

## Pharmaceutical Business

### Clinical Development as of October 31, 2018

<In-house development>

Code (Generic Name)	Potential Indication/Dosage form	Mechanism		Phase (Region)	Note
JTZ-951 (enarodustat)	Anemia associated with chronic kidney disease /Oral	HIF-PH inhibitor	Increases red blood cells by stimulating production of erythropoietin, an erythropoiesis- stimulating hormone, via inhibition of HIF-PHD.	Phase3 (Japan) Phase1 (Overseas)	In-house Co-development with Torii
JTE-052 (delgocitinib)	Autoimmune/allergic diseases /Oral, Topical *Atopic dermatitis/Topical	JAK inhibitor	Suppresses overactive immune response via inhibition of Janus kinase (JAK) related to immune signal.	Phase3 (Japan)	In-house *Co-development with Torii
JTE-051	Autoimmune/allergic diseases /Oral	Interleukin-2 inducible T cell kinase inhibitor	Suppresses overactive immune response via inhibition of the signal to activate T cells related to immune response.	Phase2 (Overseas)	In-house
JTT-251	Type 2 diabetes mellitus /Oral	PDHK inhibitor	Decreases blood glucose by activation of pyruvate dehydrogenase (PDH) related to carbohydrate metabolism.	Phase1 (Overseas)	In-house
JTE-451	Autoimmune/allergic diseases /Oral	ROR $\gamma$ antagonist	Suppresses overactive immune response via inhibition of ROR $\gamma$ related to Th 17 activation.	Phase1 (Overseas)	In-house
JTT-662	Type 2 diabetes mellitus /Oral	SGLT1 inhibitor	Suppresses postprandial hyperglycemia and normalizes blood glucose level via inhibition of SGLT1.	Phase1 (Overseas)	In-house
JTT-751 (ferric citrate)	Iron-deficiency anemia/Oral	Oral iron replacement	Corrects iron-deficiency anemia by using absorbed iron for synthesis of hemoglobin.	Phase3 (Japan)	In-license (Keryx Biopharmaceuticals) Co-development with Torii Additional indication

Clinical trial phase presented above is based on the first dose.

<Licensed compounds>

Compound (JT's code)	Licensee	Mechanism		Note
trametinib	Novartis	MEK inhibitor	Inhibits cellular growth by specifically inhibiting the activity of MAPK/ERK pathway.	
Anti-ICOS monoclonal antibody	MedImmune	ICOS antagonist	Suppresses overactive immune response via inhibition of ICOS which regulates activation of T cells.	
JTE-052	LEO Pharma ROHTO Pharmaceutical	JAK inhibitor	Suppresses overactive immune response via inhibition of Janus kinase (JAK) related to immune signal.	
JTZ-951	JW Pharmaceutical	HIF-PH inhibitor	Increases red blood cells by stimulating production of erythropoietin, an erythropoiesis- stimulating hormone, via inhibition of HIF-PHD.	

Updates since the previous announcement on August 1, 2018:

<In-house development>

•JTT-662 has entered the clinical trial stage (Phase1).

<Licensed compounds>

•trametinib: Novartis announced that Mekinist® (trametinib) has approved in EU,  
in combination with Tafinlar® (dabrafenib) for adjuvant treatment of BRAF V600 mutation-positive melanoma on August 29, 2018. \*additional indication