WHAT IS CLAIMED:

1. A method, comprising:

acquiring experimental data corresponding to an immunoassay experiment, wherein the experimental data is based on an analyte of interest;

analyzing, by a machine learning process trained to determine a degree that a band of the analyte shifts in immunoassays, the experimental data; and

determining, based on the analyzing, the degree of shift for a band in the immunoassay experiment, wherein the band comprises the analyte of interest.

2. The method of claim 1, wherein the machine learning process comprises a neural network, wherein the neural network comprises a feedforward network or a deep neural network.

3. The method of claim 1, wherein:

the analyzing comprises analyzing an immunoassay image of the immunoassay experiment; and

the determining comprises marking the degree of shift for the band on the immunoassay image,

wherein the immunoassay image comprises a stained gel or a capillary gel where the analyte is loaded.

4. The method of claim 1, wherein the immunoassay experiment is a bead-based immunoassay or a flow-based immunoassay.

5. The method of claim 1, wherein the analyte is at least one of a protein, a hapten, a hormone, a nucleic acid, a peptide, a modified peptide, or a modified form of any of the foregoing analytes.

6. The method of claim 1, wherein the machine learning process has been trained using an immunoassay dataset comprising at least one of glycosylation, disulfide bonds, modified

residue, 3-(N-morpholino)propanesulfonic acid (MOPS), ubiquitination, lipidation, 2-(N-morpholino)ethanesulfonic acid (MES), isoelectric point (pI), SUMOylation, Tris acetate, interchain or polymer cross links, gel type, buffer type, or degree of shift.

7. The method of claim 1 or claim 6, wherein the experimental data comprises at least one of glycosylation, disulfide bonds, modified residue, 3-(N-morpholino)propanesulfonic acid (MOPS), ubiquitination, lipidation, 2-(N-morpholino)ethanesulfonic acid (MES), isoelectric point (pI), SUMOylation, Tris acetate, or interchain or polymer cross links for the analyte of interest and gel type and buffer type for the immunoassay experiment.

8. The method of claim 1, wherein the degree of shift of the band is caused by a shift in the molecular weight corresponding to the analyte of interest.

9. The method of claim 1, further comprising:

determining whether the experimental data should be modified; and

displaying the determined modifications.

10. A system, comprising:

at least one processor; and

a memory coupled to the at least one processor, the memory having instructions stored thereon that, when executed by the processor, cause the processor to perform operations comprising:

acquiring experimental data, wherein the experimental data comprises an identifier of an analyte and an immunoassay image;

analyzing the immunoassay image to mark features of the immunoassay image, wherein the features comprises at least one band;

determining, by a machine learning process, a degree of shift for a band on the immunoassay image, wherein the band comprises an analyte of interest that corresponds to the identifier; and

displaying the degree of shift for the band on the immunoassay image.

11. The system of claim 10, wherein the machine learning process comprises a neural network.

12. The system of claim 10, wherein the processor performs further operations comprising:

calculating a molecular weight data for the band; and

displaying a data table, wherein the data table comprises the calculates molecular weight.

13. The system of claim 10, wherein the experimental data further comprises at least one identifier of a cell line, an identifier of a molecular marker, a lysate type, a loading concentration, and a gel type.

14. The system of claim 10, wherein the processor performs further operations comprising:

determining whether the experimental data should be modified; and

displaying the determined modifications.

15. The system of claim 10, wherein the immunoassay image is an image of a bead-based immunoassay or a flow-based immunoassay.

16. The system of claim 10, wherein the analyte is at least one of a protein, a hapten, a hormone, a nucleic acid, a peptide, a modified peptide, or a modified form of any of the foregoing analytes.

17. The system of claim 10, wherein the features further comprise at least one of a frame of the immunoassay image and at least one lane of the immunoassay image, wherein the at least one lane is analyzed to determine the shift of the band in each lane.

18. The system of claim 10, wherein the at least one processor performs operations further comprising:

displaying whether the band was found, found with non-specific bands, not found, or there were no bands.

19. The system of claim 10, wherein the machine learning process has been trained with an immunoassay dataset to determine a degree that a band of an analyte shifts in an immunoassay experiment.

20. The system of claim 19, wherein the immunoassay dataset comprises at least one glycosylation, disulfide bonds, modified residue, 3-(N-morpholino)propanesulfonic acid (MOPS), ubiquitination, lipidation, 2-(N-morpholino)ethanesulfonic acid (MES), isoelectric point (pI), SUMOylation, Tris acetate, interchain or polymer cross links, gel type, and buffer type.