



## Feasibility of the planned range of Ovulona applications

**Premise:** The indications are as follows.

FDA 510(k): K973860

Personal OTC fertility monitor & for use of menstrual profile by physicians

Use of Funds

Generate revenues with FDA-cleared Ovulona by month 16 and prepare for Smart Ovulona™ launch in month 33

Portfolio Expansion

Home cervical health screening for pre-cancerous conditions and STDs, PMDD, PCOS, early pregnancy loss, menstrual cramps and menopause management, pregnancy monitoring for parturition alarm and for prematurity management (PTL, PTB)

### **Application 1: - handheld device has the ability to serve both the conception and birth control**

[Here is how](#) it works to serve both purposes. Click on the link. The Ovulona™ will provide simply the indications of the three fertile days in plain English (e.g. FERTILE DAY 1 as opposed to mostly INFERTILE during each menstrual cycle), letting the user decide how she uses the information. This concept applies to both the daily-insertable handheld Ovulona as well as to the prospective cervical ring vaginal insert (with a portable base controlling the ring from the outside), into which we will transform the manual device. The proceptive (conception-aiding) use has the FDA clearance, as does the use of the longitudinal data on sequentially recorded menstrual cycle signatures by healthcare professionals. Example of pregnancy avoidance by fertility awareness: “The effectiveness of a fertility awareness based method to avoid pregnancy in relation to a couple's sexual behaviour during the fertile time: a prospective longitudinal study”, Hum. Reprod. (2007) 22 (5): 1310-1319 at <http://humrep.oxfordjournals.org/content/22/5/1310.full>

And compare our solution: <https://biozhena.files.wordpress.com/2014/10/the-problem-of-natural-birth-control-4.pdf>

### **Application 2: - baby gender selection**

The consumer information in the package insert of the Ovulona product will include the summary of the initial clinical study performed prior to the launch of the product. The expectation for the outcome of the study is as illustrated above under point 1. That in turn is based on [the outcome](#) of a [France et al. study of fetal gender pre-selection](#) superimposed on the menstrual cyclic profile generated by our device in a small clinical trial.

More details are in the file [Fetal sex preselection – illustrated](#) which is attached to the article referenced above by the link to [the outcome](#) . The article lists significant references to supporting evidence by other studies of other investigators.

The said file is a description of the origin (including the best clinical trial evidence available to date) of the 3-day fertile window. The 3-day window of high conception

probability is unequivocal (there is no doubt that the data show the 3-day window of high conception probability). The low birth counts on the flanks of this 3-day group are data point outliers due to errors in the investigators' estimating the ovulation day. These errors will be eliminated by the use of the Ovulona instead of the imperfect methods previously employed by the earlier investigators.

The statistics of the fetal gender pre-selection by timing intercourse with respect to ovulation are also reported therein and summarized in the slide under point 1. The full 1992 paper by France et al. should be read to appreciate their study and its meaning for the gender pre-selection by timing conception with respect to the time of ovulation. And, as we always emphasize, the gender preselection will always be a probabilistic exercise (not a deterministic claim) just like conception itself is. Our claim is that we will let the user know when her FERTILE DAY 1 is and when her FERTILE DAY 3 is, and she will do what she likes with the knowledge of her fertile window.

### **Application 3: - immediate detection of pregnancy**

This is based on our understanding of the Ovulona menstrual cyclic profile signature, in which the post-ovulation part of the signature is interpreted as driven by the so-called follicular waves (see [a recent review](#)). These waves reflect the preparation of the reproductive system for the next menstrual cycle when conception has not occurred. In case conception does occur, the physiology changes abruptly because the reproductive system is now under the control of the budding conceptus (early embryo), as a consequence of which the system is no longer preparing for the next menstrual cycle and therefore the waves will disappear.

This amounts to basically instant detection of conception, and it obviates the notorious 2-week wait faced by women today when they use the HPTs [Home Pregnancy Tests] that are offered for detection of the hormone hCG in the woman's urine. The HPTs are known to be inaccurate, too (because they depend on the analytical sensitivity of the given HPT product to detect the minute amount of hCG released by the conceptus into the blood stream and cleared into the urine of the user). For more on this, see <http://biozhena.wordpress.com/2010/01/10/about-the-added-bonus-of-folliculogenesis-monitoring-automatic-pregnancy-detection/>

### **Application 4: - prediction of the full-term birth date**

This is based on the detection of ovulation by the Ovulona because ovulation is the start time of gestation when conception occurs. Ovulation is detected automatically (see under point 1) and the user will enter the date mark - by simply pressing a specially provided button - whenever she has sexual intercourse. The software will automatically take the date of the conceiving ovulation and will automatically calculate the EDD/EDC [Expected Date of Delivery/Expected Date of Confinement].

The number of the expected gestation days to be added to the date of the recorded ovulation will be selected according to the most appropriate protocol at the time of the launch of this application. Depending on medical literature evidence, and on clinical studies conducted in different parts of the world, it will become clear whether or not gestation period varies depending on climate or other factors. Based on clinical



evidence (for 266 or other number of days), it will be decided how the gestation period constant will be allowed to be edited by the individual patients' physicians.

### **Application 5: - detection of premature labor/birth and monitoring cervical health for tissue aberration**

Significant research precedent exists for electrometric monitoring of cervical tissues - but only in complex clinical settings. Our FDA-approved fertility monitor is an electrometric product for personal use at home, and it is an affordable, simple-to-use means for self-monitoring of a woman's cervix. Applications such as cervical health screening (cervical cancer and other STDs) and monitoring of pregnancy - including for prediction and/or detection of premature labor or birth - will be performed with the same device, which will be powered by a different electronic program (based on a differently optimized regime of monitoring the cervical tissues, optimized for the given purpose).

A basic outline is given in a 1-page explanation, [“Why we can detect cervical tissue aberration”](#), which addresses the cervical health screening application. A corresponding reasoning applies to monitoring the cervix during pregnancy. Again, the electronic monitoring program will be modified for the given purpose, with reference to precedent in published studies, and will be developed in appropriately designed clinical studies. An example of a review of published studies is: [BEYOND CERVICAL LENGTH: EMERGING TECHNOLOGIES FOR ASSESSING THE PREGNANT CERVIX, Am J Obstet Gynecol. 2012 November ; 207\(5\): 345–354](#) .

### **Application 6: - early pregnancy loss**

This is a logical extension of Application 3, based on the expectation that personal cervix monitoring will be continued after conception has been detected precisely for the reason of guarding against the possibility of early pregnancy loss (EPL). The detection of EPL is based on the same understanding of the post-ovulation part of the menstrual cyclic profile signature. In the event of an EPL, the menstrual cyclic profile is logically expected to come back, alerting the woman to try getting pregnant again as soon as possible. This is to reduce the probability of recurring spontaneous abortion as documented in medical literature. [Study](#): Women who conceive within six months of an initial miscarriage have the best reproductive outcomes and lowest complication rates in a subsequent pregnancy. For more, see [the blog article linked under Application 3](#).

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