CLAIMS

1. A method of analyzing compound distribution in a system, comprising:

(a) providing a system and a first experimental protocol for use with the system, the first experimental protocol comprising one or more biological elements, introducing a compound into the system, contacting the one or more biological elements by the compound, and taking actions at one or more timepoints;

(b) modifying the first experimental protocol by excluding at least one of the one or more biological elements to generate a first modified experimental protocol;

(c) measuring compound concentration at one or more of the timepoints from the first experimental protocol;

(d) performing the first modified experimental protocol; and

(e) using the measurement of concentration of the compound to analyze compound distribution across the system.

2. A method according to Claim 1, further comprising the step of (f) performing the first experimental protocol.

3. A method according to Claim 1, in which the system comprises one or more microfluidic devices.

4. A method according to Claim 1, in which the system comprises infusion tubing.

5. A method according to Claim 1, in which the system comprises syringes.

6. A method according to Claim 1, in which the first experimental protocol comprises compound testing on the biological elements.

7. A method according to Claim 1, in which the first experimental protocol comprises cells and the first modified experimental protocol does not comprise cells.

8. A method according to Claim 1, in which the system comprises coatings and the first experimental protocol is modified by excluding coatings.

9. A method according to Claim 1, in which the first modified experimental protocol does not comprise taking actions at one or more timepoints of the first experimental protocol.

10. A method according to Claim 1, in which the performing a measurement of the concentration replaces the taking actions at one or more timepoints.

11. A method according to Claim 1, in which the first modified experimental protocol is modified in that only a subset of input compound concentrations is included in the modified experimental protocol as compared to the first experimental protocol.

12. A method according to Claim 1, in which the first modified experimental protocol is modified in that porous elements are excluded as compared to the first experimental protocol.

13. A method according to Claim 1, in which the system includes a first microfluidic device comprising a first membrane with pores.

14. A method according to Claim 12, in which the system is replaced with a second system in the modified experimental protocol, the second system including a second microfluidic device not comprising a membrane without pores in at least one region in which the first membrane comprises pores.

15. A method according to Claim 1, in which the first experimental protocol comprises flowing fluid in the system.

16. A method according to Claim 15, in which the system comprises an input port configured to permit fluid input to the system.

17. A method according to Claim 15, in which the system comprises an output port configured to permit fluid output from the system.

18. A method according to Claim 16, in which the first experimental protocol comprises flowing into the input port.

19. A method according to Claim 17, in which the first experimental protocol comprises collecting a first sample from the output port.

20. A method according to Claim 17, in which the measuring of the concentration of the compound comprises collecting a sample from the output port and quantifying the concentration of the compound in the sample.

21. A method according to Claim 1, in which the first modified experimental protocol further quantifies the percentage of the compound that is absorbed into the system.

22. A method according to Claim 1, further comprising introducing fluid flow to the system.

23. A method according to Claim 22, in which the taking actions comprises sampling effluent.

24. A method according to Claim 23, in which the first experimental protocol further comprises assaying the effluent to achieve an apparent metabolite value.

25. A method according to Claim 24, further comprising using the measurement of concentration of the compound to correct the apparent metabolite value.

26. A method according to Claim 24, further comprising using the measurement of concentration of the compound to determine variability of the apparent metabolite value.

27. A method according to Claim 1, further comprising using the measurement of concentration to determine whether to perform the first experimental protocol.

28. A method according to Claim 1, further comprising (i) using the measurement of concentration of the compound to generate a second modified experimental protocol; and (ii) performing the second modified experimental protocol.

29. A method according to Claim 1, in which the first experimental protocol comprises living cells.