Claims

1. *A method of screening a dried blood spot for a plurality of analytes comprising infectious agents, genetic disorders, metabolic markers, toxins, and oncologic conditions, the method comprising: acquiring a mid-infrared spectrum; compressing the spectrum into a latent feature vector; applying a plurality of machine-learning classifiers to generate respective binary outputs; and displaying the outputs on a user interface.*
2. *The method of claim 1, wherein the infectious agents comprise at least HIV, malaria, hepatitis B and C, and dengue virus.*
3. *The method of claim 1, wherein the genetic disorders comprise β-thalassemia, sickle-cell disease, and phenylketonuria.*
4. *The method of claim 1, further comprising flagging a discordance between a binary HIV output and a contemporaneously collected rapid HIV test result and generating a quality-control alert.*
5. *A system comprising: (i) a portable ATR-FTIR spectrometer; (ii) a single-use ATR card configured to receive a <5 µL blood drop; (iii) a cloud service implementing the method of claim 1; and (iv) a rules engine implementing the alert of claim 4.*
6. *A computer-readable medium storing instructions that cause a processor to perform the method of any of claims 1-4.*