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Cardium Therapeutics (ASE/CXM)

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BUY **Excellent (Excellagen) prospects**

Cardium Therapeutics is developing wound care and cardiovascular products

Investment Highlights

1) Cardium's **Tissue Repair Company** subsidiary is leading the pack in terms of the Company's near-term catalysts: **Excellagen's** 510(k) application was filed late last year and is nearing the typical approval decision date; the **MedPodium** line will launch concurrently with Excellagen; **Excellerate** is on track to be reformulated and possibly begin Phase 3 trials (possibly with a partner) next year; and other large-market medical specialty areas have been selected for future product development in later years, including **osteobiologics** and **periodontics/oral surgery**, areas with large industry players eager to license and/or partner promising new products.

2) The Company hasn't forgotten its original **Cardium Biologics** division, either, re-targeting its **Generx** DNA-based angiogenic growth factor to developing nations not set up for bypass surgery or stenting – Cardium has already signed one development agreement with more possibly to come. Additional late stage US trials may still be in the works for Generx, as well, through new formulations, taking advantage of over 10 years and \$200 million already spent to develop this underappreciated asset, purchased at a deep discount by current management (the original developers) from big pharma.

3) Cardium's **deep management team scored a venture home run** last year with the sale of InnerCool Therapies to Royal Philips Electronics for \$10 million+, after completing a strategic repositioning and product line expansion in the three years since acquiring this division. With recently-added new funding and an experienced and diverse executive team, board of directors and scientific advisory board, we would not be surprised to see new ventures, partnerships or product acquisitions be brought into Cardium's corporate portfolio in the near future, adding value to shareholders and positive news flow to attract the attention of the investing public.

Current Price **\$0.47**

Price Target **\$1.50**

Estimates	F2008A	F2009A	F2010E
Revenues(\$000s)	\$417	\$445	\$1,000
EPS	(\$0.55)	(\$0.24)	(\$0.14)

Stock Data	
52-Week Range	\$0.17-\$1.15
Shares Outstanding (mil.)	77.8
Market Capitalization (mil.)	\$36.6
Enterprise Value (mil.)	\$32.3
Debt to Capital (12/09)	0.0%
Book Value/Share (12/09)	(\$0.03)
Price/Book	N/A x
Average Trading Volume (3-Month)	1.5 million
Insider Ownership	9.9%
Institutional Ownership	5.5%
Short interest (Millions)	4.3
Dividend / Yield	\$0.00/0.0%



Price target and ratings changes over the past 3 yrs:
Initiated - April 20, 2010 - Buy - Price Target \$1.50

Conclusion

Cardium has found a diamond-in-the-rough with its new Excellagen collagen-based wound care product line, prompting some near-term catalysts with a 510(k) application decision due soon and a new distributed product line launch to add to the proprietary products. Meanwhile, Cardium has bought some more time to develop its longer-term assets, specifically its proprietary gene therapy approaches to tissue repair and coronary revascularization. The resulting, refocused strategy could lead to a great deal of excitement for investors in the coming months and into the ensuing several years, as well, and thus we are initiating coverage on shares of CXM with a BUY rating and an 18-24 month price target of \$1.50, still below with trading ranges of less than one year ago.

History/Capitalization

Cardium was formed in 2003 by co-founders Chris Reinhard and Tyler Dylan to acquire certain technology and product rights from Schering AG Group of Germany relating to growth factor therapeutics. These therapeutics had been originally developed by Collateral Therapeutics, Inc., as part of a six-year R&D collaboration with Schering which culminated with the buy-out of publicly-traded Collateral by Schering AG in 2002 for approximately \$160 million. After Schering (now part of Bayer Schering Pharma AG) experienced a strategic refocusing in 2004, the cardiovascular small molecule drugs and biologics in development were divested, including the Generx program developed at Collateral, and Mr. Reinhard and Dr. Dylan completed the acquisition of these former Collateral portfolio therapeutics in October 2005. Subsequently, Cardium came public through a reverse merger with a publicly-traded company and raised \$30 million in a private equity financing to complete the Schering assets acquisition. Since its public company merger, Cardium has completed two acquisitions in addition to Generx, InnerCool Therapies in March 2006 and the Tissue Repair Company in August 2006, which are described below. Since formation, the Company has financed its operations and acquisitions through equity and debt financings, including most recently common stock private placement in September 2009 and registered direct offerings in October 2009 and March 2010, and the sale in 2009 of the InnerCool Therapies subsidiary to Royal Philips Electronics. Cardium maintains has its corporate headquarters in San Diego, California.

Technology Platforms

Cardium's two key platforms, **Tissue Engineering** within the Tissue Repair Company, a 100% owned subsidiary, and **Cardiovascular Biologics**, within the Cardium Biologics group, are described below:

Tissue Engineering

Cardium's tissue engineering technology platform revolves around the Company's proprietary Gene Activated Matrix (GAM) technology, which is designed to provide a therapeutic level of protein synthesis at a specific site in the body. This flexible mechanism can be used both in soft tissue such as skin, ligament, tendons and cartilage, as well as in hard tissue such as bone. The GAM technology is distinctive in the marketplace in that it uses an immobilized gene delivery mechanism that allows for gene uptake that is restricted to the application site only, reducing the amount of active ingredient needed and lowering possible side effects. The Gene Activated Matrix is flexible in that it can be comprised of any biocompatible matrix containing a gene or DNA vector encoded for a growth factor or therapeutic protein. Thus, the GAM technology allows the use of any biocompatible matrix, natural or synthetic, which can be collagen, de-mineralized bone, allograft or other synthetic materials that are commonly used today for orthopedic or surgical procedures.

The theory behind the GAM technology revolves around surmounting limitations of other proteins employed in gene therapy, such as inherently short half-lives or the need for refrigeration, as the localized and sustained

production of therapeutically significant concentrations of DNA-driven proteins at the delivery site can significantly enhance the stimulation of localized therapeutic processes, such as tissue repair. Cardium's Gene Activated Matrix has been shown in company studies to allow proliferative cells to migrate into the Matrix, and then take up the immobilized gene, resulting in the localized and sustained production of active quantities of growth factor proteins.

The table below outlines Cardium's Tissue Engineering Platform and the major application areas using its proprietary gene activated matrix technology:

<i>Medical Area</i>	<i>Product</i>	<i>Formulation</i>	<i>Medical subspecialties</i>
Wound Healing	Excellerate (Custom Formulation)	Ad5PDGF-B/ Collagen 2.6%	Diabetic Foot Ulcers, Pressure Ulcers, Acute & Surgical Wounds
Wound Healing	ExcellagenXL & FX (Custom Formulation)	Collagen 2.6%	Diabetic Foot Ulcers, Pressure Ulcers, Acute & Surgical Wounds
Periodontal Tissue Engineering	Excellerate	Ad5PDGF-B/	Periodontal disease
Orthobiologics	Osteorate	Ad5PDGF-B/ Ad5chBMP4	Spinal Fusion, Non-Union Bone Fractures

Wound Healing

The wound care market is a large and growing area in the US, fueled by the aging of America and the increasing incidence of diabetes and other chronic diseases which can lead to diabetic foot ulcers and other adverse dermal-related diseases. Diabetic foot ulcers (DFU) and their care are a significant unmet medical need in the US and worldwide; of the approximately 24 million diabetic patients in the US roughly 5%-10% will develop foot ulcers each year or 1 million new cases, 20% will require amputation. In 2007 the first advanced wound care product – VAC from Kinetic Concepts (NYSE/KCI/Not Rated) reached \$1 billion in sales; the diabetic foot ulcer care market is currently estimated at \$1.5-\$2.0 billion in revenues per year.

A study published in *Diabetes Care* journal in 2003 documented the cost of treating individual diabetic foot ulcers: Over the first two years after diagnoses patients with diabetic foot ulcers had 36 more outpatient visits and 8 more inpatient days, incurring an additional \$28,000 in total healthcare costs. Furthermore, ulcers are the number one cause of lower extremity amputation with 84% of these types of amputations preceded by ulcers – if necessary, amputations can cost between \$25,000-\$50,000 per incidence depending on the location of the procedure and even after amputation long-term survival chances are only 50%.

Main treatment options in the DFU wound market include KCI's VAC Negative Pressure Wound Therapy system and related dressings, canisters and accessories – since this product's inception over 3 million patients have been treated worldwide. Another, more closely related treatment for DFUs is Regranex Gel (becaplermin .01%) a platelet-derived growth factor (PDGF) based topical gel first approved in 1997 and is now manufactured by UK-based Systagenix Wound Management, a privately-held company, following the venture-backed purchase of the professional wound care product portfolio of Johnson & Johnson's (NYSE/JNJ/Not Rated) Ethicon subsidiary in 2008.

ExcellagenXL & ExcellagenFX

Cardium's most advanced product line includes ExcellagenXL and ExcellagenFX, advanced wound care device systems comprised of highly-refined, soluble bovine (cow) dermal Type-1 collagen, which is modified to reduce immunogenicity and promote usefulness in wound settings. The core of Cardium's unique product is the highly purified and enhanced Type-1 collagen protein used, which is processed into the form of a gel that requires storage at standard refrigeration temperatures only. Excellagen fibrillar collagen protein gel is a

physiologic formulation consisting of a bioactive and biodegradable material that promotes effective wound healing management by providing a moist protective barrier and stimulates the natural wound healing process through the promotion of cell migration and capillary in-growth to support tissue regeneration. Collagen is an easy-to-obtain natural material already used in a number of medical procedures, such as cosmetic surgery, burn healing, and bone reconstruction. Collagen is the most common form of protein found in mammals, making up between 25%-35% of whole-body protein content. Because of its triple-helix molecular structure, collagen can form long, fibrillar strings, essential for building a number of key structures in the human body. Twenty-nine types of collagen are found in the human body, the most important of which is Collagen Type 1, which is the base material in skin, tendons, veins, organs and bone. Most commercial/medical collagen is derived from material taken from young beef cattle sourced from closed herds or from countries which have never reported a case of Bovine spongiform encephalopathy, or “Mad-cow” disease.

Other types of wound care products are manufactured with alginates (seaweed), hydrogels and hydrocolloids in forms which require hydration, mixing and reconstitution immediately prior to administration. Excellagen, however, is made from well-accepted collagen and comes in a convenient, easy to store and easy to administer formulation. Excellagen’s ease of use also extends to administration of the product: ExcellagenXL is designed for administration every one or two weeks by physicians, for a total of only 1-6 administrations (with weekly outer dressing changes); by contrast, the leading current prescription advanced wound care product, Regranex Gel, is recommended for daily administration over a 10-week treatment period, followed by a daily wound cleaning and redressing procedure without the gel. As the labor component of health care costs rises, the need for a cost efficient advanced wound care treatment becomes more acute.

At present, Cardium’s Excellagen product line includes **ExcellagenXL**, which is intended to be supplied in a kit configuration containing four single-use 1.0cc syringes, each containing 0.5cc of Excellagen gel and four sterile flexible applicators to facilitate topical administration over the wound site. The **ExcellagenFX** kit has been designed to consist of one single 10.0cc syringe containing 4.0cc of Excellagen gel and one single-use sterile flexible applicator designed for deeper administration at the wound site and is planned for use in more complex and hard-to-reach deep soft tissue wounds. Furthermore, the Excellagen matrix platform allows for the incorporation of other agents into the formulation, such as antimicrobials, DNA-based and/or other biologics, which can be added at a later date to broaden the Excellagen product line. Cardium has preliminarily named these product candidates **ExcellagenRx**.

In early December 2009, Cardium’s subsidiary Tissue Repair Company submitted a 510(k) premarket notification with the US FDA for the use of both ExcellagenXL and ExcellagenFX for patients with dermal wounds, which can include diabetic ulcers, pressure ulcers, venous ulcers, tunneled/undermined wounds, surgical and trauma wounds, second degree burns and other types of wounds. The filing is based on the results from the Phase 2b Matrix clinical study, reported in October 2009, demonstrating substantial improvements in wound healing responses in patients with non-healing diabetic foot ulcers following one or two applications of Excellagen (Collagen 2.6%). In the Matrix Phase 2b study, Excellagen was given to 31 patients with diabetic foot ulcers, either one or two doses, over a 12-week period. After 12 weeks, the Excellagen patients showed 45% wound closure, versus 31% for standard of care (16 patients). A similar study showed 25% incidence of wound closure in patients given a placebo gel and 34% given Regranex Gel.

The typical time period for FDA approval of 510 (k) is 90-180 days for similar medical device and systems; it has now been over 120 days since filing of the Excellagen application. Most recently, Cardium management has related that the Company is targeting a mid-year 2010 launch for Excellagen in the US with a marketing partner.

Excellerate (Ad5PDGF-B and Collagen 2.6% matrix)

Cardium's Excellerate is a custom formulation of Collagen 2.6% topical gel combined with the Company's proprietary adenovector delivered platelet-derived growth factor-B protein, or Ad5PDGF-B. Cardium employs its Gene Activated Matrix technology developed by the Tissue Repair Company subsidiary to locally stimulate the release of the PDGF-B protein, an important key in the human body's wound healing process. Sustained localized micro-release of PDGF-B protein by a patient's own cells directly at a wound site is believed to stimulate angiogenesis and granulated tissue formation through the recruitment and proliferation of cells including monocytes, fibroblasts and endothelial cells, cell types that are critical for the wound healing process. Cardium's unique adenovector cassette delivery platform has a number of advantages over alternative DNA-based gene therapy, including established FDA-recognized manufacturing standards, a large safety database, relatively low toxicity, and very favorable manufacturing cost characteristics.

In October 2009, Cardium reported data from the multi-center Matrix Phase 2b clinical trial of Excellerate for the treatment of patients with chronic non-healing foot ulcers. The study evaluated patients treated with Excellerate product candidate alone, with collagen 2.6% alone, and patients who received only the protocol specified standard of care. After 12 weeks of treatment, patients treated with one dose of Excellerate (n=40) showed 48% wound closure, as compared with 45% for the collagen formulation (n=31) and 31% for the standard of care (n=16). These clinical results also compared favorably with published trials using Regranex gel, where only 34% of patients showed total wound closure after 12 weeks compared with 25% for a placebo gel. The Excellerate procedure was also designed to be a simpler, easier-to-use treatment regimen compared with Regranex or other wound healing agents and devices. Complete results for the Matrix 2b study were published in the October 2009 issue of *Wound Repair and Regeneration*, a journal from the Wound Healing Society. The article showed further that after 14 weeks, 67% (10 of 15) of the patients, 7 of whom had received only one application, showed complete wound closure, and even in a short period of application (2 weeks) about half of the patients receiving Excellerate showed a significant reduction in wound size, over 50%.

Based on initial feedback from study investigators, a potential Phase 3 clinical program for Excellerate is expected to allow for one or two follow-up doses to patients that exhibit a slower healing rate or who have not yet achieved substantial wound closure. In addition, based on recent product advancements, Excellerate will be re-formulated for the next stage of clinical development into an easy-to-use single syringe that is pre-mixed and ready to be applied in the clinical setting. The planned reformulation will also allow Excellerate to be maintained in a physician's office using a standard refrigerator (at about 4°C) and is expected to have a shelf life of 15-18 months. Cardium is targeting a Biologics License Application process for Excellerate. Company management plans to schedule a meeting with the FDA to review the complete integrated data set and outline plans for a potential Phase 3 development program for Excellerate.

Orthobiologics Initiative (Osteorate)

In the third quarter of 2009, Cardium announced plans to develop a DNA-based orthobiologics product portfolio based on its GAM Matrix technology that will initially focus on:

- 1) **Non-union bone fractures in medically-compromised patients;** and
- 2) **Spinal fusions for patients with degenerative disc disease.**

Orthobiologics is a rapidly-developing new component of orthopedic medicine that encompasses biologically-active products designed to enhance musculo-skeletal repair and regeneration. Cardium has initially termed its product offering in this area Osteorate, which will be a DNA-based surgical injectable bone graft gel used to repair bone fractures and regenerate tissue in certain medically-compromised patient populations. Osteorate is intended to be based on a reformulation of the Excellerate wound healing product candidate, and a broad spectrum of materials could be deployed with the matrix design, such as collagen, demineralized bone matrices,

allograft and synthetic graft materials. Cardium intends to partner this initiative with larger companies active in the orthopedic area, such as orthopedic implants, spinal fusion, and orthobiologic manufacturers.

Periodontal Tissue Repair/Oral Implant Osseointegration

Both periodontal disease surgery and oral/dental implants are growing medical areas within dentistry and oral surgery, fueled by advancements in treatment and technology and demographic factors such as the general aging of the population. Cardium has completed preclinical research demonstrating the potential benefits of using its GAM technology for accelerating and enhancing periodontal tissue repair and oral implant osseointegration (the process of the new dental implant adhering to the jaw, often unique to titanium). The results of this preclinical study were published in the scientific journal *Gene Therapy* (10 September 2009).

MedPodium

In January 2010, Cardium announced plans to launch the MedPodium product line, an over-the-counter advanced skin care product portfolio for patients with the potential for foot disorders and ailments, especially diabetic patients with lower extremity neuropathy. Cardium's MedPodium six-product patient care line is intended to enhance and expand Cardium's product portfolio beyond the current Excellagen product candidate platform. The MedPodium product line will initially carry six products including skin balm, conditioning nail oil, sea salt scrub and soak, aloe vera-based foot crème, cooling foot gel with eucalyptus, and softening crème and has been formulated to include blended natural and botanical ingredients while containing no artificial colors and fragrances. Cardium has licensed the MedPodium product line, which is being manufactured on a contract basis in Canada, and will most launch the products concurrently with the approval and launch of the Excellagen collagen-based products, expected sometime this year.

Cardiovascular Biologics

Technology Platform & Approach

There is currently no approved therapy designed to increase blood flow and oxygen supply by increasing the growth of recruitable collateral vessels in the heart. Current therapy has evolved around revascularization procedures, including angioplasty, stenting and coronary artery bypass graft (CABG) surgery, which have proven to be effective treatments for the repair of large conduit vessels of the heart when they become narrowed with plaque or blocked by thrombus. Although these currently popular procedures can be performed to mechanically open or surgically bypass blockages of the large epicardial blood vessels that surround the myocardium, none of these approaches are believed to be capable of also addressing blockages affecting the mid-size to smaller blood vessels (which deliver oxygenated blood to the adjacent heart tissue so that oxygen transfer can take place) but are located deeper within the heart muscle.

With the growth of successful cardiac procedures as well as with the increase in acuity of many patients with other chronic diseases, it has now become apparent that new techniques must be developed which go further in treating cardiac diseases, for example for:

- 1) **Those patients who undergo revascularization interventions** on accessible portions of the large upstream blood vessels to relieve their angina **but continue to experience myocardial ischemia** and the associated angina symptoms or a return of angina; and
- 2) The increasing number of **patients who are not candidates for revascularization due to the extent of disease**, co-morbidities, anatomically unfavorable coronary disease, or the high risks associated with repeated CABG surgery.

Cardium's therapeutic approach to cardiovascular therapeutics centers around the use of a standard diagnostic cardiac catheter, typically familiar to an interventional cardiologist, to accomplish the intracoronary delivery of cardiovascular-directed growth factor therapy. Angiogenic (related to the growth of new blood vessels) growth factors are generally secreted locally in response to ischemia (a restriction in blood supply resulting in tissue damage) or stress and are only effective in a local mini-environment (a fraction of a millimeter from where they are secreted). Generx, Cardium's proprietary cardiovascular therapeutic, consists of an adenovector construct carrying the angiogenic gene FGF-4, a naturally occurring biologic growth factor. When Generx is infused in an intracoronary method through cardiac catheterization, myocardial production of FGF-4 protein results, and when locally produced and secreted this protein is believed to stimulate the production of other, downstream angiogenic growth factors. In an ischemic setting, these growth factors can stimulate the growth and maturation of new collateral blood vessels in regions of the heart that have been deprived of oxygenated blood.

Cardium's technological approach has several unique features in activating the angiogenic response to myocardial ischemia. These include:

- 1) Cardium's technique of intracoronary infusion results in **direct delivery** into the heart's extensive coronary microcirculation. This **targeted delivery method** takes advantage of the unique anatomy of the heart's circulation pattern for highly efficient oxygen and nutrient extraction;
- 2) Compared with other methods used for DNA transfer, the adenovector encoding FGF-4 is taken up with **high efficiency** by cells in the heart, especially under ischemic/hypoxic conditions. The transfected heart cells then transcribe the FGF-4 gene into messenger RNA, and translate that RNA into FGF-4 protein, with a signal sequence to cause its secretion. FGF-4 protein secretion continues for a period of several weeks. This limited production is beneficial for therapeutic angiogenesis since the newly **formed blood vessels remain in the areas of need**, such as ischemic areas of the heart muscle; and
- 3) Neither the adenovector nor the FGF-4 gene delivered by Cardium's Generx is directly incorporated into the transfected cell's chromosome and therefore **they do not integrate or cause any disruption** within the cell's own genome.

Generx

Cardium's key product candidate in the cardiovascular biologics area is Generx (alferminogene tadenovec, Ad5FGF-4), a DNA-based angiogenic growth factor therapeutic being developed for the potential treatment of patients with advanced coronary artery disease. Generx is designed to stimulate the growth of supplemental collateral blood vessels in the heart in order to enhance myocardial blood flow (perfusion) in patients who have insufficient blood flow due to atherosclerosis (build up of plaque within the arteries and veins). Generx's treatment regimen includes a one-time intracoronary administration from a standard cardiac infusion catheter, a very simple, cost effective and familiar procedure compared with alternative treatment methods such as cardiac surgery or traditional drug therapies (nitrates or Beta blockers) which provide only transient symptomatic relief or may lead to severe complications.

In the US, new anti-anginal drugs have been approved by the FDA based in part on improvements in exercise treadmill tolerance testing (ETT). The effectiveness of Cardium's Generx, by contrast, would be measured by a SPECT imaging (single photon emission computed tomography) stress test, showing improvements in the underlying physiological condition of the heart (insufficient blood flow) rather than a short-term symptomatic relief of angina provided by drug therapy.

The FDA has cleared Cardium's Generx for a Phase 3 clinical study in the US for women with late stage coronary artery disease who are unresponsive to traditional drug therapy and are not appropriate candidates for mechanical revascularization, such as angioplasty, stents or by-pass surgery. Based on an agreement with the FDA, Generx would be re-formulated to increase its shelf-life and further formulation enhancements are expected to allow for storage of the product using a standard freezer and/or a lyophilized (freeze-dried) version

for refrigerated storage. There have been a number of large-scale clinical studies completed using Generx in treating cardiovascular disease, including a Phase 1/2 study (AGENT-1) dose finding and safety trial in 1999, a Phase 2a (AGENT-2) mechanism of action study in 2001, and a Phase 2/3 (AGENT-3/4) preliminary safety and efficacy trial from 2004, all of which were completed by predecessor company Collateral Therapeutics/Schering AG. More recently, preclinical data developed by Cardium under a government SBIR grant using Generx in combination with cardiac stimulation (using agents such as dopamine which is routinely administered to patients) suggested that this method has the potential to dramatically enhance the therapeutic effect of Generx at a given dose.

In light of the results from several long-term studies using Generx in a one-time infusion showing the therapeutic's potential to achieve improved coronary collateral circulation in both men and women at levels equivalent to bypass surgery (as measured by SPECT imaging), Cardium believes that Generx has the potential to be developed as cost-effective front-line therapy in large markets of newly-industrialized nations that often do not have the infrastructure in place to perform costly procedures such as bypass surgery or angioplasty/stenting. With this strategy in mind, Cardium earlier this year signed an agreement with international contract research organization (CRO) bioRASI to assist the Company in evaluating Generx development opportunities within major newly-industrialized markets in Eastern Europe, Asia and Latin America. BioRasi is a full-service global CRO with its US operations based in South Florida and overseas offices in Moscow, Kiev, Belgrade, Riga (Eastern Europe) and Mumbai, India.

Recent Results

Cardium announced financial results for their fourth quarter 2009 in mid-March 2010. The Company recorded a net gain of \$9.3 million or \$0.17 per share for the quarter, which included an \$11.4 million favorable adjustment to income for the non-cash change in the fair market value of common stock warrants. Without this gain, the net loss for the quarter would have been \$2.3 million, as compared with a net loss of \$4.1 million or (\$0.11) per share in Q4/2008. Revenues for the period, primarily grants for R&D, were \$183,000 as compared with \$42,000 in the prior year period. Both R&D and general and administrative expenses dropped significantly during the quarter, to \$774,000 and \$1.04 million in Q4/2009 from \$2.0 million and \$1.6 million in Q4/2008, respectively, the result of tighter cost controls as well as the winding down of a major late stage clinical trial for Excellerate in 2009. The Company has done a solid job in reigning in operating costs this year in the wake of a down economy. The exclusion of the InnerCool subsidiary from this year's cost structure also reduced losses in Q4/2009. Interest expense declined to \$450,000 in Q4/2009 from \$540,000 in Q4/2008, the result of the repayment of long-term debt in late 2009, while shares outstanding increased to 54.4 million in Q4/2009 from 46.9 million in Q4/2008 due to several equity offerings completed in 2009. Cash burn during the quarter was approximately \$2-\$2.5 million.

Balance Sheet and Operating Cash Flow

Cardium maintained over \$4 million in cash and restricted cash at the end of December 2009, bolstered since the end of last year by over \$10 million in net proceeds received from a March 2010 registered direct public offering. The Company has no long-term debt outstanding. At current levels of cash burn, barring additional funding or stepped-up R&D spending, we estimate that Cardium has approximately 18-24 months of operating cash burn on hand.

Outlook/Growth Drivers

Cardium is currently focused on near-term (Excellagen) and longer-term (Excellerate/Osteorate) opportunities in its Tissue Repair Company subsidiary, while also pursuing a new strategy to develop its Generx product candidate in emerging industrialized markets through new recently signed and potentially additional

partnerships. For 2010, we forecast that Cardium's most promising potential catalyst could arise from the 2009 510(k) application for Excellagen with the FDA, which if approved could result in a product launch and possibly marketing partnerships for this product and other DNA-based applications in related areas for the Company's Tissue Repair subsidiary. For 2011 and beyond, Cardium's shareholder value may best materialize through advancements in its Excellerate clinical program, or possibly new ventures arising via the Company's experienced management team.

Management

Chris Reinhardt is a co-founder of Cardium and currently serves as Chairman of the Board, Chief Executive Officer, President and Treasurer of the Company. Prior to founding Cardium, Mr. Reinhardt was a co-founder of Collateral Therapeutics, Executive Chairman of Artes Medical, Managing Director of the Henley Group, and Vice President of a number of spin-out portfolio companies of the Henley Group including Fisher Scientific, Instrumentation Laboratory and IMED Corporation.

Tyler Dylan-Hyde, Ph.D., J.D., is a co-founder of Cardium and currently serves as a Director, Chief Business Officer, General Counsel and Secretary. Dr. Dylan-Hyde served as General Counsel and Vice President of Collateral Therapeutics from 1998 until the completion of Collateral's acquisition by Schering AG in 2002. Before joining Collateral, Dr. Hyde was partner in Morrison and Foerster LLP, an international law firm. Dr. Dylan-Hyde holds a Ph. D. in Biology from the University of California, San Diego and a J.D. from the University of California, Berkeley.

Dennis Mulroy has served as Chief Financial Officer of Cardium since November 2005. Prior to joining the Company, Mr. Mulroy held financial management positions with Aries Ventures, Molecular Imaging, SeraCare Life Sciences, and Bioceutrix. Mr. Mulroy is a Certified Public Accountant in the State of California and has also been employed with Ernst & Young.

Gabor M. Rubanyi, M. D., Ph. D. has served as Chief Scientific Officer of Cardium since June 2006, after providing consulting services to the Company from November 2005 to March 2006. Prior to joining the Company, Dr. Rubanyi served in scientific positions at Schering/Berlex Labs, as a Director of Hybrid Systems, and an Associate Professor at the Mayo Clinic Medical School. **Robert L. Engler**, M.D. serves as Chief Medical Advisor of Cardium. Dr. Engler was a co-founder of Collateral Therapeutics, was previously a Scientific Advisor at Gensia, and holds a medical degree from Georgetown University. **Mark McCutchen** joined Cardium as Vice President, Business Development in August 2006 after serving as CFO of the Tissue Repair Company prior to its acquisition by the Company. Previously, Mr. McCutcheon held executive positions with Selective Genetics, Viagene and in the investment banking industry. **Barbara Sosnowski**, Ph.D. has served as Vice President-Biologics Development of Cardium since August 2006, after holding key positions at The Tissue Repair Company, Selective Genetics, Prizm Pharmaceuticals, and Ligand Pharmaceuticals. **Ted Williams** has served as Vice President of Manufacturing and Technical Operations at Cardium since November 2005. His previous experience includes similar posts at Favrilite, Collateral, Advanced Tissue Sciences, Chiron and Viagene.

In addition to management team members Mr. Reinhardt and Dr. Dylan-Hyde, Cardium's board includes **Dr. Edward Gabrielson**, a Professor of Pathology and Oncology at Johns Hopkins University School of Medicine, **Andrew M. Leitch**, a CPA and former partner at Deloitte & Touche specializing in international business, **Gerald J. Lewis**, a retired attorney with Latham & Watkins and California Court of Appeals Justice, **Murray Hutchinson**, the former Chairman and CEO of International Technology Corp. and Sunrise Medical among other ventures, and **Lou Otremba**, the CEO of Access 360 Media and former CEO of Muzak.

Dr. Rubanyi is Chairman of Cardium's Scientific Advisory Board. Other members of the SAB include Dr. **Wolfgang Schaper**, Director Emeritus of the Max-Planck Institute, **Dr. Seppo Yla-Herttuala**, Professor of Molecular Medicine at the Virtanen Institute in Kuopio, Finland, **Dr. Claudio Basilico**, a Professor of Molecular Pathogenesis and Chairman of the Microbiology Department at NYU School of Medicine, **Dr.**

William Sessa, Vice Chairman of the Department of Pharmacology at Yale School of Medicine, **Dr. H. Daniel Perez**, Professor Medicine at UCSF and former President and CEO of Berlex Biosciences, and **Dr. Richard Schatz**, Co-Chairman of the Division of Cardiology at Scripps Clinic.

Catalysts/Investor Timeline

- 1) ExcellagenXL/FX 510(k) FDA application action – Mid-2010
- 2) Launch of ExcellagenXL/FX and MedPodium – Mid-2010
- 3) Reformulation of Excellerate and potential partnership and/or Phase 3 trial – 2011
- 4) International development agreements/clinical studies for Generx – 2010/2011
- 5) Clinical studies/partnerships for Excellerate in additional medical areas – 2010/2011
- 6) Additional portfolio R&D programs or new venture-based subsidiaries – 2011/2012

Risk Factors

We believe an investment in **Cardium Therapeutics** involves the following risks:

- **FDA and regulatory risks** – Cardium is subject to regulatory review for its ongoing research and development activities, principally the US Food and Drug Administration but also potentially with other regulatory agencies as well, including in Eastern Europe, Latin America and Asia. In addition, the manufacture and handling of the Company's tissue repair and cardiac therapeutics are subject to additional oversight and regulation by the FDA if approved and marketed.
- **Reliance on joint venture partners and/or additional capital** — Currently, Cardium has enough cash on hand to fund ongoing research and marketing development programs into calendar 2011, approximately. Alternatively, the Company could obtain partnership agreements or government funding to offset planned R&D spending or to accelerate development of an existing or new R&D program in the pipeline. While other companies in the cardiology and wound care market areas have obtained such partnerships or grants in the past, there can be no assurance that Cardium will do so in the present environment. However, many of the Company's current management team and directors have successfully negotiated such deals in the past and this may aid efforts for Cardium to do so in the future.
- **Need to defend patents and other intellectual property** – Cardium may need to defend its patents in the US and overseas in the future, particularly if one or more products receive approval and are successfully marketed.

Cardium Therapeutics, Inc.
Consolidated Statements of Income
 (in \$000s, except EPS)

Robert M. Wasserman

FYE December	2007	2008	2009	2010E	2011E
Revenues					
Grant revenues	\$446	\$417	\$445	\$500	\$500
Product sales and royalties	0	0	0	500	2,000
Total revenues	446	417	445	1,000	2,500
Expenses					
Research and development	10,644	11,042	4,302	5,000	6,000
General and administrative	7,243	6,529	4,856	5,500	6,500
One-time and other	0	0	0	0	0
Total operating expenses	17,887	17,571	9,158	10,500	12,500
Loss from operations	(17,441)	(17,154)	(8,713)	(10,500)	(12,500)
Interest income	556	102	12	250	150
Interest expense	0	(550)	(6,340)	0	0
Other expense, net	(8,436)	(6,996)	3,360	(100)	(50)
Net income (loss)	(25,322)	(24,598)	(11,680)	(10,350)	(12,400)
Basic and diluted income (loss) per share	(\$0.64)	(\$0.55)	(\$0.24)	(\$0.14)	(\$0.16)
Basic and diluted shares outstanding	39,311	44,978	48,977	75,000	80,000
Key ratios:					
Cash Flow/share	(\$0.55)	(\$0.44)	(\$0.20)	(\$0.10)	(\$0.12)

Balance Sheets

 (\$000s)
 12/31/08 12/31/09

Assets:	12/31/08	12/31/09
Cash and equivalents	\$1,103	\$3,364
Accounts receivable	42	115
Prepaid expenses & other assets	76	40
Restricted cash & other	7,797	563
Total current	9,018	4,082
Restricted cash	400	863
Property & equip., net	746	352
Other assets and patent pending, net	132	180
TOTAL ASSETS	\$10,297	\$5,476
Liabilities:		
Accounts payable	\$3,359	\$2,301
Accrued liabilities & other	1,332	336
Derivative & other current liabilities	2,128	4,803
Current portion of notes & obligations	4,037	0
Total current	10,856	7,440
Deferred rent	195	190
Stockholders' equity (deficiency)	(755)	(2,155)
TOTAL LIAB & EQ	\$10,297	\$5,476

Investor Catalyst Timeline

	2010E	2011E	2012E
ExcellagenXL & FX			
FDA 510(k) approval	Q2/Q3		
Product launch	Q3/Q4		
MedPodium product launch	Q3/Q4		
Excellerate			
Reformulation		Early-Mid	
Begin US Phase III trials		Mid-Late	
Osteorate			X
Other medical areas - periodontics			X
Genex			
International trials	X (2)	X (2)	X (2)
International market launches		X (2)	X (2)
Reformulation for US trials		X	

Source: Dawson James Securities, Inc. estimates; Company documents

Important Disclosures:

Price Chart:



Price target and ratings changes over the past 3 years:

Initiated – April 20, 2010 – Target \$1.50

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Ratings Distribution	Company Coverage		Investment Banking	
	# of Companies	% of Total	# of Companies	% of Totals
Buy	12	86%	6	50%
Neutral	2	14%	2	100%
Sell	0	0%	0	0%
Total	14	100%	8	57%

Information about valuation methods and risks can be found in the “STOCK VALUATION” and “RISKS” sections of this report.

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