UNITED STATES

SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 6-K

Report of Foreign Private Issuer
Pursuant to Rule 13a-16 or 15d-16
under the Securities Exchange Act of 1934

For the month of: January 2014 (Report Number 2)

ALCOBRA LTD.
(Translation of registrant's name into English)

Amot Investment Building
2 Weizman St. 9th Floor
Tel Aviv 6423902 Israel
(Address of principal executive offices)

Indicate by check mark whether the registrant files or will file annual reports under cover of Form 20-F or Form 40-F.

Form 20-F x Form 40-F ☐

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulations S-T Rule 101(b)(1):_____

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulations S-T Rule 101(b)(7):_____

Indicate by check mark, whether the registrant by furnishing the information contained in this Form is also thereby furnishing the information to the Commission pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934.

Yes ☐ No ☒

If "Yes" is marked, indicate below the file number assigned to the registrant in connection with Rule 12g3-2(b): ___

Attached hereto and incorporated by reference herein is the registrant's press release issued on January 27, 2014.

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.

Alcobra Ltd.
(Registrant)

By /s/ Dr. Yaron Daniely
Name: Dr. Yaron Daniely
Chief Executive Officer and President

Date: January 27, 2014

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Alcobra Announces New Biomarker Finding in a Follow-up Fragile X Animal Study for MG01CI

- *Improved Cognitive Function and Social Interaction Correlated With Changes In Blood Levels of Fragile X-Specific Molecular Targets*
- *Clinical Study With MG01CI In Fragile X Syndrome Planned For 2014*

Tel Aviv, Israel – January 27, 2014 – Alcobra Ltd. (NasdaqCM: ADHD), an emerging biopharmaceutical company primarily focused on the development and commercialization of its proprietary drug candidate, MG01CI (Metadoxine Extended-Release), to treat cognitive dysfunctions, such as ADHD and Fragile X Syndrome, announced today positive results from a new study in Fmr1 knock-out mice, a validated animal model of Fragile X Syndrome. The study revealed that normalization of certain over-activated biological markers was evident in the blood and brains of test mice following treatment with Metadoxine. This finding raises the possibility of using this effect as a screening tool in future clinical investigations for identifying patients who are more likely to respond to treatment and monitoring their response over time.

Improved cognitive and social functions were associated with reduction of blood levels of over-activated Akt and Extracellular signal-related Kinase (ERK) in test mice. The Akt and ERK pathways are thought to play a critical role in impaired synaptic plasticity underlying learning and memory in Fragile X Syndrome patients.

Additional findings from this new study showed that Metadoxine treatment prevented the overabundance of poorly shaped, immature neurons in the hippocampal region of the brain and reduced exaggerated new protein synthesis in the same brain region. Overabundance of immature neurons and increased protein synthesis have been implicated in the pathophysiology of Fragile X Syndrome and are presumed to be responsible for impaired learning and memory.

Dr. Yaron Daniely, President and Chief Executive Officer of Alcobra commented, “The possibility of identifying a target population that may be more responsive to therapy using a simple blood test is a valuable milestone. The findings in this study are exciting, replicating and validating previously reported findings using Metadoxine in this model. We are excited to be moving forward this year with a clinical study evaluating MG01CI in Fragile X Syndrome.”

Alcobra previously demonstrated benefits on behavioral outcomes, including contextual fear conditioning (a method of assessing learning and memory) and social impairment in Fmr1 knock-out mice. These findings were reported at the FRAXA Investigators Meeting in Southbridge, MA in September 2013. These studies were funded in part by the FRAXA Research Foundation.

About Fragile X Syndrome

Fragile X syndrome (FXS) is a genetic condition that causes intellectual disability, behavioral and learning challenges and various physical characteristics. Behavioral characteristics can include ADHD, autism and autistic behaviors, social anxiety, stereotypic movements, poor eye contact, sensory disorders and increased risk for aggression. Fragile X Syndrome is the leading known genetic cause of autism, accounting for about 2-5% of cases. Fragile X represents an unmet medical need and a rare disease, as defined by the Orphan Drug Act. According to the U.S. Centers for Disease Control and Prevention (CDC), approximately one in 4,000 males and one in 8,000 females have Fragile X. The FDA has not approved any drugs specifically for the treatment of Fragile X or its symptoms.

About Alcobra Ltd.

Alcobra Ltd. is an emerging biopharmaceutical company primarily focused on the development and commercialization of a proprietary drug candidate, MG01CI, to treat cognitive dysfunctions including Attention Deficit Hyperactivity Disorder (ADHD) and Fragile X Syndrome. MG01CI has completed Phase II studies to treat Attention Deficit Hyperactivity Disorder. The company was founded in 2008 and is headquartered in Tel Aviv, Israel. For more information please visit the Company's website, www.alcobra-pharma.com, the content of which is not incorporated herein by reference.

Forward Looking Statements

This press release may contain forward-looking statements within the meaning of the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995 and other Federal securities laws. Because such statements deal with future events and are based on Alcobra's current expectations, they are subject to various risks and uncertainties and actual results, performance or achievements of Alcobra could differ materially from those described in or implied by the statements in this press release. For example, forward-looking statements include statements that imply that MG01CI may be helpful to treat cognitive dysfunctions such as ADHD and Fragile X, that we will launch a clinical study in Fragile X Syndrome in 2014 or at all or that the effect of certain biomarkers may be used as a screening tool in future clinical investigations for identifying patients who are more likely to respond to treatment. In addition, historic results of scientific research do not guarantee that the conclusions of future research or studies would not suggest different conclusions or that historic results referred to in this press release would be interpreted differently in light of additional research and clinical and preclinical studies results. The forward-looking statements contained or implied in this press release are subject to other risks and uncertainties, including those discussed under the heading "Risk Factors" in Alcobra Ltd.'s registration statement on Form F-1/A filed with the Securities and Exchange Commission ("SEC") on October 22, 2013, and in subsequent filings with the SEC. Except as otherwise required by law, Alcobra disclaims any intention or obligation to update or revise any forward-looking statements, which speak only as of the date hereof, whether as a result of new information, future events or circumstances or otherwise.

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