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): September 22, 2020

WAVE LIFE SCIENCES LTD.
(Exact name of registrant as specified in its charter)

Singapore	**001-37627**	**00-0000000**
(State or other jurisdiction of incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**

7 Straits View #12-00, Marina One East Tower Singapore	**018936**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: +65 6236 3388

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	Name of each exchange on which registered
$0 Par Value Ordinary Shares	**WVE**	**The Nasdaq Global Market**

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

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 8.01 Other Events.

On September 22, 2020, Wave Life Sciences Ltd. (the "Company") issued a press release announcing the commencement of an underwritten public offering of its ordinary shares (the "Offering"). In connection with the Offering, the Company also announced its intention to grant the underwriters an option for a period of up to 30 days to purchase up to an additional 15% of the number of ordinary shares sold in the Offering on the same terms and conditions. A copy of the press release is attached hereto as Exhibit 99.1, and is incorporated herein by reference.

On September 22, 2020, the Company filed with the Securities and Exchange Commission ("SEC") a preliminary prospectus supplement (the "Preliminary Prospectus Supplement") to its effective shelf registration statement on Form S-3, as amended (File No. 333-231382), pursuant to Rule 424(b)(5) under the Securities Act of 1933, as amended (the "Securities Act"), relating to the Offering. The Preliminary Prospectus Supplement contains an updated summary description of the Company's business in the section entitled "Prospectus Supplement Summary," which is attached hereto as Exhibit 99.2 and incorporated herein by reference. The information contained in Exhibit 99.2 updates and supersedes the information provided in the Company's previous periodic filings with the SEC in order to reflect recent business developments.

This Current Report on Form 8-K, including the exhibits hereto, shall not constitute an offer to sell or the solicitation of an offer to buy any securities of the Company, which is being made only by means of a written prospectus meeting the requirements of Section 10 of the Securities Act, nor shall there be any sale of the Company's securities in any state or jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of such jurisdiction.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

Exhibit No.	Description
99.1	Press release dated September 22, 2020, announcing a proposed offering of ordinary shares
99.2	"Prospectus Supplement Summary" of Wave Life Sciences Ltd.'s Preliminary Prospectus Supplement dated September 22, 2020 to the Registration Statement on Form S-3, as amended (File No. 333- 231382)
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 hereunto duly authorized.

WAVE LIFE SCIENCES LTD.

By: */s/ Paul B. Bolno, M.D.*
Paul B. Bolno, M.D.
President and Chief Executive Officer

Date: September 22, 2020

Exhibit 99.1

Wave Life Sciences Announces Proposed Public Offering of Ordinary Shares

CAMBRIDGE, Mass., September 22, 2020 — Wave Life Sciences Ltd. (Nasdaq: WVE), a clinical-stage genetic medicines company committed to delivering life-changing treatments for people battling devastating diseases, announced today that it has commenced an underwritten public offering of its ordinary shares. In connection with the offering, Wave intends to grant the underwriters a 30-day option to purchase up to an additional 15% of the number of ordinary shares sold in the public offering on the same terms and conditions. All of the shares in the offering will be sold by Wave Life Sciences.

Jefferies, SVB Leerink and Mizuho Securities are acting as joint book-running managers for the offering. The offering is subject to market and other conditions, and there can be no assurance as to whether or when the offering may be completed, or as to the actual size or terms of the offering.

The offering will be made only by means of a prospectus and related prospectus supplement forming part of a shelf registration statement that was previously filed with and declared effective by the Securities and Exchange Commission ("SEC"). A preliminary prospectus supplement and accompanying base prospectus relating to and describing the terms of the offering will be filed with the SEC and will be available on the SEC's website located at http://www.sec.gov, copies of which may be obtained, when available, from Jefferies LLC, Attention: Equity Syndicate Prospectus Department, 520 Madison Avenue, 2nd Floor, New York, NY 10022, by telephone: (212) 336-7460, or by e-mail: Prospectus_Department@Jefferies.com; SVB Leerink LLC, Attention: Syndicate Department, One Federal Street, 37th Floor, Boston, MA 02110, by telephone: (800) 808-7525, ext. 6132, or by e-mail: syndicate@leerink.com; or from Mizuho Securities USA LLC, Attn: Equity Capital Markets, 1271 Avenue of the Americas, 3rd Floor, New York, NY 10020, by telephone (212) 205-7600, or by email: US-ECM@us.mizuho-sc.com. The final terms of the offering will be disclosed in a final prospectus supplement to be filed with the SEC.

This press release shall not constitute an offer to sell, or a solicitation of an offer to buy, nor will there be any sale of these securities in any state or other jurisdiction in which such an offer, solicitation or sale would be unlawful prior to the registration or qualification under the securities laws of any such state or other jurisdiction.

About Wave Life Sciences

Wave Life Sciences (Nasdaq: WVE) is a clinical-stage genetic medicines company committed to delivering life-changing treatments for people battling devastating diseases. Wave aspires to develop best-in-class medicines across multiple therapeutic modalities using PRISM, the company's proprietary discovery and drug development platform that enables the precise design, optimization and production of stereopure oligonucleotides. Driven by a resolute sense of urgency, the Wave team is targeting a broad range of genetically defined diseases so that patients and families may realize a brighter future.

Forward-Looking Statements

This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, as amended. The words “may,” “will,” “could,” “would,” “should,” “expect,” “plan,” “anticipate,” “intend,” “believe,” “estimate,” “predict,” “project,” “potential,” “continue,” “target” and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. Forward-looking statements include statements regarding the proposed public offering of ordinary shares. These statements are subject to various risks and uncertainties, actual results could differ materially from those projected and Wave cautions investors not to place undue reliance on the forward-looking statements in this press release. These risks and uncertainties include, without limitation, risks and uncertainties related to market conditions and satisfaction of customary closing conditions related to the public offering. There can be no assurance that Wave will be able to complete the public offering on the anticipated terms, or at all. Any forward-looking statements in this press release are based on management’s current expectations and beliefs and are subject to a number of risks, uncertainties and important factors that may cause actual events or results to differ materially from those expressed or implied by any forward-looking statements contained in this press release, including, without limitation, the risks and uncertainties described in the section entitled “Risk Factors” in Wave’s preliminary prospectus supplement related to the proposed offering to be filed with the SEC and Wave’s most recent Annual Report on Form 10-K filed with the SEC, as amended, and in other filings Wave makes with the SEC from time to time. Wave undertakes no obligation to update the information contained in this press release to reflect subsequently occurring events or circumstances.

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PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights information contained elsewhere or incorporated by reference in this prospectus supplement and the accompanying prospectus. This summary does not contain all of the information that you should consider before deciding to invest in our ordinary shares. You should read this entire prospectus supplement and the accompanying prospectus carefully, including the "Risk Factors" section contained in this prospectus supplement, our consolidated financial statements and the related notes thereto and the other documents and information incorporated by reference in this prospectus supplement and the accompanying prospectus.

Overview

We are a clinical-stage genetic medicines company committed to delivering life-changing treatments for people battling devastating diseases. Using PRISM, our proprietary discovery and drug development platform that enables the precise design, optimization and production of novel stereopure oligonucleotides, we aspire to develop best in class medicines for genetically defined diseases with a high degree of unmet need.

Nucleic acid therapeutics, including oligonucleotides, are a growing and innovative class of drugs comprised of a sequence of nucleotides that are linked together by a backbone of chemical bonds. We are initially developing oligonucleotides that target the ribonucleic acid ("RNA") to either reduce the expression of disease-promoting proteins or transform the production of dysfunctional mutant proteins into the production of functional proteins. RNA is a critical molecule that can adopt complex three-dimensional structures and affect various cellular functions. By intervening at the RNA level, we have the potential to address diseases that have historically been difficult to treat with small molecules or biologics. The mechanisms that we are currently using to target RNA with our oligonucleotides include RNase H-mediated RNA degradation, Ago2-mediated RNA interference ("RNAi"), exon-skipping, and ADAR (adenosine deaminases acting on RNA)-mediated RNA editing. Oligonucleotides have additional advantages as a therapeutic class including the ability to target multiple tissue types, often without the need for a delivery vehicle, and the ability to modulate the frequency of dosing to ensure broad distribution within tissues. Oligonucleotides also have well-established manufacturing processes and validated test methods based on decades of improvements.

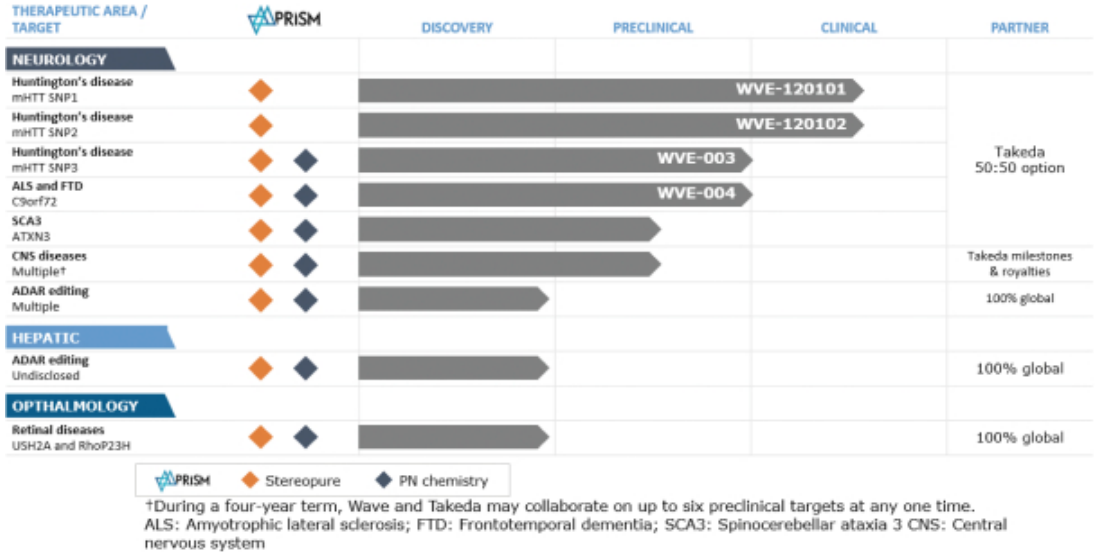
The oligonucleotides we are developing with PRISM are stereopure. A stereopure oligonucleotide is comprised of molecules with atoms precisely arranged in three-dimensional orientations at each linkage. We believe that controlling the stereochemistry of each backbone position will optimize the pharmacological profile of our oligonucleotides by maximizing the potential therapeutic benefit while minimizing the potential for side effects and safety risks. The stereopure oligonucleotides we are developing differ from the mixture-based oligonucleotides currently on the market or in development by others. Our preclinical studies have demonstrated that our stereopure oligonucleotides may achieve superior pharmacological properties compared with mixture-based oligonucleotides. Through our work in developing stereopure oligonucleotides, we have created and continue to evolve PRISM, our proprietary discovery and drug development platform.

PRISM enables us to target genetically defined diseases with stereopure oligonucleotides across multiple therapeutic modalities. PRISM combines our unique ability to construct stereopure oligonucleotides with a deep understanding of how the interplay among oligonucleotide sequence, chemistry and backbone stereochemistry impacts key pharmacological properties. By exploring these interactions through iterative analysis of in vitro and in vivo outcomes and artificial intelligence-driven predictive modeling, we continue to define design principles that we deploy across programs to rapidly develop and manufacture clinical candidates that meet pre-defined product profiles.

Our lead clinical development programs are focused in genetic diseases within neurology. Our most advanced stereopure therapeutic candidates in development, WVE-120101 and WVE-120102, are designed to selectively target mutant huntingtin ("mHTT") and spare wild-type, or healthy, huntingtin ("wtHTT") for the treatment of Huntington's disease ("HD"). WVE-120101 and WVE-120102 are currently being studied in two

Phase 1b/2a clinical trials, PRECISION-HD1 and PRECISION-HD2. Our next neurology programs approaching clinical development include our mHTT SNP3 program for the treatment of HD and our C9orf72 program for the treatment of amyotrophic lateral sclerosis ("ALS") and frontotemporal dementia ("FTD"). We are also pursuing additional central nervous system ("CNS") programs in collaboration with Takeda Pharmaceutical Company Limited ("Takeda"), including spinocerebellar ataxia 3 ("SCA3"). We are advancing discovery research in ADAR-mediated RNA-editing applications, including neurological and hepatic diseases. In addition, outside of neurology, we are advancing discovery research in ophthalmologic disorders, specifically inherited retinal diseases. In further support of our pipeline, we continue to invest in PRISM to potentially develop the next generation of stereopure oligonucleotides. We have also established and continue to enhance our internal current good manufacturing practices ("cGMP") manufacturing capabilities to increase control and visibility of our drug substance supply chain.

Our Current Programs



Additional details regarding our programs are set forth below.

Neurology

- *Huntington's Disease ("HD")*: Huntington's Disease is a rare hereditary neurodegenerative disease that results in early death and for which there is no cure. HD is caused by a mutation (i.e., an expanded CAG triplet repeat) in the HTT gene, which results in production of mutant HTT ("mHTT") protein. In HD patients, there is a progressive loss of neurons in the brain leading to cognitive, psychiatric and motor disabilities. HD patients still possess wild-type (healthy) HTT ("wtHTT") protein, which is important for neuronal function and there is increasing evidence that wtHTT may be neuroprotective in an adult brain. Additionally, a dominant gain of function in mHTT protein and a concurrent loss of function of wtHTT protein may be important components of the pathophysiology of HD. Accordingly, suppression of wtHTT may have detrimental long-term consequences. Absence of wtHTT protein has been shown to be embryonically lethal in mice. In October 2019, at our Analyst and Investor Research Day, key opinion leaders in HD research presented data suggesting that wtHTT is neuroprotective in an adult brain; transport of key neurotrophic factors such as brain-derived neurotrophic factor ("BDNF") are regulated by wtHTT levels; and HD may be caused by a dominant gain of function in mutant HTT and a loss of function of wtHTT protein. Further, the relative proportion of wtHTT to mHTT is critical based on evidence that suggests an increased amount of wtHTT relative to mHTT may result in slower

disease progression (measured by age-at-onset). Also, HD patients that lack wtHTT all together have significantly more severe disease, as measured by disease progression after symptom onset.

- *Our HD Portfolio*: In HD, we are currently advancing two clinical programs and one preclinical program. WVE-120101 and WVE-120102 are our clinical programs, where each is a distinct stereopure antisense oligonucleotide designed to selectively target a single nucleotide polymorphism ("SNP") associated with the disease-causing mutant huntingtin (mHTT) mRNA transcript within the *HTT* gene: rs362307 ("mHTT SNP1") and rs362331 ("mHTT SNP2"), respectively. Our third program in HD, which we refer to as our "mHTT SNP3" program, is also a stereopure antisense oligonucleotide designed to selectively target an undisclosed SNP on the mHTT mRNA transcript. Our mHTT SNP3 program is currently in the preclinical stage. Approximately 50% of the HD population carries SNP1 or SNP2 and, with overlap, up to 70% of the HD population carries either SNP1, SNP2 or both. Approximately 40% of the HD population carries SNP3 and, with overlap, up to 80% of the HD population carries at least one of SNP1, SNP2 and/or SNP3. Targeting mRNA transcript with these SNPs allows us to lower the mutant allele transcript, while leaving the healthy transcript relatively intact. The healthy transcript is required to produce healthy HTT protein which is important for neuronal function. We commonly refer to this method (or approach) as "allele selective targeting." SNPs are naturally occurring variations within a given genetic sequence and in certain instances can be used to distinguish between two related copies of a gene where only one is associated with the expression of a disease-causing protein. Our allele selective approach may also enable us to address the pre-manifest, or asymptomatic, HD patient population in the future. We have shown that by targeting mHTT SNP1 and mHTT SNP2 in preclinical *in vitro* studies, the production of disease-causing proteins associated with HD can be selectively reduced. In addition, we have shown that by targeting mHTT SNP3 in preclinical *in vitro* studies, our SNP3 compound selectively reduces the expression of the mutant HTT.
- *SNP phasing technology*: To verify that HD patients have at least one of the SNPs that we are targeting on the mutant allele, we investigated multiple technologies that could provide highly accurate results and rapid turnaround. We conducted a prospective observational study of the frequency of SNP1 and SNP2 in patients with HD, which confirmed the feasibility of rapidly and prospectively identifying SNP1 and / or SNP2 in association with the mHTT allele in patients with HD. This study was published in Neurology Genetics in May 2020 and the manuscript is titled "Genotyping single nucleotide polymorphisms for allele-selective therapy in Huntington's disease." In 2019, we entered into an agreement with Asuragen, Inc. ("Asuragen"), a molecular diagnostics company, for the development and potential commercialization of companion diagnostics for our investigational WVE-120101 and WVE-120102 allele-selective therapeutic programs in HD. We recently expanded our agreement with Asuragen to enable us to use their scalable SNP phasing technology in our upcoming clinical trial for HD patients carrying SNP3.
- *Phase 1b/2a Clinical Trials*: PRECISION-HD is a global clinical program consisting of the PRECISION-HD1 and PRECISION-HD2 clinical trials. PRECISION-HD1 and PRECISION-HD2 are two parallel, multicenter, double-blind, randomized, placebo-controlled Phase 1b/2a clinical trials evaluating WVE-120101 and WVE-120102, respectively, administered intrathecally, consisting of single-ascending dose and multiple-ascending dose portions. The primary objective of these two trials is to assess the safety and tolerability of intrathecal doses of WVE-120101 and WVE-120102, respectively, in early manifest HD patients. Additional objectives include measurement of total HTT protein and mutant HTT protein, and exploratory pharmacokinetic, pharmacodynamic, clinical and MRI endpoints. Each trial is designed with five multi-dose cohorts (2, 4, 8, 16, and 32 mg), each with 12 patients that have Stage I or Stage II HD, ages 25-65, who have screened positively for the presence of SNP1 or SNP2. Outside of the United States, we are conducting both the single-ascending dose and multiple-ascending dose portions of the PRECISION-HD1 and PRECISION-HD2 trials. In the United States, we received approvals to proceed with the single-dose portions of both trials. However, the U.S. Food and Drug Administration (the "FDA") indicated to us that we cannot progress to the multiple-ascending dose portions of these trials in the United States unless we

conduct an additional preclinical study and present the resulting data to the FDA for its review. For the single-dose portion of the PRECISION-HD1 trial in the United States, escalation to our highest proposed doses is subject to the FDA's review and approval of additional monitoring plans. WVE-120101 and WVE-120102 have been granted orphan drug designation for the treatment of HD by the FDA. In response to the global COVID-19 pandemic, we have taken, and will continue to take, actions to minimize disruptions to our PRECISION-HD clinical trials, including, among other actions, more frequent communications with our trial sites to monitor the impact of the evolving pandemic. As a result of the COVID-19 pandemic, our clinical trial sites have faced continued restrictions. If global restrictions continue or worsen, the ability to evaluate patients in both of the PRECISION-HD trials as planned may be further impacted.

- *PRECISION-HD2 trial*: In December 2019, we announced initial clinical data from our ongoing PRECISION-HD2 trial. In an analysis comparing all patients treated with multiple intrathecal doses of WVE-120102 to placebo, a statistically significant reduction of 12.4% ($p<0.05$) in mHTT protein was observed in cerebrospinal fluid ("CSF"). An analysis to assess a dose response across the initial four treatment groups (2, 4, 8, or 16 mg) suggested a statistically significant response in mHTT reduction at the highest doses tested ($p=0.03$). In addition, the topline analysis also indicated that there was no difference in total HTT protein or neurofilament light chain in treated patients compared to placebo. WVE-120102 was generally safe and well tolerated across all cohorts. These topline data supported the addition of higher dose cohorts, and we initiated the 32 mg cohort in January 2020. We expect to deliver clinical data from the 32 mg cohort in the first quarter of 2021.
- *PRECISION-HD1 trial*: We initiated the 32 mg cohort of the PRECISION-HD1 trial in March 2020. We expect to deliver topline clinical data from the five multi-dose cohorts (2, 4, 8, 16, 32 mg) of the PRECISION-HD1 trial in the first quarter of 2021.
- *Open-label Extensions of PRECISION-HD1 and PRECISION-HD2*: In October 2019, we initiated an open-label extension ("OLE") of the PRECISION-HD2 trial outside of the United States for patients who participated in that trial. In February 2020, we initiated an OLE of the PRECISION-HD1 trial outside of the United States for patients who participated in that trial. We expect to report data from the OLE trials in the first quarter of 2021.
- *mHTT SNP3 Program in HD*: We expect to initiate clinical development of our mHTT SNP3 program with the submission of a clinical trial application ("CTA") in the fourth quarter of 2020.
- *ALS and FTD*: In amyotrophic lateral sclerosis ("ALS") and frontotemporal dementia ("FTD"), we are advancing our C9orf72 program, which is designed to selectively target the transcripts containing the hexanucleotide repeat expansion (G4C2) in the C9orf72 gene. Our C9orf72 program is designed to minimize the impact on normal C9orf72 protein in patients, thereby reducing potential on-target risk. The G4C2 expansion in the C9orf72 gene is the most common cause of familial ALS and FTD and is a strong genetic risk factor for non-inherited (sporadic) forms of ALS and FTD. We expect to initiate clinical development of our C9orf72 program with the submission of a CTA in the fourth quarter of 2020.
- *SCA3*: In spinocerebellar ataxia 3 ("SCA3"), we are continuing to advance our program targeting ATXN3. SCA3 is a rare, hereditary (autosomal dominant), progressive, neurodegenerative disorder that is caused by a CAG-repeat expansion in the ATXN3 gene.
- *Additional CNS Disorders*: We are collaborating with Takeda to advance genetically defined targets for the treatment of other CNS disorders, including Alzheimer's disease, Parkinson's disease, and others. Under the terms of the agreement, we may collaborate with Takeda on up to six preclinical programs at any one time, during a four-year term. Takeda is entitled to exclusively license multiple preclinical programs from us during the term.
- *ADAR Editing Applications in Neurology*: We are also advancing a novel RNA-editing platform capability using endogenous ADAR (adenosine deaminases acting on RNA) enzymes via free uptake (non-viral, no nanoparticles) of A-to-I base editing oligonucleotides for the potential treatment of neurological diseases.

Ophthalmology

- We are designing and advancing stereopure oligonucleotides for the potential treatment of rare, inherited eye diseases. Our preclinical data demonstrate that a single intravitreal injection of stereopure oligonucleotide in the eye of non-human primates ("NHPs") resulted in greater than 95% knockdown of a target RNA in the retina for at least four months. Based on these data, we are working to design candidates that could achieve a therapeutic effect with only two doses per year. We are focused on advancing two preclinical programs: Usher syndrome type 2A ("USH2A") and retinitis pigmentosa due to a P23H mutation in the RHO gene ("RhoP23H"). In October 2019, we presented in vitro and ex vivo preclinical data on our USH2A program, which is designed to promote USH2A exon 13 skipping, and we presented in vitro data on our RhoP23H program, which is designed to selectively silence RhoP23H transcripts.

Hepatic

- In May 2020, we announced the first in vivo data from our novel RNA-editing platform, which demonstrated successful RNA editing of ACTB (Beta-actin) mRNA in NHPs via endogenous ADARs using stereopure GalNAc-conjugated oligonucleotides. In this proof-of-concept study, our oligonucleotides demonstrated up to 50% A to I (G) editing of ACTB mRNA in the liver of NHPs two-days post-last dose. To our knowledge, these are the first publicly available data that demonstrate successful RNA editing in vivo in NHPs. We expect to announce our first RNA-editing program in 2020.

Our Strategy

We are building a fully integrated genetic medicines company by leveraging PRISM, including our novel ADAR-mediated RNA editing modality, to design, develop and commercialize optimized disease-modifying medicines for indications with a high degree of unmet medical need in genetically defined diseases. Our lead programs are focused in CNS and are aimed at addressing HD, ALS, and FTD. We are also pursuing additional CNS programs in collaboration with Takeda, including SCA3. In parallel to our CNS programs, we are advancing preclinical programs in ophthalmology and hepatic diseases as well as exploring additional therapeutic areas that may benefit from the application of our platform.

The key components of our strategy are as follows:

- ***Maintain and extend our leadership in oligonucleotides.*** We intend to establish a dominant position in the field of oligonucleotides, advancing basic research and pharmacology using stereochemistry across multiple therapeutic modalities and target classes. Through PRISM, our efforts continue to reveal structure-activity relationships among sequence, chemistry and backbone stereochemistry that may allow us to tune the activity of our oligonucleotides in a previously unexplored modality-specific manner.
- ***Rapidly advance our differentiated Huntington's disease portfolio.*** We are advancing two HD programs currently in clinical development: WVE-120101 and WVE-120102, targeting mHTT SNP1 and mHTT SNP2, respectively. These are the first clinical programs designed to selectively target mutant HTT, while leaving wild-type HTT relatively intact. We expect to deliver data from our two Phase 1b/2a trials in HD in the first quarter of 2021 and to initiate clinical development of our mHTT SNP3 program with the submission of a CTA in the fourth quarter of 2020.
- ***Sustain our leadership in CNS.*** We are committed to transforming the care of rare genetic diseases in CNS. We are currently advancing five development programs, as well as multiple discovery-stage programs in collaboration with Takeda, targeting CNS diseases, including Alzheimer's disease and Parkinson's disease. We believe that these programs, including our C9orf72 program designed to selectively target the transcripts containing the hexanucleotide repeat expansion (G4C2) in the C9orf72 gene, have the potential to offer a foundation from which to transform our company into a leading CNS-focused genetic medicines company. We expect to initiate clinical development of our C9orf72 program with the submission of a CTA in the fourth quarter of 2020.

- ***Expand our pipeline.*** We remain intent on making disciplined investments in our platform to enable a sustainable discovery and development engine for future growth. We believe PRISM will yield optimized oligonucleotide candidates to deepen our pipeline in CNS, ophthalmology, hepatic and other disease areas. These investments in PRISM most recently yielded our ADAR-mediated RNA editing platform capability that uses endogenous ADAR enzymes via free uptake of A-to-I base editing oligonucleotides for the potential treatment of genetic diseases. We expect to announce our first RNA-editing program in a hepatic indication in 2020. We will continue to pursue these investments through wholly-owned programs as well as through potential partnerships and collaborations.
- ***Leverage manufacturing leadership in stereopure oligonucleotides.*** We have built a hybrid internal / external manufacturing model that gives us the capability to produce stereopure oligonucleotides at scales from one micromole to potential commercial scale. We believe that leveraging our internal manufacturing capabilities based in our Lexington, Massachusetts facility along with expertise from established Contract Manufacturing Organization ("CMOs"), facilitates our growth and enhances our ability to secure drug substance for current and future development activities.

Recent Developments

Subsequent to June 30, 2020 and through the date of this prospectus supplement, we have sold and issued an aggregate of 4,400,176 ordinary shares, pursuant to our open market sales agreement, as amended, with Jefferies LLC, resulting in net proceeds of approximately $48.0 million.

Risks Relating to Our Business

We are a genetic medicines company, and our business and ability to execute our business strategy are subject to a number of significant risks of which you should be aware before you decide to buy our ordinary shares. Among these important risks are the following:

- We are a clinical-stage genetic medicines company with a history of losses, and we expect to continue to incur losses for the foreseeable future, and we may never achieve or maintain profitability.
- We will require substantial additional funding, which may not be available on acceptable terms, or at all.
- Because we are developing oligonucleotides, which are considered a relatively new class of drugs, there is increased risk that the outcome of our clinical trials will not be sufficient to obtain regulatory approval.
- If we are not able to obtain and enforce market exclusivity for our technologies or product candidates, development and commercialization of our product candidates may be adversely affected.
- Other companies or organizations may challenge our or our licensors' patent rights or may assert patent rights that prevent us from developing and commercializing our products.
- We, or third parties upon whom we depend, may face risks related to health epidemics, including the COVID-19 pandemic, which may delay our ability to complete our ongoing clinical trials, initiate additional clinical trials, delay regulatory activities and have other adverse effects on our business and operations.
- We are incorporated in Singapore, and our shareholders may have more difficulty protecting their interests than they would as shareholders of a corporation incorporated in the United States.

If we are unable to adequately address these and other risks we face, our business, financial condition, operating results and prospects may be adversely affected. For additional information about the risks we face, please see the information contained in or incorporated by reference under "Risk Factors" on page S-10 of this prospectus supplement and page 7 of the accompanying prospectus.

Corporate History and Information

Wave Life Sciences Ltd. was incorporated under the name Wave Life Sciences Pte. Ltd. (Registration No.: 201218209G) under the laws of Singapore on July 23, 2012. On November 16, 2015, we closed our initial public offering. In preparation for our initial public offering, on November 5, 2015, Wave Life Sciences Pte. Ltd. converted from a private limited company to a public limited company known as Wave Life Sciences Ltd., or Wave. Wave has four wholly-owned subsidiaries: Wave Life Sciences USA, Inc. ("Wave USA"), a Delaware corporation (formerly Ontorii, Inc.); Wave Life Sciences Japan, Inc. ("Wave Japan"), a company organized under the laws of Japan (formerly Chiralgen., Ltd.); Wave Life Sciences Ireland Limited ("Wave Ireland"), a company organized under the laws of Ireland; and Wave Life Sciences UK Limited ("Wave UK"), a company organized under the laws of the United Kingdom.

Our registered office is located at 7 Straits View #12-00, Marina One East Tower, Singapore 018936, and our telephone number at that address is +65 6236 3388. Our principal office for Wave USA is located at 733 Concord Avenue, Cambridge, MA 02138, and our telephone number at that address is +1-617-949-2900. Our registered office for Wave Japan is 2438 Miyanoura-cho, Kagoshima-shi, Kagoshima pref. 891-1394, Japan. Our registered office for Wave Ireland is One Spencer Dock, North Wall Quay, Dublin 1, Ireland. Our registered office for Wave UK is 1 Chamberlain Square CS, Birmingham B3 3AX, United Kingdom. Our corporate website address is www.wavelifesciences.com. The information on our website is not part of this prospectus supplement or the accompanying prospectus or incorporated by reference into this prospectus supplement or the accompanying prospectus, and you should not consider any information contained on, or that can be accessed through, our website in deciding whether to purchase our ordinary shares. Our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K and all amendments to such reports are made available free of charge through the "For Investors & Media—Financial Information" section of our website as soon as reasonably practicable after they have been filed or furnished with the SEC.