

Supplemental Figure 1

A $xa = \text{IF}(x < 5, x, \text{IF}(x < 84, x - 5, x - 84))$
 $Y_{\text{load}} = 3 * (b - \exp(-f_w * xa) * b + (-1 + \exp(-b * xa)) * f_w) / (b - f_w)$
 $Y_{\text{main}} = (((1 + 2 * \exp(-f_w * xa) - 3 * \exp(-f_w * (5 + xa))) * b + (-1 - 2 * \exp(-b * xa) + 3 * \exp(-b * (5 + xa))) * f_w) / (b - f_w))$
 $Y_{\text{wash}} = (-1 / (-b + f_w)) * (\exp(-84 * b - 84 * f_w - b * xa) * (-3 * \exp(84 * b + (b - f_w) * xa) * b + 2 * \exp(84 * b + 5 * f_w + (b - f_w) * xa) * b + \exp(84 * b + 84 * f_w + (b - f_w) * xa) * b + 3 * \exp(84 * f_w) * f_w - 2 * \exp(5 * b + 84 * f_w) * f_w - \exp(84 * b + 84 * f_w) * f_w))$
 $f = \text{IF}(x < 5, Y_{\text{load}}, \text{IF}(x < 84, Y_{\text{main}}, Y_{\text{wash}}))$

B $\text{if}(t > 84)$
 $f = (2 * \exp(5 * f_w + b * t + (b * t) / v_r) * b^2 * (-1 + v_r) + \exp(84 * f_w + b * t + (b * t) / v_r) * b^2 * (-1 + v_r) - 3 * \exp((b * t * (1 + v_r)) / v_r) * b^2 * (-1 + v_r) + 3 * \exp((b + f_w) * t) * (b - f_w) * f_w * v_r^2 - 2 * \exp(b * t + f_w * t + (5 * b) / v_r) * (b - f_w) * f_w * v_r^2 - \exp(b * t + f_w * t + (84 * b) / v_r) * (b - f_w) * f_w * v_r^2 + 2 * \exp(5 * b + f_w * t + (b * t) / v_r) * f_w * (b - f_w * v_r) + \exp(84 * b + f_w * t + (b * t) / v_r) * f_w * (b - f_w * v_r) + 3 * \exp(t * (f_w + b / v_r)) * f_w * (-b + f_w * v_r)) / (\exp(t * (b + f_w + b / v_r)) * (b - f_w) * (-1 + v_r) * (b - f_w * v_r));$
 else
 $\text{if}(t > 5)$
 $f = (-3 * \exp(5 * b - f_w * t + (b * t) / v_r) * b^2 * (-1 + v_r) + 2 * \exp(5 * b + 5 * f_w - f_w * t + (b * t) / v_r) * b^2 * (-1 + v_r) + 3 * \exp(5 * b) * (b - f_w) * f_w * v_r^2 - 2 * \exp((5 * b * (1 + v_r)) / v_r) * (b - f_w) * f_w * v_r^2 + \exp(b * (5 + t / v_r)) * (b - f_w) * (-1 + v_r) * (b - f_w * v_r) + 3 * \exp(b * (5 + t * (-1 + v_r^(-1)))) * f_w * (-b + f_w * v_r) - 2 * \exp(b * (10 + t * (-1 + v_r^(-1)))) * f_w * (-b + f_w * v_r)) / (\exp((b * (t + 5 * v_r)) / v_r) * (b - f_w) * (-1 + v_r) * (b - f_w * v_r));$
 else
 $f = (3 * (-\exp((b * t) / v_r) * b^2 * (-1 + v_r)) - \exp(f_w * t) * f_w * (-b + f_w) * v_r^2 + \exp(t * (f_w + b * (-1 + v_r^(-1)))) * f_w * (-b + f_w * v_r) + \exp(t * (f_w + b / v_r)) * (-b + f_w) * (-1 + v_r) * (-b + f_w * v_r)) / (\exp(t * (f_w + b / v_r)) * (b - f_w) * (-1 + v_r) * (b - f_w * v_r));$

Supplemental Figure Legend

Figure S1. Equations supplied to non-linear curve fitting software

The equations shown were derived from the equations describing the models in methods, using Mathematica software.

- A. The equations for the one-compartment model were derived for use in Graphpad Prism software. The variable x is the time variable in days.
- B. The equations for the two-compartment model were derived for use in OriginPro software.

Table S1

Complete Model Parameters

Patient	$f_{peak}\%$	$f_{peak}\%$ /day	$H_{eq}\%$	f_w^a %/day	Single-compartment model			Two-compartment model					WBC %/day	SE
					$b\%$ day	SE	R^2	$B\%$ day	SE	v_r	SE	R^2		
CLL107	20.7	0.19	0.83	7.76	0.22	0.01	0.89	0.23	0.02	0.017	0.013	0.91	0.006	0.036
CLL109	13.1	0.15	1.64	6.66	0.12	0.02	-0.06	0.11	0.02	0.001	0.019	-0.11	-0.125	0.044
CLL165	15.2	0.11	1.60	6.00	0.13	0.01	0.87	0.14	0.02	0.019	0.020	0.90	-0.073	0.049
CLL169	38.6	0.33	0.76	7.44	0.49	0.04	0.92	0.49	0.04	0.001	0.024	0.92	-0.001	0.045
CLL189	43.1	0.50	1.26	6.00	0.80	0.03	0.97	0.81	0.04	0.010	0.019	0.97	0.656	0.086
CLL280	30.4	0.35	0.90	7.72	0.22	0.04	0.24	0.22	0.04	0.001	0.037	0.42	0.087	0.060
CLL282	41.3	0.37	1.19	3.46	0.55	0.11	0.46	0.39	0.00	0.001	0.074	0.30	0.654	0.099
CLL321	22.5	0.27	0.94	6.08	0.30	0.03	0.61	0.29	0.03	0.001	0.024	0.58	0.035	0.079
CLL331	18.2	0.21	1.36	6.00	0.24	0.02	0.86	0.24	0.02	0.001	0.014	0.86	0.033	0.034
CLL332	17.6	0.10	1.30	5.77	0.18	0.02	0.84	0.24	0.03	0.084	0.040	0.94	0.567	0.138
CLL336	34.0	0.40	2.12	4.94	0.40	0.03	0.90	0.41	0.04	0.001	0.021	0.90	-0.289	0.179
CLL355	25.1	0.13	1.20	4.56	0.24	0.04	0.74	0.45	0.09	0.381	0.201	0.98	0.302	0.041
CLL360	41.4	0.47	1.36	5.51	0.66	0.11	0.69	0.48	0.00	0.001	0.059	0.60	-0.311	0.086
CLL394	19.9	0.18	0.76	6.00	0.17	0.02	0.76	0.18	0.02	0.007	0.019	0.76	0.045	0.060
CLL400	68.1	0.81	1.07	6.00	1.73	0.11	0.97	1.76	0.17	0.003	0.054	0.99	0.712	0.081
CLL403	14.6	0.19	0.89	4.96	0.17	0.02	0.88	0.39	0.21	0.147	0.205	0.97	0.241	0.062
CLL408	54.8	0.54	0.49	6.00	1.08	0.09	0.93	1.09	0.14	0.005	0.054	0.93	-1.052	0.256
CLL418	40.7	0.73	1.09	6.91	0.28	0.07	-0.40	-	-	-	-	-	-0.141	0.044
CLL472	31.8	0.38	0.90	6.41	0.53	0.05	0.88	0.54	0.07	0.001	0.035	0.88	-0.053	0.142

^a A value of 6.00% was used for patients where there was insufficient data to calculate this value