



Hematology Proficiency Test Program

Statistical Summary – October 2016 (Event 16-3)

This statistical report summarizes participant data for the Hematology proficiency survey shipped 4 October 2016.

Five test samples were distributed to participants for each test category:

Routine Blood Counts (B31, B32, B33, B34, B35)

Routine Coagulation (C31, C32, C33, C34, C35)

Cell Identification (431, 432, 433, 434, 435)

Results for individual instrument and reagent systems where the number of laboratories using those systems is three or greater are provided. Mean and Standard Deviation (± 1 SD) values are calculated by a robust statistical technique that does not assume a Gaussian distribution.

Disclaimer:

Note: The use of brand and/or trade names in this report does not constitute an endorsement of the products on the part of the Wadsworth Center or the New York State Department of Health.

Should you have any questions regarding this report, please contact the Hematology Section at (518) 474-9878.

Summary of Participant Responses

Mean ± One Standard Deviation

White Cell Count (x 10⁹/L)

Specimen: B31	Specimen: B32	Specimen: B33	Specimen: B34	Specimen: B35	Number	[Code] Instrument or Reagent System
28.24 ± 1.02	9.16 ± 0.37	16.38 ± 0.62	8.15 ± 0.38	3.15 ± 0.17	n = 204	[---] All Methods & Instruments
<Instruments>						
29.07 ± 1.03	9.43 ± 0.23	16.51 ± 0.56	8.16 ± 0.12	3.16 ± 0.11	n = 8	[ABM] Abbott Cell Dyn 3700
27.93 ± 0.78	9.03 ± 0.16	16.08 ± 0.30	8.12 ± 0.22	3.14 ± 0.12	n = 5	[ABS] Abbott Cell Dyn Sapphire
29.74 ± 1.09	9.29 ± 0.23	16.75 ± 0.26	8.43 ± 0.28	3.24 ± 0.13	n = 7	[ABT] Abbott Cell Dyn Ruby
25.45 ± 0.83	8.69 ± 0.20	14.90 ± 0.45	8.43 ± 0.23	3.07 ± 0.05	n = 3	[ABU] Abbott Cell Dyn Emerald
26.13 ± 0.43	8.72 ± 0.21	15.56 ± 0.13	7.26 ± 0.09	2.90 ± 0.01	n = 3	[BTD] Siemens Advia 120
26.06 ± 0.75	8.60 ± 0.28	15.24 ± 0.82	7.34 ± 0.30	2.89 ± 0.14	n = 10	[BTE] Siemens Advia 2120
28.69 ± 0.44	9.25 ± 0.17	16.68 ± 0.26	8.43 ± 0.17	3.21 ± 0.09	n = 34	[CUL] Coulter UniCel DxH 600,800
28.12 ± 1.15	9.09 ± 0.19	16.42 ± 0.28	7.95 ± 0.12	3.07 ± 0.09	n = 4	[CUS] Coulter ACT 5 diff
29.18 ± 0.33	9.46 ± 0.15	16.75 ± 0.26	8.56 ± 0.20	3.43 ± 0.06	n = 15	[CUT] Coulter ACT series,not ACT5 diff
28.20 ± 0.45	9.39 ± 0.21	16.58 ± 0.35	8.19 ± 0.23	3.22 ± 0.07	n = 11	[CUX] Coulter LH750,755
28.07 ± 0.36	9.33 ± 0.15	16.41 ± 0.12	8.19 ± 0.17	3.20 ± 0.00	n = 6	[CUY] Coulter LH 780
29.58 ± 0.59	9.28 ± 0.23	16.74 ± 0.22	9.32 ± 0.47	3.37 ± 0.11	n = 5	[CUZ] Coulter LH500
27.05 ± 0.19	8.95 ± 0.27	16.03 ± 0.23	8.07 ± 0.05	3.10 ± 0.00	n = 3	[ROB] ABX Pentra series
28.22 ± 0.21	8.92 ± 0.15	16.04 ± 0.16	8.70 ± 0.99	3.15 ± 0.23	n = 4	[ROC] ABX Micro
28.03 ± 1.25	8.99 ± 0.51	15.74 ± 0.16	8.10 ± 0.05	3.14 ± 0.07	n = 5	[SYA] Sysmex XE 5000
27.54 ± 0.36	8.50 ± 0.69	15.01 ± 1.77	7.99 ± 0.14	3.03 ± 0.08	n = 24	[SYC] Sysmex XN-series
28.11 ± 0.59	9.13 ± 0.23	16.15 ± 0.38	7.92 ± 0.22	3.10 ± 0.08	n = 16	[SYI] Sysmex XT-2000i,XT-1800i
28.62 ± 0.66	9.35 ± 0.28	16.79 ± 0.37	8.19 ± 0.22	3.16 ± 0.12	n = 17	[SYP] Sysmex XS-1000i,XS-1000iAL
27.60 ± 1.05	8.88 ± 0.50	15.70 ± 0.64	7.87 ± 0.24	3.04 ± 0.16	n = 4	[SYQ] Sysmex XE 2100D(Blood Center)
27.88 ± 0.36	8.92 ± 0.26	15.98 ± 0.58	7.84 ± 0.20	3.01 ± 0.11	n = 12	[SYV] Sysmex XT 4000i

Summary of Participant Responses
 Mean ± One Standard Deviation

Red Cell Count (x 10¹²/L)

Specimen: B31 -----	Specimen: B32 -----	Specimen: B33 -----	Specimen: B34 -----	Specimen: B35 -----	Number -----	[Code] Instrument or Reagent System -----
3.101 ± 0.082	4.532 ± 0.070	4.461 ± 0.088	2.050 ± 0.052	2.590 ± 0.054	n = 204	[---] All Methods & Instruments
<Instruments>						
3.119 ± 0.036	4.549 ± 0.085	4.436 ± 0.087	2.074 ± 0.042	2.639 ± 0.059	n = 7	[ABM] Abbott Cell Dyn 3700
3.117 ± 0.043	4.496 ± 0.074	4.432 ± 0.064	2.041 ± 0.026	2.579 ± 0.035	n = 5	[ABS] Abbott Cell Dyn Sapphire
3.073 ± 0.012	4.565 ± 0.075	4.471 ± 0.054	2.064 ± 0.025	2.593 ± 0.022	n = 7	[ABT] Abbott Cell Dyn Ruby
2.987 ± 0.060	4.275 ± 0.027	4.195 ± 0.036	1.968 ± 0.024	2.451 ± 0.061	n = 3	[ABU] Abbott Cell Dyn Emerald
3.052 ± 0.068	4.501 ± 0.037	4.383 ± 0.014	2.108 ± 0.015	2.622 ± 0.024	n = 3	[BTD] Siemens Advia 120
3.077 ± 0.048	4.451 ± 0.095	4.377 ± 0.106	2.134 ± 0.055	2.625 ± 0.053	n = 10	[BTE] Siemens Advia 2120
3.143 ± 0.042	4.553 ± 0.038	4.504 ± 0.050	2.049 ± 0.037	2.600 ± 0.031	n = 34	[CUL] Coulter UniCel DxH 600,800
3.110 ± 0.035	4.525 ± 0.030	4.509 ± 0.024	2.054 ± 0.019	2.535 ± 0.053	n = 4	[CUS] Coulter ACT 5 diff
3.166 ± 0.057	4.582 ± 0.088	4.523 ± 0.095	2.072 ± 0.044	2.621 ± 0.035	n = 15	[CUT] Coulter ACT series,not ACT5 diff
3.149 ± 0.030	4.594 ± 0.043	4.521 ± 0.045	2.082 ± 0.021	2.608 ± 0.029	n = 11	[CUX] Coulter LH750,755
3.156 ± 0.039	4.591 ± 0.059	4.537 ± 0.043	2.074 ± 0.025	2.612 ± 0.034	n = 6	[CUY] Coulter LH 780
3.253 ± 0.058	4.620 ± 0.071	4.558 ± 0.075	2.105 ± 0.012	2.669 ± 0.059	n = 5	[CUZ] Coulter LH500
3.042 ± 0.032	4.505 ± 0.090	4.458 ± 0.024	2.009 ± 0.061	2.503 ± 0.005	n = 3	[ROB] ABX Pentra series
3.122 ± 0.037	4.465 ± 0.086	4.409 ± 0.084	2.025 ± 0.063	2.528 ± 0.046	n = 4	[ROC] ABX Micro
3.144 ± 0.036	4.549 ± 0.028	4.489 ± 0.027	2.076 ± 0.028	2.622 ± 0.031	n = 5	[SYA] Sysmex XE 5000
3.021 ± 0.036	4.515 ± 0.058	4.405 ± 0.046	1.992 ± 0.040	2.532 ± 0.037	n = 24	[SYC] Sysmex XN-series
3.092 ± 0.027	4.509 ± 0.045	4.441 ± 0.061	2.045 ± 0.033	2.604 ± 0.021	n = 16	[SYI] Sysmex XT-2000i,XT-1800i
3.002 ± 0.031	4.472 ± 0.039	4.357 ± 0.048	1.993 ± 0.019	2.527 ± 0.030	n = 17	[SYP] Sysmex XS-1000i,XS-1000iAL
3.155 ± 0.030	4.545 ± 0.039	4.505 ± 0.027	2.071 ± 0.024	2.632 ± 0.013	n = 4	[SYQ] Sysmex XE 2100D(Blood Center)
3.113 ± 0.027	4.519 ± 0.037	4.495 ± 0.056	2.061 ± 0.022	2.607 ± 0.025	n = 12	[SYV] Sysmex XT 4000i

Summary of Participant Responses

Mean ± One Standard Deviation

Hemoglobin (g/dL)

Specimen: B31	Specimen: B32	Specimen: B33	Specimen: B34	Specimen: B35	Number	[Code] Instrument or Reagent System
7.98 ± 0.23	13.60 ± 0.19	10.96 ± 0.20	6.08 ± 0.19	8.16 ± 0.16	n = 205	[---] All Methods & Instruments
<Instruments>						
8.47 ± 0.08	13.83 ± 0.10	11.27 ± 0.08	6.42 ± 0.12	8.38 ± 0.06	n = 8	[ABM] Abbott Cell Dyn 3700
8.30 ± 0.10	13.92 ± 0.11	11.26 ± 0.11	6.29 ± 0.09	8.45 ± 0.11	n = 5	[ABS] Abbott Cell Dyn Sapphire
8.41 ± 0.09	13.91 ± 0.22	11.25 ± 0.25	6.27 ± 0.23	8.31 ± 0.23	n = 7	[ABT] Abbott Cell Dyn Ruby
8.01 ± 0.20	13.51 ± 0.29	10.88 ± 0.24	6.06 ± 0.10	8.03 ± 0.23	n = 3	[ABU] Abbott Cell Dyn Emerald
8.20 ± 0.09	13.60 ± 0.09	11.00 ± 0.09	6.20 ± 0.00	8.33 ± 0.05	n = 3	[BTD] Siemens Advia 120
8.35 ± 0.25	13.65 ± 0.30	11.08 ± 0.30	6.32 ± 0.17	8.39 ± 0.14	n = 10	[BTE] Siemens Advia 2120
7.94 ± 0.11	13.61 ± 0.12	10.83 ± 0.13	6.17 ± 0.09	8.16 ± 0.13	n = 34	[CUL] Coulter UniCel DxH 600,800
8.08 ± 0.15	13.62 ± 0.20	10.98 ± 0.21	6.10 ± 0.11	8.07 ± 0.20	n = 4	[CUS] Coulter ACT 5 diff
8.10 ± 0.11	13.59 ± 0.25	11.02 ± 0.17	6.13 ± 0.13	8.21 ± 0.11	n = 15	[CUT] Coulter ACT series,not ACT5 diff
8.02 ± 0.12	13.62 ± 0.14	11.01 ± 0.10	6.08 ± 0.08	8.16 ± 0.07	n = 11	[CUX] Coulter LH750,755
7.88 ± 0.07	13.54 ± 0.10	10.94 ± 0.27	6.09 ± 0.11	8.10 ± 0.00	n = 6	[CUY] Coulter LH 780
8.39 ± 0.13	13.56 ± 0.11	11.13 ± 0.14	6.30 ± 0.10	8.30 ± 0.00	n = 5	[CUZ] Coulter LH500
7.90 ± 0.09	13.73 ± 0.14	10.97 ± 0.05	5.97 ± 0.05	8.03 ± 0.05	n = 3	[ROB] ABX Pentra series
8.23 ± 0.16	13.58 ± 0.20	11.04 ± 0.18	6.20 ± 0.18	8.14 ± 0.18	n = 4	[ROC] ABX Micro
7.90 ± 0.00	13.40 ± 0.10	10.82 ± 0.11	5.95 ± 0.08	8.12 ± 0.08	n = 5	[SYA] Sysmex XE 5000
7.77 ± 0.09	13.52 ± 0.18	10.87 ± 0.13	5.89 ± 0.10	8.01 ± 0.10	n = 24	[SYC] Sysmex XN-series
7.85 ± 0.07	13.55 ± 0.15	10.93 ± 0.13	5.94 ± 0.07	8.10 ± 0.08	n = 16	[SYI] Sysmex XT-2000i,XT-1800i
7.84 ± 0.08	13.57 ± 0.11	10.92 ± 0.10	5.93 ± 0.07	8.07 ± 0.07	n = 17	[SYP] Sysmex XS-1000i,XS-1000iAL
7.90 ± 0.00	13.65 ± 0.12	10.95 ± 0.12	5.98 ± 0.04	8.25 ± 0.06	n = 4	[SYQ] Sysmex XE 2100D(Blood Center)
7.82 ± 0.11	13.53 ± 0.12	10.97 ± 0.09	5.94 ± 0.08	8.08 ± 0.10	n = 12	[SYV] Sysmex XT 4000i

Summary of Participant Responses

Mean ± One Standard Deviation

Hematocrit (%)

Specimen: B31	Specimen: B32	Specimen: B33	Specimen: B34	Specimen: B35	Number	[Code] Instrument or Reagent System
23.84 ± 0.89	39.35 ± 1.36	31.65 ± 1.47	18.04 ± 0.89	24.12 ± 1.12	n = 207	[---] All Methods & Instruments
<Instruments>						
24.70 ± 0.22	41.57 ± 0.48	33.13 ± 0.28	18.94 ± 0.51	25.49 ± 0.50	n = 8	[ABM] Abbott Cell Dyn 3700
21.93 ± 0.40	36.41 ± 0.70	29.15 ± 0.48	16.50 ± 0.38	22.13 ± 0.45	n = 5	[ABS] Abbott Cell Dyn Sapphire
20.82 ± 0.44	34.80 ± 0.66	28.79 ± 0.53	15.72 ± 0.37	20.50 ± 0.46	n = 7	[ABT] Abbott Cell Dyn Ruby
24.67 ± 0.79	40.24 ± 0.99	32.11 ± 1.02	18.67 ± 0.34	24.86 ± 0.92	n = 4	[ABU] Abbott Cell Dyn Emerald
19.93 ± 0.14	34.75 ± 0.19	27.08 ± 0.15	16.15 ± 0.19	21.32 ± 0.15	n = 3	[BTD] Siemens Advia 120
20.12 ± 0.53	34.34 ± 0.81	27.33 ± 0.62	16.17 ± 0.38	21.34 ± 0.50	n = 10	[BTE] Siemens Advia 2120
24.37 ± 0.41	40.39 ± 0.36	33.20 ± 0.44	18.33 ± 0.36	24.65 ± 0.32	n = 34	[CUL] Coulter UniCel DxH 600,800
22.34 ± 0.69	37.21 ± 0.90	31.08 ± 0.86	16.69 ± 0.59	21.90 ± 1.00	n = 4	[CUS] Coulter ACT 5 diff
24.11 ± 0.33	39.63 ± 0.86	32.16 ± 0.80	17.95 ± 0.37	24.18 ± 0.44	n = 15	[CUT] Coulter ACT series,not ACT5 diff
23.89 ± 0.26	40.00 ± 0.52	32.29 ± 0.54	17.93 ± 0.23	24.03 ± 0.34	n = 11	[CUX] Coulter LH750,755
23.94 ± 0.43	39.90 ± 0.42	32.51 ± 0.34	17.97 ± 0.21	24.12 ± 0.27	n = 6	[CUY] Coulter LH 780
24.36 ± 0.74	39.87 ± 0.16	32.69 ± 0.69	18.43 ± 0.34	24.73 ± 0.60	n = 5	[CUZ] Coulter LH500
22.70 ± 0.18	37.48 ± 0.78	31.08 ± 0.68	16.98 ± 0.51	22.56 ± 0.10	n = 3	[ROB] ABX Pentra series
23.36 ± 0.52	38.65 ± 1.83	30.94 ± 1.37	17.28 ± 1.06	23.07 ± 0.92	n = 4	[ROC] ABX Micro
24.29 ± 0.41	39.50 ± 0.26	31.85 ± 0.11	18.47 ± 0.29	24.50 ± 0.49	n = 5	[SYA] Sysmex XE 5000
22.87 ± 0.24	38.77 ± 0.50	31.14 ± 0.43	17.44 ± 0.36	23.30 ± 0.39	n = 24	[SYC] Sysmex XN-series
24.04 ± 0.24	38.72 ± 0.38	30.97 ± 0.39	18.63 ± 0.39	24.75 ± 0.29	n = 16	[SYI] Sysmex XT-2000i,XT-1800i
23.77 ± 0.22	39.02 ± 0.39	30.90 ± 0.31	18.44 ± 0.37	24.33 ± 0.31	n = 17	[SYP] Sysmex XS-1000i,XS-1000iAL
24.10 ± 0.29	39.29 ± 0.23	31.80 ± 0.42	18.63 ± 0.20	24.47 ± 0.16	n = 4	[SYQ] Sysmex XE 2100D(Blood Center)
24.34 ± 0.31	39.17 ± 0.50	31.52 ± 0.45	18.93 ± 0.36	24.97 ± 0.31	n = 12	[SYV] Sysmex XT 4000i

Summary of Participant Responses

Mean ± One Standard Deviation

Platelet Count (x 10⁹/L)

Specimen: B31	Specimen: B32	Specimen: B33	Specimen: B34	Specimen: B35	Number	[Code] Instrument or Reagent System
389.4 ± 22.63	240.4 ± 10.72	203.1 ± 10.86	443.8 ± 32.54	113.8 ± 7.37	n = 205	[---] All Methods & Instruments
<Instruments>						
409.9 ± 14.49	250.2 ± 3.85	213.2 ± 7.66	460.4 ± 22.33	119.5 ± 2.75	n = 8	[ABM] Abbott Cell Dyn 3700
363.6 ± 9.59	235.2 ± 5.04	188.6 ± 8.42	403.4 ± 19.92	112.1 ± 2.88	n = 5	[ABS] Abbott Cell Dyn Sapphire
416.9 ± 15.98	262.4 ± 8.42	211.3 ± 8.36	426.5 ± 12.69	129.4 ± 8.47	n = 7	[ABT] Abbott Cell Dyn Ruby
401.7 ± 10.35	240.9 ± 3.80	209.2 ± 5.43	468.3 ± 23.36	120.9 ± 6.60	n = 4	[ABU] Abbott Cell Dyn Emerald
416.9 ± 13.79	263.9 ± 10.81	206.8 ± 10.38	491.0 ± 20.08	122.3 ± 6.76	n = 3	[BTD] Siemens Advia 120
421.8 ± 14.56	254.6 ± 9.93	202.1 ± 8.11	481.9 ± 18.02	120.9 ± 6.32	n = 10	[BTE] Siemens Advia 2120
380.4 ± 9.86	233.7 ± 5.81	197.4 ± 3.83	428.0 ± 11.05	112.1 ± 2.44	n = 34	[CUL] Coulter UniCel DxH 600,800
410.4 ± 16.71	241.7 ± 9.91	213.5 ± 10.85	475.8 ± 18.72	116.9 ± 7.16	n = 4	[CUS] Coulter ACT 5 diff
391.0 ± 9.50	234.6 ± 6.32	205.4 ± 7.66	459.4 ± 16.88	115.5 ± 6.41	n = 15	[CUT] Coulter ACT series,not ACT5 diff
386.5 ± 13.42	239.6 ± 8.05	208.3 ± 8.77	455.9 ± 9.76	116.8 ± 4.43	n = 11	[CUX] Coulter LH750,755
390.6 ± 3.11	242.2 ± 5.30	210.2 ± 5.88	449.5 ± 20.31	117.6 ± 1.15	n = 6	[CUY] Coulter LH 780
407.4 ± 8.97	242.5 ± 7.81	207.8 ± 9.02	457.1 ± 15.81	119.6 ± 3.32	n = 5	[CUZ] Coulter LH500
412.8 ± 20.34	256.8 ± 4.11	210.0 ± 4.60	448.9 ± 31.89	113.4 ± 3.87	n = 3	[ROB] ABX Pentra series
398.3 ± 17.36	238.2 ± 15.52	218.6 ± 22.19	476.4 ± 62.25	116.3 ± 9.62	n = 4	[ROC] ABX Micro
347.7 ± 25.54	221.1 ± 12.19	181.0 ± 13.22	400.9 ± 37.03	102.9 ± 7.38	n = 5	[SYA] Sysmex XE 5000
356.3 ± 8.18	237.1 ± 7.51	194.2 ± 7.18	392.3 ± 16.11	103.5 ± 3.44	n = 24	[SYC] Sysmex XN-series
398.3 ± 6.97	245.9 ± 7.65	209.9 ± 7.72	461.3 ± 14.53	115.6 ± 4.07	n = 16	[SYI] Sysmex XT-2000i,XT-1800i
389.5 ± 11.95	238.0 ± 7.60	200.8 ± 5.92	457.0 ± 10.23	110.0 ± 3.97	n = 17	[SYP] Sysmex XS-1000i,XS-1000iAL
418.7 ± 10.16	254.7 ± 6.02	211.1 ± 5.67	472.6 ± 17.67	122.1 ± 4.76	n = 4	[SYQ] Sysmex XE 2100D(Blood Center)
399.0 ± 4.53	246.4 ± 5.57	210.3 ± 8.21	461.6 ± 7.88	114.7 ± 5.05	n = 12	[SYV] Sysmex XT 4000i

Summary of Participant Responses

Mean ± One Standard Deviation

Prothrombin Time (seconds)

Specimen: C31 -----	Specimen: C32 -----	Specimen: C33 -----	Specimen: C34 -----	Specimen: C35 -----	Number -----	[Code] Instrument or Reagent System -----
52.26 ± 9.28	11.31 ± 0.71	29.65 ± 4.36	11.26 ± 0.65	10.97 ± 0.73	n = 152	[---] All Methods & Instruments
<Instruments>						
43.72 ± 0.94	11.02 ± 0.09	26.10 ± 0.81	11.06 ± 0.23	10.42 ± 0.19	n = 8	[BEB] Siemens BCS,BCSXP
59.84 ± 2.48	12.92 ± 0.47	33.40 ± 0.87	12.83 ± 0.30	12.80 ± 0.32	n = 16	[DGC] Diagnostica Stago STA Compact
61.25 ± 0.55	13.35 ± 0.23	34.31 ± 0.41	13.36 ± 0.11	13.20 ± 0.17	n = 5	[DGD] Diagnostica Stago STA-R,STA-R Evo
33.21 ± 3.30	11.65 ± 0.43	21.56 ± 1.70	11.59 ± 0.26	11.21 ± 0.34	n = 5	[ILA] IL ACL(All except810,ELITE,EPRO,8
54.15 ± 2.96	11.38 ± 0.25	30.59 ± 2.09	11.46 ± 0.17	11.10 ± 0.26	n = 11	[ILD] IL ACL(ELITE,ELITE PRO,8/9/10000)
58.93 ± 3.27	11.48 ± 0.32	32.74 ± 1.50	11.37 ± 0.27	11.17 ± 0.30	n = 49	[ILE] IL ACL TOP Series
44.49 ± 1.78	10.95 ± 0.27	26.04 ± 0.81	10.95 ± 0.30	10.60 ± 0.22	n = 27	[SYD] Sysmex CA1500, CA7000
45.23 ± 1.92	10.60 ± 0.31	26.34 ± 1.06	10.63 ± 0.38	10.37 ± 0.29	n = 23	[SYW] Sysmex CA500,CA600
<Reagents>						
60.31 ± 2.67	13.09 ± 0.45	33.65 ± 0.90	12.99 ± 0.36	12.95 ± 0.35	n = 23	[TA3] STA Neoplastine CL+
44.68 ± 1.87	10.83 ± 0.33	26.14 ± 0.95	10.85 ± 0.36	10.49 ± 0.27	n = 59	[TD2] Siemens Innovin
33.61 ± 2.86	11.52 ± 0.41	21.29 ± 1.45	11.52 ± 0.35	11.08 ± 0.33	n = 7	[TJ2] HemosIL PT-Fibrinogen
58.24 ± 3.78	11.46 ± 0.32	32.45 ± 1.80	11.39 ± 0.25	11.17 ± 0.31	n = 59	[TJ8] HemosIL RecombiPlasTin 2G
<Reagent & Instrument>						
59.84 ± 2.48	12.92 ± 0.47	33.40 ± 0.87	12.83 ± 0.30	12.80 ± 0.32	n = 16	[TA3]&[DGC] STA Neoplastin & Diagnostic
61.25 ± 0.55	13.35 ± 0.23	34.31 ± 0.41	13.36 ± 0.11	13.20 ± 0.17	n = 5	[TA3]&[DGD] STA Neoplastin & Diagnostic
43.72 ± 0.94	11.02 ± 0.09	26.10 ± 0.81	11.06 ± 0.23	10.42 ± 0.19	n = 8	[TD2]&[BEB] Siemens Innovi & Siemens BC
44.49 ± 1.78	10.95 ± 0.27	26.04 ± 0.81	10.95 ± 0.30	10.60 ± 0.22	n = 27	[TD2]&[SYD] Siemens Innovi & Sysmex CA1
45.23 ± 1.92	10.60 ± 0.31	26.34 ± 1.06	10.63 ± 0.38	10.37 ± 0.29	n = 23	[TD2]&[SYW] Siemens Innovi & Sysmex CA5
33.21 ± 3.30	11.65 ± 0.43	21.56 ± 1.70	11.59 ± 0.26	11.21 ± 0.34	n = 5	[TJ2]&[ILA] HemosIL PT-Fib & IL ACL(All
54.14 ± 2.93	11.35 ± 0.28	30.64 ± 1.86	11.45 ± 0.19	11.13 ± 0.28	n = 10	[TJ8]&[ILD] HemosIL Recomb & IL ACL(ELI
58.92 ± 3.32	11.47 ± 0.32	32.72 ± 1.52	11.37 ± 0.27	11.16 ± 0.30	n = 48	[TJ8]&[ILE] HemosIL Recomb & IL ACL TOP

Summary of Participant Responses

Mean ± One Standard Deviation

INR (International Normalized Ratio)

Specimen: C31 -----	Specimen: C32 -----	Specimen: C33 -----	Specimen: C34 -----	Specimen: C35 -----	Number -----	[Code] Instrument or Reagent System -----
4.894 ± 0.950	1.020 ± 0.050	2.751 ± 0.348	1.017 ± 0.052	0.994 ± 0.038	n = 155	[---] All Methods & Instruments
<Instruments>						
4.526 ± 0.337	1.067 ± 0.047	2.666 ± 0.161	1.068 ± 0.045	0.990 ± 0.022	n = 7	[BEB] Siemens BCS,BCSXP
7.123 ± 0.436	0.985 ± 0.049	3.346 ± 0.156	0.984 ± 0.034	0.980 ± 0.054	n = 16	[DGC] Diagnostica Stago STA Compact
7.275 ± 0.380	1.010 ± 0.017	3.418 ± 0.118	1.000 ± 0.000	1.000 ± 0.009	n = 5	[DGD] Diagnostica Stago STA-R,STA-R Evo
5.855 ± 1.023	0.980 ± 0.040	2.798 ± 0.391	0.955 ± 0.053	0.918 ± 0.015	n = 5	[ILA] IL ACL(All except810,ELITE,EPRO,8
5.035 ± 0.241	1.024 ± 0.039	2.784 ± 0.094	1.035 ± 0.040	1.004 ± 0.040	n = 11	[ILD] IL ACL(ELITE,ELITE PRO,8/9/10000)
5.061 ± 0.316	1.019 ± 0.050	2.848 ± 0.146	1.009 ± 0.045	0.998 ± 0.035	n = 52	[ILE] IL ACL TOP Series
4.031 ± 0.227	1.030 ± 0.044	2.400 ± 0.113	1.036 ± 0.049	0.998 ± 0.020	n = 28	[SYD] Sysmex CA1500, CA7000
4.350 ± 0.242	1.032 ± 0.056	2.539 ± 0.144	1.035 ± 0.047	1.000 ± 0.050	n = 23	[SYW] Sysmex CA500,CA600
<Reagents>						
7.122 ± 0.445	0.998 ± 0.039	3.351 ± 0.140	0.991 ± 0.027	0.986 ± 0.040	n = 23	[TA3] STA Neoplastine CL+
4.203 ± 0.306	1.036 ± 0.050	2.474 ± 0.162	1.040 ± 0.049	0.998 ± 0.033	n = 59	[TD2] Siemens Innovin
6.276 ± 1.091	0.993 ± 0.018	2.853 ± 0.332	0.954 ± 0.054	0.919 ± 0.020	n = 7	[TJ2] HemosIL PT-Fibrinogen
5.049 ± 0.307	1.020 ± 0.048	2.832 ± 0.146	1.012 ± 0.048	0.999 ± 0.034	n = 62	[TJ8] HemosIL RecombiPlasTin 2G
<Reagent & Instrument>						
7.123 ± 0.436	0.985 ± 0.049	3.346 ± 0.156	0.984 ± 0.034	0.980 ± 0.054	n = 16	[TA3]&[DGC] STA Neoplastin & Diagnostic
7.275 ± 0.380	1.010 ± 0.017	3.418 ± 0.118	1.000 ± 0.000	1.000 ± 0.009	n = 5	[TA3]&[DGD] STA Neoplastin & Diagnostic
4.526 ± 0.337	1.067 ± 0.047	2.666 ± 0.161	1.068 ± 0.045	0.990 ± 0.022	n = 7	[TD2]&[BEB] Siemens Innovi & Siemens BC
4.031 ± 0.227	1.030 ± 0.044	2.400 ± 0.113	1.036 ± 0.049	0.998 ± 0.020	n = 28	[TD2]&[SYD] Siemens Innovi & Sysmex CA1
4.350 ± 0.242	1.032 ± 0.056	2.539 ± 0.144	1.035 ± 0.047	1.000 ± 0.050	n = 23	[TD2]&[SYW] Siemens Innovi & Sysmex CA5
5.855 ± 1.023	0.980 ± 0.040	2.798 ± 0.391	0.955 ± 0.053	0.918 ± 0.015	n = 5	[TJ2]&[ILA] HemosIL PT-Fib & IL ACL(All
5.034 ± 0.239	1.028 ± 0.040	2.763 ± 0.076	1.040 ± 0.040	1.007 ± 0.030	n = 10	[TJ8]&[ILD] HemosIL Recomb & IL ACL(ELI
5.057 ± 0.318	1.018 ± 0.050	2.845 ± 0.147	1.008 ± 0.046	0.997 ± 0.036	n = 51	[TJ8]&[ILE] HemosIL Recomb & IL ACL TOP

Summary of Participant Responses

Mean ± One Standard Deviation

Activated Partial Thromboplastin Time (seconds)

Specimen: C31	Specimen: C32	Specimen: C33	Specimen: C34	Specimen: C35	Number	[Code] Instrument or Reagent System
78.60 ± 10.99	29.23 ± 2.91	56.40 ± 6.88	29.18 ± 2.81	28.78 ± 2.52	n = 153	[---] All Methods & Instruments
<Instruments>						
67.30 ± 1.43	25.48 ± 0.47	50.11 ± 0.74	25.49 ± 0.35	23.76 ± 0.59	n = 8	[BEB] Siemens BCS,BCSXP
75.25 ± 2.13	29.96 ± 1.08	52.67 ± 1.94	29.98 ± 0.83	30.70 ± 0.93	n = 16	[DGC] Diagnostica Stago STA Compact
70.69 ± 2.49	29.70 ± 0.11	50.61 ± 1.41	29.65 ± 0.44	30.10 ± 0.26	n = 5	[DGD] Diagnostica Stago STA-R,STA-R Evo
78.93 ± 13.93	29.25 ± 1.04	55.16 ± 9.75	29.10 ± 1.53	28.31 ± 0.64	n = 5	[ILA] IL ACL(All except810,ELITE,EPRO,8
88.15 ± 11.05	29.94 ± 1.03	61.29 ± 7.91	30.04 ± 0.63	28.44 ± 0.52	n = 10	[ILD] IL ACL(ELITE,ELITE PRO,8/9/10000)
89.20 ± 2.10	31.97 ± 0.90	63.11 ± 1.51	31.70 ± 0.99	30.66 ± 1.00	n = 52	[ILE] IL ACL TOP Series
71.97 ± 2.05	26.86 ± 0.67	52.95 ± 1.31	26.80 ± 0.55	27.07 ± 0.61	n = 28	[SYD] Sysmex CA1500, CA7000
68.39 ± 1.67	25.80 ± 0.70	50.62 ± 1.23	25.71 ± 0.64	25.82 ± 0.72	n = 21	[SYW] Sysmex CA500,CA600
<Reagents>						
74.74 ± 3.00	30.00 ± 1.06	52.12 ± 2.03	30.13 ± 0.91	30.76 ± 1.02	n = 19	[AA2] Diagnostica Stago STA PTT-Auto
74.12 ± 2.72	29.57 ± 1.38	53.81 ± 2.42	29.60 ± 0.17	30.24 ± 0.45	n = 4	[AA3] Diagnostica Stago PTT-LA
70.71 ± 1.53	26.36 ± 0.83	51.58 ± 1.82	26.05 ± 0.63	26.35 ± 0.78	n = 5	[AD2] Siemens Actin
69.89 ± 3.04	26.28 ± 0.95	51.82 ± 1.94	26.27 ± 0.86	26.26 ± 1.36	n = 54	[AD4] Siemens Actin FSL
70.70 ± 1.74	28.86 ± 1.08	49.20 ± 1.62	28.98 ± 1.05	28.18 ± 0.68	n = 6	[AJ3] HemosIL Test APTT-SP
89.80 ± 2.88	31.72 ± 1.09	63.39 ± 1.84	31.49 ± 1.08	30.36 ± 1.26	n = 63	[AO4] HemosIL SynthASil
<Reagent & Instrument>						
75.49 ± 1.92	30.02 ± 1.07	52.41 ± 1.78	30.19 ± 0.93	30.90 ± 1.01	n = 12	[AA2]&[DGC] Diagnostica St & Diagnostic
70.69 ± 2.49	29.70 ± 0.11	50.61 ± 1.41	29.65 ± 0.44	30.10 ± 0.26	n = 5	[AA2]&[DGD] Diagnostica St & Diagnostic
74.12 ± 2.72	29.57 ± 1.38	53.81 ± 2.42	29.60 ± 0.17	30.24 ± 0.45	n = 4	[AA3]&[DGC] Diagnostica St & Diagnostic
69.94 ± 1.11	25.97 ± 0.05	50.86 ± 0.61	25.80 ± 0.27	25.97 ± 0.23	n = 3	[AD2]&[SYW] Siemens Actin & Sysmex CA5
67.30 ± 1.43	25.48 ± 0.47	50.11 ± 0.74	25.49 ± 0.35	23.76 ± 0.59	n = 8	[AD4]&[BEB] Siemens Actin & Siemens BC
71.96 ± 2.13	26.83 ± 0.62	52.93 ± 1.22	26.79 ± 0.50	27.05 ± 0.58	n = 26	[AD4]&[SYD] Siemens Actin & Sysmex CA1
68.13 ± 1.60	25.76 ± 0.85	50.57 ± 1.37	25.69 ± 0.74	25.76 ± 0.86	n = 18	[AD4]&[SYW] Siemens Actin & Sysmex CA5
69.66 ± 0.90	28.67 ± 0.95	48.69 ± 1.47	28.06 ± 0.56	28.15 ± 0.72	n = 3	[AJ3]&[ILA] HemosIL Test A & IL ACL(All
72.09 ± 1.62	29.10 ± 1.17	49.79 ± 1.69	29.82 ± 0.32	28.20 ± 0.63	n = 3	[AJ3]&[ILD] HemosIL Test A & IL ACL(ELI
93.93 ± 3.53	30.22 ± 0.85	65.35 ± 2.79	30.21 ± 0.74	28.48 ± 0.42	n = 7	[AO4]&[ILD] HemosIL SynthA & IL ACL(ELI
89.20 ± 2.10	31.97 ± 0.90	63.11 ± 1.51	31.70 ± 0.99	30.66 ± 1.00	n = 52	[AO4]&[ILE] HemosIL SynthA & IL ACL TOP

Summary of Participant Responses

Mean ± One Standard Deviation

Fibrinogen (mg/dL)

Specimen: C31	Specimen: C32	Specimen: C33	Specimen: C34	Specimen: C35	Number	[Code] Instrument or Reagent System
287.2 ± 23.77	291.0 ± 26.35	290.9 ± 27.69	293.2 ± 29.85	493.2 ± 56.85	n = 90	[---] All Methods & Instruments
<Instruments>						
313.7 ± 21.74	303.0 ± 17.32	312.8 ± 23.88	311.2 ± 22.15	533.5 ± 23.95	n = 7	[BEB] Siemens BCS,BCSXP
282.0 ± 14.70	282.7 ± 16.04	284.2 ± 16.55	288.4 ± 12.51	502.3 ± 23.73	n = 14	[DGC] Diagnostica Stago STA Compact
287.4 ± 6.25	292.4 ± 9.85	287.3 ± 8.36	285.2 ± 6.03	496.7 ± 7.68	n = 5	[DGD] Diagnostica Stago STA-R,STA-R Evo
300.0 ± 19.66	307.6 ± 23.94	305.6 ± 23.65	313.5 ± 27.69	526.2 ± 47.95	n = 34	[ILE] IL ACL TOP Series (ACLTOP,ACLTOP
267.2 ± 12.83	268.3 ± 14.96	266.7 ± 14.93	264.8 ± 15.32	429.2 ± 21.86	n = 21	[SYD] Sysmex CA1500, CA7000
<Reagents>						
350.5 ± 44.41	305.2 ± 29.20	348.1 ± 56.72	296.9 ± 31.89	519.9 ± 13.79	n = 3	[TJ2] HemosIL PT-Fibrinogen
311.0 ± 13.98	327.8 ± 15.20	312.7 ± 16.54	330.5 ± 15.91	520.4 ± 27.43	n = 12	[TJ8] HemosIL RecombiPlasTin 2G
284.0 ± 11.95	286.0 ± 14.96	285.6 ± 14.27	287.7 ± 10.65	500.8 ± 15.75	n = 19	[FA4] Stago STA-Fibrinogen 5
313.7 ± 21.74	303.0 ± 17.32	312.8 ± 23.88	311.2 ± 22.15	533.5 ± 23.95	n = 7	[FB2] Siemens Multifibren U
268.1 ± 11.82	268.7 ± 14.15	267.8 ± 15.36	266.1 ± 14.90	430.9 ± 27.48	n = 24	[FD2] Siemens Fibrinogen Determination
304.8 ± 23.95	310.6 ± 36.67	316.3 ± 18.03	320.1 ± 24.25	540.1 ± 80.48	n = 7	[FJ2] HemosIL Fibrinogen C,XL
290.2 ± 17.47	294.5 ± 14.18	297.9 ± 28.38	297.9 ± 24.67	536.1 ± 76.94	n = 15	[FO3] HemosIL QFA(bovine)
<Reagent & Instrument>						
311.0 ± 13.98	327.8 ± 15.20	312.7 ± 16.54	330.5 ± 15.91	520.4 ± 27.43	n = 12	[TJ8]&[ILE] HemosIL Recomb & IL ACL TOP
282.0 ± 14.70	282.7 ± 16.04	284.2 ± 16.55	288.4 ± 12.51	502.3 ± 23.73	n = 14	[FA4]&[DGC] Stago STA-Fibr & Diagnostic
287.4 ± 6.25	292.4 ± 9.85	287.3 ± 8.36	285.2 ± 6.03	496.7 ± 7.68	n = 5	[FA4]&[DGD] Stago STA-Fibr & Diagnostic
313.7 ± 21.74	303.0 ± 17.32	312.8 ± 23.88	311.2 ± 22.15	533.5 ± 23.95	n = 7	[FB2]&[BEB] Siemens Multif & Siemens BC
267.2 ± 12.83	268.3 ± 14.96	266.7 ± 14.93	264.8 ± 15.32	429.2 ± 21.86	n = 21	[FD2]&[SYD] Siemens Fibrin & Sysmex CA1
300.1 ± 24.98	304.1 ± 25.28	311.7 ± 15.29	315.3 ± 19.65	522.1 ± 58.18	n = 6	[FJ2]&[ILE] HemosIL Fibrin & IL ACL TOP
290.2 ± 17.47	294.5 ± 14.18	297.9 ± 28.38	297.9 ± 24.67	536.1 ± 76.94	n = 15	[FO3]&[ILE] HemosIL QFA(bo & IL ACL TOP

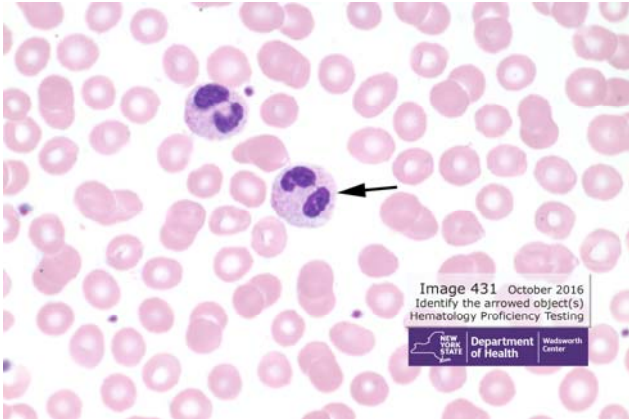
NEW YORK STATE HEMATOLOGY PROFICIENCY TEST PROGRAM

Test event of October 4, 2016

Images on the New York State Department of Health – Wadsworth Center web page:

<http://www.wadsworth.org/chemheme/cellPT> were used to test all laboratories that perform manual white cell differentials. A summary of responses appear below, acceptable responses are shown in shaded areas.

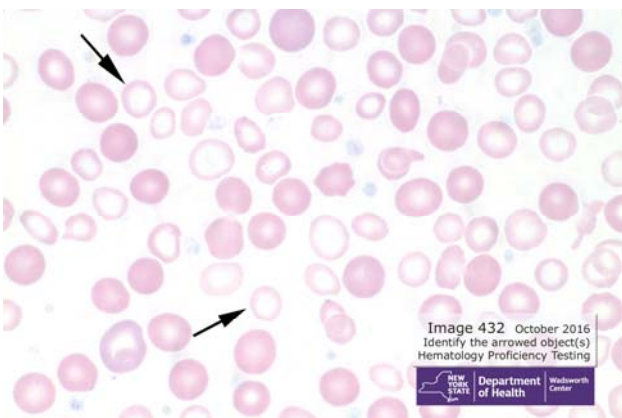
Image 431



Number of Responses	Percent of Laboratories	Cell type or finding
169	96.0%	Neutrophil with Pelger-Huët nucleus
6	3.4%	Segmented neutrophil
1	0.6%	Döhle body

The arrowed white blood cell in Image 431 has two distinct lobes, mature nuclear chromatin, and unremarkable cytoplasmic granules. A second neutrophil with characteristics similar to those of the arrowed neutrophil is also present in Image 431. The presence of two bilobed neutrophils supports the diagnosis of congenital Pelger-Huët anomaly. Ninety-six percent of the participants correctly identified the arrowed cell in Image 431 as a neutrophil with Pelger-Huët nucleus.

Image 432

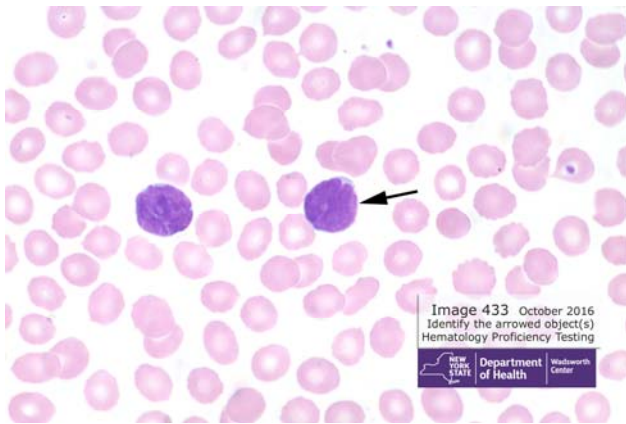


Number of Responses	Percent of Laboratories	Cell type or finding
176	100%	Erythrocyte - hypochromic

The arrowed red blood cells in Image 432 display increased areas of central pallor and, as all of the participants agree, are hypochromic erythrocytes. Image 432 was captured from the peripheral blood smear of a 70 year-old male diagnosed with iron deficiency anemia secondary to chronic blood loss.

Increased blood loss is the most common cause of iron deficiency anemia. A diagnosis of iron deficiency anemia is commonly made based on the results of serum iron level, total iron-binding capacity, serum ferritin level and the percentage transferrin saturation.

Image 433



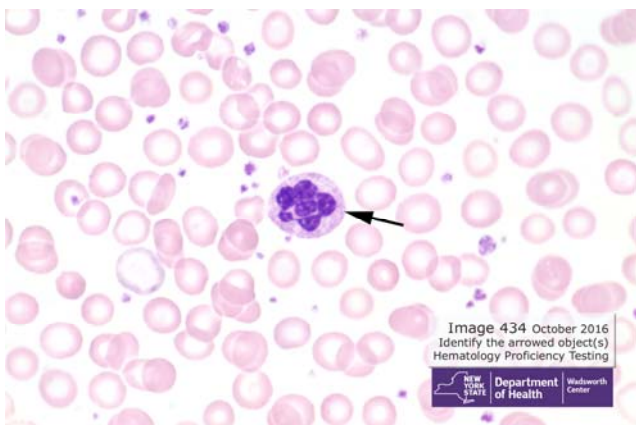
Number of Responses	Percent of Laboratories	Cell type or finding
131	74.4%	Lymphoma/ Sézary cell
39	22.2%	Blast cell, not classified
4	2.3%	Reactive/Atypical lymphocyte
2	1.1%	Normal lymphocyte

The nucleus of the arrowed cell in Image 433 and the nucleus of the adjacent white blood cell appear cleaved with condensed chromatin. The majority of participant and referee laboratories identified the arrowed cell in Image 433 as a

lymphoma/Sezary cell, however, since consensus was not achieved by participant laboratories nor by referee laboratories, pass credit was issued. Image 433 was taken from the peripheral blood smear of a female with a preliminary diagnosis of follicular lymphoma. Follicular lymphomas may be classified as cleaved or uncleaved, the cleaved cells in Image 433 support the preliminary diagnosis of follicular lymphoma.

“Follicular lymphoma (FL) is a neoplasm composed of follicle centre (germinal centre) B-cells (typically both centrocytes and centroblasts/large transformed cells), which usually has at least a partially follicular pattern. If diffuse areas of any size comprised predominantly or entirely of blastic cells are present in any case of follicular lymphoma, a diagnosis of diffuse large B-cell lymphoma is also made. Lymphomas composed of centrocytes and centroblasts with an entirely diffuse pattern in the sampled tissue may be included in this category. Primary cutaneous lymphomas of germinal centre cells are separately classified.” Swerdlow, S.H., Campo, E., Harris, N., Jaffe, E.S., Pileri, S.A., Stein, H., Thiele, J., Vardiman, J.W. World Health Organization Classification of Tumours of Haematopoietic and Lymphoid Tissues (4th edition), IARC Press, Lyon, 2008 p.220

Image 434

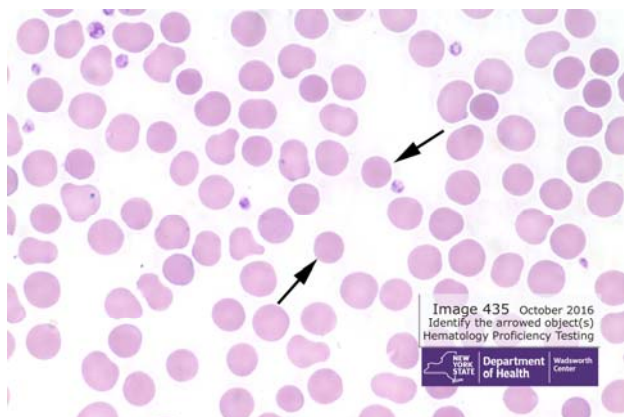


Number of Responses	Percent of Laboratories	Cell type or finding
176	100%	Hypersegmentation

The arrowed white blood cell in Image 434 is a neutrophil with five, possibly six, nuclear segments. The cell was correctly identified as hypersegmentation by all of the participant and referee laboratories.

Image 434 was captured from the peripheral blood of a 70 year-old male diagnosed with iron deficiency anemia secondary to chronic blood loss, the same case as Image 432 where the finding was hypochromia. The presence of hypersegmented neutrophils in this case of iron deficiency anemia could be an indication of a coexisting folate deficiency.

Image 435



Number of Responses	Percent of Laboratories	Cell type or finding
167	94.9%	Spherocyte
9	5.1%	Erythrocyte - normal

The striking feature of Image 435 is the homogeneity of the red blood cells, they all lack areas of central pallor. The arrowed cells were correctly reported by 167 of the participants as spherocytes. The image was captured from the peripheral blood of a 23 year-old with known hereditary spherocytosis. Additional findings in this case supporting

hyposplenism included the presence of acanthocytes and Howell Jolly bodies.