

regulating a flow of fluid through the channel by extending the extendible member to a second member position to control a cross-sectional shape of the channel; directing illumination radiation to be incident on the chip; measuring radiation emitted from the chip; and  
5 detecting molecules in a sample positioned within the chip based on the measured radiation.

**29.** The method of claim **28**, further comprising extending a plurality of movable pins from a first position not in contact with the chip to a second position wherein the movable pins  
10 contact electrical terminals of a heating element within the chip.

**30.** The method of claim **29**, further comprising at least one of measuring a temperature of the chip and controlling a temperature of the chip by applying an electrical potential  
15 difference between the electrical terminals.

**31.** The method of claim **28**, further comprising positioning a vacuum source into fluid communication with a vacuum channel formed in the chip.

**32.** The method of claim **28**, further comprising, prior to  
20 positioning the extendible member, measuring an image of the chip on the support stage and determining a position of the chip relative to the stage based on the image.

**33.** The method of claim **28**, wherein the molecules in the sample are detected based on a measurement of emitted radiation  
25 at one central wavelength.

**34.** The method of claim **28**, wherein detecting molecules in the sample comprises detecting both molecules comprising amino acids and molecules comprising nucleic acids in the  
30 sample.

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