

SECURITIES & EXCHANGE COMMISSION EDGAR FILING

ENDRA Life Sciences Inc.

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

POST-EFFECTIVE AMENDMENT NO. 1
TO FORM S-1
ON FORM S-3
REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933

ENDRA LIFE SCIENCES INC.

(Exact name of registrant as specified in its charter)

Delaware

*(State or other jurisdiction of
incorporation or organization)*

26-0579295

*(I.R.S. Employer
Identification No.)*

ENDRA Life Sciences Inc.
3600 Green Court, Suite 350
Ann Arbor, MI 48105
(734) 335-0468

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Francois Michelon
Chief Executive Officer
ENDRA Life Sciences Inc.
3600 Green Court, Suite 350
Ann Arbor, MI 48105
(734) 335-0468

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copy to:

Mark R. Busch
K&L Gates LLP
214 North Tryon Street, 47th Floor
Charlotte, North Carolina 28202
(704) 331-7440

From time to time after the effective date of this registration statement.

(Approximate date of commencement of proposed sale to the public)

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box. []

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933 check the following box. [X]

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. []

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. []

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box. []

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box. []

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act (check one):

Large accelerated filer []

Non-accelerated filer [X]

Accelerated filer []

Smaller reporting company [X]

Emerging growth company [X]

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 to Section 7(a)(2)(B) of the Securities Act. []

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until the Registration Statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

EXPLANATORY NOTE

This Post-Effective Amendment No. 1 ("Post-Effective Amendment") to the Registration Statement on Form S-1 and the Registration Statement on Form S-1MEF (Registration Nos. 333-214724 and 333-217788, respectively) (the "Registration Statements") of ENDRA Life Sciences Inc. (the "Company") is being filed pursuant to the undertakings in the Registration Statements to update and supplement the information contained in the Registration Statements, which were previously declared effective by the Securities and Exchange Commission (the "SEC") or became effective upon filing, as applicable, on May 8, 2017.

The Registration Statements registered the offer and sale of 1,932,000 units at a public offering price of \$5.00 per unit, each unit consisting of one share of the Company's common stock and a warrant to purchase one share of common stock ("Public Warrant"), including units sold to the underwriters to cover over-allotments. The Registration Statements also registered on a continuous basis the 1,932,000 shares of common stock underlying the Warrants (the "Public Warrant Shares"). Additionally, the Registration Statements registered 154,560 shares of the Company's common stock ("Underwriters' Warrant Shares" and, together with the Public Warrant Shares, the "Warrant Shares") underlying warrants issued to the underwriters of the offering of units ("Underwriters' Warrants" and, together with the Public Warrants, "Warrants"). As of the date of this Post-Effective Amendment, no Warrants have been exercised and no Warrant Shares have been issued. No additional securities are being registered under this Post-Effective Amendment. All applicable registration fees were paid at the times the Registration Statements were originally filed.

This Post-Effective Amendment is being filed to (i) update the contents of the prospectus contained in the Registration Statements pursuant to Section 10(a)(3) of the Securities Act of 1933, as amended (the "Securities Act"), in respect of the continuous offering pursuant to Rule 415 of up to 2,086,560 Warrant Shares previously registered on the Registration Statements and (ii) convert the Registration Statements on Form S-1 into a registration statement on Form S-3.

THE INFORMATION IN THIS PROSPECTUS IS NOT COMPLETE AND MAY BE CHANGED. THESE SECURITIES MAY NOT BE SOLD UNTIL THE REGISTRATION STATEMENT FILED WITH THE SECURITIES AND EXCHANGE COMMISSION IS EFFECTIVE. THIS PRELIMINARY PROSPECTUS IS NOT AN OFFER TO SELL THESE SECURITIES AND WE ARE NOT SOLICITING AN OFFER TO BUY THESE SECURITIES IN ANY STATE WHERE THE OFFER OR SALE IS NOT PERMITTED.

Subject to completion, dated December 28, 2018



ENDRA Life Sciences Inc.

Prospectus

2,086,560 Shares of Common Stock Issuable Upon Exercise of Outstanding Warrants

This prospectus relates to an aggregate of 2,086,560 shares of our common stock, par value \$0.0001 per share ("Common Stock"), which, as of the date of this prospectus, are issuable upon exercise of 1,932,000 warrants ("Public Warrants") originally issued as part of the units sold in our initial public offering, which closed on May 12, 2017 (the "Initial Public Offering"), and upon exercise of 154,560 warrants ("Underwriters' Warrants and, together with the Public Warrants, the "Warrants") issued to the underwriters of the Initial Public Offering and their designees.

As of the date of this prospectus, the Warrants have an exercise price of \$6.25 per share of Common Stock and will expire on May 12, 2022, with respect to the Public Warrants, and on May 8, 2022, with respect to the Underwriters' Warrants. If the Warrants are exercised, we will receive the proceeds from such exercise.

On December 27, 2018, the last reported sale price for our Common Stock was \$1.78 per share. Our Common Stock and the Public Warrants are traded on the Nasdaq Capital Market under the symbols "NDRA" and "NDRAW," respectively.

We are an "Emerging Growth Company" as defined in the Jumpstart Our Business Startups Act of 2012 and, as such, have elected to comply with certain reduced public company reporting requirements for this prospectus and future filings. See "Prospectus Summary – Implications of Being an Emerging Growth Company."

Our business and an investment in our Common Stock involve a high degree of risk. Before making any investment in Common Stock, you should read and carefully consider risks described in the "Risk Factors" section on page [1](#) of this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of the Common Stock offered hereby or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

This prospectus is dated , 2019.

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Unless otherwise stated or the context otherwise requires, the terms “ENDRA,” “we,” “us,” “our” and the “Company” refer to ENDRA Life Sciences Inc., a Delaware corporation.

You should rely only on the information contained in or incorporated by reference into this prospectus and any related prospectus supplement that we may provide to you in connection with this offering. We have not authorized anyone to provide you with additional or different information. If anyone provides you with different or inconsistent information, you should not rely on it. We are not making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus is accurate only as of the date on the front cover of this prospectus, regardless of time of delivery. Our business, financial condition, results of operations and prospects may have changed since that date.

For investors outside the United States: we have not done anything that would permit this offering or possession or distribution of this prospectus or any prospectus supplement we may provide to you in connection with this offering in any jurisdiction where action for that purpose is required, other than in the United States. You are required to inform yourselves about and to observe any restrictions relating to this offering and the distribution of this prospectus and any such prospectus supplement outside of the United States.

MARKET AND INDUSTRY DATA

Unless otherwise indicated, information contained in this prospectus and the documents we incorporate herein by reference concerning our industry and the markets in which we operate is based on information from independent industry and research organizations, other third-party sources (including industry publications, surveys and forecasts), and management estimates. Management estimates are derived from publicly available information released by independent industry analysts and third-party sources, as well as data from our internal research, and are based on assumptions made by us upon reviewing such data and our knowledge of such industry and markets which we believe to be reasonable. Although we believe the data from these third-party sources is reliable, we have not independently verified any third-party information. In addition, projections, assumptions and estimates of the future performance of the industry in which we operate and our future performance are necessarily subject to uncertainty and risk due to a variety of factors, including those described in “Risk Factors” and “Cautionary Note Regarding Forward-Looking Statements.” These and other factors could cause results to differ materially from those expressed in the estimates made by the independent parties and by us.

TRADEMARKS

We operate under a number of trademarks, including, among others, “ENDRA” and “TAEUS,” all of which are registered under applicable intellectual property laws. This prospectus contains references to our trademarks and service marks and to those belonging to other entities. Solely for convenience, trademarks and trade names referred to in this prospectus may appear without the ® or TM symbols, but such references are not intended to indicate, in any way, that we will not assert, to the fullest extent possible under applicable law, our rights or the rights of the applicable licensor to these trademarks and trade names. We do not intend our use or display of other companies’ trade names, trademarks or service marks to imply a relationship with, or endorsement or sponsorship of us by, any other companies.

PROSPECTUS SUMMARY

The following summary highlights selected information contained elsewhere in or incorporated by reference in this prospectus. This summary is not complete and does not contain all of the information that should be considered before investing in our securities. Potential investors should read the entire prospectus carefully, including the more detailed information regarding our business provided in our Annual Report on Form 10-K for the fiscal year ended December 31, 2017 (the "Form 10-K") incorporated herein by reference, the risks of purchasing our Common Stock discussed under the "Risk Factors" section of the Form 10-K, and our financial statements and the accompanying notes to the financial statements incorporated herein by reference.

Our Company

We are leveraging experience with pre-clinical enhanced ultrasound devices to develop technology for increasing the capabilities of clinical diagnostic ultrasound, to broaden patient access to the safe diagnosis and treatment of a number of significant medical conditions in circumstances where expensive X-ray computed tomography ("CT") and magnetic resonance imaging ("MRI") technology is unavailable or impractical.

In 2010, we began marketing and selling our Nexus 128 system, which combined light-based thermoacoustics and ultrasound to address the imaging needs of researchers studying disease models in pre-clinical applications. Building on this expertise in thermoacoustics, we have developed a next-generation technology platform — Thermo Acoustic Enhanced Ultrasound, or TAEUS — which is intended to enhance the capability of clinical ultrasound technology and support the diagnosis and treatment of a number of significant medical conditions that currently require the use of expensive CT or MRI imaging or where imaging is not practical using existing technology.

Unlike the near-infrared light pulses used in our legacy Nexus 128 system, our TAEUS technology uses radio frequency ("RF") pulses to stimulate tissues, using a small fraction of the energy that would be transmitted into the body during an MRI scan. The use of RF energy allows our TAEUS technology to penetrate deep into tissue, enabling the imaging of human anatomy at depths equivalent to those of conventional ultrasound. The RF pulses are absorbed by tissue and converted into ultrasound signals, which are detected by an external ultrasound receiver and a digital acquisition system that is part of the TAEUS system. The detected ultrasound is processed into images using our proprietary algorithms and displayed to complement conventional gray-scale ultrasound images.

Each of our TAEUS platform applications will require regulatory approvals before we are able to sell or license the application. Based on certain factors, such as the installed base of ultrasound systems, availability of other imaging technologies, such as CT and MRI, economic strength and applicable regulatory requirements, we intend to seek initial approval of our applications for sale in the European Union, followed by the United States and China.

In April 2016, we entered into a Collaborative Research Agreement with General Electric Company, acting through its GE Healthcare business unit and the GE Global Research Center (collectively, "GE Healthcare"). Under the terms of the agreement, GE Healthcare has agreed to assist us in our efforts to commercialize our TAEUS technology for use in a fatty liver application by, among other things, providing equipment and technical advice, and facilitating introductions to GE Healthcare clinical ultrasound customers. In return for this assistance, we have agreed to afford GE Healthcare certain rights of first offer with respect to manufacturing and licensing rights for the target application. More specifically, we have agreed that, prior to commercially releasing our non-alcoholic fatty liver disease ("NAFLD") TAEUS application, we will offer to negotiate an exclusive ultrasound manufacturer relationship with GE Healthcare for a period of at least one year of commercial sales. The commercial sales would involve, within our sole discretion, either our Company commercially selling GE Healthcare ultrasound systems as the exclusive ultrasound system with our TAEUS fatty liver application embedded, or GE Healthcare being the exclusive ultrasound manufacturer to sell ultrasound systems with our TAEUS fatty liver application embedded. The agreement is subject to termination by either party upon not less than 60 days' notice. On January 30, 2018, we and GE Healthcare entered into an amendment to our agreement, extending its term by 21 months to January 22, 2020.

In November 2017 we engaged two firms that specialize in medical device software development to commence productization of our TAEUS device targeting NAFLD. The agreements call for these vendors to provide us with the specialized engineering resources necessary to translate our current prototype TAEUS device into a clinical product meeting CE regulatory requirements required for commercial launch in the European Union followed by FDA submission for the U.S. market.

In November 2017, we contracted with the Centre for Imaging Technology Commercialization (CIMTEC) to initiate human studies with our TAEUS device targeting NAFLD. In October 2018 we received approval from Health Canada to initiate these studies which are expected to provide key insights into clinical work flow and quantitative methodologies for the device. These studies are now underway. We provided an update on data collection and expansion of the study in December 2018 and are aiming for preliminary study reporting in the first quarter of 2019.

In June 2018, we reported that, in order to focus our resources on developing our TAEUS technology for clinical use, we are exploring strategic alternatives with respect to our pre-clinical business. We now intend to discontinue our pre-clinical business and are working with distributors and customers of our Nexus 128 system to facilitate this process.

Risks Related to Our Business

An investment in our securities involves a high degree of risk. You should carefully consider the risks summarized below. These risks are discussed more fully in the "Risk Factors" section of our Form 10-K and our subsequently filed Quarterly Reports on Form 10-Q incorporated herein by reference. These risks include, but are not limited to, the following:

- We have a history of operating losses, and we may never achieve or maintain profitability.
- Our efforts may never result in the successful development of commercial applications based on our TAEUS technology.
- If we fail to obtain and maintain necessary regulatory clearances or approvals for our TAEUS applications, or if clearances or approvals for future applications and indications are delayed or not issued, our commercial operations will be harmed.
- Our limited commercial experience makes it difficult to evaluate our current business, predict our future results or forecast our financial performance and growth.
- We are depending on third parties to design, manufacture and seek regulatory approval of our TAEUS applications. If any third party fails to successfully design, manufacture and gain regulatory approval of our TAEUS applications, our business will be materially harmed.
- We cannot be certain that results from limited animal and human studies of any of our TAEUS applications will be indicative of future studies or that any of our TAEUS applications will be successfully commercialized.
- Competition in the medical imaging market is intense and we may be unable to successfully compete.

- If we are unable to secure additional financing on favorable terms, or at all, to meet our future capital needs, we will be unable to complete fully our current business plan.
- We intend to market our TAEUS applications, if approved, globally, in which case we will be subject to the risks of doing business outside of the United States.
- If we are unable to protect our intellectual property, then our financial condition, results of operations and the value of our technology and products could be adversely affected.

Implications of Being an Emerging Growth Company

We are an “emerging growth company,” as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act, and, for as long as we continue to be an “emerging growth company,” we may choose to take advantage of exemptions from various reporting requirements applicable to other public companies but not to “emerging growth companies,” including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved. We could be an “emerging growth company” until December 31, 2022, or until the earliest of (i) the last day of the first fiscal year in which our annual gross revenues exceed \$1.07 billion, (ii) the date that we become a “large accelerated filer” as defined in Rule 12b-2 under the Securities Exchange Act of 1934, as amended, which would occur if the market value of our common stock that is held by non-affiliates exceeds \$700 million as of the last business day of our most recently completed second fiscal quarter, or (iii) the date on which we have issued more than \$1 billion in non-convertible debt during the preceding three-year period. We are choosing to “opt out” of the extended transition periods available under the JOBS Act for complying with new or revised accounting standards, but intend to take advantage of the other exemptions discussed above.

We are also currently considered a “smaller reporting company,” which generally means that we have a public float of less than \$250 million. If we are still considered a “smaller reporting company” at such time as we cease to be an “emerging growth company,” we will be subject to increased disclosure requirements. However, the disclosure requirements will still be less than they would be if we were not considered either an “emerging growth company” or a “smaller reporting company.” Specifically, similar to “emerging growth companies,” “smaller reporting companies” are able to provide simplified executive compensation disclosures in their filings; are exempt from the provisions of Section 404(b) of the Sarbanes-Oxley Act requiring that independent registered public accounting firms provide an attestation report on the effectiveness of internal control over financial reporting; and have certain other decreased disclosure obligations in their SEC filings, including, among other things, being required to provide only two years of audited financial statements in annual reports.

Corporate Information

We were incorporated in Delaware in July 2007 and have a wholly-owned subsidiary, ENDRA Life Sciences Canada Inc. Our corporate headquarters is located at 3600 Green Court, Suite 350, Ann Arbor, Michigan 48105-1570. Our website can be accessed at www.endrainc.com. The telephone number of our principal executive office is (734) 335-0468. The information contained on, or that may be obtained from, our website is not, and shall not be deemed to be, a part of this prospectus.

THE OFFERING

Common Stock currently outstanding	7,422,642 shares. (1)
Common Stock offered by the Company	2,086,560 shares issuable upon the exercise of Warrants, consisting of 1,932,000 Public Warrants issued as part of the units sold in our Initial Public Offering and 154,560 Underwriters' Warrants issued to the underwriters of the Initial Public Offering and their designees.
Description of Warrants	Each Warrant entitles the holder to purchase one share of Common Stock at an initial exercise price of \$6.25, subject to adjustment, and expires at 5:00 p.m., New York City time on May 12, 2022, with respect to the Public Warrants, and on May 8, 2022, with respect to the Underwriters' Warrants.
Use of proceeds	The gross proceeds if all the Warrant holders, as of the date of this prospectus, exercise their Warrants will be approximately \$13.0 million; however, we are unable to predict the timing or amount of potential Warrant exercises. Accordingly, all such proceeds will be used for working capital and other general corporate purposes. It is possible that some, or all, of the Warrants may expire and never be exercised.
Nasdaq symbols	Our Common Stock and the Public Warrants are listed on the Nasdaq Capital Market under the symbols "NDRA" and "NDRAW," respectively.
Risk factors	You should carefully consider the information set forth in this prospectus and, in particular, the specific factors set forth in the "Risk Factors" section in the Form 10-K and subsequently filed Quarterly Report on Form 10-Q incorporated herein by reference before deciding whether or not to invest in Common Stock.

(1) As of December 28, 2018. This number excludes:

- 489,273 shares of Common Stock issuable upon the exercise of outstanding warrants (other than the Warrants described herein) at a weighted average exercise price of \$7.03 per share;
- 1,206,617 shares of Common Stock issuable upon the exercise of outstanding stock options issued pursuant to our 2016 Omnibus Incentive Plan, or our Incentive Plan, at a weighted average exercise price of \$4.56 per share; and
- 138,457 shares of Common Stock reserved for future issuance under our Incentive Plan.

See "Description of Capital Stock" below.

RISK FACTORS

An investment in Common Stock involves a high degree of risk. You should carefully consider the risks set forth under the section captioned "Risk Factors" contained in our Annual Report on Form 10-K for the year ended December 31, 2017 and our subsequently filed Quarterly Reports on Form 10-Q, which are incorporated by reference into this prospectus, and in the other reports that we file with the SEC and incorporate by reference into this prospectus, before deciding to invest in Common Stock. The risks and uncertainties we have described are not the only ones we face.

If any of the events described in these risk factors actually occurs, or if additional risks and uncertainties that are not presently known to us or that we currently deem immaterial later materialize, then our business, prospects, results of operations and financial condition could be materially adversely affected. In that event, the trading price of our securities could decline, and you may lose all or part of your investment in our securities. The risks discussed include forward-looking statements, and our actual results may differ substantially from those discussed in these forward-looking statements. See "Cautionary Note Regarding Forward-Looking Statements."

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated herein by reference contain “forward-looking statements” within the meaning of Section 27A of the Securities Act and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), that are intended to be covered by the “safe harbor” created by those sections. Forward-looking statements, which are based on certain assumptions and describe our future plans, strategies and expectations, can generally be identified by the use of forward-looking terms such as “believe,” “expect,” “may,” “will,” “should,” “would,” “could,” “seek,” “intend,” “plan,” “goal,” “project,” “estimate,” “anticipate,” “strategy”, “future”, “likely” or other comparable terms and references to future periods. All statements other than statements of historical facts included in this prospectus and the documents incorporated herein by reference regarding our strategies, prospects, financial condition, operations, costs, plans and objectives are forward-looking statements. Examples of forward-looking statements include, among others, statements we make regarding: expectations for revenues, cash flows and financial performance, the anticipated results of our development efforts and the timing for receipt of required regulatory approvals and product launches.

Forward-looking statements are neither historical facts nor assurances of future performance. Instead, they are based only on our current beliefs, expectations and assumptions regarding the future of our business, future plans and strategies, projections, anticipated events and trends, the economy and other future conditions. Because forward-looking statements relate to the future, they are subject to inherent uncertainties, risks and changes in circumstances that are difficult to predict and many of which are outside of our control. Our actual results and financial condition may differ materially from those indicated in the forward-looking statements. Therefore, you should not rely on any of these forward-looking statements. Important factors that could cause our actual results and financial condition to differ materially from those indicated in the forward-looking statements include, among others, the following:

- our limited commercial experience, limited cash and history of losses;
- our ability to obtain adequate financing to fund our business operations in the future;
- our ability to achieve profitability;
- our ability to develop a commercially feasible application based on our TAEUS technology;
- market acceptance of our technology;
- results of our human studies, which may be negative or inconclusive;
- our ability to find and maintain development partners;
- our reliance on collaborations and strategic alliances and licensing arrangements;
- the amount and nature of competition in our industry;
- our ability to protect our intellectual property;
- potential changes in the healthcare industry or third-party reimbursement practices;
- delays and changes in regulatory requirements, policy and guidelines including potential delays in submitting required regulatory applications for CE mark certification or U.S. Food and Drug Administration (“FDA”) approval;
- our ability to obtain CE mark certification and secure required FDA and other governmental approvals for our TAEUS applications;
- our ability to comply with regulation by various federal, state, local and foreign governmental agencies and to maintain necessary regulatory clearances or approvals; and
- the other risks and uncertainties described in the Risk Factors section of this prospectus and those risks and uncertainties described in the documents incorporated by reference into this prospectus.

Any forward-looking statement made by us in this prospectus is based only on information currently available to us and speaks only as of the date on which it is made. We undertake no obligation to publicly update any forward-looking statement, whether written or oral, that may be made from time to time, whether as a result of new information, future developments or otherwise. We anticipate that subsequent events and developments will cause our views to change. You should read this prospectus and the documents referenced in this prospectus and filed as exhibits to the registration statement of which this prospectus is a part completely and with the understanding that our actual future results may be materially different from what we expect. Our forward-looking statements do not reflect the potential impact of any future acquisitions, merger, dispositions, joint ventures or investments we may undertake. We qualify all of our forward-looking statements by these cautionary statements.

USE OF PROCEEDS

The gross proceeds if all the Warrant holders, as of the date of this prospectus, exercise their Warrants will be approximately \$13.0 million; however, we are unable to predict the timing or amount of potential Warrant exercises. Accordingly, all such proceeds will be used for working capital and general corporate purposes. It is possible that some, or all, of the Warrants may expire and never be exercised.

DILUTION

If you purchase shares of Common Stock in this offering, you will experience dilution to the extent of the difference between the Warrants' exercise price per share and our pro forma net tangible book value per share immediately after this offering.

Net tangible book value per share represents total tangible assets less total liabilities, divided by the number of shares of common stock outstanding. Our historical net tangible book value as of September 30, 2018 was \$(457,610), or \$(0.12) per share of Common Stock. On a pro forma basis after giving effect to our sale of 2,863,500 shares of Common Stock in the underwritten public offerings we completed in October and November 2018, and the issuance of 611,310 shares of Common Stock up the conversion of convertible promissory notes in connection therewith, and after deducting the underwriting discount and estimated offering expenses payable by us in such offerings, our net tangible book value as of September 30, 2018 would have been \$8,733,318 or \$1.28 per share of Common Stock. After giving effect to the sale of 2,086,560 shares of Common Stock upon exercise of all of the Warrants covered by this prospectus at an exercise price of \$6.25 per share, our net tangible book value as of September 30, 2018 would have been \$21,774,318 or \$2.45 per share of Common Stock. This represents an immediate increase in net tangible book value of \$1.17 per share to existing stockholders and an immediate dilution in net tangible book value of \$3.80 per share to investors in this offering. The following table illustrates this dilution on a per share basis:

Public offering price per share		\$	6.25
Pro forma net tangible book value per share as of September 30, 2018	\$	1.28	
Increase in net tangible book value per share attributable to this offering	\$	<u>1.17</u>	
As adjusted tangible book value per share, after giving effect to this offering		\$	<u>2.45</u>
Dilution per share to investors in this offering		\$	<u><u>3.80</u></u>

The above discussion and table are based on 3,947,828 shares of Common Stock outstanding as of September 30, 2018 and exclude the following:

- 497,135 shares of Common Stock issuable upon the exercise of outstanding warrants (other than the Warrants described herein), at a weighted average exercise price of \$6.93 per share;
- 987,911 shares of Common Stock issuable upon the exercise of outstanding stock options issued pursuant to our 2016 Omnibus Incentive Plan, or our Incentive Plan, at a weighted average exercise price of \$5.60 per share; and
- 357,163 shares of Common Stock reserved for future issuance under our Incentive Plan.

To the extent that any of these warrants or options are exercised, new options are issued under our Incentive Plan or we issue additional shares of Common Stock or other equity securities in the future, there may be further dilution to investors participating in this offering.

PLAN OF DISTRIBUTION

We will deliver shares of Common Stock offered hereby upon exercise of the Warrants we issued in connection with our Initial Public Offering. As of the date of this prospectus, the Warrants were exercisable for a total of up to 2,086,560 shares of Common Stock, which can be adjusted pursuant to the terms of the Warrants. We will not issue fractional shares upon exercise of the Warrants. Each of the Warrants contains instructions for exercise. In order to exercise any of the Warrants, the holder must deliver to Continental Stock Transfer, Inc., as Warrant Agent, the information required in the Warrants, along with payment for the exercise price of the shares to be purchased. The Warrant Agent will then deliver shares of Common Stock in the manner described in the applicable form of Warrant, each of which is filed as an exhibit to the registration statement of which this prospectus is a part.

DESCRIPTION OF CAPITAL STOCK

The following is a brief description of our capital stock. This summary does not purport to be complete in all respects. This description is subject to and qualified entirely by the terms of our Fourth Amended and Restated Certificate of Incorporation (the "Certificate of Incorporation"), and our amended and restated bylaws, copies of which have been filed with the SEC and are also available upon request from us.

Authorized Capitalization

We have 60,000,000 shares of capital stock authorized under our Certificate of Incorporation, consisting of 50,000,000 shares of common stock with a par value of \$0.0001 per share ("Common Stock") and 10,000,000 shares of preferred stock with a par value of \$0.0001 per share ("Preferred Stock"). As of the date of this prospectus, we had 7,422,642 shares of Common Stock issued and outstanding held of record by 32 stockholders, and no shares of Preferred Stock issued and outstanding. Our authorized but unissued shares of Common Stock and Preferred Stock are available for issuance without further action by our stockholders, unless such action is required by applicable law or the rules of any stock exchange or automated quotation system on which our securities may be listed or traded.

Common Stock

The holders of outstanding shares of Common Stock are entitled to such dividends as may be declared by our board of directors out of funds legally available for such purpose. The shares of Common Stock are neither redeemable nor convertible. Holders of Common Stock have no preemptive or subscription rights to purchase any of our securities.

Each holder of our Common Stock is entitled to one vote for each such share outstanding in the holder's name. No holder of Common Stock is entitled to cumulate votes in voting for directors.

In the event of our liquidation, dissolution or winding up, the holders of our Common Stock are entitled to receive pro rata our assets, which are legally available for distribution, after payments of all debts and other liabilities. All of the outstanding shares of our Common Stock are fully paid and non-assessable.

Our shares of Common Stock are listed on the Nasdaq Capital Market under the symbol "NDRA."

Preferred Stock

Our board of directors has the authority, without further action by the stockholders, to issue up to 10,000,000 shares of Preferred Stock in one or more series and to fix the designations, powers, rights, preferences, qualifications, limitations and restrictions thereof. These designations, powers, rights and preferences could include voting rights, dividend rights, dissolution rights, conversion rights, exchange rights, redemption rights, liquidation preferences, and the number of shares constituting any series or the designation of such series, any or all of which may be greater than the rights of Common Stock. The issuance of Preferred Stock could adversely affect the voting power of holders of Common Stock and the likelihood that such holders will receive dividend payments and payments upon liquidation. In addition, the issuance of Preferred Stock could have the effect of delaying, deferring or preventing change in our control or other corporate action. No shares of Preferred Stock are outstanding, and we have no present plan to issue any shares of Preferred Stock.

Stock Options and Warrants

As of December 28, 2018, we had reserved the following shares of Common Stock for issuance pursuant to stock options, warrants and equity plans:

- 2,575,833 shares of Common Stock issuable upon the exercise of outstanding warrants, including the Warrants, at a weighted average exercise price of \$6.40 per share;
- 1,206,617 shares of Common Stock issuable upon the exercise of outstanding stock options issued pursuant to our 2016 Omnibus Incentive Plan, or our Incentive Plan, at a weighted average exercise price of \$4.56 per share; and

- 138,457 shares of our Common Stock reserved for future issuance under our Incentive Plan.

Other Convertible Securities

As of the date hereof, other than the securities described above, the Company does not have any outstanding convertible securities.

GE Healthcare Right

In April 2016, we entered into a Collaborative Research Agreement with General Electric Company, acting through its GE Healthcare business unit and the GE Global Research Center, or GE Healthcare. The agreement provides that prior to selling any equity interests in our company to a healthcare device manufacturer, we will first offer to negotiate in good faith to sell such equity interests to GE Healthcare.

Transfer Agent

The transfer agent of our Common Stock offered hereby is Corporate Stock Transfer, Inc., 3200 Cherry Creek Dr. South, Suite 430, Denver, CO 80209. Its telephone number is (303) 282-4800.

Anti-Takeover Effects of Certain Provisions of Delaware Law and Our Charter Documents

The following is a summary of certain provisions of Delaware law, our Certificate of Incorporation and our bylaws. This summary does not purport to be complete and is qualified in its entirety by reference to the corporate law of Delaware and our Certificate of Incorporation and bylaws.

Effect of Delaware Anti-Takeover Statute. We are subject to Section 203 of the Delaware General Corporation Law, an anti-takeover law. In general, Section 203 prohibits a Delaware corporation from engaging in any business combination (as defined below) with any interested stockholder (as defined below) for a period of three years following the date that the stockholder became an interested stockholder, unless:

- prior to that date, the board of directors of the corporation approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;
- upon consummation of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the number of shares of voting stock outstanding (but not the voting stock owned by the interested stockholder) those shares owned by persons who are directors and officers and by excluding employee stock plans in which employee participants do not have the right to determine whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- on or subsequent to that date, the business combination is approved by the board of directors of the corporation and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66 2/3% of the outstanding voting stock that is not owned by the interested stockholder.

Section 203 defines "business combination" to include the following:

- any merger or consolidation involving the corporation and the interested stockholder;
- any sale, transfer, pledge or other disposition of 10% or more of the assets of the corporation involving the interested stockholder;
- subject to certain exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;

- subject to limited exceptions, any transaction involving the corporation that has the effect of increasing the proportionate share of the stock of any class or series of the corporation beneficially owned by the interested stockholder; or
- the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits provided by or through the corporation.

In general, Section 203 defines an interested stockholder as any entity or person beneficially owning 15% or more of the outstanding voting stock of the corporation, or who beneficially owns 15% or more of the outstanding voting stock of the corporation at any time within a three-year period immediately prior to the date of determining whether such person is an interested stockholder, and any entity or person affiliated with or controlling or controlled by any of these entities or persons.

Our Charter Documents. Our charter documents include provisions that may have the effect of discouraging, delaying or preventing a change in control or an unsolicited acquisition proposal that a stockholder might consider favorable, including a proposal that might result in the payment of a premium over the market price for the shares held by our stockholders. Certain of these provisions are summarized in the following paragraphs.

Effects of authorized but unissued Common Stock. One of the effects of the existence of authorized but unissued common stock may be to enable our board of directors to make more difficult or to discourage an attempt to obtain control of our Company by means of a merger, tender offer, proxy contest or otherwise, and thereby to protect the continuity of management. If, in the due exercise of its fiduciary obligations, the board of directors were to determine that a takeover proposal was not in our best interest, such shares could be issued by the board of directors without stockholder approval in one or more transactions that might prevent or render more difficult or costly the completion of the takeover transaction by diluting the voting or other rights of the proposed acquirer or insurgent stockholder group, by putting a substantial voting block in institutional or other hands that might undertake to support the position of the incumbent board of directors, by effecting an acquisition that might complicate or preclude the takeover, or otherwise.

Cumulative Voting. Our Certificate of Incorporation does not provide for cumulative voting in the election of directors, which would allow holders of less than a majority of the stock to elect some directors.

Vacancies. Our Certificate of Incorporation provides that all vacancies may be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum.

Special Meeting of Stockholders. A special meeting of stockholders may only be called by the Chairman of the board of directors, the President, the Chief Executive Officer, or the board of directors at any time and for any purpose or purposes as shall be stated in the notice of the meeting, or by request of the holders of record of at least 20% of the outstanding shares of common stock. This provision could prevent stockholders from calling a special meeting because, unless certain significant stockholders were to join with them, they might not obtain the percentage necessary to request the meeting. Therefore, stockholders holding less than 20% of the issued and outstanding common stock, without the assistance of management, may be unable to propose a vote on any transaction that would delay, defer or prevent a change of control, even if the transaction were in the best interests of our stockholders.

LEGAL MATTERS

The validity of the Common Stock offered hereby has been passed upon for us by K&L Gates LLP, Charlotte, North Carolina.

EXPERTS

The financial statements of ENDRA Life Sciences Inc. as of December 31, 2017 and December 31, 2016 included in the Annual Report on Form 10-K for the year ended December 31, 2017 have been audited by RBSM LLP, independent registered public accounting firm, as stated in its report, which is incorporated herein by reference. We have incorporated these financial statements by reference in reliance upon the report of RBSM LLP, given upon their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a Registration Statement on Form S-3 under the Securities Act to register the Common Stock offered by this prospectus. The term "registration statement" means the original registration statement and any and all amendments thereto, including the schedules and exhibits to the original registration statement or any amendment. This prospectus is part of that registration statement. This prospectus does not contain all of the information set forth in the registration statement or the exhibits to the registration statement. For further information with respect to us and the Common Stock being offered pursuant to this prospectus, you should refer to the registration statement and its exhibits. Statements contained in this prospectus as to the contents of any contract, agreement or other document referred to are not necessarily complete, and you should refer to the copy of that contract or other documents filed as an exhibit to the registration statement.

We file annual reports, quarterly reports, current reports, proxy statements and other information with the SEC under the Exchange Act. You can read our SEC filings, including the registration statement, at the SEC's website at www.sec.gov.

You may read and copy this information at the SEC's Public Reference Room at 100 F Street, N.E., Washington D.C. 20549, at prescribed rates. You may obtain information regarding the operation of the public reference room by calling the SEC at 1-800-SEC-0330.

The SEC also maintains a website (<http://www.sec.gov>) that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC.

Our website can be accessed at <http://www.endrainc.com>. The information contained on, or that may be obtained from, our website is not, and shall not be deemed to be, a part of this prospectus.

The representations, warranties and covenants made by us in any agreement that is filed as an exhibit to the registration statement of which this prospectus is a part were made solely for the benefit of the parties to such agreement, including, in some cases, for the purpose of allocating risk among the parties to such agreements, and should not be deemed to be a representation, warranty or covenant to you. Moreover, such representations, warranties or covenants were made as of an earlier date. Accordingly, such representations, warranties and covenants should not be relied on as accurately representing the current state of our affairs.

This prospectus includes statistical and other industry and market data that we obtained from industry publications and research, surveys and studies conducted by third parties. Industry publications and third-party research, surveys and studies generally indicate that they have gathered their information from sources they believe to be reliable, although they do not guarantee the accuracy or completeness of such information. While we believe that these industry publications and third-party research, surveys and studies are reliable, we have not independently verified such data.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to "incorporate by reference" information from other documents that we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus. Information in this prospectus supersedes information incorporated by reference that we filed with the SEC prior to the date of this prospectus.

We incorporate by reference into this prospectus and the registration statement of which this prospectus is a part the information or documents listed below that we have filed with the SEC:

- our annual report on Form 10-K for the fiscal year ended December 31, 2017 filed with the SEC on March 20, 2018 (as amended by Form 10-K/A filed with the SEC on April 13, 2018);
- our quarterly reports on Form 10-Q for the fiscal quarter ended March 31, 2018 filed with the SEC on May 15, 2018, the fiscal quarter ended June 30, 2018 filed with the SEC on August 13, 2018 and the fiscal quarter ended September 30, 2018 filed with the SEC on November 5, 2018;
- our Current Reports on Form 8-K filed with the SEC on February 5, 2018, March 29, 2018 (as amended by Form 8-K/A filed on April 13, 2018), June 15, 2018, July 2, 2018, July 18, 2018, August 17, 2018, October 16, 2018 and November 13, 2018;
- our Definitive Proxy Statement on Schedule 14A related to our 2018 Annual Meeting of Stockholders, filed with the SEC on May 10, 2018; and
- the description of our Common Stock contained in our Registration Statement on Form 8-A (File No. 001-37969) filed with the SEC on December 16, 2016, including any amendment or reports filed for the purpose of updating such description.

We also incorporate by reference any future filings (other than current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items unless such Form 8-K expressly provides to the contrary) made with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, including those made on or after the date of the initial filing of the registration statement of which this prospectus is a part and prior to effectiveness of such registration statement, until we file a post-effective amendment that indicates the termination of the offering of the Securities made by this prospectus and will become a part of this prospectus from the date that such documents are filed with the SEC. Information in such future filings updates and supplements the information provided in this prospectus. Any statements in any such future filings will automatically be deemed to modify and supersede any information in any document we previously filed with the SEC that is incorporated or deemed to be incorporated herein by reference to the extent that statements in the later filed document modify or replace such earlier statements.

We will furnish without charge to you, on written or oral request, a copy of any or all of the documents incorporated by reference, including exhibits to these documents. You should direct any requests for documents to ENDRA Life Sciences Inc., 3600 Green Court, Suite 350, Ann Arbor, Michigan 48105; Telephone: (734) 335-0468. Copies of the above reports may also be accessed from our website at www.endrainc.com. We have authorized no one to provide you with any information that differs from that contained in this prospectus. Accordingly, you should not rely on any information that is not contained in this prospectus. You should not assume that the information in this prospectus is accurate as of any date other than the date of the front cover of this prospectus.

Any statement contained in a document incorporated or deemed to be incorporated by reference in this prospectus will be deemed modified, superseded or replaced for purposes of this prospectus to the extent that a statement contained in this prospectus modifies, supersedes or replaces such statement.



ENDRA Life Sciences Inc.

Prospectus

2,086,560 Shares of Common Stock Issuable Upon Exercise of Outstanding Warrants

, 2019

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

Set forth below is an estimate (except for registration fees, which are actual) of the approximate amount of the fees and expenses payable by us in connection with the issuance and distribution of the shares of our Common Stock described in this Post-Effective Amendment No. 1.

SEC registration fee	\$	1,682*
Accounting fees and expenses	\$	5,000
Legal fees and expenses	\$	20,000
Miscellaneous	\$	3,318
Total	\$	30,000

* Previously paid.

Item 15. Indemnification of Directors and Officers.

The following summary is qualified in its entirety by reference to the complete text of any statutes referred to below and the Fourth Amended and Restated Certificate of Incorporation of ENDRA Life Sciences Inc., a Delaware corporation.

Section 145 of the General Corporation Law of the State of Delaware (the "DGCL") permits a Delaware corporation to indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation) by reason of the fact that the person is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by the person in connection with such action, suit or proceeding if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe the person's conduct was unlawful.

In the case of an action by or in the right of the corporation, Section 145 of the DGCL permits a Delaware corporation to indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by reason of the fact that the person is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees) actually and reasonably incurred by the person in connection with such action, suit or proceeding if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation and except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Court of Chancery or the court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses that the Court of Chancery or such other court shall deem proper.

Section 145 of the DGCL also permits a Delaware corporation to purchase and maintain insurance on behalf of any person who is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise against any liability asserted against such person and incurred by such person in any such capacity, or arising out of such person's status as such, whether or not the corporation would have the power to indemnify such person against such liability under Section 145 of the DGCL.

Article NINTH of our Fourth Amended and Restated Certificate of Incorporation states that our directors shall not be personally liable to us or to our stockholders for monetary damages for any breach of fiduciary duty as a director, notwithstanding any provision of law imposing such liability. Under Section 102(b)(7) of the DGCL, the personal liability of a director to the corporation or its stockholders for monetary damages for breach of fiduciary duty can be limited or eliminated except (i) for any breach of the director's duty of loyalty to the corporation or its stockholders; (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law; (iii) under Section 174 of the DGCL (relating to unlawful payment of dividend or unlawful stock purchase or redemption); or (iv) for any transaction from which the director derived an improper personal benefit.

Article EIGHTH of our Fourth Amended and Restated Certificate of Incorporation provides that we shall indemnify (and advance expenses to) our officers and directors to the full extent permitted by the DGCL.

All of the Company's directors and officers are covered by insurance policies maintained by the Company against specified liabilities for actions taken in their capacities as such, including liabilities under the Securities Act. Such insurance also insures us against losses which we may incur in indemnifying our officers and directors.

As permitted by the DGCL, we have entered into indemnification agreements with each of our directors and executive officers that require us to indemnify them against various actions including, but not limited to, third-party actions where such director or executive officer, by reason of his or her corporate status, is a party or is threatened to be made a party to an action, or by reason of anything done or not done by such director in any such capacity. We indemnify directors and executive officers against all costs, judgments, penalties, fines, liabilities, amounts paid in settlement by or on behalf of such directors or executive officers and for any expenses actually and reasonably incurred by such directors or executive officers in connection with such action, if such directors or executive officers acted in good faith and in a manner they reasonably believed to be in or not opposed to our best interests, and with respect to any criminal proceeding, had no reasonable cause to believe their conduct was unlawful. We also intend to advance to our directors and executive officers expenses (including attorney's fees) incurred by or on behalf of such directors and executive officers in advance of the final disposition of any action after our receipt of a statement or statements from directors or executive officers requesting such payment or payments from time to time, provided that such statement or statements are preceded or accompanied by a written undertaking, by or on behalf of such directors or executive officers, to repay such amount if it shall ultimately be determined that they are not entitled to be indemnified against such expenses by us.

The indemnification agreements also set forth certain procedures that will apply in the event of a claim for indemnification or advancement of expenses, including, among others, provisions about submitting a written request to us that includes such documentation and information as is reasonably available to the director or executive officer and is reasonably necessary to determine entitlement to indemnification and provisions.

Item 16. Exhibits and Financial Statement Schedules.

Exhibit Number	Exhibit Description	Incorporated by Reference				
		Filed Herewith	Form	Exhibit	Filing Date	Registration/File No.
4.1	Specimen Certificate representing shares of Common Stock of the Registrant		S-1	4.1	11/21/16	333-214724
4.2	Form of Warrant Agreement and Warrant		S-1	4.2	05/03/17	333-214724
4.3	Form of Underwriters' Warrant		S-1	4.3	11/21/16	333-214724
5.1	Opinion of K&L Gates LLP		S-1	5.1	05/03/17	333-214724
23.1	Consent of RBSM LLP, Independent Registered Public Accounting Firm	X				
23.2	Consent of K&L Gates LLP (contained in Exhibit 5.1)		S-1	5.1	05/03/17	333-214724
24.1	Power of Attorney (included on signature page)	X				
101.INS	XBRL Instance Document	X				
101.SCH	XBRL Taxonomy Schema	X				
101.CAL	XBRL Taxonomy Extension Calculation Linkbase	X				
101.DEF	XBRL Taxonomy Extension Definition Linkbase	X				
101.LAB	XBRL Taxonomy Extension Label Linkbase	X				
101.PRE	XBRL Taxonomy Extension Presentation Linkbase	X				

Item 17. Undertakings.

Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the provisions described under Item 15 or otherwise, the registrant has been advised that in the opinion of the SEC such indemnification by it is against public policy as expressed in the Securities Act of 1933 and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities, other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding, is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act of 1933 and will be governed by the final adjudication of such issue.

(a) The undersigned registrant hereby undertakes:

1. To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

i. To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

ii. To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of a prospectus filed with the SEC pursuant to Rule 424(b) under the Securities Act if, in the aggregate, the changes in volume and price represent no more than 20% change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement); and

iii. To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement.

provided, however, that paragraphs (a)(1)(i), (a)(1)(ii) and (a)(1)(iii) of this section do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the SEC by the registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934 (the "Exchange Act") that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

2. That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

3. To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

- (b) The undersigned registrant hereby undertakes that, for the purpose of determining liability under the Securities Act of 1933 to any purchaser if the registrant is relying on Rule 430B: (A) each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and (B) each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof. Provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.
- (c) The undersigned registrant hereby undertakes that, for the purpose of determining liability under the Securities Act of 1933 to any purchaser: if the registrant is subject to Rule 430C, each prospectus filed pursuant to Rule 424(b) as part of a registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A, shall be deemed to be part of and included in the registration statement as of the date it is first used after effectiveness; provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such first use, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such date of first use.

- (d) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to section 13(a) or section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Ann Arbor, State of Michigan, on this 28th day of December 2018.

ENDRA Life Sciences Inc.

/s/ Francois Michelin
Francois Michelin
Chief Executive Officer and Director
(Principal Executive Officer)

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following persons in the capacities and on the dates indicated.

Dated: December 28, 2018 /s/ Francois Michelin
Francois Michelin
Chief Executive Officer and Director
(Principal Executive Officer)

Dated: December 28, 2018 /s/ David R. Wells
David R. Wells
Chief Financial Officer
(Principal Financial and Accounting Officer)

Dated: December 28, 2018 ***
Anthony DiGiandomenico, Director

Dated: December 28, 2018 ***
Sanjiv Gambhir, M.D., Ph.D., Director

Dated: December 28, 2018 ***
Michael Harsh, Director

Dated: December 28, 2018 ***
Alexander Tokman, Director

*** By: /s/ Francois Michelin
Francois Michelin
Attorney-in-fact

INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM'S CONSENT

We consent to the incorporation by reference in this Registration Statement of ENDRA Life Sciences Inc. (the "Company") on Amendment #1 to Form S-1 on Form S-3 of our report, which includes an explanatory paragraph regarding the substantial doubt about the Company's ability to continue as a going concern, dated March 20, 2018, relating to the consolidated financial statements of ENDRA Life Sciences Inc. and subsidiary, appearing in the Annual Report on Form 10-K of ENDRA Life Sciences Inc. and subsidiary for the year ended December 31, 2017. We also consent to the reference to our firm under the heading "Experts" in such Prospectus.

/s/ RBSM LLP

RBSM LLP
Henderson, NV
December 28, 2018
