

# Supporting Information

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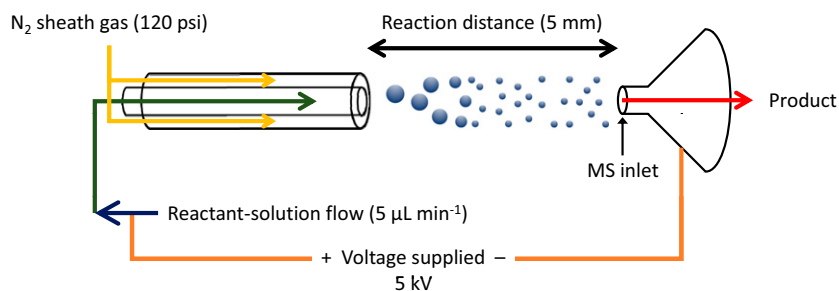


Fig. S1. Schematic diagram showing the setup for the synthesis of ribonucleosides in microdroplets produced from an abiotic salvage reaction, recorded by a high-resolution MS. MS, mass spectrometer.

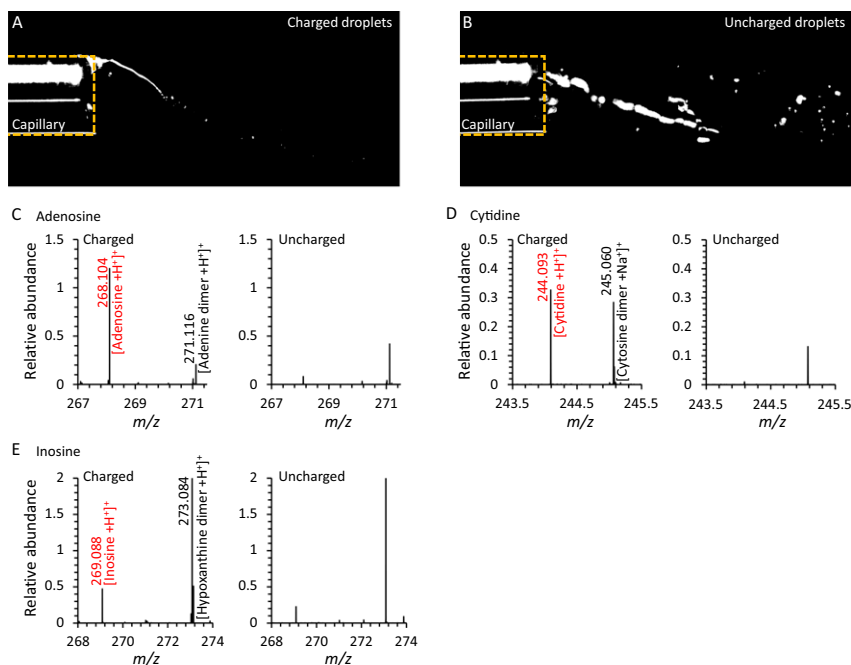


Fig. S2. Characteristics of microdroplets as the voltage applied to the ESI source is varied from 0 to +5 kV. Optical images of (A) charged and (B) uncharged aqueous microdroplets in which a capillary with known inside diameter is used as the reference. The sizes of charged and uncharged microdroplets are <1.3 and 12.5  $\mu\text{m}$ , respectively. (C–E) Mass spectra obtained with and without applied voltage for generating the ribonucleosides (C) adenosine, (D) cytosine, and (E) inosine. The red numbers and letters denote the detected  $m/z$  peaks of each ribonucleoside.

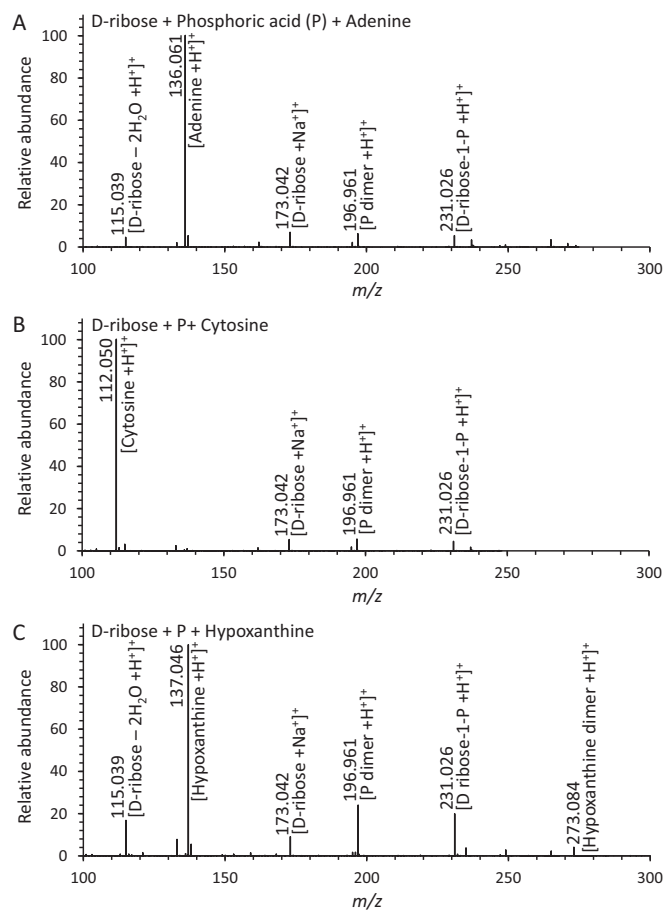


Fig. S3. Mass spectra for the products of a reaction in microdroplets containing 15 mM D-ribose, 15 mM phosphoric acid, and 5 mM of the nucleobase: (A) adenine, (B) cytosine, and (C) hypoxanthine. No ribonucleoside formation was detected.

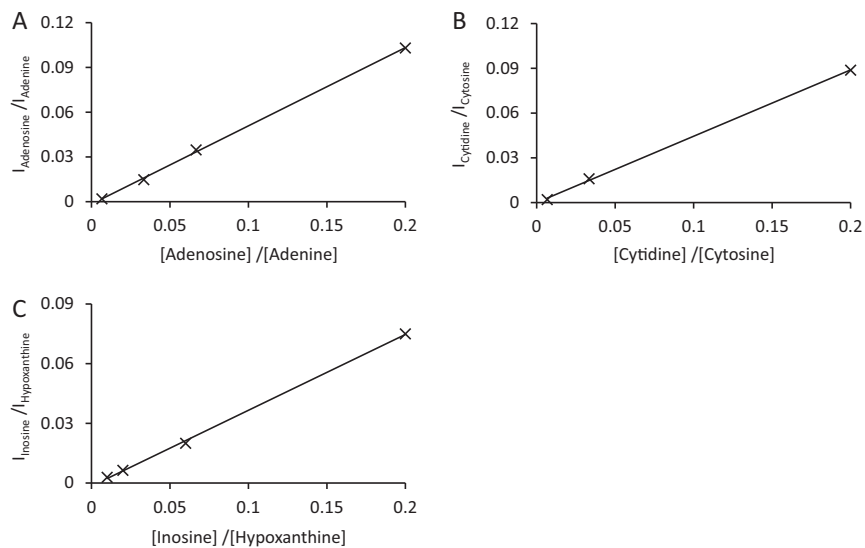
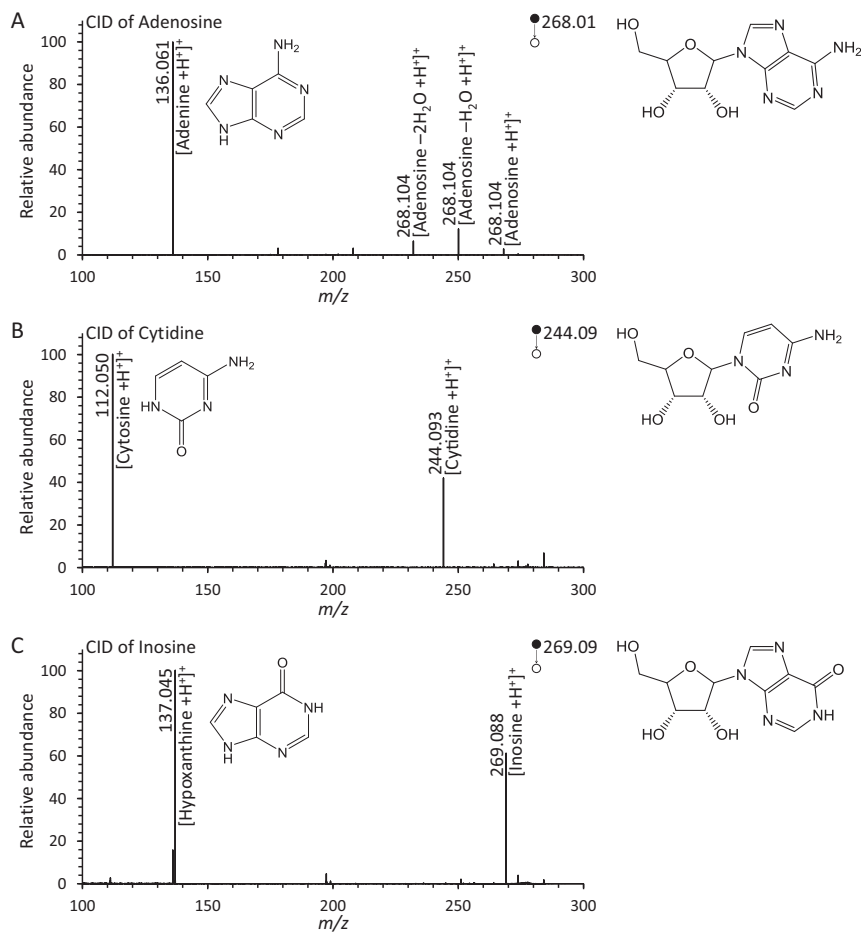
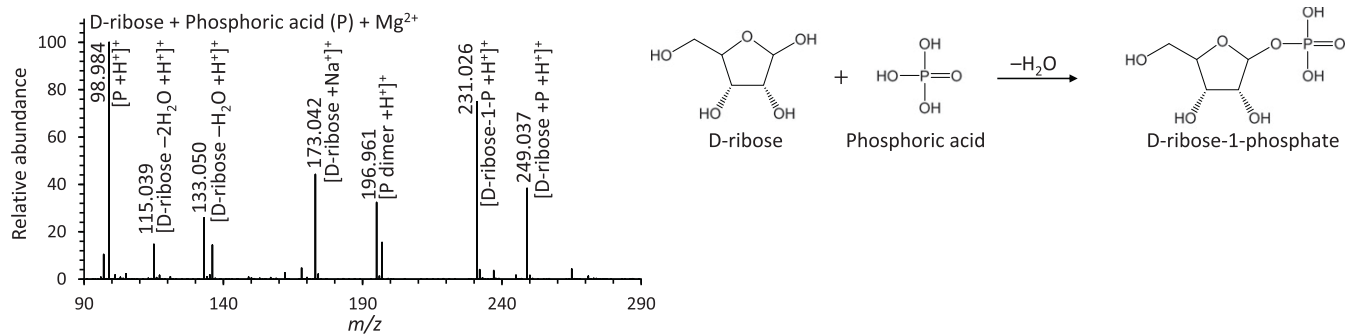


Fig. S4. Standard calibration plots for quantitative analysis: (A) adenosine, (B) cytidine, and (C) inosine.



**Fig. S5.** Tandem MS analysis of ribonucleosides synthesized in microdroplets, identified as (A) adenosine, (B) cytidine, and (C) inosine. The tandem mass spectra were obtained using CID.



**Fig. S6.** Mass spectra of the Rib-1-P produced from D-ribose and phosphoric acid in microdroplets and the related reaction process.