

Specialty Pharmacy Pipeline Report

Third Quarter 2007

To help keep you informed about medications in development, the *Walgreens Specialty Pharmacy Pipeline Report* provides a summary of specialty medications that may be approved by the U.S. Food and Drug Administration (FDA) within the next few years. While not all-inclusive, this report focuses on medications in phase III studies that may impact treatment for certain specialty disease states. It also highlights selected, newly approved or soon-to-be approved specialty medications of interest to the marketplace.

Medications to Watch

Here is a closer look at a few recently approved or soon-to-be approved medications that may have a significant impact on therapeutic classes and treatment for specific disease states.

Ixabepilone

Ixabepilone is a semisynthetic analog of epothilone B. It is currently under FDA review for the treatment of metastatic breast cancer (MBC). The American Cancer Society estimates that over 40,000 women will die from breast cancer this year. Epothilones are a novel class of antineoplastic agents that target microtubules, which are involved in cell division and growth.

Positive results were reported from four phase II trials studying the use of ixabepilone in women with MBC as a first-line treatment, and in those who have failed other chemotherapies including anthracyclines, taxanes, and Xeloda® (capecitabine). Similar to epothilones, taxanes also target microtubules; however, ixabepilone and the taxanes bind to different sites on the microtubule and therefore patients with resistance to taxane therapy may not experience resistance to

ixabepilone. The potential benefit of ixabepilone in patients who have failed treatment with approved chemotherapies may offer another hope for these patients since they have limited treatment options.

In June 2007, the FDA accepted and granted priority review status to the new drug application (NDA) for ixabepilone. Bristol-Myers Squibb expects a response to its NDA by the end of October 2007.

Kuvan™ (sapropterin)

Kuvan is an investigational agent for the treatment of phenylketonuria (PKU) characterized by abnormally high phenylalanine levels that can lead to mental retardation, seizures, and behavioral problems. PKU is a genetic disorder that has been diagnosed in approximately 50,000 people worldwide. It is caused by a defect in the gene that codes for phenylalanine hydroxylase, the enzyme responsible for breaking down phenylalanine. In turn, phenylalanine hydroxylase requires tetrahydrobiopterin (BH₄) as a cofactor in this breakdown process.

The current management strategy for PKU is a highly restrictive low-phenylalanine diet. The diet is low in protein and supplemented with phenylalanine-free mixtures of amino acids which often have an unpleasant taste. This restrictive diet is often difficult for patients to follow, thereby affecting their quality of life. Therefore, alternative treatments for PKU are needed.

Kuvan is a synthetic form of BH₄ which may allow some patients to follow a less restrictive diet. BioMarin and Merck Serono, the manufacturers of Kuvan, estimate that between 30 percent to 50 percent of the

patients diagnosed with PKU could potentially be treated with Kuvan. In clinical trials, a starting dose of 20 milligrams per kilogram per day administered orally was used. An NDA for Kuvan was filed in May 2007. The FDA granted priority review status and expects to make an approval decision by November 2007. Kuvan is currently available to eligible patients through an expanded access program.

Oral Hycamtin® (topotecan)

An intravenous (IV) formulation of Hycamtin® (topotecan) is currently available. The IV form is indicated for the treatment of small cell lung cancer (SCLC) after failure of first-line chemotherapy, as well as for the treatment of ovarian or cervical cancer that has not responded to other therapies. An oral formulation of Hycamtin has recently been developed and studied in patients with relapsed SCLC. Both forms of Hycamtin are topoisomerase I inhibitors, which can cause cell death by permanently damaging the cell's genetic material.

There are two main types of lung cancer: SCLC and non-small cell lung cancer. Approximately 15 percent to 20 percent of lung cancers are attributed to the small cell type, which has a more aggressive disease course. While many cases of SCLC initially respond to chemotherapy, the majority of patients experience a relapse within one year of treatment. Of those relapsed patients who do not receive a second-line therapy, median survival time is only two to three months.

In a clinical trial, oral Hycamtin and best supportive care (BSC) were compared with BSC alone in patients with relapsed SCLC who were not candidates for standard IV chemotherapy. Median survival times in this phase III study were 25.9 weeks in the oral Hycamtin and BSC group and 13.9 weeks in the BSC-alone group. Results of this trial led to the NDA that GlaxoSmithKline filed for oral Hycamtin. The FDA accepted the NDA filing and granted priority review status to the application in June 2007.

Rilonacept (interleukin-1 trap)

Rilonacept is a long-acting inhibitor of interleukin-1 (IL-1), a protein in the body that helps regulate inflammatory responses. This medication is under FDA review for the long-term treatment of cryopyrin-associated periodic syndromes (CAPS). In excess, IL-1 can be harmful and has been shown to cause inflammation in a variety of disorders, including CAPS, a group of rare inherited autoinflammatory disorders associated with defects in the CIAS1 (cold-induced autoinflammatory syndrome-1) gene. Three syndromes make up CAPS: familial cold autoinflammatory syndrome, Muckle-Wells syndrome, and neonatal onset multisystem inflammatory disease. These disorders are characterized by spontaneous systemic inflammation and can lead to fever, rash, fatigue, joint pain, chills, chronic meningitis, and hearing loss.

Currently, there are no medications approved to treat CAPS. Non-steroidal anti-inflammatory drugs and glucocorticosteroids are used to reduce fever and pain but have no effect on the other inflammatory features of the disorder. Rilonacept has been designed to attach to and neutralize IL-1 in the bloodstream.

In a phase III study, rilonacept was compared to placebo over a six-week period. The primary endpoint of this study was change in disease activity, which was based on a symptom score composed of daily evaluation of fever, chills, fatigue, joint pain, eye redness, and eye pain. Patients randomized to weekly subcutaneous injections of rilonacept experienced about an 85 percent reduction in their mean symptom score compared with an approximately 13 percent reduction in patients receiving placebo. In August 2007, the FDA accepted for filing and granted priority review status to the biologic license application (BLA) for rilonacept. Rilonacept has been designated as an orphan drug and was previously granted fast track status. Regeneron, the manufacturer, expects a response to its BLA by the end of November 2007.

Medications Recently Approved

Manufacturer/ Drug Name	Indication	Mechanism of Action/Drug Class	Route of Administration	Approval Date	Comments
Human Immunodeficiency Virus (HIV)					
Pfizer/ Selzentry™ (maraviroc)	For treatment-experienced patients with chemokine receptor 5 (CCR5)-tropic HIV-1 infection who have ongoing viral replication with resistance to multiple antiretroviral agents	Inhibits entry of virus into human CD4 T-cells/CCR5 antagonist	Oral	08/06/07	First in a new class of oral HIV medications. Launch expected mid-September 2007.
Immunoglobulin					
CSL Behring/ Privigen™ (immune globulin intravenous [human])	For the treatment of primary immunodeficiency (PI) and chronic immune thrombocytopenic purpura (ITP)	Restores abnormally low immunoglobulin G levels in PI; unknown mechanism in ITP/ Intravenous immunoglobulin	IV infusion	07/27/07	Does not require refrigeration or reconstitution. Launch expected first quarter 2008.
Oncology					
Wyeth Pharmaceuticals/ Torisel™ (temsirolimus)	For the treatment of advanced renal cell carcinoma	Controls tumor cell growth/Cell cycle inhibitor	IV injection	05/30/07	Also in phase III trials for the treatment of mantle cell lymphoma.
Pulmonary Arterial Hypertension					
Gilead Sciences/ Letairis™ (ambrisentan)	For the treatment of pulmonary arterial hypertension (PAH) in patients with WHO (World Health Organization) class II or III symptoms to improve exercise capacity and delay clinical worsening	Reduces vascular smooth muscle constriction/Endothelin receptor antagonist	Oral	06/15/07	Walgreens Specialty Pharmacy is a preferred distributor, a distinction given to a select number of specialty pharmacies based on criteria established by the pharmaceutical company.

Pipeline Medications in Phase III Trials

Manufacturer/ Drug Name	Indication	Mechanism of Action/Drug Class	Route of Administration	Comments
Acromegaly				
Tercica and Ipsen/ Somatuline® Autogel® (lanreotide)	For the treatment of acromegaly	Binds to somatostatin receptors leading to a decrease in growth hormone levels/ Somatostatin analogue	SC injection	Designated as an orphan drug. NDA accepted January 2007. A response to the NDA is expected by August 30, 2007.
Amyloid A Amyloidosis				
Neurochem/ Kiacta™ (eprodissate), formerly™ Fibrillex™	For the treatment of Amyloid A amyloidosis	Reduces amyloid protein deposition/Amyloid fibrillogenesis inhibitor	Oral	Designated as an orphan drug. NDA filed February 2006. FDA granted priority review status April 2006. First approvable letter August 2006. Second approvable letter July 2007—the FDA requested additional data.

Pipeline Medications in Phase III Trials (continued)

Manufacturer/ Drug Name	Indication	Mechanism of Action/Drug Class	Route of Administration	Comments
Anemia				
Roche/ Mircera® (erythropoietin), formerly CERA, R744	For the treatment of anemia associated with chronic kidney disease, including patients on dialysis, as well as those not on dialysis	Stimulates red blood cell production/ CERA (continuous erythropoietin receptor activator)	SC or IV injection	BLA filed April 2006. Approvable letter May 2007. Product label to be finalized after the FDA has issued recommendations on the entire class of erythropoiesis-stimulating agents.
Cystic Fibrosis				
Inspire Pharmaceuticals/ Denufosol	For the treatment of cystic fibrosis	Designed to enhance mucosal hydration and mucociliary clearance/ Second generation P2Y ₂ agonist	Inhalation	Designated as an orphan drug with fast track status. Phase III trials initiated July 2006. Complete enrollment into trials expected by the end of 2007.
Hemophilia				
Wyeth/ ReFacto® AF (antihemophilic factor)	For the treatment of hemophilia	Blood clotting factor/ Recombinant factor VIII	Infusion	Launch anticipated in 2008.
Hepatitis				
Valeant Pharmaceuticals/ Viramidine® (taribavirin)	For the treatment of chronic hepatitis C virus infection in combination with pegylated interferon alfa-2b	Reduces virus synthesis/Antiviral (synthetic nucleoside analogue)	Oral	Prodrug of ribavirin. Enrollment for a phase II trial using a weight-based dose of Viramidine initiated March 2007. Based on an early review of this study, Valeant will decide whether to begin a third phase III study at the weight-based dose.
Human Immunodeficiency Virus (HIV)				
Merck/ Isentress™ (raltegravir), formerly MK-0518	For the treatment of HIV in treatment-experienced patients	Inhibits the insertion of the HIV viral DNA into human DNA/ Integrase inhibitor	Oral	NDA filing accepted and granted priority review status June 2007. A response to the NDA is expected by mid-October 2007. Available through an expanded access program.
Tibotec Therapeutics and J&J/ Etravirine, formerly TMC125	For the treatment of non-nucleoside reverse transcriptase inhibitor (NNRTI)-resistant HIV infection	Inhibits viral DNA replication/NNRTI	Oral	Studied in combination with Prezista™ (darunavir), Tibotec's protease inhibitor. FDA granted fast track status. NDA filed July 2007. Available through an expanded access program.

Pipeline Medications in Phase III Trials (continued)

Manufacturer/ Drug Name	Indication	Mechanism of Action/Drug Class	Route of Administration	Comments
Inflammatory Diseases				
UCB/ Cimzia™ (certolizumab pegol)	For the treatment of moderate to severe or active Crohn's disease, moderate to severe or active rheumatoid arthritis, and moderate to severe psoriasis	Targets tumor necrosis factor alpha, which is involved in the inflammatory process/ Monoclonal antibody	SC injection	BLA for the treatment of moderate to severe Crohn's disease filed March 2006. FDA requested more information December 2006. UCB will conduct a short-term efficacy study to confirm the induction of clinical response in Crohn's disease. Results from this study are expected in the second half of 2008. The company plans to file a BLA for the treatment of rheumatoid arthritis fourth quarter of 2007.
Regeneron/ Rilonacept (interleukin-1 trap)	For the treatment of CAPS	Binds and neutralizes IL-1/ Long-acting IL-1 inhibitor	SC injection	Designated as an orphan drug with fast track status. BLA filed June 2007. FDA granted priority review status August 2007. A response to the BLA is expected by the end of November 2007.
Multiple Sclerosis				
Novartis/ Fingolimod, formerly FTY720	For the treatment of relapsing-remitting multiple sclerosis (MS)	Reduces inflammation and myelin damage in the brain and spinal cord/ Immunomodulatory agent	Oral	NDA filing planned for 2009. Also in phase III trials for the prevention of kidney transplant rejection.
Sanofi-aventis/ Teriflunomide	For the treatment of relapsing forms of MS	Inhibits pyrimidine synthesis/ Immunomodulatory agent	Oral	Also being studied in combination with interferon-beta and with Copaxone® (glatiramer acetate).
Oncology				
Adventrx/ CoFactor® (ANX-510)	For the treatment of metastatic colorectal cancer in combination with 5-fluorouracil (5-FU)	Binds 5-FU to the enzyme thymidylate synthase/Folate biomodulator	IV injection	Enhances 5-FU therapy. Designated as an orphan drug. Phase III trials initiated June 2006. Complete enrollment into trials expected during 2008.
Bristol-Myers Squibb/ Ixabepilone	For the treatment of metastatic breast cancer, alone or in combination with Xeloda® (capecitabine), in patients who have failed other therapies	Inhibits the growth and development of cancer cells/Epothilone B analog	IV infusion	Represents a novel class of antineoplastic agents. NDA filing accepted and granted priority review status June 2007. A response to the NDA is expected late October 2007.
Cell Therapeutics/ Xyotax™ (paclitaxel poliglumex)	For the treatment of advanced non-small cell lung cancer in women	Promotes assembly and stabilizes microtubules resulting in inhibition of cellular division/ Antimicrotubule chemotherapy agent	IV infusion	Links paclitaxel to a biodegradable polyglutamate polymer that delivers more chemotherapy to tumor cells. Filed for a Special Protocol Assessment (SPA) January 2007. FDA granted fast track status.

Pipeline Medications in Phase III Trials (continued)

Manufacturer/ Drug Name	Indication	Mechanism of Action/Drug Class	Route of Administration	Comments
Oncology				
Celtic Pharma and Neurobiological Technologies/ Xerecept [®] (corticoreslin)	For the treatment of peritumoral cerebral edema	Reduces edema/ Synthetic human corticotropin releasing factor	SC injection	Designated as an orphan drug. NDA filing planned for 2008.
Cephalon/ Treanda [®] (bendamustine)	For the treatment of chronic lymphocytic leukemia (CLL) and for the treatment of non-Hodgkin's lymphoma (NHL) in patients who failed Rituxan [®] (rituximab)	Causes cell death and disrupts cell division/ Hybrid alkylating agent	IV infusion	NDA filing for CLL planned for third quarter 2007. NDA filing for NHL planned for fourth quarter 2007.
Dendreon/ Provenge [®] (sipuleucel-T)	For the treatment of metastatic hormone-refractory prostate cancer (HRPC)	Stimulates immune system to target and destroy cancer cells/Active cellular immunotherapy	IV infusion	BLA filed November 2006. Approvable letter May 2007—the FDA will accept either a positive interim or final analysis of survival from the ongoing phase III trial to amend the BLA. Dendreon anticipates interim survival results in 2008.
GPC Biotech and Spectrum Pharmaceuticals/ Orplatna (satraplatin)	In combination with prednisone for the treatment of HRPC in patients whose prior chemotherapy has failed	Binds to the DNA of cancer cells and prevents replication/ Platinum chemotherapy agent	Oral	NDA filed February 2007. NDA withdrawn July 2007 based on the FDA Advisory Committee's recommendation that the FDA should wait for the final survival analysis from the ongoing phase III trial before deciding on approval. The results should be available within six months and, if they are positive, the NDA will be resubmitted. Available through an expanded access program.
Intarcia Therapeutics/ Atamestane	For first-line treatment of hormone-dependent breast cancer in combination with estrogen receptor blocker Fareston [®] (toremifene)	Interferes with estradiol production/ Steroidal aromatase inhibitor	Oral	Phase III studies ongoing.
Lorus Therapeutics/ Virulizin [®]	For first-line treatment of advanced pancreatic cancer in combination with Gemzar [®] (gemcitabine)	Increases the cytogenic effects of macrophages/ Biologic response modifier	IM injection	Rolling NDA accepted July 2005. Designated as an orphan drug with fast track status.
Marshall Edwards/ Phenoxodiol	For the treatment of HRPC in Taxotere [®] (docetaxel) nonresponders and recurrent chemotherapy-resistant, late-stage ovarian cancer	Causes cell death through inhibition of antiapoptotic proteins/ Antineoplastic (multiple signal transduction regulator)	IV injection/Oral	FDA granted fast track status.

Pipeline Medications in Phase III Trials (continued)

Manufacturer/ Drug Name	Indication	Mechanism of Action/Drug Class	Route of Administration	Comments
Oncology				
MGI PHARMA/ Saforis™ (glutamine in UpTec™)	For the prevention and treatment of chemotherapy-induced oral mucositis	Promotes healing and prevents damage to mucosa/Amino acid	Oral	FDA granted priority review status. NDA filed April 2006. Approvable letter October 2006. The FDA requested an additional phase III efficacy trial.
Novartis/ Tasigna® (nilotinib)	For the treatment of Philadelphia chromosome-positive (Ph+) chronic myeloid leukemia (CML) in patients who are unresponsive or become resistant to Gleevec® (imatinib)	Inhibits Bcr-Abl, the definitive cause of Ph+ CML/Tyrosine kinase inhibitor	Oral	NDA filed December 2006. FDA requested a three-month extension in the regulatory review period July 2007. Designated as an orphan drug with fast track status. Available through an expanded access program.
Novartis and Bayer Schering Pharma AG/ Vatalanib	For the treatment of metastatic colorectal cancer in combination with oxaliplatin, 5-FU, and leucovorin	Inhibits formation of blood vessels that supply nutrients to tumors/Tyrosine kinase inhibitor	Oral	NDA filing planned for 2007.
Protherics PLC/ Voraxaze™ (glucarpidase), formerly Carboxy- peptidase G2	Adjunctive therapy for cancer patients undergoing chemotherapy who are at risk for methotrexate toxicity	Rapidly reduces serum methotrexate levels/Recombinant enzyme	IV injection	Designated as an orphan drug with fast track status. BLA originally filed in September 2006 and resubmitted in November 2006. FDA requested additional information and agreed to let Protherics resubmit its BLA as a rolling submission starting in early 2008. Available through an expanded access program.
Osteoporosis				
Amgen/ Denosumab	For the treatment of postmenopausal osteoporosis and treatment-induced bone loss	Inhibits bone destruction/ Monoclonal antibody	SC injection	All endpoints were met in the phase III trial for treatment-induced bone loss.
NPS Pharmaceuticals/ Preos® (parathyroid hormone)	For the treatment of osteoporosis in postmenopausal women	Stimulates new bone growth/Recombinant human parathyroid hormone	SC injection	NDA filed May 2005. Approvable letter March 2006. Finalized the protocol design for a new phase IIIb clinical trial in March 2007.

Pipeline Medications in Phase III Trials (continued)

Manufacturer/ Drug Name	Indication	Mechanism of Action/Drug Class	Route of Administration	Comments
Phenylketonuria				
BioMarin and Merck Serono/ Kuvan™ (sapropterin), formerly Phenoptin™	For the treatment of phenylketonuria	Enhances the activity of phenylalanine hydroxylase resulting in decreased levels of phenylalanine/ Enzyme cofactor	Oral	Designated as an orphan drug with fast track status. NDA filed May 2007. FDA granted priority review status July 2007. A response to the NDA is expected by November 2007. Available through an expanded access program.
Pulmonary Arterial Hypertension				
Encysive Pharmaceuticals/ Thelin™ (sitaxsentan)	For the treatment of PAH	Reduces vascular smooth muscle constriction/ Endothelin receptor antagonist	Oral	Designated as an orphan drug. NDA filed May 2005. First approvable letter March 2006. Second approvable letter July 2006. Third approvable letter June 2007. Encysive filed a request with the FDA for formal dispute resolution to contest the third approvable letter August 2007.
Respiratory Syncytial Virus				
MedImmune and AstraZeneca/ Numax® (motavizumab)	For the prevention of respiratory syncytial virus (RSV) infection in high-risk pediatric populations	Inhibits RSV replication/ Monoclonal antibody	IM injection	Expected to be more potent than Synagis® (palivizumab), which is the current standard of care for the prevention of RSV. BLA filing planned for fourth quarter 2007. Pending approval, launch anticipated during the 2008-2009 RSV season.
Rheumatoid Arthritis				
Roche and Chugai/ Actemra™ (tocilizumab)	For the treatment of rheumatoid arthritis	Blocks interleukin-6 receptors/Monoclonal antibody	IV infusion	BLA filing planned for late 2007.
Transplant				
Fresenius Medical Care AG and Nabi/ (ATG-Fresenius S)	For the prevention of graft-versus-host disease in lung transplantation	Targets a range of antigens on activated T-cells/Polyclonal antibody	Injection	BLA filing expected early 2009. FDA granted fast track status.
Novartis/ Certican™ (everolimus)	For the prevention of solid organ transplant rejection in combination with Neoral® (cyclosporine)	Inhibits T-cell proliferation, which are cells involved in the rejection process/ Immunosuppressant (mammalian target of rapamycin inhibitor)	Oral	NDA filed December 2002. First approvable letter October 2003. Second approvable letter August 2004. FDA Advisory Committee recommended that additional study data be provided to support the NDA November 2005. Clinical trials are ongoing.

New Dosage Forms in the Pipeline

Manufacturer/ Drug Name	Indication	Mechanism of Action/Drug Class	Current Route of Administration	Investigational Route of Administration	Comments
Cystic Fibrosis					
Gilead Sciences/ Cayston™ (aztreonam lysine)	For the treatment of patients with cystic fibrosis who have pulmonary <i>Pseudomonas aeruginosa</i>	Inhibits bacterial cell wall synthesis/ Monobactam antibiotic	IV injection	Inhalation	NDA filing expected by the end of 2007. Designated as an orphan drug. Available through an expanded access program.
Multiple Sclerosis					
Merck Serono and Teva/ Mylinax® (cladribine)	For the treatment of relapsing forms of MS	Interferes with lymphocytes, which are involved in the pathology of MS/ Antineoplastic (purine nucleoside analogue)	IV infusion	Oral	FDA granted fast track status. Full enrollment for phase III study completed January 2007.
Oncology					
GlaxoSmithKline/ Hycamtin® (topotecan)	For the second-line treatment of small cell lung cancer	Damages the DNA of cancer cells resulting in cancer cell death/ Topoisomerase I inhibitor	IV infusion	Oral	NDA accepted and granted priority review June 2007.

New Indications in the Pipeline

Manufacturer/ Drug Name	Current Indication	Investigational Indication	Mechanism of Action/Drug Class	Route of Administration	Comments
Crohn's Disease					
Elan and Biogen Idec/Tysabri® (natalizumab)	For the treatment of relapsing forms of MS	For the treatment of moderately to severely active Crohn's disease	Reduces the presence of white blood cells, which are involved in the inflammation process/Monoclonal antibody	IV infusion	sBLA filed December 2006. The FDA Advisory Committee recommended approval July 2007.
Bayer HealthCare Pharmaceuticals/ Leukine® (sargramostim)	To improve immune cell function in patients receiving treatment for myelogenous leukemia or following a bone marrow transplant	For the treatment of moderately to severely active Crohn's disease	Modulates immune system/Granulocyte macrophage colony stimulating factor	SC injection	
Hepatitis					
Gilead Sciences/ Viread® (tenofovir)	For the treatment of HIV	For the treatment of chronic hepatitis B virus infection	Inhibits the formation of viral DNA/ Nucleotide reverse transcriptase inhibitor	Oral	Primary endpoints were met in phase III trials. NDA filing planned for fourth quarter 2007.

New Indications in the Pipeline (continued)

Manufacturer/ Drug Name	Current Indication	Investigational Indication	Mechanism of Action/Drug Class	Route of Administration	Comments
Hepatitis					
Valeant Pharmaceuticals/ Infergen® (interferon alfacon-1)	For the treatment of hepatitis C virus (HCV) infection	For the treatment of chronic HCV in combination with ribavirin after failure to respond to previous course of pegylated interferon plus ribavirin	Inhibits viral replication/Interferon	SC injection	
Juvenile Rheumatoid Arthritis					
Abbott/ Humira® (adalimumab)	For the treatment of rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis, and Crohn's disease	For the treatment of juvenile rheumatoid arthritis	Targets tumor necrosis factor alpha/ Monoclonal antibody	SC injection	sBLA filed May 2007.
Amgen/ Kineret® (anakinra)	For the treatment of rheumatoid arthritis	For the treatment of polyarticular-course chronic juvenile rheumatoid arthritis	Blocks the biologic activity of IL-1/IL-1 inhibitor	SC injection	
Bristol-Myers Squibb/ Orencia® (abatacept)	For the treatment of moderate to severe rheumatoid arthritis in patients who have had an inadequate response to one or more disease- modifying anti- rheumatic drugs (DMARDs)	For the treatment of juvenile idiopathic arthritis in patients who have had an inadequate response to one or more DMARDs	Inhibits T-cell activation/ Selective costimulation modulator	IV infusion	sBLA accepted August 2007.
Oncology					
Bayer HealthCare Pharmaceuticals and Onyx Pharmaceuticals/ Nexavar® (sorafenib)	For the treatment of advanced renal cell carcinoma	For the treatment of advanced liver cancer	Reduces tumor cell growth and blood supply/Multikinase inhibitor	Oral	Designated as an orphan drug for advanced liver cancer. FDA granted fast track status. sNDA filed June 2007.
Pfizer/ Sutent® (sunitinib)	For the treatment of gastrointestinal stromal tumor and advanced renal cell carcinoma	For the treatment of metastatic colorectal cancer	Reduces tumor cell growth and blood supply/Multikinase inhibitor	Oral	Phase III trial initiated June 2007.
Osteoporosis					
Novartis/ Reclast® (zoledronic acid)	For the treatment of Paget's disease	For the treatment of postmenopausal osteoporosis	Inhibits osteoclast- mediated bone resorption/IV bisphosphonate	IV infusion	sBLA filed November 2006.
Psoriasis					
Abbott/ Humira® (adalimumab)	For the treatment of rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis, and Crohn's disease	For the treatment of chronic plaque psoriasis	Targets tumor necrosis factor alpha/ Monoclonal antibody	SC injection	sBLA filed April 2007.

Approvable designation or letter – indicates that an FDA committee has reviewed the application and has suggested to the FDA that it approve the new medication. The FDA does not have to follow the advice of the committee, but usually does.

BLA – stands for “biologic license application”; similar to an NDA, but used for investigational medications that are considered to be biologic agents.

Double-blind – a type of study in which the participants and the investigators are blinded to treatment; this type of study has less bias than nonblinded studies.

Expanded access program – manufacturer programs that allow the distribution of new medications prior to FDA approval for patients with a life-threatening disease who cannot be treated successfully with currently available medications.

Fast track status – designation granted by the FDA to an investigational agent indicating an expedited review of the NDA; usually applies to medications that treat serious or life-threatening conditions and that demonstrate the potential to address unmet medical needs.

Follow-on protein product – generally refers to protein products that are intended to be similar enough to a product already on the market to permit the applicant to rely on certain existing scientific knowledge about the safety and effectiveness of the approved protein product for approval of the follow-on protein product.

Formal dispute resolution – an FDA process where sponsors can challenge regulatory decisions by bringing the dispute to the attention of FDA supervisors.

NDA – stands for “new drug application”; the process by which a manufacturer submits information to the FDA to gain approval for the agent; conducted after phase III development is completed.

NDA rolling submission – usually applies to fast track medications; indicates that the review process can be started even before the FDA receives all the information. However, the FDA requires all the information before a final decision about approval can be made.

Orphan drug – a medication that treats a rare disease that affects fewer than 200,000 Americans. A medication granted orphan drug status is entitled to seven years of marketing exclusivity.

Phase II – second phase of medication development; typically involves several hundred patients to determine safety and preliminary data on efficacy.

Phase III – last phase of medication development; involves safety and efficacy trials of the new medication. This phase of development can take years to complete.

Phase IIIb – trials that often begin before FDA approval. This phase—conducted after phase III trials—may supplement or complete earlier studies by providing additional safety data or they may test the approved medication for additional indications.

Priority review – designation granted by the FDA to an investigational agent after it has been submitted to the FDA for approval; a priority designation means that the FDA will review and take action on the application (approve or not approve) within six months instead of the standard 10 months for all other medication filings.

Randomized controlled trial – a study in which people are allocated at random (by chance alone) to receive one of several clinical interventions; it is the most powerful study design in clinical research.

sBLA – stands for “supplemental biologic license application”; similar to sNDA, but used for already approved investigational medications that are considered to be biologic agents.

sNDA – stands for “supplemental new drug application”; the process by which a pharmaceutical company submits information to the FDA to gain approval for a new indication for an agent that has already been approved by the FDA.

SPA – stands for “special protocol assessment”; an agreement with the FDA that the manufacturer’s clinical protocol for a phase III trial is acceptable to support an NDA or BLA.

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