

February

2010

Product Development Pipeline

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Therapeutic area	Compound/Vaccine	Type	Indication	Phase	Achieved Regulatory Review Milestones		
					MAA	NDA/BLA	
Biopharmaceuticals	933776	monoclonal antibody	Alzheimer's disease	I			
	1070806	monoclonal antibody	metabolic disease	I			
	1223249	monoclonal antibody	amyotrophic lateral sclerosis	I			
	2401502†	domain antibody targeted multi-component vaccine	malignant melanoma	I			
	APN01†	recombinant human angiotensin converting enzyme 2	acute respiratory distress syndrome	I			
	iboctadekin† (+ <i>Doxil</i>)	IL18 immunomodulator (+ topoisomerase II inhibitor)	ovarian cancer	I			
	iboctadekin† (+ rituximab)	IL18 immunomodulator (+ anti-CD20 monoclonal antibody)	follicular lymphoma	I			
	otelixizumab†	anti-CD3 monoclonal antibody (s.c.)	type 1 diabetes	I			
	249320	monoclonal antibody	stroke	II			
	315234	monoclonal antibody	rheumatoid arthritis	II			
	679586	monoclonal antibody	severe asthma	II			
	<i>Arzerra</i> (ofatumumab)†	anti-CD20 human monoclonal antibody	follicular lymphoma (relapsed patients)	II			
	<i>Benlysta</i> (belimumab)†	anti-B lymphocyte stimulator monoclonal antibody (s.c.)	systemic lupus erythematosus	II			
	mepolizumab	anti-IL5 monoclonal antibody	severe asthma & nasal polyposis	II			
	ofatumumab†	anti-CD20 human monoclonal antibody	multiple sclerosis	II			
	<i>Arzerra</i> (ofatumumab)†	anti-CD20 human monoclonal antibody	chronic lymphocytic leukaemia, first line therapy & use in relapsed patients	III			
	<i>Arzerra</i> (ofatumumab)†	anti-CD20 human monoclonal antibody	diffuse large B cell lymphoma (relapsed patients)	III			
	<i>Arzerra</i> (ofatumumab)†	anti-CD20 human monoclonal antibody	follicular lymphoma (refractory patients)	III			
	<i>Benlysta</i> (belimumab)†	anti-B lymphocyte stimulator monoclonal antibody (i.v.)	systemic lupus erythematosus	III			
	denosumab†	anti-receptor activator for nuclear kappa (RANK) ligand human monoclonal antibody	bone metastatic disease	III			
denosumab†	anti-RANK ligand human monoclonal antibody	hormone ablative/chemotherapy bone loss in cancer patients	III				
ofatumumab†	anti-CD20 human monoclonal antibody	rheumatoid arthritis	III				
otelixizumab†	anti-CD3 monoclonal antibody (i.v.)	type 1 diabetes	III				
<i>Syncria</i> †	glucagon-like peptide 1 agonist	type 2 diabetes	III				
<i>Prolia</i> (denosumab)†	anti-RANK ligand human monoclonal antibody	post-menopausal osteoporosis	Submitted	PO:Dec09	N/A		
<i>Arzerra</i> (ofatumumab)†	anti-CD20 human monoclonal antibody	chronic lymphocytic leukaemia (refractory patients)	Approved	PO:Jan10	A:Oct09		
Cardiovascular & Metabolic	1278863	prolyl hydroxylase inhibitor	anaemia	I			
	1521498	mu-opioid receptor inverse agonist	obesity	I			
	1614235†	sodium dependent glucose transport (SGLT1) inhibitor	type 2 diabetes	I			
	2245840	SIRT1 activator	sarcopaenia (also COPD & psoriasis)	I			
	184072	SIRT1 activator	type 2 diabetes (also haematologic cancers)	II			
	256073	high affinity nicotinic acid receptor (HM74A) agonist	dyslipidaemia	II			
	557296	oxytocin antagonist	premature ejaculation	II			
	1292263	G-protein coupled receptor 119 (GPR119) agonist	type 2 diabetes	II			
	1362885	glycogen phosphorylase inhibitor	type 2 diabetes	II			
	2245840	SIRT1 activator	type 2 diabetes (also COPD & psoriasis)	II			
	losmapimod	p38 kinase inhibitor	cardiovascular disease (also COPD, pain & depression)	II			
	retosiban (221149)	oxytocin antagonist	threatened pre-term labour	II			
	rilapladib†	Lp-PLA2 inhibitor	atherosclerosis	II			
	<i>Avandamet XR</i>	PPAR gamma agonist + metformin	type 2 diabetes – extended release	III		N/A	
	<i>Avandia</i> + simvastatin	PPAR gamma agonist + statin	type 2 diabetes	III		N/A	
	darapladib†	Lp-PLA2 inhibitor	atherosclerosis	III			
	<i>Arixtra</i>	synthetic factor Xa inhibitor	treatment of acute coronary syndrome	Approved	A:Aug07	AL:Feb07 & Sep07	
	<i>Avandia</i>	PPAR gamma agonist	prevention of disease progression	Approved	A:Apr09	A:Jul08	
	Infectious Diseases	932121	plasmodium electron transport chain inhibitor	malaria	I		
		945237	topoisomerase II inhibitor	treatment of bacterial infections	I		
1322322		novel class antibacterial agent	treatment of bacterial infections	I			
<i>Relenza</i> †		neuraminidase inhibitor (i.v.)	treatment of influenza	II			
sitamaquine		8-aminoquinoline	treatment of visceral leishmaniasis	II		N/A	
tafenoquine†		8-aminoquinoline	Plasmodium vivax malaria	II			
Neurosciences	586529†	CRF1 antagonist	depression & anxiety	I			
	618334	dopamine D3 antagonist	drug dependency	I			
	1014802	sodium channel blocker	bipolar disorder	I			
	1034702	muscarinic acetylcholine agonist	dementia	I			
	1144814	NK1/NK3 antagonist	schizophrenia	I			
	163090	5HT1 antagonist	depression & anxiety	II			
	239512	histamine H3 antagonist	dementia & schizophrenia	II			
	561679†	CRF1 antagonist	depression & anxiety	II			
	649868†	orexin antagonist	sleep disorders	II			
	742457	5HT6 antagonist	dementia	II			
	2402968 (PRO051)†	antisense oligonucleotide	Duchenne muscular dystrophy	II			
	firategrast†	dual alpha4 integrin antagonist (VLA4)	multiple sclerosis	II			
	<i>Horizant</i> (1838262)†	voltage-gated calcium channel modulator	migraine prophylaxis	II			
	<i>Horizant</i> (1838262)†	voltage-gated calcium channel modulator	neuropathic pain	II			
	losmapimod	p38 kinase inhibitor	pain (also cardiovascular disease, COPD & depression)	II			
	losmapimod	p38 kinase inhibitor	depression (also cardiovascular disease, COPD & pain)	II			
	orvepitant	NK1 antagonist	depression & anxiety	II			
	almorexant†	orexin antagonist	insomnia	III			
	<i>Horizant</i> (1838262)†	voltage-gated calcium channel modulator	restless legs syndrome	Submitted		CR:Feb10	
	retigabine†	neuronal potassium channel opener	epilepsy – partial seizures	Submitted	S:Oct09	S:Oct09	
<i>Lamictal XR</i>	sodium channel inhibitor	epilepsy – partial generalised tonic-clonic seizures, once-daily	Approved	N/A	A:Jan10		
<i>Lamictal XR</i>	sodium channel inhibitor	epilepsy – partial seizures, once-daily	Approved	N/A	A:May09		
Oncology	2110183	AKT protein kinase inhibitor	cancer	I			
	2118436	Braf protein kinase inhibitor	cancer	I			
	2126458	Pi3 kinase inhibitor	cancer	I			
	2141795	AKT protein kinase inhibitor	cancer	I			
	184072	SIRT1 activator	haematologic cancers (also type 2 diabetes)	II			
	1120212†	mitogen-activated protein kinase inhibitor (MEK1/2)	cancer	II			
	2285921†	thrombopoietin receptor agonist	thrombocytopenia	II			
	foretinib (1363089)†	mesenchymal-epithelial transition factor (C-met) kinase inhibitor	papillary renal cell carcinoma and other cancers	II			
	<i>Revolade/Promacta</i> †	thrombopoietin receptor agonist	oncology-related thrombocytopenia	II			
	<i>Tyverb/Tykerb</i>	Her2 and EGFR dual kinase inhibitor	head & neck squamous cell carcinoma (unresectable disease)	II			
	<i>Votrient</i> (pazopanib)	multi-kinase angiogenesis inhibitor	breast cancer, adjuvant therapy	II			
	<i>Votrient</i> (pazopanib)	multi-kinase angiogenesis inhibitor	non-small cell lung cancer, first line & adjuvant therapy	II			
	<i>Votrient</i> (pazopanib)	multi-kinase angiogenesis inhibitor	ovarian cancer, maintenance therapy	III			
	<i>Revolade/Promacta</i> †	thrombopoietin receptor agonist	chronic liver disease induced thrombocytopenia	III			
	<i>Revolade/Promacta</i> †	thrombopoietin receptor agonist	hepatitis C induced thrombocytopenia	III			
	<i>Tyverb/Tykerb</i>	Her2 and EGFR dual kinase inhibitor	breast cancer, adjuvant therapy	III			
	<i>Tyverb/Tykerb</i>	Her2 and EGFR dual kinase inhibitor	gastric cancer	III			
	<i>Tyverb/Tykerb</i>	Her2 and EGFR dual kinase inhibitor	head & neck squamous cell carcinoma (resectable disease)	III			
	<i>Votrient</i> (pazopanib)	multi-kinase angiogenesis inhibitor	sarcoma	III			
	<i>Votrient</i> (pazopanib) + <i>Tyverb/Tykerb</i>	multi-kinase angiogenesis inhibitor + Her2 and EGFR dual kinase inhibitor	inflammatory breast cancer	III			
<i>Avodart</i>	5-alpha reductase inhibitor	reduction in the risk of prostate cancer	Submitted	S:Sep09			
<i>Duodart</i> (<i>Avodart</i> + alpha blocker)	5-alpha reductase inhibitor + alpha blocker	benign prostatic hyperplasia – fixed dose combination	Submitted	S:Dec08	TA:Jan10		
<i>Revolade/Promacta</i> †	thrombopoietin receptor agonist	idiopathic thrombocytopenic purpura	Approved	PO:Dec09	A:Nov08		
<i>Tyverb/Tykerb</i>	Her2 and EGFR dual kinase inhibitor	breast cancer, first line therapy	Approved	PO:Feb10	A:Jan10		
<i>Votrient</i> (pazopanib)	multi-kinase angiogenesis inhibitor	renal cell cancer	Approved	PO:Feb10	A:Oct09		
Ophthalmology	pazopanib	multi-kinase angiogenesis inhibitor (oral)	age-related macular degeneration (also cancer indications)	I			
	pazopanib	multi-kinase angiogenesis inhibitor (eye drops)	age-related macular degeneration	II			
Respiratory & Immuno-inflammation	610677	p38 kinase inhibitor (inhaled)	COPD	I			
	681323	p38 kinase inhibitor (i.v.)	acute lung injury & acute respiratory distress syndrome	I			
	1325756	chemokine receptor (CXCR2) antagonist	COPD	I			
	2245840	SIRT1 activator	COPD & psoriasis (also type 2 diabetes & sarcopaenia)	I			
	CCX025†	CCR9 antagonist	Crohn's disease	I			
	256066	PDE inhibitor (inhaled)	COPD	II			
	573719	muscarinic acetylcholine antagonist	COPD	II			
	573719 + 642444†	muscarinic acetylcholine antagonist + long-acting beta2 agonist	COPD	II			
	656933	chemokine receptor (CXCR2) antagonist	cystic fibrosis	II			
	685698	glucocorticoid agonist	asthma	II			
	705498	transient receptor potential vanilloid (TRPV1) antagonist (intranasal)	non-allergic rhinitis	II			
	870086	novel glucocorticoid agonist (inhaled)	asthma	II			
	961081†	muscarinic antagonist, beta2 agonist	COPD	II			
	962040	motilin receptor agonist	delayed gastric emptying	II			
	1399686	anti-inflammatory macrolide conjugate (oral)	inflammatory bowel disease	II			
	1605786 (CCX282)†	CCR9 antagonist	Crohn's disease	II			
	2190915†	5-lipoxygenase-activating protein (FLAP) inhibitor	asthma	II			
	losmapimod	p38 kinase inhibitor (oral)	COPD (also cardiovascular disease, pain & depression)	II			
	<i>Relovair</i> (642444† + 685698)	long-acting beta2 agonist + glucocorticoid agonist	asthma	II			
	<i>Relovair</i> (642444† + 685698)	long-acting beta2 agonist + glucocorticoid agonist	COPD	III			
642444†	long-acting beta2 agonist	COPD	III				
Paediatric Vaccines	Heptavalent combination vaccine	conjugated	Neisseria meningitis C, Haemophilus influenzae type b, diphtheria, Hepatitis B, tetanus, pertussis and poliomyelitis disease prophylaxis	II			
	Hexavalent combination vaccine	conjugated	Neisseria meningitis C, Haemophilus influenzae type b, diphtheria, tetanus, pertussis and poliomyelitis disease prophylaxis	II			
	S. pneumoniae paediatric next generation	recombinant – conjugated	Streptococcus pneumoniae disease prophylaxis	II			
	<i>Mosquirix</i>	recombinant	malaria prophylaxis (Plasmodium falciparum)	III		N/A	
	<i>Nimenrix</i> (MenACWY-TT)	conjugated	Neisseria meningitis groups A, C, W & Y disease prophylaxis	III			
	<i>MenHibrix</i> (Hib-MenCY-TT)	conjugated	Neisseria meningitis groups C & Y & Haemophilus influenzae type b disease prophylaxis	Submitted		S:Aug09	
	<i>Hiberix</i>	conjugated	paediatric booster for Haemophilus influenzae type b	Approved	A:Nov07	A:Aug09	
	<i>Synflorix</i>	conjugated	Streptococcus pneumoniae disease prophylaxis in infants & children	Approved	A:Mar09	N/A	
	Other Vaccines	Alzheimer's disease	conjugated	treatment of Alzheimer's disease	I		
		Cytomegalovirus	recombinant	cytomegalovirus infection prophylaxis	I		
HIV		recombinant	HIV disease prophylaxis/immunotherapy	I			
NTHi-Pneumo		recombinant	Streptococcus pneumoniae and Haemophilus influenzae disease prophylaxis in adults	I			
Dengue fever		attenuated tetravalent	dengue fever prophylaxis	II			
Tuberculosis		recombinant	tuberculosis prophylaxis	II			
Zoster		recombinant	Herpes Zoster prevention	II			
New generation flu vaccine		inactivated split – trivalent	seasonal influenza prophylaxis for the elderly	III			
<i>Simplrix</i>		recombinant	genital herpes prophylaxis	III			
Flu pandemic & pre-pandemic†		H5N1 inactivated split – monovalent (Quebec)	pandemic influenza prophylaxis	Submitted	S:Jul09	S:Jun09 (Canada)	
<i>Arepanrix</i> (Flu pandemic)†	H1N1 inactivated split adjuvanted – monovalent (Quebec)	pandemic influenza prophylaxis (emergency use)	Approved	PO:Jan10	A:Oct09 (Canada)		
<i>Cervarix</i> †	recombinant	cervical dysplasia & cancer prophylaxis caused by HPV 16/18	Approved	A:Sep07	A:Oct09		
Influenza A (H1N1) 2009 monovalent vaccine (Flu pandemic)†	H1N1 inactivated split – monovalent (Quebec)	pandemic influenza A (H1N1) 2009 prophylaxis (emergency use)	Approved		A:Nov09		
<i>Pandemrix</i> (Flu pandemic)†	H1N1 inactivated split adjuvanted – monovalent (Dresden)	pandemic influenza prophylaxis (emergency use)	Approved	A:Sep09			
Antigen Specific Cancer Immunotherapeutic (ASCI)	WT1	recombinant	treatment of acute myelogenous leukaemia	II			
	MAGE-A3	recombinant	treatment of melanoma	III			
	MAGE-A3	recombinant	treatment of non-small cell lung cancer	III			
Dermatology (Stiefel) late-stage assets only	<i>Duac</i> low dose	clindamycin/benzoyl peroxide gel	acne vulgaris	III			
	tazarotene foam	retinoid foam	acne vulgaris	III			
	calcipotriene	vitamin D3 analog	mild to moderate plaque psoriasis	Submitted		S:Dec09	
	itraconazole tablets	oral anti-fungal	onychomycosis	Submitted		S:Mar09	
<i>Veltin</i>	antibiotic/retinoid gel	acne vulgaris	Submitted		S:Oct09		
HIV (ViiV Healthcare)	1265744†	HIV integrase inhibitor	HIV infections	II			
	1349572†	HIV integrase inhibitor	HIV infections	II			
	2248761 (IDX899)†	non-nucleotide reverse transcriptase inhibitor	HIV infections	II			
	PF-232798	CCR5 antagonist	HIV infections	II			
	UK-453061	non-nucleotide reverse transcriptase inhibitor	HIV infections	II			
	Selzentry/Celsentri	CCR5 antagonist	HIV infection, use in treatment naïve patients	Approved		A:Nov09	

Key			
†	In-license or other alliance relationship with third party	BLA	Biological License Application
S	Month of first submission	MAA	Marketing Authorisation Application (Europe)
A	Month of first regulatory approval (for MAA, this is the first EU approval letter)	NDA	New Drug Application (USA)
AL/CR	Month of first regulatory approval or Complete Response Letter received - indicates that ultimately approval can be given subject to resolution of outstanding queries	Phase I	Evaluation of clinical pharmacology, usually conducted in volunteers
		Phase II	Determination of dose and initial evaluation of efficacy, conducted in a small number of patients
PO	Month of EU Positive Opinion	Phase III	Large comparative study (compound versus placebo and/or established treatment) in patients to establish clinical benefit and safety
TA	FDA Tentative Approval		

MAA and NDA/BLA regulatory review milestones shown in the table above are those that have been achieved. Future filing dates are not included in this list.

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Product Development Pipeline February 2010

This document outlines GlaxoSmithKline's drug development portfolio. The content of the drug development portfolio will change over time as new compounds progress from discovery to development and from development to the market. Owing to the nature of the drug development process, many of these

compounds, especially those in early stages of investigation, may be terminated as they progress through development. For competitive reasons, new projects in pre-clinical development have not been disclosed and some project types may not have been identified.

Option-based alliances with third parties that include assets in Phase I and Phase II development

Company	Disease Area	Phase
Anacor Pharmaceuticals	anti-bacterial	I
ChemoCentryx	inflammatory disease*	I & II
Concert Pharmaceuticals	HIV (protease inhibitor)	I
Galapagos	autoimmune disease	I
NeuroSearch	neuroscience (anxiety & pain)	I
OncoMed Pharmaceuticals	oncology	I
Prosensa Therapeutics	neuroscience	I
Ranbaxy Laboratories	respiratory	I
Theravance	gastrointestinal	I

* Two assets

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING INFORMATION

Under the safe harbor provisions of the US Private Securities Litigation Reform Act of 1995, the company cautions investors that any forward-looking statements or projections made by the company, including those made in this document, are subject to risks and uncertainties that may cause actual results to differ materially from those projected.

Continued development of commercially viable new products is critical to the Group's ability to replace sales of older products that decline upon expiration of exclusive rights, and to increase overall sales. Developing new products is a costly, lengthy and uncertain process. A new product candidate can fail at any stage of the process, and one or more late-stage product candidates could fail to receive regulatory approval.

New product candidates may appear promising in development but, after significant investments, fail to reach the market or have only limited commercial success as a result of efficacy or safety concerns, inability to obtain necessary regulatory approvals, difficulty or excessive costs to manufacture or infringement of patents or other intellectual property rights of others or inability to differentiate the product adequately from those with which it competes.

Other factors that may affect the Group's operations are described under 'Risk Factors' in the Operating and Financial Review and Prospects in the company's Annual Report on Form 20-F for 2009.
