# 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 1, 2021**

# MATINAS BIOPHARMA HOLDINGS, INC.
**(Exact name of registrant as specified in its charter)**

| **Delaware** | **001-38022** | **46-3011414** |
|---|---|---|
| **(State or other jurisdiction of incorporation)** | **(Commission File Number)** | **(IRS Employer ID Number)** |

| | |
|---|---|
| **1545 Route 206 South, Suite 302**<br>**Bedminster, New Jersey**<br>**(Address of principal executive offices)** | **07921**<br>**(Zip Code)** |

**Registrant's telephone number, including area code: (908) 443-1860**

**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 (see General Instruction A.2. below):

☐ 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 | Name of Each Exchange on Which Registered |
|---|---|---|
| Common Stock | MTNB | NYSE American |

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 7.01 Regulation FD Disclosure.**

Matinas BioPharma Holdings, Inc. (the "Company") issued a press release announcing topline results from the ENHANCE-IT study of LYPDISO™ against Vascepa®. A copy of the press release is furnished as Exhibit 99. 1 hereto and incorporated herein by reference.

The Company created a presentation which includes the topline results from the ENHANCE-IT study (the "Presentation") which it intends to use during a planned conference call on February 1, 2021 and then at various conferences and investor meetings. The Presentation is attached hereto as Exhibit 99.2.

The information in this Item 7.01 and Exhibits 99.1 and 99.2 attached hereto 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 shall be expressly set forth by specific reference in such a filing.

**Item 8.01. Other Events.**

On February 1, 2021, the Company announced topline results from the ENHANCE-IT study*(Pharmacodynamic Effects of a Free-fatty Acid Formulation of Omega-3 Pentaenoic Acids to ENHANCE Efficacy in Adults with Hypertriglyceridemia),* a second head-to-head comparative study of the Company's LYPDISO™ product candidate vs.

Vascepa®.

Analyses were performed on a Pharmacodynamic ("PD") population (n=94; all subjects with evaluable measurements in the two-treatment period, regardless of compliance with study drug treatment), and a Per Protocol ("PP") population (n=82; those subjects in the PD population where overall compliance in both treatment periods was at least 80% with no clinically important protocol violations or deviations).

Plasma eicosapentaenoic acid ("EPA") concentrations were statistically significantly higher with LYPDISO™, with a 46% relative percentage improvement in EPA blood level concentrations over Vascepa®.

In the PD population there was a greater reduction in triglycerides ("TG") with LYPDISO™ (21.9%) as compared with Vascepa (15.7%); this 39% relative improvement did not achieve statistical significance. In the PP population, there were statistically significant superior reductions in TGs, total cholesterol ("TC"), very-low-density lipoprotein cholesterol ("VLDL-C") and high sensitivity C-reactive protein ("hsCRP"), a well-established inflammatory marker.

The REDUCE-IT outcomes trial with Vascepa® demonstrated that achieved EPA levels drive the cardiovascular protection conferred by omega-3 fatty acids. The biomarker changes in ENHANCE-IT with LYPDISO™ may support potential protection against cardiovascular disease in a pivotal Phase 3 outcome program.



**PLASMA FATTY ACIDS – Pharmacodynamic (PD) Population**

| PD Population (n=94) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Fatty Acid | Baseline (Median) | | End-of-Treatment (Median) | | % Δ from Baseline (Median) | | *Relative % Increase in Omega-3 level Δ vs. Vascepa* | *P-value* |
| | LYPDISO™ | Vascepa® | LYPDISO™ | Vascepa® | LYPDISO™ | Vascepa® | | |
| EPA (µg/mL) | 13.8 | 15.5 | 143 | 115 | 1009 | 690 | 46 % | <0.001 |
| DPA (µg/mL) | 20.3 | 20.7 | 57.8 | 50.3 | 183 | 145 | 26 % | <0.001 |
| DHA (µg/mL) | 48.6 | 50.2 | 49.7 | 48.1 | 4.5 | -1.4 | -- | 0.01 |
| EPA+DPA+DHA (nmol/mL) | 254 | 263 | 789 | 696 | 221 | 160 | 38 % | <0.001 |

The PD population included all subjects for whom the estimation of PD parameters was possible for 2 treatment periods.

Blood fatty acids levels increased with both LYPDISO™ and Vascepa®, with similar findings in both the PD and the PP populations. In the PD population the change in fatty acid level with LYPDISO™ was 46% greater for EPA, 26% greater for docosapentaenoic acid ("DPA"), and 38% greater for total omega-3 levels than with Vascepa® – all statistically significant. DHA levels did not change meaningfully with either therapy but increased slightly with LYPDISO™.

These findings highlight and further confirm the greater bioavailability of LYPDISO's free fatty acid formulation in delivering substantially higher blood levels of EPA.



**LIPOPROTEINS AND INFLAMMATORY MARKERS – Pharmacodynamic (PD) Population**

| Variable* | PD Population (N = 94) | | P-value |
|---|---|---|---|
| | Median % Δ | | |
| | LYPDISO™ | Vascepa® | |
| TG | - 21.9 | - 15.7 | 0.27 |
| TC | - 5.2 | - 2.9 | 0.17 |
| LDL-C | - 5.4 | - 2.5 | 0.24 |
| VLDL-C | - 16.3 | - 12.9 | 0.26 |
| HDL-C | - 1.3 | - 1.5 | 0.69 |
| Non-HDL-C | - 7.5 | - 3.8 | 0.19 |
| Apo A1 | - 5.0 | - 3.5 | 0.46 |
| Apo B | - 4.7 | - 1.9 | 0.54 |
| Apo C3 | - 12.5 | - 10.5 | 0.53 |
| PCSK9 | - 7.7 | - 6.1 | 0.80 |
| hs-CRP | **- 5.7** | **+ 9.4** | **0.03** |

*Units of mg/dL for lipoprotein lipids, units of ng/mL for PCSK9, and units of mg/L for hs-CRP

In the PD population LYPDISO™ reduced TGs by 21.9%, compared to a 15.7% reduction with Vascepa®; this difference (a relative improvement of 39%) did not

achieve statistical significance.

There were similar non-significant numerical trends for all other lipid parameters. Of note, LYPDISO™ did not raise LDL cholesterol.

With regard to changes in hs-CRP, there were statistically significant and superior differences between groups: LYPDISO™ was associated with reductions in hs-CRP, while Vascepa was associated with increases in hs-CRP.



**LIPOPROTEINS AND INFLAMMATORY MARKERS – Per Protocol (PP) Population**

| Variable | *PP Population (N = 82) | | P-value |
|---|---|---|---|
| | Median % Δ | | |
| | LYPDISO™ | Vascepa® | |
| TG | **- 20.9*** | **-13.8** | **0.04** |
| TC | **- 5.5*** | **- 2.3** | **0.04** |
| LDL-C | - 5.6 | - 2.1 | 0.17 |
| VLDL-C | **- 16.0*** | **- 10.9** | **0.03** |
| HDL-C | - 1.6 | - 2.0 | 0.52 |
| Non-HDL-C | - 7.6 | - 3.2 | 0.07 |
| Apo A1 | - 5.0 | - 2.9 | 0.44 |
| Apo B | - 4.1 | - 1.8 | 0.60 |
| Apo C3 | - 11.1 | - 8.7 | 0.10 |
| PCSK9 | - 6.7 | - 5.5 | 0.68 |
| hs-CRP | **- 6.1*** | **+ 9.9** | **0.01** |




| Variable | *PP Population (N = 82) | | P-value |
|---|---|---|---|
| | Median % Δ | | |
| | LYPDISO™ | Vascepa® | |
| TG | **- 20.9*** | **-13.8** | **0.04** |
| TC | **- 5.5*** | **- 2.3** | **0.04** |
| LDL-C | - 5.6 | - 2.1 | 0.17 |
| VLDL-C | **- 16.0*** | **- 10.9** | **0.03** |
| HDL-C | - 1.6 | - 2.0 | 0.52 |
| Non-HDL-C | - 7.6 | - 3.2 | 0.07 |
| Apo A1 | - 5.0 | - 2.9 | 0.44 |
| Apo B | - 4.1 | - 1.8 | 0.60 |
| Apo C3 | - 11.1 | - 8.7 | 0.10 |
| PCSK9 | - 6.7 | - 5.5 | 0.68 |
| hs-CRP | **- 6.1*** | **+ 9.9** | **0.01** |


*The PP population included all subjects in the PD population for whom compliance for both study periods was at least 80% and for whom no clinically important protocol violations or deviations occurred during the trial.

*Statistically significant (superiority) vs. Vascepa.

In the prespecified PP population, there were similar numerical trends as seen within the PD population; however, given the more stringent compliance requirements for this population, with less inter-individual variability, some of the differences between groups emerged as statistically significant.

In the PP population, LYPDISO™ reduced TGs by 20.9%, compared to a 13.8% reduction with Vascepa®; this difference was significant with a P-value of 0.04 (a relative improvement of 51%). There were also additional statistically significant superior reductions with LYPDISO™ in total cholesterol (5.5% vs 2.3%) and VLDL-C (16.0% vs 10.9%), with similar non-significant numerical trends for the other lipid parameters. In the PP population, there were significant differences between groups in hs-CRP response.

ENHANCE-IT did not demonstrate statistical significance on the primary endpoint of triglycerides in the prespecified population. The Company intends to begin a process to identify a partner with which to collaborate on a cardiovascular outcomes study.

Analysis of the safety database for ENHANCE-IT remains ongoing. There were no serious adverse events reported for this study.



Further analyses of additional clinical data from the study are continuing and the Company expects to present the full data from this study at upcoming scientific congresses and in peer-reviewed journals over the course of the year.

*Forward- Looking Statements*

This Current Report on Form 8-K contains certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934 and Private Securities Litigation Reform Act, as amended, including those relating to topline results of the ENHANCE-IT study, the Company's strategic focus and the future development of its product candidates, including MAT2203, the anticipated timing of regulatory submissions, the anticipated timing of clinical studies, the anticipated timing of regulatory interactions, the Company's ability to identify and pursue development and partnership opportunities for its products or platform delivery technology on favorable terms, if at all, and the ability to obtain required regulatory approval and other statements that are predictive in nature, that depend upon or refer to future events or conditions. All statements other than statements of historical fact are statements that could be forward-looking statements.

These statements may be identified by the use of forward-looking expressions, including, but not limited to, "expects," "anticipates," "intends," "plans," "could," "believes," "estimates" and similar expressions. These statements involve known and unknown risks, uncertainties and other factors which may cause actual results to be materially different from any future results expressed or implied by the forward-looking statements. Forward-looking statements are subject to a number of risks and uncertainties, including, but not limited to, the Company's ability to obtain additional capital to meet its liquidity needs on acceptable terms, or at all, including the additional capital which will be necessary to complete the clinical trials of our product candidates; the ability to successfully complete research and further development and commercialization of our product candidates; the uncertainties inherent in clinical testing; the timing, cost and uncertainty of obtaining regulatory approvals; our ability to protect the Company's intellectual property; the loss of any executive officers or key personnel or consultants; competition; changes in the regulatory landscape or the imposition of regulations that affect the Company's products; and the other factors listed under "Risk Factors" in our filings with the SEC, including Forms 10-K, 10-Q and 8-K. Investors are cautioned not to place undue reliance on such forward-looking statements, which speak only as of the date hereof. Except as may be required by law, the Company does not undertake any obligation to release publicly any revisions to such forward-looking statements to reflect events or circumstances after the date hereof or to reflect the occurrence of unanticipated events. The Company's product candidates are all in a development stage and are not available for sale or use.

**Item 9.01 Financial Statements and Exhibits.**

| Exhibit No. | Description |
|---|---|
| 99.1 | Press Release, dated February 1, 2021. |
| 99.2 | Slide Presentation, dated February 1, 2021. |



**SIGNATURES**

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

**MATINAS BIOPHARMA HOLDINGS, INC.**

Dated: February 1, 2021

By: */s/ Jerome D. Jabbour*
Name: Jerome D. Jabbour
Title: Chief Executive Officer

**Exhibit 99.1**

**Matinas BioPharma Announces Topline Results from ENHANCE-IT Study of LYPDISO™ Against Vascepa®**

*– LYPDISO™ demonstrated a statistically significant 46% relative percent increase in EPA change from baseline over Vascepa® –*

*– LYPDISO™ demonstrated a 39% relative difference in response over Vascepa in TG reduction –*

*– Primary endpoint of percent change from baseline to end of treatment in triglycerides in the pharmacodynamic population did not meet statistical significance over Vascepa® –*

*– Per protocol analysis demonstrated statistical significance and superiority vs. Vascepa® on several key lipid and inflammatory markers –*

*– Management to host conference call today, Monday, February 1, 2021 at 8:00 a.m. ET –*

**BEDMINSTER, N.J., February 1, 2021** – Matinas BioPharma Holdings, Inc. (NYSE AMER: MTNB), a clinical-stage biopharmaceutical company focused on developing next generation therapeutics to advance standards of care in areas of significant unmet medical need, today announced topline results from the ENHANCE-IT study *(Pharmacodynamic Effects of a Free-fatty Acid Formulation of Omega-3 Pentaenoic Acids to ENHANCE Efficacy in Adults with Hypertriglyceridemia),* the second head-to-head comparative study of LYPDISO™ vs. Vascepa®.

In ENHANCE-IT, the key parameters evaluated included triglycerides (TGs), other lipoprotein and inflammatory markers, and blood levels of omega-3 fatty acids. The primary endpoint was the percent change from baseline to end-of-treatment in TG and superiority vs. Vascepa ®.

Analyses were performed on a Pharmacodynamic (PD) population (n=94; all subjects with evaluable measurements in the two-treatment period, regardless of compliance with study drug treatment), and a Per Protocol (PP) population (n=82; those subjects in the PD population where overall compliance in both treatment periods was at least 80% with no clinically important protocol violations or deviations).

Plasma eicosapentaenoic acid (EPA) concentrations were statistically significantly higher with LYPDISO™, with a 46% relative percentage improvement in EPA blood level concentrations over Vascepa®.

In the PD population there was a greater reduction in TGs with LYPDISO™ (21.9%) as compared with Vascepa (15.7%); this 39% relative improvement did not achieve statistical significance. In the PP population, there were statistically significant superior reductions in TGs, total cholesterol (TC), VLDL cholesterol (VLDL-C) and high sensitivity C-reactive protein (hsCRP), a well-established inflammatory marker.

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"In this ENHANCE-IT study, LYPDISO™ achieved significantly higher EPA levels, and lowered triglycerides as well as hsCRP levels to a greater extent than Vascepa®," said John J.P. Kastelein, M.D., Ph.D., Matinas Scientific Advisory Board member and Professor of Medicine at the Department of Vascular Medicine at the Academic Medical Center of the University of Amsterdam, The Netherlands. "The REDUCE-IT outcomes trial with Vascepa® has shown that achieved EPA levels drive the cardiovascular protection conferred by omega-3 fatty acids. The impressive biomarker changes in ENHANCE-IT with LYPDISO™ support a potential robust protection against cardiovascular disease in a pivotal Phase 3 outcome program."

**PLASMA FATTY ACIDS – Pharmacodynamic (PD) Population**

| PD Population (n=94) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Fatty Acid | Baseline (Median) | | End-of-Treatment (Median) | | % Δ from Baseline (Median) | | *Relative % Increase in Omega-3 level Δ vs. Vascepa* | *P-value* |
| | LYPDISO™ | Vascepa® | LYPDISO™ | Vascepa® | LYPDISO™ | Vascepa® | | |
| EPA (µg/mL) | 13.8 | 15.5 | 143 | 115 | 1009 | 690 | 46 % | <0.001 |
| DPA (µg/mL) | 20.3 | 20.7 | 57.8 | 50.3 | 183 | 145 | 26 % | <0.001 |
| DHA (µg/mL) | 48.6 | 50.2 | 49.7 | 48.1 | 4.5 | -1.4 | -- | 0.01 |
| EPA+DPA+DHA (nmol/mL) | 254 | 263 | 789 | 696 | 221 | 160 | 38 % | <0.001 |

The pharmacodynamic (**PD**) population included all subjects for whom the estimation of PD parameters was possible for 2 treatment periods.

Blood fatty acids levels increased with both LYPDISO™ and Vascepa®, with similar findings in both the PD and the PP populations. In the PD population the change in fatty acid level with LYPDISO™ was 46% greater for EPA, 26% greater for DPA, and 38% greater for total omega-3 levels than with Vascepa ® – all highly statistically significant. DHA levels did not change meaningfully with either therapy but increased slightly with LYPDISO™.

These findings highlight and further confirm the greater bioavailability of LYPDISO's free fatty acid formulation in delivering substantially higher blood levels of EPA.

**LIPOPROTEINS AND INFLAMMATORY MARKERS – Pharmacodynamic (PD) Population**

| Variable* | PD Population (N = 94) | | P-value |
|---|---|---|---|
| | Median % Δ | | |
| | LYPDISO™ | Vascepa® | |
| TG | - 21.9 | - 15.7 | 0.27 |
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| LDL-C | - 5.4 | - 2.5 | 0.24 |
| VLDL-C | - 16.3 | - 12.9 | 0.26 |
| HDL-C | - 1.3 | - 1.5 | 0.69 |
| Non-HDL-C | - 7.5 | - 3.8 | 0.19 |
| Apo A1 | - 5.0 | - 3.5 | 0.46 |
| Apo B | - 4.7 | - 1.9 | 0.54 |
| Apo C3 | - 12.5 | - 10.5 | 0.53 |
| PCSK9 | - 7.7 | - 6.1 | 0.80 |
| hs-CRP | **- 5.7** | **+ 9.4** | **0.03** |

*Units of mg/dL for lipoprotein lipids, units of ng/mL for PCSK9, and units of mg/L for hs-CRP

In the PD population LYPDISO™ reduced TGs by 21.9%, compared to a 15.7% reduction with Vascepa®; this difference (a relative improvement of 39%) did not achieve statistical significance.

There were similar numerical trends for all other lipid parameters. Of note, LYPDISO™ did not raise LDL cholesterol, as has been noted with other omega-3 formulations containing DHA.

With regard to changes in hs-CRP, there were statistically significant and superior differences between groups – LYPDISO™ was associated with reductions in hs-CRP, while Vascepa was associated with increases in hs-CRP.

**LIPOPROTEINS AND INFLAMMATORY MARKERS – Per Protocol (PP) Population**

| Variable | *PP Population (N = 82) | | P-value |
|---|---|---|---|
| | Median % Δ | | |
| | LYPDISO™ | Vascepa® | |
| TG | **- 20.9*** | **-13.8** | **0.04** |
| TC | **- 5.5*** | **- 2.3** | **0.04** |
| LDL-C | - 5.6 | - 2.1 | 0.17 |
| VLDL-C | **- 16.0*** | **- 10.9** | **0.03** |
| HDL-C | - 1.6 | - 2.0 | 0.52 |
| Non-HDL-C | - 7.6 | - 3.2 | 0.07 |
| Apo A1 | - 5.0 | - 2.9 | 0.44 |
| Apo B | - 4.1 | - 1.8 | 0.60 |
| Apo C3 | - 11.1 | - 8.7 | 0.10 |
| PCSK9 | - 6.7 | - 5.5 | 0.68 |
| hs-CRP | **- 6.1*** | **+ 9.9** | **0.01** |

*The per protocol population (**PP**) included all subjects in the **PD** population for whom compliance for both study periods was at least 80% and for whom no clinically important protocol violations or deviations occurred during the trial.

*Statistically significant (superiority) vs. Vascepa

In the prespecified PP population, there were similar numerical trends as seen within the PD population; however, given the more stringent compliance requirements for this population, with less inter-individual variability, some of the differences between groups now emerged as statistically significant.

In the PP population, LYPDISO™ reduced TGs by 20.9%, compared to a 13.8% reduction with Vascepa®; this difference was significant with a P-value of 0.04 (a relative improvement of 51%).

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There were additional statistically significant superior reductions with LYPDISO™ in total cholesterol (5.5% vs 2.3%) and VLDL-C (16.0% vs 10.9%), with similar non-significant numerical trends for the other lipid parameters.

In the PP population, there were again significant differences between groups in hs-CRP response.

“We are very grateful for all the hard work and dedication on the part of the study team, the investigators, and most importantly, the study subjects, especially during a pandemic,” commented James J. Ferguson, M.D, FACC, FAHA, Chief Medical Officer of Matinas. “These results have advanced our understanding of the potential role of LYPDISO™ in the management of patients with elevated triglycerides and cardiovascular disease. Bioavailability is clearly an important consideration in achieving higher EPA levels. Even when Vascepa is given the advantage of being dosed with meals, LYPDISO™ provides TG lowering that is better than with Vascepa®, with no increase in LDL-C, and with the added advantage of substantially higher blood levels of EPA, total omega-3 and significant impact on hs-CRP.”

“We are very pleased with the topline data from ENHANCE-IT” said Jerome D. Jabbour, Chief Executive Officer of Matinas. “The statistically significant superior EPA levels achieved with LYPDISO are an important differentiator vs. Vascepa®. Although we did not achieve statistical significance on the primary endpoint of triglycerides in the prespecified population, these data point to the potential for robust cardiovascular risk reduction with LYPDISO™. We further believe that these data could position LYPDISO™ to potentially become the best-in-class prescription omega-3 for the reduction of cardiovascular risk and we will begin a process to identify a partner with which to collaborate on a cardiovascular outcomes study.”

ENHANCE-IT was an open-label, randomized, 28-day crossover study assessing the pharmacodynamic effects of LYPDISO vs. Vascepa. The study enrolled 100 adult men and women with elevated triglycerides (150-499 mg/dL), with approximately 58% of study subjects with TGs ≥ 200 mg/dL. The study protocol involved two 28-day treatment periods, with a washout period of at least 28 days in between treatments and was conducted at eight sites in the U.S. LYPDISO and Vascepa were each administered as 2g twice daily with food in accordance with currently approved Vascepa labeling. Lipid parameters (triglycerides, Total-, LDL-, VLDL-, HDL-, and non-HDL cholesterol, apolipoproteins A1, B and C3, and PCSK9), a key inflammatory marker (hs-CRP), and omega-3 blood levels were measured at each baseline and at the end of each treatment period. The primary endpoint measured the percent change from baseline to end-of-treatment in plasma triglycerides.

Analysis of the safety database for ENHANCE-IT remains ongoing. There were no serious adverse events reported for this study and no dropouts related to study drug adverse events.

Further analyses of additional clinical data from the study are continuing and the Company expects to present the full data from this study at upcoming scientific congresses and in peer-reviewed journals over the course of the year.

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**Conference Call and Webcast Information**

Matinas will host a live conference call and webcast today, February 1, 2021, at 8:00 a.m. Eastern Time to discuss the results from ENHANCE-IT. A slide presentation will accompany the call and webcast and will be available on the Company's website.

Participating on the conference call will be members of the Matinas management team as well as Dr. Kastelein.

The conference call can be accessed by dialing 877-407-5976 for participants in the U.S. or Canada and 412-902-0031 for international callers (reference passcode 13715418).

The conference call will also be webcast live on Matinas' website,www.matinasbiopharma.com, under the 'Investors' section and will be archived there for 90 days.

**About Matinas BioPharma**

Matinas BioPharma is a clinical-stage biopharmaceutical company focused on developing next generation therapeutics to advance standards of care for patients in areas of significant unmet medical need. Company leadership has a deep history and knowledge of drug development and is supported by a world-class team of scientific advisors.

LYPDISO, the Company's lead product candidate for the treatment of cardiovascular and metabolic conditions, is a prescription-only omega-3 fatty acid-based composition, comprised primarily of EPA and DPA, under development for hypertriglyceridemia.

In addition, Matinas is developing a portfolio of products based upon its proprietary lipid nanocrystal (LNC) drug delivery platform, which can solve complex challenges relating to the safe and effective delivery of potent medicines, making them orally bioavailable, less toxic, and targeted to cells and tissues.

MAT2203 is an oral, encochleated formulation of the well-known, but highly toxic, antifungal medicine amphotericin B, primarily used to treat serious invasive fungal infections. MAT2203 is currently in a Phase 2 open-label, sequential cohort study (EnACT) in HIV-infected patients with cryptococcal meningitis. EnACT is currently enrolling patients in its second cohort, with the next DSMB evaluation of safety and efficacy data anticipated to occur in the middle of 2021.

MAT2501 is an oral, encochleated formulation of the broad-spectrum aminoglycoside antibiotic medicine amikacin, primarily used to treat chronic and acute bacterial infections. The Company recently announced that it has been awarded up to $3.75 million from the Cystic Fibrosis Foundation (CFF) to support development of MAT2501 toward an indication to treat nontuberculous mycobacterial (NTM) lung disease, including infections in patients with cystic fibrosis (CF).

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**Forward Looking Statements**

This release contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, including those relating to the ENHANCE-IT study, the Company's strategic focus and the future development of its product candidates, including MAT9001, the anticipated timing of regulatory submissions, the anticipated timing of clinical studies, the anticipated timing of regulatory interactions, the Company's ability to identify and pursue development and partnership opportunities for its products or platform delivery technology on favorable terms, if at all, and the ability to obtain required regulatory approval and other statements that are predictive in nature, that depend upon or refer to future events or conditions. All statements other than statements of historical fact are statements that could be forward-looking statements. Forward-looking statements include words such as "expects," "anticipates," "intends," "plans," "could," "believes," "estimates" and similar expressions. These statements involve known and unknown risks, uncertainties and other factors which may cause actual results to be materially different from any future results expressed or implied by the forward-looking statements. Forward-looking statements are subject to a number of risks and uncertainties, including, but not limited to, our ability to obtain additional capital to meet our liquidity needs on acceptable terms, or at all, including the additional capital which will be necessary to complete the clinical trials of our product candidates; our ability to successfully complete research and further development and commercialization of our product candidates; the uncertainties inherent in clinical testing; the timing, cost and uncertainty of obtaining regulatory approvals; our ability to protect the Company's intellectual property; the loss of any executive officers or key personnel or consultants; competition; changes in the regulatory landscape or the imposition of regulations that affect the Company's products; and the other factors listed under "Risk Factors" in our filings with the SEC, including Forms 10-K, 10-Q and 8-K. Investors are cautioned not to place undue reliance on such forward-looking statements, which speak only as of the date of this release. Except as may be required by law, the Company does not undertake any obligation to release publicly any revisions to such forward-looking statements to reflect events or circumstances after the date hereof or to reflect the occurrence of unanticipated events. Matinas BioPharma's product candidates are all in a development stage and are not available for sale or use.

**Investor and Media Contacts**

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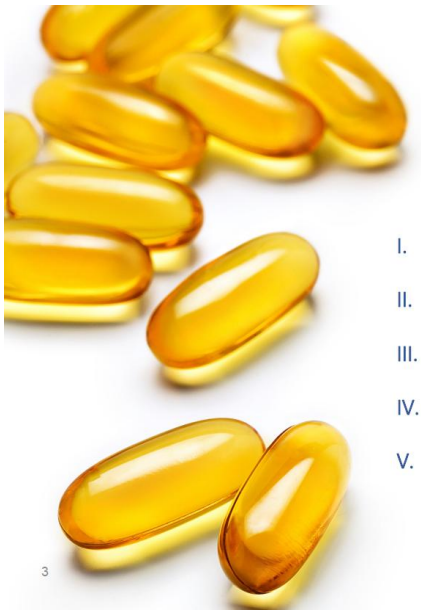
**Exhibit 99.2**


## Forward-Looking Statements

This presentation contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, including those relating to the Company's product development, clinical and regulatory timelines, market opportunity, cash flow and other statements that are predictive in nature, that depend upon or refer to future events or conditions. All statements other than statements of historical fact are statements that could be forward-looking statements. Forward-looking statements include words such as "expects," "anticipates," "intends," "plans," "could," "believes," "estimates" and similar expressions. These statements involve known and unknown risks, uncertainties and other factors which may cause actual results to be materially different from any future results expressed or implied by the forward-looking statements. Forward-looking statements are subject to a number of risks and uncertainties, including, but not limited to, our ability to obtain additional capital to meet our liquidity needs on acceptable terms, or at all, including the additional capital which will be necessary to complete the clinical trials of our product candidates; our ability to successfully complete research and further development and commercialization of our product candidates; the uncertainties inherent in clinical testing; the timing, cost and uncertainty of obtaining regulatory approvals; our ability to protect the Company's intellectual property; the loss of any executive officers or key personnel or consultants; competition; changes in the regulatory landscape or the imposition of regulations that affect the Company's products; and the other factors listed under "Risk Factors" in our filings with the SEC, including Forms 10-K, 10-Q and 8-K. Investors are cautioned not to place undue reliance on such forward-looking statements, which speak only as of the date of this release. Except as may be required by law, the Company does not undertake any obligation to release publicly any revisions to such forward-looking statements to reflect events or circumstances after the date hereof or to reflect the occurrence of unanticipated events. Matinas BioPharma's product candidates are all in a development stage and are not available for sale or use.



## CALL AGENDA

I. Opening Remarks – Jerome D. Jabbour, CEO

II. Review of Results – James J. "Terry" Ferguson, M.D., FACC, FAHA - CMO

III. KOL Perspective – John Kastelein, M.D., Ph.D., FESC

IV. Summary & Conclusions

V. Question & Answer Session

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## ENHANCE-IT Topline Data – Opening Remarks

**Jerome D. Jabbour**
**Chief Executive Officer**



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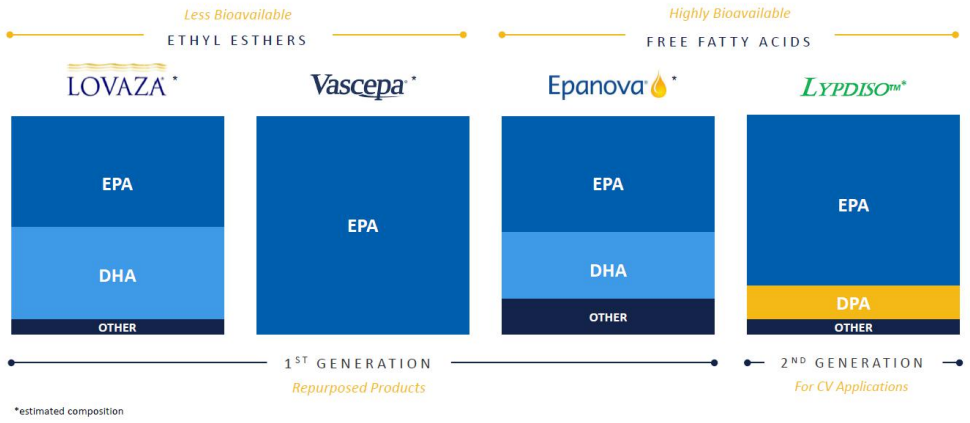
## LYPDISO™ – Formulated to Achieve Best-in-Class Potency




*estimated composition



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## ENHANCE-IT Topline Data – Review of Study and Study Results

**James J. "Terry" Ferguson, M.D., FACC, FAHA**
**Chief Medical Officer**



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## ENHANCE-IT Study: LYPDISO™ vs Vascepa®

**OBJECTIVES**

To assess pharmacodynamic (PD) effects of LYPDISO™, compared with Vascepa®, on TGs and other lipoprotein lipids, apolipoproteins, hs-CRP, and PCSK9 in men and women with elevated TGs

- Randomized, open-label, active-control crossover design (n=100)
- LYPDISO™ vs. Vascepa®, administered per Vascepa® label at 2g 2x/day with a meal each time; TLC diet
- Fasting TG 150-499 mg/dL (at least 50% with TGs ≥200-499 mg/dL)
- No other lipid-lowering Rx (stable-dose statins allowed)
- Two 28-day treatment periods, ≥ 28-day washout between treatments
- Measurement of PD parameters and omega-3 blood levels

**PRIMARY ENDPOINT**

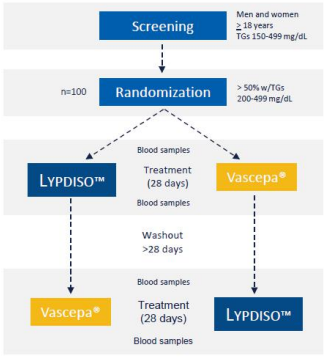
- % change from baseline to end-of-treatment in plasma TG

**SECONDARY ENDPOINTS**

- Total-C, LDL-C, VLDL-C, HDL-C, non-HDL-C, Apo A1, Apo B, Apo C3, PCSK9, hs-CRP
- Omega-3 fatty acids (EPA, DHA, DPA, total) in plasma

The pharmacodynamic (PD) population included all subjects for whom estimation of PD parameters was possible for both treatment periods.

The per protocol population (PP) included all subjects in the PD population for whom compliance for both treatment periods was ≥ 80% with no clinically important protocol deviations.




Primary Endpoint: % Change from baseline in plasma TG



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## ENHANCE-IT – Plasma Fatty Acids – Pharmacodynamic (PD) Population

| PD Population (n=94) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Fatty Acid | Baseline (Median) | | End-of-Treatment (Median) | | % Δ from Baseline (Median) | | *Relative % Increase in Omega-3 level Δ vs. Vascepa* | *P-value* |
| | LYPDISO™ | Vascepa® | LYPDISO™ | Vascepa® | LYPDISO™ | Vascepa® | | |
| **EPA** (µg/mL) | 13.8 | 15.5 | 143 | 115 | 1009 | 690 | 46 % | <0.001 |
| **DPA** (µg/mL) | 20.3 | 20.7 | 57.8 | 50.3 | 183 | 145 | 26 % | <0.001 |
| **DHA** (µg/mL) | 48.6 | 50.2 | 49.7 | 48.1 | 4.5 | -1.4 | -- | 0.01 |
| **EPA+DPA+DHA** (nmol/mL ) | 254 | 263 | 789 | 696 | 221 | 160 | 38 % | <0.001 |

Similar outcomes were noted in the per-protocol (PP) population.



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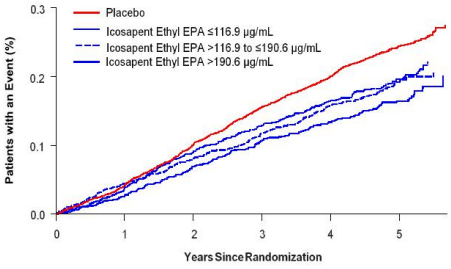
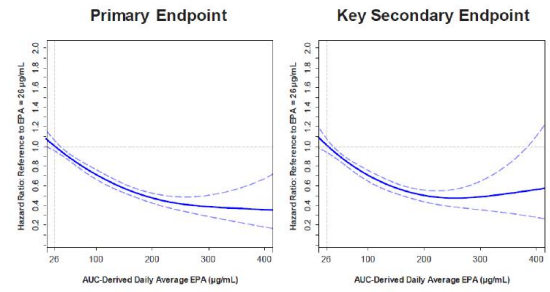
## EPA Blood Levels Were the Only Biomarker That Predicted CV Outcomes in REDUCE-IT

***Primary Endpoints in REDUCE-IT as a Function of EPA Levels***




Amarin *EMDAC Panel Nov. 2019*

***Relationship of EPA Levels to Outcome (HR)***




Bhatt DL. *ACC/WCC 2020, Chicago (virtual)*

**Key Points:**

1. The highest EPA blood levels in REDUCE-IT were associated with the lowest CV event rates.
2. EPA was the only biomarker that predicted outcome – Changes in TG, LDL-C, non-HDL, ApoB and hs-CRP did not.



## ENHANCE-IT – Lipoproteins and Inflammatory Markers- Pharmacodynamic (PD) Population

| Variable* | PD Population (N = 94) | | P-value |
|---|---|---|---|
| | Median % Δ | | |
| | LYPDISO™ | Vascepa® | |
| TG | - 21.9 | - 15.7 | 0.27 |
| TC | - 5.2 | - 2.9 | 0.17 |
| LDL-C | - 5.4 | - 2.5 | 0.24 |
| VLDL-C | - 16.3 | - 12.9 | 0.26 |
| HDL-C | - 1.3 | - 1.5 | 0.69 |
| Non-HDL-C | - 7.5 | - 3.8 | 0.19 |
| Apo A1 | - 5.0 | - 3.5 | 0.46 |
| Apo B | - 4.7 | - 1.9 | 0.54 |
| Apo C3 | - 12.5 | - 10.5 | 0.53 |
| PCSK9 | - 7.7 | - 6.1 | 0.80 |
| hs-CRP | **- 5.7** | **+ 9.4** | **0.03** |

**Units of mg/dL for lipoprotein lipids, units of ng/mL for PCSK9, and units of mg/L for hs-CRP*



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## ENHANCE-IT – Lipoproteins and Inflammatory Markers- Per Protocol (PP) Population

| Variable** | PP Population (N = 82) | | P-value |
|---|---|---|---|
| | Median % Δ | | |
| | LYPDISO™ | Vascepa® | |
| TG | **- 20.9*** | **-13.8** | **0.04** |
| TC | **- 5.5*** | **- 2.3** | **0.04** |
| LDL-C | - 5.6 | - 2.1 | 0.17 |
| VLDL-C | **- 16.0*** | **- 10.9** | **0.03** |
| HDL-C | - 1.6 | - 2.0 | 0.52 |
| Non-HDL-C | - 7.6 | - 3.2 | 0.07 |
| Apo A1 | - 5.0 | - 2.9 | 0.44 |
| Apo B | - 4.1 | - 1.8 | 0.60 |
| Apo C3 | - 11.1 | - 8.7 | 0.10 |
| PCSK9 | - 6.7 | - 5.5 | 0.68 |
| hs-CRP | **- 6.1*** | **+ 9.9** | **0.01** |

***Units of mg/dL for lipoprotein lipids, units of ng/mL for PCSK9, and units of mg/L for hs-CRP*

***Statistical significance (superiority) vs. Vascepa®**



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## ENHANCE-IT Topline Data – Key Opinion Leader Perspective

### John Kastelein, M.D., Ph.D., FESC

John is Emeritus Professor of Medicine at the Department of Vascular Medicine at the Academic Medical Center (AMC) of the University of Amsterdam, where he held the Strategic Chair of Genetics of Cardiovascular Disease. Professor Kastelein has published over 1,320 research papers in peer reviewed journals, including Nature Genetics, Lancet, New England Journal of Medicine, JAMA and Circulation and had a Hirsch index of 122 as of January 2020. His citations reached over 680 in 2020 and in total over 74,800.

Dr. Kastelein is a member of the Steering Committees of numerous lipid-lowering and cardiovascular intervention trials. His main interest is in the development of novel therapies for Cardiovascular Diseases and the genetic basis of dyslipidemia. Dr. Kastelein is chief executive officer (CEO) of the Vascular Research Network (VRN), a site maintenance organization comprising over 50 hospitals in the Netherlands, involved in clinical trials for cardiometabolic disease. He is president of the Dutch Atherosclerosis Society and the National Scientific Committee on Familial Hypercholesterolemia and is also a Fellow of the European Society of Cardiology (FESC). In 2010 he was awarded the prestigious Dutch Heart Association prize of EUR 1 million and in 2011 the ZonMw Parel for his research in the field of gene therapy. In addition to these functions, Dr. Kastelein is a key advisor to a number of biotech and pharmaceutical companies.

Dr. Kastelein was awarded a doctorate in Medicine (with Honors) from the University of Amsterdam, trained in internal medicine at the Academic Medical Center of the University of Amsterdam, and trained in lipidology and molecular biology at the University of British Columbia in Vancouver.



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## ENHANCE-IT – Summary and Conclusions

- Plasma EPA concentrations were significantly higher with LYPDISO™, (**46%** relative percent increase change from baseline EPA level vs. Vascepa®)
- Levels of EPA have been directly correlated with improvements in cardiovascular outcomes (Vascepa® in REDUCE-IT)
- The ENHANCE-IT data indicate potential for superior cardioprotection with LYPDISO™ vs. Vascepa®
- The primary endpoint of percent change from baseline to end-of-treatment in triglycerides (TGs) did not meet statistical significance in the prespecified Pharmacodynamic (PD) Population
- Analysis of the Per Protocol (PP) Population demonstrated statistically significant improvement and superiority vs. Vascepa® in TGs, Total Cholesterol, and VLDL
- There were also significant reductions in hs-CRP with LYPDISO™ compared with Vascepa®, suggesting potential superior anti-inflammatory impact of LYPDISO™ (with additional potential cardiovascular and anti-inflammatory implications)
- The ENHANCE-IT data support the pursuit of a cardiovascular outcomes indication for LYPDISO™
- Analysis of safety database is ongoing. There were no serious adverse events reported and no dropouts related to study drug adverse events.



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