

Regado Biosciences, Inc.

Pioneering the only
antithrombotic therapies with
true reversibility

Taking Science to Heart™

October 2010

Overview

Regado Biosciences, Inc. (“Regado” or the “Company”), founded in 2003, is a biopharmaceutical company engaged in the discovery and development of therapies in cardiovascular medicine using actively controlled aptamer technology. The Company is focusing on new products for antithrombotic indications in the acute care and sub-acute care therapeutic setting. Regado's paired aptamer-active control agent technology is designed to give physicians the ability to directly control the degree of antithrombotic activity in real time on a per patient per setting basis. Regado's clinical programs are more specifically concentrated on acute and sub-acute care injectable anticoagulants. Anticoagulants represent an established multi-billion dollar worldwide market opportunity in need of therapeutics with improved safety and flexibility which optimize therapeutic outcomes. The Company owns or has pending patent protection for worldwide rights to all of its development products, which, for the anticoagulant systems REG1 and REG2, extend through 2025 and beyond. Additionally, Regado has an exciting pipeline of aptamer-control agent pairs against platelet adhesion and/or platelet aggregation targets that recently resulted in the nomination of REG3 as a clinical development candidate. The Company is led by an experienced management team comprising business and scientific leaders with an established track record of successful drug development (See Appendix).

REGADO PROGRAMS

Regado is employing its innovative platform technology to develop a pipeline of aptamers with matched, active control agents^{1,2} (Table 1). The Company has four R&D programs; REG1 for arterial thrombosis indications (currently in phase 2b), REG2 for venous thrombosis indications (currently in phase 1), REG3, a GPVI inhibitor for antiplatelet indications currently completing IND enabling preclinical studies and REG-AP, a discovery

program exploring traditional and novel antiplatelet targets. Aptamers are nucleic acids that bind to and inhibit a specific molecular target. Due to their nature, aptamers have innate specific oligonucleotide complements which can serve as control agents to limit or reverse the effects of the corresponding aptamer on a particular target. Regado's aptamers offer the specificity exhibited by antibody therapeutics to block protein-protein interactions while possessing attractive small molecule characteristics such as an *in vitro* selection process, lower manufacturing costs and a low risk of immunogenic reactions. The reversible nature of the Regado systems offers the control (as exercised by the physician and in real time) to turn on and off, or titrate, activity at the biologic target as needed on a repeated basis. Regado's drug development efforts are focused on cardiovascular indications in acute and sub-acute care settings. Their products are a natural complement to a product portfolio containing anticoagulant(s) and/or antiplatelet agent(s) for chronic, oral use.

Regado's lead product candidate, the REG1 Anticoagulation System, is a first-in-class, innovative, proprietary, two-component system composed of RB006, an aptamer-based anticoagulant and RB007, its specifically matched, active control agent. REG1 is being developed for use in coronary artery disease, including Acute Coronary Syndrome (ACS) patients undergoing percutaneous coronary intervention (PCI) and patients undergoing open heart surgery (OHS) including coronary artery bypass grafting (CABG) and/or heart valve repair or replacement.

Regado began developing REG1 in 2004 and, after successfully completing IND-enabling preclinical studies, filed an IND in April 2005. Following FDA acceptance in May 2005, Regado initiated a comprehensive phase 1 clinical program encompassing 174 subjects in three separate trials, two in healthy adult volunteers and one in patients with stable cardiovascular disease.³⁻⁵ Subsequent to the achievement of positive phase 1 results, Regado embarked upon a phase 2a proof-of-

concept study in stable coronary arterial disease patients undergoing elective PCI. The study (REVERSAL-PCI) was designed to assess the ability of REG1 to replace standard heparin therapy in patients undergoing coronary balloon angioplasty dilatation and stenting. The study population characteristics were consistent with the general population of patients undergoing elective PCI. The study, completed in October 2008, demonstrated the safety and feasibility of employing the REG1 system in elective PCI patients. REG1 achieved its primary endpoint of no increase in bleeding upon early sheath removal after PCI.⁶ In addition, the important secondary endpoints of stable, rapid onset of activity and rapid, titratable reversibility of anticoagulation as measured by activated partial thromboplastin time (aPTT) were also achieved. Anticoagulation measures [aPTT and Activated Clotting Time (ACT)] reached appropriate target levels during PCI with low interpatient variability.

Despite advancements in the field of acute care anticoagulants in recent years, this remains a clearly unsatisfied market. Myriad deficiencies with existing therapeutics remain including unpredictable safety, prolonged onset of action, variable pharmacokinetics and effectiveness, inconvenient administration and lack of control. Heparin, the most established anticoagulant, continues to be used in the ACS setting yet remains suboptimal given inherent safety problems and high interpatient variability. Recently, contamination of heparin resulting from manufacturing control deficiencies also has led to grave concerns about its use. New treatments, including bivalirudin, have provided some incremental benefit to heparin. Although bivalirudin reduces bleeding, it generally does not offer any improvement in efficacy versus heparin. Moreover, bivalirudin, like heparin, lacks the property of active control. Given the situation with current anticoagulants, the physician choosing among the existing therapeutics is compelled to make a compromising clinical decision, choosing between optimized efficacy and optimized safety. The unique mechanism of action of REG1 as an inhibitor of Factor IXa, coupled with the characteristic of immediate,

partial or complete reversibility, positions this system to become the new paradigm for anticoagulation therapy as the optimal anticoagulant system.

In March, 2009, an end-of-phase-2a (EOP2a) meeting was held with FDA to review the available results of REG1 non-clinical and clinical development along with the remaining development plan. The non-clinical program was deemed sufficient for completing clinical development and the proposed phase 2b clinical study was acceptable with regard to design, dosing and the statistical analysis plan.

The Company also is engaging FDA in the design of a registration development plan for REG1 in open heart surgery. The plan will be submitted for FDA review by the end of 2010.

Regado's second clinical program is REG2. REG2 is a subcutaneously administered depot formulation of RB006 coupled with RB007 administered as an IV bolus. REG2 is intended for use in a venous thrombosis indication such as venous thromboembolism (VTE) prophylaxis in patients undergoing abdominal surgery.⁷ Regado began clinical development of REG2 in 2009 and has completed a single escalating dose study in healthy adult volunteers.⁸ This study represents the first reported successful subcutaneous administration of an aptamer in humans. Results from this study indicate that REG2 is well tolerated, exhibits predictable and reproducible reversibility and has a duration of action of 7-10 days following a single RB006 subcutaneous injection. The results also demonstrated successful reversal with the active control agent, RB007.

REG-AP is Regado's antiplatelet discovery program exploring new targets of platelet aggregation or adhesion for the treatment of new indications (e.g., diabetic vasculopathies, peripheral ischemia, platelet pro-inflammatory diseases and stroke) as well as traditional indications (e.g., ACS). An aptamer-control agent pair (REG3) targeting the platelet collagen receptor, GPVI, is presently completing IND enabling preclinical studies and the Company expects to initiate phase 1 clinical testing for REG3 in 1H2011.

Regado exclusively licensed the right to discover aptamer-control agent pairs with antithrombotic activity from Archemix Corporation. Duke University exclusively

licensed the control agent technology to Regado for all fields and uses. Both parties are entitled to certain modest payments from Regado under these licenses.

Product Pipeline

Table 1

Regado's advancing comprehensive injectable antithrombotic pipeline						
Event	Pre-clinical	Phase 1	Phase 2a	Phase 2b	Phase 3	Mkt. Opp.
REG1: RB006 (IV bolus) + RB007 (IV bolus)	ACS – PCI OHS (including CABG)					>\$1 Billion
REG2: RB006 (SC injection) + RB007 (IV bolus)	VTE Prophylaxis					~\$800 Million
REG3: RB571 + RB515	ACS etc.					TBD

REG1 and REG2

REG1 and REG2 are two-component systems comprising a Factor IXa inhibiting anticoagulant aptamer, pegnivacogin (aka RB006) and its matched active control agent, anivamersen (aka RB007). RB007 permits consummate therapeutic flexibility by enabling clinicians to titrate or reverse completely in real time the amount of anticoagulation in a patient. REG1, consisting of RB006 and RB007 each administered by IV bolus, is being developed for the treatment of ACS patients undergoing PCI. The PCI market is large and is expected to grow 1.9% annually, resulting in 2.7M procedures by 2020 in the US alone. Conservative US peak sales projections for REG1 in ACS patients undergoing PCI are ~ \$950M. In addition, there are lifecycle opportunities for REG1 that exist in large, unsatisfied and growing markets. The lifecycle opportunities include elective PCI, open heart surgery including CABG and/or valve repair or replacement, medically managed ACS patients and the newly emerging indication of TAVI (Transcatheter Arterial Valve Implantation). REG2 comprises a subcutaneously administered depot

formulation of RB006 and an intravenously (bolus) administered formulation of RB007. REG2 is being developed for venous thromboembolism (VTE) prophylaxis in patients undergoing abdominal surgery. The abdominal surgery population is large at 1.2M patients, growing annually at 3.6% in the US. In rigorous quantitative market research, surgeons stated strong preference for REG2, an injectable formulation for their patients who experience difficulty in swallowing, yet need an effective and safe anticoagulant that offers control. The revenue opportunity for abdominal surgery is large with peak revenues projected at ~\$800M in the US alone with a number of possible lifecycle opportunities increasing this number substantially. As optimal anticoagulant systems, both REG1 and REG2 are positioned for significant global market penetration in a variety of indications providing a multi-billion dollar value proposition.

REG1 is anticipated to launch in the ACS-PCI indication in early 2016. Regado holds worldwide rights to all compounds in their product portfolio with IP protection through 2025 and beyond.

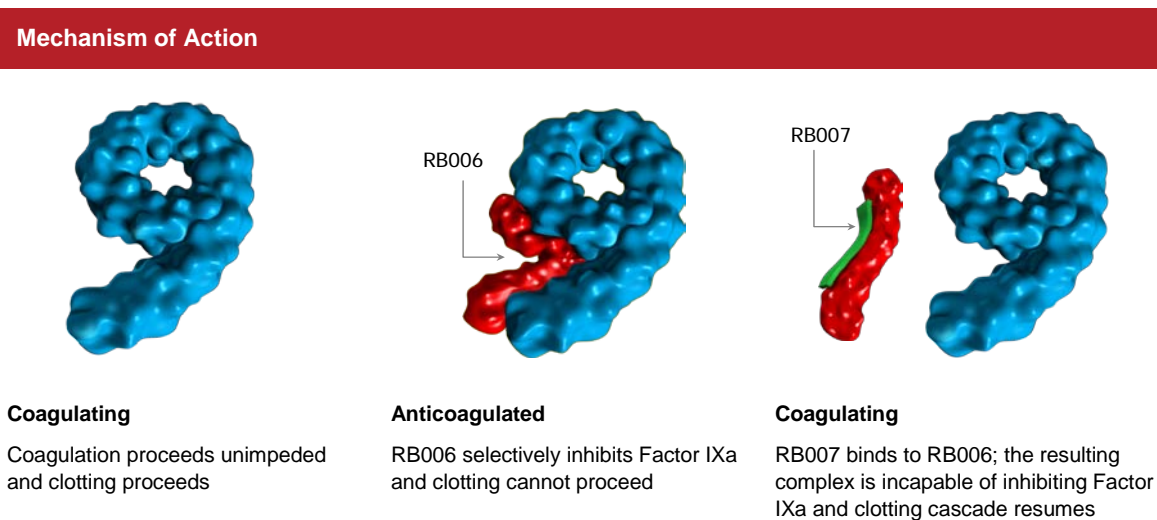
Mechanism of Action of REG1 and REG2

The anticoagulant component of REG1 and REG2, RB006, is a single-stranded, nuclease-stabilized RNA aptamer, 31 nucleotides in length, coupled to a 40KDa PEG moiety. As such, RB006 has a plasma half-life of >24 hours. RB006 selectively and potently binds to blood coagulation Factor IXa, inhibiting its activity and preventing blood clot formation (by impeding the clotting cascade) either rapidly due to its fast onset of action after a single bolus injection or gradually after a subcutaneous injection of a depot formulation. In both the case of REG1 and REG2, the active control agent, RB007, is a synthetic RNA oligonucleotide that consists of a 15 nucleotide sequence that is the Watson-Crick base pair complement to a corresponding portion of RB006. RB007 contains no PEG moiety. Binding of RB007 to RB006 releases RB006 from Factor IXa (or prevents circulating RB006 from binding to Factor IXa), causing the predictable and rapid reversal of the

anticoagulant effect of RB006 and allowing the patient's coagulation system to return to normal within minutes after a single IV bolus injection of RB007 (Figure 1).

By adjusting the dose of RB007, physicians can partially or completely reverse the activity of RB006, titrating the anticoagulant effect based on each patient's individual needs in each clinical setting. This cycle can be repeated as treatment dictates with a stable effect on coagulation with low variability. Due to the short half-life of RB007 (~3 min), anticoagulation can be re-initiated as needed within minutes after reversal by using another dose of RB006. Given both the flexibility of dose and administration, Regado believes REG1 and REG2 have the potential to become the respective anticoagulant therapy of choice, representing a breakthrough opportunity that can fulfill unmet medical needs from the emergency room to the operating room and through to hospital discharge.

Figure 1



REG1 CLINICAL RESULTS

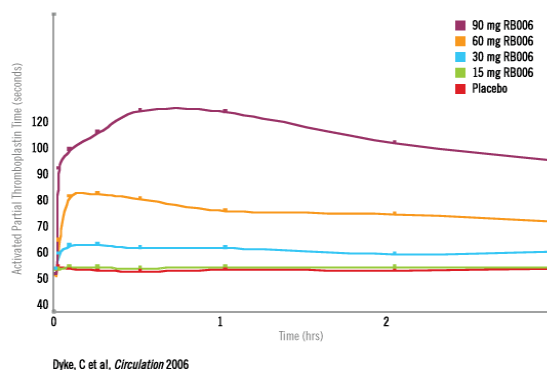
The Company conducted three phase 1 clinical studies with REG1. The studies, which enrolled 174 individuals, established REG1 was well-tolerated, exhibited predictable pharmacokinetics and demonstrated the anticipated pharmacodynamic effects in both healthy volunteers and patients with stable cardiovascular disease, while establishing an understanding of the desired dose for RB006 and RB007 for phase 2 studies.

Phase 1a³

REG1-1a was a blinded, placebo-controlled dose-escalation study. Eighty-five healthy volunteers were randomized to receive a dose of the anticoagulant (RB006) or placebo, followed several hours later by a dose of the control agent (RB007) or placebo. The study showed RB006 and RB007 were well-tolerated. In volunteers treated with RB006, rapid and dose-dependent anticoagulation was observed (Figure 2). At doses approximating a therapeutic dose of RB006, the duration of the intended anticoagulant effect was at least 24 hours. In volunteers treated with RB006 who were then administered a complete reversal dose RB007, the anticoagulation was reversed rapidly and durably, returning their blood to its normal state. This study demonstrated for the first time the anticoagulant activity of RB006 and reversal activity of RB007 in humans. It should be noted that when RB007 was administered alone it was demonstrated to have a very short half-life (~3 minutes) and no clinical effects.

Figure 2

RB006 effectively inhibits Factor IXa and prevents clotting



Phase 1b⁴

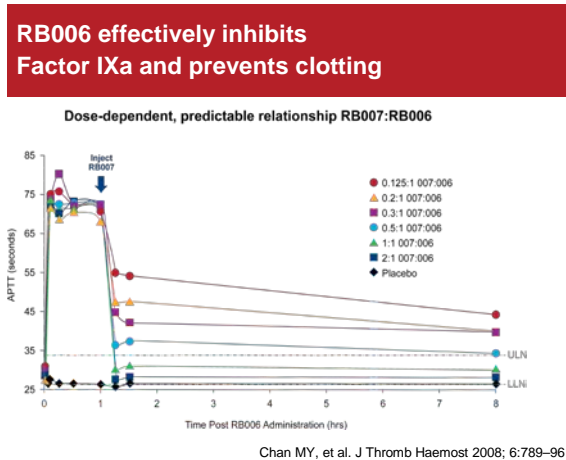
REG1-1b was a multi-center, double-blind, placebo-controlled study that enrolled 50 patients with stable cardiovascular disease taking commonly prescribed oral antiplatelet drugs including aspirin and clopidogrel. Patients were randomized to receive one dose of RB006 or placebo, followed several hours later by a dose of RB007 or placebo. As predicted, the reversible anticoagulant activity of the REG1 system observed in REG1-1a was observed in REG1-1b, demonstrating that the REG1 system exhibits expected pharmacodynamic effects in the target patient population. This study also showed RB006 and RB007 were well-tolerated in patients on antiplatelet therapy, demonstrating the safety to proceed to further studies of REG1 in the target patient population.

Phase 1c⁵

REG1-1c was a double-blind, placebo-controlled study that randomized 39 healthy volunteers to receive three consecutive RB006 - RB007 treatment cycles or placebo. The study employed a body-weight adjusted dosing strategy, whereby patients receiving RB006 had their dose prospectively determined based upon their body weight at the time of entry into the trial. The weight-adjusted dosing strategy was developed via analysis of data obtained in the phase 1a and

1b studies. Based upon this analysis, it was expected that weight-adjusted dosing of RB006 would maximally inhibit Factor IXa producing consistent pharmacodynamic responses, with low intra and inter-subject variability, and would therefore be the optimal dosing strategy for RB006 going forward. Consistent with these predictions, Regado was successful in designing a trial that demonstrated very reproducible anticoagulant effects. Two groups of volunteers were dosed with RB006 on different treatment days and then assigned to varying doses of RB007 to establish the ability of REG1 to produce a range of therapeutic anticoagulant effects. REG1-1c demonstrated that not only could RB007 neutralize completely the activity of RB006, but by adjusting the RB007 dose, physicians were able to titrate the anticoagulant effect produced by RB006 (Figure 3). It also demonstrated that RB006 was well tolerated when given as repeat doses with no loss of effect, low variability and a very predictable anticoagulant response.

Figure 3

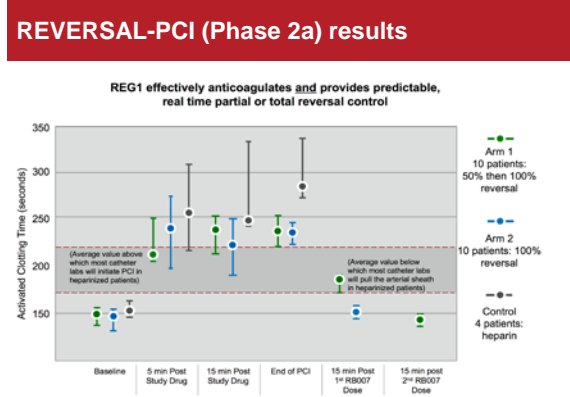


Phase 2a (REVERSAL-PCI)^{6,7}

Based upon the combined results of the Company’s phase 1 clinical program, Regado initiated REVERSAL-PCI, a multi-center, open-label, randomized phase 2a clinical study that enrolled 26 stable coronary arterial disease patients undergoing elective PCI. The study was designed to assess whether REG1 could replace standard heparin therapy during

a coronary balloon angioplasty dilatation and stenting procedure in patients at low risk for complications associated with therapy-related bleeding or heart attack. This study completed enrollment in October 2008. Data from this study (Figure 4) demonstrated low interpatient variability for the REG1 treated group, rapid onset and stable anticoagulant effects after a bolus injection of RB006 administered at 1 mg/kg and rapid partial or complete reversal upon administration of an appropriate dose of IV bolus RB007. Results indicated that REG1 was well-tolerated in these patients, that RB006 was an effective anticoagulant for use in PCI, that RB007 could partially or completely (depending on the dose given) reverse the anticoagulation behavior of RB006 in a predictable and rapid fashion and that planned early arterial sheath removal could be accomplished after RB006 reversal without any extraneous bleeding.

Figure 4



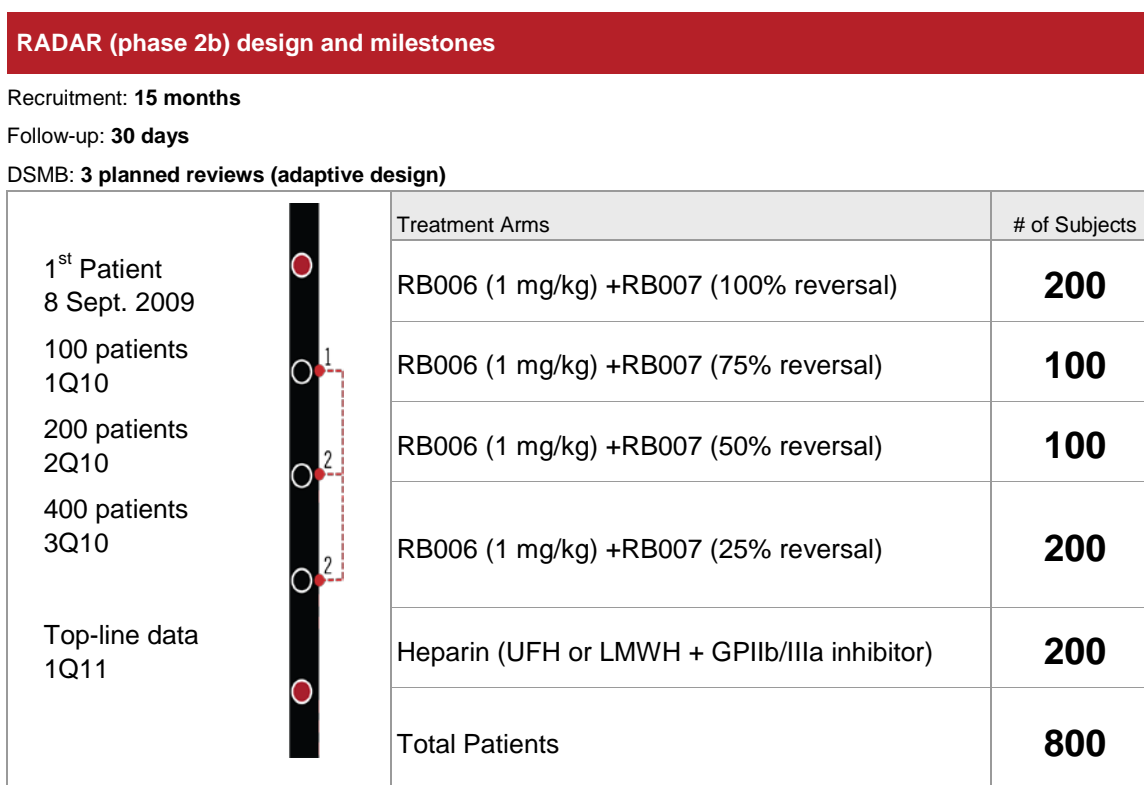
Phase 2b (RADAR)

A phase 2b study, the RADAR trial, is currently ongoing in ACS patients undergoing PCI. The study is designed as an adaptive design dose ranging study for RB007 with a fixed dose (1 mg/kg) of RB006. The dose of RB006 chosen has been shown to maximally inhibit FIXa offering the potential to improve protection during the ischemic period. The study will enroll 4 cohorts of patients receiving doses of RB007 equivalent to 25%, 50%, 75% and 100% reversal, respectively.

An active control group receiving heparin will complete the study (Figure 5). The study will compare the bleeding effects between the heparin and RB007 arms. It is also designed to estimate an effect of REG1 versus heparin on ischemic events. All endpoints are adjudicated independently. Study design including endpoints, sample size, dosing and statistical analysis plan have been discussed and agreed with the FDA at an end-of-phase-2a meeting in March 2009. Upon completion, Regado expects to have verified the RB006 dose and identified the dose or dose range of

RB007 that yields the optimal combination of improved safety (reduced bleeding) and maximized therapeutic outcomes. In discussions with FDA, it has been agreed that this study will be adequate to serve as the basis for the design of a phase 3 program and that it will be supportive to the pivotal studies. The trial was initiated in September 2009 and is expected to complete enrollment in about 16 months (4Q10) including ~800 subjects in 7 countries. Top-line data is projected to be available in early 1Q2011.

Figure 5



1 General safety review

2 Any RB007 arm with a bleeding rate in excess of heparin will be discontinued and remaining subjects intended for that arm will be re-randomized to retained RB007 arms

REG2 CLINICAL RESULTS

The Company has conducted one phase 1 clinical study to date with REG2. The study enrolled 36 individuals to evaluate subcutaneously administered RB006 with and without IV bolus administered RB007 compared to placebo. REG2 was easy to inject, well-tolerated and exhibited predictable

pharmacokinetics and pharmacodynamic effects in healthy volunteers. The characteristics of REG2 in this initial clinical study were consistent with those desirable for use in venous thrombosis applications.⁸

Phase 1a⁹

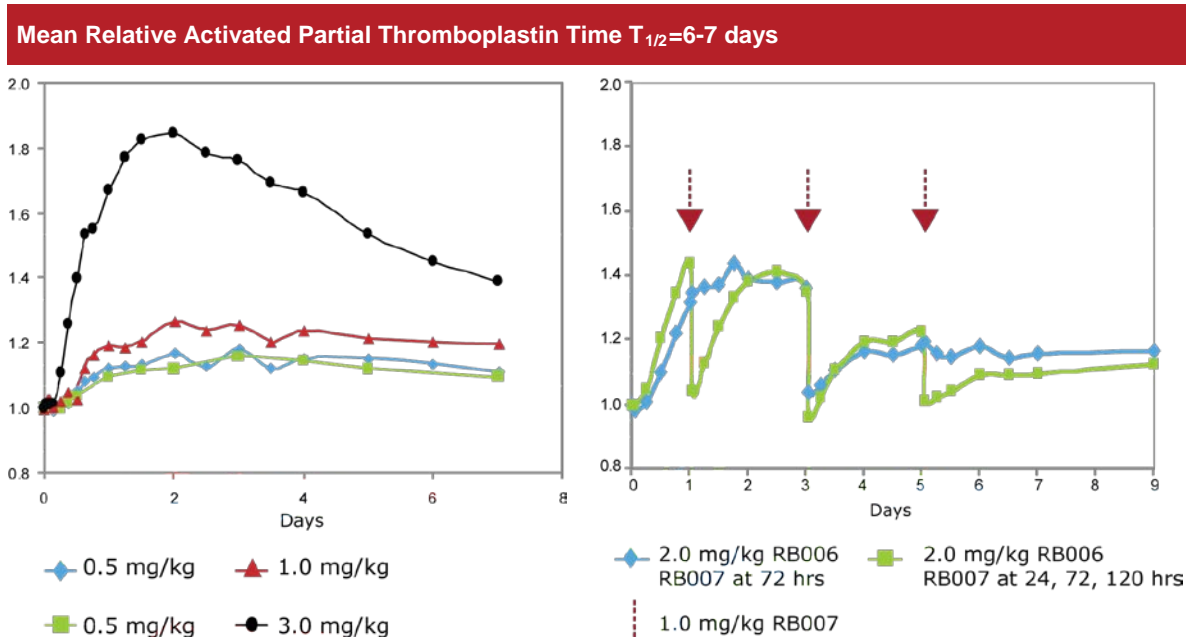
REG2-1a was a partially blinded, placebo-controlled 5-arm dose escalation study involving 36 healthy volunteers. In each of three arms, 6 subjects received RB006 and 2 received placebo. The subjects were then followed for 10 days. In the remaining 2 arms, subjects received open label RB006, one arm with a prolonged follow-up (8 weeks), the other with predefined doses of RB007 reversal and a 10 day follow-up. As shown in Figure 6, injection of RB006 resulted in an intermediate onset of action with anticoagulation beginning at about 8-12 hours, a peak effect at ~48 hours and a long duration of action with a half-

life of approximately 7 days. Injection of RB007 resulted in the reversal of plasma RB006 concentration and anticoagulant effect, which defines a pattern for active control of RB006 for future use. The study was the first study of aptamers using a subcutaneous formulation in humans and demonstrated that RB006 can be easily used and is well tolerated in healthy volunteers.

Phase 1b

A partially blinded, placebo-controlled, multiple dose escalation study in adult volunteers is presently undergoing design and is planned for initiation in the first half of 2011.

Figure 6



Appendix

Regado management team

Name	Position	Prior experience
David J. Mazzo, Ph.D.	President and Chief Executive Officer	Aeterna Zentaris, Chugai Pharma USA, Schering-Plough, HMR, RPR
Steven Zelenkofske, D.O., F.A.C.C.	Sr. VP Clinical/Medical Affairs and Chief Medical Officer	Sanofi-Aventis, Boston Scientific, Novartis
Chris Rusconi, Ph.D.	Sr. VP, Discovery/Preclinical Development, Chief Scientific Officer and Co-Founder	Director of Research for the Program in Combination Therapeutics at Duke University Medical Center
Ellen McDonald, M.B.A.	Sr. VP, Business Operations and Chief Business Officer	Aeterna Zentaris, Chugai Pharma, Bristol-Myers Squibb, Johnson & Johnson
Alexander Giaquinto, Ph.D.	Sr. VP of Reg. Aff. & QA and Chief Compliance Officer	Schering-Plough
Christopher Courts, M.B.A., C.P.A.	Vice President of Finance	ITC Deltacom

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