Table 5. Correspondence between This Paper's Ten Base Pair Groups and 14 Theoretically Possible Base Pair Conformations and the Three Primary Naming Systems[†]

	This paper	Common designation [5,6,25,28-29]	Leontis & Westhof [26]	Saenger [68]
C:G	WC	GC Watson-Crick	CG *cis* WC/WC	XIX (WC)
	Wb	GC NH-CO[&]	—	—
	sWC	—	—	—
	sWb	#	#	#
	rWC	CG reverse Watson-Crick	CG *trans* WC/WC	XXII (rWC)
	rWb	—	—	—
	H(*)	GC Hoogsteen (—)	$C^{+}G$ *cis* WC/H (—)	—
	rH(*)	GC NH_2-CO[&] (—)	$C^{+}G$ *trans* WC/H (—)	—
	S(*)	—	—	—
	rS(*)	GC N7-NH_2[&] (—)	CG *trans* H/H (GC *trans* S/S)	—
	fS(*)	— (GC N3-NH_2, NH_2-N3)	GC *trans* WC/S (CG *trans* WC/S)	—
	pfS(*)	GC NH-CO (—)	GC *cis* WC/S (CG *cis* WC/S)	—
	pS(*)	— (GC N3-NH_2[&]	— (CG *cis* H/S)	—
	rpS(*)	GC CO-NH_2[&] (GC NH_2-CO[&])	— (CG *cis* S/S or GC *cis* S/S[§])	—
U:A	WC	AU Watson-Crick	UA *cis* WC/WC	XX (WC)
	Wb	—	—	—
	sWC	AU NH_2-2-CO[&]	—	—
	sWb	#	#	#
	rWC	AU reverse Watson-Crick	UA *trans* WC/WC	XXI (rWC)
	rWb	—	—	—
	H(*)	AU Hoogsteen (AU NH_2-4-CO[&])	UA *cis* WC/H (AU *cis* WC/H)	XXIII (H)
	rH(*)	AU reverse Hoogsteen (—)	UA *trans* WC/H (—)	XXIV (rH)
	S(*)	—	AU *trans* H/S or AU *cis* WC/S	—
	rS(*)	—	UA *trans* H/H or UA *trans* S/S[§] (—)	—
	fS(*)	AU NH_2-2-CO (AU N3-NH_2[&])	UA *cis* WC/S (—)	—
	pfS(*)	—	AU *cis* WC/S (UA *cis* WC/S)	—
	pS	—	AU *cis* H/S (—)	—
	rpS(*)	—	UA *cis* S/S[§] (AU *cis* S/S[§])	—
U:G	WC	—	—	—
	Wb(*)	GU wobble (GU NH-4-CO[&])	UG *cis* WC/WC (—)	XXVIII
	sWC	#	#	#
	sWb	—	—	—
	rWC	—	—	—
	rWb	GU reverse wobble	UG *trans* WC/WC	XXVII
	H(*)	GU CO-NH (1 bond) (—)	UG *cis* WC/H (—)	—
	rH(*)	GU N7-NH[&] (—)	UG *trans* WC/S (GU *trans* WC/S)	—
	S(*)	—	— (UG *trans* H/S)	—
	rS(*)	—	— (GU *trans* S/S)	—
	fS(*)	GU N3-NH, NH_2-CO (—)	GU *trans* WC/S (UG *trans* WC/S)	—
	pfS(*)	— (GU NH_2-4-CO)	GU *cis* WC/S (UG *cis* WC/S)	—
	pS(*)	— (GU NH_2-2-CO)	GU *cis* H/S (—)	—
	rpS(*)	—	GU *cis* S/S[§] (UG *cis* S/S)	—
G:A	WC	GA imino	GA *cis* WC/WC	VIII
	Wb	—	—	—
	sWC	#	#	#
	sWb	#	#	#
	rWC	—	—	—
	rWb	—	—	—
	H(*)	GA N7-N1,CO-NH_2 (GA^{+} N7-N1,CO-NH_2)	GA *cis* WC/H ($A^{+}G$ *cis* WC/H)	IX
	rH(*)	—	— (AG *trans* WC/H)	—

	S(*)	GA sheared or GA NH_2-N7$^{\&}$ (—)	AG *trans* H/S or AG *cis* WC/S (—)	XI
	rS(*)	GA NH_2-N3$^{\&}$ (—)	GA trans H/H or GA *trans* S/S (AG *trans* S/S)	—
	fS(*)	GA N3-NH_2, NH_2-N1 (—)	AG *trans* WC/S (—)	X
	pfS(*)	GA NH_2-N1 or GA N3-$NH_2^{\&}$ (—)	AG *cis* WC/S (GA *cis* WC/S)	—
	pS(*)	—	AG *cis* H/S (—)	—
	rpS(*)	—	GA *cis* S/S§ or GA *cis* H/H (AG *cis* S/S)	—
C:A	WC	—	—	—
	Wb(*)	AC wobble (AC N1-$NH_2^{\&}$)	C^+A *cis* WC/WC (—)	—
	sWC	#	#	#
	sWb	AC N1-$NH_2^{\&}$	—	—
	rWC	—	—	—
	rWb	AC reverse wobble	CA *trans* WC/WC	XXVI
	H(*)	AC N7-NH_2 (NH_2-2-CO$^{\&}$)	—	—
	rH(*)	AC reverse Hoogsteen (—)	CA *trans* WC/H (—)	XXV
	S(*)	—	AC *trans* H/S or AC *cis* WC/S (CA *trans* H/S or CA *cis* WC/S)	—
	rS(*)	—	CA *trans* H/H (—)	—
	fS(*)	—	AC *trans* WC/S (CA *trans* WC/S)	—
	pfS(*)	— (AC N3-$NH_2^{\&}$)	—	—
	pS(*)	—	AC *cis* H/S (CA *cis* H/S)	—
	rpS(*)	#	# CA *cis* S/S§ (AC *cis* S/S§)	#
U:C	WC	UC 4-CO-NH_2	UC *cis* WC/WC	XVIII
	Wb	—	—	—
	sWC	UC 2-CO-$NH_2^{\&}$	—	—
	sWb	#	#	#
	rWC	UC 2-CO-$NH_2^{\&}$	UC *trans* WC/WC	XVII
	rWb	—	—	—
	H(*)	—	— (CU cis WC/H)	—
	rH(*)	—	—	—
	S(*)	—	CU *trans* H/S (—)	—
	rS(*)	UC 2-CO-$NH_2^{\&}$ (—)	UC *trans* H/S (—)	—
	fS(*)	— (UC NH-CO)	CU *trans* WC/S (UC *trans* WC/S)	—
	pfS(*)	—	CU *cis* WC/S (UC *cis* WC/S)	—
	pS	—	CU *cis* H/S (—)	—
	rpS(*)	—	UC *cis* S/S§ (CU *cis* S/S§)	—
A:A	WC	—	—	—
	Wb	AA N1-NH_2	AA *cis* WC/WC	—
	sWC	#	#	#
	sWb	#	#	#
	rWC	#	#	#
	rWb	AA N1-NH_2, sym	AA *trans* WC/WC	I
	H	AA N7-$NH_2^{\&}$	—	—
	rH	AA N7-NH_2	AA *trans* WC/H	V
	S	AA sheared or AA N3-$NH_2^{\&}$	AA *trans* H/S or AA *cis* WC/S	—
	rS	AA N7-NH_2, sym	AA *trans* H/H	II
	fS	—	AA trans WC/S	—
	pfS	—	—	—
	pS	—	AA *cis* H/S	—
	rpS	#	AA *cis* S/S§	#
C:C	WC	—	—	—
	Wb	CC N3-CO, NH_2-N3	C^+C *cis* WC/WC	—
	sWC	#	#	#
	sWb	CC CO-$NH_2^{\&}$	—	—
	rWC	CC CO-NH_2, sym	CC *trans* WC/WC	—
	rWb	CC N3-NH_2, sym	—	XIV
	rWC	—	CC *trans* WC/WC	XV

	H	—	CC *cis* WC/H	—
	rH	—	CC *trans* WC/H	—
	S	—	CC *trans* H/S or CC *cis* WC/S	—
	rS	#	#	#
	fS	—	—	—
	pfS	—	CC *trans* WC/S	—
	pS	—	CC *cis* H/S	—
	rpS	#	CC *cis* S/S[§]	#
G:G	WC	#	#	#
	Wb	GG CO-NH[&]	GG *cis* WC/WC	—
	sWC	#	#	#
	sWb	—	—	—
	rWC	#	#	#
	rWb	GG N1-CO, sym	GG *trans* WC/WC	III
	H	GG N1-CO, N7-NH_2	GG *cis* WC/H	VI
	rH	GG N7-NH	GG *trans* WC/H	VII
	S	GG NH_2-N7[&]	GG *trans* H/S	—
	rS	GG N3-NH_2, sym	GG *trans* S/S	IV
	fS	—	—	—
	pfS	GG N3-NH_2[&]	GG *cis* WC/S	—
	pS	—	—	—
	rpS	—	GG *cis* S/S	—
U:U	WC	—	—	—
	Wb	UU NH-CO	UU *cis* WC/WC	XVI
	sWC	#	#	#
	sWb	—	—	—
	rWC	—	—	—
	rWb(*)	UU 2-CO-NH, sym (UU 4-CO-NH_2, sym)	UU *trans* WC/WC	XII, XIII
	H	_	UU *cis* WC/H	—
	rH	UU 4-CO-C5H, NH-4-CO	UU *trans* WC/H	—
	S	—	—	—
	rS	—	—	—
	fS	—	UU *trans* WC/S	—
	pfS	—	UU *cis* WC/S	—
	pS	—	—	—
	rpS	—	UU cis S/S[§]	—

[†] The pound sign (#) represents the conformations that are not likely to form a hydrogen bond(s) between two basepairing bases, and the long dash mark (—) represents the conformations that were not assigned by the three other naming systems. The conformations available at http://prion.bchs.uh.edu/bp_type/ are simply represented by using acronyms; CO for carbonyl, NH for imino, NH_2 for amino, and sym for symmetric

[&] Base pair conformations with a single hydrogen bond are explicitly designated.

[§] Base pair conformations proposed by the LW system, which have either base-backbone or backbone-backbone hydrogen bonding interactions between two nucleotides. These interactions were not considered as base pairs and are not included in our classification system for simplicity (**Fig. 2-11**).