

February

2011

Product Development Pipeline

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Therapeutic area	Compound/Vaccine	Type	Indication	Phase	Achieved Regulatory Review Milestones		
					MAA	NDA/BLA	
Biopharmaceuticals	933776	beta amyloid monoclonal antibody	Alzheimer's disease	I			
	1070806	IL18 monoclonal antibody	metabolic disorders	I			
	1223249	NOGO-A monoclonal antibody	amyotrophic lateral sclerosis & multiple sclerosis	I			
	2401502 [†]	domain antibody targetted multi-component vaccine	malignant melanoma	I			
	2586881 (APN01) [†]	recombinant human angiotensin converting enzyme 2	acute respiratory distress syndrome	I			
	iboctadekin [†] (+ <i>Doxil</i>)	IL18 immunomodulator (+ topoisomerase II inhibitor)	ovarian cancer	I			
	otelixizumab [†]	anti-CD3 monoclonal antibody (i.v.)	Graves eye disease	I			
	otelixizumab [†]	anti-CD3 monoclonal antibody (s.c. & i.v.)	rheumatoid arthritis	I			
	otelixizumab [†]	anti-CD3 monoclonal antibody (s.c.)	type 1 diabetes	I			
	249320	myelin-associated glycoprotein monoclonal antibody	stroke	II			
	315234	oncostatin M monoclonal antibody	rheumatoid arthritis	II			
	768974 [†]	parathyroid hormone	osteoporosis	II			
	albiglutide [†]	glucagon-like peptide 1 (GLP 1) agonist	heart failure	II			
	<i>Benlysta</i> [†]	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 (s.c.)	multiple sclerosis	II			
	ofatumumab [†]	anti-CD20 human monoclonal antibody (s.c.)	rheumatoid arthritis	II			
	otelixizumab [†]	anti-CD3 monoclonal antibody (i.v.)	myaesthesia gravis	II			
	albiglutide [†]	GLP 1 agonist	type 2 diabetes	II			
	<i>Arzerra</i> [†]	anti-CD20 human monoclonal antibody	chronic lymphocytic leukaemia, first line therapy & use in relapsed patients	III			
<i>Arzerra</i> [†]	anti-CD20 human monoclonal antibody	diffuse large B cell lymphoma (relapsed patients)	III				
otelixizumab [†]	anti-CD3 monoclonal antibody (i.v.)	follicular lymphoma (refractory & relapsed patients)	III				
<i>Benlysta</i> [†]	anti-B lymphocyte stimulator monoclonal antibody (i.v.)	type 1 diabetes	III	Submitted	S: Jun10	S: Jun10	
denosumab [†]	anti-receptor activator for nuclear kappa (RANK) ligand human monoclonal antibody	bone metastatic disease	Submitted		N/A	N/A	
<i>Arzerra</i> [†]	anti-CD20 human monoclonal antibody	chronic lymphocytic leukaemia (refractory patients)	Approved		A: Apr10	A: Oct09	
<i>Prolia</i> [†]	anti-RANK ligand human monoclonal antibody	hormone ablativ/chemotherapy bone loss in prostate cancer patients	Approved		N/A	N/A	
<i>Prolia</i> [†]	anti-RANK ligand human monoclonal antibody	postmenopausal osteoporosis	Approved		A: May10	N/A	
Cardiovascular & Metabolic	1614235 [†]	sodium dependent glucose transport (SGLT1) inhibitor	type 2 diabetes	I			
	2245840	SIRT1 activator	sarcopaenia (also COPD & psoriasis)	I			
	256073	high affinity nicotinic acid receptor (HM74A) agonist	metabolic disorders	II			
	557296	oxytocin antagonist	premature ejaculation	II			
	1278863	prolyl hydroxylase inhibitor	anaemia associated with chronic renal disease	II			
	1278863	prolyl hydroxylase inhibitor	peripheral arterial disease	II			
	1292263	G-protein coupled receptor 119 (GPR119) agonist	metabolic disorders	II			
	1521498	mu-opioid receptor inverse agonist	compulsive eating disorders	II			
	2245840	SIRT1 activator	type 2 diabetes (also COPD & psoriasis)	II			
	losmapimod	p38 kinase inhibitor	cardiovascular disease (also COPD & pain)	II			
	retosiban	oxytocin antagonist	threatened pre-term labour	II			
	rilapladib [†]	Lp-PLA2 inhibitor	atherosclerosis	II			
	darapladib [†]	Lp-PLA2 inhibitor	atherosclerosis	III			
	<i>Arixtra</i>	synthetic factor Xa inhibitor	treatment of acute coronary syndrome	Approved		A: Aug07	AL: Feb07 & Sep07
	Infectious Diseases	2251052 [†]	leucyl t-RNA synthetase inhibitor (oral & iv)	bacterial infections	I		
2336805		hepatitis C virus inhibitor	hepatitis C	I			
2485852		hepatitis C virus inhibitor	hepatitis C	I			
1322322		polypeptide deformylase inhibitor	bacterial infections	II			
tafenoquine [†]		8-aminoquinoline	Plasmodium vivax malaria	II			
<i>Relenza</i> [†]	neuraminidase inhibitor (i.v.)	influenza	III				
Neurosciences	2018682	sphingosine-1-phosphate receptor 1 (S1P1) agonist	multiple sclerosis	I			
	239512	histamine H3 antagonist	dementia & schizophrenia	II			
	649868 [†]	orexin antagonist	sleep disorders	II			
	742457	5HT6 antagonist	dementia	II			
	firategrast [†]	dual alpha4 integrin antagonist (VLA4)	multiple sclerosis	II			
	<i>Horizant</i> [†]	voltage-gated calcium channel modulator	post-herpetic neuralgia	II		N/A	
	losmapimod	p38 kinase inhibitor	pain (also cardiovascular disease & COPD)	II			
	orvepitant	NK1 antagonist	depression & anxiety	II			
	IPX066 [†]	dopamine precursor + DOPA decarboxylase inhibitor	Parkinson's disease	III			
	<i>Horizant</i> [†]	voltage-gated calcium channel modulator	restless legs syndrome	Submitted			S: Sep08 Jan09 & Oct10
<i>Trobalt/Potiga</i> (retigabine/ezogabine) [†]	neuronal potassium channel opener	epilepsy – partial seizures	Submitted		PO: Jan11	CR: Nov10	
Oncology	2110183	AKT protein kinase inhibitor	cancer	I			
	2126458	PI3 kinase inhibitor	cancer	I			
	2141795	AKT protein kinase inhibitor	cancer	I			
	2256098	focal adhesion kinase inhibitor	cancer	I			
	vestipitant	NK1 antagonist (i.v.)	post operative nausea & vomiting	I			
	1120212 [†] + BKM120	mitogen-activated protein kinase inhibitor (MEK1/2) + Pi3 kinase inhibitor	cancer	I			
	1120212 [†]	MEK1/2 inhibitor	pancreatic cancer	II			
	1120212 [†] + 2118436	MEK1/2 inhibitor + BRAF protein kinase inhibitor	metastatic melanoma	II			
	2285921 [†]	thrombopoietin receptor agonist	thrombocytopenia	II			
	foretinib [†]	mesenchymal-epithelial transition factor (C-met) kinase inhibitor	papillary renal cell carcinoma and other cancers	II			
	<i>RevoladelPromacta</i> [†]	thrombopoietin receptor agonist	oncology-related thrombocytopenia	II			
	1120212 [†]	MEK1/2 inhibitor	metastatic melanoma	III			
	2118436	BRAF protein kinase inhibitor	metastatic melanoma	III			
	<i>Votrient</i>	multi-kinase angiogenesis inhibitor	ovarian cancer, maintenance therapy	III			
	<i>RevoladelPromacta</i> [†]	thrombopoietin receptor agonist	chronic liver disease induced thrombocytopenia	III			
	<i>RevoladelPromacta</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>	multi-kinase angiogenesis inhibitor	renal cell cancer, adjuvant therapy	III			
<i>Votrient</i>	multi-kinase angiogenesis inhibitor	sarcoma	III				
<i>Votrient + 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 & Mar10	CR: Jan11	
<i>Duodart/Jalyn</i>	5-alpha reductase inhibitor + alpha blocker	benign prostatic hyperplasia - fixed dose combination	Approved		A: Mar10	A: Jun10	
<i>RevoladelPromacta</i> [†]	thrombopoietin receptor agonist	idiopathic thrombocytopenic purpura	Approved		A: Mar10	A: Nov08	
<i>Tyverb/Tykerb</i>	Her2 and EGFR dual kinase inhibitor	breast cancer, first line therapy	Approved		A: Jun10	A: Jan10	
<i>Votrient</i>	multi-kinase angiogenesis inhibitor	renal cell cancer	Approved		A: Jun10	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			
	705498	transient receptor potential vanilloid (TRPV1) antagonist (topical)	pruritis	I			
	1322888	motilin receptor agonist	delayed gastric emptying	I			
	1325756	chemokine receptor (CXCR2) antagonist	COPD	I			
	1440115	urotensin antagonist	asthma	I			
	2245840	SIRT1 activator	COPD (also type 2 diabetes & sarcopaenia)	I			
	2245840	SIRT1 activator	psoriasis (also type 2 diabetes & sarcopaenia)	II			
	256066	PDE4 inhibitor (inhaled)	COPD	II			
	656933	chemokine receptor (CXCR2) antagonist	cystic fibrosis	II			
	685698	glucocorticoid agonist	asthma	II			
	681323	p38 kinase inhibitor (i.v.)	acute lung injury & acute respiratory distress syndrome	II			
	705498	transient receptor potential vanilloid (TRPV1) antagonist (intranasal)	non-allergic rhinitis	II			
	870086	novel glucocorticoid agonist (inhaled)	asthma	II			
	870086	novel glucocorticoid agonist (topical)	atopic dermatitis	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			
	2190915 [†]	5-lipoxygenase-activating protein (FLAP) inhibitor	asthma	II			
	losmapimod	p38 kinase inhibitor (oral)	COPD (also cardiovascular disease & pain)	II			
	573719	muscarinic acetylcholine antagonist	COPD	III			
	573719 + vilanterol (642444) [†]	muscarinic acetylcholine antagonist + long-acting beta2 agonist	COPD	III			
	vilanterol (642444) [†]	long-acting beta2 agonist	COPD	III			
	1605786 (CCX282) [†]	CCR9 antagonist	Crohn's disease	III			
	<i>Relovair</i> (vilanterol [†] + 685698)	long-acting beta2 agonist + glucocorticoid agonist	asthma	III			
	<i>Relovair</i> (vilanterol [†] + 685698)	long-acting beta2 agonist + glucocorticoid agonist conjugated	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			
	MMR	live attenuated	measles, mumps, rubella prophylaxis	II (US)		A: Oct03	
	S. pneumoniae paediatric next generation	recombinant - conjugated	Streptococcus pneumoniae disease prophylaxis	II			
	<i>Mosquirix</i>	recombinant	malaria prophylaxis (Plasmodium falciparum)	III			
	<i>Nimenrix</i> (MenACWY-TT)	conjugated	Neisseria meningitis groups A, C, W & Y disease prophylaxis	Submitted		N/A	
<i>MenHibrix</i> (Hib-MenCY-TT)	conjugated	Neisseria meningitis groups C & Y & Haemophilus influenzae type b disease prophylaxis	Submitted		N/A		
Other Vaccines	Flu pandemic [†]	cell-culture based H5N1 vaccine	pandemic influenza prophylaxis	I			
	HIV	recombinant	HIV disease prophylaxis	I			
	HIV	recombinant	HIV disease immunotherapy	II			
	Tuberculosis	recombinant	tuberculosis prophylaxis	II			
	Flu vaccine	inactivated split - quadrivalent	seasonal influenza prophylaxis	III			
	Zoster	recombinant	Herpes Zoster prevention	III			
	Flu (pre-) pandemic	H5N1 inactivated split - monovalent (Quebec)	pre-pandemic & pandemic influenza prophylaxis	Submitted		N/A	
<i>Pumarix</i>	H5N1 inactivated split - monovalent (Quebec)	pandemic influenza prophylaxis	Submitted		PO: Nov10		
Antigen Specific Cancer Immunotherapeutic (ASCI)	PRAME	recombinant	treatment of metastatic melanoma	I			
	PRAME	recombinant	treatment of resectable non-small cell lung cancer	I			
	NY-ESO-1	recombinant	treatment of metastatic melanoma	I			
	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			
Rare Diseases	2696273 [†]	ex-vivo stem cell gene therapy	adenosine deaminase severe combined immune deficiency (ADA-SCID)	III			
	2402968 [†]	antisense oligonucleotide	Duchenne muscular dystrophy	III			
Dermatology (Stiefel) (late-stage assets only)	migalastat HCl [†]	pharmacological chaperone	Fabry disease	III			
	tazarotene foam	retinoid foam	acne vulgaris	III			
	<i>Duac</i> low dose	clindamycin/benzoyl peroxide gel	acne vulgaris	Submitted		S: Nov10	
	<i>Sorilux</i> (calcipotriene foam)	vitamin D3 analog	mild to moderate plaque psoriasis	Approved		A: Oct10	
	itraconazole tablets	oral anti-fungal	onychomycosis	Approved		A: Apr10	
<i>Veltin</i>	antibiotic/retinoid gel	acne vulgaris	Approved		A: Jul10		
HIV (ViiV Healthcare)	1265744 [†]	HIV integrase inhibitor (long-acting formulation)	HIV infections	I			
	2248761 [†]	non-nucleoside reverse transcriptase inhibitor	HIV infections	II			
	PF-232798	CCR5 antagonist	HIV infections	II			
	UK-453061	non-nucleoside reverse transcriptase inhibitor	HIV infections	II			
	1349572 [†]	HIV integrase inhibitor	HIV infections	III			
	1349572 [†] + abacavir sulphate + lamivudine	HIV integrase inhibitor + reverse transcriptase inhibitors (fixed dose combination)	HIV infections	III			

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 Approvable 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 below are those that have been achieved. Future filing dates are not included in this list.

Estimated submission dates are only disclosed where they are within 12 months of the date of the chart. This date represents the most likely year of submission where it is considered that there is a reasonably high probability of successfully meeting the date assuming the clinical data meets the expected end-points of the clinical trials.

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Product Development Pipeline February 2011

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 or later development

Company	Disease Area	Phase
Cancer Research UK	cancer	I
ChemoCentryx	inflammatory disease	I* & II
Galapagos	autoimmune disease	I*
OncoMed Pharmaceuticals	oncology	I*
Prosensa Therapeutics	neuroscience	I
Ranbaxy Laboratories	respiratory	I
Theravance	pain	I
Telethon Institute for Gene Therapy	stem cell gene therapy	I & II
Affiris	Alzheimer's disease treatment vaccine	II
Nabi	nicotine vaccine	III

* 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 2010.

