SUPPLEMENTAL TABLES

SUPPLEMENTAL TABLE 1 Current standard identification protocol (standard-protocol) by organism-group

Organism-group	Primary Methods	Secondary Methods
S. aureus	LA[a], PHX[b]	Tube coagulase, thermonuclease, biochemicals[c]
Other Staph[d]	LA[a], PHX[b]	Tube coagulase, thermonuclease, biochemicals[c]
BHS[e]	LA[a], catalase, PYR, bacitracin	Hippurate, manual system[f]
VGS[g]	PYR, catalase, optochin, biochemicals[c]	Manual system[f]
S. anginosus	PYR, catalase, biochemicals[c]	Manual system[f], sequencing[h]
S. pneumoniae	Optochin, PHX[b]	LA[a] test, quellung
Other GPC[i]	PYR, LAP, catalase, vancomycin, microdase, biochemicals[c]	GLC[j]
Enterococcus sp.	PYR, catalase, PHX[b]	Biochemicals[c]
Enterobacteriaceae	Indole, TSI, PHX[b]	Manual system[f], biochemicals[c]
P. aeruginosa	Oxidase, TSI, PHX[b]	Biochemicals[c], GLC[j]
Other NF GNB[k]	Oxidase, TSI, PHX[b]	Biochemicals[c], GLC[j]
Haemophilus sp.	Differential media[l]	Porphyrin test, XV Strip, GLC[j]
Other GNCB[m]	Butyrate hydrolysis, oxidase,	GLC[j]

	indole, PHX[b]	
Corynebacterium sp.	Catalase, PHX[b], GLC, manual system[f]	Sequencing[h]
Other GPR[n]	Catalase, oxidase, GLC	Sequencing[h]
Anaerobic GN[o]	Vancomycin, kanamycin, colistin, nitrate, BBE, catalase, aerotolerance	Manual system[f], GLC[j]
Anaerobic GP[p]	Vancomycin, SPS, catalase, indole, aerotolerance	Manual system[f], GLC[j]
C. albicans	Germ-tube production	Sugar assimilation and fermentation, morphology on cornmeal agar, biochemicals[c]
Other *Candida* sp.	Sugar assimilation and fermentation, morphology on cornmeal agar, biochemicals[c], differential media[l]	Manual system[f], sequencing[h]
Other yeasts	Sugar assimilation and fermentation, morphology on cornmeal agar, biochemicals[c], differential media[l]	Manual system[f], sequencing[h]

[a] LA, latex agglutination kit. These include: Prolex Blue Staph kit (Pro-Lab Diagnostics), Prolex Streptococcal Grouping kit (Pro-Lab Diagnostics), and BBL Pneumoslide (BD Diagnostics).

[b] PHX, Phoenix automated microbial identification system (BD Diagnostics).

[c] Biochemicals, manual tube biochemical tests (multiple manufacturers).

[d] Other Staph, Staphylococci other than *S. aureus*. Species level identification required for *S. epidermidis*, *S. lugdunensis*, and *S. saprophyticus*.

[e] BHS, Beta-hemolytic *Streptococcus*.

[f] Manual identification system, Non-automated commercial identification systems. These include: API 20C AUX (Biomerieux, Durham NC), API 20E (Biomerieux), API Coryne (Biomerieux), Remel RapID ANA II (Thermo Fisher Scientific, Lenexa KS), and Remel RapID STR system (Thermo Fisher Scientific).

[g] VGS, Viridans-group *Streptococcus*.

[h] Sequencing, 16S rRNA gene and ITS sequencing (Applied Biosystems).

[i] GPC, Gram-positive cocci.

[j] Gas-liquid chromatography (GLC) (MIDI, Inc).

[k] NF GNB, Glucose non-fermenting gram-negative bacilli.

[l] Differential media, Commercial selective and differential media. This includes BBL Hemo ID Quad Plate (BD Diagnostics) and CHROMagar Candida (BD Diagnostics).

[m] GNCB, Fastidious gram-negative coccobacilli.

[n] GPR, Gram-positive rod.

[o] Anaerobic GN, Anaerobic gram-negative bacteria.

[p] Anaerobic GP, Anaerobic gram-positive bacteria.

SUPPLEMENTAL TABLE 2a Reagent costs to identify a single isolate of a species

Species or species-group	**Isolates encountered in study**	**Reagents consumed in study (cost per reagent in US $)**			**Cost (US $)**
		Catalase (0.0005)	LA[a] (0.81)	PHX[b] (1.27)[c]	
S. aureus	100	28	103	102	
Total Cost of 100 isolates		0.014	83.43	129.54	212.98
Cost per isolate					**2.13**

[a] LA, latex agglutination kit.

[b] PHX, Phoenix microbial identification system.

[c] This price is the cost difference between the "Combined Identification plus Susceptibility" and the "Susceptibility only" panels.

SUPPLEMENTAL TABLE 2b Hands-on labor-time to identify a single isolate of a species

Species or species-group	**Isolates encountered in study**	**Reagents consumed in study (labor-time per reagent in min:sec)**			**Time (min:sec)**
		Catalase (0:10)	LA[a] (0:30)	PHX[b] (0:00)[a]	
S. aureus	100	28	103	102	
Hands on labor-time for 100 isolates		4:40	51:30	0:00	56:10
Hands on labor-time per isolate					**00:34**

[a] LA, latex agglutination kit.

[b] PHX, Phoenix microbial identification system.

[c] No labor-time savings expected as the "Susceptibility only" panel still needs to be performed.

36 SUPPLEMENTAL TABLE 3 Time-to-identification (TTI) by MALDI- and standard-protocol by organism-group

Organism-group	**n**	**Proportion identified by number of days of workup**																		
		Standard-protocol TTI										MALDI-protocol TTI								*p-value*
		0 (%)	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	6 (%)	>6 (%)	Mean (days)	Median (days)	0 (%)	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Mean (days)	Median (days)	
S. aureus	109		64.2	32.1	2.8	0.9				1.40	1	94.5	5.5					0.06	0	<0.001
Other Staph[a]	26	3.8	57.7	26.9	11.5					1.46	1	76.9	19.2	3.8				0.27	0	<0.001
BHS[b]	72	26.4	70.8	2.8						0.76	1	83.3	16.7					0.17	0	<0.001
VGS[c]	7		28.6	28.6	28.6	14.3				2.29	2		42.9	42.9	14.3			1.71	2	0.046
S. anginosus	17	5.9	58.8	11.8	23.5					1.53	1	64.7	29.4	5.9				0.41	0	0.002
S. pneumoniae	6	16.7	83.3							0.83	1	50.0	50.0					0.50	0.5	0.157
Other GPC[d]	6	16.7	16.7	33.3					33.3	4.17	2	50.0	16.7	33.3				0.83	0.5	0.052
Enterococcus	78		43.6	39.7	12.8	1.3	2.6			1.79	2	84.6	15.4					0.15	0	<0.001

sp.																			
Enterobacteriaceae	284		69.4	25.4	2.8	1.1	0.4	1.1		1.41	1	93.0	7.0				0.07	0	<0.001
P. aeruginosa	77		33.8	51.9	7.8	1.3	2.6	2.6		1.95	2	87.0	13.0				0.13	0	<0.001
Other NF GNB[e]	39		28.2	38.5	5.1	7.7	10.3	7.7	2.6	2.82	2	82.1	12.8	5.1			0.23	0	<0.001
Haemophilus sp.	10		80.0		20.0					1.40	1	100					0.00	0	0.003
Other GNCB[f]	7	85.7	14.3							0.14	0	100					0.00	0	0.317
Corynebacterium sp.	9	22.2	33.3	22.2		11.1	11.1			1.78	1	88.9	11.1				0.11	0	0.012
Other GPR[g]	8	12.5	12.5		12.5	12.5		12.5	37.5	6.00	5	37.5		37.5	12.5	12.5	1.88	2	0.049
Anaerobic GN[h]	26			65.4	7.7	23.1		3.8		2.69	2	92.3		7.7			0.15	0	<0.001
Anaerobic GP[i]	14	14.3	21.4	28.6	7.1	7.1			21.4	3.07	2	71.4	14.3	14.3			0.43	0	0.002

C. albicans	52	96.2	1.9		1.9				0.08	0	96.2	3.8					0.04	0	0.984
Other *Candida* sp.	56	3.6	64.3	14.3	5.4	1.8	5.4		5.4	2.11	1	83.9	14.3	1.8			0.18	0	<0.001
Other yeasts	8			25.0	25.0	25.0			25.0	4.00	3.5	75.0	25.0				0.25	0	0.011
All organisms	**911**	**9.4**	**52.1**	**26.5**	**5.5**	**2.4**	**1.4**	**1.1**	**1.5**	**1.61**	**1**	**87.2**	**10.6**	**1.9**	**0.1**	**0.1**	**0.1**	**0.16**	**0**	<0.001

[a] Other Staph, Staphylococci other than *S. aureus*.

[b] BHS, Beta-hemolytic *Streptococcus*.

[c] VGS, Viridans-group *Streptococcus*.

[d] GPC, Gram-positive cocci.

[e] NF GNB, Glucose non-fermenting gram-negative bacilli.

[f] GNCB, Fastidious gram-negative coccobacilli.

[g] GPR, Gram-positive rod.

[h] Anaerobic GN, Anaerobic gram-negative bacteria.

[i] Anaerobic GP, Anaerobic gram-positive bacteria.

SUPPLEMENTAL TABLE 4 Per-test cost of MALDI-protocol

Item	**Cost per unit (US $)**	**Notes**
Matrix	0.083 per spot	While 250µl available per vial, measured ~170µl recovered per vial during the study
DTP[a] in duplicate (includes Matrix)	0.36 for 2 smears	Cost of toothpick & pipette tips
FEP[b] in duplicate (includes Matrix)	0.62 for 2 spots	Cost of toothpick, pipette tips, and chemical reagents

[a] DTP, Direct Transfer Procedure.

[b] FEP, Formic-acid Extraction Procedure.

SUPPLEMENTAL TABLE 5 Fixed annual costs of MALDI-protocol

Item	**Cost calculation**	**Cost per year (US $)**	**Notes**
BTS[a] (includes Matrix)	($1.19 per spot) x (2 spots per target) x (9 targets per day)	7,846	While 50µl available per vial, measured 45µl recovered per vial during the study
Target cleaning	($0.31 per target) x (9 targets per day)	1,014	Includes costs of pipette tips
Instrument servicing	$26,000 in 2nd year 5% increase per year from 3rd to 5th years	22,413	Average in the first 5 years.
Total		**31,273**	

[a] BTS, bacterial test standard.