

# Table S-II

Band <sup>#</sup>	cm <sup>-1</sup>	Vibrational origin	Ref. <sup>##</sup>
13	800	Ring breathing in RNA cytosine	48
14	824	Out-of-plane CH bending in tyrosine	50
15	844	Ring deformation in tyrosinate	50
16	852	In-plane ring breathing in tyrosine	50
17	863	5-ring & 6-ring deformation in RNA guanine	48
18	881	C–C stretching & CH <sub>2</sub> rocking in methionine	45
19	899	Ring deformation in RNA guanine	48
20	913	6-ring deformation in RNA adenine	48
21	929	Ring deformation in RNA adenine C–C stretching in homocysteine	48,51
22	940	C–N stretching in amino acids	45
22*	959	S–H in-plane bending in homocysteine	51
23	965	5-ring deformation in RNA guanine	48
24	985	Amide III	11
25	1004	Ring stretching in phenylalanine	48

<sup>#</sup>Numbers and colors are the same as those of the sub-bands shown in Fig. 5 of the main paper.

<sup>##</sup>Reference numbers are the same as those listed in the main paper.