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Supplementary Table 1. Clinical Studies Included in Vedolizumab Population Pharmacokinetic-Pharmacodynamic Analyses

Study identifier	Study design/study population/ geographic region	Dosing regimen	Participants enrolled/ with PK	Sampling times†
CPH 001	Phase 1, open-label, multiple-dose study in Japanese patients with UC (aged 18–70 yr). Site in Japan.	Multiple IV doses (days 1, 15, 43) VDZ 150 mg (n = 3) VDZ 300 mg (n = 6)	Total = 9 VDZ = 9 PK = 9	PK: Day 1 (predose, 2, 6, and 12 hours postdose); on days 15 and 43 (predose, 2 and 6 hours postdose); on days 2, 3 (first 3 patients only), 8, 16, 29 and during follow-up (day 44 and wk 8, 10, 14, 18, 22, 26, 30, and 34) AVA: days 1, 15 and 43 (predose), and any time on days 29, 57, 71, 99, 127, 155, 183, 211, and 239.
CCT-101	Phase 3, randomized, double-blind, placebo-controlled, parallel-group, multicenter study of efficacy, safety and PK of VDZ induction and maintenance therapy. Japanese patients with moderate or severe UC and inadequate response to, loss of response to, or intolerance of 1 or more of the following agents: corticosteroids, immunomodulators, or TNF-α antibodies (aged 15–80 yr). Sites in Japan.	Multiple IV doses Induction (wk 0, 2, 6): Cohort 1 (double-blinded) VDZ 300 mg Placebo Cohort 2 (open-label) VDZ 300 mg Maintenance (wk 14 60): VDZ 300 mg Q8W Placebo	Induction: Cohort 1 VDZ = 164 Placebo = 82 Cohort 2 VDZ = 46 Maintenance: VDZ Q8W = 41 Placebo = 42 Placebo continuation = 26 PK = 152	PK: wk 2, 6, 10, 14, 22, 30, and 60/ET (predose if drug administered at visit, or anytime during visit if drug not administered). AVA: wk 0,10, 30, 60/ET (predose if drug administered at visit, or anytime during visit if drug not administered).
CCT-001	Phase 3, randomized, double-blind, placebo-controlled, parallel-group, multicenter study of efficacy, safety and PK of VDZ induction and maintenance therapy. Japanese patients with moderate or severe CD and inadequate response to, loss of response to, or intolerance of 1 or more of the following agents: corticosteroids, immunomodulators, or TNF-α antibodies (aged 15–80 yr). Sites in Japan.	Multiple IV doses Induction (wk 0, 2, 6): VDZ 300 mg Placebo Maintenance (wk 14 60): VDZ 300 mg Q8W Placebo	Induction: VDZ = 79 Placebo = 78 Maintenance: VDZ Q8W = 12 Placebo = 12 Placebo continuation = 17 PK = 63	PK: wk 2, 6, 10, 14, 22, 30, and 60/ET (predose if drug administered at visit, or anytime during visit if drug not administered). AVA: wk 0,10, 30, 60/ET (predose if drug administered at visit, or anytime during visit if drug not administered).
GEMINI 1 (NCT00783718)	Phase 3, 52-wk, randomized, placebo-controlled, double-blind, multicenter study of efficacy and safety of VDZ induction and maintenance therapy. Patients with moderately to severely active UC and inadequate response to, loss of response to, or intolerance of 1 or more of the following agents: corticosteroids (ex-US only), immunomodulators, or TNF-α antagonists (aged 18–80 yr). Sites in North America, Western/ Northern Europe, Central Europe, Eastern Europe, and Asia/Australia/ Africa.	Multiple IV doses Induction (wk 0, 2): VDZ 300 mg Placebo Maintenance (wk 6-52): VDZ 300 mg Q4W VDZ 300 mg Q8W Placebo	Induction ITT: VDZ = 225 Placebo = 149 Induction non ITT: VDZ = 521 Maintenance ITT: VDZ Q4W = 125 VDZ Q8W = 122 Placebo = 126 Maintenance non ITT: VDZ Q4W = 373 Placebo = 149 PK = 654	PK: wk 0, 2, 6, 22, and 46 (predose [within 30 min before start of infusion] and postdose [within 2 hr after start of infusion]); wk 14 and 38 (predose); wk 4 and 52 (anytime during visit). AVA: wk 0, 6, 14, 26, 38, 52 (or ET), 66 (or Final Safety visit) and at the time of disease exacerbation. Samples were collected predose, if applicable.

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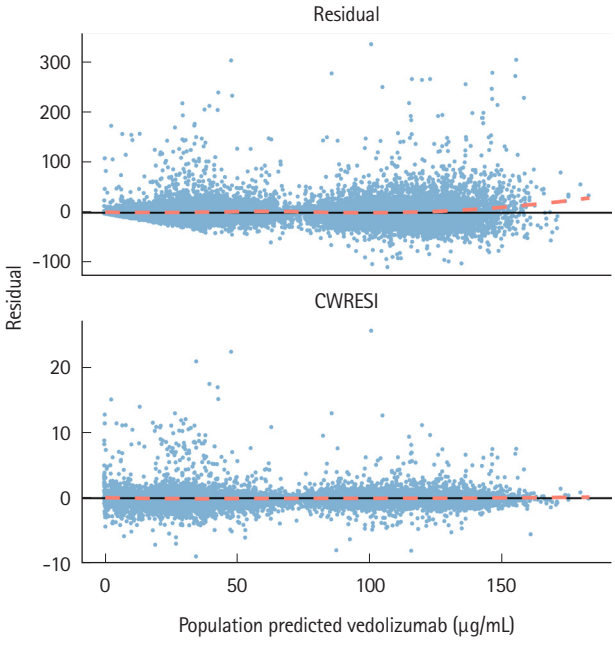
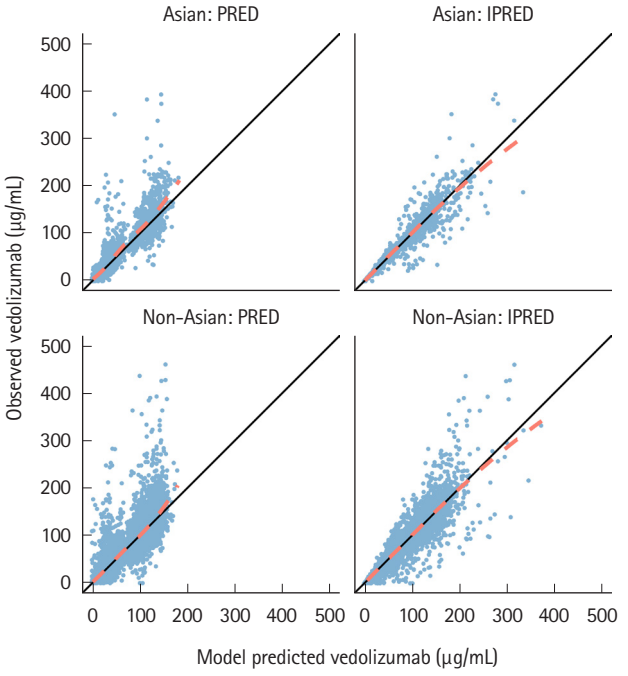
Supplementary Table 1. Continued

Study identifier	Study design/study population/ geographic region	Dosing regimen	Participants enrolled/ with PK	Sampling times†
GEMINI 2 (NCT00783692)	Phase 3, 52-wk, randomized, placebo-controlled, double-blind, multicenter study of efficacy and safety of VDZ induction and maintenance therapy. Patients with moderately to severely active CD and demonstrated inadequate response to, loss of response to, or intolerance of 1 or more of the following agents: corticosteroids (ex-US only), immunomodulators, or TNF-α antagonists (aged 18–80 yr). Sites in North America, Western/ Northern Europe, Central Europe, Eastern Europe, and Asia/Australia/ Africa.	Multiple IV doses Induction (wk 0, 2): VDZ 300 mg Placebo Maintenance (wk 6-52): VDZ 300 mg Q4W VDZ 300 mg Q8W Placebo	Induction ITT: VDZ = 220 Placebo = 148 Induction non-ITT: VDZ = 747 Maintenance ITT: VDZ Q4W = 154 VDZ Q8W = 154 Placebo = 153 Maintenance non-ITT: VDZ Q4W = 506 Placebo = 148 PK = 827	PK: wk 0, 2, 6, 22, and 46 (predose [within 30 min before start of infusion] and postdose [within 2 h after start of infusion]); wk 14 and 38 (predose); wk 4 and 52 (anytime during visits). AVA: wk 0, 6, 14, 26, 38, 52 (or ET), 66 (or Final Safety visit) and at the time of disease exacerbation. Samples were collected predose, if applicable.

PK, pharmacokinetics; IV, intravenous; VDZ, vedolizumab; AVA, anti-vedolizumab antibody; Q8W, every 8 weeks; ET, early termination; Q4W, every 4 weeks; ITT, intent to-treat; CD, Crohn's disease; UC, ulcerative colitis.



Supplementary Fig. 1. Goodness-of-fit plots for the vedolizumab final population pharmacokinetic model: residual and conditional weighted residual with interaction (CWRESI) versus population predicted vedolizumab concentration. Values are shown as points with a dashed red loess trend line through the data. A solid black line at y = 0 is shown for reference.



Supplementary Fig. 2. Goodness-of-fit plots for the vedolizumab final population pharmacokinetic model: observed vedolizumab concentrations versus population (PRED) and individual predicted (IPRED) vedolizumab concentration. Results are stratified by race. Values are shown as points with a dashed red loess trend line through the data. The line of identity (solid black) is shown for reference.