Year 2025 Third Quarter Ended December 31, 2024

Research and development (R&D) expense

- R&D expense was $11.3 million for the three months ended December 31, 2024, as compared to $4.5 million for the three months ended December 31, 2023. The increase in R&D expense was primarily due to an increase in research, development, and contract manufacturing expenses related to the PALISADE Phase 3 Program for fasedienol in SAD and U.S. IND-enabling programs for ituvone in MDD and PH80 in menopausal hot flashes.

General and administrative (G&A) expense

- G&A expense was $4.0 million for the three months ended December 31, 2024, as compared to $3.8 million for the three months ended December 31, 2023. The increase in G&A expense was primarily due to an increase in headcount.

Net loss

- Net loss was $14.1 million for the three months ended December 31, 2024, as compared to $6.4 million for the three months ended December 31, 2023.

Other financial highlights

- Cash, cash equivalents, and marketable securities were $88.6 million as of December 31, 2024.

Conference Call and Webcast:

Vistagen will host a conference call and live audio webcast today February 13, 2025, at 5:00 p.m. Eastern Time to provide a corporate update of Vistagen's progress.

The conference call is being webcast live and a link can be found under "Events" in the Investors section of the Company's website.

Participants may register for the live call link HERE to receive the dial-in numbers and unique PIN to access the call. It is recommended that you join 15 minutes prior to the start of the event.

A webcast replay of the call will be available on Vistagen's website within 24 hours after the end of the live conference call and will be accessible for at least 90 days.

About Fasedienol for the Acute Treatment of Social Anxiety Disorder

Fasedienol, the lead clinical-stage product candidate, is a synthetic neuroactive intranasal pherine in an ongoing U.S. registration-directed Phase 3 clinical development program for the acute treatment of anxiety in adults with social anxiety disorder (SAD), a highly prevalent, serious, and life-threatening psychiatric mental health disorder affecting over 30 million adults in the U.S. The proposed mechanism of action (MOA) of fasedienol is fundamentally differentiated from all FDA-approved anti-anxiety medications. When administered intranasally in microgram-level doses, fasedienol activates nasal chemosensory neurons connected to olfactory bulb neurons that, in turn, connect to neural circuits in the limbic amygdala involved in SAD. Fasedienol is pharmacologically active without requiring apparent systemic absorption or direct binding on neurons in the brain to achieve its rapid-onset anxiolytic effects. Because of its innovative non-systemic neurocircuitry-focused MOA, fasedienol has the potential to achieve rapid-onset anxiolytic effects for individuals with SAD on an acute, as-needed basis, with a significantly reduced risk of unwanted side effects and safety concerns, such as potential drug-drug interactions, sedation, abuse, misuse, withdrawal symptoms, and addiction, associated with certain current oral and other systemically absorbed neuropsychiatric pharmaceuticals that act directly on neurons in the brain and are sometimes prescribed off-label for the acute treatment of SAD. There is no U.S. FDA-approved acute treatment for SAD. The U.S. FDA has granted Fast Track designation for the development of fasedienol for the acute treatment of SAD.

About Ituvone for the Treatment of Major Depressive Disorder

Ituvone is an investigational, non-systemic intranasal pherine product candidate with a novel, rapid-onset neurocircuitry-focused proposed mechanism of action (MOA) that is fundamentally differentiated from the MOA of all currently approved pharmacological treatments for depression disorders. Ituvone is administered intranasally at microgram-level doses and is designed to regulate olfactory-to-amygdala neural circuitry believed to produce antidepressant effects, without systemic absorption or brain penetration and without many of the side effects and safety concerns potentially associated

with currently approved antidepressants. Unlike antidepressants which rely on single or double-receptor occupancy in the brain, itruvone activates neural circuits that regulate the amygdala, hypothalamus, entorhinal area and hippocampus, prefrontal cortex, locus coeruleus, and raphe nucleus, all involved in the pathophysiology of depression. The scope of itruvone's neural circuit activation, and potential impact on the brain, appears wider, faster and safer than can be achieved with therapies targeting binding to any specific brain receptor. Vistagen is developing itruvone as a potential new non-systemic, stand-alone treatment for major depressive disorder, and the FDA has granted Fast Track designation for the development of itruvone for that indication.

About PH80 for the Treatment of Vasomotor Symptoms (Hot Flashes) Due to Menopause

PH80 is an investigational non-hormonal, non-systemic, neurocircuitry-focused intranasal pherine product candidate with a novel, rapid-onset proposed MOA that is fundamentally differentiated from all currently approved treatments for vasomotor symptoms (hot flashes) due to menopause. Rapid activation of peripheral nasal chemosensory neurons via self-administration of low microgram doses of PH80 rapidly stimulates neurocircuits in the olfactory bulbs that are connected to the limbic amygdala and hypothalamus, which are involved in the regulation of the autonomic nervous system and thermoregulatory areas of the hypothalamus. Vistagen is developing PH80 as a potential new non-hormonal, non-systemic treatment for the management of moderate to severe vasomotor symptoms (hot flashes) due to menopause.

About Vistagen

Headquartered in South San Francisco, CA, Vistagen (Nasdaq: VTGN) is a clinical-stage biopharmaceutical company leveraging a deep understanding of nose-to-brain neurocircuitry to develop and commercialize a broad and diverse pipeline of clinical-stage product candidates from a new class of intranasal therapies called pherines. Pherines specifically and selectively bind to peripheral receptors in human nasal chemosensory neurons, which activate olfactory bulb-to-brain neurocircuits without requiring systemic absorption or uptake into the brain to achieve desired therapeutic benefits and differentiated safety. Vistagen's neuroscience pipeline also includes an oral prodrug with potential to impact certain neurological conditions involving the NMDA receptor. Vistagen is passionate about developing transformative treatment options to improve the lives of individuals underserved by the current standard of care for multiple highly prevalent indications, including social anxiety disorder, major depressive disorder, and vasomotor symptoms (hot flashes) associated with menopause. Connect at www.Vistagen.com.

Forward-looking Statements

This press release contains certain forward-looking statements within the meaning of the 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 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. There can be no guarantee that any of Vistagen's product candidates will successfully complete ongoing or future clinical trials within estimated timelines or at all, receive regulatory approval or be commercially successful, or that Vistagen will be able to successfully replicate the result of past studies of any of its product candidates. Other factors that may cause such a difference include, without limitation, risks and uncertainties relating to conducting and/or completing ongoing clinical trials, including PALISADE-3 and/or PALISADE-4, as currently expected or at all; completing IND-enabling programs for applicable product candidates, including itruvone and PH80; launching planned clinical trials for any of Vistagen's product candidates; submission of a new drug application (NDA) to the U.S. FDA for any of Vistagen's product candidate, including fasedienol; the ability of any clinical trial information submitted by Vistagen to the U.S. FDA to support a NDA; Vistagen's dependence on third-party collaborators for the development, regulatory approval, and/or commercialization of its product candidates and other aspects of its business, which are outside of Vistagen's full control; risks associated with current and potential future healthcare reforms; the scope and enforceability of Vistagen's patents, including patents related to Vistagen's pherine product candidates and AV-101; fluctuating costs of materials and other resources and services required to conduct Vistagen's ongoing and/or planned clinical and non-clinical 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 Vistagen's product candidates. These risks are more fully discussed in the section entitled "Risk Factors" in Vistagen's Annual Report on Form 10-K for the fiscal year ended March 31, 2024, and Quarterly Report on Form 10-Q for the period ended December 31, 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). Vistagen's SEC filings are available on the SEC's website at www.sec.gov. You should not place undue reliance on these forward-looking statements, which apply only as of the date of this press release and should not be relied upon as representing Vistagen's views as of any subsequent date. Vistagen explicitly disclaims any obligation to update any forward-looking statements other than as may be required by law. If Vistagen does update one or more forward-looking statements, no inference should be made that Vistagen will make additional updates with respect to those or other forward-looking statements.

Investor Inquiries:
Mark A. McPartland
markmcp@vistagen.com

Media Inquiries:
Michelle Wellington
mwellington@vistagen.com

Vistagen

VISTAGEN THERAPEUTICS, INC.
CONDENSED CONSOLIDATED BALANCE SHEETS
(in thousands, except share and par value amounts)

	December 31, 2024	March 31, 2024
	(Unaudited)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 74,715	$ 119,166
Marketable securities	13,845	-
Prepaid expenses and other current assets	1,381	1,506
Total current assets	89,941	120,672
Property and equipment, net	428	435
Right-of-use asset - operating lease	1,461	1,820
Other assets	477	726
Total assets	$ 92,307	$ 123,653
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 1,039	$ 1,547
Accrued expenses	5,469	2,235
Deferred revenue - current portion	2,510	791
Operating lease obligation - current portion	603	550
Total current liabilities	9,621	5,123
Deferred revenue - non-current portion	454	2,674
Operating lease obligation - non-current portion	1,110	1,570
Total liabilities	11,185	9,367
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, $0.001 par value; 10,000,000 shares authorized at December 31, 2024 and March 31, 2024; no shares outstanding at December 31, 2024 and March 31, 2024	-	-
Common stock, $0.001 par value; 325,000,000 shares authorized at December 31, 2024 and March 31, 2024; 28,321,216 and 27,029,731 shares issued at December 31, 2024 and March 31, 2024, respectively	28	27
Additional paid-in capital	479,048	474,441
Treasury stock, at cost, 4,522 shares of common stock held at December 31, 2024 and March 31, 2024	(3,968)	(3,968)
Accumulated other comprehensive income	11	-
Accumulated deficit	(393,997)	(356,214)
Total stockholders' equity	81,122	114,286
Total liabilities and stockholders' equity	$ 92,307	$ 123,653

Vistagen

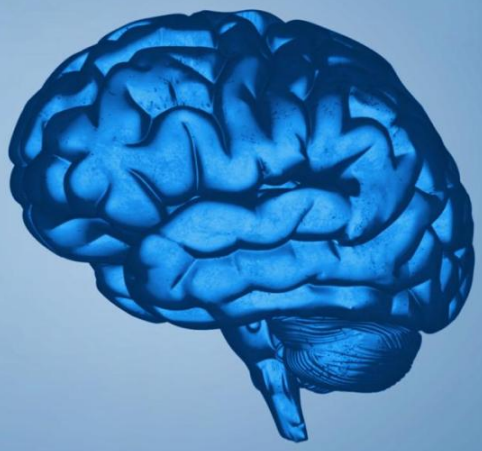
VISTAGEN THERAPEUTICS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS
(unaudited)
(in thousands, except share and per share data)

	Three Months Ended December 31,		Nine Months Ended December 31,	
	2024	2023	2024	2023
Revenues:				
Sublicense and other revenue	$ 234	$ 411	$ 501	$ 867
Total revenues	234	411	501	$ 867
Operating expenses:				
Research and development	11,305	4,537	29,168	$ 12,586
General and administrative	4,049	3,758	12,811	$ 9,943
Total operating expenses	15,354	8,295	41,979	$ 22,529
Loss from operations	(15,120)	(7,884)	(41,478)	$ (21,662)
Other income, net:				
Interest income, net	1,031	1,534	3,702	$ 1,824
Loss before income taxes	(14,089)	(6,350)	(37,776)	$ (19,838)
Income taxes	—	—	(7)	$ (3)
Net loss	$ (14,089)	$ (6,350)	$ (37,783)	$ (19,841)
Unrealized gain (loss) on marketable securities	(11)	—	11	—
Comprehensive loss	$ (14,100)	$ (6,350)	$ (37,772)	$ (19,841)
Basic and diluted net loss per common share	$ (0.46)	$ (0.22)	$ (1.23)	$ (1.27)
Weighted average common shares outstanding, basic and diluted	30,711,872	29,388,085	30,649,384	15,632,451

Vistagen

Nasdaq: VTGN

Pioneering neuroscience with nose-to-brain neurocircuitry



February 2025

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. There can be no guarantee that any of the Company's product candidates will successfully complete ongoing or future clinical trials within estimated timelines or at all, 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. Other factors that may cause such a difference include, without limitation, risks and uncertainties relating to conducting and/or completing ongoing and planned nonclinical studies and clinical trials, including PALISADE-3 and PALISADE-4, as currently expected or at all; 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; launching planned clinical trials for any of our product candidates; the Company's submission of a new drug application (NDA) to the U.S. FDA for any product candidate, including fasedienol; the ability of any clinical trial information submitted by the Company to the U.S. FDA to support a NDA; the Company's dependence on third-party collaborators for the development, regulatory approval, and/or commercialization of its products candidates and other aspects of our business, which are outside of our full control; risks associated with current and potential future healthcare reforms; the scope and enforceability of the Company's patents, including patents related to Vistagen's pherine product candidates and AV-101; fluctuating costs of materials and other resources and services required to conduct Vistagen's ongoing and/or planned clinical and non-clinical 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 Vistagen's product candidates. These risks are more fully discussed in the section entitled "Risk Factors" in Vistagen's Annual Report on Form 10-K for the fiscal year ended March 31, 2024, and Quarterly Report on Form 10-Q for the period ended December 31, 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.

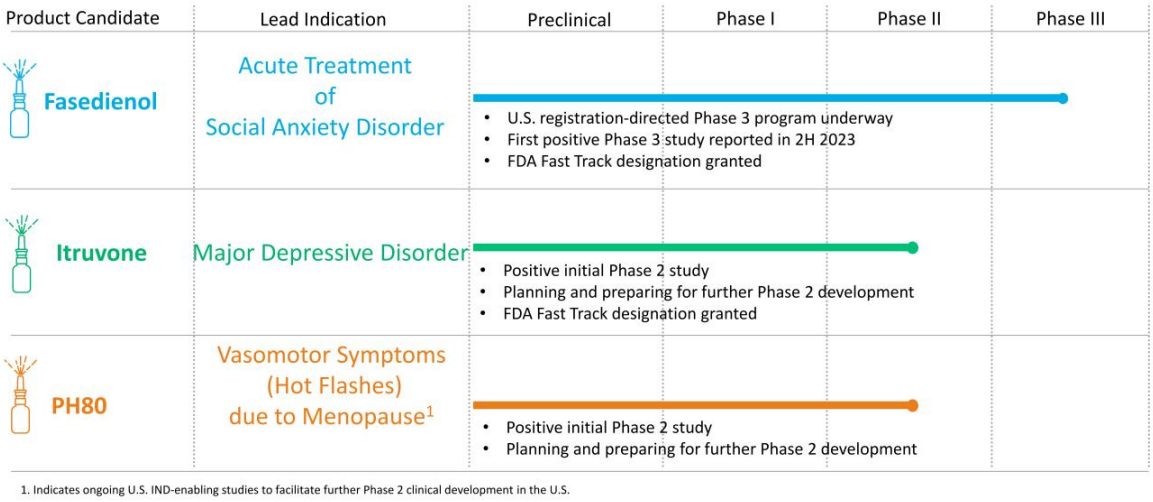
Given these uncertainties, you should not place undue reliance on these forward-looking statements, which apply only as of the date of this presentation and should not be relied upon as representing the Company's views as of any subsequent date. The Company explicitly disclaims any obligation to update 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 neurocircuitry-focused pherine pipeline differentiated from all approved therapies
- Five pherine product candidates with positive clinical data in six 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
  - Cancer Cachexia (Loss of Appetite) – Phase 2
- Ongoing U.S. registration-directed Phase 3 studies in Social Anxiety Disorder
- Multibillion-dollar peak sales potential across multiple neuroscience indications
- Multiple partnering opportunities

Lead Clinical-stage 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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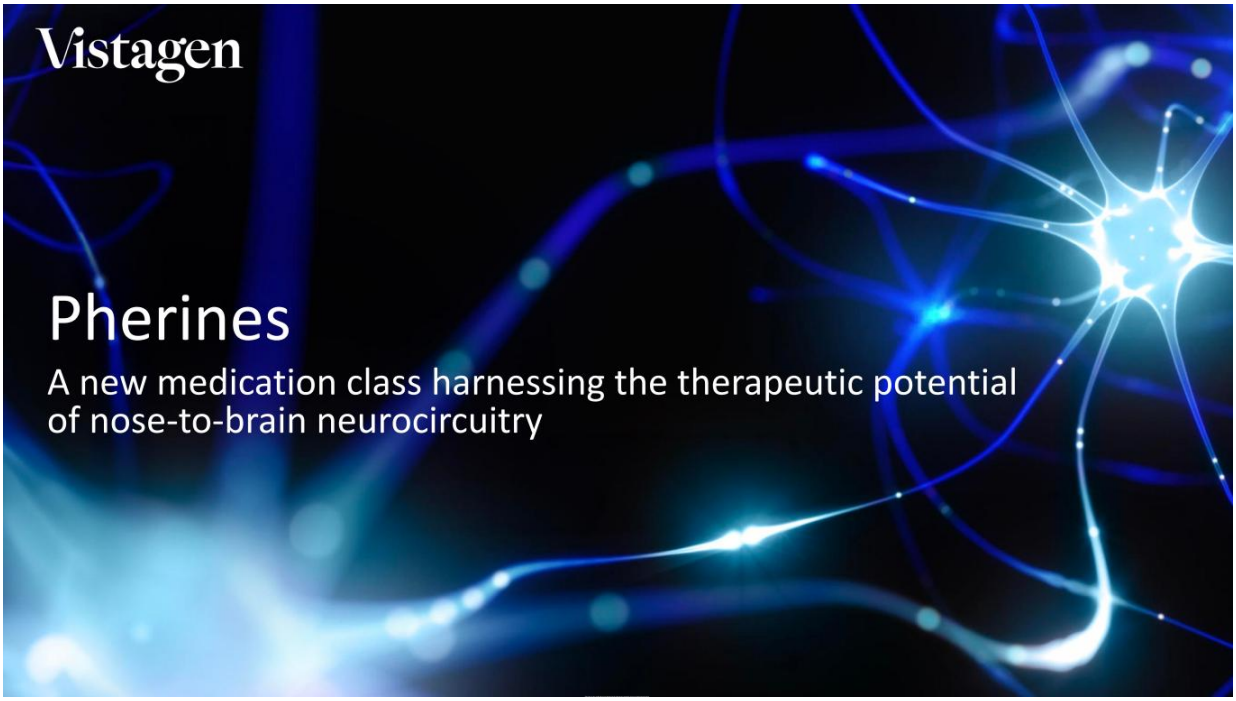
Vistagen
Pherines
A new medication class harnessing the therapeutic potential
of nose-to-brain neurocircuitry

Pherines

A new class of intranasal neuroscience product candidates

- Rapidly activate nose-to-brain neurocircuits affecting multiple high-prevalence indications
- Non-systemic MOAs are distinguished from all FDA-approved drugs for target indications
- No binding to neurons in the brain
- Favorable and differentiated safety data observed in all clinical trials to date

Main Areas of the Brain Regulated by Pherine Neurocircuits

Fasedienol for Social Anxiety		Itruvone for Depression		PH80 for Menopausal Hot Flashes	
• NCNs	(+)	• NCNs	(+)	• NCNs	(+)
• OB	(+)	• OB	(+)	• OB	(+)
• AMY ($Fear_{OFF}$ neurons)	(+)	• AMY ($Fear_{ON}$ neurons)	(+)	• AMY ($Fear_{OFF}$ neurons)	(+)
• LC, RN, VTA, HYP (ant), BNST, PC	(-)	• LC, RN, VTA, HYP (post), BNST, PC, STR	(+)	• LC, RN, HYP (post), BNST, PC, STR	(-)
• HYP (PVN-OXY)	(+)	• EA – HIPP	(+)	• HYP (POA, AVP neurons)	(-)
		• HYP (PVN-AVP)	(+)	• 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

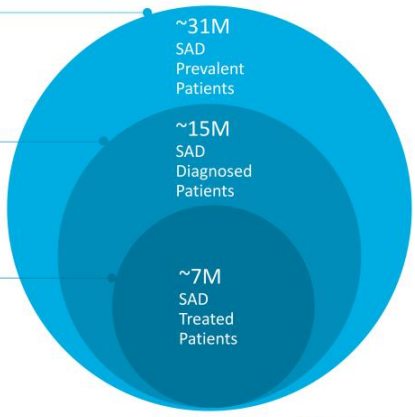
Patients suffering but unaware they may have SAD or not yet motivated to seek professional help

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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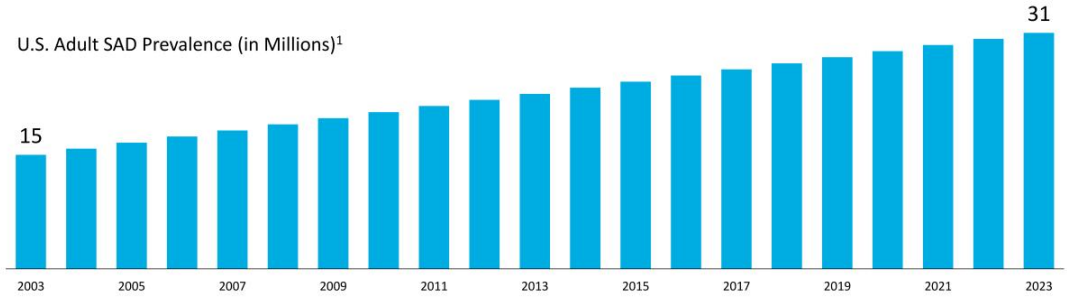
U.S. Social Anxiety Disorder Prevalence Continues to Grow



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 an 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

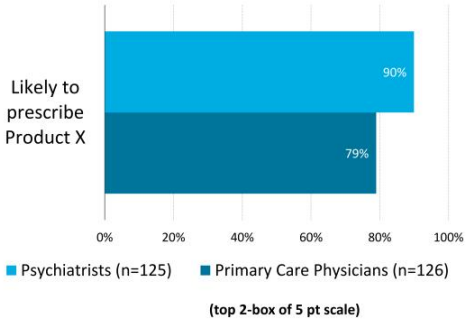
Vistagen

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

High Intent to Prescribe a Product with Fasedienol's Profile

Psychiatrists and Primary Care Physicians Note it Would Be Appropriate for the Majority of their SAD Patients



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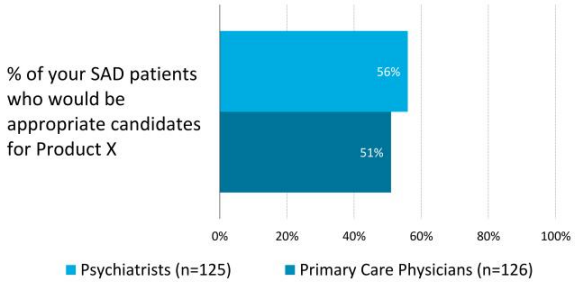

Sources: Vistagen Proprietary Market Research, Online Survey, Jan 2022 (n=251)

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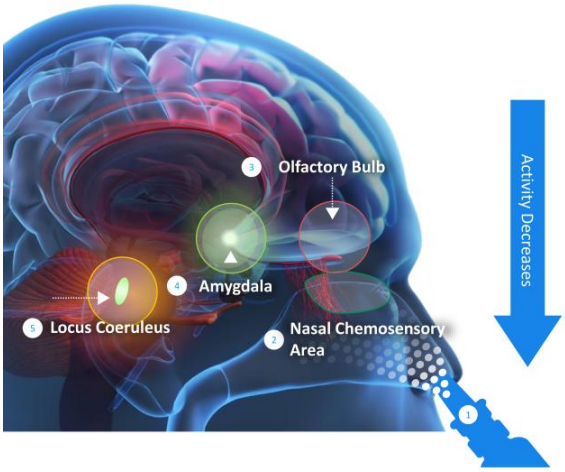
Fasedienol's Novel Neurocircuitry-focused MOA

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

Vistagen

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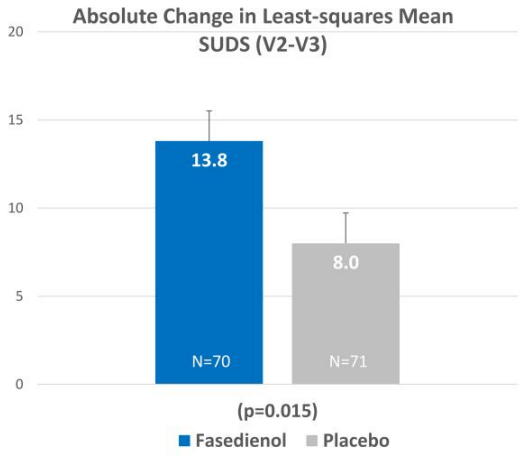
PALISADE-2 Primary Efficacy Endpoint (Patient-reported): Change in Least-squares Mean SUDS Scores

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



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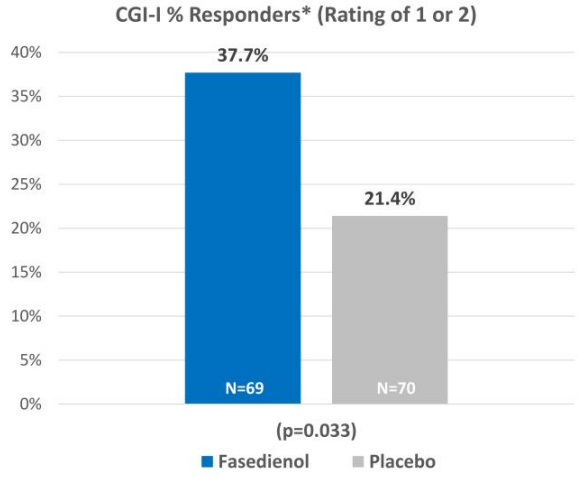
PALISADE-2 Secondary Efficacy Endpoint (Clinician-reported): CGI-I Responders vs. Placebo

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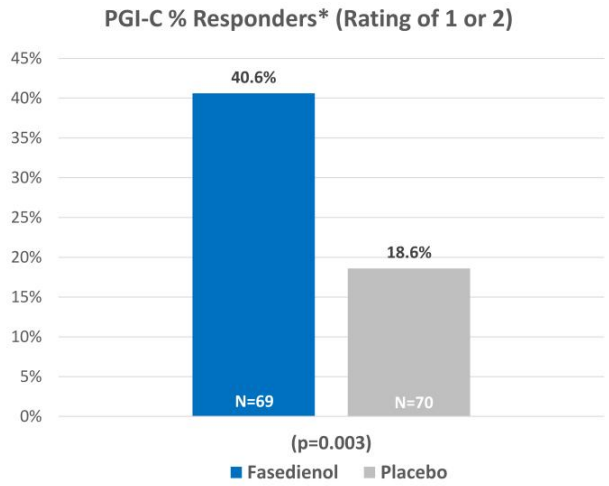
* In accordance with FDA-aligned, pre-specified statistical analysis plan, missing CGI-I values for one subject on placebo and one subject on fasedienol were not imputed for the ITT CGI-I responder analysis. The missing values resulted from site error and are considered missing at random.

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

Vistagen

* 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

Favorable tolerability profile consistent with 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%)

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 trials 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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Fasedienol U.S. Registration-directed Phase 3 Program

To complement the positive PALISADE-2 Phase 3 trial, Vistagen is conducting two ongoing PALISADE Phase 3 studies as part of its U.S. registration-directed Phase 3 program for the 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

PALISADE-3 and PALISADE-4 Study Enhancements

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

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

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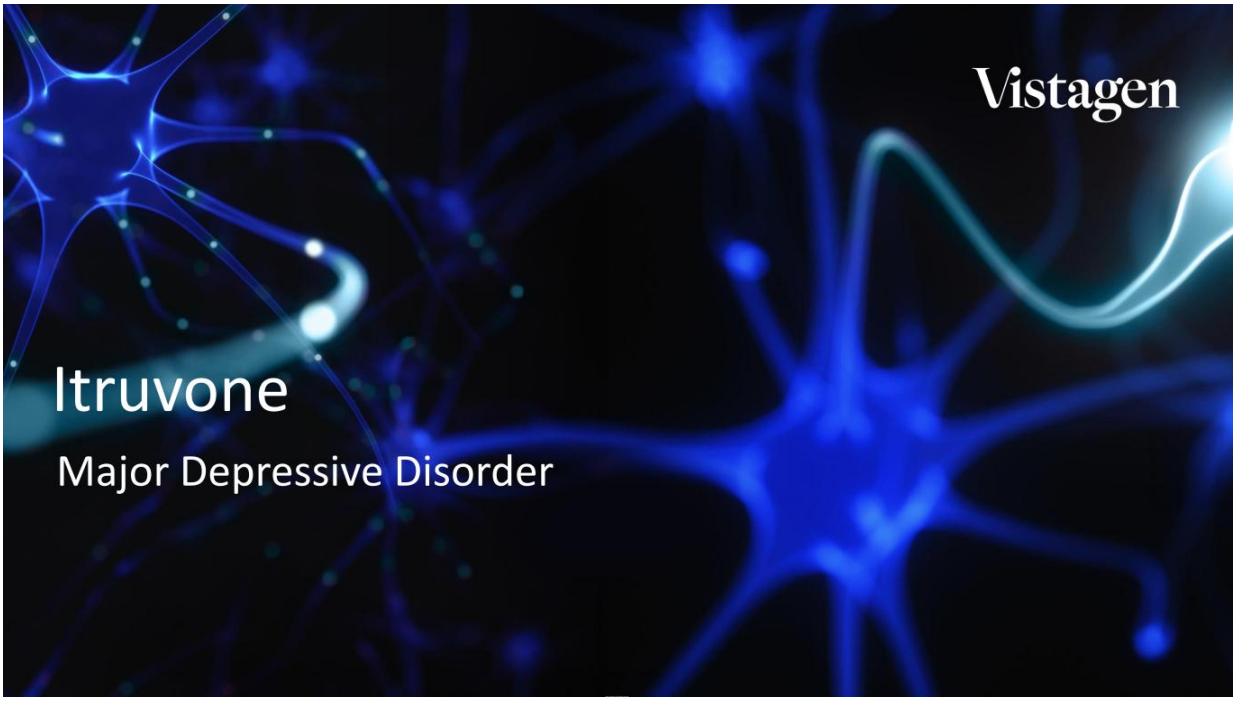

Vistagen
Itruvone
Major Depressive Disorder

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

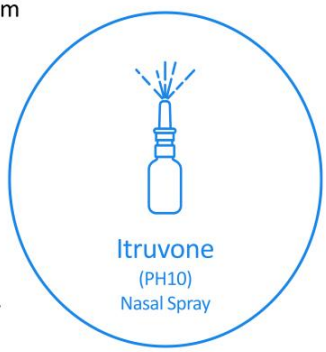
- Often do not work
- Significant potential side effects
  - Weight gain, stomach pain, tiredness, dizziness, tardive dyskinesia, headache, nervousness, restlessness, cognitive impairment

Vistagen

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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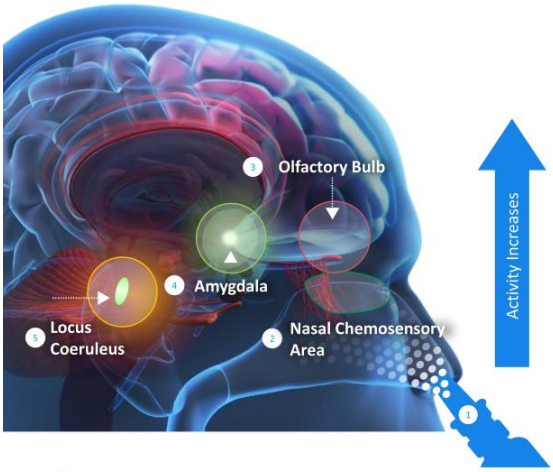
Itruvone's Novel Neurocircuitry-focused MOA

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

Vistagen

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

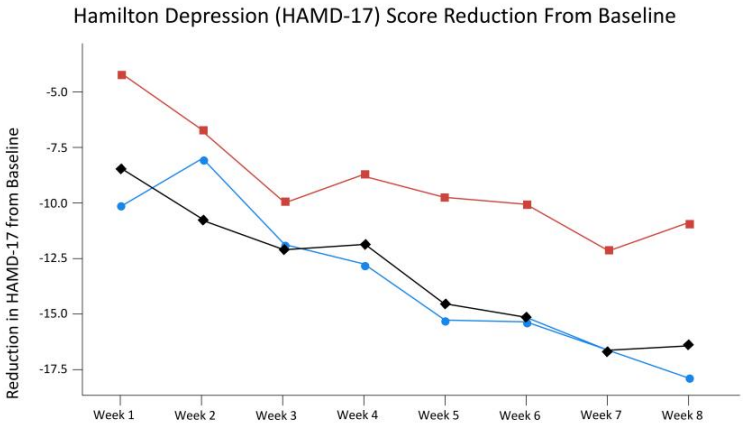
Itruvone Phase 2A Study in MDD

- 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.

Itruvone Phase 2A Study in MDD



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

Itruvone 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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Ituvone Phase 2B Clinical Plan*

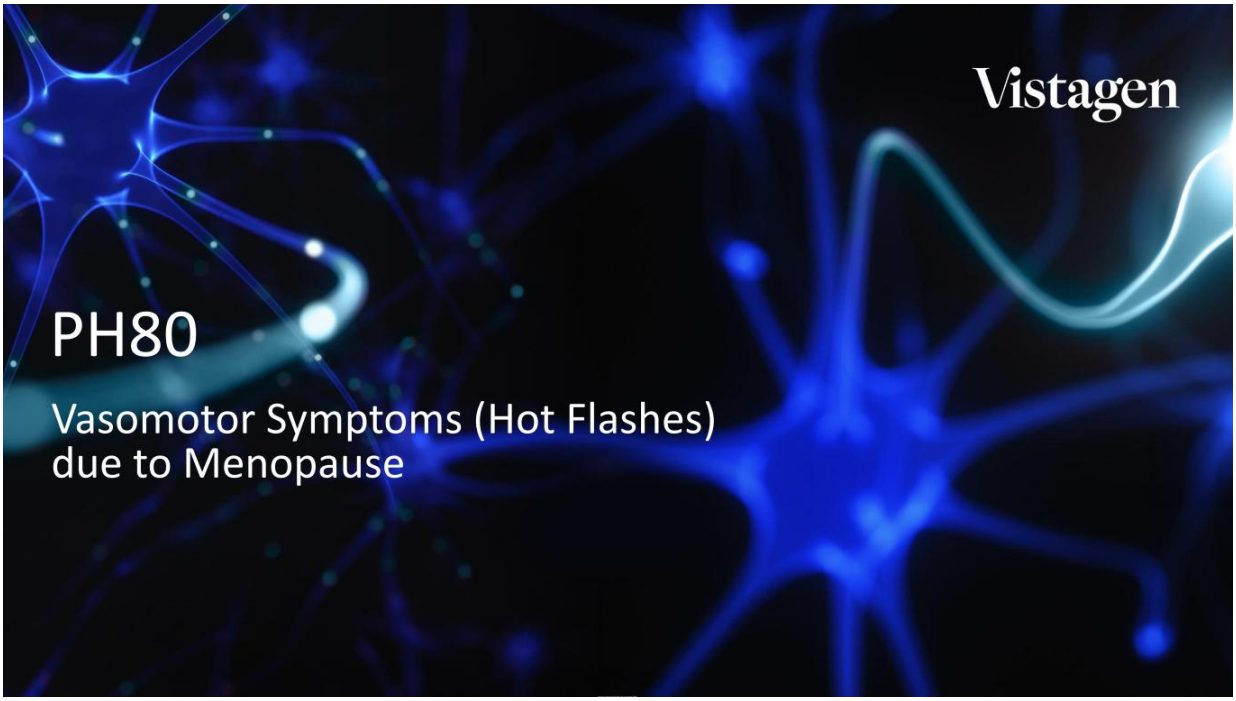
Planning and preparation for Phase 2B development of ituvone as a non-systemic monotherapy for MDD is underway

- 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


Vistagen
PH80
Vasomotor Symptoms (Hot Flashes)
due to Menopause

VMS (Hot Flashes): Highly Prevalent and Disrupts 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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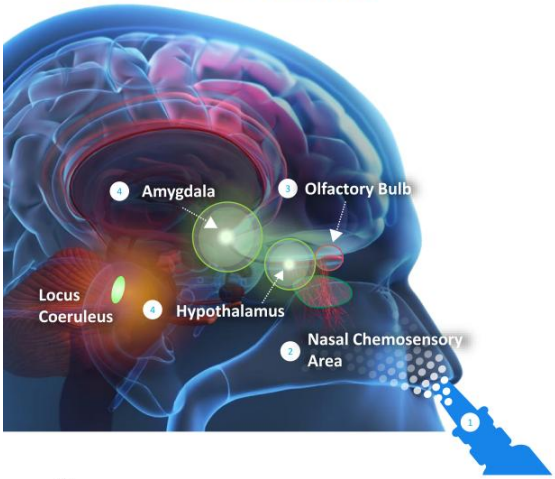
PH80's Novel Neurocircuitry-focused MOA

Distinguished 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

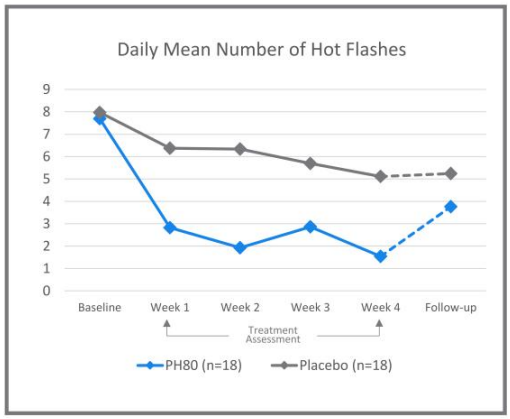
Participants: Menopausal women aged 45-60 (n=36) with ≥ 8 hot flashes of moderate to severe intensity per day on average for 1 week (≈ 56/week)

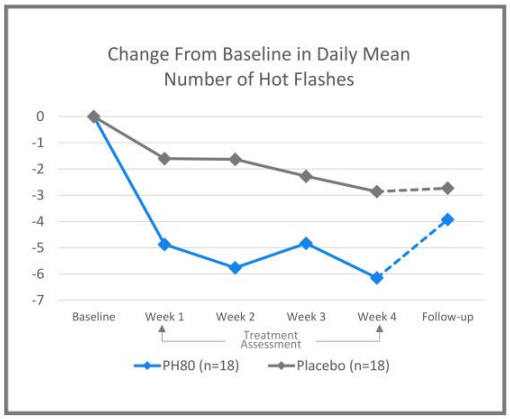
Outcome Measures: Daily ratings of the Number, Severity, Disruption in function (Bother), and Sweating associated with daily hot flashes, PGI-C, CGI-I, Safety, and Tolerability

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

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)





39 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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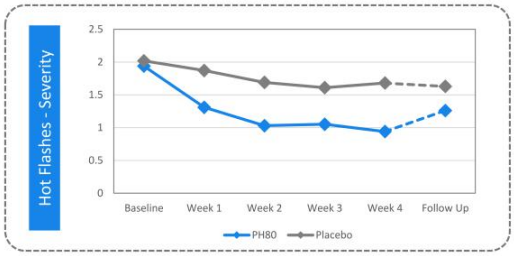
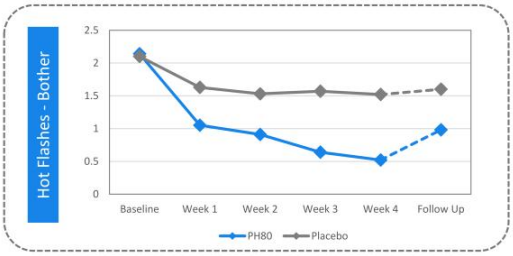
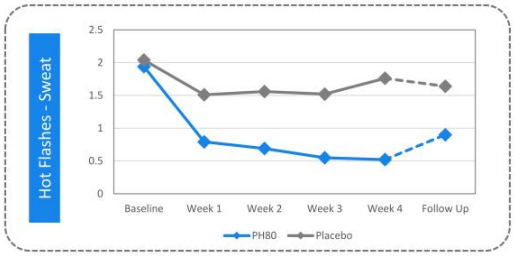
PH80 Phase 2A Study in Hot Flashes: Met Secondary Efficacy Endpoint

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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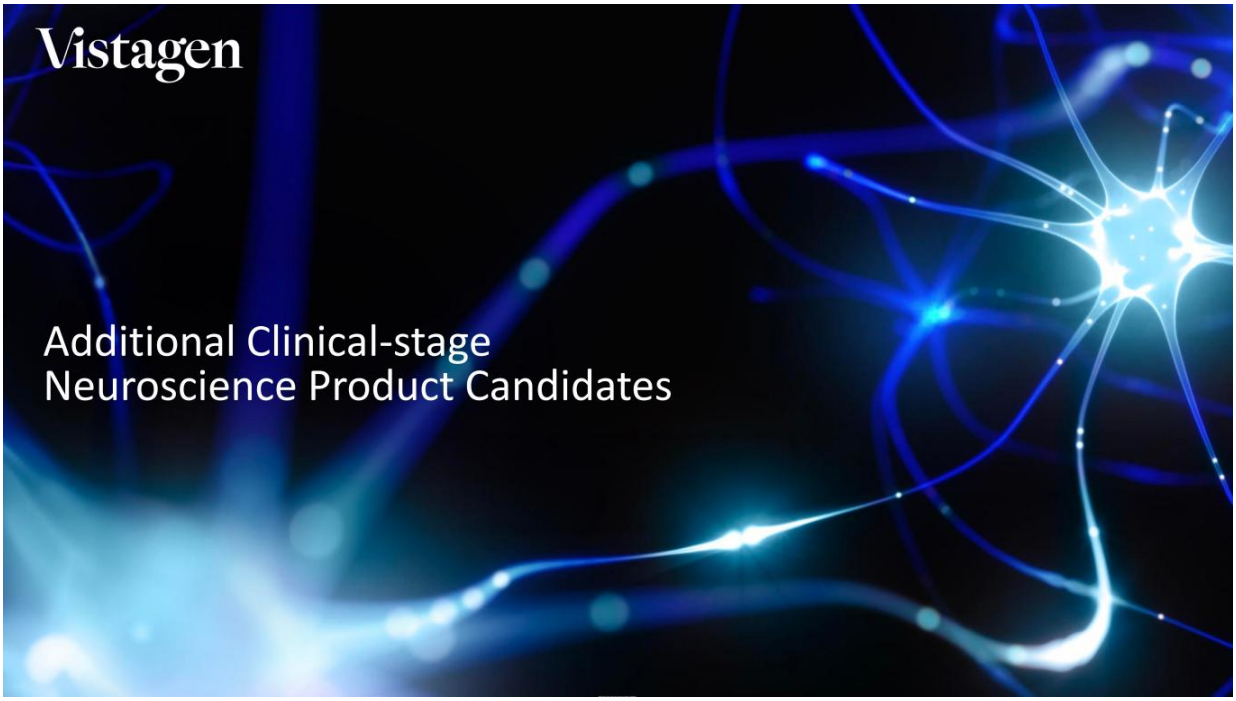
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Additional Clinical-stage
Neuroscience Product Candidates

Additional Clinical-stage Neuroscience Product Candidates

Pherines (nasal)	Indications	Preclinical	Phase I	Phase II	Phase III
PH80	Premenstrual Dysphoric Disorder[1]				
PH15	Cognitive/Psychomotor Impairment due to Mental Fatigue[1]				
PH284	Cancer Cachexia[1]				
Non-pherine (oral)	**Indications**	**Preclinical**	**Phase I**	**Phase II**	**Phase III**
AV-101	Disorders involving NMDAR				

FDA Fast Track designation in major depressive disorder and neuropathic pain

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

Vistagen


Vistagen
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

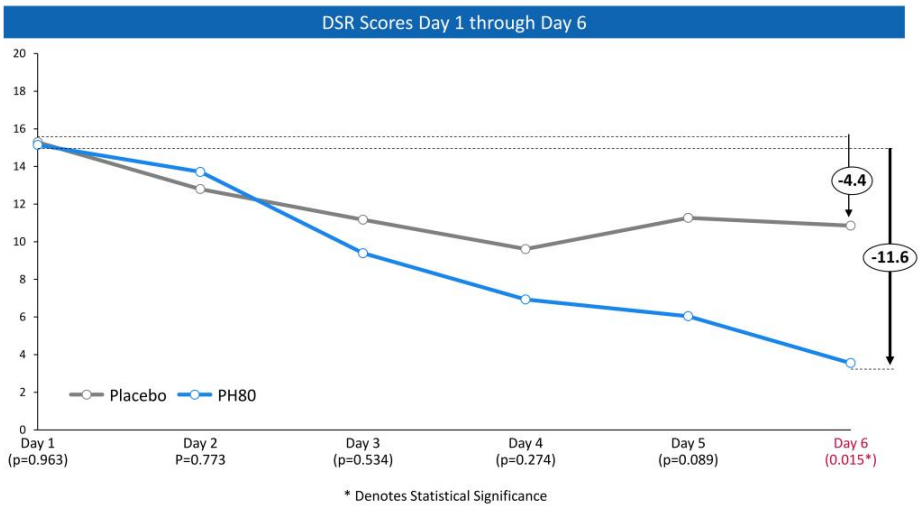
Participants: Women aged 18-40 (n=52) with at least 1 year of experiencing PMDD symptoms and Premenstrual Tension Scale (PMTS) score ≥ 10. Individuals with relevant pre-existing conditions or use of SSRIs were excluded

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

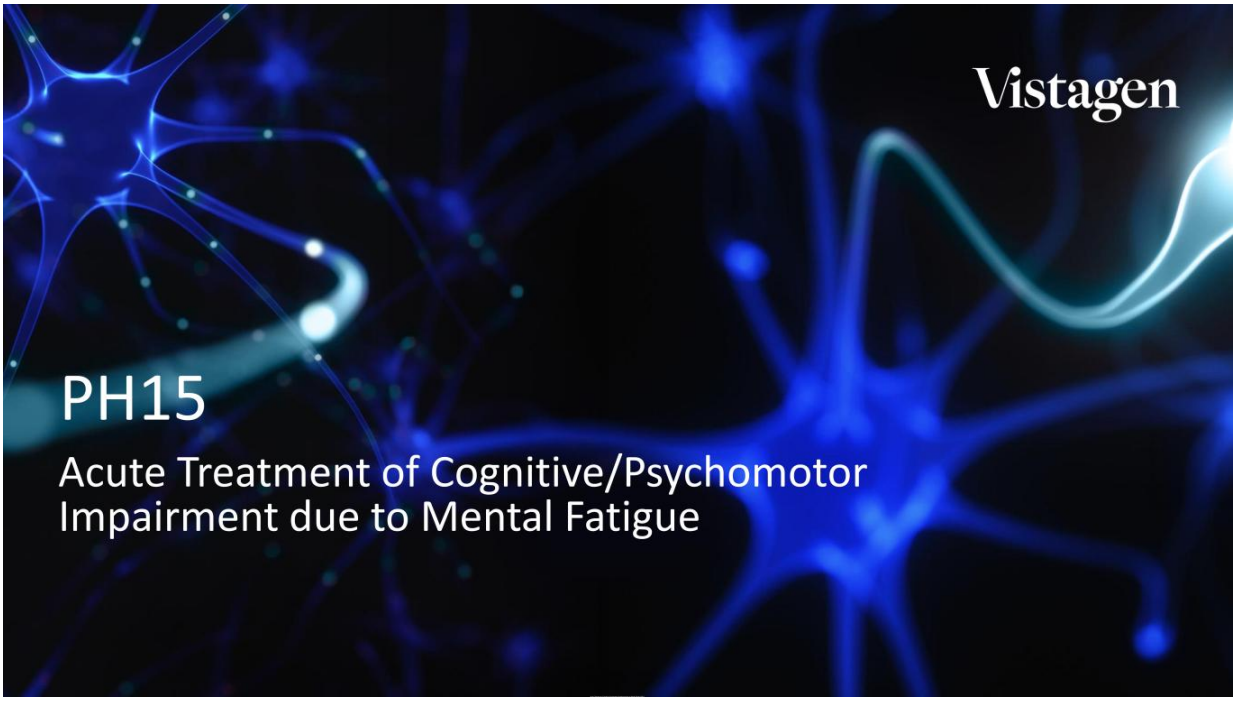
PH80 Phase 2A Study in PMDD: Met Primary Efficacy Endpoint

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



* Denotes Statistical Significance

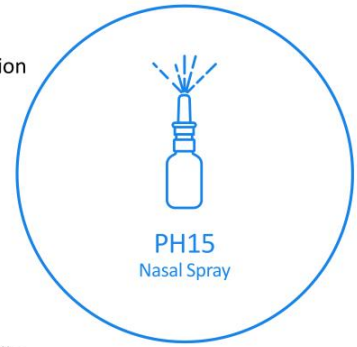
Vistagen


Vistagen
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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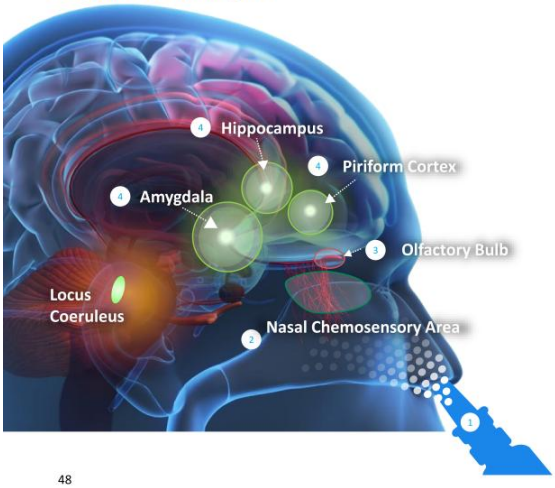
PH15's Novel Neurocircuitry-focused MOA

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

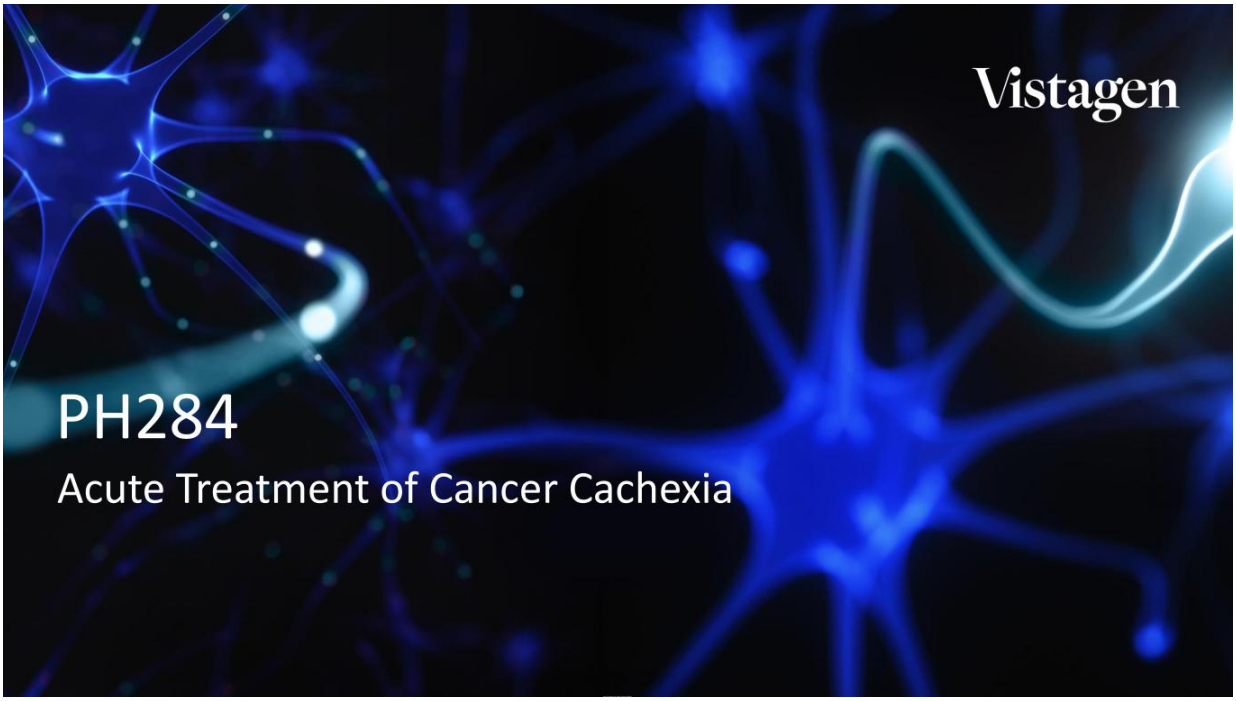
Objective: Explore efficacy, safety, and tolerability of intranasal administration of PH15 on psychomotor performance as measured by reaction time in sleep-deprived participants

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 Cancer Cachexia

PH284 Nasal Spray

Potential acute treatment for cancer 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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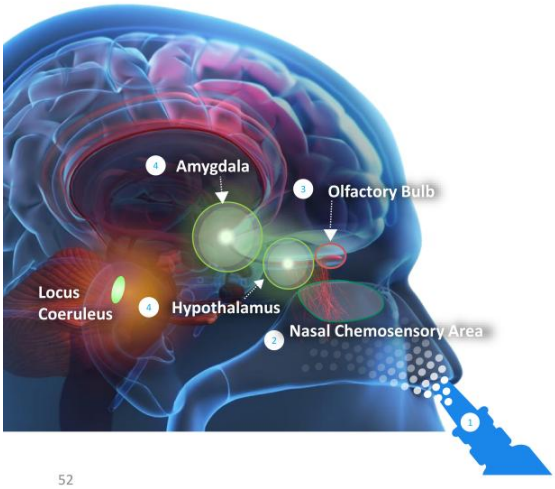
PH284's Novel Neurocircuitry-focused MOA

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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PH284 Phase 2A Study for Improvement of Loss of Appetite Associated with Chronic Disorders, such as Cancer Cachexia

Objective: Evaluate the efficacy, safety, and tolerability of intranasal administration of PH284 in female patients diagnosed with cachexia (induced by chronic loss of appetite) due to terminal cancer.

Study Details: Randomized, double-blind, placebo-controlled exploratory Phase 2A study designed to evaluate the efficacy, safety, and tolerability of intranasal administration of PH284 in female patients diagnosed with cachexia (induced by chronic loss of appetite) due to terminal cancer (n=40). PH284 nasal spray (0.4 µg/50 µL) was administered intranasally, one spray in each nostril (total daily dose = 3.2µg), four times daily before meals (breakfast, mid-morning snack, lunch, and dinner). From Day 1 through Day 4, all subjects were administered a placebo 30 minutes before each meal. Beginning on Day 5 through Day 11, subjects were randomized in a 1:1 fashion to receive either PH284 or placebo.

Participants: Forty female cancer patients

Outcome Measures: Patients measured Subjective Feeling of Hunger (SFH) ten minutes before each meal. PH284, as compared to placebo, induced a cumulative effect on mean SFH scores, with scores increasing from breakfast to lunch and lunch to dinner throughout the treatment period. Specifically, before dinner on Day 7 of treatment, PH284 subjects reported a 71% improvement in SFH versus baseline, while placebo subjects reported a less than 1% improvement.

Safety and Tolerability: No unusual changes in body weight were observed in either the PH284 or placebo groups, though on average, there was a small gain in body weight for PH284 versus a small loss in placebo. PH284 demonstrated no serious adverse events, and adverse events reported for the PH284 group were similar to those reported in the placebo-treated group. All the adverse events reported were attributed to the underlying medical condition (cancer) and were not deemed to be related to the administration of PH284 or placebo.


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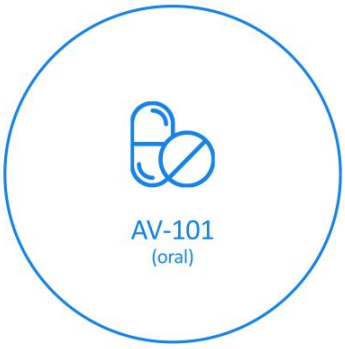
AV-101
Potential for Collaborative Phase 2A Development

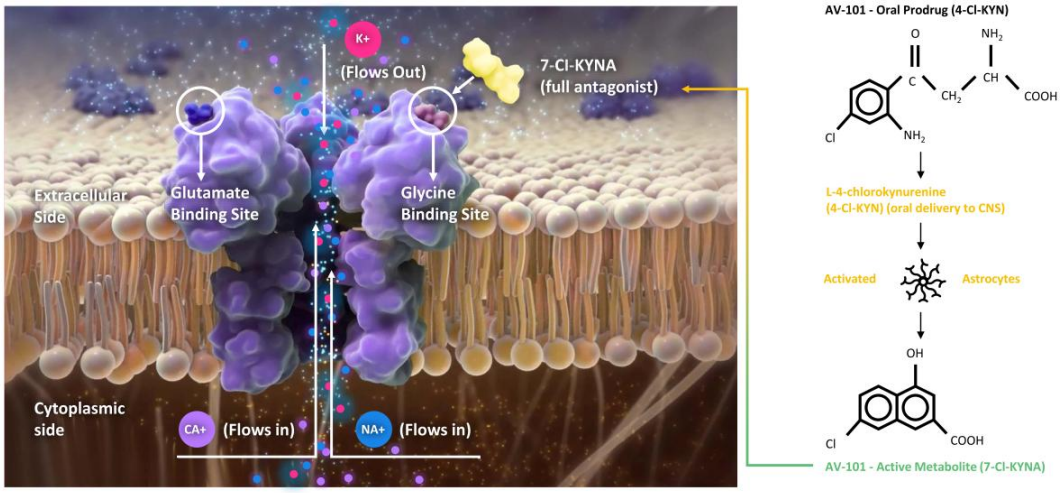
AV-101 for Multiple Neuroscience Disorders

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



AV-101's Proposed Mechanism of Action



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AV-101 for Multiple Neuroscience Disorders

Levodopa-Induced Dyskinesia
Associated with Parkinson's therapy

Neuropathic Pain

Potential to partner for clinical development and commercialization

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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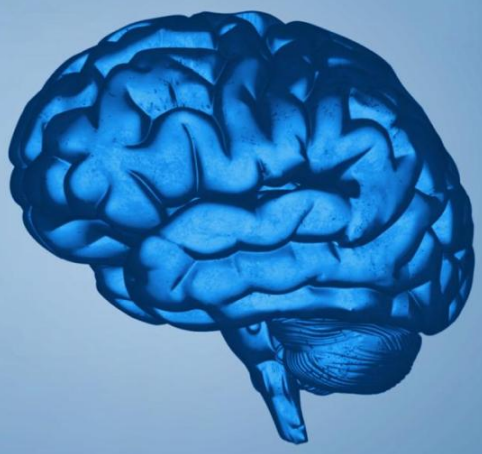

Contact us:

Investors:
IR@Vistagen.com

Media:
media@vistagen.com

Business Development:
BD@Vistagen.com

Tel: (650) 577-3600