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a timely update to XY stockholders

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A World First: Sexed Sperm for Cattle Available Commercially in United Kingdom

It's a world first: Sexed sperm for cattle is commercially available in the United Kingdom—thanks to XY, Inc.

XY has made it possible for UK farmers to be the first in the world to purchase sorted cattle sperm that allows them to pre-select the sex of dairy calves before the animals are conceived.

XY joined Cogent to announce sexed sperm now is commercially available in the UK. The break-through announcement was made at the British Royal Agricultural Show, Stoneleigh, UK, on July 3, 2000.



AT COGENT'S RECENT COMMERCIALIZATION ANNOUNCEMENT IN UK ARE: (LEFT TO RIGHT) JOHN PARKER, CHAIRMAN OF COGENT BOARD OF DIRECTORS; WES BLUHM, COGENT DIRECTOR OF MEMBER SERVICES; TIM HEYWOOD, COGENT MANAGING DIRECTOR; AND DR. MERVYN JACOBSON, XY CEO/PRESIDENT.

"Commercialization of sperm sexing will revolutionize herd management by improving breeding efficiency and herd quality and provide strong animal-welfare benefits," said Dr. Mervyn Jacobson, XY's chief executive officer and president. "This truly is a world breakthrough."

Jacobson noted: "Using XY's method to select for female calves makes the calving process much easier for heifers, themselves calving for the first time, since female calves usually are smaller and easier to deliver."

Cogent reported 93 percent of calves born during field trials were female — as desired.

Jacobson noted XY chose to first commercialize sexed sperm in England for two reasons: To help alleviate the dairy crisis that country is experiencing and because of Cogent's strong historical support for XY.

Last summer, the British government ended subsidies of more than £28 million (\$42 million U.S.) that compensated dairy farmers for unwanted male calves. Stories quickly appeared throughout the British media about desperate farmers slaughtering or abandoning their male dairy calves.

In the coming years, XY plans to offer its technology worldwide and is already negotiating with prospective licensees in many countries.

"XY continues to talk to several American companies and hopes soon to announce its first U.S. licensees," Jacobson said.

XY Business Plan

The XY business model of the future is starting to take shape—and what we see is exciting. We originally planned to spend about \$2.5M in 2000 on research and development to prepare us for our first commercial launch. We assumed this would

“Sexed semen is the most promising new reproductive technology for the livestock industry today. It will revolutionize cattle breeding in the future.”

— From *The Daily Nebraskan*, April 7, 2000, quoting Professor Gene Deutscher, University of Nebraska’s West Central Research and Extension Center in North Platte.

be a net expense for XY. In fact, we already enjoy some innovative sources of cash inflow, and currently, the net expense for 2000 is likely to be reduced to around \$1M. As we grow further in 2001, we anticipate expenses to exceed \$3M, but this now is likely to be offset by revenues of more than \$4M, and so we may yet see our first profitable year in 2001. The same trend should become even more apparent in 2002.

David Cran: Sex Selection Pioneer



DR. DAVID CRAN

When a sperm-sorting breakthrough happens anywhere in the world, David Cran, XY’s director of sperm sorting development in Europe, most likely has been involved. Cran, renowned for his understanding of how sperm and eggs interact at the molecular level, helped produce the world’s first sexed calf in 1992 and the world’s first sexed lambs in 1995. This prolific researcher has authored more than 90 scientific publications and is a sought-after conference speaker (“I’ve forgotten how many presentations I’ve given,” he laughs). Today he is part of an expanding

team of experts who oversee making XY’s sperm-sorting technology more efficient. “I now serve as a research liaison between XY and organizations such as Cogent to ensure the technology works on site,” Cran said.

Hired by XY in 1997 after XY acquired Mastercalf Ltd., Cran notes: “I’ve been in sperm sexing from the beginning and seen the evolution of the whole procedure. Now, XY is putting sexing into practice by merging biology and farming practices. In five years, XY will have developed a system in cattle that is robust and used by farmers as much as artificial insemination.”

Cran earned his Ph.D. from Edinburgh University in Scotland. After a four-year post-doctoral position in Australia he joined the Animal Research Station in Cambridge, known for its extensive pioneering work in animal reproduction. During the next 17 years at Cambridge and at the Babraham Institute, Cran carried out basic studies on the physiology and structure of eggs and spermatozoa, and was involved in the elucidation of the nature of cellular signals during fertilization.

In late 1991 Cran joined Mastercalf Ltd., also located in Cambridge. After XY, Inc. acquired Mastercalf Ltd. in 1997, Dr. Cran assumed his current dual assignment in Europe and Colorado.

XY Funding Update

Stockholders are aware XY has been pursuing a general plan to secure \$10M new capital under a multi-year, three-phase program to cover all XY research and development priorities until XY becomes self-funding from its own revenues. This plan has been enormously successful, and XY has so far secured \$8.3M of the total \$10M. Today, XY has adequate cash reserves to cover all foreseeable commitments.

CORPORATE PRIORITIES REDIRECTED

Knowing fund raising can be most distracting to senior management, XY is redirecting current corporate priorities toward (1) building the upper-management infrastructure of XY, (2) preparing to go commercial and (3) generating self-sustaining revenue streams for XY. We are, of course, still willing to sell stock to raise the remaining \$1.7M, but we shall now pursue this more opportunistically—and preferably, where such stock sales also support the three more urgent priorities listed above.

XY Stockholders

It is a year since The XY Files last reviewed the overall stockholder situation. At that time, there were 60 stockholders, with 6,343,200 shares issued. At \$5 per share, the market valued XY at some \$31.7M.

Currently, there are 63 stockholders, with 6,771,200 shares issued. At the current selling price of \$10 per share, the market now values XY at around \$67.7M.

Obviously, as new funds are raised, so the XY investor base expands and earlier holdings are diluted somewhat, although perceived values continue to grow.

TOP 10 STOCKHOLDERS

Cytomation (USA)	2,000,100	29.54%	Cogent Breeding Limited (UK)	300,000	4.43%
CSURF (USA)	1,000,100	14.78%	Finot Pty Limited (Australia)	200,000	2.95%
Dr. Mervyn Jacobson (Switzerland)	786,833	11.62%	Elizabeth Sy (Guam)	120,000	1.77%
Bovine Technology (Australia)	675,000	9.97%	MediConsumables Pty Limited (AA)	100,000	1.48%
Goyaike SA (Argentina)	400,000	5.91%	Amoeba Fund (UK)	100,000	1.48%

XY Success: Sexed Calves from Sexed Heifers



THIS YEAR’S BIRTH OF SEXED FEMALE CALVES FROM HEIFERS—THEMSELVES PRODUCED VIA XY’S METHOD OF USING ARTIFICIAL INSEMINATION WITH SEXED SPERM—PROVES A POINT: SEXED HEIFERS DISPLAY NORMAL FERTILITY RATES AND PRODUCE HEALTHY CALVES. AS XY CEO MERVYN JACOBSON POINTS OUT, THIS HISTORIC GROUP OF FEMALES ALSO UNDERSCORES THE BREAKTHROUGH ANIMAL WELFARE AND ECONOMIC BENEFIT OF SEXED SPERM: “USING OUR METHOD, EVERY PREGNANCY CAN BE A VALUABLE PREGNANCY; EVERY CALF, A WANTED CALF.”

XY Activity Builds Over Last Six Months

The arrival of the new millennium has been good for XY. Major developments over recent months are summarized below. Additional details may be obtained in subsequent pages of this update, from our website or by contacting XY.

“The Internet, along with incredible advances in geographic information systems, cell sorting, live-stock identification and other fields, has brought science and agriculture closer. Non-Internet names such as... XY, Inc...and others will become increasingly known. These high-tech companies advance not only the cause of science but also farming itself.”

—From May 4, 2000 editorial by Christopher Wood, Northern Colorado Business Report

JANUARY

- Sex selection was a major theme at the IETS Conference in Maastricht, Holland. Of a total of 20 speakers, 15 came from XY, either as employees, consultants or collaborators.
- XY settled terms for Cogent’s future commercial license for cattle in UK and Ireland and also agreed upon criteria for field trials that would permit Cogent to start commercial sales in UK.
- XY expanded its support for endangered species by reaching an agreement with the Institute of Zoology, London, to jointly pursue a project on Mohor gazelles at a conservation sanctuary in Spain.
- XY also agreed to work with breeders of an endangered horse breed, the Cleveland Bay, to help increase the number of female offspring.

FEBRUARY

- XY settled formal agreements with Goyaike SA of Argentina, under which Goyaike invests substantially in XY,

contributes to XY’s research budget, secures rights to become the exclusive licensee for cattle in Argentina, Chile and Uruguay, and nominates a representative to the XY Board of Directors for this year. (See complete story on XY and Goyaike S.A. agreement.)



XY CEO VISITS GOYAIKE SA, IN ESCOBAR, ARGENTINA, AND MEETS ROSEMARY, A WELL-PRESERVED ELDERLY JERSEY OF HIGH-GENETIC BACKGROUND.

MARCH

- XY reached agreement with the Livestock Improvement Association of Japan to pursue a joint research collaboration in Japan.
- XY also reached agreement with Animal Reproduction Company of Australia to jointly research applications of pre-pubertal oocyte collection in heifers together with sexed semen.

APRIL

- XY and Colorado State University reached agreement on the Year 2000 horse research program.
- Dr. Alejandro Cantarelli, representing Goyaike SA of Argentina, was duly appointed the seventh member of XY’s Board of Directors.



DR. MERVYN JACOBSON SIGNS AGREEMENT IN TOKYO WITH KUROJI ASANO, PRESIDENT OF THE LIVESTOCK IMPROVEMENT ASSOCIATION OF JAPAN.

“In an activity such as this...any percentage of males, no matter how small, is undesirable. What is the solution? The interesting thing here would be to direct or pre-determine the sex before the embryo is formed. The only way to achieve this is to work with the X and Y components of the semen.”

—From the 1997 Annual Report, Argentine Polo Association

MAY

- XY's Scientific Advisory Committee conducted its annual review in Fort Collins.
- On May 17, XY announced the birth of "La Luna," the first filly produced using sexed semen, artificial insemination and 5-million sperm (just 1% of what is generally regarded as a minimal dose of 500-million sperm).
- XY reached agreement with Omaha's Henry Doorly Zoo, Omaha, Neb., to collaborate on a range of activities. XY and the Zoo will be sole sponsors of the endangered species symposium at the Year 2001 IETS Conference. XY and the Zoo also will work together to help endangered species, including gaurs (an endangered bovine breed indigenous to Southeast Asia) and Western Lowland gorillas. (See complete story on XY and the Zoo's Naida Loskutoff.)



GAURS – AN ENDANGERED BOVINE SPECIES

JUNE

- Called the "Bold Plan," XY reached formal agreement with Cytomation to jointly develop the next generation of sperm sorters, to cross-license all know-how to each other within agreed fields and to expand XY's field to now include all sperm-sorting applications. (See story on back page.)
- On June 5, XY announced the birth of "Alexander the Great," the first sex-selected colt produced using sexed semen, artificial insemination and just 5-million sperm.
- XY reached further agreement with Cogent, establishing the date on which Cogent will go commercial in the UK this year. This momentous event was formally announced at the Royal Agricultural Show in UK on July 3, 2000. (See front-page story.)
- On June 6, XY received its first-ever patent for work done "in-house" by XY employees and consultants.
- On June 26, XY reached agreement with Hokkaido Livestock Improvement of Japan to pursue research and future commercial collaboration in Japan.

"The livestock industry should accept that it has to find ways to reduce the number of unwanted progeny. Developments in biotechnology, such as sexing of semen in dairy production, could also be used to tackle the problem."

—From the annual report of the Farm Animal Welfare Council, UK, as reported in Farmers Weekly, May 19, 2000.



LA LUNA (LEFT) AND ALEXANDER THE GREAT NUZZLE.

XY and Doorly Zoo's Naida Loskutoff Team Up in the Conservation of Wildlife

The first lesson Dr. Naida Loskutoff teaches students during summer internships in Africa is that "wild" is a myth on all continents.

Dr. Loskutoff, who serves as reproductive physiologist at Omaha's Henry Doorly Zoo, says simply: "The manipulation of the environment by humans means animals have to be managed today in order to survive."

To that end, Dr. Loskutoff has dedicated her life and her professional energies to championing assisted-reproductive technology for the conservation and genetic management of wildlife, including endangered species.

She travels to Africa annually to work with the South African Research Expedition. As well, Dr. Loskutoff has taught numerous assisted-reproduction short courses around the world in such countries as Dubai, Brazil, Mexico, South Africa, Thailand and China.

Dr. Loskutoff serves as a reproductive advisor for several Species Survival Plans, which function under the auspices of the American Association of Zoos and Aquariums, including those designed for the okapi and the gorilla. She also is a member of the AZA Genome Resource Banking Scientific Advisory Group.

"I am just ecstatic that you have committed XY to benefit the Cleveland Bay breed from your process. You're at the top of my favorite person list today, that's for sure."

—Quoted from an April 20, 2000, letter to XY CEO Mervyn Jacobson from Linda Yaciv, breeder of the endangered Cleveland Bay horse, British Columbia, Canada.

species by responsible application of its powerful sexing technology. Because of Dr. Loskutoff's work with the Species Survival Plan and coordinating the gorilla's Species Survival Plan to incorporate assisted reproduction in managing the captive gorilla population in North America, she is particularly enthusiastic about XY's cutting-edge applied research in sorting sperm.

"XY's sperm sorting work and its reputation as a world-class scientific team led me to call Dr. Jacobson. I personally know many of XY's scientific collaborators—Dr. George Seidel, Dr. Larry Johnson, Dr. Dettlef Rath—and have been quite impressed with XY presentations at recent annual meetings of the International Embryo Transfer Society," she says.

Dr. Loskutoff points out, "My zoo and all zoos really are facing a crisis: Among our most popular animals—elephants and gorillas—we have an over-population of males and aging females who are no longer breeding.

The direction of the Species Survival Plan, says Dr. Loskutoff, is to develop systematic management and research plans, including assisted-reproduction programs to produce more offspring within such species as tigers; gorillas; elephants; and gaur, an endangered bovine breed indigenous to Southeast Asia.

Enter XY, Inc. and its commitment to helping preserve endangered

"Clearly, sperm sorting can help us deal with this crisis while humanely managing and conserving fragile animal populations."

Currently, XY and Omaha's Henry Doorly Zoo are collaborating on a number of research projects. Dr. Loskutoff visited XY in June to work with Dr. Duane Garner on Western Lowland Gorilla sperm sorting protocols. In addition, XY and the Zoo are working on gaur.

"We expect success with both," says Dr. Loskutoff. "With the gaur, XY can build on its extensive research and success with bovine reproduction and sperm sexing. While gorilla sperm have never before been sexed, we're confident that experience with human sperm-sexing techniques will help."

The positive collaboration between XY and Omaha's Henry Doorly Zoo is obvious in one very public upcoming event: In January 2001, XY and the Zoo will co-host "Assisted Reproductive Technology for the Conservation and Genetic Management of Wildlife," an all-day satellite symposium of the highly respected IETS conference. The satellite conference will be held within the Henry Doorly Zoo.

XY Signs Agreement with Goyaike S.A. in Argentina

XY, Inc. has signed an agreement with Goyaike S.A., a leading cattle-breeding company in Argentina, that will—for the first time—bring XY's sperm-sorting research for dairy cattle to South America.

Goyaike (pronounced Goy-czhek-ee) is the lead investor in XY's third round of funding. XY, Inc. expects to secure a total of \$6M from several investors, including Goyaike, when round three funding closes in the coming months.

As part of the agreement, Goyaike entered into a research collaboration with XY, secured future rights to commercialize XY's technology in Argentina in the coming years and will provide a director to XY's board of directors in the current year.

"Goyaike understands the important role sperm sorting can play in boosting the quality of dairy-cattle herds and in reducing unnecessary slaughter of animals," said XY CEO Mervyn Jacobson. "The agreement with Goyaike falls nicely in line with XY's strategy to make sperm-sorting techniques available worldwide."



WESTERN LOWLAND GORILLA INFANT

The “Bold Plan”

XY has always had close historical ties to Cytomation. Cytomation, with CSURF, was an original founder and incorporator of XY. Today, Cytomation holds a substantial equity stake in XY, and also important formal agreements regarding instrument supply, etc. However, this closeness can sometimes prove challenging, as each company moves forward quickly, and each pursues overlapping but separate opportunities and destinies.



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It must be emphasized that XY and Cytomation each remain separate companies with separate stockholders, Boards of Directors and missions. Thus, directors and management are obligated to carefully perform in the best interests of their individual companies.

“The obligations and rights of each company had to be clearly defined and protected while both companies still work and without giving away proprietary information, resources or the like.”

—XY CEO

Finally, an initiative proposed by Attorney Luke Santangelo led to a simple concept that appeared to satisfy such concerns. On June 1, 2000, XY and Cytomation executed their “Bold Plan.”

BOLD PLAN CLARIFIES GROUND RULES

The plan clarifies:

- each company cross-licenses the IP of the other in their separate fields
- work to begin immediately on the next generation of sperm sorters, and
- XY secures significant rights to MoFlo in all applications concerning sperm.

The last ground rule, in particular, means that even the human sperm-sorting applications of MoFlo will be controlled by XY. The reasoning: To ensure sperm sorters are not innocently sold for “human application” by Cytomation and later redirected by the customer in a foreign country toward animal applications.

The XY rights also cover sperm sorting for purposes other than sex selection. It is suggested that selection for positive and negative traits and genes by flow cytometry may become big business in the future—and XY now has the exclusive right to use MoFlo to sort sperm for such traits—either in conjunction with sex selection or separately.

We truly have achieved an important win-win situation with Cytomation.

Intellectual Property

In the area of biotechnology in which XY operates, intellectual property rights (patents and know-how) are the undisputed “crown jewels” that ultimately determine rights, obligations, power—and eventual commercial success or failure. XY now holds important exclusive rights from USDA (sexing sperm using a flow cytometer in non-human mammals), from CSURF (low dose, freezing of sperm, etc.) and from Cytomation (applications of MoFlo sorter, etc. to sperm, etc). XY also holds rights and licenses with several leading research institutes globally.

A VALUABLE XY RESOURCE

One additional XY resource should not be overlooked: the powerful intellectual competence of XY’s own employees. Over recent years, XY employees have been actively working on a number of new projects and inventions of special interest to XY, and XY has filed many new patent applications to secure very broad new patent positions in the future. Much of this work has proceeded quietly—even secretly—to comply with the strict novelty rules of the patent process.

THE FIRST XY PATENT

After several years of persistent effort, we are delighted to report that the first XY patent has just been issued by the United States Patent Office on June 6, 2000. This patent is now public information and the details can at last be disclosed. Its official title is “System For Improving Yield of Sexed Embryos in Mammals,” and the inventors are Dr. George Seidel of CSU with XY employees Lisa Herickhoff and John Schenk. This is good news for XY and should be seen by stockholders as only the first fruit of a careful, expensive, multi-year effort by XY to secure significant additional rights into the future and to strengthen our position as THE world leader in sex selection.

As always, if you have any questions, please feel free to let us know.

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