



NBS (ASE) **\$4.99**

Rating: **Hold**

Price Target: **N/A**

Report Type **INITIATION OF COVERAGE** August 31, 2007

## NeoStem, Inc.

### COMPANY PROFILE

NeoStem is involved in the collection, processing and storage of adult stem cells, to be used by the donor if the medical need were to arise.

### MARKET DATA\*

52-Week High/Low	\$10.10/\$2.52
Ave. Daily Volume (Approx)	7,000 sh
Shares Outstanding (Approx)	3.95 Mil sh
Fully Diluted (Approx)	N/A
Public Float (Approx)	N/A
Short Position/Ratio (Approx)	N/A

\*Numbers have been adjusted to reflect recent 1:10 reverse stock split.

### FINANCIAL DATA

Market Capitalization (Approx)	\$20 Mil
Cash & Equivalents (6/30)*	\$85,382
Book Value (6/30)*	\$0.25
Long-term Debt (6/30)	0
Short-term Debt (Approx 6/30)	\$147,000
Total Debt/Equity*	15%
Total Debt/Total Capitalization*	13%

\*Does not include proceeds from recent secondary.

	Revs	EPS	Oper Cash Flow
Q1	\$ 6,262	(1.51)	\$( 827,722)
Q2	\$ 6,262	(1.20)	\$( 955,904)
Q3*	\$ 6,262	(1.10)	\$(1,084,008)
Q4	\$ 26,938	(1.00)	\$( 771,147)
2006**	\$ 45,724	(4.81)	\$(3,638,831)
Q1***	\$ 55,895	(0.73)	\$(1,700,294)
Q2	\$ 6,017	(0.74)	\$( 923,571)
2007			

\*EPS in 2006 were adjusted for a 1:10 reverse stock split in August, 2006. Q4 2006 adjusted is approximate.

\*\* (Ongoing results will not be exactly comparable to previous results (2006 & previous) due to a prior, negligible, business operation).

\*\*\*EPS for all quarters have been adjusted for a 1:10 reverse split in August, 2007.



Chart is adjusted for the recent 1:10 reverse split

[www.neostem.com](http://www.neostem.com)

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### INITIATING COVERAGE WITH A HOLD RATING

### HIGHLIGHTS

- NeoStem is the first, and currently the only, provider of “banking” services for adult stem cells in North America.
- There are currently 2 stem cell collection facilities in operation (including one of HemaCare’s), with 2 more opening in the very near future.
- It’s important to differentiate between “adult” and “embryonic” stem cells. Also, the stem cells being collected and banked are intended to be used, if needed, by the *same* person, on an “autologous” basis.
- Stem cell transplants are currently used as “standard” treatments for a variety of illnesses, primarily various cancers and blood diseases.
- A recent pact with CareCredit, a GE Money Company, makes NeoStem’s services more readily affordable.
- The company was listed on the American Stock Exchange on August 9 (previously OTCBB).
- We believe that potential future success will be closely related to advancements in stem cell treatments, geopolitical events, and increased awareness and acceptance of this service among the general public.
- Initiate Coverage with a Hold rating.

**PLEASE READ THE IMPORTANT DISCLOSURES AND CERTIFICATIONS AT THE END OF THIS REPORT**

## **INITIATING COVERAGE OF NEOSTEM, INC. WITH A HOLD RATING**

NeoStem is an emerging growth company involved in the collection, processing and storage of adult stem cells. These stem cells would be used by the donor on an “autologous” basis if the medical necessity arose in the future.

### **GENERAL INVESTMENT OVERVIEW**

NeoStem is involved in the collection, processing and storage, or “banking”, of adult stem cells. The stem cells are collected in anticipation of a potential future medical need, generally to be used by the client himself. The company is aiming to initially generate revenues from clients who are banking their own stem cells and from physicians in the form of “start-up” fees for the opening of stem cell collection facilities, with additional markets also targeted.

It is extremely important to note that we are discussing “adult” stem cells in this report and *not* embryonic stem cells. There is a tremendous amount of confusion and misunderstanding regarding this topic. Adult stem cells are collected from adults (and children), or the newborn from their umbilical cord blood and placentas, and are used in procedures known as bone marrow transplants, or stem cell transplants, “standard” medical treatments that treat dozens of diseases and illnesses, most of them, if not all, fatal. These illnesses include many Leukemias, Lymphomas, Multiple Myeloma as well as many others. Using one’s own stem cells is referred to as an autologous (auto) stem cell transplant, while using the stem cells of a donor, including cord blood, is referred to as an allogeneic (allo) stem cell transplant. Research using embryonic stem cells is currently extremely controversial and they are not currently used in *any* “standard” medical treatments.

The basic reasoning behind the NeoStem’s services is for currently healthy individuals to “bank”, or “store”, their own stem cells in the event that in the future, if they were to develop a serious medical condition, they could then access their own “previously healthy” stem cells for a potential medical treatment.

NeoStem is the first, and currently the only, provider of banking/storage services of adult stem cells in North America. On a global basis the number of such companies is currently extremely limited and this is an extremely new field. There is however a growing global market for the collection and storage of umbilical cord blood, collected at childbirth, due to the stem cells that the cord blood contains. NeoStem is essentially aiming to recreate this market, but is aiming the service at a different target “client” and market.

The company is a relatively newer enterprise, only generating revenues from their stem cell operations for the past three quarters. We believe that the company’s future success will be primarily related to advancements in stem cell treatments, geopolitical events, acceptance by the Federal, state and city governments, as well as the development of awareness and momentum among consumers and physicians.

We are endeavoring in this report to discuss not only NeoStem, but also the adult stem cell sector in general. We believe the only way to clearly understand NeoStem is by having a basic understanding of adult stem cells, primarily stem cell transplants and their uses, the advantages and disadvantages of various stem cell treatment methods, and the potential catalysts that could conceivably affect NeoStem, positively as well as negatively. We also believe there are many people interested in learning more about this sector and who might have the desire to use a service like NeoStem’s to bank their stem cells as “insurance” against the possibility of developing an illness in the future that is either *currently* treatable by stem cell transplants, or could *potentially* be treatable in the future. These people might be interested or curious about stem cell storage and the reasons why they would want to possibly take advantage of these services and store their own, and/or their loved ones’, stem cells.

We are initiating coverage of NeoStem with a Hold rating. We believe that the sector has great potential, however, we believe the company has to first develop momentum as far as gaining acceptance and generating revenue momentum before we can recommend purchasing the stock at these levels. We believe, however, that potential catalysts could materialize that could affect the company and/or its stock price. In the meantime, we will closely monitor the company and its progress.

## **BACKGROUND: STEM CELLS, STEM CELL TRANSPLANTS**

### **ADULT STEM CELLS/HEMATOPOIETIC STEM CELLS**

Stem cells are essentially the building blocks of living organisms. Though embryonic stem cells generate a great deal of attention and controversy, and do have a tremendous amount of future curative medical potential, it's actually adult stem cells that are currently generating the majority of the research and actual treatment efforts. Adult stem cells can be found in adults, children, and the newborn. There are various types of adult stem cells, but in this report we will be focusing on only one, hematopoietic stem cells. We would point out that there are between approximately 50-75 illnesses and diseases that are currently being treated using hematopoietic stem cells (*excluding* additional "experimental" treatments and clinical trials), and *none* are currently being treated with embryonic stem cells (as far as "standard", medically accepted treatments).

Hematopoietic stem cells are primarily found in the bone marrow, and are the source of the creation and constant renewal of the body's blood supply and immune system, hematopoiesis. Hematopoietic stem cells produce blood cells and also additional hematopoietic stem cells. The blood cells produced are red blood cells (which transport oxygen), white blood cells (leukocytes, which fight infection) and platelets (which induce clotting). In a normally functioning adult there are a tremendous amount of blood cells produced constantly, approximately 100 billion red blood cells and 400 million white blood cells produced *hourly*. The adult stem cells that we refer to in this report, as far as stem cell transplants and collection and banking services, are hematopoietic stem cells. Hematopoietic stem cells are also the only adult stem cells that are currently used in accepted "standard" medical treatments.

The role of hematopoietic stem cells in medical treatments is as a tool to literally replace and rebuild the bone marrow in patients whose bone marrow has either been damaged or destroyed by various diseases including blood cancers, or as a "rescue" to replace bone marrow that has been destroyed or eradicated after using high doses of chemotherapy and/or radiation therapy (radiotherapy) as part of a treatment procedure. This has been done to eradicate a disease, or perhaps a solid tumor, in the patient. The "replacement" hematopoietic stem cells either come from the patient themselves (autologous) or from a donor or umbilical cord blood (allogeneic), and are infused into the patient through an intravenous IV solution. The replacement hematopoietic stem cells will then "engraft" into the patient's bone marrow, and will rebuild the patient's immune system and blood supply.

### **STEM CELL TRANSPLANTS (SCT's)**

The procedure where hematopoietic stem cells are used to restore a patient's bone marrow is referred to by various terms, however in this report we will use the terminology "stem cell transplant" (SCT). It is not a transplant as most people envision, it is just an infusion containing the stem cells into a patient via an Intravenous (IV) solution. This treatment methodology has been used for almost forty years, it is currently accepted by the medical community as a "standard" medical treatment, and is generally covered by the insurance companies.

These treatments were originally referred to as "bone marrow transplants" (BMT's), because the stem cells previously were literally collected directly from the bone marrow, in a relatively invasive procedure. This is because the bone marrow is where the majority of the body's hematopoietic stem cells are produced and found. Currently however the stem cells are collected in a much less invasive procedure. The patient, or a donor, is given a "mobilizing" drug, a (granulocyte) colony stimulating growth factor, in NeoStem's case Neupogen (G-CSF from Amgen-AMGN), on 2 consecutive days, with the collection procedure following by approximately 2-3 days. This drug causes a very large amount of hematopoietic stem cells to be produced and mobilized to the donor's blood stream. These stem cells will now be found in great numbers in the donor's blood supply as "peripheral blood stem cells, or "PBSC's". Blood is then withdrawn from the patient (using an intravenous IV catheter in the arm), and the PBSC's are separated from the blood by an Apheresis machine. The cells are then cryogenically frozen, either to be stored on a short-term basis for use as a near-term treatment (or on a long-term basis, as in NeoStem's service). If umbilical cord blood is used as the source of the stem cells, the blood has already been collected and frozen at childbirth and the stem cells will be separated out at a later stage. Besides the terms "bone marrow transplants" and "stem cell transplants", additional terms often used are "peripheral blood stem cell transplants" (PBSCT's) and "hematopoietic stem cell transplants" (HSCT's). In addition, the term "Cord Blood Transplant" (CBT, CBT's) is used when cord blood is used as the source.

We would point out that SCT's are an extremely serious procedure, with a very high risk of extremely serious complications and possibly death, and are not undertaken unless the patient's underlying medical condition is extremely serious, or potentially fatal. It is generally restricted to certain patients based on their age and medical condition, though there are "alternatives" to standard SCT's that broaden these restrictions that we cover later in this report. We would also note that it is not the *procedure* itself that is dangerous, but instead the pre-conditioning procedure generally used before the transplant (chemotherapy and radiotherapy), and then the potentially very long and difficult recovery period after the transplant. This is due primarily to the success, or the lack of, "engraftment" of the new, infused, hematopoietic stem cells, and the extreme risk of infection. And if an allogeneic transplant, there are additional risks, primarily including graft versus host disease (GVHD) and graft rejection. However, we would importantly point out that SCT's, though possibly a treatment of last resort due to the extreme nature of the total procedure, are also generally a life-saving procedure, and generally the *only* one available as a suitable treatment. They can, in essence, provide a "rebirth", a "second chance", a potentially life-saving opportunity to people that otherwise would almost certainly be faced with a fatal illness.

#### SCT's: PRE-TRANSPLANT, TRANSPLANT, POST-TRANSPLANT

##### PRE-TRANSPLANT

The pre-transplant procedure will likely involve a conditioning regimen of high-dose chemotherapy and/or radiation therapy. The purpose is to eradicate all traces of the previous disease and also generally to eradicate the bone marrow in order to improve the outcome of the soon to be transplanted stem cells. The patient is given immunosuppressant drugs in order to fight potential infections following the SCT, since the patient will not have a functioning immune system, as well as to not interfere with the stem cells from a donor, in the case of an allogeneic SCT. (These drugs alternatively however might be given at a later stage of the transplant process). PBSC's will be collected, from either the patient if auto, or the donor, if allo, and frozen. If cord blood is used as a source it has already been collected and frozen. Again, using NeoStem's service, the pre-illness (or early onset) stem cells might have already been collected and frozen a long period of time previously.

##### TRANSPLANT

The transplant procedure itself is relatively simple and risk-free. The hematopoietic stem cells are infused into the patient through an intravenous IV solution. The process takes a couple of hours.

##### POST-TRANSPLANT

The patient is at extremely high-risk of infection for at least the first few weeks following the transplant, until their immune system begins to be restored and will remain at risk for a considerable period of time. The "engraftment" of the infused hematopoietic stem cells into the patient's bone marrow occurs over several weeks. There is the possibility that the graft might be rejected, especially in an allogeneic transplant. The engraftment period will generally be slightly longer if cord blood has been used as a stem cell source. In an allogeneic transplant there is a high risk of graft versus host disease (GVHD), where the *donor's* immune cells literally attack those of the recipient. The less of an "HLA match" (to be discussed later), the greater the risk of GVHD, which in its worst case can be life-threatening. There is one advantage to allogeneic transplant however, and that is the "graft-versus-tumor" (GVT/GVL/GVD) effect, where the donor's immune cells can actually defeat the recipient's diseased cells. Though engraftment can occur within several weeks, the complete restoration of the immune system can take several months or longer.

#### **DISEASES/ILLNESSES CURRENTLY TREATED WITH SCT's**

Stem cell transplants are currently used as "standard", medically accepted treatments for approximately 50-75 blood cancers, diseases and illnesses as well as some solid tumors. This number includes both autologous as well as allogeneic transplants. Stem cell transplants are generally used for "acquired" illnesses and diseases, and are used generally in conjunction with various other treatment procedures such as chemotherapy and radiation therapy. They are used where the bone marrow has been destroyed or seriously impaired, very often due to the high doses of chemotherapy and/or radiotherapy that have been applied in order to eradicate the existing disease. Insurance

companies will generally pay for these transplants as “medically necessary”, “covered” treatments. They are used to restore the bone marrow and its blood cell production function.

The cause of many of these diseases is unknown, however, certain known or speculated causes include smoking, employment in and exposure to “high-risk” environments with exposure to radiation, toxic chemicals or other substances, and other factors. It is for these reasons that NeoStem will target certain potentially high-risk markets.

The primary diseases that stem cell transplants are used as treatments for are blood and immune system cancers and diseases (hematologic/hematopoietic malignancies), and other illnesses that damage or destroy the bone marrow, the body’s machine for blood cell and immune system production. The primary diseases and illnesses that SCT’s are used in the treatment of include Leukemias, Lymphomas (Hodgkin’s Disease, non-Hodgkin’s Disease), Multiple Myeloma, Myelodysplastic Syndromes, storage disorders, bone marrow failure syndromes, as well as many other diseases and solid tumors. We would note that out of the approximately 50-75 illnesses currently treated with SCT’s, certain treatment indications are specifically for autologous transplants, some for allogeneic, some for either, some are for pediatric treatment only and some for adult treatment only.

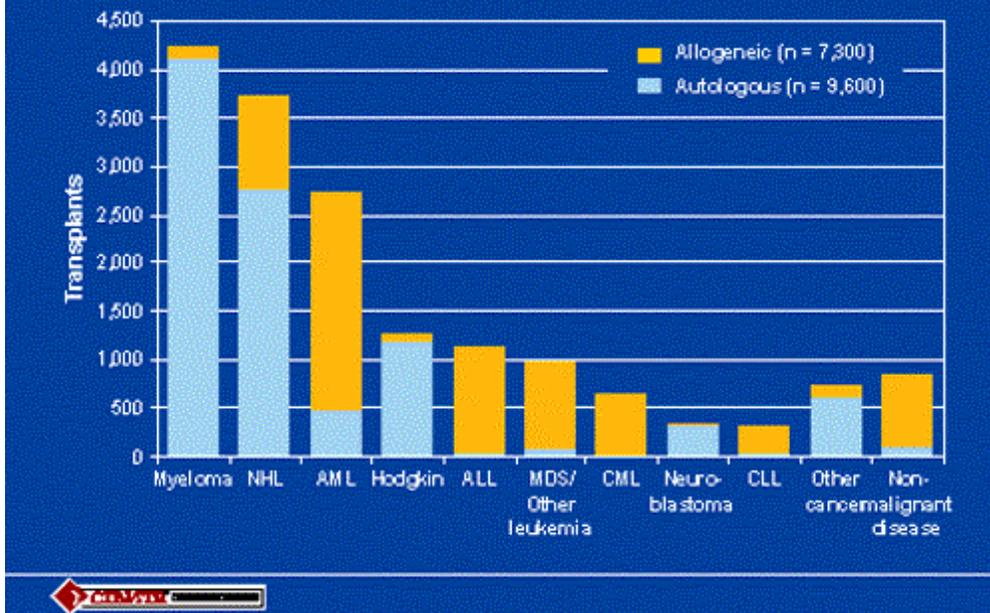
We would very importantly note that there are a great many SCT trials currently ongoing that are not yet considered “standard” treatments for illnesses such as Diabetes, cardiac disease, neurological diseases, solid tumors and many other ailments, and many of these trials have yielded extremely positive results. (We would caution readers however that many of these may never proceed past the trial stages and never become accepted procedures).

We believe that there will be a broader range of SCT treatments used in the future, some even in the near future. However, in this report we are primarily concerned with what are *currently* accepted as “standard” treatments, rather than any potential future applications, no matter how promising or exciting. When we use the term “standard”, we are referring to a generally accepted usage among the medical community as well as the general acceptance by the insurance industry for payment of these procedures. The cost of SCT’s can range from approximately \$100,000-\$250,000, so these costs can obviously present major obstacles to both the uninsured, as well as to those who are using a SCT for a procedure that is *not* considered a “standard” procedure.

We would add one very important point. All current studies and statistics concerning stem cell transplants involve either stem cells from a donor (allogeneic), or stem cells from the patient (autologous). However, all autologous stem cell transplants have previously involved stem cells that are generally already diseased, or potentially diseased. After they are withdrawn from the patient they are generally then “purged” to attempt to remove any disease traces before being infused back into the patient, in the hope that these purged stem cells will then be able to restore the patient’s bone marrow and functionality, as well as combating any remaining traces of disease. A service like NeoStem’s has only been very recently available, there has never previously been the option to bank a patient’s stem cells either “pre-onset”/“pre-disease”, or at an earlier stage of their illness. We believe that many illnesses that previously were indicated for only allogeneic transplants will now be suitable for autologous transplants, and in many instances auto will be preferable. There is also the significant potential that the long term mortality/survival rates for certain, or even many, auto SCT’s would improve materially based on the use of “banked” pre-onset stem cells. This potentially opens up a new and very large opportunity for the uses of additional, autologous, stem cell transplants in the future.

There are approximately 16,000 SCT’s performed annually in the U.S., and approximately 40,000 on a global basis. Out of that U.S. number, approximately 9,500 are autologous and 6,500 are allogeneic. These numbers obviously do not include those cases where patients are waiting to have SCT’s performed and suitable donors cannot yet be found. As many as 9,000-14,000 people in the U.S. die annually while waiting for suitable stem cell donors. However, with the increasing use of (double) cord blood transplants being used for adult patients, this number will probably decrease noticeably over the next few years. Approximately 115,000 people in the US are diagnosed with various blood cancers annually, which represents approximately 8% of all cancers diagnosed in the US. We would add that all of these statistics exist under “normal”, average, conditions. These numbers could go higher, potentially substantially higher, in the event of any unforeseen circumstances such as a major radiation or toxic chemical or gas accident, for example.

## Indications for Hematopoietic Stem Cell Transplants 2003 – North America



### ALTERNATIVES TO “COMMON” SCT’s

#### “MINI” SCT’s

Non-myeloablative stem cell transplants (as opposed to “myeloablative”, the “common”, transplants) are also known as reduced-intensity transplants or “mini” transplants. Mini transplants are suitable for a wider range of patients as far as age and medical condition due to the less toxic preparative regimen used. There are advantages and disadvantages to mini transplants, however we will not cover this in detail in this report.

#### CORD BLOOD TRANSPLANTS (CBT’s)/UMBILICAL CORD BLOOD

The use of umbilical cord blood as a source of hematopoietic stem cells has become well accepted over the past 10-15 years. Though initially used for pediatric to pediatric stem cell transplants (“cord blood transplants”- “CBT’s”), cord blood is increasingly being used for pediatric to adult stem cell transplants, often using two cord blood units, referred to as double cord blood transplants. The reasoning behind this is that cord blood units generally have a smaller number of hematopoietic stem cells, so a second cord unit is used to supply an increased and adequate number of stem cells to aid in the success of an adult engraftment. SCT’s using cord blood are allogeneic, since the cord blood is a donor source of stem cells. We would also note that the stem cells are “adult” stem cells, just collected at childbirth.

Umbilical cord blood and placenta cord blood are collected at childbirth. The cord blood is either “donated” by the parents to “public” cord blood banks and maintained by government-mandated organizations, or is banked for potential future self-use (autologous, or potentially by a family member) with “private” cord blood banking companies. In either case the blood is collected and then frozen cryogenically. Cord blood banking began in the early 1990’s and accelerated in the mid-to-late 1990’s, and has grown relatively rapidly since. The use of cord blood as a donor source for allogeneic transplants has certain advantages and disadvantages, which we will cover later in this report.

## **AUTOLOGOUS/ALLOGENEIC SCT's**

### **AUTOLOGOUS SCT's- ADVANTAGES, DISADVANTAGES**

As we've mentioned previously, the opportunity to "bank", or "store", one's own stem cells "pre-disease"/"pre-onset", or at an earlier stage of disease, has never existed until extremely recently so statistics on SCT procedures using "pre-banked" autologous stem cells don't yet exist. However, by taking advantage of this new opportunity we feel that autologous stem cell transplants offer additional positive benefits and gain additional advantages over allogeneic SCT's.

The primary advantages of auto SCT's are the time factor (essentially no delay possibilities) and no risk of graft vs. host disease (GVHD). Time can be a crucial factor for an extremely ill patient, and using your own stem cells eliminates the time delay of donor searches, and the possibility that no suitable donor is even found. Allogeneic SCT's carry a very high risk of GVHD, which at its worst can be fatal. Allo SCT's also carry a significantly higher risk of graft rejection than auto SCT's. Immunosuppressant drugs have to be heavily used with allo SCT's, further increasing the chances of infection while the recipient's immune system is essentially non-functional and being restored. The choice of allo SCT's is also limited for older patients above certain age ranges, as well as for those patients considered "higher-risk" due to their medical condition. Auto SCT's can be a life-saving choice for an extremely ill patient who has banked his own stem cells pre-illness.

The disadvantages of auto SCT's, comparative to allo SCT's, are two-fold, though in our opinion are relatively minor and far outweighed by their positives and advantages. The risk of using one's own potentially diseased stem cells, even after their "purging" (treating the stem cells after collection, but before transplant, attempting to expunge any remaining disease), can possibly defeat any positive result attained from the transplant (though again, we'd point out that with a service like NeoStem's and the ability to bank pre-onset, this risk can now be substantially reduced). The other is that the transfusion of stem cells from an allogeneic *donor* can actually serve to combat the recipient's diseased cells, an action we've previously mentioned known as the "graft-vs-tumor" (GVT) effect (also referred to as "graft-vs-leukemia" (GVL), "graft-vs-malignancy" (GVM) or "graft-vs-disease" (GVD).

In our opinion, especially with new services such as NeoStem's, we feel it's generally much more advantageous to use autologous SCT's rather than allogeneic SCT's. Due to the various advantages of auto SCT's, people might want to consider banking their own stem cells. We will discuss this in greater detail later in this report.

### **ALLOGENEIC SCT's- ADVANTAGES, DISADVANTAGES**

Allogeneic SCT's will be sourced from "adult" donors as well as cord blood unit donations.

As we've previously mentioned, the main advantages of allogeneic SCT's are the use of stem cells from a donor that are not diseased, and the additional 'GVT' affect provided. We'd also note that the use of cord blood provides additional advantages as well as disadvantages. Cord blood does not present as great a risk of GVHD as found in stem cells from an adult donor, due to the less mature nature of the stem cells. Conversely, it also provides less of a GVT effect.

There are several disadvantages to the use of allogeneic SCT's, however we'd also note that many of these disadvantages are lessened by the use of cord blood as an allogeneic source.

The primary disadvantages of allo SCT's are the potentially long time delay factor, even the possibility of not being able to find a suitable donor at all. An "HLA match" using cord blood is generally quicker to find than with an "adult" donor, again due to the generally less mature nature of the stem cells and their less restrictive matching qualities. The time factor is also reduced due to the fact that the cord blood units have already been collected and frozen, as opposed to adult donors being listed in a "registry", but then having to be physically located and contacted, and their stem cells then actually having to be procured.

A donor (allogeneic) has to be "matched" to the recipient. By matching, we are referring to "immunologic compatibility", the matching of HLA antigens found on the stem cells of the recipient and the donor, basically genetic matching, genetic "compatibility" or tissue compatibility. This is done to minimize the possibility of "graft

rejection” and to lower the possibility of GVHD. When performing an SCT, a “perfectly matched” or “closely matched” donor is necessary, or preferred. The chances of finding a matched donor is best with a sibling, if no relatives are found that are perfectly matched then a “search” through various “registries” (and even among friends, acquaintances, etc.) will be performed. (“MUD” is the term for a “matched unrelated donor”). A search can take months, and might ultimately end with no suitable match being found, which would potentially be disastrous for the patient. It is estimated that approximately 20-30% of suitably matched donors are found from siblings, approximately 25-30% are found in public registries (though we would again note that this figure can be substantially lower for minorities, especially certain ethnicities and races), leaving approximately 40%-55% unmatched without a suitable donor. We would again mention however that with the increasing use of cord blood, and especially the use of double cord transplants for “adult” patients, we feel that this number will decrease over the next few years. Again, cord blood generally needs less stringent matching and so is generally an excellent alternative to adult stem cell donors. The search for a donor, after searching among relatives, would generally be conducted by the National Blood Marrow Donor Program in the US, and possibly globally as well. The reason that among racial and ethnic minorities it can be extremely difficult to find a suitable match is due to the specific HLA matching antigens needed and the lack of racial and ethnic minorities represented in the donor registries. This presents a serious disadvantage for many people of certain racial or ethnic origins in need of an SCT.

#### **CORD BLOOD- ADVANTAGES, DISADVANTAGES**

Though we’ve previously mentioned these, we’ll recap them very quickly. Cord blood in general can serve as an excellent alternative to “adult” stem cell donors. The primary disadvantage of cord blood is the smaller quantity of stem cells per cord blood unit, which could lead to difficulties in successful engraftment in adult stem cell recipients, however, double cord blood unit transplants are increasingly being done to overcome this limitation, and with generally excellent results.

The primary advantages of cord blood are a greatly reduced time delay factor, and less risk of graft rejection and GVHD. Since the cord blood has already been collected and frozen, the primary time delay element is for finding a suitable match, which with cord blood is generally easier because of the less stringent HLA matching required than with stem cells from “adult” donors. (Though we would again point out that cord blood stem cells from newborns and stem cells from “adult” donors are both “adult” stem cells).

The primary disadvantages of cord blood are less of a “GVT” effect demonstrated, and the fact that it is still an allogeneic procedure, meaning there is still the possibility of not finding a suitable, or any, match, there is still the risk of graft rejection and GVHD, immunosuppressant drugs still have to be used (though in generally lesser quantities) and there is still a time delay, though relatively minor.

#### **BACKGROUND: STEM CELL COLLECTION AND STORAGE**

Umbilical cord blood banking began in the early 1990’s and accelerated in the mid-to-late 1990’s. As we’ve mentioned previously, cord blood banking consists of donating to “public” organizations “banking” at “private” companies. The donations are to be used by the public as the need arises, private banking is to be used by the family that does the banking. Private cord blood banking costs approximately \$1,700, plus an approximate \$125 annual storage fee, with payment plans generally available. Private cord blood banking has been growing at a rapid rate.

There are approximately 25-30 “private” cord blood banking companies currently operating in the U.S. There are approximately 400,000 cord blood units currently banked “privately” in the U.S, with approximately 175,000 units banked “publicly”. Annual revenues for the private cord blood banking companies are currently approximately \$250 million, in the U.S. alone.

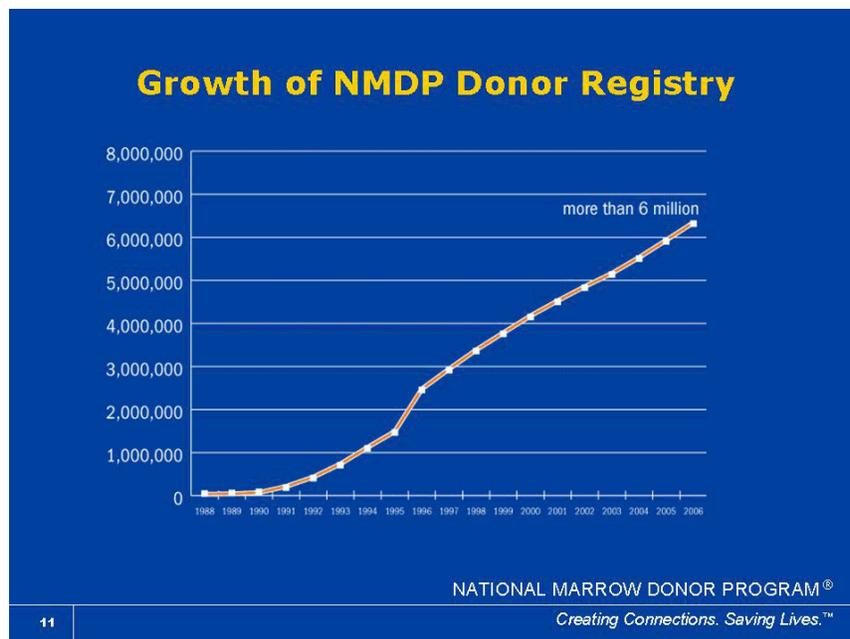
The primary cord blood bank companies in the U.S. are Cord Blood Registry (private), LifebankUSA (a subsidiary of Celgene-CELG), ViaCord (a subsidiary of ViaCell-VIAC), Cryo-Cell International (CCEL) and Cord Blood America (CBAI). Sir Richard Branson recently opened a cord blood bank in England, Virgin Health Bank, which due to his notoriety we believe will serve to additionally increase public awareness of these services. Cord blood banking companies are operating on a global basis. The “sector” of *adult* stem cell collection companies is a very new area.

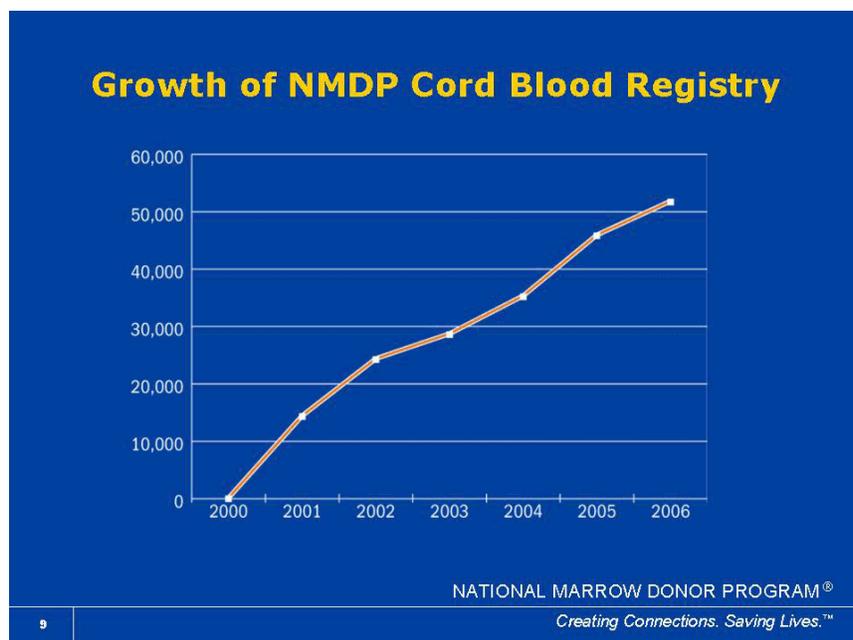
There is an effort by government, both federal and by several states, to encourage the public donation of umbilical cord blood (from parents' newborn children), as well as for the registration of potential adult stem cell donors. The purpose is to maintain a national, and in a larger sense international, stem cell and cord blood registry that can be accessed by those in need. The funding is used to finance, and to increase the public awareness of these programs.

In late 2005 the Stem Cell Therapeutic and Research Act of 2005 was signed into law. Incorporated in that law was the "C. W. Bill Young Cell Transplantation Program" bill which authorizes the creation and funding of a national umbilical cord blood collection and storage program. In mid/late 2006 the initial funds were allocated for that program. There are also currently approximately 11 states that have mandated programs to educate the public, and expectant parents, about cord blood donation, and for hospitals to provide cord blood collection services.

The reason that people privately bank their newborns' cord blood is primarily due to their hopes and expectations for the treatment of diseases that their children might one day develop. However, these expectations of treatments might be unduly inflated, based on both their misunderstanding of the stem cell field in general as well as perhaps overzealous marketing materials distributed by the cord bank companies.

The banking of *adult* stem cells is an extremely new field. There are less than a handful of companies on a global basis that are currently collecting and banking adult stem cells, with NeoStem currently the only company doing so in North America, though a few others have announced their intention to establish collection and storage operations, though with perhaps limited capabilities. Apart from actual adult stem cell banking, there exist many adult stem cell donor "registries" on a global basis, with the largest one in the U.S. being the National (Bone) Marrow Donor Program, the NMDP. The NMDP also maintains the largest centralized cord blood registry in the country, the difference with cord blood being that the cord blood units have already been collected and frozen. However, the *adult* registries are only "registries", or lists, of *potential* donors, people that have voiced a desire to donate their stem cells. In the case of an actual need, the potential donor would have to be contacted, and if still willing, screened and then actually have the stem cells collected. The difference between this and the adult stem cell banking facilities is that the latter actually collect and then store the stem cells from clients, in anticipation of their potential use, by the client, in the future. The cord blood banking process is generally a much easier process than adult stem cell banking for various reasons. The advertising for public and private banking is done through various magazines, direct mail, pamphlets in physician's offices and hospitals, (possibly print, and other media as well), and is also, to an extent, funded by the federal government and several states. The cord blood is collected at childbirth, in a simple totally non-invasive process. Adult stem cell banking however is a field that most people, and even physicians, are not yet familiar with. NeoStem's basic collection cost is approximately \$6,000 (though payment plans are available from CareCredit), approximately \$600-\$800 for the Neupogen costs, and it involves at a minimum 2-3 office visits.





## TYPES OF EVENTS THAT COULD POTENTIALLY INFLUENCE THE USE OF STEM CELLS & SCT'S

Developments in medical technologies, procedures, drugs, treatments, as well as additional factors, could all potentially affect the need and/or usefulness of stem cell transplants, and in turn, directly or indirectly, NeoStem. The need for stem cell banking services will generally be correlated to the use of, and the need for, stem cell transplants. If any medical treatments or procedures were developed that were to reduce or eliminate the need for, or usefulness of, SCT's, then this could potentially significantly affect the need for services such as NeoStem's banking services. Conversely, if any discoveries were made that encouraged the use of SCT's and broadened their applications and usefulness, this could potentially be a substantial positive for the company.

We will highlight some recent events, and list some potential future events, that could all serve as catalysts affecting NeoStem, either positively or negatively.

### RECENT EVENTS

#### *Recent medical technology developments*

##### Reprogramming skin cells into embryonic stem cells

A recent technique was discovered that could have revolutionary effects in stem cell research and treatments. Scientists were able to essentially reprogram skin cells in mice into stem cells with embryonic qualities. If this were able to be done with human skin cells, which is a very big if, this could not only revolutionize medical treatments, but could also significantly impact and reinvigorate the entire stem cell sector. It would then be conceivable for a person's skin cells to be removed, "manipulated", and then infused back into the patient with a stem cell transplant. This could potentially unleash an untold number of additional treatment capabilities due to the embryonic stem cell's ability to develop into any type of human tissue or organ.

#### *Recent drug results*

##### Vidaza - Myelodysplastic Syndrome MDS

Vidaza is a drug in Phase III clinical trials for Myelodysplastic Syndrome, MDS and has shown excellent results. This drug could potentially be used as an alternative to SCT's, however, it is not curative.

### Revlimid - Multiple Myeloma

Revlimid is in clinical trials for Multiple Myeloma, the bone marrow cancer. It has shown extremely positive results, and could very likely be used as an alternative to SCT's.

### GVHD drugs, including Prochymal

Prochymal is in late-stage clinical trials as a treatment for GVHD, the primary negative aspect of allogeneic SCT's. Drugs that prove to be successful in fighting GVHD could serve as a powerful incentive to increase the use of allogeneic SCT's, or to at least use them with less potential risk involved. This in turn could prove to be a disincentive to the banking of stem cells due to a potentially slightly lesser need for SCT's.

### Bexxar, Zevalin - Non-Hodgkin's Lymphoma

A recent NY Times article discussed the benefits of Bexxar and Zevalin in fighting Non-Hodgkin's Lymphoma, both have proven to be tremendously effective. Both drugs have received FDA approval, and both are undergoing additional clinical drug trials. Either or both drugs could potentially prove to serve as alternatives to SCT's.

### *Recent events*

#### 9/11 Workers discovered with high asthma rates

A recent study of workers at the 9/11 site, including first responders, showed an asthma rate literally 12 times higher than average. This is an example of situations and events that could instill an interest in banking ones' stem cells.

#### Nuclear facility damaged by earthquake in Japan

Japan has 55 nuclear reactors and relies on nuclear power for one third of its electricity, however it is also one of the most earthquake prone countries in the world and has had a series of accidents and cover-ups in their nuclear industry. The deadliest accident occurred three years ago, killing four workers, and in 1999 a company covered-up a fifteen minute uncontrollable nuclear chain reaction. To quote one news service, "Nuclear safety problems can be a particularly sensitive issue in Japan, the only nation to be attacked with atomic weapons ... .."

A recent earthquake in Japan caused damage at the Kashiwazaki nuclear plant, the world's largest in terms of power output capacity. There was a radioactive water leak, a fire, several hundred drums of radioactive waste fell, opening the lids on a few dozen of them, and there was damage to exhaust ducts and pipes.

The largest nuclear reactor accident was at Chernobyl in 1986, killing dozens of workers and spreading radiation for hundreds of miles. The Japanese earthquake has reawakened interest in nuclear safety. France has 59 reactors, and has reported hundreds of safety related incidents in just the past few years. To quote the Wall Street Journal regarding a report by the OECD and IAEA (International Atomic Energy Agency), in the last 20 years there have been (at least) 16 "significant events" including nuclear fuel degradation, a fire and a hydrogen explosion, among others.

These sorts of events can serve as powerful inducements to bank ones' stem cells with a service like NeoStem's.

#### Rocky Flats nuclear weapons plant workers sought medical benefits

Rocky Flats, near Denver, housed a nuclear weapons plant from 1952 to 1989. The plant was closed after a raid by Federal agents investigating environmental crimes, and was designated a Superfund hazardous waste site. A large number of Rocky Flats workers were fighting for medical compensation after many developed serious illnesses including bone marrow, brain, cervical and kidney cancers. The workers recently encountered a significant setback in receiving benefits. Incidents such as this can highlight the potential benefits and reasons for stem cell banking.

## POTENTIAL FUTURE DEVELOPMENTS

We would importantly note that there is a great deal of ongoing research and testing regarding potential stem cell treatments for a wide variety of illnesses, including Diabetes, cardiac disease, Alzheimer's and other neurological diseases, solid tumors, and a host of other ailments. Research efforts in these fields and others also involve pharmaceuticals, gene therapy, embryonic stem cells, medical devices and other potential treatments. Research is also being conducted regarding the possible regenerative potential of some of the above treatments. Developments in any of these areas have the potential to affect NeoStem in a positive or negative manner. Any new approaches or developments concerning stem cell transplants in general could also significantly affect the company.

Major funding initiatives (or in turn, any cutbacks) concerning stem cell research could also indirectly affect the sector. A recent example of this is a \$3 billion embryonic research initiative in California, which could also lead to an increased research effort by "private" industry. News of trials, treatments, approved drugs, etc. concerning stem cells, whether adult or embryonic, from the pharmaceutical and biotechnology sector could directly or indirectly affect the sector.

World events in general could also affect not only the sector, but also the perceived need for stem cell banking specifically. These could include geopolitical events, terrorist actions, environmental issues, a nuclear incident, a major gas release or a major chemical accident. Media attention also generally affects the sector, though very often this is only for a short-term basis.

Any of these potential developments could serve as stock catalysts for the company and the stem cell sector in general, as well as serving as fundamental business catalysts. They could also serve to generate increased interest among the public and potentially substantially increase interest in adult stem cell banking specifically.

## NEOSTEM

### THE COMPANY

NeoStem is the first, and currently the only, provider of collection and "banking" services for adult stem cells in North America, and among one of only an extremely small number of such companies globally. We would note that there are a very small number of companies that are planning, or have *stated* that they are planning, to establish adult stem cell collection facilities in the U.S., though of possibly limited scope, including CalbaTech/TherapyStem (CLBE), Bio-Matrix Scientific (BMSN) and AdultCells. However, we would note that the timing of any these launches is currently extremely unclear.

On a global basis, the only companies that we have identified that are currently collecting and storing adult stem cells are StemLife of Malaysia and a related entity, Thai StemLife of Thailand.

As we've already stated, this is essentially a service that has not previously existed. The only comparable service is that of collecting and storing umbilical cord blood, which has only existed since the early 1990's, and has since grown very rapidly.

The company recently raised net proceeds of \$5.8 million in a secondary offering and concurrently gained an American Stock Exchange listing. They have been generating revenues from their stem cell operations, commencing in their Q4 of 2006, from a combination of "start-up fees", paid by physicians to operate stem cell collection facilities, and from "clients" paying to bank their stem cells. The clients that bank their stem cells with NeoStem do so with the intention of using them (on an autologous basis) if the medical need were to arise in the future.

### COLLECTION & STORAGE FACILITIES

There is currently 1 collection facility in operation in Encinitas, Ca., in their "Physicians' network", with an additional 2 planned to commence operations extremely soon, in Las Vegas and in Eastern Pennsylvania. The company has an agreement with HemaCare (HEMA), with NeoStem essentially outsourcing certain stem cell collection services to HemaCare. As part of the agreement, one of HemaCare's current facilities, in Sherman Oaks, Ca., is considered one of NeoStem's associated collection facilities. The company is also planning, using a portion

of the proceeds from its recently completed secondary, on opening a company stem cell collection facility in New York City, to serve as its “flagship” collection facility. The company hopes to have additional collection facilities, company operated or as part of their “physicians’ network”, in operation in the future.

The Pennsylvania facility will be run by Azani Medical Spa in Bethlehem, Pa, and they also plan on offering their services in Western NJ. The Las Vegas agreement is with Dr. Ivan Goldsmith. Their Encinitas facility is at the California Healthspan Institute, run by Dr. Ron Rothenberg.

We would note that basically any medical office or facility can be designated as a stem cell collection facility, as long as they have been approved. The approval process rests on the state where the facility is located, however, only approximately 5 states currently have approval procedures in place for such facilities. The remaining states at this point are basically referred to as “non-regulated” states. Approval is also generally necessary for “inter-state” uses, for example where a resident of one state wants to use his own stem cells intra-state, but have them collected in a different state. In this case, the other state would also have to be approved by the state where the patient resides. The state approval process can take approximately three to four months or longer. If any facilities were to use HemaCare’s collection services for the actual collection process, they would *not* need to be approved. This is because HemaCare is already licensed for such collection activities, wherever they occur. The FDA does not currently have any approval or licensing authority over such facilities, however the facilities are required to register with the FDA.

The company is currently using facilities at Good Samaritan Hospital in Los Angeles for their stem cell storage. In the future the company is planning on using, or developing, storage facilities in additional geographic areas of the country in order to simplify access to the stored stem cells.

## TARGET MARKETS

- Physicians- To establish stem cell collection facilities, to educate, and refer, their patients.
- Consumers- High net worth and educated, parents that have banked their newborn’s cord blood, the general public.
- High Risk Employment Profile - Chemicals, toxic substances, gases, radiation, nuclear sites.
- Corporate- Executives, as recruiting and compensation “perks”, executive wellness programs.
- Government- Federal, State, City- First responders, the armed services, workers at nuclear sites.
- Political leaders
- (One target market that the company has not specifically targeted, that however would be a very suitable market, are minorities: Certain ethnicities and races who are not well represented among the donor registries and donated cord blood units).

## POTENTIAL PARTNERSHIPS

Potential partnerships for the company include businesses and organizations that could alternatively also possibly serve as competition. These include cord blood banking companies, hospitals and clinics, physicians and pharmaceutical and biotechnology companies.

## BUSINESS MODEL

The company is initially planning on generating revenues from just a couple of sources. These are “start-up” fees charged to physicians for the rights to establish stem cell collection facilities on an exclusive basis within a specific geography, and collection and storage fees from consumer clients. Additional fees would be revenue splits with physicians at their collection facilities, as well as fees from other target markets and sources.

The company’s consumer collection fees are approximately \$6,000 per client, plus approximately \$400 in annual storage fees, basically an ongoing annuity. There is also an approximate \$600-\$800 fee for the Neupogen mobilization costs, which will generally not be paid to the company. However, the company has not publicly disclosed their fee structure for any of their other revenue sources, which leaves us at a loss for specifying any meaningful detail, besides speculation. Though projecting revenues, gross margins, and related fundamentals for a company at such an early stage as NeoStem is generally extremely difficult, this obviously leaves us at an additional loss, and we would strongly suggest that the company divulge much more specific information in the future.

## WHY SHOULD YOU BANK YOUR STEM CELLS?

There are various reasons why a person might consider banking their stem cells. We have mentioned some of them previously and we will now briefly recap the primary reasons. But our feeling is that due to basic human nature, unless a person has an immediate pressing need to do so, the general course of action would be to take no action. We somewhat equate the potential decision to bank one's stem cells with purchasing insurance, or even scheduling medical appointments. It is something that people do, but generally grudgingly. As the expression goes, "Insurance is sold, not bought".

Obviously the costs of NeoStem's stem cell collection service has to be weighed against an individual's need, or *perceived* need, for that service. At a cost of \$6,000 for the collection service, and approximately \$600-\$800 for the Neupogen costs, it's not inexpensive, and the company themselves have said that they are targeting higher net worth clients. The company's recent agreement with CareCredit allowing consumers to pay by payment plan makes the service much more affordable and within reach of a much larger target market.

Some of the people that might have an interest in the company's services are those with family histories of, or who might've already contracted, certain illnesses, those employed in high-risk environments such as proximity to radiation and toxic chemicals and substances, first responders, the armed services, those concerned about terrorism, certain government employees, executives and minorities who are not well represented in the donor and cord blood registries, among others. Those who are already familiar with stem cell banking, such as parents who've banked their newborn's cord blood, are potentially also likely candidates. People with greater economic means, in higher socioeconomic brackets, are candidates due to the greater affordability and education factors. Physicians are a major target market, not necessarily for themselves, but as candidates to open their own NeoStem affiliated stem cell collection facilities as well as educating and referring their patients and other members of the medical community.

The primary intent of stem cell banking is for currently healthy individuals (or even individuals at the early onset of disease) to have ready access to their own banked stem cells in the future, in the event they were to develop a disease or other serious medical condition that could potentially be treated by a stem cell transplant. NeoStem's marketing pitch is that it's preferable to bank your stem cells while you're healthy, as opposed to waiting until you're in an emergency situation when events would be out of your control. Banking your stem cells in advance is to a degree an "insurance" policy, which NeoStem refers to as "bioinsurance". If the time were to come when a person did develop an illness that a stem cell transplant was a suitable treatment option for, it would generally be highly advantageous to use their own banked, pre-onset stem cells. We are not suggesting that this is an infallible treatment option, however we do believe that NeoStem's service, and "autologous" stem cell banking in general, can have many definite advantages over allogeneic transplants.

The primary consideration in banking one's own stem cells involves the basic advantages and disadvantages of autologous SCT's vs. allogeneic SCT's, and again, if there is a need, or a perceived need, for the service. Unless a person has a higher risk profile, the odds of that person ever needing a SCT are very low. By some statistics, the odds are roughly between 1 in 50 to 1 in 220 people, or between 2.0% to 0.45%. This is exclusive of any future potential stem cell transplant treatments of major diseases such as Diabetes, cardiac disease, neurological illnesses, etc. However, that notwithstanding, if one were to suddenly find themselves in an emergency life or death situation and in need of a stem cell transplant, we're sure the decision at that point would be seen in a vastly different light.

Matching is probably the key determinant factor. A perfect match, or at the very least a close match, has to be found. Siblings are the best choice, but if not suitable, a search has to be initiated. Searches can literally take months (4 months on average), and in more difficult matching situations, especially those that exist with many minorities whether by ethnicity or race, a suitable match may never be found. A person in extreme medical need may literally not have the time available for a potentially lengthy search to prove successful. In addition, people over certain age limits, and in extremely poor health, or "high-risk", may not even be eligible for allogeneic SCT's. Allogeneic SCT's carry a very high risk of GVHD (graft versus host disease), which can be fatal, and graft rejection. In addition, the immunosuppressant drugs that have to be administered for allo SCT's further impair the patient's immune system, thereby increasing their risk of infection, which can also prove to be life-threatening. The recent use of umbilical cord blood as an additional allogeneic stem source for adults, and especially using two cord blood units in double cord blood transplants, is proving to be an excellent alternative. Though there are many advantages in using cord blood as an allo source, there are still certain allo risks, and in our opinion self-banked stem cells

would still be preferred. We'd again note that stem cell transplants carry a risk of mortality, ("TRM"- transplant related mortality) (again, primarily due to the after-effects, not the actual procedure), and allogeneic stem cell transplants carry a much higher mortality risk than autologous transplants. This risk will also generally increase with age and among higher-risk patients.

#### PUTTING A HUMAN FACE ON STEM CELL TRANSPLANTS

To put a human face on the perhaps esoteric subject of SCT's, we're going to cite a couple of recent examples of individuals with illnesses that involved blood disorders and the use of stem cell transplants.

##### Michael Brecker

Michael Brecker was a very well known musician, a saxophonist, very well respected and in strong demand in both pop and jazz circles, and a winner of 13 Grammy awards. He played with an extremely wide range of musicians, from Paul Simon, James Taylor, Steely Dan, Eric Clapton and Frank Zappa to Herbie Hancock, Pat Metheny, Chick Corea and McCoy Tyner. He and his brother Randy Brecker, a well-known trumpet player, owned the jazz club Seventh Avenue South in New York City in the early 1980's, and jointly ran the Brecker Brothers band.

Approximately 3 years ago Michael was diagnosed with Myelodysplastic Syndrome (MDS), a bone marrow blood disorder. Brecker needed a stem cell transplant, however, he was an Ashkenazi Jew, with an ethnic background found in Eastern-Central Europe. He was an unusual HLA match, and despite an extensive two year search, even among his children, his brother, the Ashkenazi Jewish community and others of Eastern European Jewish descent, a suitable donor was never found. A "partial" matching stem cell transplant was conducted, with his daughter as the donor, but unfortunately it was not effective. In January of 2007 Brecker died of complications of leukemia.

##### Arthur Lee

Not nearly as well known as Michael Brecker, Arthur Lee nonetheless achieved some degree of recognition with his band LOVE, dating from the late 1960's. In February of 2006, Lee was diagnosed with acute myelogenous leukemia, AML, and Lee needed a stem cell transplant. In May of 2006, just 3 months later, Lee was given a cord blood transplant, with a suitable cord blood match, after no "adult" donor match could be found. In Lee's case expediency was an extremely important issue due to the fact that doctors felt he would not survive long enough to find a suitable adult donor.

##### Bang the Drum Slowly

In the novel, Bruce Pearson, a catcher, has Hodgkin's Disease and is terminally ill. The book was published in 1956. The first stem cell transplant occurred in 1968, and they began to be regularly used by the mid 1970's. When the book was published, they didn't even exist, and they are now used as a standard treatment for Hodgkin's disease.

#### CARECREDIT AGREEMENT

The company recently signed a pact with CareCredit, a subsidiary of the GE Money Company. CareCredit is the country's largest provider of payment plans for consumer medical coverage. In our opinion the CareCredit agreement is a major positive for NeoStem in that it makes their services much more affordable to a much larger potential target market than previously available. At a basic cost of \$6,000, the service is relatively prohibitive except to a relatively small target audience, especially when considering the general lack of public awareness of these services and their potential benefits, as well as taking into account the basic inertia of human behavior. However, with a choice of flexible payment plans now available, we feel that NeoStem's service now has a much more realistic chance of success by eliminating a major obstacle to the wider adoption of their services and has greatly increased their addressable market.

#### MANAGEMENT/BOARD OF DIRECTORS/SCIENTIFIC ADVISORY BOARD/ADVISORY BOARD

We feel that the company has many highly experienced and respected individuals with excellent credentials associated with the company, including physicians, professors and chairpersons of medical departments.

*Doctor Robin L Smith, CEO.* Dr. Smith is also Co-Chairman of the Board for the New York University Hospital for Joint Diseases, on the Board of the New York University School of Medicine and on the Chemotherapy Foundation Board of Trustees. Dr. Smith has worked with numerous private and public companies in executive positions, advisory roles and as director and advisory board member, and has practiced as a physician. Dr. Smith also serves on several editorial boards, and has written or contributed to a great many peer reviewed papers, abstracts and additional writings.

*Larry May, CFO.* Mr. May formerly worked at Amgen (AMGN) as Treasurer, Corporate Controller and Chief Accounting Officer. Mr. May has previously worked at other medical technology companies, and also at the predecessor company to NeoStem, NS California.

*Renee Cohen, VP Operations.* Ms. Cohen's main goals are to build and expand business relationships and awareness of the company. Ms. Cohen formerly worked at Pfizer (PFE) in several senior positions.

*Doctor Joseph Zuckerman, Director.* Dr. Zuckerman is Chairman of the NYU Hospital for Joint Diseases Department of Orthopedic Surgery and the Walter A. L. Thompson Professor of Orthopedic Surgery at the NYU School of Medicine.

*Dr. Wayne Marasco, Chairman, Scientific Advisory Board.* Dr. Marasco is an Associate Professor at the Department of Cancer Immunology & AIDS at the Dana-Farber Cancer Institute and Associate Professor of Medicine at Harvard Medical School.

*Dr. Douglas Losordo, Scientific Advisory Board.* Dr. Losordo is Professor of Medicine at Northwestern University and Director of the Feinberg Cardiovascular Research Institute. Dr. Losordo has also previously served as a Professor at Tufts University School of Medicine and was Chief of Cardiovascular Research at St. Elizabeth's Medical Center in Boston.

*Dr. Stephen Nimer, Scientific Advisory Board.* Dr. Nimer is Professor of Medicine and Professor of Pharmacology at Weill Medical College of Cornell University. He is also Chief of Hematology Service and Head of the Division of Hematologic Oncology at Memorial Sloan-Kettering Cancer Center in New York. Dr. Nimer is also a member of many professional organizations including the American Society of Hematology and the American Society of Clinical Oncology as well as working as a reviewer for many medical journals including the New England Journal of Medicine and the Journal of the American Medical Association.

*Dr. Richard Gatti, Advisory Board.* Dr. Gatti is a professor at the University of California, Los Angeles (UCLA) and a pathologist at the UCLA Medical Center.

Additional directors have relationships with many private and public companies in a variety of business sectors.

## **FINANCIALS**

We are commencing our review of the company's results with their Q4 of 2006 due to the fact that previous results were generated from now discontinued business operations. Their Q4 of 2006 was the first with a contribution from their current stem cell operations, and their Q1 of 2007 was the last with a contribution from their previous operation of providing warranties online. We're going to briefly summarize the past three quarters, the first quarters with revenue contributions from NeoStem's stem cell operations.

### **Q4 2006 RESULTS**

Revenues in the company's Q4 of 2006 included the company's first revenues from the company's stem cell operations. Total revenues for Q4 were \$26,938. This included \$6,262 from their selling of online warranties, and approximately \$20,676 from their NeoStem operations, including "start-up" fees (collected from physicians/medical practitioners to set up stem cell collection facilities) and client stem cell banking/storage fees. However, these revenue sources were not specifically broken out per category. As we note elsewhere in this report, we hope that the company will break-out specific revenue sources, as well as specific operating expense items, in the future.

## **Q1 2007 RESULTS**

Total revenues for the company's Q1 were \$55,895, consisting of their final (now phased-out) revenues from their selling of online warranties of \$1,697, and \$54,000 from start-up fees. The number of start-up fees/collection facilities was not specified, however we would speculate that that number was two, meaning that the start-up fee per facility was \$27,000. If this is correct, we would also note that we do not know if this is the "standard" start-up fee that the co. is intending to charge. The company has not specified the exact dollar terms of many of their revenue components, including some already generated or those ongoing or planned.

## **Q2 2007 RESULTS**

Revenues for the company's Q2 were \$6,017. The company did not specify the source of the revenues, however, based on the specific dollar amount, we would speculate that they were due to one stem cell banking client. We would note the still very sporadic nature of the company's revenues, which is not unexpected at this point, and the need for the company to develop momentum, which we are not yet expecting in the very near term. We would also argue, again, for the company to be more forthcoming in their financial releases as to the specific sources of their revenues, and their fee structure in general.

The company's Q2 net loss was \$(1,958,261) vs. \$(1,245,082) for their Q2 of 2006. Their EPS loss was (0.74) vs. (1.20) for their Q2 of 2006. The company's operating cash flow loss was \$(923,571) vs. \$(955,904) for their Q2 of 2006.

## **EXPENSES**

The company has been spending substantial sums, and intends to continue to do so, on marketing and sales related items, including increased hiring, marketing materials and the use of marketing consultants, in order to increase the awareness of their services among consumers, medical practitioners and in other potential markets.

The company's Q2 total OpEx/SG&A was \$1,960,393. However, in addition to standard OpEx costs, there were also outlays for additional services including investment banking services, investor relations and public relations fees, consulting fees and others, which to a large extent were not "actual" cash outlays because they were paid for in stock. That Q2 amount totaled approximately \$770,000 and was added back to operating cash flow, resulting in an "actual" OpEx cash outlay of approximately \$1.18 million.

The company did not itemize a breakdown of their SG&A expenses (though, they did state by how much those expenses had "increased by"). As we have noted that we would like to see a specific revenue breakdown by source, we would also like to see a specific SG&A expense breakdown as well.

With Q2 revenues of \$6,017, SG&A ("OpEx") costs of \$1.96 million (though again, after adjusting for "non-cash" add-backs to operating cash flow, this equates to "actual" cash outlays of approximately \$1.18 million), and an operating cash flow loss of \$(923,571), there is obviously an extremely wide discrepancy that currently exists between their cash inflows and outflows.

CapEx has recently been extremely low, with Q1 at \$10,716 and Q2 at \$8,478. However, we would look for these outlays to increase greatly in the future, due, at least in the near term, to the company's plans to spend at least \$900,000 for a stem cell collection facility in New York City as a "flagship" site.

## **FUNDING**

The company exited their Q2 (June 30) with cash of \$85,382, however, the company completed a secondary in mid August, raising approximately \$5.8 million in net proceeds. The company in January raised approximately \$2.3 million in net proceeds from the issuance of a private placement (a "PIPE"), so in essence the company depleted all of those funds before the secondary offering. We would also add that the company, like many smaller, emerging growth companies, has survived by issuing a series of private placements.

The secondary removes any near-term liquidity concerns, however, the company currently has a high burn rate, primarily related to marketing and related expenses, coupled with low revenues. The company is also anticipating the possibility of the exercise of the warrants issued in the secondary (exercisable at \$6.00), which would generate additional liquidity. We anticipate that the company has enough cash for approx. four quarters of operations, and at that point would either need to raise additional funding and/or decrease their OpEx costs, which have great leeway due to their marketing costs.

#### **CATALYSTS/BENCHMARKS COMPANY SPECIFIC CATALYSTS**

Earlier we discussed many events that could potentially affect the stem cell industry in general, and NeoStem itself directly or indirectly. We will list a few specific events that could specifically impact the company.

- Las Vegas and Pennsylvania stem cell collection facilities become operational.
- Announcements of additional stem-cell collection center openings.
- Partnership announcements (Pharmaceutical/Biotechnology companies, cord blood banking companies, hospitals, health care facilities, others).
- Opening of NYC stem cell collection facility (which they could also lever for media attention, in addition to adding to their stem cell collection capabilities).
- Expansion of their client revenue base (Government, Corporate).
- Revenue acceleration, positive operational momentum.

#### **VALUATION/SUMMARY/OPINION**

NeoStem has made much progress recently, and we believe the company is in a promising sector. The company over the past three quarters has begun to generate revenues from their stem cell banking operations, albeit still at a very low level. They commenced trading on the American Stock Exchange on August 9, and they recently raised approximately \$5.8 million in net proceeds in a secondary offering, the bulk of which will be used to increase public awareness of the company.

The company is currently the only provider of banking services for adult stem cells in North America, and one of only a miniscule number globally. The nearest comparable market is that of the banking of umbilical cord blood, which began in the early 1990's and is now generating approximately \$250 million in annual revenues just domestically.

There is currently 1 stem cell collection facility in the company's "physician network", with 2 more planned to open extremely soon. (A HemaCare facility in Sherman Oaks, Ca. is also considered a NeoStem affiliated collection facility). There are many respected and accomplished physicians, medical professionals and business professionals affiliated with the company.

Cord blood banking has basically become an established sector. As far as adult stem cell banking however, the company is in essence aiming to be a trailblazer, and the potential market at this point is completely unknown. This is a path that in our opinion will require substantial effort to develop, involving both time and financial commitment.

NeoStem's current market capitalization is approximately \$20 million. The company's revenues for the past three quarters (excluding their now discontinued warranties business) were \$80,891. Their operating cash flow loss for the past three quarters was approximately \$(3,395,912). We are anticipating sporadic and nominal revenues for the near term. The company intends to spend substantial sums on marketing expenses for the foreseeable future, and will be spending approximately \$900,000 on a New York City "flagship" stem cell collection facility. The company will need to spend broadly in order to not only raise awareness of themselves among the general public and physicians, but to also raise awareness of the "new" adult stem cell banking opportunity in general, and to create a "need" for their services among the public, physicians, government and corporate environments, and to generate attention in the media.

In our opinion, to be able to support the company's current market capitalization, or to even project a higher stock price with a higher market capitalization, the company will have to demonstrate a much higher level of momentum

in terms of revenues and outlook, and will have to solidly demonstrate the viability of their business plan and demonstrate staying power.

For these reasons we are at this point initiating coverage on NeoStem with a Hold rating, and not yet initiating price targets or financial projections. We would note that there are potential catalysts that could potentially materialize that could affect the company and the stock price. We would also note that stocks in the stem cell sector tend to move as a group, both positively and negatively. Company specific catalysts could involve partnerships, additional physician network collection facilities opening, additional stem cell banking clients and revenue generation from additional markets. Broad industry catalysts could involve new medical developments, geopolitical events and media attention, among others.

The stem cell field should continue to generate attention, and we believe that this will accelerate over time as medical techniques and procedures advance, additional drug treatments and solutions are approved, and as treatments for additional diseases are developed and become more widely accepted. Any major medical breakthroughs could serve to accelerate acceptance of the sector. These events could serve to substantially increase interest and growth in the adult stem cell sector and potentially adult stem cell banking.

**ACKNOWLEDGEMENTS** We'd like to thank the following people for the generosity of their time and assistance, we appreciate it greatly.

Dr. Frances Verter	Parents Guide to Cord Blood	<a href="http://www.ParentsGuideCordBlood.org">www.ParentsGuideCordBlood.org</a>
Doctor Jeffrey Chell	National Marrow Donor Program	<a href="http://www.marrow.org">www.marrow.org</a>
Darlene Haven	National Marrow Donor Program	<a href="http://www.marrow.org">www.marrow.org</a>

**ADDITIONAL RESOURCES/INFORMATION** Websites, organizations

We're including a brief resource section that we believe can be helpful to those that have a further interest in stem cell transplants and stem cell and cord blood banking and donating.

National (Bone) Marrow Donor Program	NMDP	<a href="http://www.marrow.org">www.marrow.org</a>	Also includes cord blood information.
National Bone Marrow Transplant Link	nbmt LINK	<a href="http://www.nbmtlink.org">www.nbmtlink.org</a>	
Parents Guide to Cord Blood		<a href="http://www.ParentsGuideCordBlood.org">www.ParentsGuideCordBlood.org</a>	
National Cord Blood Program	NCB	<a href="http://www.NationalCordBloodProgram.org">www.NationalCordBloodProgram.org</a>	
National Foundation for Transplants	NFT	<a href="http://transplants.org">http://transplants.org</a>	
The Leukemia & Lymphoma Society		<a href="http://lls.org">http://lls.org</a>	
Chemocare		<a href="http://www.chemocare.com">www.chemocare.com</a>	
Oncology Channel		<a href="http://www.oncologychannel.com">www.oncologychannel.com</a>	
BMTnet		<a href="http://www.bmtnet.org">www.bmtnet.org</a>	
Center for International Blood and Marrow Transplant Research	CIBMTR	<a href="http://www.cibmtr.org">www.cibmtr.org</a>	
BMT Infonet		<a href="http://www.bmtinfonet.org">www.bmtinfonet.org</a>	
Bone Marrow Donors Worldwide		<a href="http://www.bmdw.org">www.bmdw.org</a>	
National Cancer Institute	NCI	<a href="http://www.cancer.gov">www.cancer.gov</a>	
Cancer Research UK		<a href="http://www.cancerhelp.org.uk">www.cancerhelp.org.uk</a>	
New York Blood Center		<a href="http://www.nybloodcenter.org">www.nybloodcenter.org</a>	
Bone Marrow Transplantation		<a href="http://www.nature.com/bmt/index.html">www.nature.com/bmt/index.html</a>	
European Group for Blood & Marrow Tr.	EBMT	<a href="http://www.ebmt.org">www.ebmt.org</a>	
Cord Blood Forum		<a href="http://www.cordbloodforum.org">www.cordbloodforum.org</a>	
Int'l Society for Stem Cell Research	ISSCR	<a href="http://www.isscr.org">www.isscr.org</a>	

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NEOSTEM, INC. AND SUBSIDIARY  
CONSOLIDATED STATEMENTS OF OPERATIONS  
(Unaudited)

	Three Months Ended June 30	
	2007	2006
Earned revenues	\$ 6,017	\$ 6,262
Direct costs	(2,350)	(4,467)
	3,667	1,795
Gross profit		
Selling, general and administrative	1,960,393	1,039,409
	(1,956,726)	(1,037,614)
Operating loss		
Other income (expense):		
Interest income	2,874	2,005
Interest expense	(4,409)	(209,473)
Interest expense - Series A mandatorily redeemable convertible preferred stock	-	-
	\$ (1,958,261)	\$ (1,245,082)
Net loss		
	(\$0.74)	(\$1.20)
Net loss per common share		
Weighted average common shares outstanding	2,657,053	1,038,029

NEOSTEM, INC. AND SUBSIDIARY  
CONSOLIDATED STATEMENTS OF CASH FLOWS  
(Unaudited)

	For the Six Months Ended June 30,	
	2007	2006
	-----	-----
Cash flows from operating activities:		
Net loss	\$(3,774,596)	\$(2,384,526)
Adjustments to reconcile net loss to net cash used in operating activities:		
Common shares issued and stock options granted for services rendered and interest expense	1,326,253	675,473
Depreciation	19,943	12,041
Amortization of debt discount	-	136,696
Series A mandatorily redeemable convertible preferred stock dividends	-	9,934
Deferred acquisition costs	1,253	8,934
Changes in operating assets and liabilities:		
Prepaid expenses and other current assets	(97,125)	(103,591)
Accounts receivable	(37,202)	-
Unearned revenues	4,482	(12,524)
Accounts payable, accrued expenses, and other current liabilities	(66,873)	(126,063)
	-----	-----
Net cash used in operating activities	(2,623,865)	(1,783,626)
	-----	-----
Cash flows from investing activities:		
Acquisition property and equipment	(19,194)	-
	-----	-----
Net cash used in investing activities	(19,194)	-
	-----	-----
Cash flows from financing activities:		
Net proceeds from issuance of common stock	2,320,055	1,928,100
Proceeds from advances on notes payable	138,232	180,396
Payments of capitalized lease obligations	(11,645)	(9,631)
Proceeds from sale of convertible debentures	-	250,000
Repayments of notes payable	(154,860)	(141,861)

Net cash provided by financing activities	2,291,782	2,207,004
Net increase/(decrease) in cash and cash equivalents	(351,277)	423,378
Cash and cash equivalents at beginning of period	436,659	488,872
Cash and cash equivalents at end of period	\$ 85,382	\$ 912,250

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## RISKS

- The company has had limited revenues and is not profitable. The company needs to greatly increase their market awareness and their revenue generation. The company has only generated revenues from their current business operations for the past three quarters.
- The company is in a market segment that is not well known or understood by the general public.
- Future medical discoveries could directly or indirectly affect the need or even the usefulness of the company's services, either negatively or positively.
- The co. could pursue additional financings that would be dilutive to current shareholders.
- The co is a younger co and has to execute well and conserve their resources.
- The stock tends to trade lower volume amounts that can result in large percentage price moves on nominal stock activity.
- The viability of long-term storage of adult stem cells has not been established.
- Additional competition could develop from larger, more well-established and better funded companies.
- The company intends to spend considerable sums for the foreseeable future on various marketing and advertising expenditures.

*Additional information is available upon request.*

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**Recommendation History:** Pro-Active Research Group, Inc. initiated coverage of NeoStem, Inc. on August 31, 2007 with a Hold recommendation. We are not initiating price targets at this point.

**Rating System:** Pro-Active Research has a three-tier rating system: Buy (and Speculative Buy), Hold, Sell. Pro-Active also issues non-rated informational reports.

**Coverage Universe:** 75% Buy, 25% Hold

## DISCLAIMER

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This report was created on August 31, 2007 from information publicly known as of August 31, 2007. Material developments may have occurred in the interim. Neither Pro-Active Research Group, Inc. nor the analyst accepts any responsibility for any material change concerning the company since this report was prepared.

## **DISCLOSURES**

Pro-Active Consulting Group, Inc. has received \$4,250 and expects to receive an additional \$4,250 from a third party as compensation for four months of research services from Pro-Active Research, Inc. This four month term could be extended.

Pro-Active Consulting, its representatives, and affiliated companies may beneficially own 1% or more of a class of common stock or other securities of NeoStem ("NBS"), and may also be short the common stock or other securities of NeoStem ("NBS").

### **Analyst Certification**

The analysts named in this report hereby certify that their views about the company are accurate and they have not and will not receive direct compensation in exchange for providing specific recommendations in this report.

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