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: September 2013

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 ☒ 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 September 10, 2013.

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: September 11, 2013

News Release

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Alcobra's Pre-clinical Fragile X Study for MG01CI
Shows Significant Positive Results
Statistically significant improvements in learning, memory and sociability in Fragile X animal study

Tel Aviv, Israel (September 10, 2013) – Alcobra Ltd. (NASDAQ CM: ADHD), an emerging biopharmaceutical company primarily focused on the development and commercialization of its proprietary drug, MG01CI (Sustained-Release Metadoxine), to treat cognitive dysfunction, announced today positive findings from a pre-clinical study with a mouse model of Fragile X Syndrome. The study showed significant improvement in cognitive and social functioning following treatment with MG01CI in a valid animal model of Fragile X Syndrome (FMR1 knock-out mouse model).

The study included multiple behavioral assessments of 40 mice, comprising 20 Fragile X knock-out mice and 20 control littermate mice, that were treated with MG01CI or placebo. The data showed significant improvement in behavioral outcomes assessed with this animal model, including contextual fear conditioning (a test primarily evaluating memory and learning), social interaction, and Y-maze alternation (a test of learning and perseverance). All assessments were scored blindly (raters were not aware of the treatment each mouse received).

"We are excited about these new findings and are considering our next steps in this new potential use of MG01CI for the treatment of Fragile X Syndrome, and possibly Autism Spectrum Disorder," commented Dr. Yaron Daniely, President and Chief Executive Officer of Alcobra Ltd. "This is yet another demonstration of the potential for MG01CI to address multiple cognitive dysfunctions."

Dr. Jonathan Rubin, Chief Medical Officer of Alcobra Ltd., added, "This pre-clinical study provides a promising signal regarding the cognitive effects of MG01CI in an area of significant unmet need, which currently has no approved pharmacological treatments, possibly warranting translation of these findings into clinical studies of Fragile X syndrome."

About Fragile X Syndrome (FMR1 KO)
Fragile X syndrome is the most common single-gene cause of autism and inherited cause of intellectual disability among boys. Approximately 1 in 4,000 males and 1 in 8,000 females have Fragile X syndrome, according to Centers for Disease Control and Prevention (CDC). Not everyone with the mutation will show signs or symptoms of Fragile X, and disabilities will range from mild to severe as well as physical characteristics such as an elongated face, large or protruding ears, large testes (macroorchidism), and behavioral characteristics such as stereotypic movements (e.g. hand-flapping), problems with attention and hyperactivity, and social anxiety. A majority of individuals with Fragile X Syndrome will have either Autism Spectrum Disorder or autistic symptoms, and will have varying levels of cognitive impairment.

Fragile X results from a change or mutation in the Fragile X Mental Retardation 1 (FMR1) gene, which is found on the X chromosome. The gene normally makes a protein called Fragile X Mental Retardation Protein, or FMRP, which is missing or deficient in individuals with Fragile X Syndrome. This protein is important in regulating pathways which are involved in creating and maintaining connections between cells in the brain.

The Food and Drug Administration (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, MG01CI, to treat Attention Deficit Hyperactivity Disorder (ADHD). MG01CI has completed Phase II studies to treat ADHD. The company was founded in 2008 and is headquartered in Tel Aviv, Israel.

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. 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 filed with the Securities and Exchange Commission ("SEC") 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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