Drug pipeline: Q212

Laura DeFrancesco

In the first two quarters of 2012, there have been 12 approvals (NME and biologics) compared with 30 for 2011. The approvals of two obesity drugs, Qsymia and Belviq, a plant produced replacement enzyme for Gaucher's disease, Elelyso, and a PET imaging

agent for Alzheimer's, Amyvid, were of note. Sodium glucose transporter 2 inhibitors continue to impress in the clinic. But trials of Pfizer's flagship Alzheimer's therapy bapineuzumab were finally suspended.

Notable regulatory approvals (Q2 2012)

Drug/company	Indication	Approval and drug information
Amyvid (florbetapir F-18)/Eli Lilly	Alzheimer's imaging disease	4/6/12, FDA. 18F-labeled small molecule allows detection of amyloid beta in patients through positron emission tomography
SOM230/Novartis	Cushing's syndrome	4/25/12, Europe. Cyclohexapeptide somatostatin analog with unique ability to bind somatostatin receptor subtypes 1-5
Stendra (avanafil)/Vivus	Erectile dysfunction	4/12/12, FDA. Phosphodiesterase 5 inhibitor with faster onset than marketed drugs
Elelyso (taliglucerase-alpha)/Pfizer	Gaucher's disease	5/1/12, Human glucocerebrosidase expressed in carrot cell line
Perjeta (pertuzumab)/Roche	Breast cancer	6/8/12, FDA. Humanized mAb that inhibits HER2 dimerization by binding different epitope from Herceptin
Belviq (lorcaserin hydrochloride)/Arena Pharmaceuticals	Obesity	6/27/12, FDA. Small-molecule selective agonist of only 5-hydroxy tryptamine 2C receptor subtype
Myrbetriq (mirabegron)/Astellas Pharma	Overactive bladder	6/28/12, FDA. Small-molecule beta 3 adrenergic agonist, relaxing smooth muscle
Qsymia (phentermine and topiramate)/Vivus	Obesity	7/12/12, FDA. Amphetamine appetite suppressor and anticonvulsant with unknown mechanism in obesity

Source: BioMedTracker, a service of Sagient Research (<http://www.biomedtracker.com/>). FDA, US Food and Drug Administration; EMA, European Medicines Agency.

Notable regulatory setbacks (Q2 2012)

Drug/company	Indication	Setback summary
Setipiprant/Actelion	Allergic rhinitis	4/2/12. Phase 3 study of small-molecule antagonist of chemoattractant receptor-homologous molecule expressed on TH2 cells (CRTH2) failed to show efficacy
Vyndagel (tafamidis meglumine)/Pfizer	Familial amyloid polyneuropathy	6/18/12. FDA issued a complete response letter requesting more efficacy data, despite EMA approval. Small molecule, originally developed by FoldRx, stabilizes transthyretin, inhibiting fibril formation
BMS-986094/Bristol-Myers Squibb	Hepatitis C	8/1/10. Phase 2b trial of nucleoside inhibitor of RNA-dependent RNA polymerase (NS5b), originally developed by Inhibitex, halted due to safety issues
Bapineuzumab/Pfizer and Johnson & Johnson	Alzheimer's disease	8/6/12. Phase 3 trial of anti-beta amyloid humanized mAb discontinued after failing to meet co-primary endpoints
Talactoferrin/Agennix	Non-small cell lung cancer	8/6/12. Phase 3 trial of dendritic cell activator (recombinant human lactoferrin) suspended when overall survival of patients did not improve
Cytofab (AZD9773)/AstraZeneca	Sepsis	8/8/12. Company halted further development on this sheep polyclonal anti-TNF alpha antibody after phase 2b failed to show improvement over placebo
Ganitumab (AMG 479)/Amgen	Pancreatic cancer	8/8/12. Company halted phase 3 trial when human mAb against insulin-like growth factor-1 was unlikely to meet overall survival endpoint

Source: BioMedTracker, a service of Sagient Research (<http://www.biomedtracker.com/>). FDA, US Food and Drug Administration; EMA, European Medicines Agency.

Notable upcoming regulatory decisions (Q4 2012)

Drug/company	Indication	Upcoming catalyst
Glybera (alipogene tiparivovec)/UniQure	Lipoprotein lipase deficiency	9/25/12, EMA. Glybera, a Ser447X variant of human lipoprotein lipase gene delivered by AAV vector
Linacotide/Ironwood	Irritable bowel syndrome	9/8/12, PDUFA. Linacotide, a 14-mer peptide agonist of guanylate cyclase-C that increases fluid secretion into the intestine
Metreleptin/Amylin	Lipodystrophy	10/3/12, PDUFA. Metreleptin is recombinant human leptin, which affects blood glucose and triglycerides
Jetrea/Thrombogenics	Vitreomacular adhesion	10/17/12, PDUFA. Jetrea is recombinant plasmin, a truncated stable form of plasmin
Enzalutamide/Astellas	Prostate cancer	11/21/12, PDUFA. Enzalutamide, an androgen receptor antagonist of higher affinity than bicalutamide
Cabozantinib/Exelixis	Thyroid cancer	11/29/12, PDUFA. Cabozantinib inhibits hepatocyte growth factor receptor MET, RET and vascular endothelial growth factor receptor 2
Raxibacumab (ABthrax)/Human Genome Sciences	Anthrax	12/15/12, PDUFA. ABthrax, a human monoclonal antibody that blocks anthrax from binding to cell surface
BG-12 (dimethyl fumarate)/Biogen Idec	Multiple sclerosis	12/28/12, PDUFA. BG-12, a second-generation fumarate that is immunomodulatory
Kynamro (mipomersen sodium)/Sanofi	Dyslipidemia/hypercholesterolemia	12/31/12, EU. Mipomersen, 2'-O-(2-methoxy) ethyl-modified ribose antisense oligo against apoB-100

Source: BioMedTracker, a service of Sagient Research (<http://www.biomedtracker.com/>). FDA, US Food and Drug Administration; EMA, European Medicines Agency.

FDA approvals by lead indication area

Source: FDA; BioMedTracker, a service of Sagient Research (<http://www.biomedtracker.com/>).

*2012 partial year from Jan. 1 to Aug. 11. Numbers in parentheses after legends are total approvals since 1995.

Notable trial results (Q2 2012)

Drug/company	Indication	Results
Canagliflozin/Johnson & Johnson	Diabetes	Phase 3 results of this sodium glucose transporter 2 inhibitor improved glycemia in patients with moderate renal impairment (Am. Diabetes Assoc., Abstract 411LB, 2012)
Dapagliflozin/Bristol-Myers Squibb	Diabetes	Phase 3 results of this sodium glucose transporter 2 inhibitor demonstrated that 10% of T2D patients with cardiovascular disease achieved three endpoints (Am. Diabetes Assoc., Abstract 1114-P, 2012)
Amatuximab/Esai	Mesothelioma	Phase 2 results of chimeric mAb against mesothelin demonstrated 39% with partial response, 51% with stable disease with mean progression free survival of 6.1 months (ASCO, Abstract 7030, 2012)
AMG386/Amgen	Renal cell carcinoma	Phase 2 results of fusion protein (peptibody) targeting angiotensin demonstrated overall response rate of 58-59% (ASCO, Abstract 4606, 2012)
GLPG0634/Galapagos	Rheumatoid arthritis	Phase 2 results of selective JAK1 inhibitor showed overall improvement in ACR20 in 83% of patients receiving drug versus 33% receiving placebo (EUNETHYDIS Int. Conf., Abstract OP0263, 2012)
Ipragliflozin/Astellas	Diabetes	Phase 2 trial of this sodium glucose transporter2 inhibitor shows that patients reduce A1C and body weight (Am. Diabetes Assoc., Abstract 1046-P, 2012)
Miravirsin/Santaris	Hepatitis C	Phase 2 trial of oligonucleotide targeting MIR-122 demonstrated prolonged dose dependent reduction in HCV RNA (Eur. Assoc. Study Liver, Abstract 58, 2012)
PF-332991/Pfizer	Sarcoma	Phase 2 results of cyclin dependent kinase 4/6 inhibitor demonstrated 70% progression free survival at 12 weeks (ASCO, Abstract 10002, 2012).
Yttrium-90 clivatuzumab tetraxetan/Immunomedics	Pancreatic cancer	Phase 2 trial of mAb targeting mucin antigen labeled with yttrium-90 demonstrated disease control in 58% of patients in 7.7 months (Soc. Nucl. Med., Abstract 495, 2012)

Source: BioMedTracker, a service of Sagient Research (<http://www.biomedtracker.com/>). FDA, US Food and Drug Administration; EMA, European Medicines Agency.

Corrected after print 7 December 2012.

Laura DeFrancesco is Senior Editor, Nature Biotechnology.

Erratum: My data are your data

Vivien Marx

Nat. Biotechnol. 30, 509–511 (2012); doi:10.1038/nbt.2243; published online 7 June 2012; corrected after print 7 December 2012

In the version of this article initially published, the statement on p. 509, column 2, top paragraph, was missing a few words, making it a fragment: “Besides the risk of duplicating research discoveries that would be missed if data and methods aren’t shared,” should have read, “Besides the risk of duplicating research, it’s also about discoveries and breakthroughs that would be entirely missed if data and methods aren’t shared’...” On p. 511, column 2, paragraph 3, it was stated that the Lung Genomics Research Consortium (LGRC) shares data within the consortium but not with a wider community. In fact, that is not the case, and the sentence now reads, “Although the LGRC research portal is open, it does not offer sequence-based data, which must go to the NIH database of Genotypes and Phenotypes, where controlled data access policies are in place and individuals are de-identified.” Also on p. 511, in column 3, paragraph 2, the European Systems Biology of Microorganisms program was incorrectly identified as SysMo-SEEK. It is SysMo. SysMO-Seek is a data-sharing platform developed for the 13 consortia that make up SysMo. The sentence now reads, “When developing a data-sharing platform called SysMO-SEEK for the European Systems Biology of Microorganisms program...”. The errors have been corrected in the PDF and HTML versions of this article.

Erratum: Beyond counting tumor cells

Jim Kling

Nat. Biotechnol. 30, 578–580 (2012); doi:10.1038/nbt.2295; published online 9 July 2012; corrected after print 7 December 2012

In the version of this article originally published, On-Q-It platform was called by its previous and outdated name, C5 (Circulating Cancer and Characterization Chip). It should have been called OnQChip. The error has been corrected in the HTML and PDF versions of the article.

Erratum: Antibody specification beyond the target: claiming a later-generation therapeutic antibody by its target epitope

Colin G Sandercock & Ulrich Storz

Nat. Biotechnol. 30, 615–618 (2012); doi:10.1038/nbt.2291; published online 9 July 2012; corrected after print 7 December 2012

In the version of this article initially published, in Table 1 “Patents claiming anti-TNFα antibodies,” patent US 7012135 should have been assigned to UCB Pharma and not UC Berkeley. The error has been corrected in the PDF and HTML versions of this article.

Erratum: Drug pipeline: Q212

Laura DeFrancesco

Nat. Biotechnol. 30, 817 (2012); doi:10.1038/nbt.2359; published online 10 September 2012; corrected after print 7 December 2012

In the version of this article initially published, the Thrombogenics drug Jetrea (recombinant microplasmin) was listed in “Notable upcoming regulatory decisions” as indicated for thyroid cancer. It should have read vitreomacular adhesion. The error has been corrected in the HTML and PDF versions of the article.

Corrigendum: Pharmacogenomics in clinical practice and drug development

Andrew R Harper & Eric J Topol

Nat. Biotechnol. 30, 1117–1124 (2012); doi:10.1038/nbt.2424; published online 8 November 2012; corrected after print 7 December 2012

In the version of this article initially published, the funders were not acknowledged. The funding statement should have read “E.J.T. was funded by the National Institutes of Health/National Center for Advancing Translational Sciences TR000109.” The error has been corrected in the HTML and PDF versions of the article.