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Hematology Proficiency Test Program

Statistical Summary – February 2016 (Event 16-1)

This statistical report summarizes participant data for the Hematology proficiency survey shipped 1 February 2016.

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

Routine Blood Counts (B21, B22, B23, B24, B25)

Routine Coagulation (C21, C22, C23, C24, C25)

Cell Identification (421, 422, 423, 424, 425)

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: B21	Specimen: B22	Specimen: B23	Specimen: B24	Specimen: B25	Number	[Code] Instrument or Reagent System
4.12 ± 0.25	20.14 ± 1.01	9.29 ± 0.39	26.33 ± 1.09	2.53 ± 0.14	n = 218	[---] All Methods & Instruments
<Instruments>						
4.59 ± 0.20	21.33 ± 1.22	9.77 ± 0.60	26.78 ± 1.84	2.82 ± 0.15	n = 3	[ABG] Abbott Cell Dyn 1700
4.10 ± 0.16	19.79 ± 0.26	9.32 ± 0.15	26.43 ± 0.46	2.67 ± 0.11	n = 8	[ABM] Abbott Cell Dyn 3700
4.02 ± 0.13	20.33 ± 0.58	9.13 ± 0.23	26.10 ± 0.77	2.45 ± 0.06	n = 4	[ABS] Abbott Cell Dyn Sapphire
4.15 ± 0.12	20.17 ± 0.53	9.44 ± 0.27	26.74 ± 0.89	2.63 ± 0.04	n = 6	[ABT] Abbott Cell Dyn Ruby
4.07 ± 0.05	18.54 ± 0.10	8.83 ± 0.05	23.88 ± 0.15	2.50 ± 0.00	n = 3	[ABU] Abbott Cell Dyn Emerald
3.80 ± 0.11	19.21 ± 0.67	9.01 ± 0.38	24.93 ± 1.82	2.31 ± 0.09	n = 4	[BTD] Siemens Advia 120
3.79 ± 0.17	19.06 ± 0.76	9.01 ± 0.47	25.87 ± 0.70	2.32 ± 0.10	n = 10	[BTE] Siemens Advia 2120
4.25 ± 0.11	20.55 ± 0.48	9.34 ± 0.20	26.15 ± 0.54	2.51 ± 0.06	n = 35	[CUL] Coulter UniCel DxH 600,800
3.98 ± 0.04	20.20 ± 0.08	9.15 ± 0.12	26.77 ± 0.25	2.45 ± 0.06	n = 4	[CUS] Coulter ACT 5 diff
4.39 ± 0.12	21.26 ± 0.65	9.63 ± 0.26	27.22 ± 0.70	2.78 ± 0.11	n = 17	[CUT] Coulter ACT series,not ACT5 diff
4.43 ± 0.05	21.33 ± 0.68	9.58 ± 0.15	27.71 ± 0.44	2.66 ± 0.10	n = 3	[CUW] Coulter HMX
4.31 ± 0.10	20.70 ± 0.47	9.53 ± 0.25	27.26 ± 0.40	2.63 ± 0.09	n = 12	[CUX] Coulter LH750,755
4.30 ± 0.10	20.90 ± 0.46	9.69 ± 0.14	27.18 ± 0.50	2.78 ± 0.13	n = 7	[CUY] Coulter LH 780
4.45 ± 0.10	20.92 ± 0.55	9.59 ± 0.13	28.02 ± 0.43	2.84 ± 0.10	n = 6	[CUZ] Coulter LH500
4.17 ± 0.05	20.07 ± 0.59	9.25 ± 0.19	26.09 ± 0.37	2.53 ± 0.05	n = 3	[ROB] ABX Pentra series
4.32 ± 0.15	20.43 ± 0.41	9.26 ± 0.10	26.37 ± 0.23	2.57 ± 0.05	n = 3	[ROC] ABX Micro
3.86 ± 0.13	18.58 ± 0.83	8.75 ± 0.52	24.80 ± 1.20	2.46 ± 0.13	n = 9	[SYA] Sysmex XE 5000
3.73 ± 0.23	19.05 ± 0.55	8.83 ± 0.43	25.54 ± 0.41	2.44 ± 0.07	n = 13	[SYC] Sysmex XN-series
3.98 ± 0.11	19.52 ± 0.51	9.08 ± 0.26	26.04 ± 0.76	2.48 ± 0.08	n = 18	[SYI] Sysmex XT-2000i,XT-1800i
4.02 ± 0.17	19.31 ± 1.42	9.08 ± 0.57	25.78 ± 1.29	2.42 ± 0.05	n = 4	[SYO] Sysmex XE2100
4.14 ± 0.11	20.66 ± 0.48	9.55 ± 0.18	27.02 ± 0.42	2.53 ± 0.08	n = 19	[SYP] Sysmex XS-1000i,XS-1000iAL
3.95 ± 0.23	18.49 ± 1.09	8.87 ± 0.68	24.65 ± 1.37	2.49 ± 0.04	n = 4	[SYQ] Sysmex XE 2100D(Blood Center)
3.99 ± 0.11	19.52 ± 0.31	9.05 ± 0.22	25.87 ± 0.41	2.46 ± 0.10	n = 12	[SYV] Sysmex XT 4000i

Summary of Participant Responses

Mean ± One Standard Deviation

Red Cell Count (x 10¹²/L)

Specimen: B21	Specimen: B22	Specimen: B23	Specimen: B24	Specimen: B25	Number	[Code] Instrument or Reagent System
4.090 ± 0.079	5.071 ± 0.087	4.820 ± 0.081	4.854 ± 0.089	2.057 ± 0.049	n = 218	[---] All Methods & Instruments
<Instruments>						
4.178 ± 0.121	5.147 ± 0.069	4.879 ± 0.136	4.910 ± 0.092	2.091 ± 0.044	n = 3	[ABG] Abbott Cell Dyn 1700
4.107 ± 0.061	5.041 ± 0.068	4.836 ± 0.083	4.871 ± 0.065	2.123 ± 0.028	n = 7	[ABM] Abbott Cell Dyn 3700
4.143 ± 0.031	5.179 ± 0.083	4.875 ± 0.067	4.952 ± 0.037	2.088 ± 0.032	n = 4	[ABS] Abbott Cell Dyn Sapphire
4.113 ± 0.076	5.202 ± 0.073	4.899 ± 0.056	4.965 ± 0.086	2.058 ± 0.041	n = 6	[ABT] Abbott Cell Dyn Ruby
3.828 ± 0.086	4.869 ± 0.101	4.618 ± 0.094	4.652 ± 0.105	2.001 ± 0.044	n = 3	[ABU] Abbott Cell Dyn Emerald
4.141 ± 0.041	5.092 ± 0.051	4.832 ± 0.087	4.889 ± 0.068	2.117 ± 0.027	n = 4	[BTD] Siemens Advia 120
4.054 ± 0.119	5.040 ± 0.107	4.776 ± 0.154	4.836 ± 0.130	2.091 ± 0.043	n = 10	[BTE] Siemens Advia 2120
4.103 ± 0.048	5.064 ± 0.052	4.812 ± 0.061	4.837 ± 0.068	2.039 ± 0.033	n = 35	[CUL] Coulter UniCel DxH 600,800
4.067 ± 0.064	5.089 ± 0.068	4.789 ± 0.064	4.859 ± 0.057	2.064 ± 0.023	n = 4	[CUS] Coulter ACT 5 diff
4.132 ± 0.118	5.099 ± 0.119	4.851 ± 0.145	4.955 ± 0.133	2.072 ± 0.071	n = 17	[CUT] Coulter ACT series,not ACT5 diff
4.197 ± 0.014	5.236 ± 0.067	4.930 ± 0.064	4.975 ± 0.019	2.119 ± 0.052	n = 3	[CUW] Coulter HMX
4.124 ± 0.034	5.151 ± 0.044	4.897 ± 0.045	4.952 ± 0.049	2.067 ± 0.012	n = 12	[CUX] Coulter LH750,755
4.121 ± 0.032	5.139 ± 0.041	4.886 ± 0.022	4.910 ± 0.036	2.067 ± 0.019	n = 7	[CUY] Coulter LH 780
4.166 ± 0.028	5.220 ± 0.048	4.905 ± 0.027	5.008 ± 0.076	2.107 ± 0.019	n = 6	[CUZ] Coulter LH500
4.027 ± 0.123	5.110 ± 0.126	4.769 ± 0.115	4.827 ± 0.067	1.976 ± 0.039	n = 3	[ROB] ABX Pentra series
3.944 ± 0.100	4.985 ± 0.083	4.753 ± 0.069	4.762 ± 0.077	1.961 ± 0.044	n = 3	[ROC] ABX Micro
4.116 ± 0.047	5.052 ± 0.052	4.837 ± 0.050	4.844 ± 0.028	2.081 ± 0.018	n = 9	[SYA] Sysmex XE 5000
4.026 ± 0.037	5.058 ± 0.047	4.801 ± 0.052	4.838 ± 0.053	2.012 ± 0.028	n = 13	[SYC] Sysmex XN-series
4.049 ± 0.046	5.005 ± 0.046	4.784 ± 0.034	4.786 ± 0.036	2.041 ± 0.023	n = 18	[SYI] Sysmex XT-2000i,XT-1800i
4.131 ± 0.038	5.023 ± 0.043	4.840 ± 0.032	4.856 ± 0.019	2.086 ± 0.023	n = 4	[SYO] Sysmex XE2100
3.999 ± 0.039	5.041 ± 0.051	4.771 ± 0.041	4.806 ± 0.023	2.005 ± 0.022	n = 19	[SYP] Sysmex XS-1000i,XS-1000iAL
4.152 ± 0.042	5.044 ± 0.066	4.827 ± 0.075	4.833 ± 0.040	2.110 ± 0.015	n = 4	[SYQ] Sysmex XE 2100D(Blood Center)
4.083 ± 0.043	5.036 ± 0.067	4.808 ± 0.055	4.807 ± 0.044	2.067 ± 0.036	n = 12	[SYV] Sysmex XT 4000i

Summary of Participant Responses

Mean ± One Standard Deviation

Hemoglobin (g/dL)

Specimen: B21	Specimen: B22	Specimen: B23	Specimen: B24	Specimen: B25	Number	[Code] Instrument or Reagent System
11.97 ± 0.17	14.61 ± 0.28	13.69 ± 0.19	14.27 ± 0.30	6.58 ± 0.14	n = 220	[---] All Methods & Instruments
<Instruments>						
11.93 ± 0.14	14.68 ± 0.24	13.72 ± 0.41	14.41 ± 0.20	6.74 ± 0.10	n = 3	[ABG] Abbott Cell Dyn 1700
12.12 ± 0.16	14.89 ± 0.09	13.83 ± 0.14	14.73 ± 0.16	6.83 ± 0.10	n = 8	[ABM] Abbott Cell Dyn 3700
12.17 ± 0.09	14.87 ± 0.08	13.95 ± 0.12	14.57 ± 0.08	6.82 ± 0.04	n = 4	[ABS] Abbott Cell Dyn Sapphire
12.30 ± 0.00	15.19 ± 0.14	14.02 ± 0.17	14.94 ± 0.06	6.65 ± 0.11	n = 6	[ABT] Abbott Cell Dyn Ruby
12.10 ± 0.00	14.97 ± 0.14	13.95 ± 0.19	14.62 ± 0.15	6.70 ± 0.00	n = 3	[ABU] Abbott Cell Dyn Emerald
12.33 ± 0.09	14.93 ± 0.20	13.81 ± 0.11	14.58 ± 0.15	6.85 ± 0.06	n = 4	[BTD] Siemens Advia 120
12.07 ± 0.26	14.81 ± 0.31	13.78 ± 0.33	14.41 ± 0.34	6.75 ± 0.12	n = 10	[BTE] Siemens Advia 2120
11.93 ± 0.12	14.37 ± 0.15	13.57 ± 0.14	14.00 ± 0.16	6.53 ± 0.08	n = 35	[CUL] Coulter UniCel DxH 600,800
12.03 ± 0.08	14.80 ± 0.08	13.78 ± 0.04	14.42 ± 0.04	6.62 ± 0.04	n = 4	[CUS] Coulter ACT 5 diff
11.89 ± 0.25	14.72 ± 0.34	13.69 ± 0.25	14.37 ± 0.25	6.57 ± 0.15	n = 17	[CUT] Coulter ACT series,not ACT5 diff
12.04 ± 0.10	14.95 ± 0.27	13.66 ± 0.10	14.53 ± 0.05	6.67 ± 0.05	n = 3	[CUW] Coulter HMX
11.88 ± 0.12	14.54 ± 0.16	13.67 ± 0.10	14.26 ± 0.12	6.54 ± 0.07	n = 12	[CUX] Coulter LH750,755
11.92 ± 0.17	14.67 ± 0.16	13.75 ± 0.20	14.28 ± 0.20	6.67 ± 0.07	n = 7	[CUY] Coulter LH 780
11.96 ± 0.21	14.79 ± 0.31	13.69 ± 0.21	14.54 ± 0.41	6.60 ± 0.16	n = 6	[CUZ] Coulter LH500
11.87 ± 0.31	14.78 ± 0.41	13.70 ± 0.27	14.45 ± 0.27	6.48 ± 0.15	n = 3	[ROB] ABX Pentra series
12.10 ± 0.09	14.94 ± 0.10	13.87 ± 0.05	14.57 ± 0.14	6.73 ± 0.05	n = 3	[ROC] ABX Micro
11.95 ± 0.13	14.50 ± 0.13	13.63 ± 0.15	14.17 ± 0.13	6.60 ± 0.00	n = 9	[SYA] Sysmex XE 5000
11.89 ± 0.07	14.61 ± 0.13	13.67 ± 0.13	14.29 ± 0.15	6.47 ± 0.08	n = 13	[SYC] Sysmex XN-series
12.00 ± 0.10	14.42 ± 0.15	13.61 ± 0.18	14.02 ± 0.14	6.53 ± 0.11	n = 18	[SYI] Sysmex XT-2000i,XT-1800i
12.05 ± 0.06	14.67 ± 0.08	13.75 ± 0.06	14.34 ± 0.16	6.63 ± 0.08	n = 4	[SYO] Sysmex XE2100
11.90 ± 0.09	14.63 ± 0.11	13.68 ± 0.12	14.30 ± 0.12	6.49 ± 0.04	n = 19	[SYP] Sysmex XS-1000i,XS-1000iAL
11.99 ± 0.11	14.58 ± 0.13	13.70 ± 0.18	14.14 ± 0.32	6.60 ± 0.08	n = 4	[SYQ] Sysmex XE 2100D(Blood Center)
12.00 ± 0.14	14.34 ± 0.17	13.62 ± 0.13	13.97 ± 0.11	6.49 ± 0.11	n = 12	[SYV] Sysmex XT 4000i

Summary of Participant Responses

Mean ± One Standard Deviation

Hematocrit (%)

Specimen: B21	Specimen: B22	Specimen: B23	Specimen: B24	Specimen: B25	Number	[Code] Instrument or Reagent System
34.97 ± 1.46	42.22 ± 1.74	39.85 ± 1.54	41.31 ± 1.77	19.76 ± 0.82	n = 221	[---] All Methods & Instruments
<Instruments>						
35.43 ± 1.13	42.67 ± 0.76	40.17 ± 0.77	41.43 ± 0.95	19.76 ± 0.39	n = 3	[ABG] Abbott Cell Dyn 1700
36.90 ± 0.77	44.06 ± 0.43	41.87 ± 0.91	43.38 ± 0.77	20.84 ± 0.55	n = 8	[ABM] Abbott Cell Dyn 3700
33.03 ± 0.09	40.58 ± 0.70	37.68 ± 0.63	39.30 ± 0.51	18.28 ± 0.37	n = 4	[ABS] Abbott Cell Dyn Sapphire
30.90 ± 1.04	38.77 ± 1.17	36.11 ± 1.15	36.97 ± 1.24	16.72 ± 0.52	n = 6	[ABT] Abbott Cell Dyn Ruby
34.55 ± 0.49	42.68 ± 0.72	39.63 ± 1.15	41.52 ± 0.66	19.95 ± 0.41	n = 4	[ABU] Abbott Cell Dyn Emerald
31.80 ± 0.40	38.80 ± 0.80	35.89 ± 0.81	37.29 ± 0.76	17.77 ± 0.31	n = 4	[BTD] Siemens Advia 120
30.59 ± 0.77	37.91 ± 0.94	35.11 ± 0.99	36.45 ± 1.09	17.29 ± 0.36	n = 10	[BTE] Siemens Advia 2120
36.15 ± 0.48	43.61 ± 0.53	40.94 ± 0.47	42.66 ± 0.58	19.90 ± 0.32	n = 35	[CUL] Coulter UniCel DxH 600,800
33.51 ± 0.57	41.40 ± 0.76	38.26 ± 0.61	40.24 ± 0.52	18.43 ± 0.31	n = 4	[CUS] Coulter ACT 5 diff
35.87 ± 0.86	43.11 ± 0.95	40.58 ± 1.11	42.62 ± 0.92	19.75 ± 0.55	n = 17	[CUT] Coulter ACT series,not ACT5 diff
35.83 ± 0.23	43.81 ± 0.56	40.78 ± 0.41	42.55 ± 0.19	19.97 ± 0.31	n = 3	[CUW] Coulter HMX
35.71 ± 0.34	43.67 ± 0.57	41.03 ± 0.41	42.93 ± 0.47	19.65 ± 0.23	n = 12	[CUX] Coulter LH750,755
35.64 ± 0.38	43.60 ± 0.50	40.98 ± 0.60	42.65 ± 0.35	19.68 ± 0.41	n = 7	[CUY] Coulter LH 780
35.53 ± 0.53	44.01 ± 0.71	40.76 ± 0.06	42.99 ± 0.86	19.78 ± 0.29	n = 6	[CUZ] Coulter LH500
33.49 ± 0.66	41.22 ± 0.41	38.07 ± 0.41	40.00 ± 0.18	18.38 ± 0.24	n = 3	[ROB] ABX Pentra series
34.43 ± 0.05	42.50 ± 0.36	39.58 ± 0.49	41.35 ± 0.45	18.73 ± 0.14	n = 3	[ROC] ABX Micro
35.19 ± 0.54	41.93 ± 0.63	39.96 ± 0.59	41.16 ± 0.33	20.00 ± 0.19	n = 9	[SYA] Sysmex XE 5000
33.93 ± 0.54	41.67 ± 0.76	39.37 ± 0.71	40.59 ± 0.85	19.03 ± 0.37	n = 13	[SYC] Sysmex XN-series
34.33 ± 0.57	40.81 ± 0.66	39.00 ± 0.45	40.02 ± 0.50	20.10 ± 0.30	n = 18	[SYI] Sysmex XT-2000i,XT-1800i
35.54 ± 0.51	41.99 ± 0.31	40.16 ± 0.47	41.27 ± 0.32	20.30 ± 0.32	n = 4	[SYO] Sysmex XE2100
34.44 ± 0.35	41.55 ± 0.40	39.29 ± 0.35	40.56 ± 0.32	19.98 ± 0.26	n = 19	[SYP] Sysmex XS-1000i,XS-1000iAL
35.71 ± 0.57	42.35 ± 0.65	40.36 ± 0.85	41.44 ± 0.56	20.58 ± 0.21	n = 4	[SYQ] Sysmex XE 2100D(Blood Center)
34.86 ± 0.36	41.34 ± 0.50	39.42 ± 0.41	40.34 ± 0.42	20.34 ± 0.32	n = 12	[SYV] Sysmex XT 4000i

Summary of Participant Responses

Mean ± One Standard Deviation

Platelet Count ($\times 10^9/L$)

Specimen: B21	Specimen: B22	Specimen: B23	Specimen: B24	Specimen: B25	Number	[Code] Instrument or Reagent System
170.7 ± 9.29	569.5 ± 26.20	247.1 ± 12.25	476.7 ± 22.32	65.7 ± 5.05	n = 219	[---] All Methods & Instruments
<Instruments>						
191.0 ± 18.03	628.5 ± 36.94	273.9 ± 15.08	521.3 ± 17.73	66.4 ± 6.14	n = 3	[ABG] Abbott Cell Dyn 1700
178.7 ± 9.25	593.0 ± 19.76	263.8 ± 8.42	491.2 ± 17.90	68.3 ± 1.56	n = 8	[ABM] Abbott Cell Dyn 3700
175.8 ± 6.12	561.0 ± 20.06	244.0 ± 8.82	477.2 ± 12.08	70.8 ± 2.58	n = 4	[ABS] Abbott Cell Dyn Sapphire
176.1 ± 5.46	578.8 ± 16.17	252.5 ± 10.16	487.2 ± 2.77	75.1 ± 3.66	n = 6	[ABT] Abbott Cell Dyn Ruby
187.9 ± 10.31	573.8 ± 28.44	260.0 ± 7.05	479.5 ± 21.51	63.7 ± 8.31	n = 4	[ABU] Abbott Cell Dyn Emerald
175.1 ± 3.00	579.1 ± 14.23	240.8 ± 6.04	482.3 ± 6.73	74.1 ± 7.40	n = 4	[BTD] Siemens Advia 120
174.6 ± 6.19	593.2 ± 19.47	243.6 ± 11.60	495.0 ± 11.29	68.4 ± 1.87	n = 10	[BTE] Siemens Advia 2120
167.4 ± 5.37	547.5 ± 14.05	237.5 ± 7.81	458.8 ± 12.96	64.0 ± 1.93	n = 35	[CUL] Coulter UniCel DxH 600,800
189.1 ± 10.49	580.7 ± 14.50	253.7 ± 7.57	488.8 ± 8.58	70.4 ± 2.83	n = 4	[CUS] Coulter ACT 5 diff
168.9 ± 12.04	560.4 ± 18.33	242.3 ± 12.91	474.8 ± 20.87	64.7 ± 4.98	n = 17	[CUT] Coulter ACT series,not ACT5 diff
167.8 ± 2.36	550.2 ± 4.11	243.7 ± 5.97	464.1 ± 7.17	65.3 ± 1.37	n = 3	[CUW] Coulter HMX
172.3 ± 5.15	558.7 ± 17.27	245.1 ± 8.18	480.1 ± 19.17	68.1 ± 1.87	n = 12	[CUX] Coulter LH750,755
171.4 ± 6.20	555.3 ± 12.35	248.9 ± 6.04	471.2 ± 17.90	68.7 ± 2.07	n = 7	[CUY] Coulter LH 780
174.1 ± 4.91	563.2 ± 5.27	247.0 ± 3.48	489.9 ± 11.97	67.2 ± 2.16	n = 6	[CUZ] Coulter LH500
182.1 ± 7.17	588.1 ± 31.01	257.3 ± 11.27	506.3 ± 24.86	70.9 ± 5.63	n = 3	[ROB] ABX Pentra series
175.8 ± 12.13	550.6 ± 11.12	252.0 ± 6.42	476.7 ± 5.09	77.6 ± 4.72	n = 3	[ROC] ABX Micro
155.6 ± 6.92	529.5 ± 21.43	227.4 ± 6.12	427.7 ± 14.45	57.9 ± 2.25	n = 9	[SYA] Sysmex XE 5000
163.0 ± 3.95	569.7 ± 10.85	248.2 ± 4.24	469.1 ± 10.80	58.2 ± 1.63	n = 13	[SYC] Sysmex XN-series
175.5 ± 6.08	591.3 ± 12.27	257.7 ± 9.79	487.3 ± 12.49	66.8 ± 3.02	n = 18	[SYI] Sysmex XT-2000i,XT-1800i
154.0 ± 4.64	534.7 ± 25.83	229.6 ± 7.53	434.2 ± 25.45	60.5 ± 2.98	n = 4	[SYO] Sysmex XE2100
167.4 ± 3.56	578.8 ± 8.54	247.4 ± 4.11	475.5 ± 10.11	63.2 ± 1.92	n = 19	[SYP] Sysmex XS-1000i,XS-1000iAL
180.8 ± 3.42	606.0 ± 21.22	264.8 ± 8.05	504.2 ± 10.12	71.8 ± 1.46	n = 4	[SYQ] Sysmex XE 2100D(Blood Center)
173.1 ± 4.57	585.8 ± 8.59	255.3 ± 4.52	485.4 ± 9.56	66.8 ± 2.28	n = 12	[SYV] Sysmex XT 4000i

Summary of Participant Responses
 Mean ± One Standard Deviation

Prothrombin Time (seconds)

Specimen: C21 -----	Specimen: C22 -----	Specimen: C23 -----	Specimen: C24 -----	Specimen: C25 -----	Number -----	[Code] Instrument or Reagent System -----
11.32 ± 0.76	27.90 ± 4.00	11.93 ± 1.01	51.39 ± 9.45	11.89 ± 1.00	n = 156	[---] All Methods & Instruments
<Instruments>						
11.16 ± 0.26	25.36 ± 0.89	11.07 ± 0.29	45.21 ± 2.14	11.01 ± 0.32	n = 8	[BEB] Siemens BCS,BCSXP
13.17 ± 0.31	31.65 ± 0.81	13.70 ± 0.26	60.07 ± 2.46	13.69 ± 0.24	n = 14	[DGC] Diagnostica Stago STA Compact
13.26 ± 0.32	31.56 ± 0.65	14.04 ± 0.19	57.12 ± 1.24	14.04 ± 0.27	n = 5	[DGD] Diagnostica Stago STA-R,STA-R Evo
11.74 ± 0.31	20.91 ± 0.66	11.95 ± 0.28	32.81 ± 2.27	11.99 ± 0.27	n = 5	[ILA] IL ACL(All except810,ELITE,EPRO,8
11.45 ± 0.53	27.19 ± 8.07	12.23 ± 0.84	48.55 ± 16.54	12.18 ± 0.70	n = 4	[ILC] IL ACL Futura/Advance
11.57 ± 0.22	30.28 ± 1.53	12.46 ± 0.32	56.76 ± 2.65	12.55 ± 0.37	n = 12	[ILD] IL ACL(ELITE,ELITE PRO,8/9/10000)
11.58 ± 0.37	31.41 ± 1.98	12.44 ± 0.43	59.99 ± 4.20	12.32 ± 0.45	n = 39	[ILE] IL ACL TOP Series
10.62 ± 0.23	25.45 ± 1.10	11.06 ± 0.29	45.54 ± 2.42	11.00 ± 0.26	n = 32	[SYW] Sysmex CA500/CA600 series
10.94 ± 0.29	25.30 ± 0.83	11.27 ± 0.26	45.37 ± 1.63	11.30 ± 0.25	n = 26	[SYX] Sysmex CA 1500
11.23 ± 0.08	25.24 ± 0.75	11.31 ± 0.27	45.72 ± 1.69	11.36 ± 0.23	n = 5	[SYY] Sysmex CA 7000
<Reagents>						
13.21 ± 0.30	31.55 ± 0.83	13.79 ± 0.36	59.06 ± 2.56	13.80 ± 0.31	n = 21	[TA3] STA Neoplastine CL+
10.83 ± 0.35	25.35 ± 0.97	11.15 ± 0.31	45.43 ± 2.02	11.14 ± 0.32	n = 72	[TD2] Siemens Innovin
11.57 ± 0.41	20.79 ± 0.52	11.81 ± 0.31	33.34 ± 1.89	11.90 ± 0.29	n = 8	[TJ2] HemosIL PT-Fibrinogen
11.58 ± 0.33	31.10 ± 1.88	12.47 ± 0.41	59.24 ± 3.95	12.40 ± 0.45	n = 51	[TJ8] HemosIL RecombiPlasTin 2G
<Reagent & Instrument>						
13.17 ± 0.31	31.65 ± 0.81	13.70 ± 0.26	60.07 ± 2.46	13.69 ± 0.24	n = 14	[TA3]&[DGC] STA Neoplastin & Diagnostic
13.26 ± 0.32	31.56 ± 0.65	14.04 ± 0.19	57.12 ± 1.24	14.04 ± 0.27	n = 5	[TA3]&[DGD] STA Neoplastin & Diagnostic
11.16 ± 0.26	25.36 ± 0.89	11.07 ± 0.29	45.21 ± 2.14	11.01 ± 0.32	n = 8	[TD2]&[BEB] Siemens Innovin & Siemens BC
10.62 ± 0.23	25.45 ± 1.10	11.06 ± 0.29	45.54 ± 2.42	11.00 ± 0.26	n = 32	[TD2]&[SYW] Siemens Innovin & Sysmex CA5
10.94 ± 0.29	25.30 ± 0.83	11.27 ± 0.26	45.37 ± 1.63	11.30 ± 0.25	n = 26	[TD2]&[SYX] Siemens Innovin & Sysmex CA
11.23 ± 0.08	25.24 ± 0.75	11.31 ± 0.27	45.72 ± 1.69	11.36 ± 0.23	n = 5	[TD2]&[SYY] Siemens Innovin & Sysmex CA
11.74 ± 0.31	20.91 ± 0.66	11.95 ± 0.28	32.81 ± 2.27	11.99 ± 0.27	n = 5	[TJ2]&[ILA] HemosIL PT-Fib & IL ACL(All
11.59 ± 0.22	30.28 ± 1.52	12.49 ± 0.27	56.76 ± 2.65	12.61 ± 0.32	n = 11	[TJ8]&[ILD] HemosIL Recomb & IL ACL(ELI
11.58 ± 0.38	31.32 ± 1.89	12.44 ± 0.44	59.79 ± 3.96	12.32 ± 0.46	n = 38	[TJ8]&[ILE] HemosIL Recomb & IL ACL TOP

Summary of Participant Responses

Mean ± One Standard Deviation

INR (International Normalized Ratio)

Specimen: C21	Specimen: C22	Specimen: C23	Specimen: C24	Specimen: C25	Number	[Code] Instrument or Reagent System
1.034 ± 0.053	2.634 ± 0.316	1.090 ± 0.057	4.959 ± 1.015	1.085 ± 0.059	n = 159	[---] All Methods & Instruments
<Instruments>						
1.075 ± 0.066	2.612 ± 0.174	1.066 ± 0.049	4.534 ± 0.354	1.073 ± 0.068	n = 7	[BEB] Siemens BCS,BCSXP
0.996 ± 0.049	3.125 ± 0.166	1.050 ± 0.049	7.109 ± 0.541	1.052 ± 0.046	n = 14	[DGC] Diagnostica Stago STA Compact
1.019 ± 0.030	3.107 ± 0.081	1.096 ± 0.020	6.726 ± 0.189	1.105 ± 0.008	n = 5	[DGD] Diagnostica Stago STA-R,STA-R Evo
0.990 ± 0.074	2.694 ± 0.260	1.023 ± 0.072	5.973 ± 1.020	1.016 ± 0.103	n = 5	[ILA] IL ACL(All except810,ELITE,EPRO,8
1.000 ± 0.064	2.916 ± 0.251	1.104 ± 0.049	6.163 ± 0.812	1.055 ± 0.072	n = 4	[ILC] IL ACL Futura/Advance
1.055 ± 0.048	2.839 ± 0.180	1.133 ± 0.054	5.548 ± 0.478	1.147 ± 0.065	n = 12	[ILD] IL ACL(ELITE,ELITE PRO,8/9/10000)
1.036 ± 0.053	2.764 ± 0.186	1.114 ± 0.061	5.235 ± 0.381	1.100 ± 0.055	n = 42	[ILE] IL ACL TOP Series
1.039 ± 0.045	2.448 ± 0.112	1.089 ± 0.042	4.327 ± 0.252	1.082 ± 0.042	n = 31	[SYW] Sysmex CA500/CA600 series
1.036 ± 0.042	2.308 ± 0.102	1.082 ± 0.031	4.039 ± 0.186	1.083 ± 0.033	n = 27	[SYX] Sysmex CA 1500
1.075 ± 0.041	2.440 ± 0.114	1.106 ± 0.047	4.429 ± 0.227	1.110 ± 0.041	n = 5	[SYY] Sysmex CA 7000
<Reagents>						
1.004 ± 0.052	3.101 ± 0.154	1.065 ± 0.061	6.945 ± 0.490	1.069 ± 0.055	n = 21	[TA3] STA Neoplastine CL+
1.042 ± 0.047	2.400 ± 0.144	1.084 ± 0.040	4.226 ± 0.292	1.081 ± 0.042	n = 72	[TD2] Siemens Innovin
0.967 ± 0.073	2.746 ± 0.230	1.034 ± 0.064	6.282 ± 0.898	1.017 ± 0.078	n = 8	[TJ2] HemosIL PT-Fibrinogen
1.042 ± 0.050	2.783 ± 0.197	1.122 ± 0.058	5.286 ± 0.408	1.112 ± 0.063	n = 54	[TJ8] HemosIL RecombiPlasTin 2G
<Reagent & Instrument>						
0.996 ± 0.049	3.125 ± 0.166	1.050 ± 0.049	7.109 ± 0.541	1.052 ± 0.046	n = 14	[TA3]&[DGC] STA Neoplastin & Diagnostic
1.019 ± 0.030	3.107 ± 0.081	1.096 ± 0.020	6.726 ± 0.189	1.105 ± 0.008	n = 5	[TA3]&[DGD] STA Neoplastin & Diagnostic
1.075 ± 0.066	2.612 ± 0.174	1.066 ± 0.049	4.534 ± 0.354	1.073 ± 0.068	n = 7	[TD2]&[BEB] Siemens Innovin & Siemens BC
1.039 ± 0.045	2.448 ± 0.112	1.089 ± 0.042	4.327 ± 0.252	1.082 ± 0.042	n = 31	[TD2]&[SYW] Siemens Innovin & Sysmex CA5
1.036 ± 0.042	2.308 ± 0.102	1.082 ± 0.031	4.039 ± 0.186	1.083 ± 0.033	n = 27	[TD2]&[SYX] Siemens Innovin & Sysmex CA
1.075 ± 0.041	2.440 ± 0.114	1.106 ± 0.047	4.429 ± 0.227	1.110 ± 0.041	n = 5	[TD2]&[SYY] Siemens Innovin & Sysmex CA
0.990 ± 0.074	2.694 ± 0.260	1.023 ± 0.072	5.973 ± 1.020	1.016 ± 0.103	n = 5	[TJ2]&[ILA] HemosIL PT-Fib & IL ACL(All
1.059 ± 0.040	2.856 ± 0.179	1.139 ± 0.045	5.487 ± 0.444	1.160 ± 0.046	n = 11	[TJ8]&[ILD] HemosIL Recomb & IL ACL(ELI
1.037 ± 0.053	2.759 ± 0.186	1.115 ± 0.061	5.225 ± 0.380	1.101 ± 0.056	n = 41	[TJ8]&[ILE] HemosIL Recomb & IL ACL TOP

Summary of Participant Responses
 Mean ± One Standard Deviation

Act Partial Thromboplastin Time (seconds)

Specimen: C21	Specimen: C22	Specimen: C23	Specimen: C24	Specimen: C25	Number	[Code] Instrument or Reagent System
29.02 ± 3.57	53.49 ± 6.32	32.56 ± 2.41	79.51 ± 10.50	32.58 ± 2.35	n = 155	[---] All Methods & Instruments
<Instruments>						
25.16 ± 0.34	48.01 ± 1.06	27.52 ± 0.56	70.24 ± 0.82	27.39 ± 0.78	n = 8	[BEB] Siemens BCS,BCSXP
29.83 ± 0.86	52.14 ± 1.13	35.01 ± 0.84	76.57 ± 2.05	34.80 ± 0.70	n = 14	[DGC] Diagnostica Stago STA Compact
29.11 ± 0.66	50.16 ± 1.09	34.04 ± 0.76	72.96 ± 1.64	34.03 ± 0.65	n = 5	[DGD] Diagnostica Stago STA-R,STA-R Evo
27.74 ± 2.94	52.98 ± 8.72	30.75 ± 0.67	78.02 ± 13.35	31.48 ± 2.00	n = 5	[ILA] IL ACL(All except810,ELITE,EPRO,8
32.17 ± 0.79	62.46 ± 1.22	34.01 ± 0.61	94.92 ± 1.71	33.29 ± 1.03	n = 4	[ILC] IL ACL Futura/Advance
30.07 ± 1.85	60.28 ± 6.41	31.83 ± 0.70	91.03 ± 10.91	31.99 ± 0.59	n = 11	[ILD] IL ACL(ELITE,ELITE PRO,8/9/10000)
33.53 ± 0.93	60.55 ± 1.70	34.69 ± 1.05	91.64 ± 2.24	34.56 ± 0.87	n = 42	[ILE] IL ACL TOP Series
25.94 ± 0.63	48.60 ± 1.05	30.62 ± 0.93	71.59 ± 1.63	30.60 ± 1.15	n = 28	[SYW] Sysmex CA500/CA600 series
26.73 ± 0.90	50.28 ± 1.30	31.51 ± 1.20	74.15 ± 1.45	31.56 ± 1.44	n = 27	[SYX] Sysmex CA 1500
26.97 ± 0.08	49.62 ± 1.04	31.56 ± 1.28	73.09 ± 0.49	31.33 ± 0.88	n = 5	[SYY] Sysmex CA 7000
<Reagents>						
29.56 ± 0.83	51.74 ± 1.49	34.65 ± 0.83	75.47 ± 2.49	34.69 ± 0.84	n = 18	[AA2] Diagnostica Stago STA PTT-Auto
30.65 ± 0.27	52.53 ± 1.13	35.67 ± 1.04	77.47 ± 0.95	34.50 ± 0.18	n = 3	[AA3] Diagnostica Stago PTT-LA
26.20 ± 0.88	49.23 ± 1.43	30.81 ± 1.54	72.66 ± 2.09	30.77 ± 1.73	n = 68	[AD4] Siemens Actin FSL
26.39 ± 1.42	48.54 ± 1.38	31.28 ± 1.04	71.24 ± 2.19	31.40 ± 1.54	n = 7	[AJ3] HemosIL Test APTT-SP
33.05 ± 1.38	61.10 ± 1.90	34.19 ± 1.51	92.33 ± 2.66	34.10 ± 1.35	n = 56	[AO4] HemosIL SynthASil
<Reagent & Instrument>						
29.52 ± 0.71	52.03 ± 1.10	34.89 ± 0.79	76.22 ± 2.18	34.90 ± 0.76	n = 11	[AA2]&[DGC] Diagnostica St & Diagnostic
29.11 ± 0.66	50.16 ± 1.09	34.04 ± 0.76	72.96 ± 1.64	34.03 ± 0.65	n = 5	[AA2]&[DGD] Diagnostica St & Diagnostic
30.65 ± 0.27	52.53 ± 1.13	35.67 ± 1.04	77.47 ± 0.95	34.50 ± 0.18	n = 3	[AA3]&[DGC] Diagnostica St & Diagnostic
25.16 ± 0.34	48.01 ± 1.06	27.52 ± 0.56	70.24 ± 0.82	27.39 ± 0.78	n = 8	[AD4]&[BEB] Siemens Actin & Siemens BC
25.93 ± 0.64	48.63 ± 1.06	30.66 ± 0.92	71.67 ± 1.62	30.64 ± 1.16	n = 27	[AD4]&[SYW] Siemens Actin & Sysmex CA5
26.73 ± 0.90	50.28 ± 1.30	31.51 ± 1.20	74.15 ± 1.45	31.56 ± 1.44	n = 27	[AD4]&[SYX] Siemens Actin & Sysmex CA
26.97 ± 0.08	49.62 ± 1.04	31.56 ± 1.28	73.09 ± 0.49	31.33 ± 0.88	n = 5	[AD4]&[SYY] Siemens Actin & Sysmex CA
25.65 ± 1.37	47.04 ± 1.08	30.44 ± 0.10	69.10 ± 0.55	30.45 ± 1.45	n = 3	[AJ3]&[ILA] HemosIL Test A & IL ACL(All
27.27 ± 1.23	49.53 ± 0.23	32.36 ± 0.10	73.30 ± 0.64	32.57 ± 0.69	n = 3	[AJ3]&[ILD] HemosIL Test A & IL ACL(ELI
32.17 ± 0.79	62.46 ± 1.22	34.01 ± 0.61	94.92 ± 1.71	33.29 ± 1.03	n = 4	[AO4]&[ILC] HemosIL SynthA & IL ACL Fut
30.71 ± 0.89	63.00 ± 1.80	31.56 ± 0.66	95.58 ± 3.42	31.82 ± 0.43	n = 8	[AO4]&[ILD] HemosIL SynthA & IL ACL(ELI
33.53 ± 0.93	60.55 ± 1.70	34.69 ± 1.05	91.64 ± 2.24	34.56 ± 0.87	n = 42	[AO4]&[ILE] HemosIL SynthA & IL ACL TOP

Summary of Participant Responses

Mean ± One Standard Deviation

Fibrinogen (mg/dL)

Specimen: C21	Specimen: C22	Specimen: C23	Specimen: C24	Specimen: C25	Number	[Code] Instrument or Reagent System
299.4 ± 26.91	280.1 ± 26.25	504.8 ± 79.18	271.2 ± 29.05	507.0 ± 75.37	n = 88	[---] All Methods & Instruments
<Instruments>						
307.1 ± 25.89	313.0 ± 17.23	521.7 ± 5.86	299.2 ± 20.17	524.5 ± 3.18	n = 7	[BEB] Siemens BCS,BCSXP
305.1 ± 17.36	282.9 ± 14.41	555.2 ± 25.37	270.4 ± 13.87	548.0 ± 18.40	n = 13	[DGC] Diagnostica Stago STA Compact
299.1 ± 6.97	272.2 ± 7.04	522.4 ± 10.53	255.3 ± 7.61	527.7 ± 13.56	n = 4	[DGD] Diagnostica Stago STA-R,STA-R Evo
314.9 ± 21.27	292.1 ± 18.18	556.8 ± 99.73	289.3 ± 22.68	563.8 ± 90.28	n = 28	[ILE] IL ACL TOP Series (ACLTOP,ACLTOP
284.9 ± 25.35	250.0 ± 18.37	492.6 ± 41.36	261.1 ± 25.97	454.4 ± 42.55	n = 4	[SYW] Sysmex CA500/CA600 series
276.6 ± 16.56	258.7 ± 16.71	437.4 ± 31.40	250.1 ± 14.05	443.8 ± 24.59	n = 20	[SYX] Sysmex CA 1500
272.9 ± 12.30	255.4 ± 15.19	433.2 ± 21.08	237.0 ± 1.65	433.2 ± 12.81	n = 5	[SYY] Sysmex CA 7000
<Reagents>						
326.0 ± 21.63	358.9 ± 50.16	540.9 ± 85.98	343.8 ± 18.49	542.0 ± 82.90	n = 3	[TJ2] HemosIL PT-Fibrinogen
316.9 ± 10.63	301.5 ± 11.01	478.4 ± 28.92	295.0 ± 7.73	486.7 ± 29.30	n = 14	[TJ8] HemosIL RecombiPlasTin 2G
303.1 ± 15.27	279.5 ± 13.61	546.4 ± 27.23	266.2 ± 14.57	543.0 ± 19.36	n = 17	[FA4] Stago STA-Fibrinogen 5
307.1 ± 25.89	313.0 ± 17.23	521.7 ± 5.86	299.2 ± 20.17	524.5 ± 3.18	n = 7	[FB2] Siemens Multifibren U
277.0 ± 18.01	256.9 ± 17.07	441.2 ± 33.89	247.7 ± 16.59	441.0 ± 22.71	n = 29	[FD2] Siemens Fibrinogen Determination
331.3 ± 29.08	289.9 ± 24.83	665.3 ± 47.42	292.1 ± 24.81	652.0 ± 32.92	n = 8	[FJ2] HemosIL Fibrinogen C,XL
299.2 ± 17.57	279.5 ± 15.71	606.3 ± 95.48	267.7 ± 28.55	632.3 ± 76.93	n = 8	[FO3] HemosIL QFA(bovine)
<Reagent & Instrument>						
316.8 ± 9.82	301.0 ± 9.83	480.5 ± 24.68	295.0 ± 7.73	488.9 ± 23.91	n = 13	[TJ8]&[ILE] HemosIL Recomb & IL ACL TOP
305.1 ± 17.36	282.9 ± 14.41	555.2 ± 25.37	270.4 ± 13.87	548.0 ± 18.40	n = 13	[FA4]&[DGC] Stago STA-Fibr & Diagnostic
299.1 ± 6.97	272.2 ± 7.04	522.4 ± 10.53	255.3 ± 7.61	527.7 ± 13.56	n = 4	[FA4]&[DGD] Stago STA-Fibr & Diagnostic
307.1 ± 25.89	313.0 ± 17.23	521.7 ± 5.86	299.2 ± 20.17	524.5 ± 3.18	n = 7	[FB2]&[BEB] Siemens Multif & Siemens BC
284.9 ± 25.35	250.0 ± 18.37	492.6 ± 41.36	261.1 ± 25.97	454.4 ± 42.55	n = 4	[FD2]&[SYW] Siemens Fibrin & Sysmex CA5
276.6 ± 16.56	258.7 ± 16.71	437.4 ± 31.40	250.1 ± 14.05	443.8 ± 24.59	n = 20	[FD2]&[SYX] Siemens Fibrin & Sysmex CA
272.9 ± 12.30	255.4 ± 15.19	433.2 ± 21.08	237.0 ± 1.65	433.2 ± 12.81	n = 5	[FD2]&[SYY] Siemens Fibrin & Sysmex CA
321.8 ± 28.16	282.2 ± 25.66	655.4 ± 53.67	287.5 ± 28.75	643.8 ± 11.34	n = 6	[FJ2]&[ILE] HemosIL Fibrin & IL ACL TOP
299.2 ± 17.57	279.5 ± 15.71	606.3 ± 95.48	267.7 ± 28.55	632.3 ± 76.93	n = 8	[FO3]&[ILE] HemosIL QFA(bo & IL ACL TOP

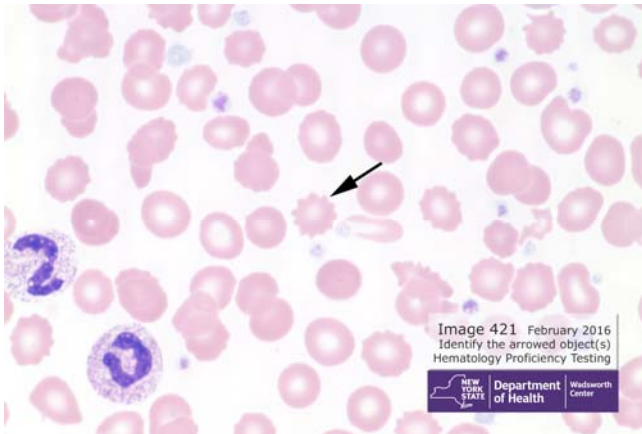
NEW YORK STATE HEMATOLOGY PROFICIENCY TEST PROGRAM

Test event of February 1, 2016

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

<http://www.wadsworth.org/regulatory/clep/pt/hematology> 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 421

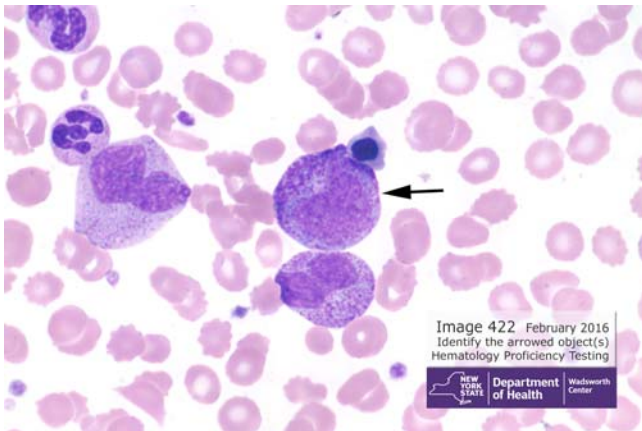


Number of Responses	Percent of Laboratories	Cell type or finding
177	98.9%	Echinocyte (crenated cell) or burr cell
2	1.1%	Acanthocyte

The arrowed red blood cell in Image 421 has central pallor and evenly distributed cell membrane projections. The red blood cell is an echinocyte as correctly reported by 98.9% of the participants. The presence of echinocytes is often the result of an improperly prepared smear (i.e. thick smear; slow drying). Rare causes of echinocytosis include uremia, vitamin E

deficiency, liver disease and myeloproliferative disorders. In this case, the image was obtained from the peripheral smear of an 84 year-old male diagnosed with unexplained leukocytosis and anemia; the origin of the echinocytes was unknown.

Image 422

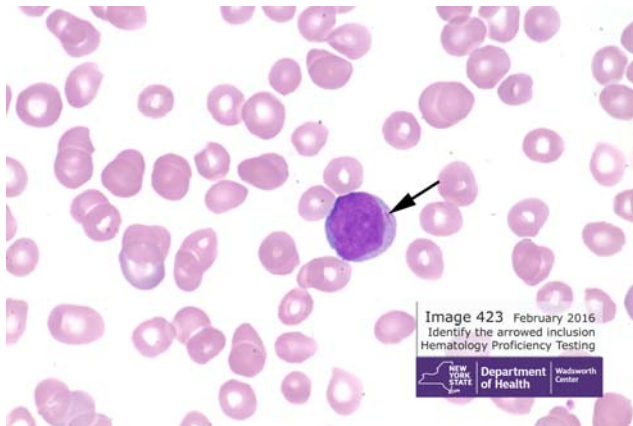


Number of Responses	Percent of Laboratories	Cell type or finding
130	72.6%	Promyelocyte
30	16.8%	Myelocyte
17	9.5%	Metamyelocyte
2	1.1%	Blast cell, not classified

The arrowed white blood cell in Image 422 is large, the cytoplasm includes the diagnostic primary, coarse azurophilic granules and prominent nucleoli are present in the nucleus. The cell is best classified as a promyelocyte as 130 participants concur. Thirty participants identified the image as a myelocyte.

The presence of secondary (specific) granules and absence of nucleoli would identify the cell as a myelocyte. The image was obtained from the peripheral blood smear of a 54 year-old female diagnosed with anemia and multiple sclerosis. The white blood cell count in this case was 18.5K/ μ L and immature white blood cell forms were observed including promyelocytes, myelocytes, metamyelocytes and band neutrophils. Due to lack of 80% consensus for both participant and referee laboratories, pass credit was issued.

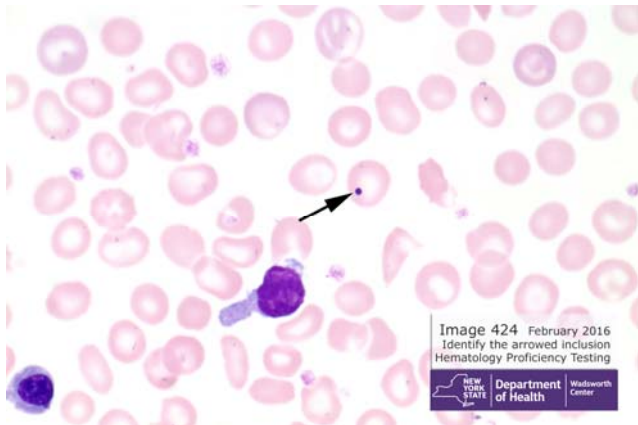
Image 423



Number of Responses	Percent of Laboratories	Cell type or finding
179	100%	Auer rod(s)

The arrowed inclusion in the white blood cell of Image 423 is pink in color and needle-shaped, it is an Auer rod as correctly identified by all participants. Auer rods are aggregates of primary (azurophilic) granules and are associated with acute myelomonocytic leukemia, erythroleukemia and, as in this case, acute myelogenous leukemia.

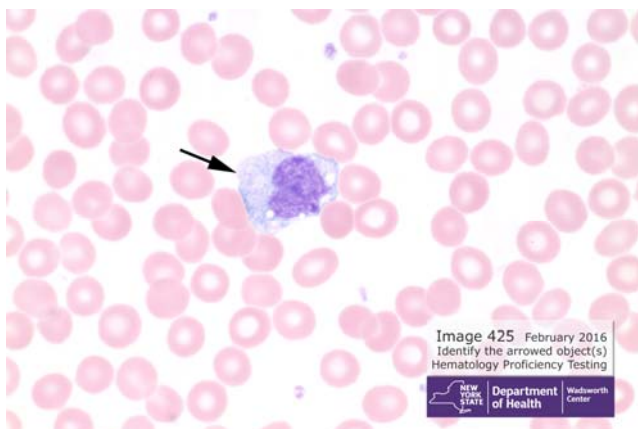
Image 424



Number of Responses	Percent of Laboratories	Cell type or finding
179	100%	Howell-Jolly body

The arrowed inclusion in the red blood cell of Image 424 is dark blue, round and located on the periphery of the cell. The inclusion is a Howell-Jolly body as correctly reported by all participants. The image was obtained from the peripheral blood smear of a 24 year-old female diagnosed with sickle cell anemia where Howell-Jolly bodies would be an expected and significant diagnostic finding.

Image 425



Number of Responses	Percent of Laboratories	Cell type or finding
178	99.4%	Monocyte
1	0.6%	Reactive/Atypical lymphocyte

The arrowed cell in Image 425 possesses ample blue-gray cytoplasm with few noticeable granules and vacuoles. The nuclear chromatin is slightly clumped and without nucleoli. The cell was correctly identified as a monocyte by 99.4% of the participants. Monocytes are normal constituents of the peripheral blood, an increased percentage can be expected in chronic infections and malignancy as in this case of a 66 year-old female diagnosed with liver cancer.