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- (81) **Designated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM,

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- (54) **Title:** UMI COLLAPSING

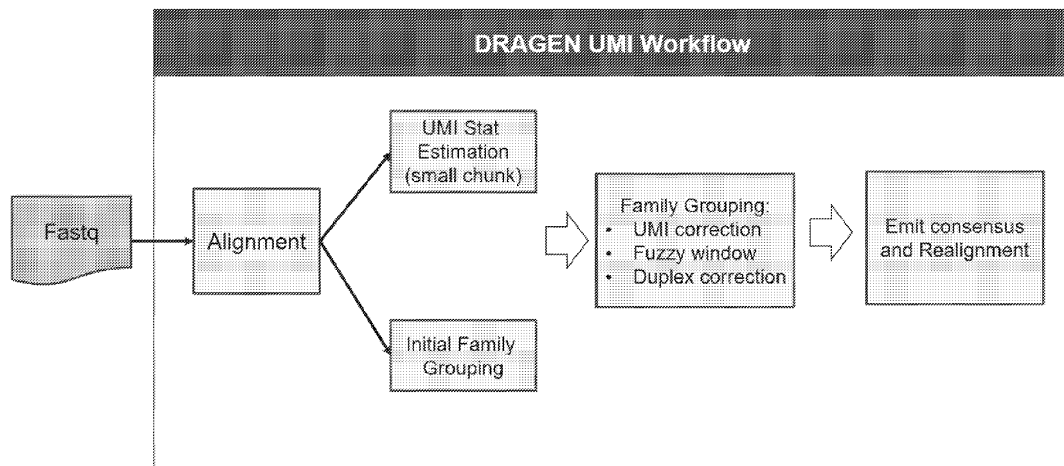


FIG. 11

- (57) **Abstract:** Disclosed herein include systems, devices, and methods for grouping sequence reads and collapsing families of sequence reads that originate from the same DNA molecules using UMIs.