

Development pipeline (as of July 25, 2019)

Development code	Indication # Additional indication	Stage (Date)	Generic name Product name Dosage form	Origin Overseas name (Collaborator)	Mode of Action
<u>Oncology</u>					
RG6268	Solid tumors [<i>NTRK</i> fusion-positive]	Approved (19/06)	entrectinib Rozlytrek Oral	Roche/Nerviano Medical Sciences	ROS1/TRK inhibitor
	Non-small cell lung cancer (NSCLC) #	Filed (19/03)			
RG7446	Small cell lung cancer #	Filed (18/12)	atezolizumab Tecentriq Injection	Roche Tecentriq	Engineered anti-PD-L1 monoclonal antibody
	Breast cancer #	Filed (18/12)			
	NSCLC (adjuvant) #	Phase III Multinational study			
	NSCLC (neoadjuvant) #	Phase III Multinational study			
	Urothelial carcinoma #	Phase III Multinational study			
	Muscle invasive urothelial carcinoma (adjuvant) #	Phase III Multinational study			
	Renal cell carcinoma #	Phase III Multinational study			
	Renal cell carcinoma (adjuvant) #	Phase III Multinational study			
	Early breast cancer #	Phase III Multinational study			
	Ovarian cancer #	Phase III Multinational study			
	Prostate cancer #	Phase III Multinational study			
	Hepatocellular carcinoma #	Phase III Multinational study			
	Head and neck carcinoma (adjuvant) #	Phase III Multinational study			
RG435	Renal cell carcinoma #	Phase III Multinational study	bevacizumab Avastin	Roche Avastin	Anti-VEGF (Vascular Endothelial Growth Factor) humanized monoclonal antibody

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	Hepatocellular carcinoma #	Phase III Multinational study	Injection		
RG3502	Breast cancer (adjuvant) #	Phase III Multinational study	trastuzumab emtansine Kadcyla Injection	Roche Kadcyla	Anti-HER2 antibody-tubulin polymerization inhibitor conjugate
RG7440	Prostate cancer	Phase III Multinational study	ipatasertib	Roche/Array BioPharma	AKT inhibitor
	Breast cancer	Phase III Multinational study	Oral		
RG7596	Diffuse large B-cell lymphoma (DLBCL)	Phase III Multinational study	polatuzumab vedotin Injection	Roche	Anti-CD79b antibody-drug conjugate
RG6264	Breast cancer (Fixed-dose combination, subcutaneous injection)	Phase III Multinational study	trastuzumab/pertuzumab Herceptin/Perjeta Injection	Roche Herceptin/Perjeta	Anti-HER2 humanized monoclonal antibody/ HER2 dimerization inhibitory humanized monoclonal antibody
AF802 / RG7853	NSCLC (adjuvant) #	Phase III Multinational study	alectinib Alecensa Oral	In-house Alecensa (Roche)	ALK inhibitor
GC33	Hepatocellular carcinoma	Phase I Multinational study*	codrituzumab Injection	In-house	Anti-Glypican-3 humanized monoclonal antibody
CKI27	Solid tumors	Phase I	 Oral	In-house	Raf and MEK dual inhibitor
ERY974	Solid tumors	Phase I	 Injection	In-house	Anti-Glypican-3/CD3 bispecific antibody
RG7421	Solid tumors	Phase I	cobimetinib Oral	Roche/Exelixis Cotellic	MEK inhibitor
RG7802	Solid tumors	Phase I	cibisatamab Injection	Roche	Anti-CEA/CD3 bispecific antibody
RG7828	Hematologic tumors	Phase I	mosunetuzumab Injection	Roche	Anti-CD20/CD3 bispecific antibody

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<u>Bone and Joint Diseases</u>					
ED-71	Osteoporosis	Filed (18/02) China	eldecalcitol Edirol Oral	In-house	Activated vitamin D ₃ agent
NRD101	Knee osteoarthritis /Shoulder periarthritis	Phase III China	purified sodium hyaluronate Suvenyl Injection	In-house	Sodium hyaluronate
<u>Renal Diseases</u>					
EOS789	Hyperphosphatemia	Phase I	Oral	In-house	–
<u>Autoimmune Diseases</u>					
RG7845	Rheumatoid arthritis	Phase I	fenebrutinib Oral	Roche	BTK inhibitor
MRA / RG1569	Systemic sclerosis #	Development discontinued	tocilizumab Actemra Injection	In-house Actemra/RoActemra (EU) (Roche)	Humanized anti-human IL-6 receptor monoclonal antibody
<u>Neurology</u>					
RG1450	Alzheimer's disease	Phase III Multinational study	gantenerumab Injection	Roche/MorphoSys	Anti-amyloid-beta human monoclonal antibody
SA237 / RG6168	Neuromyelitis optica spectrum disorder (NMOSD)	Phase III Multinational study*	satralizumab Injection	In-house (Roche)	Anti-IL-6 receptor recycling antibody
RG6042	Huntington's disease	Phase III Multinational study	Injection	Roche/Ionis Pharmaceuticals	Antisense oligonucleotide targeting <i>HTT</i> mRNA
RG6206	Duchenne muscular dystrophy (DMD)	Phase II/III Multinational study	Injection	Roche/Bristol-Myers Squibb	Anti-myostatin adnectin
RG7916	Spinal muscular atrophy (SMA)	Phase II/III Multinational study	risdiplam Oral	Roche/PTC Therapeutics	SMN2 splicing modifier
RG7935	Parkinson's disease	Phase I	prasinezumab	Roche/Prothena	Anti- α -synuclein monoclonal antibody

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			Injection		
GYM329 / RG6237	Neuromuscular disease	Phase I	Injection	In-house (Roche)	—
RG7906	Psychiatric disorders	Phase I	Oral	Roche	—
RG6100	Alzheimer's disease	Phase I	injection	Roche/AC Immune	Anti-tau humanized monoclonal antibody
RG7314	Autism spectrum disorder	Phase I	balovaptan Oral	Roche	Vasopressin 1a receptor antagonist
Other diseases					
ACE910 / RG6013	Hemophilia A (Non-inhibitor) #	Approved (19/03) Europe	emicizumab Hemlibra Injection	In-house Hemlibra (Roche)	Anti-FIXa/FX bispecific antibody
RG7716	Diabetic macular edema	Phase III Multinational study	faricimab	Roche	Anti-VEGF/Ang2 bispecific antibody
	Wet age-related macular degeneration	Phase III Multinational study	Injection		
CIM331**	Pruritus in dialysis patients	Phase II	nemolizumab Injection	In-house	Anti-IL-31 receptor A humanized monoclonal antibody
SKY59 / RG6107	Paroxysmal nocturnal hemoglobinuria (PNH)	Phase I/II Multinational study	crovalimab Injection	In-house (Roche)	Anti-C5 recycling antibody
PCO371	Hypoparathyroidism	Phase I	Oral	In-house	PTH1 receptor agonist
AMY109	Endometriosis	Phase I	Injection	In-house	—

In principle, completion of first dose is regarded as the start of clinical studies in each phase.

* Multinational studies managed by Chugai

** Development for atopic dermatitis: Out-licensed to Galderma (Overseas) and Maruho (Japan)

Changes from the last announcement on January 31, 2019

Oncology

- RG6268 Filed → Approved (Solid tumors (*NTRK* fusion-positive))
- RG7446 Phase III multinational study (NSCLC (neoadjuvant) : development started)

Neurology

- MRA/RG1569 Phase III multinational study (Systemic sclerosis) → Development discontinued

Neurology

- RG7314 Phase I (Autism spectrum disorder : development started)

R&D Activities

For the changes during the second quarter of FY2019 (January 1 – June 30), please refer to page 4 of “CONSOLIDATED FINANCIAL STATEMENTS (IFRS) (Non-Audited) (for the second quarter of the fiscal year 2019).”

Major clinical trials in oncology field

Treatment	Expected Indication	Study design	Study name	Stage	Planned filing year
RG3502, Kadcylla	Breast cancer (adjuvant)	Kadcyla vs. Herceptin	KATHERINE	Phase III	2019
		Kadcyla + Perjeta vs. Herceptin + Perjeta + chemo	KAITLIN	Phase III	
RG7446 (Tecentriq)	Non-small cell lung cancer (NSCLC) [1st line]	PD-L1 positive: Tecentriq vs. chemo	IMpower110	Phase III	-
		TMB* positive: Tecentriq vs. chemo	B-FAST	Phase II/III	
		Non-Squamous: Chemo ± Tecentriq	IMpower132	Phase III	
		Squamous: Chemo ± Tecentriq	IMpower131	Phase III	
	NSCLC (neoadjuvant)	Chemo ± Tecentriq	IMpower030	Phase III	2021
	NSCLC (adjuvant)	Tecentriq vs. best supportive care	IMpower010	Phase III	2022 and beyond
	Small cell lung cancer	carboplatin + etoposide ± Tecentriq	IMpower133	Phase III	Filed
	Urothelial carcinoma (UC)	Tecentriq ± chemo vs. chemo	IMvigor130	Phase III	2021
	Muscle invasive UC (adjuvant)	Tecentriq vs. observation	IMvigor010	Phase III	2020
	Renal cell carcinoma	Tecentriq + Avastin vs. sunitinib	IMmotion151	Phase III	2020
	Renal cell carcinoma (adjuvant)	Tecentriq	IMmotion010	Phase III	2022 and beyond
	Breast cancer	TNBC** : nab-paclitaxel ± Tecentriq	IMpassion130	Phase III	Filed
		TNBC: paclitaxel ± Tecentriq	IMpassion131	Phase III	
	Early breast cancer	TNBC (adjuvant): paclitaxel ± Tecentriq	IMpassion030	Phase III	2021
		TNBC (neoadjuvant): nab-paclitaxel ± Tecentriq	IMpassion031	Phase III	
		HER2+BC (neoadjuvant): Herceptin + Perjeta + chemo ± Tecentriq	IMpassion050	Phase III	
	Ovarian cancer	carboplatin + paclitaxel + Avastin ± Tecentriq	IMaGYN050	Phase III	2020
Prostate cancer	Castration-resistant prostate cancer: enzalutamide ± Tecentriq	IMbassador250	Phase III	2021	
Hepatocellular carcinoma	Tecentriq + Avastin vs. sorafenib	IMbrave150	Phase III	2021	
Head and neck carcinoma (adjuvant)	Tecentriq	IMvoke010	Phase III	2021	
RG7440 (ipatasertib)	Prostate cancer	abiraterone ± RG7440	IPATential150	Phase III	2021
	Breast cancer	TNBC: paclitaxel ± RG7440 HR+ breast cancer: paclitaxel ± RG7440	IPATunity130	Phase III	2020
RG7596 (polatuzumab vedotin)	DLBCL	Chemo ± RG7596	POLARIX	Phase III	2021
RG6264***	Breast cancer	RG6264 (SC) + chemo vs. Herceptin (IV) + Perjeta (IV) + chemo	FeDeriCa	Phase III	2021
RG6268 (Rozlytrek)	NSCLC	ROS1 fusion-positive NSCLC: Rozlytrek	STARTRK2	Phase II	Filed
AF802, Alecensa	NSCLC (adjuvant)	ALK fusion-positive NSCLC: Alecensa vs. chemo	ALINA	Phase III	2022 and beyond

* TMB: tumor mutational burden ** TNBC: triple negative breast cancer *** Fixed-dose combination, subcutaneous injection