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(54) Title: METHOD FOR HIGH-THROUGHPUT SCREENING OF COMPOUNDS AND COMBINATIONS OF COMPOUNDS FOR DISCOVERY AND QUANTIFICATION OF ACTIONS, PARTICULARLY UNANTICIPATED THERAPEUTIC OR TOXIC ACTIONS, IN BIOLOGICAL SYSTEMS

(57) Abstract: The invention enables high-throughput screening of compounds in living systems to detect unanticipated or unintended biological actions. The invention also allows for screening, detection, and confirmation of new indications for approved drugs. Screening and detection of toxic effects of compounds also can be achieved by using the methods of the invention. The methods comprise administering isotope-labeled substrates to a living system so that the label is incorporated into molecules in a manner that reveals flux rates through metabolic pathways thought to be involved in a disease. Comparisons between living systems exposed to compounds and living systems not so exposed reveals the effects of the compounds on the flux rates through the metabolic pathways. Combinations or mixtures of compounds can be systematically screened to detect unanticipated or unintended biological actions, including synergistic actions, in the same manner.