

Development pipeline (as of February 1, 2012)

Development code	Indication # Additional indication	Stage (date)	Generic name Product name Dosage form	Origin Overseas name (Collaborator)	Mode of Action
<b><u>Oncology</u></b>					
RG435	Breast cancer #	Approved Sep 11.	bevacizumab Avastin Injection	Roche Avastin	Anti-VEGF(Vascular Endothelial Growth Factor) humanized monoclonal antibody
	Gastric cancer #	Phase III			
	Breast cancer (adjuvant) #	Phase III Multinational study			
	Glioblastoma #	Phase III Multinational study			
	Glioblastoma (relapsed) #	Phase II			
EPOCH	Chemotherapy-induced anemia #	-	epoetin beta Epogin Injection	In-house	Recombinant human erythropoietin
RG1273	Breast cancer	Phase III Multinational study	pertuzumab Injection	Roche	Humanized HER dimerization inhibitory monoclonal antibody
RG3502	Breast cancer	Phase III Multinational study	Injection	Roche	HER2 antibody-drug conjugate (T-DM1)
GA101 (RG7159)	Indolent NHL	Phase III Multinational study	obinutuzumab Injection	Roche	Humanized anti-CD20 monoclonal antibody
	Aggressive NHL	Phase III Multinational study			
RG1415	Non-small cell lung cancer (1st line) #	Phase II	erlotinib HCl Tarceva Oral	Roche/OSI Tarceva	EGFR tyrosine kinase inhibitor
MRA	Pancreatic cancer #	Phase I / II	tocilizumab Actemra Injection	In-house	Humanized anti-human IL-6 receptor monoclonal antibody

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AF802	Non-small cell lung cancer	Phase I / II	Oral	In-house	ALK inhibitor
WT4869	Myelodysplastic syndromes	Phase I / II	Injection	In-house / Dainippon Sumitomo Pharma	WT1 peptide cancer vaccine
	Solid tumors	Phase I			
CIF (RG7167)	Solid tumors	Phase I	Oral	In-house  (Roche)	MEK inhibitor
		Phase I Overseas			
CKI27 (RG7304)	Solid tumors	Phase I	Oral	In-house  (Roche)	Raf and MEK dual inhibitor
		Phase I Overseas			
GC33 (RG7686)	Liver cancer	Phase I	Injection	In-house  (Roche)	Humanized anti-Glypican-3 monoclonal antibody
		Phase I Overseas			
PA799	Solid tumors	Phase I Overseas	Oral	In-house	PI3K class I inhibitor
RG3638	Non-small cell lung cancer	Phase I	Injection	Roche	Humanized anti-Met antibody
<b>Bone and Joint Diseases</b>					
MRA	Systemic-onset juvenile idiopathic arthritis (sJIA) #	Approved Aug. 11 EU	tocilizumab Actemra / RoActemra(EU) Injection	In-house  (Roche)	Humanized anti-human IL-6 receptor monoclonal antibody
	Rheumatoid arthritis (new formulation: subcutaneous injection)	Phase III			
		Phase III Overseas			

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NRD101	Enthesopathy (Lateral epicondylitis, Patellar tendinitis, Achilles tendinopathy, Plantar fasciitis)	Phase III	sodium hyaluronate Suvenyl Injection	In-house	Sodium hyaluronate
RG484	Osteoporosis	Phase II / III	ibandronate sodium hydrate Injection	Roche Boniva (US) / Bonviva (EU) (Taisho Pharmaceutical)	Bisphosphonate
		Phase II	ibandronate sodium hydrate Oral		
SA237	Rheumatoid arthritis	Phase I	Injection	In-house	Humanized anti-human IL-6 receptor monoclonal antibody
<b>Transplant, Immunology and Infectious Diseases</b>					
RG442	Chronic hepatitis B #	Approved Sep. 11	peginterferon alfa-2a Pegasys Injection	Roche Pegasys	Peginterferon alfa-2a agent (recombinant)
RG7128	Chronic hepatitis C	Development suspended	mericitabine  Oral	Roche	Polymerase inhibitor
<b>Other Diseases</b>					
CSG452	Type II diabetes	Phase III	tofogliflozin hydrate  Oral	In-house	SGLT2 inhibitor
RG1678	Schizophrenia	Phase III Multinational study	bitopertin  Oral	Roche	Glycine reuptake inhibitor
RG1450	Alzheimer's disease	Phase I	gantenerumab  Injection	Roche/Morphosys	Human anti-amyloid-beta monoclonal antibody
RG7090	Major depressive disorder	Phase I Overseas	Oral	Roche	mGluR5 antagonist
RG3637	Asthma	Phase I	lebrikizumab  Injection	Roche	Humanized anti-IL-13 antibody

Changes from the last announcement on October 21, 2011

Bone and Joint Diseases

-NRD101 (Suvenyl)

Phase III (Enthesopathy)

Transplant, Immunology and Infectious Diseases

-RG7128

Development suspended (Chronic hepatitis C)

R&D Activities (Jan. 1, 2011 – Feb. 1, 2012)

As for clinical development activities in Japan, the Company saw progress as described below:

Oncology

- In February 2011, we obtained an approval for an additional indication of a 5-FU derivative, RG340 (product name: Xeloda) for advanced or recurrent gastric cancer, which is not amenable to curative resection.
- In March 2011, we obtained an approval for an additional indication of a humanized anti-HER2 monoclonal antibody, RG597 (product name: Herceptin) for advanced or recurrent gastric cancer overexpressing HER2, not amenable to curative resection.
- In July 2011, we obtained an approval for an additional indication of an EGFR tyrosine kinase inhibitor, RG1415 (product name: Tarceva) for pancreatic cancer.
- In September 2011, we obtained an approval for an additional indication of a humanized anti-VEGF monoclonal antibody, RG435 (product name: Avastin), for breast cancer, as a combination therapy with paclitaxel.
- In May 2011, we started a Phase III multinational study (expected indication: breast cancer) for a HER2 antibody-drug conjugate (T-DM1), RG3502.
- In October and November 2011, we started a Phase III multinational study (expected indication: aggressive NHL and indolent NHL) conducted by Roche for a humanized anti-CD20 monoclonal antibody, GA101, respectively.
- In August and September 2011, we started a Phase I study (expected indication: Myelodysplastic syndromes and solid tumors) for a WT1 peptide cancer vaccine, WT4869, respectively.
- In August 2011, we started a Phase I study (expected indication: non-small cell lung cancer) for a humanized anti-Met antibody, RG3638.

Bone and Joint diseases

- In April 2011, we launched an active Vitamin D3 derivative, ED-71 (product name: Ediolol), for osteoporosis.
- In October 2011, we started a Phase III study (expected indication: enthesopathy (lateral epicondylitis, patellar tendinitis, achilles tendinopathy, plantar fasciitis)) for a sodium hyaluronate, NRD101 (product name: Suvenyl).

Renal Diseases

- In July 2011, we launched a continuous erythropoietin receptor activator, RG744 (product name: Mircera), for renal anemia.

Transplant, Immunology and Infectious Diseases

- In July 2011, we obtained an approval for an additional indication of an anti-viral agent, RG964 (Product name: Copegus), in combination with a peginterferon

- alfa-2a agent (recombinant), RG442 (product name: Pegasys), for compensated liver cirrhosis caused by hepatitis C virus.
- In September 2011, we obtained an approval for an additional indication of a peginterferon alfa-2a agent (recombinant), RG442 (product name: Pegasys), for chronic hepatitis B.
- After prioritizing the R&D portfolio, we decided not to develop a polymerase inhibitor, RG7128 (expected indication: chronic hepatitis C).

#### Other Diseases

- In January 2011, we started a Phase III multinational study (expected indication: schizophrenia) for a glycine reuptake inhibitor, RG1678.
- In June 2011, we started a Phase I study (expected indication: major depressive disorder) for an mGluR5 antagonist, RG7090.
- In August 2011, we started a Phase I study (expected indication: asthma) for a humanized anti-IL-13 antibody, RG3637.

Also, as for development activities overseas, the Company saw progress as described below:

- In April and in August 2011, Roche obtained an approval for a humanized anti-human IL-6 receptor monoclonal antibody, MRA (product name: Actemra/RoActemra), for systemic-onset juvenile idiopathic arthritis (sJIA) in US and EU, respectively.

## Major clinical trials in oncology field currently running in Japan

Theme	Expected Indication	Regimen	Stage	Planned Filing Date
RG435 (bevacizumab) Avastin	Breast cancer	paclitaxel + RG435	Approved (Sep. 11)	-
	Breast cancer (adjuvant)	standard chemotherapy ± RG435	BEATRICE study Phase III Multinational study	2014
	Glioblastoma	temozolomide ± RG435	AVAglio study Phase III Multinational study	2014
	Glioblastoma [relapsed]	RG435	Phase II	2014
RG1415 (erlotinib HCl) Tarceva	Pancreatic cancer	gemcitabine + RG1415	Approved (Jul. 11)	-
	Non-small cell lung cancer (1st line)	RG1415	Phase II	2012
RG1273 (pertuzumab)	Breast cancer	RG597 + docetaxel ± RG1273	CLEOPATRA study Phase III Multinational study	2012
RG3502 (T-DM1)	Breast cancer	RG3502	MARIANNE study Phase III Multinational study	2013
GA101/RG7159 (obinutuzumab)	Indolent NHL	GA101 + chemo vs Rituximab + chemo (G-chemo vs R-chemo)	GALLIUM study Phase III Multinational study	Post 2015
	Aggressive NHL	GA101 + CHOP vs Rituximab + CHOP (G-CHOP vs R-CHOP)	GOYA study Phase III Multinational study	Post 2015