CLEAN SET OF CLAIMS

1-66. (Canceled)

67. (Original) A method of analyzing compound distribution in a system, comprising:

a) providing a system and a first experimental protocol for use with said system, said first experimental protocol comprising introducing a compound into said system and taking actions at one or more timepoints;

b) modifying said first experimental protocol to generate a first modified experimental protocol;

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

d) performing said first modified experimental protocol; and

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

68. (Original) The method of claim 67, further comprising the step of f) performing said first experimental protocol.

69. (Original) The method of claim 67, wherein said system comprises one or more microfluidic devices.

70. (Original) The method of claim 67, wherein said system comprises infusion tubing.

71. (Original) The method of claim 67, wherein said system comprises syringes.

72. (Original) The method of claim 67, wherein said system comprises one or more biological elements and said first experimental protocol is modified to exclude at least one of said one or more biological elements.

73. (Original) The method of claim 72, wherein said first experimental protocol comprises compound testing on said biological elements.

74. (Original) The method of claim 67, wherein said first experimental protocol comprises cells and said first modified experimental protocol does not comprise cells.

75. (Original) The method of claim 67, wherein said system comprises coatings and said first experimental protocol is modified by excluding coatings.

76. (Original) The method of claim 67, wherein said first modified experimental protocol does not comprise taking actions at one or more timepoints of said first experimental protocol.

77. (Original) The method of claim 67, wherein said performing a measurement of the concentration replaces said taking actions at one or more timepoints.

78. (Original) The method of claim 67, wherein said first modified experimental protocol is modified in that only a subset of input compound concentrations is included in said modified experimental protocol as compared to said first experimental protocol.

79. (Original) The method of claim 67, wherein said first modified experimental protocol in that porous elements are excluded as compared to said first experimental protocol.

80. (Original) The method of claim 67, wherein said system includes a first microfluidic device comprising a first membrane with pores.

81. (Original) The method of claim 79, wherein said system is replaced with a second system in said modified experimental protocol, said second system including a second microfluidic device not comprising a membrane without pores in at least one region in which said first membrane comprises pores.

82. (Original) The method of claim 67, wherein said first experimental protocol comprises flowing fluid in said system.

83. (Original) The method of claim 82, wherein said system comprises an input port configured to permit fluid input to the system.

84. (Original) The method of claim 82, wherein the system comprises an output port configured to permit fluid output from the system.

85. (Original) The method of claim 83, wherein said first experimental protocol comprises flowing into said input port.

86. (Original) The method of claim 84, wherein said first experimental protocol comprises collecting a first sample from said output port.

87. (Original) The method of claim 84, wherein said measuring of the concentration of said compound comprises collecting a sample from said output port and quantifying said concentration of said compound in said sample.

88. (Original) The method of claim 67, wherein said first modified experimental protocol further quantifies the percentage of said compound that is absorbed into said system.

89. (Original) The method of claim 67, further comprising introducing fluid flow to said system.

90. (Original) The method of claim 89, wherein said taking actions comprises sampling effluent.

91. (Original) The method of claim 90, wherein said first experimental protocol further comprises assaying said effluent to achieve an apparent metabolite value.

92. (Original) The method of claim 91, further comprising using said measurement of concentration of said compound to correct said apparent metabolite value.

93. (Original) The method of claim 91, further comprising using said measurement of concentration of said compound to determine variability of said apparent metabolite value.

94. (Original) The method of claim 67, further comprising using said measurement of concentration to determine whether to perform said first experimental protocol.

95. (Original) The method of claim 67, further comprising (i) using said measurement of concentration of said compound to generate a second modified experimental protocol; and (ii) performing said second modified experimental protocol.

96. (Original) The method of claim 67, wherein said first experimental protocol comprises living cells.

97-105. (Canceled)

106. (Original) A method of determining compound distribution in a system, comprising:

a) providing a system and an experimental protocol for said system comprising one or more biological elements; wherein said one or more biological elements are contacted by a compound;

b) modifying said experimental protocol by excluding at least one of said one or more biological elements;

c) performing said modified experimental protocol; and

d) determining the distribution of said compound in said system using by measuring the concentration of said compound in said system.

107. (Original) The method of claim 106, wherein said experimental protocol comprises introducing fluid flow into said system.

108. (Original) The method of claim 107, wherein said experimental protocol comprises collecting effluent.

109. (Original) The method of claim 105, wherein said experimental protocol comprises assaying said effluent.

110. (Original) The method of claim 106, wherein said biological elements comprise cells.

111. (Original) The method of claim 106, wherein said biological elements comprise biological coatings.

112. (Original) The method of claim 106, wherein said system comprises one or more microfluidic devices.

113. (Original) The method of claim 106, wherein said distribution of said compound is used to calculate error bars for results from said experimental protocol.

114. (Original) The method of claim 106, said percent distribution of said compound is used to calculate half maximal inhibitory concentration (IC50) for said experimental protocol

115. (Original) A method of assessing compound distribution in a system, comprising:

a) providing a system and a first experimental protocol for said system, said first experimental protocol comprising introducing a compound into said system;

b) modifying said first experimental protocol to generate a modified experimental protocol, said modified experimental protocol comprising:

i) introducing said compound using a first concentration; and

ii) performing a first measurement of the concentration of said compound;

c) performing said modified experimental protocol;

d) comparing said measurement of the concentration of said compound to a threshold;

e) performing said first experimental protocol if said measurement of concentration surpasses said threshold.

116. (Original) The method of claim 115, wherein said first experimental protocol further comprises introducing fluid flow into said system.

117. (Original) The method of claim 116, wherein said first experimental protocol comprises collecting effluent at one or more time points.

118. (Original) The method of claim 117, wherein said first experimental protocol comprises assaying said effluent.

119. (Original) The method of claim 115, wherein said biological elements comprise cells.

120. (Original) The method of claim 115, wherein said biological elements comprise biological coatings.

121. (Original) The method of claim 115, wherein said system comprises one or more microfluidic devices.

122. (Original) The method of claim 117, wherein said first measurement is performed at least one of said one or more timepoints of said first experimental protocol.

123. (Original) The method of claim 115, wherein said measurement of the concentration of said compound to a threshold are compared by dividing said first measurement by said first concentration to obtain a first ratio.

124. (Original) The method of claim 123, wherein the said threshold is a first ratio value above one of 10%, 20%, 33%, 50%, 66%, and 75%.

125. (Original) The method of claim 115, wherein said modified experimental protocol further comprises measuring an input compound concentration, and wherein the said first measurement is divided by the measured said input concentration to obtain a measured ratio.

126-293. (Canceled)

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.