MAP Pharmaceuticals, Inc.
Form 10-K
March 20, 2008
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UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

x ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2007

OR

¨ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from _____ to _____

Commission File Number 001-33719

MAP PHARMACEUTICALS, INC.

(Exact name of registrant as specified in its charter)

Delaware	**20-0507047**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

2400 Bayshore Parkway, Suite 200

Mountain View, California	**94043**
(Address of principal executive offices)	**(Zip code)**

(650) 386-3100

(Registrant s telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	**Name of Each Exchange on Which Registered**
Common Stock per share $0.01 par value	**The Nasdaq Global Market**

Securities registered pursuant to Section 12(g) of the Act:

None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ¨ No x

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act. Yes ¨ No x

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes x No ¨

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant s knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ¨

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer or a non-accelerated filer. See definition of accelerated filer and large accelerated filer in Rule 12b-2 of the Exchange Act.

Large accelerated filer ¨	Accelerated filer ¨
Non-accelerated filer x (Do not check if a smaller reporting company)	Smaller reporting company ¨

Indicate by check mark whether the registrant is a shell company (as defined by Rule 12b-2 of the Exchange Act). Yes ¨ No x

The initial public offering of MAP Pharmaceutical, Inc. s Common Stock, par value $0.01 per share, commenced on October 4, 2007. There was no public market for the Company s Common Stock prior to that date.

As of March 14, 2008, the registrant had outstanding 20,253,766 shares of Common Stock.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant s proxy statement to be filed with the SEC pursuant to Regulation 14A in connection with the registrant s 2008 Annual Meeting of Stockholders, to be filed subsequent to the date hereof, are incorporated by reference into Part III of this Annual Report on Form 10-K. Such proxy statement will be filed with the SEC not later than 120 days after the conclusion of the registrant s fiscal year ended December 31, 2007.

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PART I

ITEM 1. BUSINESS

Overview

We use our proprietary inhalation technologies to enhance the therapeutic benefits and commercial attractiveness of proven drugs while minimizing risk by capitalizing on their known safety, efficacy and commercialization history. We have several proprietary product candidates in clinical development which address large market opportunities, including our two most advanced product candidates, Unit Dose Budesonide, or UDB, for pediatric asthma and MAP0004 for migraine. We have announced positive results from Phase 2 clinical studies of UDB and MAP0004 in 2007. We initiated a Phase 3 clinical program for UDB in January 2008 and anticipate initiating a Phase 3 clinical program for MAP0004 in early 2008. We hold worldwide commercialization rights for each of our product candidates and intend to market UDB and MAP0004 in the United States through our own focused sales force targeting pediatricians for UDB and neurologists and headache specialists for MAP0004. For MAP0004, we may establish partnerships with pharmaceutical companies to market and sell to primary care physicians.

Our proprietary technologies enable us to develop proprietary drug candidates for delivery via the respiratory tract to more effectively treat both local respiratory and systemically treatable diseases. We develop inhalable drug particles with the specific physical and chemical characteristics to facilitate efficient pulmonary delivery. We believe this will result in medicines that are most appropriate for the intended indication. We believe that our product candidates potentially offer several benefits to patients compared to alternative therapies, including: quicker symptom relief, longer-lasting therapeutic benefit at lower doses, shorter administration time, enhanced safety profile and convenient, non-invasive delivery.

The following are our two most advanced product candidates:

Unit Dose Budesonide is our proprietary nebulized version of budesonide intended to treat pediatric asthma in children from 12 months to eight years of age. UDB is designed to be administered more quickly and to provide efficacy at lower doses than conventional nebulized budesonide, which is the current leading treatment for pediatric asthma. Conventional nebulized budesonide is the only inhaled corticosteroid that is approved by the U.S. Food and Drug Administration, or the FDA, for treating asthma in children under the age of four in the United States. In 2006, sales of conventional nebulized budesonide generated revenues of approximately $700 million in the United States and approximately $900 million worldwide, according to data published by IMS Health. Our UDB product candidate has been designed to achieve a particle size smaller than previously possible with budesonide. We believe this smaller particle size allows for faster delivery and efficacy at a lower dose, which together may offer improved safety, compliance and convenience. We announced positive results from a Phase 2 clinical program for UDB in February 2007, and we initiated our Phase 3 clinical program in January 2008. Our program for UDB will include Phase 3 pivotal efficacy clinical trials as well as additional trials evaluating the uptake of UDB by the body, known as pharmacokinetic trials.

MAP0004 is our proprietary orally inhaled version of dihydroergotamine, or DHE, intended to treat migraine. Migraine is a syndrome characterized by four symptoms: pain, nausea, phonophobia, or abnormal sensitivity to sound, and photophobia, or abnormal sensitivity to light. MAP0004 is designed to provide faster onset and longer-lasting migraine relief than triptans, the class of drugs most often prescribed for treating migraine. In 2006, triptans generated revenues of approximately $2.1 billion in the United States, according to data published by IMS Health. MAP0004 is an easy to use, non-invasive, at-home therapy in development that patients self-administer using our proprietary hand-held Tempo inhaler. DHE is available as an intravenous therapy which has been used in clinical settings for over 50 years for the safe and effective treatment of migraine, particularly forms of migraine that are severe or do not respond to triptans or other therapies. MAP0004 has been shown to retain the rapid onset and long-lasting effectiveness of intravenous DHE while avoiding the nausea that intravenous administration

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can cause. We believe MAP0004 has the potential to be suitable as a first-line therapy for some migraine patients. We announced positive results from our Phase 2 clinical trials for MAP0004 in March 2007. In January 2008, we completed the special protocol assessment, or SPA, process with the U.S. Food and Drug Administration, or FDA, for the first Phase 3 clinical trial of MAP0004, and reached agreement with the FDA on the design of the protocol. The study, if successful, could support the potential approval of MAP0004 as a treatment for migraine. We anticipate initiating a Phase 3 clinical program in early 2008. Our program for MAP0004 will include Phase 3 pivotal efficacy clinical trials as well as an additional pharmacokinetic trial and a trial evaluating the effect of MAP0004 on the body, known as a pharmacodynamic trial.

Our product portfolio also includes the two earlier stage product candidates listed below, both of which highlight the broad applicability of our technologies to a diverse range of potential future products. While we do not plan to make further significant direct investment in these two product candidates, we plan to evaluate partnership opportunities for further development and commercialization of these two product candidates as well as other product candidates which may utilize these technologies.

We are applying our proprietary particle formulation technologies to deliver the optimal ratio of multiple drugs in a reproducible and consistent manner. We combine two or more drugs together into a single micron sized particle at consistent and reproducible ratios, which may improve the delivery profile and stability of the resultant combination therapy. We believe our proprietary technologies in this area have potential broad applicability for a number of small molecule combination product candidates in diverse indications via inhalation and other routes of delivery We are demonstrating this capability with MAP0005, our proprietary combination of an inhaled corticosteroid and a long-acting beta-agonist, or LABA, for the potential treatment of asthma and chronic obstructive pulmonary disease, or COPD. This product candidate demonstrates our ability to apply our proprietary technology to combine two drugs within a single particle, in this case a corticosteroid with a LABA, in a pre-specified ratio and deliver it to the respiratory tract using our proprietary Tempo inhaler. The two drugs utilized in MAP0005 are well characterized and previously approved by the FDA both as single drugs and in combination use. We initiated a Phase 2a clinical trial with MAP0005 for the treatment of asthma and COPD in October 2007 outside the United States. We have not filed, and nor did we file, an investigational new drug application, or IND, with the FDA for MAP0005 because our Phase 2a trial is not being conducted in the United States.

We have also demonstrated our ability to apply our proprietary technologies to formulate and stabilize biologically-active proteins and peptides. Without the need for excipients or other additives, we design and incorporate our protein formulations to be stored for months at room temperature, and to provide multiple doses of medicine delivered accurately without the need for invasive needle injections. We are demonstrating this capability with MAP0001, our proprietary formulation of insulin for the potential treatment of Type 1 and Type 2 diabetes via pulmonary delivery using our proprietary Tempo inhaler. We believe our proprietary formulation coupled with our Tempo inhaler may overcome many of the issues currently associated with the invasive delivery of proteins by injection or infusion in general, and with inhalable insulin therapies in particular. We have developed small particles of insulin which allow the drug to be inhaled deeply in the lungs, with only a small percentage of insulin deposited in the back of the mouth and throat. In a Phase 1a clinical study conducted in Australia, MAP0001 was shown to be biologically active and achieved maximum therapeutic blood levels as quickly as Novorapid subcutaneous injection, a widely used injectable insulin. We have not filed, and we were not required to file, an IND with the FDA for MAP0001 because our Phase 1a trial was not conducted in the United States.

A core part of our strategy is to reduce the risk of drug development by focusing on the development of proven drugs with established safety and efficacy profiles. The compounds underlying our product candidates are well characterized and have been previously approved by the FDA for other sponsors and in other dosage forms and formulations. As a result, we may seek FDA marketing approval of our product candidates under Section 505(b)(2) of the Federal Food, Drug and Cosmetic Act, or FFDCA, which, if available to us, would allow any new drug

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application, or NDA, we file with the FDA to rely in part on data in the public domain or the FDA s prior conclusions regarding the safety and effectiveness of approved compounds. This may expedite the development program for our product candidates by potentially decreasing the overall scope of work we must do ourselves.

Our Product Candidates

The following table summarizes our product candidates, each developed using our proprietary technologies:

Product Candidate	Indication	Status of Clinical Programs	Commercial Rights
Unit Dose Budesonide (UDB)	Pediatric asthma in children from 12 months to eight years of age	Phase 3	Worldwide
MAP0004	Acute migraine with or without aura	Initiating Phase 3 clinical program in early 2008	Worldwide
MAP0005	Adult asthma and chronic obstructive pulmonary disease	Phase 2a	Worldwide
MAP0001	Type 1 and Type 2 diabetes	Phase 1a	Worldwide

In the table, under the heading Status of Clinical Programs, generally Phase 3 indicates evaluation of clinical efficacy and safety within an expanded patient population, at geographically dispersed clinical trial sites; Phase 2 indicates clinical safety testing, dosage testing and initial efficacy testing in a limited patient population; Phase 1 indicates initial clinical safety testing in healthy volunteers or a limited patient population, or trials directed toward understanding the mechanisms or metabolism of the drug. For purposes of the table, Status indicates the most advanced stage of development that has been completed or is on-going.

Unit Dose Budesonide (UDB) for the Treatment of Pediatric Asthma

UDB is our proprietary nebulized version of budesonide for treating pediatric asthma in children from 12 months to eight years of age. UDB is designed to be administered more quickly and to provide efficacy at doses lower than those approved for conventional nebulized budesonide, which is the current leading treatment for pediatric asthma. Conventional nebulized budesonide is the only inhaled corticosteroid, or ICS, approved by the FDA for treating asthma in children under the age of four in the United States. Conventional nebulized budesonide was first introduced in Europe in 1990, and in the United States in 2000. Our version of budesonide, UDB, has been designed to have a particle size smaller than previously possible. This potentially allows a higher percentage of drug to be delivered into the lung in a shorter period of time. We believe this may reduce the amount of drug deposited in the back of the mouth and throat where it is ineffective and may result in local and systemic side effects. We announced positive results from our Phase 2 clinical trial in February 2007, and then conducted an end of Phase 2 meeting with the FDA. We initiated our Phase 3 clinical program in January 2008. Our program for UDB includes Phase 3 pivotal efficacy clinical trials as well as additional pharmacokinetic trials.

Pediatric Asthma Market

According to the Centers for Disease Control and Prevention, or CDC, pediatric asthma is the most common chronic childhood disease in the United States, and is a major global public health problem. Asthma is a chronic respiratory disorder that is characterized by inflammation and narrowing of the airways, leading to limitation or obstruction of airflow and resulting in symptoms such as episodes of wheezing, chest tightness, breathlessness and coughing. In children, these symptoms are often seen at night, leading to disturbed sleep for both the parents and the child.

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According to the CDC, of the estimated 22 million patients diagnosed with asthma in the United States, approximately 6.8 million are children under 18 years of age and approximately 1.2 million are children under five years of age. In the United States, rates of asthma diagnosis in children under five years old are approximately 5.8%, compared to approximately 11.5% for children between five and 11 years old. The number of very young asthmatics may be underestimated since diagnosis in young children is difficult and physicians are often reluctant to make a formal diagnosis of asthma at such a young age.

Guidelines from both the Global Initiative for Asthma, or GINA, issued in 2006 and from the National Asthma Education and Prevention Program, or NAEPP, issued in 2007 recommend the use of ICSs, as the preferred initial treatment to reduce inflammation and maintain long-term control of asthma in children of all ages. Currently, conventional nebulized budesonide is the only FDA-approved ICS for treating asthma in children under four years old, and is the only approved nebulized corticosteroid product for the treatment of pediatric asthma in children ages 12 months to eight years, marketed as Pulmicort Respules by AstraZeneca plc, or AstraZeneca. According to data published by IMS Health, prescriptions of Pulmicort Respules, which was introduced in the United States in 2000, exceeded three million in the United States in 2006. Since its introduction, annual sales of Pulmicort Respules have grown to approximately $700 million in the United States and approximately $900 million worldwide in 2006.

In the United States, children under the age of five will often use a nebulizer to administer inhaled asthma therapies. A nebulizer is a vaporizing device which is used to administer medication to patients in the form of a mist. Children under the age of five are generally unable to master the coordination required to use other inhalation technologies. These include metered dose inhalers, or MDIs, which use pressurized propellants to expel a specific amount of drug from a canister, and dry powder inhalers, or DPIs, which are unpressurized devices that dispense specific amounts of dry drug particles powered by the patients own inhalation. In some cases, and more often outside the United States, physicians may prescribe an MDI plus a holding chamber or spacer, because, like nebulizers, these do not require patients to time their breaths to dispense the drug. Many physicians prefer to prescribe nebulizer therapy because it requires little training or coordination and has less dose-to-dose drug variability.

As an alternative to ICS therapy for asthmatic children under five years old, physicians sometimes prescribe leukotriene antagonists since they can be given orally and avoid concerns about possible adverse effect associated with high doses of ICS, such as suppression of bone development. Leukotriene antagonists, however, are not the preferred treatment according to the NAEPP and GINA guidelines, and are often used as additive therapy with an ICS. We estimate that prescriptions of the leading leukotriene antagonist, Singulair, to children under the age of six generated approximately $500 million in sales in 2007, out of a total of approximately $3.5 billion in the United States.

Limitations of Current Nebulized Therapies

Due to its safety relative to other corticosteroids, budesonide has been widely adopted for use in pediatric asthma. GINA and NAEPP guidelines indicate ICS therapy should be used as the first line of treatment.

Conventional nebulized budesonide has three major limitations:

Lengthy administration time for delivery of therapeutic dose: Administration of an effective dose of conventional nebulized budesonide is relatively slow, with a published nebulization time in clinical use of five to ten minutes. However, our own market research indicates that nebulization times can often be between ten and fifteen minutes. We believe the lengthy administration process limits compliance to the prescribed therapy, especially for restless toddlers, reducing the effectiveness of the treatment. In addition, conventional nebulized budesonide is only compatible with a narrow range of nebulizers, and cannot be administered effectively using next generation nebulizers, which are designed to be smaller, more convenient and to have potentially faster drug administration times.

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Delivery of therapeutic dose late in the administration cycle: We believe that much of the conventional nebulized budesonide dose is delivered much later in the administration cycle, because a smaller percentage of drug is nebulized in the first few minutes of administration. This late, or delayed, delivery in an already lengthy administration cycle can exacerbate poor patient compliance, particularly for young children who may be unlikely to complete a full administration cycle, and reduces the likelihood of a restless toddler receiving a therapeutic dose.

Potential side effects associated with local and systemic exposure: During administration, conventional nebulized budesonide is often deposited in the back of the mouth and throat, never reaching the lungs where the drug is effective. If drug adheres to the back of the mouth and throat, it can lead to local side effects, such as cough, hoarseness and oral yeast infections, known as thrush. High doses of ICS can also lead to excessive systemic exposure to the drug, which may potentially cause impaired growth in children, reduction in bone density as well as skin thinning and bruising.

Our Potential Solution: Unit Dose Budesonide

We use our proprietary technologies to develop UDB as a smaller, consistently reproducible budesonide particle. The small size and stability of these drug particles allows for many more drug particles to be collected and transported into the lung by the small droplets generated by the nebulizer. The result is a formulation that exhibits a consistent, linear delivery of therapy over the entire administration time. By creating stable, small drug particles with consistent delivery over time, we believe we may overcome many limitations of current pediatric asthma therapies.

Based on our clinical studies, we believe UDB may provide patients with the following therapeutic benefits when compared to conventional nebulized budesonide:

Faster delivery: UDB has been shown to enable complete administration of an effective dose in approximately half the time of conventional nebulized budesonide. In addition, we may elect in the future to perform the required clinical studies to market UDB with next generation nebulizers. According to our *in vitro* research, UDB is compatible with next generation nebulizers and may therefore have additional benefits such as an even faster administration time.

Higher percentage of drug delivered earlier: UDB s smaller particle size allows for more consistent and linear dosing throughout a shorter administration cycle, rather than drug being delivered later in the cycle. According to our *in vitro* research, the small size of our UDB particles resulted in approximately three times as much Fine Particle Dose, or FPD, of UDB being nebulized in the first minute when compared to conventional budesonide. FPD is a measure of the amount of drug that may reach the lungs. Therefore, restless toddlers may be more likely to receive a therapeutic dose of UDB more often compared to conventional budesonide, potentially resulting in better asthma control, and reduction of emergency room visits.

Efficient delivery at a lower dose: Our studies have shown that our low dose of UDB has the potential to treat asthma effectively with approximately half of the lowest dose of conventional nebulized budesonide, further reducing potential local and systemic side effects including cortisol suppression. UDB is efficiently delivered to the surface of the lung, reducing the amount of drug deposited in the back of the mouth and throat. This may lead to a reduction in oral thrush and systemic cortisol suppression, which is a marker of potential systemic adverse effects including decreased bone density and impaired growth. No cortisol suppression has been observed in our clinical studies with UDB to date.

UDB Clinical Development Program

UDB has been shown in our clinical studies to be effective in improving asthma symptoms and to be well tolerated when compared to placebo. Nebulization time has been shown to be three to five minutes. We

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announced positive results from a Phase 2 clinical trial in February 2007, and we initiated a Phase 3 clinical program for UDB in pediatric asthmatics in January 2008.

Phase 2 Clinical Trial Results. In February 2007, we announced positive results from a Phase 2 clinical trial of UDB as a potential treatment for pediatric asthma. The trial included 205 asthmatic children aged one to 18 years old across multiple sites in the United States. The objective of the study was to evaluate the efficacy, tolerability and pharmacokinetics of UDB. The study compared two different doses of UDB, 0.135 mg and 0.25 mg, administered twice a day, in a randomized, double-blind, placebo-controlled trial. The co-primary endpoints of the study were the change from baseline in Nighttime Composite Symptom Score, which is a composite of the three symptoms of coughing, wheezing and shortness of breath, and the change from baseline in Daytime Composite Symptom Score in the same three symptoms. Secondary endpoints included changes from baseline in morning and evening peak expiratory flow, a measure of lung function. In addition, we evaluated trends in Forced Expiratory Volume in one second, or FEV, which indirectly measures airway narrowing.

This Phase 2 clinical trial demonstrated that after six weeks of dosing, UDB produced a statistically significant reduction in Nighttime and Daytime Composite Symptom Scores versus placebo for the 0.135 mg dose of UDB ($p = 0.002$ for the nighttime score and $p = 0.003$ for the daytime score). A p-value of 0.05 or less generally represents statistical significance. Positive trends in FEV_1 were seen in those patients old enough to take this test. The higher 0.25 mg twice a day dose was not significantly better than placebo in the co-primary endpoints of Nighttime and Daytime Composite Symptom Score. However, we observed consistent trends with respect to secondary endpoints and similar magnitude of FEV_1 improvements in both doses compared to placebo, which we believe is sufficient to support future clinical evaluation of the 0.25 mg dose.

The study showed both doses of UDB to be well tolerated, with no serious adverse events reported. There were no incidences of oral thrush. Also, there was no reduction in cortisol levels as compared to placebo over the duration of the study. Suppression of cortisol, a natural steroid hormone produced by the body, correlates with the occurrence of systemic side effects from the administration of high dose ICSs. Therefore, cortisol levels are often measured as an indication of systemic side effects from the administration of ICSs. Patients experienced average nebulization times of three to five minutes, which steadily decreased over the course of the study period.

Phase 3 Clinical Program. We are currently conducting a Phase 3 pivotal efficacy clinical trial to provide evidence of efficacy and safety of UDB for the treatment of pediatric asthma. The first Phase 3 trial, which we initiated in January 2008, is a multi-center, randomized, double-blind, placebo controlled efficacy and safety trial in approximately 360 asthmatic children 12 months to eight years of age. Patients are randomized to either a 0.25 mg dose of UDB, a 0.135 mg dose of UDB or placebo given twice a day over a 12 week treatment period. The primary efficacy endpoint is the change from baseline for both Nighttime and Daytime Composite Symptom scores. We will follow these patients in a long-term safety extension study. Our second Phase 3 trial will be a confirmatory efficacy trial with a similar design to the first Phase 3 trial. We also plan to conduct the following additional two pharmacokinetic trials: a 14 day active controlled crossover trial in approximately 30 adult asthmatics; and a 12 week active controlled trial in approximately 100 patients.

Because budesonide is well characterized and previously approved, we may seek FDA marketing approval of UDB under Section 505(b)(2) of the FFDCA. Section 505(b)(2) of the FFDCA provides an alternate path to FDA approval for modifications to formulations of products previously approved by the FDA. Section 505(b)(2) permits the filing of an NDA where at least some of the information required for approval comes from studies not conducted by or for the applicant and for which the applicant has not obtained a right of reference. This may expedite the development program for UDB by potentially decreasing the overall scope of work we must do ourselves.

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MAP0004 for the Treatment of Migraine

MAP0004 is our proprietary orally inhaled version of dihydroergotamine, or DHE, intended to treat migraine. Our Phase 2 studies showed that MAP0004 provided pain relief in as fast as ten minutes after dosing and that this relief lasted at least 24 hours. Based on these results, we believe MAP0004 has the potential to be suitable as a first-line therapy for some migraine patients. Historically, estimated onset of significant pain relief with oral triptans, the class of drugs most often prescribed for treating migraine, occurs between 45 and 90 minutes after dosing. Migraine is a syndrome characterized by four symptoms: pain, nausea, phonophobia, or abnormal sensitivity to sound, and photophobia, or abnormal sensitivity to light. MAP0004 is an easy to use, non-invasive, at-home therapy in development that patients self-administer using our proprietary hand-held Tempo inhaler. DHE is available as an intravenous therapy which has been used in clinical settings for over 50 years for the safe and effective treatment of migraine, particularly forms of migraine that are severe or do not respond to triptans or other therapies. We believe DHE s adoption as a first-line therapy has been limited by its invasive mode of administration and high incidence of nausea. MAP0004 has been shown to retain the rapid onset and long-lasting effectiveness of intravenous DHE while avoiding the nausea that intravenous administration can cause. We announced positive results from our Phase 2 clinical trials in March 2007, and then conducted an end of Phase 2 meeting with the FDA. In January 2008, we completed the SPA process with the FDA for the first Phase 3 clinical trial of our MAP0004 product candidate, and reached agreement with the FDA on the design of the protocol. The study if successful could support the potential approval of MAP0004 as a treatment for migraine. We anticipate initiating a Phase 3 clinical program in early 2008.

Migraine Market

Migraine is a chronic and debilitating neurological disorder characterized by episodic attacks. Migraine attacks typically manifest themselves as moderate to severe headache pain, with associated symptoms that often include nausea and vomiting, photophobia, phonophobia, and visual disturbances or aura. They usually involve pounding or throbbing pain on one side of the head, although pain may occur on both sides. Migraines limit the normal functioning of patients, who often seek dark, quiet surroundings until the episode has passed. Most migraines last between four and 24 hours, but some last as long as three days. According to published studies, the median frequency of attack is 1.5 times per month, although approximately 25% of migraine sufferers experience one or more attacks every week.

Migraine is a major public health problem that affects up to approximately 12% of the population in the United States and Europe. According to the National Headache Foundation, approximately 30 million people in the United States suffer from migraines. According to data published by IMS Health, the total sales revenue for prescription drugs used to treat migraine is approximately $3.5 billion worldwide. Within this market, triptans are the major class of migraine-specific drugs used for the treatment of acute migraines, with 2006 sales totaling approximately $2.1 billion in the United States and approximately $3.0 billion worldwide. Approximately 90% of triptan prescriptions are for oral formulations, with the remaining 10% split between injectable and nasal formulations. Of the approximately $2.1 billion triptan market in the United States, oral, injectable and nasal formulations accounted for approximately $1.7 billion, $200 million and $100 million in sales in 2006, respectively. Of the seven triptan products, Imitrex, generically referred to as sumatriptan, from GlaxoSmithKline plc, or GlaxoSmithKline, is the market leader, with sales of approximately $1.2 billion in the United States and approximately $1.5 billion worldwide in 2006.

There are two general categories of migraine therapies: acute and preventive. Acute therapies dominate the migraine market and are used during infrequent attacks, typically characterized as one to three attacks per month, and are designed to relieve the pain, nausea, phonophobia and photophobia symptoms of migraine. The goals of acute therapy are to stop the attack quickly and consistently, while preventing recurrence, to maintain the patient s ability to function, to use the least amount of medication and to limit adverse side effects. Although triptans are the predominant class of drugs used to specifically target migraine, DHE is another class of acute, migraine-specific therapy.

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Limitations of Current Migraine Therapies

The type of migraine treatment pursued depends on the frequency and severity of the headache, speed of onset and previous response to medication. In published studies, migraine sufferers often cite faster onset of pain relief and lower incidence of migraine recurrence as two key therapeutic attributes they would like from their medication. The treatment paradigm typically involves patients self-medicating with over-the-counter drugs when pain is mild and attacks are infrequent. Patients with more frequent or severe migraines or those who do not respond to simple analgesics may seek medical attention with a primary care physician initially and then with a headache clinic or neurology specialist if needed. Once a physician has diagnosed migraine, triptans are generally prescribed. If a patient does not respond to one triptan, the physician may switch to another, as the response to various triptans is unpredictable.

Triptans have three major limitations:

Slow onset: While triptans have improved the treatment of migraine, their onset of pain relief is relatively slow. Historically, estimated onset of significant pain relief with oral triptans occurs between 45 and 90 minutes after dosing.

Not broadly efficacious: Approximately 30% to 40% of migraine patients do not fully respond to the first triptan prescribed. Migraine patients who do not respond to any triptan therapy have few satisfactory alternatives.

Side effects: Triptans may constrict arteries, which may raise blood pressure.

DHE is an acute therapy and alternative to triptans that has been used for more than 50 years to safely treat migraine. Many headache specialists consider DHE to be the standard of care in treatment of *status migrainosus* , which is a condition characterized by debilitating migraines that last more than 72 hours. Although DHE overcomes many of the limitations of triptans, historically it has also had its own limitations, including the following:

Inconvenient and inconsistent dosing: DHE has been available predominantly for administration nasally and intravenously. Intravenous administration of DHE requires the supervision of a healthcare provider and is typically performed in a headache clinic or hospital setting, which is expensive and requires the patient to travel to one of these locations while suffering with the migraine. Absorption of DHE via the nasal pathway may lead to inconsistent dosing, and generally takes 30 to 60 minutes to provide significant pain relief. Nasal administration of DHE may result in unpleasant taste, and can cause inflammation of the nasal membrane.

Side effects: One of the common side effects of conventional DHE administered intravenously is nausea. Patients who receive DHE intravenously are often given an anti-nausea medication at the same time.

Our Potential Solution: MAP0004

We believe that MAP0004 may provide patients with the following benefits when compared to existing migraine therapeutics:

Rapid onset: The inhalation of DHE via our Tempo inhaler offered fast onset of pain relief similar to intravenous DHE and faster onset of pain relief than oral and nasal triptans. A clinical study showed that MAP0004 provided pain relief as early as within ten minutes of dosing.

Long-lasting: In a Phase 2 study, MAP0004 provided long-lasting pain relief with low incidence of recurrence. Our clinical studies support sustained pain relief through 24 hours.

Broadly efficacious: Based on historical DHE use, MAP0004 may provide a higher response rate and has the potential to treat patients who have not previously responded to other therapies, such as triptans. We also believe that MAP0004 has the potential to treat additional indications, including chronic migraine, migraine with sensitization, migraine headaches lasting over 72 hours, medication overuse headache, cluster headache, menstrual migraine, adolescent migraine and migraine prophylaxis.

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Convenient and consistent delivery: MAP0004 is non-injectable and designed to be easy to use, which may result in increased patient comfort and compliance. Our studies were performed in the home, without clinical supervision and with minimal training. Dose-to-dose variability was comparable to solid oral dosage forms.

Low incidence of side effects: Drug-induced nausea was very low in our Phase 2 clinical studies, in which migraine-associated nausea also decreased with treatment. In addition, there were no indications of arterial constriction in our clinical studies. There were no reports of bitter taste or local inflammation associated with the dose of MAP0004 selected for further development.

MAP0004 Clinical Development Program

MAP0004 has been shown in our clinical studies to be effective in providing pain relief to migraine sufferers within ten minutes of dosing and to be well tolerated when compared to placebo. We announced positive results from our Phase 2 clinical trials in March 2007. In January 2008, we completed the SPA process with the FDA for the first Phase 3 clinical trial of our MAP0004 product candidate, and reached agreement with the FDA on the design of the protocol. The study if successful could support the potential approval of MAP0004 as a treatment for migraine. We anticipate initiating a Phase 3 clinical program for MAP0004 in migraine patients in early 2008.

Phase 2 Clinical Trial Results. In March 2007, we announced positive results from two Phase 2 clinical trials with MAP0004 for the treatment for acute migraine.

The objective of the first study was to evaluate the efficacy and tolerability of three different doses of MAP0004 in adult migraine patients when self-administered at home. This Phase 2 study was a randomized, double blind, placebo-controlled study of three doses of MAP0004 in 86 patients. The study consisted of two treatment periods. The first treatment period evaluated two doses of MAP0004, 1.0 mg and 0.5 mg vs. placebo and the second treatment period re-randomized responders in the first treatment period to evaluate a lower dose, 0.25 mg vs. placebo. In the first treatment period, the 0.5 mg dose of MAP0004 showed pain relief in 32% of the patients at ten minutes ($p = 0.019$), pain relief in 72% of the patients at two hours, the study s primary endpoint ($p = 0.019$), and sustained pain relief in 43% of the patients at 24 hours ($p = 0.066$) in a treatment received population. A number of secondary endpoints were also examined, including sustained pain relief and total migraine relief at multiple time points over 24 hours. The study also showed clinically significant trends in the resolution of phonophobia, photophobia and nausea (reaching $p < 0.05$) at certain time points. Unlike conventional intravenous DHE, which is generally administered with an anti-nausea medication, MAP0004 was administered by itself and showed no statistically significant drug related increase in nausea. MAP0004 was also shown in the study to be well tolerated, with no serious adverse events reported, including cardiovascular or respiratory adverse events. In the second treatment period, 35 subjects were randomized to treat a second subsequent migraine with a 0.25 mg dose vs. placebo. No significant benefit was seen with this lowest dose when compared to placebo.

The objective of the second Phase 2 study was to evaluate the safety and tolerability of MAP0004 in subjects with asthma, a common cause of compromised lung function, and to demonstrate that the blood levels of the drug achieved by the therapy were similar to those seen after inhalation by subjects with healthy lungs. This second Phase 2 trial was a randomized, double blind, placebo-controlled study in 19 adult asthmatics. Each patient received three doses, one every week in randomized order over a 15-day period, including two 1.0 mg doses of MAP0004 and one dose of placebo. The study indicated that MAP0004 was well tolerated by subjects with compromised lung function, and that the pharmacokinetics of MAP0004, or distribution of the drug in the body, was similar to that experienced by adults with healthy lungs as shown in an earlier Phase 1 study. No serious or significant drug related adverse events were reported. In addition, no clinically significant changes were observed in pulmonary function tests, heart rate, blood pressure, respiratory rate or mean IgE levels, a measure of systemic immune response, or the body s defenses reacting to the drug itself.

Phase 3 Clinical Program. In January 2008, we completed the SPA process with the FDA for the first Phase 3 clinical trial of our MAP0004 product candidate, and reached agreement with the FDA on the design of the

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protocol. The study, if successful, could support the potential approval of MAP0004 as a treatment for migraine. This multi-center Phase 3 trial will include a randomized, double blind, placebo-controlled component to evaluate the efficacy and safety of MAP0004 in treating a single acute attack of migraine in approximately 850 patients followed by a 12-month open-label safety assessment. The primary efficacy endpoints will be pain relief at two hours, and freedom from nausea, photophobia and phonophobia at two hours. The second Phase 3 trial will be a confirmatory efficacy trial with a similar design to the efficacy component of the first Phase 3 trial. We also plan to conduct the following additional two Phase 2 pharmacokinetic and pharmacodynamic trials with MAP0004: a pharmacokinetic trial in approximately 24 adult smokers comparing them to non-smokers; and a pharmacodynamic trial in approximately 24 healthy adults compared to placebo, studying echocardiographic effects.

Because DHE is well characterized and previously approved, we may seek FDA marketing approval of MAP0004 under Section 505(b)(2) of the FFDCA. Section 505(b)(2) of the FFDCA provides an alternate path to FDA approval for modifications to formulations of products previously approved by the FDA. Section 505(b)(2) permits the filing of an NDA where at least some of the information required for approval comes from studies not conducted by or for the applicant and for which the applicant has not obtained a right of reference. This may expedite the development program for MAP0004 by potentially decreasing the overall scope of work we must do ourselves.

MAP0005 for the Treatment of Asthma and COPD

MAP0005 utilizes our proprietary particle formulation technologies to deliver the optimal ratio of multiple drugs in a reproducible and consistent manner. We combine two or more drugs together into a single micron sized particle at consistent and reproducible ratios, which may improve the delivery profile and stability of the resultant combination therapy. We believe our proprietary technologies in this area have potential broad applicability for a number of small molecule combination product candidates in diverse indications via inhalation and other routes of delivery. We are demonstrating this capability with MAP0005, our proprietary combination of an inhaled corticosteroid and a long-acting beta-agonist, or LABA, for the potential treatment of asthma and chronic obstructive pulmonary disease, or COPD. We initiated a Phase 2a clinical trial evaluating MAP0005 for the potential treatment of asthma and COPD in October 2007. According to Datamonitor, the potential market for asthma and COPD was estimated at approximately $19 billion in 2006, with expected growth to approximately $30 billion by 2015. Current ICS/LABA products such as GlaxoSmithKline s Advair and AstraZeneca s Symbicort reached worldwide sales of approximately $7.0 billion and $1.6 billion in 2007, respectively.

We have developed a novel formulation of a combination ICS and LABA suitable for use in both pressurized MDIs and DPIs to treat adolescent and adult asthma and COPD. This product candidate demonstrates our ability to apply our proprietary technology to combine two drugs within a single particle, in this case a corticosteroid with a LABA, in a pre-specified ratio and deliver it to the respiratory tract using our proprietary Tempo inhaler. We believe this approach, as compared to current ICS/LABA combinations, will allow the optimal ratio of each drug to the lung to reach the relevant receptors at the cellular level in the lung in a more reproducible and consistent manner, reducing the amount of drug delivered systemically and potentially improving the side effect profile, while improving therapeutic efficacy. This approach potentially has broad applicability for a number of additional combination drug products in diverse indications via inhalation and other routes of delivery. In addition, our approach provides for improved dose-to-dose consistency, also potentially reducing the amount of systemic drug exposure and improving patient safety. The two drugs utilized in MAP0005 are well characterized and previously approved, individually and in combination use by the FDA. As such, marketing approval of MAP0005 under Section 505(b)(2) of the FFDCA, if available, would allow any new drug application, or NDA, filed with the FDA to rely in part on data in the public domain or the FDA s prior conclusions regarding the safety and effectiveness of approved compounds. In our development program, we intend to rely on at least some information from studies that we have not conducted or sponsored ourselves, such as data typically collected in prior clinical trials for approved products.

We initiated a Phase 2a clinical trial evaluating MAP0005 for the potential treatment of asthma and COPD in October 2007. The Phase 2a clinical trial is a randomized, open-label, active-controlled, crossover, safety and

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dose response study investigating the pharmacokinetics and pharmacodynamics of MAP0005 in approximately 18 adult asthmatic patients. The trial compares two different doses of MAP0005 with one dose of a commercially marketed combination product, all administered by inhalation. The primary endpoints of the trial are the change in FEV_1 from baseline, the time to maximum change in FEV_1 and the plasma levels for the ICS. We have not filed, and nor did we file, an IND with the FDA for MAP0005 because our Phase 2a trial is not being conducted in the United States.

We believe MAP0005 serves as a proof of concept for the robust, specific delivery of two therapeutic agents which could benefit from targeted receptor delivery in a fixed ratio within a single particle. We intend to opportunistically evaluate the application of this technology to additional product candidates.

MAP0001 for the Treatment of Diabetes

MAP0001 demonstrates our ability to apply our proprietary technologies to formulate and stabilize biologically-active proteins and peptides. Without the need for excipients or other additives, we design and incorporate our protein formulations to be stored for months at room temperature, and to provide multiple doses of medicine delivered accurately without the need for invasive needle injections. We are demonstrating this capability with MAP0001, our proprietary formulation of insulin for the potential treatment of Type 1 and Type 2 diabetes via pulmonary delivery using our proprietary Tempo inhaler. We have completed a Phase 1a clinical trial for MAP0001. This product candidate demonstrates our ability to apply our proprietary technology to deliver biologically-active proteins and peptides to the lung. The global diabetes market was estimated at approximately $18.5 billion in 2005, with approximately $7.4 billion of these sales from insulin, according to Business Insights.

Our proprietary technology takes advantage of advances in supercritical fluid technology to yield a stable insulin particle which is 10 to 20% of the size of the FDA approved inhalable insulin. Our small insulin particle size allows the drug to be inhaled deeply in the lungs, with only a small percentage of insulin deposited in the back of the mouth and throat. Phase 1a data for this product candidate suggests that we may be able to provide the rapid onset of injected insulin in our Tempo inhaler, at a treatment cost comparable to currently marketed injected insulin products. In a Phase 1a clinical study conducted in Australia, MAP0001 was biologically active and achieved maximum therapeutic blood levels as quickly as Novorapid subcutaneous injection, a widely used injectable insulin. We have not filed, and we were not required to file, an IND with the FDA for MAP0001 because our Phase 1a trial was not conducted in the United States.

We believe our proprietary formulation coupled with the Tempo inhaler may overcome many of the issues currently associated with inhalable insulin, including adverse side effects, dose-to-dose inconsistency, the inability of the patient to adjust the dose easily, inconvenient and cumbersome administration and high cost relative to subcutaneous injection. MAP0001 does not use excipients, which are non-active ingredients used in a formulation to keep it stable or inhalable but which may cause adverse side effects such as local toxicity or inflammatory response in the lung. The lack of excipients in our product candidate may improve tolerability of the drug and the long-term safety of the drug by avoiding such adverse side effects. Further, because MAP0001 does not require refrigeration and our hand-held Tempo inhaler can contain multiple insulin doses, MAP0001 may be more convenient to administer than certain other inhalable insulin treatments.

Our Technology

Our aerosol delivery and pharmacological profiling technology combines our knowledge of aerosol science and medicine, and enables us to create inhaled drug products with potentially enhanced pharmacological profiles relative to the parent drugs, thereby improving their efficacy and safety. Starting with bulk drug substance, we develop particles with the physical and chemical characteristics that are well suited for the aerosol delivery of the product candidate. The particle engineering allows more of our drug to reach the areas of the respiratory tract to treat disease and reduces the amount of drug that is deposited in the back of the throat where it can cause local and systemic side effects. We then formulate the drug particles into a delivery medium and package them into the

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aerosol delivery system that is best suited for the formulation and dosing regimen in order to maximize patient compliance. Our expertise in aerosol formulation science and pulmonary medicine allows us to select excipients, already in wide use and regarded as safe, that result in favorable safety characteristics and allow flexibility in delivery format. The resulting drug products can be as consistent and efficient as alternative, often more invasive dosing formats, such as injection, but with the advantages of fast onset, high degree of intake at the target organs, and lower or controlled systemic exposure. The convenience, consistency and efficiency of inhaled administration in combination with the characteristics of our product candidates can offer meaningful therapeutic benefits when compared to existing drugs, increasing the probability of the successful adoption of our product candidates.

We apply our proprietary technologies to optimize drugs for two general types of therapeutic applications:

Delivery of drugs to treat respiratory diseases locally. Diseases such as asthma, COPD and some respiratory tract infections have been treated by pulmonary drug delivery for many years in order to target therapeutic effect to the lung and reduce systemic drug exposure and related side effects. Our technology is designed to improve the therapeutic efficacy and safety of known drugs for these applications, by efficiently delivering customized drug particles to those areas in the lung where drug is required and minimizing the drug exposure to other areas of the respiratory tract and body. In addition, our technologies have the potential to broaden the types of respiratory illnesses that can effectively be targeted and treated safely via pulmonary delivery.

Pulmonary delivery as a non-invasive method of quickly and safely administering systemic drugs. Administration of drugs via the respiratory tract is a non-invasive method of delivering drugs efficiently to the systemic circulation, with rapid onset of action, bypassing the gastrointestinal tract where many drugs are extensively metabolized after oral administration, and with rapid onset of action. The drug, or combination of drugs can reach the intended site of action as quickly as intravenously administered drugs and more quickly than oral, dermal, sublingual or even alternative injection routes, such as subcutaneous or intramuscular. We can apply our technology to small or large molecules, including peptides and proteins.

Aerosol Delivery and Pharmacological Profiling Technology

Our proprietary technologies include particle creation and formulation technologies, which can be applied to small or large molecules, including peptides and proteins. Our technologies also include the development and manufacturing of aerosol delivery devices, including our Tempo inhaler. Tempo is a proprietary, next generation pressurized MDI that dispenses drug automatically when the patient inhales and has high consistency and efficiency compared to other inhalers. Our technologies are covered by over 20 issued U.S. patents and over 25 U.S. patent applications that we own or have licensed, as well as their foreign counterparts.

Particle Creation and Formulation

We control the characteristics of our drug particles by using technology and expertise in aerosol physics, particle science and formulation, and in safety toxicology and pharmacology. We can consistently generate drug-containing aerosols with the optimal particle or droplet sizes for the therapeutic indication. Particles that are too large tend to be deposited in the throat, while medium sized particles are more efficiently delivered to the large bronchial tubes and small particles are more efficiently delivered to the alveoli, the small sacks that make up most of the absorptive surface area of the lung. We can formulate products in propellants without additional excipients, or with small amounts of excipients previously shown to be safe. We can also combine drugs by producing small, inhalable particles composed of one drug which is reproducibly intermingled or coated with multiple drugs in fixed ratios.

One of our key technologies is the generation of particles by supercritical fluid, or SCF, precipitation. SCF gives us the ability to create very small particles ranging from 100 nanometers to ten microns in diameter with

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highly precise particle size distributions. The particles have very uniform surfaces with few discontinuities or irregularities that provide enhanced aerosol performance. They are also stable for long storage periods without refrigeration, and require minimal or no excipients that can increase the potential for local toxicity or inflammatory response.

In addition to particle generation, we have extensive expertise in formulating aerosol drugs, especially for nebulized and MDI delivery formats. A key feature of this expertise is our know-how in formulating aerosolized drugs with appropriate excipients. We have expertise in formulation screening, assay development, aerosol performance testing and clinical performance simulation, long-term stability testing, large volume non-clinical testing, and generation and release of pre-clinical and clinical supplies through to human clinical proof of concept.

We believe that the combination of these various particle creation and formulation technologies is a key component of our competitive advantage.

Tempo Inhaler Platform

We designed our proprietary Tempo inhaler to enable accurate and reproducible pulmonary delivery of the drug particles we develop. Our Tempo inhaler is an innovative next generation MDI. The Tempo inhaler incorporates the size, ease of use, and convenience advantages associated with standard MDIs, but overcomes their greatest limitations: inconsistent dosing, drug delivery inefficiency and the need for patients to synchronize a breath with manual triggering of the device, which is particularly difficult for certain patient populations such as children and elderly patients. Even the more recently introduced breath-actuated MDIs still suffer from inconsistent dosing and the drug delivery inefficiency of older MDIs.

The Tempo inhaler is designed to offer a number of key competitive advantages compared to standard MDIs. These advantages include:

Automatic, optimal release of therapy: Our triggering technology is tuned for each particular drug so that drug release is synchronized to the optimal time in the breathing cycle to allow the released drug to reach the area of the respiratory tract being targeted. For example, data from a clinical study showed that the Tempo inhaler deposited 75% less of a corticosteroid in the mouth and throat and delivered three times as much drug to the lungs as a conventional MDI.

Plume speed control: Conventional MDIs spray plumes of drug at speeds of up to 50 miles per hour, causing much of the drug to hit the back of the throat. By contrast, our Tempo inhaler controls and slows down the drug plume to match the speed of the patient s inhaled breath, so more of the drug is carried into the lungs with the inhaled air.

Dose consistency: Our studies indicate that the Tempo inhaler s dose-to-dose consistency is comparable to oral dosing. Tempo inhaler also includes a counter to display how many doses have been administered so patients can track their medication use and remaining supply. The dose counter can lock out after a maximum number of doses have been delivered to prevent inadvertent overdosing.

Convenient, multiple dose use: The Tempo inhaler does not use electronics or batteries, can conveniently contain multiple doses and is relatively easy and cost efficient to manufacture. It can include up to a month s supply depending on the drug, in a small, handheld package approximately the same size as a conventional MDI and it may be used with small molecule drugs and biologics.

The FDA issued draft guidelines in 1998 covering the MDI performance that they would like MDI manufacturers to achieve. However, they have not implemented the new guidelines to date, in part because conventional MDIs may not be capable of meeting them. We believe that our Tempo inhaler may meet the FDA s draft guidelines should the FDA elect to implement them.

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We are currently developing three product candidates which utilize our Tempo inhaler. In addition to MAP0004, we initiated a Phase 2a clinical trial evaluating MAP0005 for the potential treatment of asthma and COPD in October 2007. We also have completed a Phase 1a clinical trial of MAP0001 for the treatment of diabetes.

Our Strategy

Key elements of our strategy include:

Obtain regulatory approval for our two most advanced product candidates, UDB and MAP0004: We have announced positive results from our Phase 2 clinical development programs for our two most advanced product candidates, UDB and MAP0004. We initiated a Phase 3 clinical program for UDB in January 2008 and anticipate initiating a Phase 3 clinical program for MAP0004 in early 2008. We believe the risk of clinical trial failure is lower than traditional new chemical entities because we are evaluating drugs that have been previously reviewed and approved by the FDA and have a known safety and efficacy profile.

Advance and expand our product pipeline in our target commercial areas, leveraging our extensive expertise in pulmonary delivery and respiratory science and medicine in a lower risk manner: We intend to focus our pipeline development initially on products with established safety and efficacy records, but whose market potential has been limited by safety, relative efficacy and patient compliance. We believe that we can overcome these limitations by leveraging our technologies. These technologies underpin our competitive advantage in developing multiple, high-value, in-house products with clearly defined patient benefits.

Build a focused sales force to commercialize UDB and MAP0004: We intend to build a focused sales force in the United States to market and sell our products, once approved, to pediatricians for UDB, and neurologists and headache specialists for MAP0004.

Expand the market opportunity for our most advanced product candidates: In order to expand the commercial opportunity of MAP0004, we may establish partnerships with pharmaceutical companies to market and sell to primary care physicians. Outside the United States, we may establish commercial partnerships for all of our product candidates in order to accelerate development and regulatory approvals in those countries and further broaden their commercial potential.

Collaborations, Commercial and License Agreements

Elan Pharma International Limited License Agreement

In April 2004 we entered into a license agreement with Elan Pharma International Limited, or Elan, which was superseded in February 2005 by an agreement that clarified the rights previously granted in 2004, and amended in June 2007.

Under the terms of this license agreement, Elan granted to us a worldwide, exclusive, sublicensable license under Elan s intellectual property rights to use, market, distribute, sell, have sold, offer for sale, import and export aqueous formulations of budesonide (alone or with certain other active ingredients) for pulmonary delivery using certain devices for therapeutic use in humans.

Elan also granted to us, subject to the execution of a manufacturing process transfer agreement, or manufacturing agreement, a non-exclusive sublicensable license in the same field as the exclusive license under its intellectual property rights to make and have made a bulk intermediate form of budesonide in certain countries including Canada, the United States, Ireland, certain countries in Europe, Japan, Australia and New Zealand.

Elan granted to us a worldwide non-exclusive, sublicensable license to all improvements to its intellectual property rights arising as a direct result of the performance under the license agreement, the services agreement, and/or the manufacturing agreement.

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Under the license agreement, we are required to make payments to Elan based upon achievement of certain development and sales milestones. As of December 31, 2007, when and if certain milestones are met we may be obligated to pay Elan up to $17.3 million in total future development and sale milestone payments with respect to our UDB product candidate. In addition, we are also required to make payments to Elan with respect to other product candidates we may develop pursuant to the license agreement. We are also required to pay royalties based on net sales of the product for an initial royalty term, calculated on a country-by-country basis, equal to either the expiration of Elan s patents covering the product in such country, or 15 years after commercial launch in such country, if Elan does not have patents covering the product in such country. After the initial royalty term, we continue to pay royalties on product sales to Elan at reduced rates.

Either party may terminate the agreement upon a material, uncured default of the other party. We may terminate the agreement, with or without cause, at any time upon 90 days written notice.

Xemplar Pharmaceuticals, LLC Manufacturing and Supply Agreement

In April 2006 we entered into a manufacturing and supply agreement with Xemplar Pharmaceuticals, LLC, or Xemplar, for the manufacture and supply by Xemplar to us of our clinical and commercial requirements of pressurized metered dose aerosol canisters containing placebo or active ingredient that are housed within a fully-assembled Tempo inhaler and packaged for clinical and commercial use.

Xemplar agreed to convert its manufacturing facility into a GMP contract manufacturing facility suitable for the commercial production of the product prior to or when Xemplar obtains the approvals necessary to manufacture these products in compliance with the manufacturing agreement.

We have agreed that, from the date the first NDA is submitted for a product and for a period of five years thereafter we will purchase the fully-assembled Tempo inhalers only from Xemplar, and Xemplar will manufacture and supply from its manufacturing facility all such devices as we require to support development and commercialization. If Xemplar fails to supply on time under certain circumstances, we have the right to immediately terminate the manufacturing agreement by written notice and to manufacture the product ourselves or purchase it from a third party.

Either party may terminate the agreement upon a material, uncured breach or default by the other party. We may terminate the agreement upon 60 days written notice upon our reasonable determination that Xemplar does not have the capability to manufacture the product in accordance with the warranty or in sufficient quantities.

Nektar Therapeutics Amended Restated and Amended License Agreement

We entered into a license agreement with Nektar Therapeutics UK Limited, or Nektar, in June 2004, and amended the agreement in August 2006 and October 2007. Under the agreement, Nektar granted us a worldwide, exclusive license, with a right to sublicense, under Nektar patents and know-how, to develop and commercialize any formulation of a form of dihydroergotamine for administration by inhalation using a device. The Nektar patents licensed to us include two types of patent claims: compound-limited claims and compound-inclusive claims. Compound-limited claims are Nektar patent claims that claim a form of dihydroergotamine, or formulations or methods of manufacture or methods of use of dihydroergotamine, and our license to these claims is fully-paid up and royalty free, and will survive expiration or any termination of the agreement. Compound-inclusive claims are Nektar patent claims that are not compound-limited claims, and our license to these claims is royalty-bearing.

Our obligation to pay royalties to Nektar is based on net sales of products, and will continue, on a country-by-country basis, until the longer of expiration of Nektar patents covering the product, or ten years after the first commercial sale of the product, or the date that Nektar s know-how becomes known to the general public. In addition, we are required to make future payments based upon achievement of certain product

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development milestones. As of December 31, 2007, when and if certain milestones are achieved we may be obligated to pay Nektar up to $5.0 million in total future development milestone payments with respect to our MAP0004 product candidate.

Under the agreement, we granted Nektar a worldwide, nonexclusive, royalty-free license under our patents and know-how solely to the extent useful or necessary for Nektar to fulfill its obligations under the agreement.

Either party may terminate the agreement upon a material, uncured default of the other party. We may terminate the agreement, with or without cause, at any time upon six months written notice.

Eiffel Research and Development, License and Supply Agreement

In September 2005 we entered into a research and development, license and supply agreement, or the R&D agreement, with Eiffel Technologies Limited, or Eiffel, pursuant to which Eiffel agreed to research and develop certain methods for manufacturing formulations of beta-agonists, alone or with any steroid, steroids, or insulin, using Eiffel s supercritical fluid particle formulation technology to formulate such compounds for inclusion in inhalable pharmaceutical products. Eiffel also agreed to manufacture pre-clinical and clinical supplies of such formulations.

Under the R&D agreement, Eiffel granted to us an exclusive, worldwide, sublicensable license under certain of its intellectual property rights to develop, use, make, sell, offer for sale, export and import the formulations it develops under the agreement with an appropriate delivery device for use in either pulmonary delivery, or in pulmonary and nasal delivery, depending on the type of formulation being developed.

In addition to certain payments made to Eiffel for research and development activities performed by Eiffel, we must make payments to Eiffel upon our achievement of certain development milestones. As of December 31, 2007, when and if certain milestones are achieved we may be obligated to pay Eiffel up to $10.8 million in total future development milestone payments for both of our MAP0005 and MAP0001 product candidates. In addition, we must pay to Eiffel royalties based on sales by us or our affiliates of products that include the formulations developed by Eiffel on a product by product and country by country basis until the later of the date upon which the manufacture, use, sale, offer for sale or import of such product is no longer covered by an issued and unexpired