

# BIOZHENA TECHNOLOGY OVERVIEW

Written for people who know women's health

bioZhana's electrochemical sensor of the cervix is an outer cervical wall tissue biosensor for women's fertility awareness self-care. It records menstrual cycle profiles for use by OBGYN, PRIMARY CARE, REPRODUCTIVE ENDOCRINOLOGY and other healthcare providers. Our two core products are the Ovulona™ for women and the Ovulograph™ for doctors.

Uniquely with the Ovulona, managing the effects of stress on female fecundity is feasible.

The menstrual cyclic profiles are recorded at home in a once-daily, quick and easy (<30 seconds), monitoring session for fertility awareness. The daily [fecundity](#) status will be indicated in plain English (e.g. FERTILE DAY 1). [Grasp how](#) the menstrual profiles track the menstrual cycle mechanism - folliculogenesis. Folliculogenesis underlies a woman's well-being, and the profiles resemble how EKG recordings pertain to the health of the heart, albeit not so "granular".

**bioZhana**

## What Is Folliculogenesis?

The biological foundation of a woman's well-being.

**Hypothalamus-Pituitary-Gonad Feedback Loop (F)**

Hypothalamus  
Pituitary gland  
FSH and LH  
Estrogen and progesterone negative feedback  
Uterus  
Ovary  
Estrogen  
Progesterone  
Endometrium

**Ovulation**

HYPOTHALAMUS  
PITUITARY GLAND  
FSH (DECREASING)  
LH  
MATURE OVUM  
OVULATION  
ESTROGEN FEEDBACK  
ESTROGEN

**Ovulona™**

Data From Home To Healthcare Providers

From patients' Ovulona™ units to a physician's Ovulograph™ - when needed

**Menstrual cyclic profiles for the women's doctors – like EKG for the doctors caring for the heart.**

Click on the Acrobat sticky note icon in the PDF of any slide for further pertinent details. Do this first in the <Grasp how> link just 3 lines above - or when you open that link by clicking the image here.

**Vaclav Kirsner**  
2019-08-29 21:58:31

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This sticky note icon may appear anywhere on a slide in PDF. In the first slide-set here, the icon appears within the bioZhana logo because that is where the software puts the speaker notes when provided. Advance the slides with the curved down-arrow on top left of the slides, above the logo. Else use keyboard arrow key

Open 4 slides in PDF by clicking on the slide image. Navigate with down- & up-arrow keys or curved PDF arrows. **The other images here are also clickable.** Or view the 4 slide PPS presentation at <https://biozhena.files.wordpress.com/2019/06/wealth-of-info-dom-folli-elucidated-silent-4-slides-animated-ed.-061019.ppsx> (without the sticky notes that appear only in the PDF version).

There is no technology like our [Folliculogenesis-In-Vivo™ \(FIV™\)](#), which tracks the end-organ effects of [the brain - ovary interactions](#). The FIV™ works with cycles challenged by asynchrony of brain and ovarian pacemakers (which hinders ovulation), because folliculogenesis is not run merely by circulating sex hormones but is a process of integration of all neuroendocrinological inputs, which the cervix monitors. Hence the Ovulona (and its planned telemetric Halo™ cervical ring transformation) monitors the cervix. [This is the only way to manage stress effects on fertility.](#)

Based on the results of pilot testing studies, the ovulographic™ monitoring of folliculogenesis-in-vivo is thought to [capture the fine-tuning impact on folliculogenesis](#) of [the direct neural control](#) via ovarian and uterine cervix innervation and the involvement of local (autocrine and paracrine) modulatory actions. [Those effects cause](#) a significant number of menstrual cycles to be [categorized as challenged by lack of brain-ovary pacemaker synchronization](#). The asynchrony cannot be detected by the systemic peripheral variables such as the BBT temperature or the urinary levels of hormones monitored by the commercially available home-use technologies. This is crucial because of the following fundamental principle: [Synchronization of brain and ovarian pacemakers is THE precondition of ovulation](#). This cannot be overemphasized.

To recap: In addition to the regulation of ovarian function by certain hormones, there are the fine-tuning control mechanisms by the various [neurotransmitter systems that modulate the effects of the gonadotropins on ovulation](#) and on the capacity of the ovaries to secrete the steroid hormones. It is therefore essential to monitor [the telltale signature profiles of the menstrual cycles](#) that reveal the critical events in the cyclic neuroendocrinological interactions.

The prototyped and pilot-studies tested Ovulona™ [monitor with FDA clearance](#) anticipates and then DETECTS ovulation, making possible non-interventional personalized sex-life and family planning management. With our [Ovulograph™](#), women's physicians can use the Ovulona menstrual profile records of their patients for the management of diseases such as [diabetes](#), [PCOS](#), [endometriosis](#), [PMS/PMDD](#), [MDD](#), etc. See below.

**Startup version of the [Ovulona](#) cervical sensor has FDA clearance**

Clickable link

**Ovulona™**

**Display indications:**

- Non-fertile
- Non-fertile
- Non-fertile
- \*\*\*
- Fertile day 1
- Fertile day 2
- Fertile day 3 = Ovulation
- Non-fertile
- Non-fertile
- \*\*\*

Insert to test in Posterior Fornix

Advance the slide by clicking on it or navigate using keyboard's down-arrow key

**Ovulographic: Correlation of Folliculogenesis and Symptomatic Data**

Pre-ovulation period: Post-ovulation

Rate of COPE Scores of Daily Symptoms

**Absence of the peaks anticipates failure to ovulate.**  
Ovulona anticipates LPD = Luteal Phase Defect, which often causes failure to conceive - by normal healthy women.

**Ovulograph™ for menstrual cycle diagnosis**

Compare a baseline record with two records of menstrual abnormalities

**Abnormal: Delayed Ovulation**      **Baseline cycle**      **Abnormal: Short Luteal Phase**

Baseline cyclic profile of a healthy 30-year old non-smoker woman who, as a baseline subject, is not taking any medication or contraception shown here between two cyclic profiles of a smoking mother. The baseline profile was taken twice a day, morning and evening, and the AM and PM records show not only the reproducibility but also how the post-ovulation follicular waves develop between the morning and evening hours. The smoker's consecutive profiles are similar to the baseline but exhibit significant differences. Cycle 4 record captured a delayed ovulation and short luteal phase. Cycle 5 shows also a short luteal phase, an abnormality (the luteal phase should be about 14 days long, give or take a day or two).

The Ovulograph [links to answer](#) the call: [The quality of ovulation is, obtained in normal women](#)  
By Richard S. Legro, Human Reproduction, Vol.28, No.6 pp. 1446-1447, 2013

**Improve the methods and criteria used to assess ovulatory dysfunction!**

Our electronic technology platform is bound to revolutionize women's healthcare with diagnostic tools for women, and for their doctors and insurance payers (providing for evidence-based reimbursement decisions). Furthermore, note this unique capability: [The Ovulona™ will enable determination of the lifetime of the gametes](#). (For a PDF of this, click <https://v.gd/eHKhDa> .)

The bioZhenal Corporation mission is focused on all women and their physicians:  
<https://biozhenal.wordpress.com/biozhenas-mission-a-health-tool-for-every-woman/> .

To start with, the trying-to-conceive women will benefit from the unprecedented ability to indicate in plain English the fertile window as FERTILE DAY 1, 2, and 3 = OVULATION. [Delayed](#) or [completely missing ovulation](#) can also be detected. And, after clinical testing, another indication: CONCEPTION! - when the [Ovulona automatically detects pregnancy](#) instantly and (we expect) more reliably than any home pregnancy test. Our smart sensor will automatically assess the birth EDD date based on the date of the conceptive intercourse - recorded electronically.

Our technology provides for non-interventional reproductive management, aiding conception and natural birth control without artificial pseudo-hormones, automatically detecting pregnancy as soon as conception occurs, whether planned or accidental. The home-use device enables people to [try fetal gender pre-selection](#) by timing conceptive intercourse with respect to ovulation. It will enable ovulation-based [calculation of EDD/EDC](#) and of [gestational age](#).

After appropriate clinical trials, the Ovulona will provide [early warning of cervical cancer and other STDs](#) as a built-in screen performed innocuously and concurrently with the primary measurement of fertility status. Carried out inconspicuously at home, this will avoid the problems of the Pap smear test (high cost, reliability issues causing anxiety, uncomfortable, missed by many women). SEE DOCTOR indication will appear only after aberration is reliably reproduced.

The same hardware used in pregnancy will improve management of birthing, including prematurity - a major benefit for public health. Only SaaS (Software as a Service) software will change for this and any other application - a significant profitability and user-convenience factor.

Reiterating: The Ovulona tracks the menstrual cycle folliculogenesis mechanism via the end-organ [effect of the brain-ovary HPG feedback loop interactions on the uterine cervix](#). Numerous benefits ensue in addition to the noninvasive method of a user's sex-life management.

**Ovulona** will be transformed into telemetric cervical ring  
 Women and their doctors will have a choice

**Ovulona™**

Sensor data can be correlated with auxiliary data (such as the BBT or blood)

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Store & transfer data to the Ovulograph™ for use by healthcare professionals

Next generation telemetric embodiment for users' convenience

Cervical health screened concurrently with fertility status  
 - user alerted when problem detected in several consecutive cycles

Hypothal.Lamator Understanding Human Sexuality, 5e. Copyright © 1987, The McGraw-Hill Companies, Inc. All Rights Reserved.

**Hypothalamus-Pituitary-Gonad Feedback Loop(F)**

Hypothalamus  
 Pituitary gland  
 FSH and LH  
 Estrogen and progesterone negative feedback  
 Uterus  
 Ovary  
 Estrogen  
 Progesterone  
 Endometrium

**Parasympathetic System**

**Sympathetic System**

Click the image for a 3 slide PPS recap of the Ovulona from startup to cervical ring implementation. For the PDF version [click here](#).