6 State of New Product Development (As of October 30, 2013)

1. New Drugs

Development code (Generic name)	Category (Indications)	Region	Stage	Origin
TA-7284 (Canagliflozin)	SGLT2 inhibitor (Type 2 diabetes mellitus)	Japan	Filed (May, 2013)	In-house
MP-424 (Telaprevir)	NS3-4A protease inhibitor (Chronic hepatitis C)	Taiwan	Filed (Jan., 2013)	US:Vertex
		Korea	Phase 1	
MP-214 (Cariprazine)	Dopamine D3/D2 receptor partial agonist (Schizophrenia)	Japan	Phase 2b/3	Hungary: Gedeon Richter
MT-4666	α7nACh receptor agonist (Dementia of Alzheimer's type)	Japan	Phase 2	US: EnVivo
MT-9938 (Nalfurafine)	κ-opioid receptor agonist (Refractory pruritus in Hemodialysis patients)	US, Canada	Phase 2	Japan:Toray
MP-513 (Teneligliptin)	DPP-4 inhibitor (Type 2 diabetes mellitus)	Europe	Phase 2	In-house
		US	Phase 1	
MT-3995	Selective mineralocorticoid receptor antagonist (Diabetic nephropathy)	Europe	Phase 2	In-house
		Japan	Phase 2	
MT-1303	S1P receptor functional antagonist (Multiple sclerosis)	Europe	Phase 2	In-house
		Japan	Phase 1	
	(Psoriasis)	Europe	Phase 2	
	(Inflammatory bowel disease)	Europe	Phase1	
GB-1057 (Recombinant human serum albumin)	Recombinant human serum albumin (Stabilizing agent)	US	Phase 1	In-house
MP-124	PARP inhibitor (Acute ischemic stroke)	US, Canada	Phase 1	In-house
MP-157	Angiotensin Type 2 receptor agonist (Hypertension)	Europe	Phase 1	In-house

2. Additional Indications

Product name (Generic name)	Category (Indications)	Region	Stage	Origin	Notes
Tenelia (Teneligliptin)	DPP-4 inhibitor (Type 2 diabetes mellitus, additional combination)	Japan	sNDA filed (Feb., 2013)	In-house	
Radicut (Edaravone)	Free radical scavenger (Amyotrophic lateral sclerosis*)	Japan	Phase 3	In-house	
Talion (Bepotastine)	Selective histamine H1 receptor antagonist, anti-allergic agent (Pediatric allergic rhinitis)	Japan	Phase 3	Japan: Ube Industries	
	(Pediatric atopic dermatitis)		Phase 3		
Telavic (Telaprevir)	NS3-4A protease inhibitor (Chronic hepatitis C, [genotype2])	Japan	Phase 3	US:Vertex	
	(Chronic hepatitis C, [combination with Pegasys])		Phase 3		
	(Chronic hepatitis C, [combination with Feron])		Phase 3		
Remicade (Infliximab [recombinant])	Anti-human TNFα monoclonal antibody (Refractory Kawasaki disease*)	Japan	Phase 3	US:Janssen Biotech	
	(Behcet's disease with special lesions*)		Phase 3		
	(Pediatric Crohn's disease)		Phase 3		
	(Pediatric ulcerative colitis)		Phase 3		
	(Psoriasis: increased dose)		Phase 3		
Imusera (Fingolimod)	S1P receptor functional antagonist (Chronic inflammatory demyelinating polyradiculoneuropathy)	Multinational study	P3	In-house	Co-developed with Novartis Pharma, licensed to Novartis overseas
BindRen (Colestilan[INN])	Non-absorbed phosphate binder (Pediatric hyperphosphatemia)	Europe	Phase 3	In-house	
Cholebine (Colestimide[JAN])	Bile acid signal regulation (Type 2 diabetes mellitus)	Japan	Phase 2	In-house	
	Non-absorbed phosphate binder (Hyperphosphatemia)	Japan	Phase 1		

* Orphan drug designated

3. Licensing-out

Development code (Generic name)	Category (Indications)	Region	Stage	Licensee (Notes)
TA-7284 (Canagliflozin)	SGLT2 inhibitor (Type2 diabetes mellitus)	Europe	MAA filed (Jul., 2012)	US: Janssen Pharmaceuticals
	(Type2 diabetes mellitus / fixed dose combination with metformin, IR)	US	NDA filed (Feb., 2013)	
	(Type2 diabetes mellitus / fixed dose combination with metformin, IR)	Europe	MAA filed (Mar., 2013)	
	(Obesity)	US, Europe	Phase 2	
MP-513 (Teneligliptin)	DPP-4 inhibitor (Type 2 diabetes mellitus)	Korea	NDA filed (Sep., 2013)	Korea: Handok Pharmaceuticals
FTY720 (Fingolimod)	S1P receptor functional antagonist (Chronic inflammatory demyelinating polyradiculoneuropathy)	Multinational study	Phase 3	Switzerland: Novartis (Co-developed with Novartis Pharma in Japan)
T-0047 (Firategrast)	Cell adhesion inhibitor [α4β7/α4β1 inhibitor] (Multiple sclerosis)	Europe	Phase 2	UK: GlaxoSmithKline
MKC-242	5-HT1A receptor agonist (Insomnia)	US	Phase 2	US: MediciNova
Y-39983	ROCK (rho-kinase) inhibitor (Glaucoma)	Japan	Phase 2	Japan: Senju Pharmaceutical
MT-210	5-HT2A/ Sigma 2 receptor antagonist (Schizophrenia)	Europe	Phase 2	France: Cyrenaic
TA-7906	PDE4 inhibitor (Atopic dermatitis)	Japan	Phase 2	Japan: Maruho
MCC-847	Leukotriene D4 receptor antagonist (Asthma)	Korea	Phase 2	Korea: SAMA Pharma
MT-4580	Ca sensing receptor agonist (Secondary hyperparathyroidism in hemodialysis patients)	Japan	Phase 1/2	Japan: Kyowa Hakko Kirin
sTU-199 (Tenatoprazole)	Proton pump inhibitor (Gastroesophageal reflux disease)	Europe	Phase 1	France: Negma/Sidem
TT-138	β3 receptor agonist (Pollakiuria, urinary incontinence)	US	Phase 1	US: MediciNova
Wf-516	SSRI / 5HT1A receptor antagonists (Depression)	Europe	Phase 1	US: SONKEI Pharmaceuticals
Y-803	Bromodomain inhibitor (Hematological cancer)	US, Europe	Phase 1	Switzerland: OncoEthix (Development code: OTX015)

4. Changes Since Previous Announcement on July 31, 2013

(1) In-house Development

Development code/Product name (Generic name)	Category (Indications)	Region	As of July 31, 2013	As of October 30, 2013
MT-3995	Selective mineralocorticoid receptor antagonist (Diabetic nephropathy)	Japan	Phase 1	Phase 2
MT-1303	S1P receptor functional antagonist (Psoriasis)	Europe	None	Phase 2
	(Inflammatory bowel disease)	Europe	None	Phase 1
MP-146	Uremic toxin adsorbent (Chronic kidney disease)	US, Europe	Phase 3	Discontinued

(2) Licensing-out

Development code (Generic name)	Category (Indications)	Region	As of July 31, 2013	As of October 30, 2013
MP-513 (Teneligliptin)	DPP-4 inhibitor (Type 2 diabetes mellitus)	Korea	Phase 3	NDA filed (Sep., 2013)
MT-4580	Ca sensing receptor agonist (Secondary hyperparathyroidism in hemodialysis patients)	Japan	Phase 1	Phase 1/2

5. Additional Information for State of New Product Development (as of October 30, 2013)

(1) New Drugs

Development code (Generic name)	Information
TA-7284 (Canagliflozin)	As a selective SGLT2 inhibitor, TA-7284 decreases blood glucose levels by inhibiting reabsportion of glucose in the kidney. It was filed for type2 diabetes mellitus in Japan.
MP-424 (Telaprevir)	MP-424 is NS3-4A protease inhibitor, licensed from Vertex (US). It was filed in Taiwan, and Phase1 is conducted in Korea. It was launched as a treatment for chronic hepatitis C in Japan under the brand name, TELAVIC®.
MP-214 (Cariprazine)	MP-214 is a dopamine D3/D2 receptor partial agonist, licensed from Gedeon Richter (Hungary). Clinical stage is Phase 2b/3 for schizophrenia in Japan.
MT-4666	MT-4666 is an α7 nACh receptor agonist, licensed from EnVivo(US). Clinical stage is Phase 2 for dementia of Alzheimer's type.
MT-9938 (Nalfurafine)	MT-9938 is a κ-opioid receptor agonist, licensed from Toray (Japan). Clinical stage is Phase 2 for refractory pruritus in the US.
MP-513 (Teneligliptin)	MP-513 selectively inhibits DPP-4, thus accelerates the insulin secretion after meal intake without effect on the fasting insulin secretion. Clinical stages in the US and Europe are Phase 1 and Phase 2, respectively. It has been marketed in Japan for the treatment of type2 diabetes mellitus in September 2012, under the brand name of TENELIA®.
MT-3995	MT-3995 is a selective mineralocorticoid receptor antagonist. Clinical stage is Phase2 for diabetic nephropathy in Europe and Japan.
MT-1303	MT-1303 is a sphingosine-1-phosphate receptor functional antagonist. Clinical stage is Phase1 in Japan, and Phase2 for Multiple sclerosis in EU, is Phase2 for Psoriasis in EU, is Phase1 for inflammatory bowel diseasein EU as a succesor of Imusera/Gilenya.
GB-1057(Recombinant human serum albumin)	GB-1057 is a recombinant human serum albumin. Clinical stage is Phase 1 as a stabilizing agent in the US.
MP-124	MP-124 is a PARP inhibitor that has neuroprotective effect. Clinical stages are Phase 1 in the US and Canada .
MP-157	MP-157 is an angiotensin type2 receptor agonist. Clinical stage is Phase 1 in Europe.

(2) Additional Indications

Product name (Generic name)	Information
Tenelia (Teneligliptin)	Tenelia is developed for the treatment of type2 diabetes mellitus. It selectively inhibits dipeptidyl peptidase 4 (DPP-4), thus accelerates the insulin secretion after meal intake without effect on the fasting insulin secretion. It was launched in September, 2012. An application for additional combination therapy was filed.
Radicut (Edaravone)	(Amyotrophic lateral sclerosis [Orphan drug designated in June, 2005]) Radicut is a free radical scavenger. In 2001, it was launched for improvement neurological symptoms at the acute stage of cerebral infarction, interference with activities of daily living and functional disability. Clinical stage is Phase 3 for ALS.
Talion (Bepotastine)	Talion was launched as an anti-allergic agent for adult in 2000. (Pediatric allergic rhinitis) Clinical stage is Phase 3.
	(Pediatric atopic dermatitis) Clinical stage is Phase 3.
Telavic (Telaprevir)	Telavic was launched as a treatment for chronic hepatitis C in 2011. (Chronic hepatitis C [genotype2]) Clinical stage is Phase 3.
	(Chronic hepatitis C, [combination with Pegasys]) Clinical stage is Phase 3.
	(Chronic hepatitis C, [combination with Feron]) Clinical stage is Phase 3.
Remicade (Infliximab[recombinant])	Remicade is an anti-human TNFα monoclonal antibody. It was launched as a treatment for Crohn's disease in 2002, followed by rheumatoid arthritis, intractable uveoretinitis caused by Behcet's disease, psoriasis, ankylosing spondylitis, and ulcerative colitis. (Refractory Kawasaki disease [Orphan drug designated in September, 2012]) Clinical stage is Phase 3.
	(Behcet's disease with special lesions [Orphan drug designated in September, 2012]) Clinical stage is Phase 3.
	(Pediatric Crohn's disease) Clinical stage is Phase 3.
	(Pediatric ulcerative colitis) Clinical stage is Phase 3.
	(Psoriasis: inceased dose) Clinical stage is Phase 3.
Imusera (Fingolimod)	Sphingosine-1-phosphate receptor functional antagonist. Imusera had been jointly developed with Novaltis Pharma for the domestic market. Imusera was launched as a treatment for multiple sclerosis in 2011. (Chronic inflammatory demyelinating polyradiculoneuropathy) Clinical stage is Phase 3, multinational study. It has been jointly developed with Novaltis Pharma for the domestic market.
BindRen Colestilan[INN]	Cholebine is a bile acid eliminant. The product has been marketed in Japan for the treatment of hypercholesterolemia from 1999, under the brand name of CHOLEBINE®. (Pediatric hyperphosphatemia) Clinical stage is Phase 3. It has been launched for the treatment of hyperphosphatemia in dyalisis patients in Germany and Austraria.
Cholebine (Colestimide[JAN])	Cholebine is a bile acid eliminant. It was launched as a treatment for hypercholesterolemia in 1999. (Type 2 diabetes mellitus) Clinical stage is Phase 2.
	(Hyperphosphatemia) Clinical stage is Phase 1.

(3) Licensing-out

Development code (Generic name)	Information
TA-7284 (Canagliflozin)	As a selective SGLT2 inhibitor, TA-7284 decreases blood glucose levels by inhibiting reabsorption of glucose in the kidney. In Europe, MAA was submitted by Janssen Pharmaceuticals in June 2012. It has been marketed in the US for the treatment of type2 diabetes mellitus, under the brand name of INVOKANA™. NDA, in the US in Dec. 2012, and MAA, in Europe in March 2013, were submitted for the fixed dose combination with metformin, IR. Phase 2 clinical trials in obesity in Europe and the US are completed.
MP-513 (Teneligliptin)	MP-513 selectively inhibits DPP-4, thus accelerates the insulin secretion after meal intake without effect on the fasting insulin secretion. In Korea, NDA was submitted by Handok in Kore in September 2013.
FTY720 (Fingolimod)	Sphingosine-1-phosphate receptor functional antagonist. It was launched as a treatment for multiple sclerosis under the brandname of Imusera by Mitsubishi Tanabe Pharma in Japan. It is also marketed under the brand name of Gilenya by Novartis. (Chronic inflammatory demyelinating polyradiculoneuropathy) Multinational study is Phase 3, co-development with Novartis Pharma in Japan.
T-0047 (Firategrast)	T-0047 inhibits the cell adhesion and cell migration processes of white blood cells in inflammatory region. Phase 2 is conducted by GSK in Europe, etc.
MKC-242	MKC-242 is a serotonin 1A receptor agonist, used to treat psychiatric disorders such as anxiety and depression. This compound is expected to express rapid onset with low possibility of dependency. MediciNova (US) is conducting Phase 2 for insomnia.
Y-39983	Y-39983 is a ROCK (Rho-kinase) inhibitor, which relaxes vascular smooth muscles. Clinical stage is Phase 2 in Japan by Senju Pharmaceutical.
MT-210	MT-210 is a 5-HT2A/ Sigma 2 receptor antagonist. Clinical stage is Phase 2 in Europe by Cyrenaic (France).
TA-7906	TA-7906 is a PDE4 inhibitor. Clinical stage is Phase 2 for the treatment of atopic dermatitis in Japan by Maruho.
MCC-847 (Masilukast)	Leukotriene D4 receptor antagonist. Clinical stage is Phase 2 for the treatment of asthma in Korea by SAMA Pharma (Korea).
MT-4580	Ca sensing receptor agonist. Clinical stage is Phase 1/2 for the treatment of secondary hyperparathyroidism in Hemodialysis patients in Japan by Kyowa Hakko Kirin (Japan).
sTU-199 (Tenatoprazole)	sTU-199 is an isomer of TU-199, developed in Japan, and licensed to Negma (France). Pharmacokinetic/pharmacodynamic results from Phase 1 in Europe and the US demonstrated that sTU-199 controlled gastric acid secretion at nighttime in patients receiving this compound once-daily, with the long half-life. It is expected that this compound could reveal rapid improvement for non-erosive reflux disease. Sidem Pharma, a subsidiary of Negma, is conducting phase 1 in Europe.
TT-138	TT-138 is a β3 receptor agonist used to treat pollakiuria and urinary incontinence. Phase 1 is conducted by MediciNova in the US.
Wf-516	SSRI / 5HT1A receptor antagonists. Clinical stage is Phase 1 for the treatment of depression in Europe by SONKEI Pharmaceuticals (US).
Y-803	Bromodomain inhibitor. Clinical stage is Phase 1 for the treatment of hematological cancer in the US and Europe by OncoEthix (Switzerland).

Reference

Major Ethical Drugs

Remicade (Infliximab)	Launch: May 2002	Category	Anti-TNFα monoclonal antibody

Remicade is an anti-TNFα antibody, which targets TNFα, an important inflammatory cytokine. It is very fast-acting and its efficacy is sustained for eight weeks with a single administration. It has indications for the treatment of rheumatoid arthritis, Crohn's disease, Behcet's disease with refractory uveoretinitis, psoriasis, ankylosing spondylitis, and ulcerative colitis. In addtion, in July 2009 and August 2011, changes in usage/dosage were approved for rheumatoid arthritis, and Crohn's disease, respectively.
Origin: Jannsen Biotech

Ceredist (Taltirelin)	Launch: Sep. 2000	Category	Agent for treatment of spinocerebellar degeneration

Thyrotropin releasing hormone (TRH) was known to be effective against ataxia caused by spinocerebellar degeneration, but it was previously administered only through injection. Ceredist, developed by Tanabe, is the world's first oral TRH derivative drug. An additional formulation, orally disintegrating tablets, was launched in October 2009.

Maintate (Bisoprolol)	Launch: Nov. 1990	Category	Selective β1 antagonist (Treatment of hypertension, angina pectoris, and arrhythmias)

Maintate is a representative β -blocker used in more than 100 countries around the world. It exhibits high selectivity for β 1 receptor and excellent phamacokinetics profiles. It has high efficacy and safety, and there is evidence for its cardioprotective action. In addition to the indication of chronic heart failure which was approved in May, 2011, the indication of atrial fibrillation has been newly approved in June, 2013 . Maintate is the only β-blocker with both indications of chronic heart failure and atrial fibrillation in Japan.
Origin: Merck Serono (Germany)

Talion (Bepotastine)	Launch: Oct. 2000	Category	Agent for treatment of allergic disorders

Talion has rapid onset of anti-histamine(H1) effects and has been demonstrated to be effective for allergic rhinitis, urticaria, and pruritus accompanying dermatitis. It has minimal incidence of sedation. An additional formulation, orally disintegrating tablets, was approved in March and launched in July 2007.
Origin: Ube Industries

Kremezin	Launch: Apr. 2011	Category	Agent for treatment of Chronic renal failure

Kremezin is an oral absorptive charcoal consisting of porous spherical activated carbon of high purity. It absorbs and excretes uremic toxins out of the body. Keremezin was introduced to the Japanese market in December 1991 as the first pharmaceuticals drug in the world for proactive treatment of chronic renal failure (progressive). In April, 2011, the marketing rights were transferred from Daiichi Sankyo to MTPC.
Origin, Manufacturer and distributor: Kureha

Urso (Ursodeoxycholic Acid)	Launch: July 1962	Category	Agent for improving hepatic, biliary and digestive functions

Ursodeoxycholic acid (UDCA), principal ingredient of Urso, had been extracted from blackbear's gallbladder in the past and has been used in the treatment of various digestive diseases. It is one of the bile acids existing in the human body. Urso has effects of hapatic protection and indications of improvement of liver function in chronic liver disease and hepatitis C, and dissolution of gallstones.

Venoglobulin IH (Human immunoglobulin)	Launch: Jan. 1992	Category	Plasma derivatives

Venoglobulin IH is intravenous human immunoglobulin derived from donated plasma in Japan. It shows high efficacy on serious infectious diseases in combined administration with an anti-bacterial agent due to its opsonic, immuno-bacteriolytic and antibody-dependent cytotoxic effects and neutralizing effects on toxics and viruses. In October 2010 the indication of improvement of muscle weakness associated with polymyositis or dermatomyositis, in February 2011 the indication of generalized myasthenia gravis (only in case of insufficient response to steroids or immunosuppressants) , and in October 2011 the indication of improvement of muscle weakness associated with chronic inflammatory demyelinating polyneuropathy (including polydomous motion-neuropathy) were all approved. In addition, in August 2013, the indication of pemphigus (only in case of insufficient response to steroids) has been approved. Those additional indications are expected to contribute better QOL for the patients.

Anplag (Sarpogrelate)	Launch: Oct. 1993	Category	5-HT2 blocker (Anti-platelet agent)

Anplag, an oral anti-platelet, is used to patients with arteriosclerosis obliterans (ASO) to improve ischemic symptoms like as ulcer, pain and coldness of limbs associated with chronic arterial occlusion. Anplag especially improves the bloodstream of collateral circulation and inhibits platelet aggregation, vascular contraction and growth of vascular smooth muscle cell by antagonistic action to serotonin receptor in platelets and vessels.

Radicut (Edaravone)	Launch: Jun. 2001	Category	Free radical scavenger (Cerebral neuroprotectant)

Radicut is the world's first brain protecting agent (free radical scavemger) shown to improve neurological symptoms, interference with activities of daily living, and disability (at hospital discharge) in patients at acute stage of cerebral infarction. Specific indications include the treatment of various types of infarction (cerebral lacunar, atherothrombotic and cardiogenic infarction) It is initiated administration within 24 hours after onset, and is not administrated for more than 14 days. An additional formulation, Radicut bag for I.V. Infusion, was launched in May 2010.

Depas (Etizolam)	Launch: Mar. 1984	Category	Antianxiety agent

Depas is the most widely used anxiolytic agent in Japan. Due to its broad pharmacological properties, Depas shows reasonable effectiveness for psychosomatic disease, neurosis, low back pain, neck pain and muscle-contraction headache, depression and sleep disorder.

Simponi (Golimumab)	Launch: Sep. 2011	Category	Anti-TNFα monoclonal antibody

Simponi is a human anti-TNFα monoclonal antibody for the treatment of rheumatoid arthritis (including prevention of articular structural damage), and co-marketed with Janssen Pharmaceutical. It shows a long acting efficacy by subcutaneous injection once every four weeks, and currently is under development for the ulcerative colitis by Janssen Pharmaceutical.
Origin: Janssen Biotech

Lexapro (Escitalopram)	Launch: Aug. 2011	Category	Selective sertonin reuptake inhibitor (SSRI)

Lexapro is a selective serotonin reuptake inhibitor with high selectivity of serotonin transporter, and approved in more than 97 countries and regions. By having good efficacy and tolerability, in addition to simple administration, it is expected to contribute to the improvement of medication adherence for patients with depression.
Origin: H. Lundbeck, Manufacturer and distributor: Mochida Pharmaceutical

Herbesser (Diltiazem)	Launch: Feb. 1974	Category	Calcium antagonist (Treatment of angina pectoris and hypertension)

Herbesser is a representative calcium antagonist that is used in more than 110 countries around the world. In addition to a blood pressure lowering effect, it has a cardioprotective action in patients with hypertension or angina pectoris by reducing the cardiac load through a heart rate lowering effect and by increasing the oxygen supply through a coronary vasodilating effect.

Tanatril (Imidapril)	Launch: Dec. 1993	Category	ACE inhibitor (Treatment of hypertension)

Tanatril shows excellent blood pressure control with effective organ protection as well as minimal incidence of dry cough, a common side effect of ACE inhibitors. With the approval of an additional indication in January 2002, it became the first drug in Japan approved for diabetic nephropathy with type I diabetes mellitus.

TETRABIK (Absorbed Diphtheria-purified Pertussis-tetanus inactivated polio	Launch: Oct. 31. 2012	Category	Prevention of Diphtheria, Pertussis, Tetanus and polio

TETRABIK is a combined vaccine that prevents acute poliomyelitis (polio), pertussis, diphtheria and tetanus. It is used at 1st term (initial 3 times) and 1st term (additional 1 time), in total 4 times, of the regular vaccination. By using TETRABIK, It is expected to avoid the very rare occurrence of paralytic symptoms similar to those in natural polio due to live-attenuated oral polio vaccine.
Origin, Manufacturer and distributor: BIKEN (The Research Foundation for Microbial Diseases of Osaka University)

Mearubik (Live Attenuated Measles and Rubella Vaccine)	Launch: Dec. 2005	Category	Prevention of measles and rubella

Mearubik is the combination vaccine for measles and rubella, and children are able to receive both measles and rubella shot at a time with Mearubik, which is used at the 1st term and the 2nd term of its regular vaccination. By both reducing the number of injections and relieving physical pain on people to be vaccinated, It is expected to contribute enhancement of immunization rate for measles and rubella in Japan.
Origin, Manufacturer and distributor: BIKEN (The Research Foundation for Microbial Diseases of Osaka University)