



FIRST BERLIN

Equity Research

BUY

PLURISTEM THERAPEUTICS, INC.

ISRAEL /
LIFE SCIENCES

INITIATING COVERAGE

PRICE TARGET: **\$5.50**
PREVIOUS CLOSE: **\$1.88**
RETURN POTENTIAL: **192.6%**

2 JUNE 2008



CONTENT	PAGE
PLURISTEM FACT SHEET	1
INVESTMENT CASE.....	2
SWOT ANALYSIS	4
PLURISTEM – INNOVATIVE CELL THERAPY PLAYER.....	5
PIPELINE: EARLY STAGE BUT GREAT POTENTIAL.....	7
COMPETITIVE LANDSCAPE	11
FINANCIAL POSITION.....	12
VALUATION APPROACH	13
TRIGGERS.....	15
INCOME STATEMENT ANALYSIS	16
BALANCE SHEET ANALYSIS	17
CASH FLOW ANALYSIS.....	18
APPENDIX: CLASSIFICATION OF STEM CELLS	19
DISCLAIMER.....	20

PLURISTEM THERAPEUTICS, INC.

ISRAEL / LIFE SCIENCES

Primary exchange: NASDAQ
Secondary exchange: Frankfurt
Symbol: PSTI / PJTA ISIN: US72940R1023

RATING: Buy

PRICE TARGET: \$5.50

RISK RATING: High

INITIATING COVERAGE

COMPANY PROFILE

Pluristem is a biotech company focused on the research and development of allogenic therapeutic products using mesenchymal stem cells (MSCs) from the placenta for the treatment of degenerative, ischemic and autoimmune diseases. Pluristem is based in Haifa, Israel, and has 25 employees.

KEY POINTS

An attractive player in the stem cell arena Pluristem has two lead programmes using mesenchymal stem cells (MSCs) from the placenta in advanced pre-clinical development with a combined market opportunity of up to \$6 billion. Academic studies also support its products' potential to address further indications.

MSCs represent a paradigm shift in therapeutic treatment Academic and biotech research have shown increased interest in MSCs due to their ability to form a variety of cell types, as well as their availability in quantities appropriate for clinical applications, making them good candidates for use in tissue repair and regenerative medicine. Moreover, MSCs are not recognised by the immune system and can therefore be used allogeneically. As such, Pluristem's products would witness mass-market commercialisation similar to classic drugs.

Lead drug candidates to enter clinical trials starting in H2 2008 The company's leading product, PLX-PAD for peripheral artery disease, is poised to start Phase I trials in H2 2008. Pluristem's second most advanced product, PLX-BMT for improving engraftment in umbilical cord blood transplants, will enter the clinic in H1 2009. Pre-clinical results have been very promising.

Unique technology platform Using its proprietary Plurix 3D Bioreactor, capable of imitating the bone marrow environment, Pluristem can multiply MSCs to unprecedented levels (as much as 10,000-fold), paving the way for their therapeutic use. This technology platform represents a significant quality improvement compared with current 2D bioreactors such as Aastrom's.

RECOMMENDATION

We initiate coverage of Pluristem with a Buy recommendation and a price target of \$5.50 (€3.50). We believe Pluristem's stock is undervalued, offering potential upside of almost 200% from current levels. Our valuation is in our view conservative, considering that the enterprise values of comparable early-stage peers range from \$83.0m to \$87.5m, significantly more than our \$36.2m for Pluristem. We believe the company has recently made good progress in bringing its lead products to the clinic. We expect positive news flow from its lead products entering the clinic this year to add substantial value to Pluristem and have a positive impact on the share price.

RISKS

The main risk factors that we identified are development risk, regulatory risk and commercialisation risk, including reimbursement.

TRADING DATA

Market capitalisation (30.05.08)	\$12.92m
Shares outstanding	6.87m
Closing price (30.05.08)	\$1.88
52-week range	\$1.75 / 22.80
Free float (according to company)	43%
Average daily share volume (year)	37,586

STOCK OVERVIEW



FINANCIAL HISTORY & PROJECTIONS

	2005/06	2006/07	2007/08E	2008/09E
Revenue \$m	0.00	0.00	0.00	0.00
Yr/Yr growth	na	na	na	na
Operating profit \$m	-2.33	-8.24	-10.19	-9.10
Operating margin	na	na	na	na
Net income \$m	-2.44	-8.43	-9.99	-8.92
EPS \$	-0.04	-0.03	-1.45	-1.29
P/E	na	na	na	na

COMPANY DATA (as of 31 March 2008)

Liquid assets	\$3.34m
Current assets	\$3.86m
Intangible assets	\$0.00m
Total assets	\$5.28m
Current liabilities	\$0.98m
Shareholders' equity	\$4.13m

ANALYST INFORMATION

Christian Orquera c.orquera@firstberlin.com
Tel +49 (0)30 - 80 93 96 95 Fax +49 (030) 809 39 687



INVESTMENT CASE

ATTRACTIVE EARLY-STAGE R&D PIPELINE

Pluristem has two lead programmes using mesenchymal stem cells (MSCs) in advanced pre-clinical development with a combined market potential of up to \$6 billion. Academic studies also support its products' potential to address further indications such as stroke, Parkinson's disease, multiple sclerosis, Crohn's disease and musculoskeletal disorders, which represent a combined market opportunity of almost \$22 billion. The company is successfully exploring some of these indications in early-stage pre-clinical studies.

MSCS FROM PLACENTA PROMISE THERAPEUTIC USE

Academic and biotech research have shown increased interest in MSCs due to their ability to form various cell types, as well as their availability in quantities appropriate for clinical applications, making them good candidates for use in tissue repair. We see the placenta as an attractive source, since MSCs here are in contact with two hosts, the mother and the baby, suggesting lower immunogenicity so as not to cause the mother's rejection of the baby's cells.

PLX-PAD – A PROMISING TREATMENT POISED TO START PHASE I TRIALS IN H2 2008

PLX-PAD is being investigated for peripheral artery disease. In pre-clinical trials with ischemic mice, PLX-PAD was able to restore blood flow to the affected limbs of mice and significantly increase the number of new capillaries supplying the ischemic area. Based on these encouraging results, Pluristem will file the IND application to initiate Phase I trials in Europe and the US soon; the company expects to start the clinical trials in H2 2008.

PLX-BMT MAY IMPROVE HAEMATOPOIETIC STEM CELL TRANSPLANTATION

PLX-BMT is an adjuvant product intended to be applied together with the transplantation of haematopoietic stem cells from umbilical cord blood (UCB) in order to improve the engraftment process, enhance the growth of UCB cells and reduce the risk of rejection (graft versus host disease). Pre-clinical data was very strong, demonstrating an up to 500% increase of engraftment compared with non-MSC patients. Pluristem will submit a US pre-IND filing in H1 2009; Phase I trials may start during H2 2009.

POWERFUL 3D BIOREACTOR TECHNOLOGY PLATFORM

Using its proprietary Plurix 3D Bioreactor (capable of imitating the bone marrow environment), Pluristem can multiply MSCs extracted from the placenta of birthing mothers – usually discarded as biological waste – to unprecedented levels (as much as 10,000-fold), paving the way for the therapeutic use of MSCs. We believe the uniqueness of the Plurix 3D Bioreactor offers a key advantage over Pluristem's competitors, as it overcomes a typical quantity/quality limitation for allogenic stem cell therapy, making it possible for the company to treat some 1,000 patients with the MSCs from one placenta.

**LOW VALUATION SUGGESTS UPSIDE POTENTIAL**

We initiate coverage of Pluristem with a Buy recommendation, a price target of \$5.50 (€3.50) and a High risk rating. We value the company using our proprietary risk-adjusted sum-of-the-parts valuation model, which produces a fair value of \$5.50 per share and corresponds to an enterprise value of \$36.2m. As a sense check, we conduct a peer group analysis looking at 12 peer companies active in the stem cell and immunotherapy fields. We believe our valuation is conservative, considering that the enterprise values of early-stage peers Mesoblast, StemCell, Inc. and Arius Research range from \$83.0m to \$87.5m, significantly more than our \$36.2m for Pluristem. We believe the company has recently made good progress in bringing its lead products to the clinic. We expect positive news flow from its lead products entering the clinic this year to add substantial value to Pluristem and have a positive impact on the share price.



SWOT ANALYSIS

STRENGTHS

- Experienced management. Zami Aberman, CEO, joined Pluristem in 2005 and changed the company's strategy to therapeutic development in order to leverage Pluristem's key technology platform. He has held CEO and chairman positions in Israel, the US, Europe, Japan and South Korea, mostly in the high-tech field. Yaky Yanay, CFO, has several years of management experience of public companies in the financial sector.
- Pluristem has a leading technology which emerged from Israel's world-class research centres. The company's unique proprietary Plurix 3D Bioreactor, capable of imitating the bone marrow environment, achieves the cost-effective expansion of mesenchymal stem cells (MSCs) taken from the placenta with a significantly superior qualitative/quantitative performance compared with the current 2D methods.
- As shown in pre-clinical studies, MSCs are immunoprivileged and immunosuppressive. Moreover, some initial small academic clinical trials (e.g. Le Blanc et al.) show that MSCs may produce a reduced level of rejection and faster engraftment through the allogenic stem cell transplantation of haematopoietic stem cells.
- The company's pioneering approach of using MSCs from the placenta has, in our view, a number of biological (e.g. easier to obtain) and financial (such as lower cost, etc.) advantages compared with other sources, such as bone marrow, fat tissue and umbilical cord blood.

WEAKNESSES

- Pluristem's R&D pipeline is still at an early stage; lead programmes are in late pre-clinical or IND phases. Therefore, it will take some five to six years before product approval occurs and the company generates first revenues. Nevertheless, we expect the company will capitalise on some programmes and indications in the near term through development and out-licensing deals.
- Weak financial position, cash may suffice until the end of 2008. However, assuming the acceptance of several grants in the US and Europe, the company could finance operations until H1 2009.
- Pluristem's market cap is low, currently approx. \$13m, making it difficult to attract institutional investors.

OPPORTUNITIES

- Pluristem's valuation is in our view attractive at its current market cap of roughly \$13m. Mesoblast, StemCell Inc. and Arius Research, the most comparable US companies based on development stage and profile, have market caps in the \$83.0m-87.5m range.
- The company's progress in initial clinical trials on humans may create significant shareholder value. Pluristem's technology has the potential for broad application if validated in human trials. Furthermore, the successful validation of the company's platform in early human trials could attract larger biotechnology and pharmaceutical companies seeking entry into the area of cell-based therapeutics, or to complement their existing pipelines.
- The company intends to out-license or seek partnerships for specific applications of its technology (e.g. stroke indication), or to selected geographic regions, which would generate additional value.

THREATS

- Programmes under development may progress slower than expected or may, in clinical trials on humans, fail to repeat the strong performance shown during pre-clinical development (laboratory and animal models).
- Stem cell therapeutic research is a very dynamic field; therefore, any unexpected breakthrough from competitors would significantly impact Pluristem's potential revenues.



PLURISTEM – INNOVATIVE CELL THERAPY PLAYER

EVOLVING FROM A TECHNOLOGY TO A DRUG DEVELOPING COMPANY

Pluristem Therapeutics, Inc. is a regenerative, cell-therapy company focused on the production and commercialisation of cell therapy products for the treatment of an array of degenerative, malignant, and other tissue-related disorders. The company's primary production process uses mesenchymal stem cells (MSCs) harvested and cultivated from the placenta through Pluristem's proprietary PluriX 3D Bioreactor (the Bioreactor) technology. Based in Haifa, Israel, Pluristem has a staff of 25, the majority of which function in a research and development capacity. Pluristem has experienced staff with extensive professional backgrounds in the biological and health care sciences.

The company was incorporated in the US in May 2001 with an original business model of developing and streamlining artificial intelligence software. In May 2003 Pluristem restructured itself to focus on the biotechnology industry, specifically in the realm of stem cell production technology. The company decided to further develop the 3D Bioreactor system and purchased patents for the Plurix Bioreactor technology from the Technion-Israel Institute of Technology and the Weizmann Institute of Science in May 2007. After realising the huge competitive advantage emerging from its unique PluriX 3D Bioreactor system, the company abandoned initial plans to market the technology, choosing instead to capture its full potential, generating value with the technology in-house by developing cell therapy treatments for a wide range of life threatening diseases.

PLURIX 3D – A UNIQUE SYSTEM TO EXPAND STEM CELLS UP TO 10,000-FOLD

We see the Bioreactor as a core asset from Pluristem. This innovative system abandons the standard, two-dimensional cell culture techniques in favour of a three-dimensional stromal cell culture that creates an artificial physiological environment, giving MSCs the ability to grow free of exogenous biological and pharmacological products (e.g. fibroblast growth factor -2, leukaemia inhibitory factor, etc.), which are required to expand cell cultures in the more typical two-dimensional process. This eliminates the risk of genetic instability and allows safer expansions of stem cells without the inclusion of artificial barbiturates.

Pluristem's Bioreactor system mimics the conditions in human bone marrow, where stem cells maintain their original form, meaning that they regenerate and multiply geometrically without differentiating into more complex or specialised cells. This is in our view an outstanding achievement, considering that MSCs have a predisposition to differentiate once they are out of their natural bone marrow environment. The size and scale of the Bioreactor is considerably larger than bone marrow tissue, thus allowing stem cell growth to be greatly expanded to dimensions suitable for commercialisation. The company has achieved stem cell expansion to unprecedented levels (as much as 10,000-fold), paving the way for the therapeutic use of MSCs.

Most expansion methods currently being used deliver a significantly inferior performance to Pluristem's Bioreactor. Aastrom's Replicell System for example, which uses a 2D bioreactor –



a closed system to multiply stem cells through the addition of a medium with nutrients in the form of a therapy kit – claims to increase the volume of stem cells by 100-200 times in 12 days. The system is currently in a Phase III study in the US and CE-certificated in Europe. In addition, several academic institutions and scientists (Moezzi et al. Elsevier 2005; Denning-Kendall et al. Stem cells 2003) as well as other biotech companies are multiplying stem cells through more primitive methods; by adding growth factors called cytokines (e.g. Cell-Genix-Germany CE-certified for research; Gamida-Israel-Phase I study).

DISTINGUISHING DIFFERENT TYPES OF STEM CELLS

Stem cell therapy, a novel approach for treating diseases, generally consists of giving living cells (i.e. injected or transplanted) to patients, which will then act as classical drugs. Generally, there are two types of stem cell collection and transplants: 1) ‘autologous’, where the patient’s own stem cells are used, and 2) ‘allogenic’, where cells are sourced from a genetically compatible donor. The higher the compatibility, which in the case of autologous transplants is 100%, the lower the risk of severe complications, such as graft versus host disease and death. However, allogenic products, from a commercial perspective, are more attractive.

All cells and tissue in the human body originate from stem cells, which are capable of continuously propagating and differentiating into various kinds of cells or tissues. MSCs are very different to totipotent embryonic stem cells (taken from living embryos and can develop into any cell in the body), which have been the focus of media and public criticism due to moral and ethical concerns.

MSCs can be isolated from several sources such as bone marrow, adipose, skin, cord blood, placenta, retina, etc. and are multipotent cells, meaning that under the right stimuli they have the potential to differentiate (so called plasticity) into various types of tissue such as muscle, bone, cartilage, fat, tendon, etc. (Herzog et al. 2003; Horwitz et al. 2005). As such, MSCs can offer a cure for disorders in which defective or missing cells could be replaced via stem cell transplantation. MSCs have shown to be regenerative cells that promote tissue repair in the body by modulating immune responses and protecting damaged tissue; they can even migrate to inflammation sites to influence inflammation processes and the immune system (Aggarwal et al. 2005).

In addition there are a second type of adult stem cells, known as haematopoietic, which in general cohabit with MSCs and are related to blood preservation, as they can, in particular, develop into various cell types found in the blood such as red blood cells, lymphocytes, leucocytes, etc. There is already a lot of research in progress worldwide on adult stem cells, evidenced by thousands of scientific articles published in leading journals and magazines. However, despite the significant scientific strides, adult stem cell research is still in its infancy.



ALLOGENIC MSCS PROVIDE A COMPELLING BUSINESS MODEL

Pluristem's technology platform is based on allogenic mesenchymal stem cells (MSCs) taken from the placenta. While most research on MSCs has been focused on bone marrow, several in-vitro studies show that the characteristics of MSCs from both sources are comparable. We see the placenta as an attractive source. Here, MSCs are in contact with two hosts, the mother and the baby, suggesting lower immunogenicity which would not lead to the mother's rejection of the baby's cells. In the placenta stem cells are also available in higher quantities more suited to clinical applications, making them good candidates for use in tissue repair.

MSCs have shown in a large number of studies their ability to repair tissue, which has been classically explained with their plasticity. However, recent studies suggest that MSCs frequently provided functional improvements without any evidence of engraftment or differentiation. These studies explain the mechanism of action with the secretion of a large number of cytokines and chemokines (DJ Prockop, Tulane centre for gene therapy). In addition, a growing body of evidence indicates that MSCs are immunoprivileged, meaning that they are not rejected by the patient's immune system and can therefore be used without any HLA matching (compatibility based on HLA, which are antigens on cells that strongly influence human allotransplantation and transfusions in patients). These properties pave the way for their highly attractive allogenic use. We believe that, following initial success in the sector, pharmaceutical companies will be more attracted to allogenic products, which enable a business model similar to classical drugs.

PIPELINE: EARLY STAGE BUT GREAT POTENTIAL

CHART 1: PRODUCT PIPELINE AND MARKET POTENTIAL

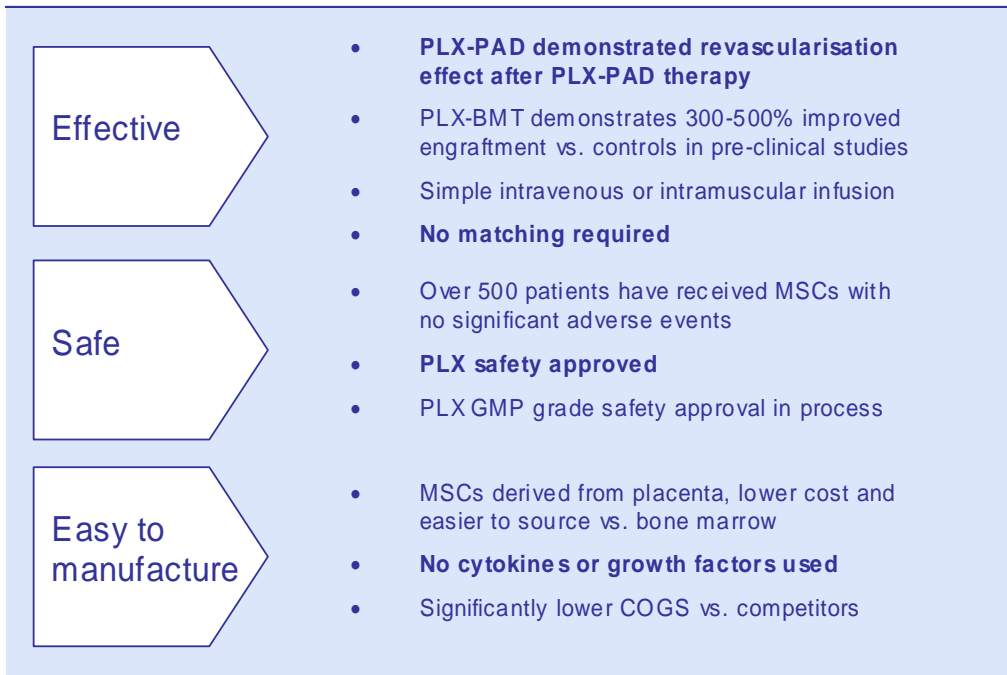
Product	Pre-clinical	IND filing	Phase I	Phase II	Phase III	Market size
PLX-PAD peripheral artery disease (incl. CLI critical limb ischemia)	→	→				\$4bn
PLX-BMT adjuvant bone marrow transplantation	→					\$2bn
PLX-STROKE	→					\$4bn
PLX-MS multiple sclerosis	→					\$5bn
PLX-IBD inflammatory bowel disease	→					\$13bn
Other disorders	→					

Source: Pluristem, First Berlin Research

Pluristem has several programmes in advanced pre-clinical development which use allogenic MSCs expanded in the 3D Bioreactor, so called PLacental eXpanded (PLX) cells. Several studies have demonstrated that PLX cells are immunoprivileged and also immunosuppressive, as they have prevented the proliferation of pro-inflammatory cells and down/up regulated pro-/anti-inflammatory cytokines.



CHART 2: PLX'S UNIQUE FEATURES



Source: Pluristem, First Berlin Research

PLX-PAD: LEAD PRODUCT BRINGS NEW HOPE FOR PAD TREATMENT

PLX-PAD is the lead drug candidate being investigated for peripheral artery disease (PAD). According to Datamonitor, the prevalence of PAD in the US, Europe and Japan affects some 20m people and the market is estimated at around \$4 billion. This disease refers to plaque built up in the wall of arteries in the pelvis and legs (atherosclerosis), leading to the obstruction of normal blood flow or arterial narrowing. Plaque will grow, become brittle and rupture, triggering the formation of a blood clot. This clot formation may cause pain, changes of skin colour, ulcers, etc. The severe form of PAD obstruction is also known as critical limb ischemia (CLI), characterised by the severe decline of blood flow.

There are currently no pharmacological treatment options for PAD or CLI; most medications will address prevention and symptomatic pain relief, without disease modification. In earlier stages where patients have painful cramping of leg muscles during walking (intermittent claudication), doctors will prescribe antiplatelets and statins, such as first line treatment Cilostazol (Pletal) to lower plaque formation. Beyond medication, given a total loss of circulation in CLI, doctors would perform surgery to free the artery (e.g. endovascular procedure, angioplasty, etc), or a bypass graft in the most severe cases. If treatment comes too late, gangrene can lead to the loss of a limb, as the last option a doctor will have to save the patient's life would be amputation.

In pre-clinical trials with ischemic mice PLX-PAD delivered very encouraging data. It was able to restore blood flow to the affected limbs of mice and significantly increase the number of new capillaries supplying the ischemic area, suggesting that the product can trigger angiogenesis. Results showed a significant increase in limb functionality 21 days after



treatment and a significant decline of oxidative stress and endothelial inflammation. Based on these promising results, in March Pluristem filed the pre-IND application to the German Clinical Trials Regulatory Agency “Paul Ehrlich Institute” and the US Centre for Biologics Evaluation and Research (division of FDA), which have now been approved. Therefore, the company expects to submit the IND applications this summer and initiate Phase I trials in two sites in Europe and one site in the US in H2 2008. We conservatively estimate risk-adjusted peak sales of higher than \$200m for this indication.

PLX-BMT COULD IMPROVE HAEMATOPOIETIC STEM CELL TRANSPLANTATION

PLX-BMT is an adjuvant product intended to be applied together with the transplantation of haematopoietic stem cells from umbilical cord blood (UCB) in order to improve the engraftment process, enhance the growth of UCB cells and reduce the risk of rejection (graft versus host disease). There are presently between 40,000 and 50,000 bone marrow transplants (BMT) performed annually worldwide, the majority of which are allogenic. The company expects that the number of transplants could triple if PLX-BMT manages to improve the performance (i.e. compatibility, engraftment, etc.) of the procedure.

UCB stem cells are at present mostly applied as an alternative therapy for BMT, especially in children. Around two-thirds of these patients suffered from leukaemia or other blood diseases. The rest suffered from congenital disturbances or collapse of the bone marrow. After high-dose chemotherapy and radiation of patients, tumour cells and with them all fast-growing tissues such as bone marrow are destroyed. Bone marrow has to be replaced, as it produces red and white blood cells, and platelets, which are essential for life.

Disappointingly, only one-third of patients needing BMT find a donor. However, 80% were able to find a UCB match. In addition, UCB stem cells have lower rejection rates (graft versus host disease) as they are relatively premature and the immune system does not easily identify them as ‘foreign’, even if the donor is not the recipient. Statistics show that 100m babies are born worldwide per year, providing a better chance to get the right tissue type for many patients awaiting treatment. As a result UCB stem cell transplantation is gaining popularity. The first successful UCB transplantation was performed in 1988 in France. Since then, more than 7,000 UCB transplantations have been conducted worldwide, 6,000 thereof during the last decade. This shows the increasing acceptance of this procedure in the last few years.

Nevertheless, the most relevant limitation for the use of UCB stem cells is the relatively low amount of stem cells in UCB, which is why most transplantations have occurred in children. The minimum recommended concentration of nucleated cells per kilogram of body weight is 20m/kg. The average amount of nucleated cells in UCB is 700m, which is sufficient for treating an individual of up to 35kg. Several academic studies show that an important reason for failures in UCB transplantation was the low dose of nucleated cells infused. Scientist Gluckman (NEJM 2001), writing on allogenic transplants, observed that “patients who received no more than 10 million nucleated cells per kilogram had a 75% probability of death, whereas recipients of at least 30 million nucleated cells per kilogram had a 30% probability of death”.

The second limitation of UCB stem cells is the slower engraftment – the process by which



transplanted cells start to grow and reproduce within the recipient. Premature stem cells still have to absolve more cycles of division, which takes a longer estimated time of some 26 days compared with roughly 18 days with bone marrow transplantation, until the patient has sufficient blood and immune cells. Given that the patient is incapable of resisting infections during the engraftment process, this longer acceptance time can be dangerous.

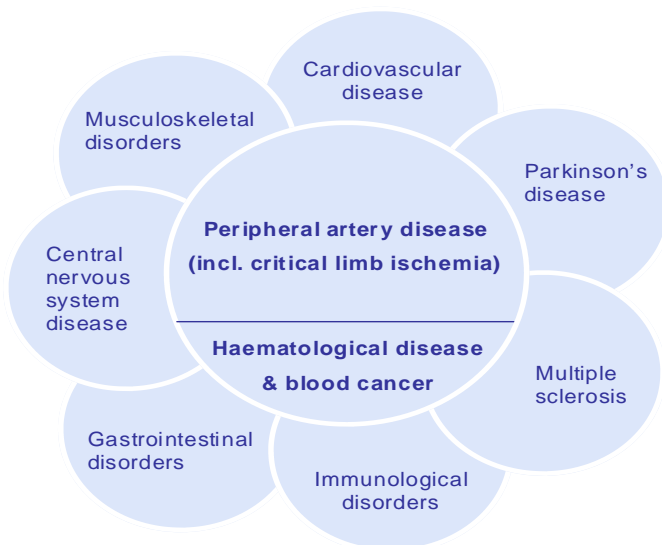
As a result, we believe Pluristem’s Bioreactor technology coupled with its PLX-BMT could make a large contribution to expanding the market by improving the performance of haematopoietic UCB stem cell transplantation. We conservatively estimate risk-adjusted peak sales in excess of \$120m for this indication.

POTENTIAL USE OF PLX FOR A VARIETY OF DISEASES

Initial pre-clinical investigation into the use of PLX for central nervous system (CNS) disorders has proved successful. Pluristem reported a statistically significant improvement in the functional and anatomical endpoints (e.g. improvement in beam walking, neurological severity score and reduction of infarct size) of ischemic rats compared to control. These first results suggest that PLX can be used to treat ischemic stroke, a disease affecting annually some two million people worldwide, representing a market potential worth around \$4 billion.

In addition, PLX delivered positive pre-clinical data in mice models for multiple sclerosis (MS), achieving statistical significance for reducing functional deficiencies in rats having the disorder. MS is an autoimmune disease which affects more than 2.5m people worldwide annually, representing a market for potential disease modifying agents of approx. \$5.4 billion. Pluristem also demonstrated efficacy in animal models (mice and rats) of PLX for other autoimmune diseases such as inflammatory bowel disease (IBD), including Morbus Crohn. IBD affects some four million people worldwide and the market size is estimated to be more than \$2 billion. We expect further indications will follow (e.g. Parkinson’s).

CHART 3: PLURISTEM’S THERAPEUTIC POTENTIAL



Source: Pluristem, First Berlin Research



COMPETITIVE LANDSCAPE

Pluristem has a number of competitors in the adult stem cell arena. Since this sector is relatively young, as of yet no company has achieved a drug registration. Considering that the most studied source for extracting stem cells has been the bone marrow, it should not be surprising that majority of companies, including the more advanced ones which have a stock listing, are using a technology based on bone marrow mesenchymal stem cells (MSCs), either allogenic or autologous.

From the first wave of early technology adopters, we believe Osiris, which uses allogenic bone marrow stem cells, is the best positioned company so far. Osiris has one product, Prochymal, undergoing Phase III trials for two indications: graft versus host disease (GVHD) and Crohn's disease. Moreover, the company recently received FDA clearance in the US to make this product available to children (2 months-17 years) with life threatening GVHD, under schemes similar to compassionate use (drug will be charged to patients). This underscores the positive opinion from the registration agency on this promising cell-based treatment, as the product has not received marketing approval yet. Osiris is also marketing a second product, Osteocel, for regenerating bone in orthopaedic indications. This product was registered as a medical device and is produced from stem cells extracted from cadavers. We believe this product validates the application of stem cell therapy for tissue regeneration.

Aastrom Biosciences is using autologous bone marrow stem cells, which in our view limits their market potential compared with allogenic stem cells. Nevertheless, the company has one product based on its Tissue Repair Cells (TRCs) in Phase III for the treatment of osteonecrosis (deterioration of the top of the thigh bone) and has initiated a Phase IIb trial for PAD and CLI (same indication as Pluristem).

Besides these two companies, all other listed players have products in earlier development stages, such as Stem Cell Therapeutics, StemCell Inc, Mesoblast or Neuralstem. We also refer to two further interesting companies which use autologous adiposal stem cells: Cytori, a listed company with one product in Phase I for cardiovascular diseases (chronic ischemia and acute myocardial infarction); and Cellerix, a private Spanish company with a lead product, Ontaril, for cryptoglandular perianal complex fistula, in Phase III clinical trials.

Although several competitors are at a more advanced development stage than Pluristem, we believe the company's use of allogenic MSCs from the placenta has a superior innovation grade. Pluristem's placenta approach is unique – and its 3D Bioreactor replicates the natural bone marrow environment, which we expect will mean its cell-based products show better results than its peers. To date, the placenta is considered the richest source of MSCs. Considering that placental MSCs are in very close contact with the baby, it implies that their immunogenicity should be almost non-existent, so that the mother does not reject the baby's cell as 'foreign'. Of note, Pluristem is to our knowledge the only company investigating MSCs taken from the placenta for therapeutic applications.



FINANCIAL POSITION

BALANCE SHEET: FINANCIALS STRENGTHENED AFTER CAPITAL INCREASE

The highlight in calendar-year 2007 was the capital increase completed on 14 May, which significantly improved Pluristem's balance sheet and cash position. Gross proceeds from the private placement amounted to \$8.5m, at a share price of \$2.50. The contract included warrants to expand the deal to a maximum of \$13.5m, at an exercise price of \$5 over the following five years. Until now, gross proceeds totalled \$10.0m, which will to our knowledge not increase further, since the contract on warrants has in our understanding been terminated. We project that the company will have cash and cash equivalents of \$2.0m by the end of the financial-year 2007/08, which ends on the 30 June. We believe the company has enough funds to run operations until H1 of calendar-year 2009, if we assume the company can maintain a current low burn rate of \$0.4m per month and that Pluristem will be able to obtain some further research grants from the NIH in the US (\$1m-3m) and/or Israel (\$1.5m).

Looking ahead, since we do not expect Pluristem to achieve profitability in the near term, we project that the company will raise some further \$15m-20m to fund operations (mainly research and development projects) until the end of calendar-year 2011. Since the company has so far been successful in getting access to new funds from the capital market (despite a difficult market environment) and both lead drug candidates are developing well, we believe further successful fund raising is very likely. We project \$20m in new funds in our balance sheet forecasts. We believe that the licensing of the lead drug candidate could be achieved by 2010, or early 2011, adding new funds into the financing equation; a double-digit US million dollar deal volume should be achievable, bringing an up-front payment in the single-digit US million dollar range (see details of Cellerix deal on next page).

Due to its small size, Pluristem has a relatively low amount of capital invested in fixed assets. We projected that property, plant and equipment will increase significantly in 2007/08 to approx. \$1.1m (from \$0.5m in 2006/07) due to the expansion of clean rooms for stem cell production. We therefore estimate that the company will have total assets of \$4.0m. At approximately \$2.0m, cash and cash equivalents will be the largest single position.

PROFIT AND LOSS: 9M 2007/08 RESULTS AND BEYOND

The company published 9M 2007/08 in accordance with management's guidance. Pluristem had no revenues and R&D expenses amounted to \$3.1m. This explains a large portion of the \$7.7m operating loss and the \$7.4m net loss. Nevertheless, we note that Pluristem finances a large amount of its expenses with stock options, meaning that a significant portion is non cash expenses. In 2007/08 we project an operating loss of \$10.2m and a net loss of \$10.0m. Thereof we estimate some \$5m to have no impact on cash. We estimate Pluristem will see a slight decline in its operating loss in 2008/09 to \$9.1m with a net loss of \$8.9m, mostly because we project a lower level of stock options. We conservatively assume the company will generate first revenues in 2010/11 from a milestone payment for out-licensing of its first drug candidate, PLX-PAD.



VALUATION APPROACH

I. SUM-OF-THE-PARTS VALUATION

We assess Pluristem's fair value, based on a sum-of-the-parts methodology, using a risk-adjusted NPV model for each product line. We believe this is the most comprehensive method to value Pluristem as it reflects the implicit risk-adjusted value of every programme under development. In our forecasting process, we adjust our sales estimates and the resulting cash flows with success probabilities to obtain risk-adjusted expected values.

Additionally, using First Berlin methodology, which takes into account company-specific risk factors, we derive a cost of equity of 15.0% for Pluristem. Taking into consideration that the company has no debt, we estimate a WACC of 15.0%, which we use to discount the projected cash flows. Including our projected net cash of \$2.0m by the end of FY 2007/08 (30 June), we value Pluristem at \$38.2m, which implies a fair value per share of \$5.50.

Using our ten-factor risk analysis, we determine a High risk rating for Pluristem. The main risk factors we identify are development risk, regulatory risk and commercialisation risk, including reimbursement.

	Risk-adjusted value (\$'000)	% of total	Risk-adjusted peak sales (\$m)	Status	Probability of success
PLX-PAD peripheral artery disease	16,800	46%	200	IND filing	15%
PLX-BMT adjuvant bone marrow transplant	8,600	24%	120	Late preclinical	5%
PLX-stroke, multiple sclerosis, IBD	5,800	16%	> 600	Preclinical	2%
Bioreactor technology platform	5,000	14%			
EV group	36,200	100%			
+ Net cash / - net debt	2,000				
Shareholder value	38,200				
Diluted number of shares (m)	6,940				
Fair value per share (\$)	5.50				
Current share price (\$)	1.88				
upside	193%				
First Berlin assumptions					
Peak sales	<i>Sales potential achieved within five years of market launch at retail selling prices</i>				
Terminal value	<i>Salvage value, at approx. 0.4x - 0.6x sales from last forecasted year</i>				
WACC	15.0%				

Our sum-of-the-parts model shows that \$16.8m or 46% of the company's value can be attributed to its lead drug candidate PLX-PAD. We believe our estimated value for this drug candidate is appropriate, compared with prices (in-/out-licensing products) paid in the industry. We recall that last year Spanish peer Cellerix, a stem cell company, out-licensed US rights for its Phase II-III drug candidate Cx401 to specialty pharma company Axcan for a transaction volume of some \$40m (upfront and milestone payments) in addition to scaled royalties based on sales. Considering that European rights are still unlicensed (a similar deal could be achieved for Europe), we see our valuation for PLX-PAD – to initiate Phase I trials in H2 2008 – appropriate.



II. PEER GROUP COMPARISON

As is often the case with small-cap biotech companies, there are almost no listed firms truly comparable to Pluristem relating to strategy, technology, programme depth (including development stage), indications and risk profile. However, we have identified a broad peer group consisting of 12 companies, six of which are US, Canadian and Australian peers active in the stem cell therapeutic field. The remaining six are US and Canadian biotech companies which develop immunotherapy and biologic products.

The difficulty here is that Pluristem, similar to some of its peers, is at an early development stage. As a result, the company is generating no sales, and is thus unprofitable on an earnings and EBITDA basis. Therefore, a comparison makes no sense unless we take the enterprise value (EV) as a rough absolute valuation, and examine this figure in comparison to the strength of the underlying technology, as well as the depth and size of the pipeline. We choose to quantify Pluristem's pipeline strength by estimating the development head start of its peers, measured by the number of years Pluristem would need to catch up with its peers. On average, Pluristem is 2.8 years behind our chosen stem cell peers and 3.8 years behind the immunotherapy peers. We use these figures to discount the respective EVs (to be interpreted as future EVs) to the present, using an estimated WACC of 15% and adjusted by our calculated average 60% probability of the company achieving the development stage of its peers.

	Companies	Share price (\$)	Market cap (\$m)	Net cash / debt (\$m)	EV (\$m)	IND filed or close to filing	Phase I	Phase II	Phase III	Total Indications	Head start (years)	PV of EV (\$m)
Stem cell biotech	Osiris Therapeutics (US)	13.16	418.0	-1.4	419.5	1	1	1	2	8	5.0	
	Cytori Therapeutics (US)	5.79	151.1	7.2	143.9	1	1	0	0	2	2.5	
	Astrom Biosciences (US)	0.39	52.0	25.8	26.1	1	1	1	1	4	4.0	
	Stem Cell Therapeutics (CN)	0.28	28.7	2.3	26.4	0	0	1	0	1	3.0	
	Mesoblast (AU)	0.75	89.9	6.9	83.0	1	0	1	0	4	1.5	
	StemCells, Inc. (US)	1.43	115.4	28.0	87.5	0	1	0	0	1	1.0	
	Median stem cell biotech		102.7		85.2						2.8	34.4
Immunotherapy & biologics	Cell Genesys (US)	3.74	294.5	-81.0	375.5	1	1	0	1	5	5.5	
	Dendreon Corp (US)	5.06	471.6	100.0	371.6	4	1	0	1	7	5.5	
	Antigenics (US)	2.30	151.0	-42.1	193.2	0	2	0	1	5	4.5	
	IDM Pharma (US)	2.10	52.9	22.0	30.9	0	1	3	1	5	4.5	
	Methylgene (CN)	2.43	89.2	60.2	28.9	4	0	1	0	13	3.0	
	Arius Research (CN)	2.03	95.6	12.3	83.3	4	0	0	0	4	0.0	
	Median immunotherapy and biologics		123.3		138.2						3.8	48.5
	Pluristem fair value (PV of EV1)	5.30	36.4	2.0	34.4	2				2		
	Pluristem fair value (PV of EV2)	7.35	50.5	2.0	48.5	2				2		

Assumptions

WACC	15%
Probability of success into Ph. II-III	60%

Source: Bloomberg (closing prices as of 21 May 2008), Companies, First Berlin Research

Based on the median discounted EVs of our peer sub-groups, we calculate a peer group valuation range of \$34.4m to \$48.5m. Assuming a valuation in line with its peers, metrics imply a valuation for Pluristem of \$5.30-7.35 per share. We believe our valuation range for Pluristem, obtained from our peer group analysis, is conservative, since it is significantly below the EVs of the most comparable early stage companies, Mesoblast, StemCells Inc. and Arius Research, which range from \$83.0m to \$87.5m. In addition, we note recent transactions in the



industry such as Abbott's collaboration (announced on 19 February), which took a \$5m stake in Mesoblast's subsidiary, Angioblast, valuing the IND-stage subsidiary at more than \$127m.

Therefore, we believe our peer group analysis confirms our conservative stock valuation of \$5.50 per share produced by our sum-of-the parts valuation model. We therefore determine a price target for Pluristem of \$5.50 and see significant upside potential to the current low share price.

TRIGGERS

As a small health-care company, Pluristem's share price will be driven by news flow on the status of certain strategic, operative and financial targets. Looking ahead, we expect 2008 and 2009 to be exciting years for the company. The company will be able to advance its lead product PLX-PAD into Phase I-II trials, being close to proof of concept. We therefore believe that announcements on the pipeline's progress will be relevant share-price drivers; they include:

- IND filing and initiation of Phase I trials in the US and Europe for PLX-PAD in H2 2008
- IND filing for PLX-BMT in H1 2009, with initiation of Phase I trials in the US in H2 2009
- Confirmatory pre-clinical data for PLX-Stroke in H1 2009, with a potential IND filing in H2 2009. Phase I trials would start towards year-end 2009
- Confirmatory pre-clinical data for PLX-MS in H1 2009, with a potential IND filing in H2 2009. Phase I trials would start towards year-end 2009
- Pre-clinical data for PLX-IBD during 2009, with a potential IND filing in H1 2009. Phase I trials would start in 2009
- Progress on pre-clinical development for further indications of PLX will be announced during 2008 and 2009 (e.g. Parkinson's)
- Pre-clinical collaboration agreement with a major Pharma company
- The first out-licensing deal of PLX-PAD could take place during 2010 or early 2011

Finally, we expect potential positive news flow on the progress of Pluristem's peers with the most advanced stem cell pipelines, particularly Osiris and Aastrom, to provide an additional boost to the share, as they could further validate the therapeutic use of mesenchymal stem cells.



INCOME STATEMENT ANALYSIS

All figures in \$'000	2003/04	2004/05	2005/06	2006/07	2007/08E	2008/09E	2009/10E
Revenues	0	0	0	0	0	0	0
Cost of goods sold	0	0	0	0	0	0	0
Gross profit	0	0	0	0	0	0	0
R&D expenses	-908	-1,787	-1,299	-2,549	-4,176	-3,700	-3,737
General and administrative expenses	-2,097	-874	-1,033	-3,726	-6,012	-5,400	-5,508
Know-how write-off	0	0	0	-1,963	0	0	0
Operating income (EBIT)	-3,005	-2,661	-2,332	-8,238	-10,188	-9,100	-9,245
Net financial result	994	563	-107	-191	200	180	144
Income before taxes & minority interests	-2,010	-2,098	-2,440	-8,429	-9,988	-8,920	-9,101
Net income / loss	-2,010	-2,098	-2,440	-8,429	-9,988	-8,920	-9,101
EPS US\$	-0.08	-0.05	-0.04	-0.03	-1.57	-1.29	-1.32
Diluted EPS US\$	-0.08	-0.05	-0.04	-0.03	-1.45	-1.29	-1.32
EBITDA	-2,913	-2,627	-2,290	-8,181	-10,069	-8,975	-9,114



BALANCE SHEET ANALYSIS

All figures in \$'000	2003/04	2004/05	2005/06	2006/07	2007/08E	2008/09E	2009/10E
Assets							
Current assets, total	741	2,099	2,538	6,053	2,572	7,225	11,439
Cash and cash equivalents	669	1,889	2,374	1,653	1,214	5,844	10,033
Marketable securities	0	0	0	3,758	800	800	800
Prepaid expenses	57	61	62	60	119	120	122
Other account receivables	15	148	101	582	439	461	484
Non-current assets, total	636	522	887	673	1,415	1,590	1,778
Property, plant and equipment	226	249	255	468	1,122	1,291	1,471
Long-term restricted deposits	21	27	29	125	187	189	191
Severance pay funds	32	28	57	81	105	111	116
Deferred issuance expenses	357	217	547	0	0	0	0
Total assets	1,377	2,620	3,425	6,727	3,987	8,816	13,217
Shareholders' equity & debt							
Current liabilities, total	392	451	734	733	879	878	892
Trade payables	113	185	285	365	450	436	436
Other current liabilities	170	90	285	211	264	269	275
Accruals	109	176	164	157	165	173	182
Long-term liabilities, total	629	366	3,335	97	160	164	152
Long-term debt	589	331	3,258	0	34	25	0
Accrued severance pay	40	35	77	97	126	139	152
Shareholders' equity, total	357	1,803	-644	5,897	2,948	7,774	12,173
Share capital	0	1	1	10	0*	0	0
Capital reserve	2,908	6,452	6,444	21,436	28,700	32,200	35,700
Capital to be issued	0	0	0	0	0	10,000	20,000
Other comprehensive loss	0	0	0	-30	-246	0	0
Loss carryforward / retained earnings	-2,551	-4,649	-7,089	-15,518	-25,506	-34,426	-43,527
Total shareholders' equity & debt	1,377	2,620	3,425	6,727	3,987	8,816	13,217

* Share capital in 2007/08 shows the effect of a 1 for 200 reverse split performed on 26 November 2007

Ratios

Current ratio (x)	1.89	4.65	3.46	8.26	2.93	8.23	12.82
Quick ratio (x)	1.85	4.33	3.32	2.34	1.52	6.79	11.38
Equity ratio (as %)	25.9%	68.8%	-18.8%	87.7%	73.9%	88.2%	92.1%
Net debt	142	-1,197	1,333	-4,890	-1,365	-6,010	-10,216
Capital employed (CE)	167	266	85	773	1,292	1,487	1,680
Return on equity (ROE)	-1126.2%	-194.3%	-421.0%	-320.9%	-225.8%	-166.4%	-91.3%
Return on capital employed (ROCE)	-3597.0%	-1230.1%	-1330.2%	-1920.3%	-986.9%	-655.0%	-583.9%
Return on net assets (RONA)	-2406.8%	-969.9%	-1391.5%	-1964.9%	-967.6%	-642.1%	-574.8%



CASH FLOW ANALYSIS

All figures in \$'000	2003/04	2004/05	2005/06	2006/07	2007/08E	2008/09E	2009/10E
Net income	-2,010	-2,098	-2,440	-8,429	-9,988	-8,920	-9,101
Depreciation and amortisation	92	34	43	56	119	125	131
Investment in working capital	80	-70	188	-379	198	-25	-10
Others (provisions, non cash exp., interest, etc.)	327	342	160	5,680	5,100	3,500	3,500
Operating cash flow	-1,512	-1,792	-2,049	-3,071	-4,571	-5,320	-5,481
CAPEX	-127	-46	-50	-286	-717	-174	-187
Free cash flow	-1,639	-1,837	-2,099	-3,357	-5,288	-5,495	-5,668
Financial cash flow	1,800	3,058	2,584	6,394	1,890	10,125	9,857
Change in cash	162	1,221	485	3,037	-3,398	4,630	4,190
Cash, start of the year	507	669	1,889	2,374	5,411	2,014	6,644
Cash, end of the year	669	1,889	2,374	5,411	2,014	6,644	10,833
Y-o-y growth							
Operating cash flow	-	-18.5%	-14.4%	-49.9%	-48.8%	16.4%	3.0%
Free cash flow	-	-12.1%	-14.2%	-59.9%	-57.5%	-3.9%	-3.1%
Financial cash flow	-	69.9%	-15.5%	147.5%	-70.4%	435.6%	-2.6%



APPENDIX: CLASSIFICATION OF STEM CELLS

Stem cells represent the beginning of life. All cells and tissues of the human body originate from these cells, which are capable of continuously propagating and differentiating into various kinds of cells or tissues. They can be classified into broad categories based on their ability of differentiation:

- 1) **Totipotent stem cells** are only found in early embryos (1-3 days) and are capable of forming a complete organism.
- 2) **Pluripotent stem cells** exist in the undifferentiated inner-cell mass of the blastocyst (5-14 days) and can form any of the more than 200 different cell types found in the body. Pluripotent stem cells derive from frozen embryos and are bred in a laboratory. The embryos normally will not survive when stem cells are taken out, which has ethical implications. Pluripotent stem cells can potentially carry an increased risk of cancer due to their very early stage of differentiation. The extraction of, and research with, these embryonic stem cells is forbidden in Germany.
- 3) **Multipotent stem cells** derive from foetal tissue, umbilical-cord blood, placenta blood and adult stem cells. These can only differentiate into a limited number of cell types, limiting their ability to differentiate more than pluripotent stem cells. Multipotent stem cells are already differentiated to some degree but can still form a number of tissues, which has proved to be successful in cell-based therapies. Therefore, one cell type develops into blood cells, another into muscle, bone or connective tissue. Bone marrow or peripheral blood stem cells contain adult stem cells which give rise only to white and red blood cells.
- 4) **Unipotent stem cells** can only form one class of tissue.

Christian Orquera
First Berlin
Equity Research GmbH

Lenné Str. 9
10785 Berlin

Tel. +49 (0)30 - 80 93 96 95
Fax +49 (0)30 - 80 93 96 87

info@firstberlin.com
www.firstberlin.com

FIRST BERLIN POLICY

In an effort to assure the independence of First Berlin research neither analysts nor the company itself trade or own securities in subject companies. In addition, analysts' compensation is not directly linked to specific financial transactions, trading revenue or asset management fees. Analysts are compensated on a broad range of benchmarks. Furthermore, First Berlin receives no compensation from subject companies in relation to the costs of producing this report.

ANALYST CERTIFICATION

I, Christian Orquera, certify that the views expressed in this report accurately reflect my personal and professional views about the subject company; and I certify that my compensation is not directly linked to any specific financial transaction including trading revenue or asset management fees; neither is it directly or indirectly related to the specific recommendation or views contained in this research. In addition, I possess no shares in the subject company.

INVESTMENT RATING SYSTEM

First Berlin's investment rating system is five tiered and includes an investment recommendation and a risk rating. Our recommendations, which are a function of our expectation of total return (forecast price appreciation and dividend yield) in the year specified, are as follows:

STRONG BUY: Expected return greater than 50% and a high level of confidence in management's financial guidance

BUY: Expected return greater than 25%

ADD: Expected return between 0% and 25%

REDUCE: Expected negative return between 0% and -15%

SELL: Expected negative return greater than -15%

Our risk ratings are Low, Medium, High and Speculative and are determined by ten factors: corporate governance, quality of earnings, management strength, balance sheet and financing risk, competitive position, standard of financial disclosure, regulatory and political uncertainty, company size, free float and other company specific risks. These risk factors are incorporated into our valuation models and are therefore reflected in our price targets. Our models are available upon request to First Berlin clients.

Up until 16 May 2008, First Berlin's investment rating system was three tiered and was a function of our expectation of return (forecast price appreciation and dividend yield) over the specified year. Our investment ratings were as follows: **BUY:** expected return greater than 15%; **HOLD:** expected return between 0% and 15%; and **SELL:** expected negative return.

ADDITIONAL DISCLOSURES

This report is not constructed as an offer to sell or the solicitation of an offer to buy any security in any jurisdiction where such an offer would be illegal. We are not soliciting any action based upon this material. This material is for the general information of clients of First Berlin. It does not take into account the particular investment objectives, financial situation or needs of individual clients. Before acting on any advice or recommendation in this material, a client should consider whether it is suitable for their particular circumstances and, if necessary, seek professional advice. The material is based upon information that we consider reliable, but we do not represent that it is accurate or complete, and it should be relied upon as such. Opinions expressed are our current opinions as of the date appearing on this material only; such opinions are subject to change without notice.

© 2008 First Berlin Equity Research GmbH. All rights reserved. No part of this material may be copied, photocopied or duplicated in any form by any means or redistributed without First Berlin's prior written consent. The research is not for distribution in the USA or Canada. When quoting please cite First Berlin as the source. Additional information is available upon request