Zacks Equity Research

November 23, 2010
Jason Napodano, CFA
312-265-9421
jnapodano@zacks.com
www.zacks.com
111 North Canal Street, Chicago, IL 60606

INVO Bioscience

(IVOB-OTC)

IVOB: Disappointing Third Quarter, But Signs Point To Better Times Ahead…

UPDATE

INVO Bio reported disappointing third quarter financial results. The company did not record any sales of its INVOcell device during the quarter due to funding issues and assembly delays at the manufacturer. Both issues have been worked out and orders placed during the third quarter were shipped in mid-October 2010. Although sales of the INVOcell device have been low, the clinical data begin generated by post-approval marketing studies around the world has been impressive. Data flow should improve over the next several quarters, and thus we believe sales will start to trend higher. Priority number one for management is to secure funding over the near-term for operations and the filing of the U.S. 510(k) application.

Current Recommendation	**Outperform**
Prior Recommendation	N/A
Date of Last Change	05/24/2010
Current Price (11/23/10)	$0.06
Target Price	**$0.20**

SUMMARY DATA

52-Week High	**$0.43**
52-Week Low	**$0.03**
One-Year Return (%)	**-83.78**
Beta	**-0.86**
Average Daily Volume (sh)	**70,514**
Shares Outstanding (mil)	**63**
Market Capitalization ($mil)	**$4**
Short Interest Ratio (days)	**N/A**
Institutional Ownership (%)	**N/A**
Insider Ownership (%)	**N/A**
Annual Cash Dividend	**$0.00**
Dividend Yield (%)	**0.00**
5-Yr. Historical Growth Rates	
Sales (%)	**N/A**
Earnings Per Share (%)	**N/A**
Dividend (%)	**N/A**
P/E using TTM EPS	**N/A**
P/E using 2010 Estimate	**N/A**
P/E using 2011 Estimate	**N/A**
Zacks Rank	**3**

Risk Level	**Above Average**
Type of Stock	**Small-Growth**
Industry	**Med-Biomed/Gene**
Zacks Rank in Industry	**23 of 138**

ZACKS ESTIMATES

Revenue
(in millions of $)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2009	0.04 A	0.02 A	0.00 A	0.01 A	0.06 A
2010	0.02 A	0.01 A	0 A	0.02 E	0.05 E
2011					0.10 E
2012					0.16 E

Earnings per Share
(EPS is operating earnings before non recurring items)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2009	$0.01 A	-$0.01 A	-$0.06 A	-$0.00 A	-$0.09 A
2010	$0.01 A	-$0.01 A	-$0.00 A	-$0.01 E	-$0.00 E
2011					-$0.03 E
2012					-$0.03 E

Zacks Projected EPS Growth Rate - Next 5 Years % **N/A**

© Copyright 2010, Zacks Investment Research. All Rights Reserved.

WHAT'S NEW

Third Quarter Review

On November 22, 2010, INVO BioSciences reported financial results for the third quarter ended September 30, 2010. The company did not record any revenues during the third quarter. Unfortunately, the company was unable to fulfill order for the device due to a lack of funding to pay the manufacturer / assembly house early in the quarter, and a delay in quality control later in the quarter. Both issues have been worked through and management noted shipping all backorders from the third quarter in October 2010. Management noted that backlog from the third quarter was slightly larger than the total revenues in the second quarter. Thus, for the fourth quarter 2010 was are now projecting revenues $20,000.

Net loss for the third quarter 2010 totaled $0.235 million, or ($0.00) per share. This was in-line with expectations. Total cash burn during the quarter was $0.141 million. The company held only $9,500 in cash and investments at the end of the third quarter. INVO is in talks with two potential options to raise money in the next few months. The first option is through a cash raise financing with new or existing shareholders. The second is through a major international partnership for INVOcell that would supply the necessary funding to push forward with the U.S. registration program. We are eagerly awaiting the outcome of these discussions.

Marketing Studies Continue

Management is aware of three independent marketing studies being conducted around the world with the company's INVOcell device.

…Columbia…

The first of these studies, conducted by Dr. Elkin Lucena of the Columbian Fertility and Sterility Center (CECOLFES LTDA) in Bogota, Columbia, recently offered up impressive data at the 66th American Society of Reproductive Medicine (ASRM) meeting in late October 2010. The results were impressive, demonstrating a 43% clinical pregnancy rate per INVOcell cycle and 48% clinical pregnancy rate when an embryo was transferred. The data was taken from first 95 women ages 21-45 that have enrolled in the program at CECOLFES.

Clinical Pregnancy Rate	
…per INVOcell Cycle (all women)	43%
…per Cycle (when embryo was transferred)	48%
…per Cycle (women < 40 years)	46%

The data compares fantastically well to clinical pregnancy rates per cycle when *in-vitro fertilization* (IVF) is used. Data compiled by the U.S. Center for Disease Control (CDC), the Society for Assisted Reproductive Technology (SART), and Canadian Health Ministry show clinical pregnancy rates for IVF range from 35% to 45%.

What is impressive for the CECOLFES results is that multiple pregnancies occurred in only 10% of the patients in the study, compared to 25-30% multiple pregnancies that occur in more traditional fertility treatment regimes such as IVF. Multiple pregnancies can cause very serious and expensive complications, especially for women above the age of 35 years. Pregnancy using the INVOcell device also eliminates the potentially dangerous need for intra-cytoplasmic sperm injection (ICSI) – where a single sperm is injected into an egg to achieve fertilization – which can result in the injection of potentially unhealthy or low-motility sperm (i.e no natural selection).

…Pakistan…

A second study being conducted by the company's distribution partner, Galaxy IVF, is currently underway in Pakistan at four INVO centers. The study began in the first quarter of 2010 with a target enrollment of 100 couples. According to management, both the U.S. National Institute of Health (NIH) and the World Health Organization (WHO) have approved the study. There has been little update since the trial began. Galaxy IVF is holding information until the study is close to being complete. Unfortunately, things seem to be moving slowly in Pakistan.

…Peru…

During the third quarter 2010, a study being conducted by Dr. Julio Diaz Pinillos at the Lima Center for Human Reproduction in Lima, Peru initiated. The study is looking enroll approximately 100 couples. Dr. Pinillos indicated that he started out slow but has been making significant improvement on enrollment over the past month. We are anticipating completion of this program during the first half of 2011.

…Canada Up Next…

In October 2010, INVO announced that it has signed an agreement with Canadian-based Invaron Pharmaceuticals for the exclusive distribution of INVOcell in Canada. We believe this could represent a meaningful near-term driver for INVO Bio given the growing infertility rates and Canada and recently implemented reimbursement policy that dramatically improves patient access to assisted reproductive procedures. INVO Bio received Health Canada Regulatory Approval in 2009. The device is CE Mark approved in Europe and Canada and conforms to all consumer health and safety requirements.

There are approximately 27 fertility centers in Canada licensed to perform assisted reproductive procedures. INVO Bio's more natural alternative to IVF is an attractive option for the estimated 1 million infertile couples in Canada. Plus, with approval and now distribution in place, the door is open to the estimated 8 million infertile couples in the U.S. and 10 million Europe to travel to Canada should they chose to seek INVOcell.

Recently, the provincial government of Quebec has initiated the funding of up to three assisted reproductive cycles for residents of the province. Fertility centers in Quebec are currently administering approximately 1,850 cycles annually. By 2014 provincial officials predict that the annual number of embryo-implant cycles administered will grow to between 7,000 and 10,000 in the Quebec province alone due to the new reimbursement policy. INVO Bio's INVOcell device represents an excellent low start-up-cost alternative to help these centers meet the potential surge in demand for assisted reproductive procedures.

Invaron Pharmaceuticals is planning to conduct a marketing study with INVOcell at various centers around Canada in 2011. We are particularly excited about this opportunity because data generated in Canada should be well-received by the U.S. FDA.

…More To Follow…

Management reported being in conversation with several other countries around the world on potential marketing studies in 2011. These studies are instrumental in continuing to build awareness and generate data from the company's planned U.S. 510(k) submission in 2011. As a reminder, INVOcell is approved and available for sale in Canada, Colombia, Guatemala, Belgium, Greece, Bulgaria, Turkey, Poland, Spain, Switzerland, Cyprus, Pakistan, Cameroon, Nigeria, South Africa, Peru, Panama, Dominican Republic, Nicaragua Ukraine and India. Management has started the registration process in China, Argentina, Venezuela, Egypt, Russia, and Taiwan.

U.S. Strategy Taking Shape

In the U.S., INVO Bio is currently seeking U.S. regulatory clearance from the FDA for the INVOcell device. The company has completed the first steps in the process for filing of a Premarket Notification with the FDA, which include completing all developmental testing and pre-trial testing for the 510(k) submission. Previously, the FDA had requested a clinical study to be conducted in the U.S. prior to granting final clearance in the U.S. However, since that time the company has been able to collect a significant amount of data from post-approval marketing studies around the world – most notably 95 patients from CECOLFES in Columbia. Management believes that once additional data from the 100 patients in Peru becomes available, it is worth having a conversation with the FDA about filing the 510(k).

Sometimes the best way to get the FDA to formally respond and qualify what is necessary for final approval is through an actual filing. Therefore, we would not be surprised to see the company submit a 510(k) application for INVOcell in the U.S., assuming they can compile the data from roughly 200 patients or so from Columbia and Peru, around the middle of 2011. The FDA should respond in six to nine months, either with outright final approval or through a response letter notifying INVO Bio what clinical data is necessary for the PMA. We remind investors that INVO has an open Investigation Device Exemption (IDE) and can begin a study, if necessary, at any time

Should the FDA still require a U.S. clinical study, we expect that this program will enroll roughly 75 to 100 patients total at IVF centers around the U.S. We believe that once initiated, the study will take 12 months to complete. Unfortunately, since the study will costly, we estimate roughly $1 to $1.5 million, management remains focused on growing product sales in the international market and securing additional funding prior to initiation. We note that management is currently in talks with potential interested parties in the U.S. to potentially help fund the study, either through a co-promotional agreement or an equity stake that supplies the necessary cash to complete the trial.

INVESTMENT THESIS

Although we are disappointed with the lack of sales in the third quarter 2010, we understand the situation has been resolved and orders placed in the third quarter were shipped in mid-October 2010. According to management, this backlog was slightly larger than the $11,000 in total sales during the second quarter 2010. Therefore, we model a total of $20,000 in revenues for the fourth quarter 2010.

Despite INVO's desperate need for cash, there are clear signs of progress being made. The data from CECOLFES presented by Dr. Elkin at ASRM was fantastic. A 43% clinical pregnancy rate with only 10% multiple births has the potential to take significant market share from in vitro fertilization (IVF) based on cost, personalization, and access.

We believe that the company has built a superior device for the treatment of infertility. The INVOcell device has been elegantly designed to provide improved efficacy over interuterine insemination (IUI) at a similar cost. The INVO procedure provides several advantages when compared to IVF, including lower risk of ovarian hyperstimulation syndrome, lower risk of anesthesia complications, and wider applicability and availability for infertile couples. Additionally, the INVO procedure provides a far more personalized and natural approach to conception than IVF.

	IUI	INVO	IVF
Cost Per Pregnancy	$12k to $16k	$9k to $16k	$17k to $35k
Pregnancy Rate	~10%	~40-45%	~35-45%

Assuming a blended worldwide price of around $250 per device, plus the costs of the warming blocks, if management were able to capture just 10% of the current market, peak sales of the device are $15 million. At the current market value of only $4 million, we believe that this opportunity at INVO Bio is dramatically under-appreciated by Wall Street.

OVERVIEW

INFERTILITY

Infertility primarily refers to the biological inability of a person to contribute to conception. There are many biological causes of infertility, some which may be treated with medical intervention. Reproductive endocrinologists and infertility specialists typically consider a couple to be infertile if the couple has not conceived after 12 months of contraceptive-free intercourse and the female is under the age of 34. For women over the age of 35, infertility may be classified after only 6 months of contraceptive-free intercourse due to declining egg quality.

There are two types of infertility, primary infertility and secondary infertility. Primary infertility is designated for a couple that has never been able to conceive. Secondary infertility results when a couple has difficulty conceiving after already having conceived once – whether or not the pregnancy has gone to term. Generally, it is estimated that one in seven couples (~15%) have problems conceiving, with the incidence varying slightly in most countries independent of the level of the country's development.

Infertility is caused by many factors, although for almost a quarter of the couples the cause remains unexplained. Age of the potential mother is the single biggest factor in infertility. However, in almost half of the reported cases of infertility in the U.S., the male is the underlying cause. Health problems that may result in infertility are: ovulation problems, tubal blockage, low-sperm count, uterine problems, tuberculosis, hypospadias, endometriosis, and polycystic ovarian syndrome. More general causes include: diabetes, thyroid disorders, adrenal disease, environmental factors, smoking, or alcohol abuse.

Treatment Options

Treatment methods for infertility may be grouped as medical or complementary and alternative treatments. Conservative options include medications designed for ovarian stimulation or cervical caps designed to collect the sperm and hold it in place against the cervical os for up to six hours. This type of conception device is particularly useful in males with low sperm count or low sperm motility. Fertility drugs primarily include medications to enhance ovarian activity, such as gonadotropins, estrogen antagonists, follicle-stimulating hormones (FSH), or gonadotropin releasing hormones (GnRH).

One such common drug is clomiphene (Serophene or Clomid), a selective estrogen receptor modulator (SERM) that increases the production of gonadotropins for ovarian stimulation. Clomiphene is taken orally, but many other drugs are administered by subcutaneous injection in the abdomen or thigh or intramuscular injection in the buttocks. Response to these drugs is monitored by frequent vaginal ultrasounds and blood estrogen determinations. At a time in the cycle when the ovarian follicles reach a designated size and estrogen levels are appropriate, an injection of the hormone human chorionic gonadotropins (hCG) is given to trigger ovulation. Ovulation usually occurs 36-48 hours after the hCG injection, and intercourse or artificial insemination or oocytes retrieval is timed accordingly.

…Interuterine Insemination (IUI)…

Interuterine insemination (IUI), or artificial insemination (AI), is the process by which sperm is placed after preparation into the reproductive tract of a female for the purpose of impregnating the female by using means other than sexual intercourse. The fresh sperm can be placed in the cervix for intracevical insemination (ICI) as well. In humans, it is used as an assisted reproductive technology (ART), primarily to treat infertility using sperm from the woman's partner, or sperm from a donor (donor sperm) where the male partner produces no sperm. It is also increasingly used to enable women without a male partner to produce children by using donor sperm.

Success rates, or pregnancy rates, for artificial insemination vary widely based on many factors, including the age and health of the female patient. For couples whose infertility is unexplained, un-stimulated IUI is no more effective than natural means of conception. IUI is among the first options that couples seeking assisted reproductive technologies (ART) because of the low cost. An IUI cycle will run approximately $1,000 in the EU and $1,500 in the U.S. Between Europe and the U.S., there was an estimated 800k IUI cycles in 2009. However, generally speaking, approximate pregnancy rates are low at only 10 to 15% per ovulatory cycle. The average couple requires 2 to 3 cycles to achieve clinical pregnancy through IUI. The overall aggregate pregnancy rate for couples attempting IUI is around 25%. Thus, for most couples, the cost to try IUI will be around $3,000 to $4,000, and only a quarter will succeed. Therefore, the overall cost per pregnancy for IUI is roughly $12,000 (in the EU) to $16,000 (in the U.S.).

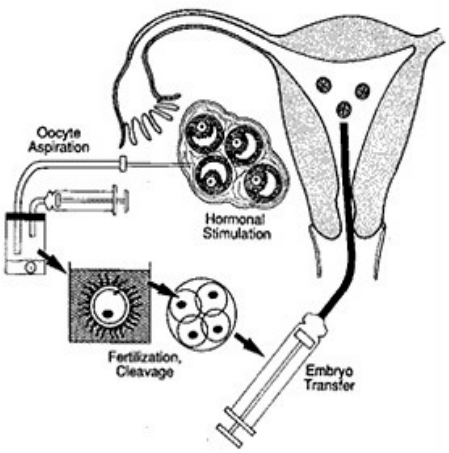
…In Vitro Fertilization (IVF)…

The procedure of *In Vitro* Fertilization (IVF) is a process by which egg cells are fertilized by sperm outside the womb as a treatment for infertility. IVF is often used when less invasive methods of assisted reproductive technologies (ART) have failed. The process involves hormonally controlling the ovulatory process, removing oocytes (eggs) from the woman's ovaries and letting sperm fertilize them in a culture medium outside of the womb.

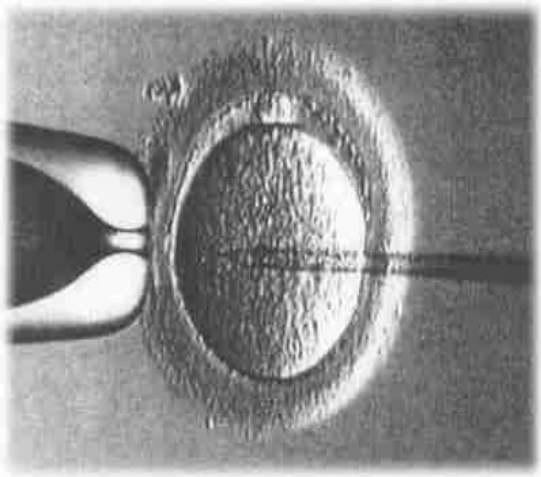
Ovarian stimulation typically starts on the third day of menstruation and consists of a regimen of fertility medications discussed above to stimulate the development of multiple follicles of ovaries. These medications are usually given for period of up to ten days. The FSH stimulates growth of immature ovarian follicles in the ovary. It is a complex process that requires close monitoring of estradiol and follicle growth by means of gynecologic ultrasonography. GnRH antagonists may be used during the last days of stimulation to block the natural surge of luteinizing hormone (LH) and allow the physician to initiate the ovulation process by using medication, usually injectable hCG. The egg retrieval procedure takes place using a transvaginal technique involving an ultrasound-guided needle piercing the vaginal wall to reach the ovaries. Through this needle the follicular fluid can be aspirated and is handed to the IVF laboratory to identify eggs. It is common to remove between ten and thirty eggs during one procedure. The retrieval procedure takes about 20 minutes and is usually done under general anaesthesia. In the laboratory, eggs are identified, stripped of surrounding cells, and prepared.

In the meantime, sperm of the partner or donor is prepared through a procedure called sperm washing. Fertilization usually takes place in a Petri dish containing a culture medium or organic material in the case of coculture. The sperm and the eggs are then incubated together at a ratio of about 75,000:1 for about 18 hours. In some cases, where male infertility is a problem due to low sperm count or low sperm motility, physicians can attempt an intracytoplasmic sperm injection (ICSI).

ICSI is a procedure where a single sperm is injected directly into an egg using a sharp glass pipette under guidance of a high powered microscope. The procedure is effective in achieving fertilization, but because it eliminates the natural process of sperm motility finding their way to the egg, potentially unhealthy (genetically inferior) sperm can be used during the process. ICSI bypasses the natural selection process by which only the most suitable sperm swim their way to create a zygote. The zygotes are then incubated for an additional 48 to 60 hours under close monitoring. When ready, the embryos are graded by the embryologist based on cell growth, evenness of growth, and degree of fragmentation. The embryos judged to be the most suitable are transferred to the patient's uterus through a thin, plastic catheter, which goes through cervix into the uterine cavity.



IVF



ICSI

Several embryos may be placed into the uterus to improve chances of implantation and pregnancy. This can often lead to multiple births. In fact, according to a study conducted by the Jones Institute for Reproductive Medicine, multiple births occur in roughly 25-30% of IVF pregnancies, with triples or more accounting for roughly 3% of the successful outcomes. As such, strict limits on the number of embryos that may be transferred have been enacted in some countries (e.g. England) to reduce the risk of high-order multiples (triplets or more), but are not universally followed or accepted.

Typical cost of an IVF cycle in the U.S. is roughly $12,400 (range: $7,000 to $15,000). Prices outside the U.S. are typically lower, and can be as low as $4,000 in Japan, with the average cost around $10,000. However, most couples will require more than one cycle to achieve pregnancy. The average is around 2.2 cycles, with many couples paying for several cycles of IVF before ultimately giving up seeking a new alternative such as adoption. Thus, a typical cost per pregnancy for IVF is approximately $25,000 (range: $17,000 to $35,000).

The first successful IVF birth occurred in 1978. Since that time, physicians have been able to improve IVF successful pregnancy rates, which now stand around 38-40% per cycle. The live birth rate for IVF, slightly lower due to miscarriages, stands around 28-30%. The live birth success rate is directly correlated to age, health, and demographic of the prospective mother. IVF attempts also correlate to success rate. One published study in the New England Journal of Medicine (NEJM) on 6,164 patients undergoing 14,248 cycles (Cumulative Live-Birth Rates after In Vitro Fertilization; NEJM, Vol. 360:236-243, January 15, 2009) reported 49% to 52% for three attempts, and 70% to 74% for six attempts. There are an estimated 600k IVF cycles between the U.S., Europe, and Asia.

…Risks and Limitations of IVF…

In vitro fertilization does not come without risks or limitations. With respect to the limitations, IVF is not cheap. As noted above, a typical IVF cycle in the U.S. can cost over $12,000. And with the average couple requiring at least 2 cycles, an IVF pregnancy will run around $25,000. The bulk of the costs of IVF are in the hormones used to obtain mature oocytes. Human recombinant gonadotropins and gonadotropin-releasing hormone (GnRH) analogues account for at least 50% of IVF costs. The remaining costs of an IVF procedure go to cover the cost of the ultrasonographic equipment suitable for monitoring ovarian follicular development and retrieving oocytes, as well as overhead costs that include the incubator unit, the monitoring and alarm system necessary to keep close watch of the incubator, power system backups, air filtration units, quality control systems, and maintenance. An IVF center can cost upwards of $500,000 to build.

Finally, IVF has substantial human costs, including a highly trained laboratory embryologist and an endocrinologist. The high capital cost of an IVF center limits the demographic and socioeconomic target market for IVF. The centers are usually large and located in major cities. There are only roughly 430 U.S. fertility clinics in the U.S. that can provide IVF services. Compare that to the more than 300 hospitals and IVF centers in Japan, a country with one-third of the population and less than one-fourth of the land mass. It is clear that cost plays a major role in the decision to try IVF.

Also noted above, the potential for multiple births is also high with IVF. It is common to remove between ten and thirty eggs during one harvesting procedure, and to have multiple embryos created. Most centers will not implant more than 2 to 3 embryos at one time to limit the potential for multiple births. If multiple embryos are generated, patients may choose to freeze embryos that are not transferred. The Society for Assisted Reproductive Technology estimates there are currently 500,000 frozen embryos in the U.S. The growing “embryo dilemma” is a hot area of contention for political and religious rights groups around the country.

However, potentially the biggest risk to IVF is ovarian hyperstimulation syndrome (OHSS), a rare but severe and potentially life-threatening complication. It results as a side-effect of human chorionic gonadotropins (hCG) use, which causes the ovaries to undergo extensive luteinization, releasing large amounts of estrogen, progesterone, and cytokines that induce vascular hyperpermeability (leaky capillaries). OHSS has been characterized by the presence of multiple luteinized cysts within the ovaries leading to ovarian enlargement and secondary complications. Severe OHSS can result in blood clots, abdominal pain and distension, decreased urine production, pleural effusion, and respiratory distress. It can be further complicated by ovarian torsion, ovarian rupture, and thrombo-phlebitis and renal insufficiency. Incidence of severe OHSS is around 2 – 4% for patients undergoing IVF. Once OHSS develops, it is prudent to postpone embryo transfer until the condition reverses, either naturally or through supportive care. Physicians typically look to monitor estradiol levels as a warning sign to developing OHSS. This adds to the workload and costs associated with IVF.

Besides the high capital costs and potentially life-threatening side-effects of ovarian hyperstimulation, IVF is also a rather tedious process that results in high emotional stress. Administration of GnRH agonists and gonadotropins (the most commonly used stimulation protocol) usually involves as many as ten office visits to complete a cycle. Specialized ultrasound monitoring and need for frequent blood estrogen determinations are required, meaning a typical office visit can run two hours long. Once a treatment cycle has begun, daily drug administration and monitoring are necessary until ovulation occurs. IVF also often creates significant psychological stress associated with prolonged treatment. The stress can result from lack of success (multiple cycles), lack of funding to continue, or negative reaction to the hormonal injections.

A study conducted by the Ninewells Hospital & Medical School, in Dundee, Scotland, and published in The Journal of Human Reproduction (Vol.21, No. 2:358-363,2006) concluded that behind discontinuing IVF as a result of a successful live birth (52%), discontinuing due to psychological stress (36%) was the number two reason why couples stop the process. Lack of funding (23%) was third.

A Wide Open Market…

As a result of the risks and limitations noted above for IVF or the relatively low pregnancy rate for IUI/ICI, many couples go left untreated for their infertility. In fact, according to the European Society of Human Reproduction and Embryology (ESHRE), in 2007 there were an estimated 150 million couples worldwide with infertility. Only around 0.5% seek treatment, leaving an estimated 149 million couples untreated.

In the U.S., there are an estimated 7.5 million couples battling infertility. The number in Europe stands around 10.0 million. For the U.S. and Europe, treatment rates are higher thanks to the availability of IVF centers and access to medical care for diseases that could lead to infertility. Areas outside of the U.S. and Europe do not fare as well. For example, in the Middle East, Russia, India, and Pakistan, infertility rates are 20% due to widespread and untreated sexually transmitted disease (STDs), and a lack of IVF centers. In Pakistan, a country with 172 million people and 25% infertility rates, there are only 5 main IVF centers. India is a country with 1.1 billion people and 20% infertility rates, there are an estimated 30 million people that could benefit from a low-cost and effective option. Russia, a country with 140 million people has seen its population decline in recent years thank in part to its high infertility rate. Countries like Russia and Australia have instituted progressive tax advantages to couples for having more than one child. Between the U.S., E.U., Australia, Japan, and developed areas of India, China, Russia, Pakistan, the Middle East, and South America, we estimate there are 80 to 100 million couples that could be potential users of an alternative procedure.

INVOcell – A Better Solution



INVOcell is a small plastic gas permeable capsule that is used in infertility treatment for the incubation of eggs and sperm for embryo development. Unlike conventional infertility treatments such as in vitro fertilization (IVF), where the eggs and sperm develop into embryos in a laboratory, the INVOcell utilizes the women's vagina as a natural incubator to support embryo development. This novel INVOcell technology offers patients a more personal approach to achieving pregnancy, decreases the risk of multiple births and reduces the chance for creating unused embryos. This can help to lower the psychological stress noted above with IVF.

Using the maternal vaginal cavity for incubation inside the INVOcell creates a simpler and reproducible procedure. It eliminates the need for expensive, high-tech monitoring of incubators, which often require power backups, air filtration, alarm systems, and instrument maintenance, and quality control technicians. The procedure takes less than 90 minutes and can be performed in a physician's office or in a satellite facility of an IVF center.

Fertilization of the oocytes (immature egg) and early embryo development takes place inside the INVOcell device, which is placed in the mother's upper vaginal cavity for incubation for three days. The upper vaginal cavity provides the necessary physiological characteristics, specifically with respect to pCO_2 concentration and pH, to facilitate development. This is a significant cost and procedural advantage over traditional IVF where the early embryo development is taking place inside a Petri dish in monitored incubators at the IVF center.

…The Device…

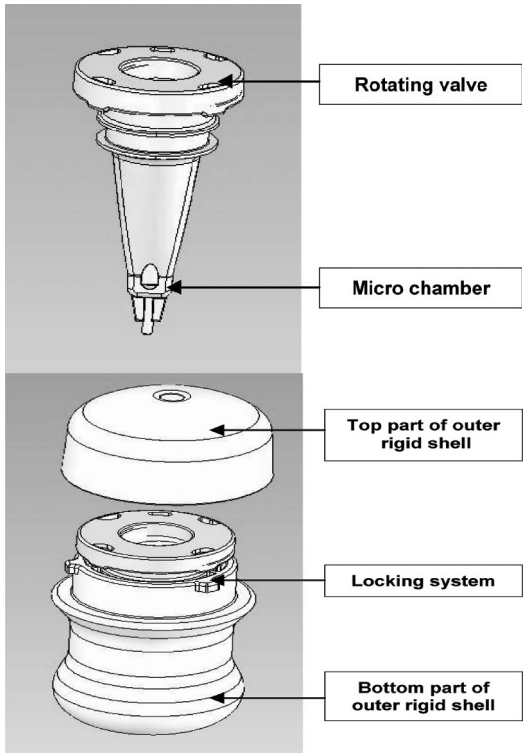
The INVO (intravaginal culture of oocytes) device is a two inch plastic capsule with an inner chamber, an outer rigid cover, and a gas permeable retention system membrane that maintains normal flow of vaginal secretions.

The device has been elegantly designed for both form and function. The rotating valve allows for access to the inner chamber without introduction of air or contamination of the culture medium. The valve also has a small orifice to help protects against variation in pH and potential medium overflow and the loss of gametes.

The micro-chamber (1.1 mL) collects the embryos after incubation and allows for observation with a microscope while still inside the chamber. This is a significant advantage because the physician can transfer the embryos directly from the device into a catheter for transplant into the uterus of the patient.

The outer rigid shell of the INVOcell device is smooth to prevent lesions or irritations in the vagina or the cervical epithelium during the three days of vaginal incubation. The outer wall is also permeable to CO_2 to allow for the ideal physiologic condition for embryo development. The rigid wall protects the inner chamber, but still allows the physician to grasp the device with a forceps for implantation or remove it from the vagina.

The device also has a locking system to prevent an unexpected opening of the outer shell. Finally, holes have been perforated in the membrane of the diaphragm (retention system) for elimination of the vaginal secretions during the incubation period.



The INVOcell device is ISO-10993 tested to assess toxicity, biocompatibility, comfort and retention within the vagina. Clinical and empirical data shows INVOcell to be well-tolerated with no meaningfully significant level of serious adverse effects observable during use. The device is ISO-13485 certified and CE Mark approved for sale in Europe and Canada. It is also available in South America, Africa, and the Middle East. In the U.S., INVO Bioscience has an open investigation drug exemption (IDE) to begin U.S. clinical trial testing. This trial has been requested by the U.S. FDA following a review of the company's 510(k) application.

…How It Works…

INVOcell was rationally developed to be a superior incubator of the growing embryo than with traditional IVF. The procedure is also less tedious and provides a far more personalized and reproducible approach to conception.

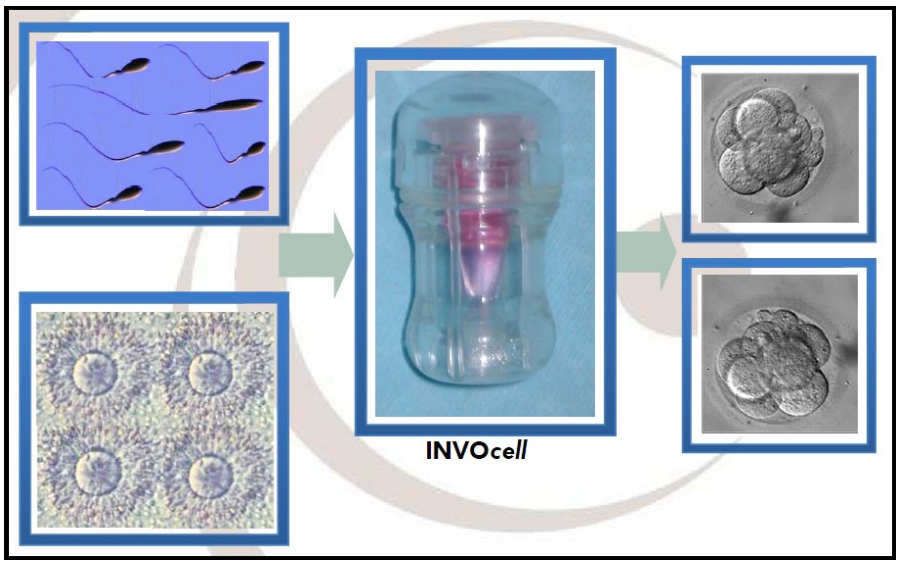
The procedure requires only mild ovarian stimulation instead of the conventional stimulation used in to IVF. Mild stimulation can be accomplished through injection of lower levels of hormones, such as 100mg of clomiphene for five days, or 75 IU of hMG or FSH without starting GnRH antagonists until later in the cycle. Through mild stimulation, physicians can recruit anywhere between five to ten eggs during one procedure. This is far less than the ten to thirty eggs typically recruited during conventional stimulation. The far quicker procedure also results in less discomfort for the patient. It can also be done under a conscious sedation rather than a general anaesthesia. Finally, less GnRH agonist and hCG levels during the cycle provide for a lower risk of overstimulation, and risk of OHSS. It is also a meaningful cost advantage, as the hormones used usually account for up to 30% of the total cost for IVF.

- ✓ Less egg recruitment
- ✓ Less risk of OHSS
- ✓ Lower cost
- ✓ Conscious sedation
- ✓ Less discomfort to patient
- ✓ Quicker procedure

Sperm collection is similar between INVOcell and IVF, although because of the movement of the INVOcell device (inside the patient) a small fraction of sperm is used to inseminate the few (usually three to five) selected oocytes. Usually a ratio of about 10,000:1 is sufficient, which provides a meaningful benefit to couples where the male has low sperm count or low sperm motility. All this can be accomplished without a highly trained embryologist, and without the need for complex lab equipment, so the costs to run the procedure are far lower than with IVF. Also, no pre-incubation of the oocytes are necessary, so the procedure can be initiated at the same time of the collection; this is another time-saving benefit to the couple.

Once the transfer of prepared sperm and eggs in the device is complete, the INVOcell device is closed, placed into a protective outer rigid shell and then positioned into the upper vaginal cavity for 2 or 3 days. A retention system is used to secure the device in the vagina during incubation. This is the ideal physiological condition for embryo incubation. Because the embryos are not stored in the fertility facility in an incubation chamber, there is no need of room air filtration with positive pressure, no need for an alarm or monitoring system, no need for a battery backup, and no need for an embryologist to be on call every night. This potentially allows for a remote facility in more rural areas. Again, this is far fewer costs to the patient and the facility.

After incubation the retention system and the device are removed from the vagina in the physician's office. The outer rigid shell is removed, the device is opened and the contents observed under microscope to find the embryos. The two best embryos are loaded into a catheter and transferred immediately into the uterine cavity. Ultrasound guidance is used in order to improve the quality of the transfer. The entire INVO procedure takes approximately 3 hours over the course of two visits.



…Advantages of INVOcell vs. IVF & IUI…

In our opinion, INVO Bioscience has created a better mousetrap for in vitro fertilization. There are numerous potential advantages of using INVOcell vs. conventional IVF.

1) **Mild Ovarian Stimulation:** Besides the obvious safety advantage of using far less hormonal treatment, which leads to lower risk of developing ovarian hyperstimulation syndrome (OHSS), there is also a big cost advantage. Roughly 50% of the costs of IVF are the hormonal treatments required to stimulate the ovaries. Reducing the medications reduces the cost of the procedure.
   - ✓ Less risk of OHSS
   - ✓ Lower costs

2) **Conscious Sedation:** With INVOcell, retrieval of the oocytes can be performed in the physician's office under a conscious sedation rather than a general anesthesia. Serious risk or complications from general anesthesia include toxic effects on the heart, lungs, liver, and kidneys, or nerve damage. And since the procedure is conducted by the OB/GYN, it limits the need for an endocrinologist, and an embryologist, or an anesthesiologist. This saves the patient both time and money.
   - ✓ Less risk of anesthesia complications
   - ✓ Significant convenience advantage for patient and physician.
   - ✓ Lower costs of procedure and skilled staff

3) **Targeted Procedure:** With conventional IVF, it is common to remove as many as fifteen to twenty eggs at one time. Often more than two to three eggs are fertilized, created an ethical dilemma of what to do with non-selected embryos for implantation. According to SART, there are 500,000 frozen embryos in the U.S alone. Implanting more than two embryos leads to high potential for multiple births. The multiple births rate for IVF is roughly 25%. INVO Biosciences has designed the INVOcell procedure to be as effective as IVF with only

removing three to five eggs, and creating one to two embryos. INVOcell does not contribute to the growing embryo dilemma, and has a significantly lower multiple births rate.

- ✓ Lower egg removal
- ✓ Low risk of multiple births (about 60-70% reduction based on clinical data)
- ✓ Potential ethical advantage

4) **Personalized Approach:** With conventional IVF, the fertilization and incubation of the embryo takes place outside of the womb in a Petri disk or another type of organic material, inside a desktop incubator. The incubator may hold the developing embryos of more than one couple, potentially creating the opportunity for error. With INVOcell, the device is placed in the upper vaginal cavity of the female, creating a far more personalized and interactive approach for the couple.
   - ✓ Less risk for embryo error
   - ✓ More personalized / interactive approach for the couple

5) **Wider Applicability:** During the fertilization procedure for conventional IVF, sperm is mixed with the eggs at a rate of approximately 75,000:1. This could be an issue in couples where the male has a low sperm count or poor sperm motility. For these couples, physicians can attempt an intracytoplasmic sperm injection (ICSI). However, statistics show a higher incidence of birth defects for children born through ICSI-IVF by 2:1 (NEJM, Vol. 346:725-730, March, 2002). During the INVO procedure, only a small fraction of the amount of sperm is used to inseminate the oocytes. Usually a ratio of about 10,000:1 is sufficient.
   - ✓ Advantage for couples where the male has low sperm count
   - ✓ A more natural insemination
   - ✓ Lower potential for birth defects

6) **Lower Capital Requirement:** Besides the lower cost of less pharmaceuticals and on-call physicians, the INVOcell procedure requires far less in terms of sophisticated equipment than conventional IVF. An IVF center requires high-tech ultrasonographic equipment suitable for monitoring ovarian follicular development and retrieving oocytes, an incubator unit, the monitoring and alarm system necessary to keep close watch of the incubator, power system backups, air filtration units, quality control systems, and maintenance. An IVF center can cost upwards of $500,000 to build and maintain. As such, IVF centers are found primarily near major hospitals in large cities. INVO allows these large IVF centers to establish satellite offices that offer INVO as an alternative. Plus, there are an estimated 5,000 OB/GYN physicians in the U.S. who offer infertility services such as IUI, but lack the facilities to offer IVF. INVO offers these physicians an opportunity to expand their in-house services at a low cost.
   - ✓ Broader geographic reach
   - ✓ Lower cost of the center allows for wider socioeconomic availability

7) **Lower Cost:** Adding in all the above factors, including the costs of the hormonal medications, the bill from the endocrinologist, the embryologist, the anesthesiologist, and covering the cost of the equipment, and a typical IVF cycle will cost $12,500 per cycle in the U.S., $6,500 in Europe. The average couple requires 2.2 cycles, meaning the cost per IVF pregnancy is around $30,000 in the U.S, and around $15,000 in the EU. For INVOcell, with applying a similar 2.2 cycles per pregnancy rate, the costs are roughly half that level.
   - ✓ Lower overall cost in the U.S. & EU by about 50%.
   - ✓ Similar cost to IUI with greater efficacy

PROJECTED FINANCIALS

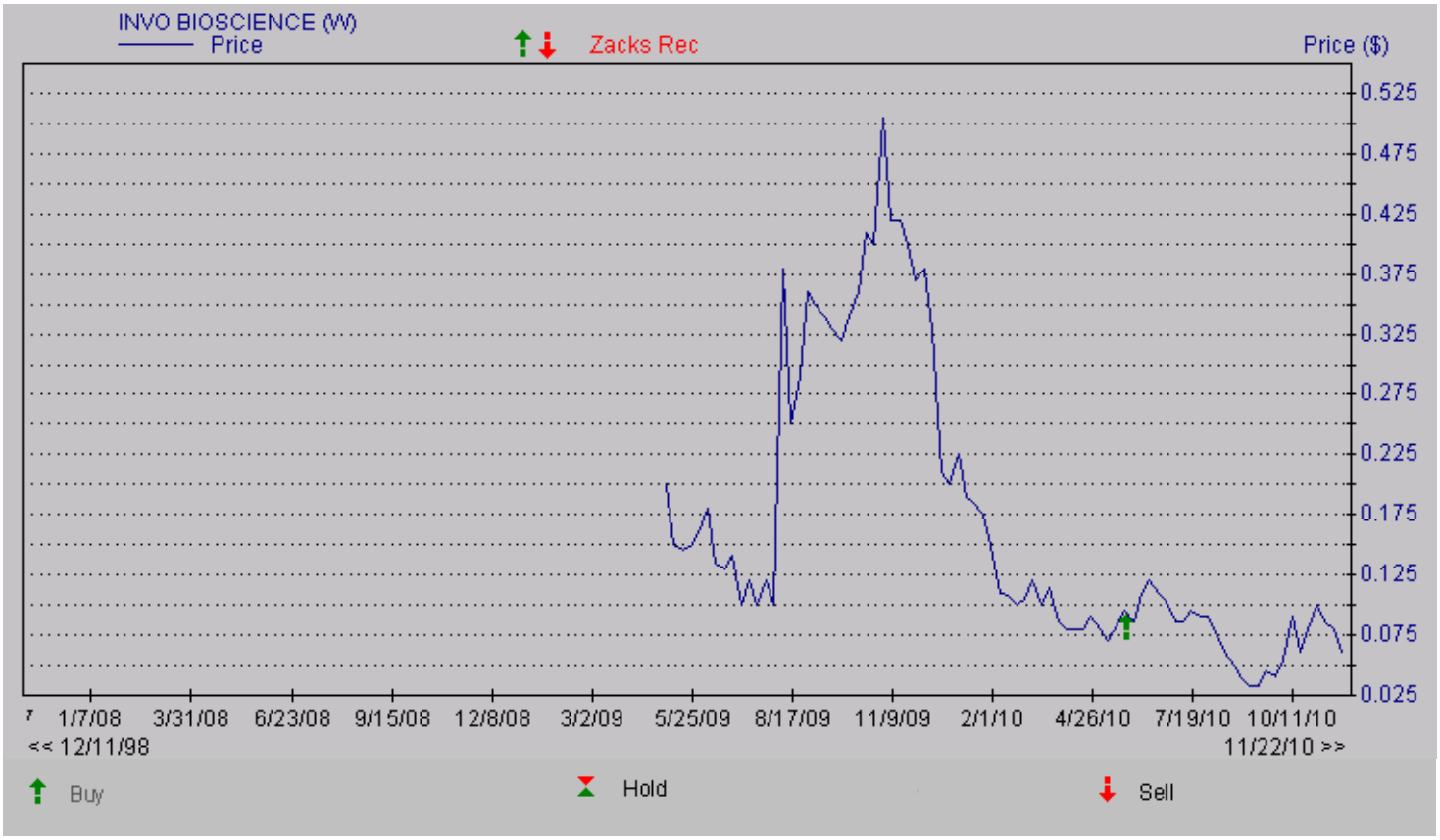
INVO Bioscience, Inc.
Income Statement

	2008 A	2009 A	Q1 A	Q2 A	Q3 A	Q4 E	2010 E	2011 E	2012 E	2013 E
Product Revenues	**$0.038**	**$0.063**	**$0.027**	**$0.011**	**$0**	**$0.020**	**$0.054**	**$0.095**	**$0.155**	**$0.325**
YOY Growth	-	*66.3%*	*-27.1%*	*-32.8%*	*-100.0%*	*189.6%*	*-13.9%*	*74.6%*	*63.2%*	*109.7%*
Total Revenues	**$0.038**	**$0.063**	**$0.027**	**$0.011**	**$0**	**$0.020**	**$0.054**	**$0.095**	**$0.155**	**$0.325**
YOY Growth	-	*66.3%*	*-27.1%*	*-32.8%*	*-100.0%*	*189.6%*	*-13.9%*	*74.6%*	*63.2%*	*109.7%*
Goods / Product Costs	$0.011	$0.041	$0.008	$0.004	$0.002	$0.006	$0.020	$0.029	$0.047	$0.098
Product Gross Margin	*100.0%*	*34.5%*	*69.0%*	*67.8%*	*0%*	*68.0%*	*63.2%*	*69.0%*	*69.5%*	*70.0%*
SG&A	$1.838	$1.857	$0.447	$0.318	$0.363	$0.420	$1.547	$1.750	$2.000	$2.150
% SG&A	-	-	-	-	-	-	-	*1842.1%*	*1290.3%*	*661.5%*
R&D	$0.052	$0.008	$0	$0	$0	$0	$0	$0.150	$0.200	$0.250
% R&D	-	-	-	-	-	-	-	*157.9%*	*129.0%*	*76.9%*
Operating Income	($1.862)	($1.843)	($0.428)	($0.310)	($0.365)	($0.406)	($1.513)	($1.834)	($2.092)	($2.173)
Operating Margin	-	-	-	-	-	-	-	*-1931.0%*	*-1349.9%*	*-668.5%*
Interest & Other Net	($0.012)	($2.819)	$1.299	($0.081)	$0.130	($0.008)	$1.339	($0.050)	($0.050)	($0.050)
Pre-Tax Income	($1.874)	($4.661)	$0.871	($0.391)	($0.235)	($0.414)	($0.174)	($1.884)	($2.142)	($2.223)
Taxes / Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Tax Rate	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Net Income	($1.874)	($4.661)	$0.871	($0.391)	($0.235)	($0.414)	($0.174)	($1.884)	($2.142)	($2.223)
YOY Growth	-	-	-	-	-	-	*-96.3%*	*985.2%*	*13.7%*	*3.7%*
Net Margin	-	-	-	-	-	-	-	*-1983.6%*	*-1382.1%*	*-683.8%*
Reported EPS	**($0.05)**	**($0.09)**	**$0.01**	**($0.01)**	**($0.00)**	**($0.01)**	**($0.00)**	**($0.03)**	**($0.03)**	**($0.02)**
YOY Growth	-	-	-	-	-	-	*-96.7%*	*870.3%*	*-0.5%*	*-7.8%*
Shares Outstanding	36.7	54.7	60.2	61.5	63.6	65.0	62.6	70.0	80.0	90.0

Source: Zacks Investment Research, Inc. *Jason Napodano, CFA*

© Copyright 2010, Zacks Investment Research. All Rights Reserved.

HISTORICAL ZACKS RECOMMENDATIONS



DISCLOSURES

The analysts contributing to this report do not hold any shares of IVOB.

Zacks Investment Research may have, or seeks to have, a business relationship with the companies listed in this report. Additionally, the analysts contributing to this report certify that the views expressed herein accurately reflect the analysts' personal views as to the subject securities and issuers. Zacks certifies that no part of the analysts' compensation was, is, or will be, directly or indirectly, related to the specific recommendation or views expressed by the analyst in the report. Additional information on the securities mentioned in this report is available upon request. This report is based on data obtained from sources we believe to be reliable, but is not guaranteed as to accuracy and does not purport to be complete. Because of individual objectives, the report should not be construed as advice designed to meet the particular investment needs of any investor. Any opinions expressed herein are subject to change. This report is not to be construed as an offer or the solicitation of an offer to buy or sell the securities herein mentioned. Zacks or its officers, employees or customers may have a position long or short in the securities mentioned and buy or sell the securities from time to time. Zacks uses the following rating system for the securities it covers. **Outperform**- Zacks expects that the subject company will outperform the broader U.S. equity market over the next one to two quarters. **Neutral**- Zacks expects that the company will perform in line with the broader U.S. equity market over the next one to two quarters. **Underperform**- Zacks expects the company will under perform the broader U.S. Equity market over the next one to two quarters. The current distribution of Zacks Ratings is as follows on the 1008 companies covered: Outperform- 13.5%, Neutral- 80.7%, Underperform – 5.7%. Data is as of midnight on the business day immediately prior to this publication.

© Copyright 2010, Zacks Investment Research. All Rights Reserved.