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(54) Title: NUTRITIVE FRAGMENTS, PROTEINS AND METHODS

(57) Abstract: Nutritive proteins are provided. In some embodiments the nutritive proteins comprise a first polypeptide sequence comprising a fragment of a naturally-occurring nutritive protein. In some embodiments the fragment comprises at least one of a) an enhanced ratio of branch chain amino acid residues to total amino acid residues present in the nutritive protein; b) an enhanced ratio of leucine residues to total amino acid residues present in the nutritive protein; and c) an enhanced ratio of essential amino acid residues to total amino acid residues present in the nutritive protein. In some embodiments, the fragment comprises at least one of a) a ratio of branch chain amino acid residues to total amino acid residues present in the nutritive protein; b) a ratio of leucine residues to total amino acid residues present in the nutritive protein; and c) a ratio of essential amino acid residues to total amino acid residues present in the nutritive protein, that is equal to or greater than the corresponding ratio present in a benchmark protein such as whey, egg or soy protein. Also provided are nucleic acids encoding the proteins, recombinant microorganisms that make the proteins, methods of making the proteins using recombinant microorganisms, compositions that comprise the proteins, and methods of using the proteins, among other things.

