**SUPPLEMENTARY MATERIALS**

*H. sapiens* DNA and amino acid sequences are in UPPERCASE characters.

*D. discoideum* or *C. elegans* DNA and amino acid sequences are **in lowercase, bold characters**.

For MCU chimeras, chimera breakpoints are highlighted in red.

For each construct, both DNA sequence and amino acid sequence are shown

FLAG tag sequence is highlighted in green.

3X GGS linker sequence between MCU and FLAG tag is highlighted in blue.

**HsMCU:**

ATGGCGGCCGCCGCAGGTAGATCGCTCCTGCTGCTCCTCTCCTCTCGGGGCGGCGGCGGCGGGGGCGCCGGCGGCTGCGGGGCGCTGACTGCCGGCTGCTTCCCTGGGCTGGGCGTCAGCCGCCACCGGCAGCAGCAGCACCACCGGACGGTACACCAGAGGATCGCTTCCTGGCAGAATTTGGGAGCTGTTTATTGCAGCACTGTTGTGCCCTCTGATGATGTTACAGTGGTTTATCAAAATGGGTTACCTGTGATATCTGTGAGGCTACCATCCCGGCGTGAACGCTGTCAGTTCACACTCAAGCCTATCTCTGACTCTGTTGGTGTATTTTTACGACAACTGCAAGAAGAGGATCGGGGAATTGACAGAGTTGCTATCTATTCACCAGATGGTGTTCGCGTTGCTGCTTCAACAGGAATAGACCTCCTCCTCCTTGATGACTTTAAGCTGGTCATTAATGACTTAACATACCACGTACGACCACCAAAAAGAGACCTCTTAAGTCATGAAAATGCAGCAACGCTGAATGATGTAAAGACATTGGTCCAGCAACTATACACCACACTGTGCATTGAGCAGCACCAGTTAAACAAGGAAAGGGAGCTTATTGAAAGACTAGAGGATCTCAAAGAGCAGCTGGCTCCCCTGGAAAAGGTACGAATTGAGATTAGCAGAAAAGCTGAGAAGAGGACCACTTTGGTGCTATGGGGTGGCCTTGCCTACATGGCCACACAGTTTGGCATTTTGGCCCGGCTTACCTGGTGGGAATATTCCTGGGACATCATGGAGCCAGTAACATACTTCATCACTTATGGAAGTGCCATGGCAATGTATGCATATTTTGTAATGACACGCCAGGAATATGTTTATCCAGAAGCCAGAGACAGACAATACTTACTATTTTTCCATAAAGGAGCCAAAAAGTCACGTTTTGACCTAGAGAAATACAATCAACTCAAGGATGCAATTGCTCAGGCAGAAATGGACCTTAAGAGACTGAGAGACCCATTACAAGTACATCTGCCTCTCCGACAAATTGGTGAAAAAGATTCTAGAGGTGGATCTGGTGGATCTGGTGGATCTATGGATTACAAGGATGACGATGACAAG\*

MAAAAGRSLLLLLSSRGGGGGGAGGCGALTAGCFPGLGVSRHRQQQHHRTVHQRIASWQNLGAVYCSTVVPSDDVTVVYQNGLPVISVRLPSRRERCQFTLKPISDSVGVFLRQLQEEDRGIDRVAIYSPDGVRVAASTGIDLLLLDDFKLVINDLTYHVRPPKRDLLSHENAATLNDVKTLVQQLYTTLCIEQHQLNKERELIERLEDLKEQLAPLEKVRIEISRKAEKRTTLVLWGGLAYMATQFGILARLTWWEYSWDIMEPVTYFITYGSAMAMYAYFVMTRQEYVYPEARDRQYLLFFHKGAKKSRFDLEKYNQLKDAIAQAEMDLKRLRDPLQVHLPLRQIGEKDSRGGSGGSGGSMDYKDDDDK\*

**DdMCU:**

**atgaatagcttcgtgatcaggaacggcttcggcctcgtcaggaccttcaacaccaggctgtttaccacctccacccagaacctggagggcgagctcaaaaccatcctcggccaggccaaggtcagcaagctgcaggaaaagctgaagctggatcccaggtccaagatcaccttcaacgacttcaagggcatcgccaaggaggtgggcatcgaggagaaggaaatcaacagcgtcagcaacgccctggctcaatccggctccatcatctacctgcctaactccctgaacgagaacctgaagacctccgtgttcaccaagcccgcccatatctaccagtccctcgaacacatcctggacatcgagaacaagggcgtgggcctgaataagctgatcgagtccaagaaatccgagatcaatagcctgaggcagaagatccagcccctggaggagaagaagcaggtgatcgacagaaaggcccacaggagggccaccgctatcatctggaccggactcggctattgcttcgcccaggccgccattctggctaggctcacctggtgggacctctcctgggacatcatcgagcccgtgagctacttcctgaccttcggctccgtcctgatcggctacacctacttcaccatgaccaagaccgagttcacctacgaggctctcaaccataggctgttcagcaagaggcaggacaagctgttcaaaagaaacaacttccctaaggaggactacgagaacctcgtgcaggccatcgacaagaaggagaaggagctcaaggagctcgagctcgccacaaagtacgatcacacccaccccggg**GGTGGATCTGGTGGATCTGGTGGATCTATGGATTACAAGGATGACGATGACAAG**\***

**mnsfvirngfglvrtfntrlfttstqnlegelktilgqakvsklqeklkldprskitfndfkgiakevgieekeinsvsnalaqsgsiiylpnslnenlktsvftkpahiyqslehildienkgvglnklieskkseinslrqkiqPleekkqvidrkahrRataiiwtglgycfaqaailarltwwdlswdiiepvsyfltfgsvligytyftmtktEftyealnhRlfskrqdKlfkrnnFpkedyenlvqaidkkekelkelelatkydhthpg**GGSGGSGGSMDYKDDDDK\*

**Chimera 1**

**atgaatagcttcgtgatcaggaacggcttcggcctcgtcaggaccttcaacaccaggctgtttaccacctccacccagaacctggagggcgagctcaaaaccatcctcggccaggccaaggtcagcaagctgcaggaaaagctgaagctggatcccaggtccaagatcaccttcaacgacttcaagggcatcgccaaggaggtgggcatcgaggagaaggaaatcaacagcgtcagcaacgccctggctcaatccggctccatcatctacctgcctaactccctgaacgagaacctgaagacctccgtgttcaccaagcccgcccatatctaccagtccctcgaacacatcctggacatcgagaacaagggcgtgggcctgaataagctgatcgagtccaagaaatccgagatcaatagcctgaggcagaagatccag**CCCCTGGAAAAGGTACGAATTGAGATTAGCAGAAAAGCTGAGAAGAGGACCACTTTGGTGCTATGGGGTGGCCTTGCCTACATGGCCACACAGTTTGGCATTTTGGCCCGGCTTACCTGGTGGGAATATTCCTGGGACATCATGGAGCCAGTAACATACTTCATCACTTATGGAAGTGCCATGGCAATGTATGCATATTTTGTAATGACACGCCAGGAATATGTTTATCCAGAAGCCAGAGACAGACAATACTTACTATTTTTCCATAAAGGAGCCAAAAAGTCACGTTTTGACCTAGAGAAATACAATCAACTCAAGGATGCAATTGCTCAGGCAGAAATGGACCTTAAGAGACTGAGAGACCCATTACAAGTACATCTGCCTCTCCGACAAATTGGTGAAAAAGATCCCGGGGGTGGATCTGGTGGATCTGGTGGATCTATGGATTACAAGGATGACGATGACAAG\*

**mnsfvirngfglvrtfntrlfttstqnlegelktilgqakvsklqeklkldprskitfndfkgiakevgieekeinsvsnalaqsgsiiylpnslnenlktsvftkpahiyqslehildienkgvglnklieskkseinslrqkiq**PLEKVRIEISRKAEKRTTLVLWGGLAYMATQFGILARLTWWEYSWDIMEPVTYFITYGSAMAMYAYFVMTRQEYVYPEARDRQYLLFFHKGAKKSRFDLEKYNQLKDAIAQAEMDLKRLRDPLQVHLPLRQIGEKDPGGGSGGSGGSMDYKDDDDK\*

**Chimera 2**

**atgaatagcttcgtgatcaggaacggcttcggcctcgtcaggaccttcaacaccaggctgtttaccacctccacccagaacctggagggcgagctcaaaaccatcctcggccaggccaaggtcagcaagctgcaggaaaagctgaagctggatcccaggtacaagatcaccttcaacgacttcaagggcatcgccaaggaggtgggcatcgaggagaaggaaatcaacagcgtcagcaacgccctggctcaatccggctccatcatctacctgcctaactccctgaacgagaacctgaagacctccgtgttcaccaagcccgcccatatctaccagtccctcgaacacatcctggacatcgagaacaagggcgtgggcctgaataagctgatcgagtccaagaaatccgagatcaatagcctgaggcagaagatccagcccctggaggagaagaagcaggtgatcgacagaaaggcccacaggagggccaccgctatcatctggaccggactcggctattgcttcgcccaggccgccattctggctaggctcacctggtgggacctctcctgggacatcatcgagcccgtgagctacttcctgaccttcggctccgtcctgatcggctacacctacttcacnatgaccaagacc**GAATATGTTTATCCAGAAGCCAGAGACAGACAATACTTACTATTTTTCCATAAAGGAGCCAAAAAGTCACGTTTTGACCTAGAGAAATACAATCAACTCAAGGATGCAATTGCTCAGGCAGAAATGGACCTTAAGAGACTGAGAGACCCATTACAAGTACATCTGCCTCTCCGACAAATTGGTGAAAAAGATCCCGGGGGTGGATCTGGTGGATCTGGTGGATCTATGGATTACAAGGATGACGATGACAAG\*

**mnsfvirngfglvrtfntrlfttstqnlegelktilgqakvsklqeklkldprykitfndfkgiakevgieekeinsvsnalaqsgsiiylpnslnenlktsvftkpahiyqslehildienkgvglnklieskkseinslrqkiqPleekkqvidrkahrRataiiwtglgycfaqaailarltwwdlswdiiepvsyfltfgsvligytyftmtkt**EYVYPEARDRQYLLFFHKGAKKSRFDLEKYNQLKDAIAQAEMDLKRLRDPLQVHLPLRQIGEKDPGGGSGGSGGSMDYKDDDDK\*

**Chimera 3**

ATGGCAGCTGCAGAAGGTAGATCGCTACTGCTACTCCTATCCTCTCGGGGAGGTGGAGGTGGAGGTGCCGGAGGTTGCGGGACGCTGACTGCCGGCTGCTTCCCTGGGCTGGGCGTCAGCCGCCACCGGCAGCAGCAGCACCACCGGACGGTACACCAGAGGATCGCTTCCTGGCAGAATTTGGGAGCTGTTTATTGCAGCACTGTTGTGCCCTCTGATGATGTTACAGTGGTTTATCAAAATGGGTTACCTGTGATATCTGTGAGGCTACCATCCCGGCGTGAACGCTGTCAGTTCACACTCAAGCCTATCTCTGACTCTGTTGGTGTATTTTTACGACAACTGCAAGAAGAGGATCGGGGAATTGACAGAGTTGCTATCTATTCACCAGATGGTGTTCGCGTTGCTGCTTCAACAGGAATAGACCTCCTCCTCCTTGATGACTTTAAGCTGGTCATTAATGACTTAACATACCACGTACGACCACCAAAAAGAGACCTCTTAAGTCATGAAAATGCAGCAACGCTGAATGATGTAAAGACATTGGTCCAGCAACTATACACCACACTGTGCATTGAGCAGCACCAGTTAAACAAGGAAAGGGAGCTTATTGAAAGACTAGAGGATCTCAAAGAGCAGCTGGCTCCCCTGGAAAAGGTACGAATTGAGATTAGCAGAAAAGCTGAGAAGAGG**gccaccgctatcatctggaccggactcggctattgcttcgcccaggccgccattctggctaggctcacctggtgggacctctcctgggacatcatcgagcccgtgagctacttcctgaccttcggctccgtcctgatcggctacacctacttcaccatgaccaagaccgag**TATGTTTATCCAGAAGCCAGAGACAGACAATACTTACTATTTTTCCATAAAGGAGCCAAAAAGTCACGTTTTGACCTAGAGAAATACAATCAACTCAAGGATGCAATTGCTCAGGCAGAAATGGACCTTAAGAGACTGAGAGACCCATTACAAGTACATCTGCCTCTCCGACAAATTGGTGAAAAAGATCCCGGGGGTGGATCTGGTGGATCTGGTGGATCTATGGATTACAAGGATGACGATGACAAG\*

MAAAEGRSLLLLLSSRGGGGGGAGGCGTLTAGCFPGLGVSRHRQQQHHRTVHQRIASWQNLGAVYCSTVVPSDDVTVVYQNGLPVISVRLPSRRERCQFTLKPISDSVGVFLRQLQEEDRGIDRVAIYSPDGVRVAASTGIDLLLLDDFKLVINDLTYHVRPPKRDLLSHENAATLNDVKTLVQQLYTTLCIEQHQLNKERELIERLEDLKEQLAPLEKVRIEISRKAEKR**ataiiwtglgycfaqaailarltwwdlswdiiepvsyfltfgsvligytyftmtkt**EYVYPEARDRQYLLFFHKGAKKSRFDLEKYNQLKDAIAQAEMDLKRLRDPLQVHLPLRQIGEKDPGGGSGGSGGSMDYKDDDDK\*

**Chimera 4**

**atgaatagcttcgtgatcaggaacggcttcggcctcgtcaggaccttcaacaccaggctgtttaccacctccacccagaacctggagggcgagctcaaaaccatcctcggccaggccaaggtcagcaagctgcaggaaaagctgaagctggatcccaggtccaagatcaccttcaacgacttcaagggcatcgccaaggaggtgggcatcgaggagaaggaaatcaacagcgtcagcaacgccctggctcaatccggctccatcatctacctgcctaactccctgaacgagaacctgaagacctccgtgttcaccaagcccgcccatatctaccagtccctcgaacacatcctggacatcgagaacaagggcgtgggcctgaataagctgatcgagtccaagaaatccgagatcaatagcctgaggcagaagatccagcccctggaggagaagaagcaggtgatcgacagaaaggcccacag**GAGGACCACTTTGGTGCTATGGGGTGGCCTTGCCTACATGGCCACACAGTTTGGCATTTTGGCCCGGCTTACCTGGTGGGAATATTCCTGGGACATCATGGAGCCAGTAACATACTTCATCACTTATGGAAGTGCCATGGCAATGTATGCATATTTTGTAATGACACGCCAGGAAT**tcacctacgaggctctcaaccataggctgttcagcaagaggcaggacaagctgttcaaaagaaacaacttccctaaggaggactacgagaacctcgtgcaggccatcgacaagaaggagaaggagctcaaggagctcgagctcgccacaaagtacgatcacacccaccccggg**GGTGGATCTGGTGGATCTGGTGGATCTATGGATTACAAGGATGACGATGACAAG\*

**Combined:**

**mnsfvirngfglvrtfntrlfttstqnlegelktilgqakvsklqeklkldprskitfndfkgiakevgieekeinsvsnalaqsgsiiylpnslnenlktsvftkpahiyqslehildienkgvglnklieskkseinslrqkiqPleekkqvidrkahrR**TTLVLWGGLAYMATQFGILARLTWWEYSWDIMEPVTYFITYGSAMAMYAYFVMTRQ**EftyealnhRlfskrqdKlfkrnnFpkedyenlvqaidkkekelkelelatkydhthpg**GGSGGSGGSMDYKDDDDK\*

**Chimera 5:**

ATGGCAGCTGCAGCAGGTAGATCGCTACTGCTACTCCTATCCTCTCGGGGAGGTGGAGGTGGAGGTGCCGGAGGTTGCGGGACGCTGACTGCCGGCTGCTTCCCTGGGCTGGGCGTCAGCCGCCACCGGCAGCAGCAGCACCACCGGACGGTACACCAGAGGATCGCTTCCTGGCAGAATTTGGGAGCTGTTTATTGCAGCACTGTTGTGCCCTCTGATGATGTTACAGTGGTTTATCAAAATGGGTTACCTGTGATATCTGTGAGGCTACCATCCCGGCGTGAACGCTGTCAGTTCACACTCAAGCCTATCTCTGACTCTGTTGGTGTATTTTTACGACAACTGCAAGAAGAGGATCGGGGAATTGACAGAGTTGCTATCTATTCACCAGATGGTGTTCGCGTTGCTGCTTCAACAGGAATAGACCTCCTCCTCCTTGATGACTTTAAGCTGGTCATTAATGACTTAACATACCACGTACGACCACCAAAAAGAGACCTCTTAAGTCATGAAAATGCAGCAACGCTGAATGATGTAAAGACATTGGTCCAGCAACTATACACCACACTGTGCATTGAGCAGCACCAGTTAAACAAGGAAAGGGAGCTTATTGAAAGACTAGAGGATCTCAAAGAGCAGCTGGCTCCCCTGGA**ggagaagaagcaggtgatcgacagaaaggcccacaggagggccaccgctatcatctggaccggactcggctattgcttcgcccaggccgccattctggctaggctcacctggtgggacctctcctgggacatcatcgagcccgtgagctacttcctgaccttcggctcngtcctgatcggctacacctacttcaccatgaccaagaccgagttcacctacgaggctctcaaccataggctgttcagcaagaggcaggacaagctgttcaaaagaaacaacttccctaaggaggactacgagaacctcgtgcaggccatcgacaagaaggagaaggagctcaaggagctcgagctcgccacaaagtacgatcacacccaccccgg**gGGTGGATCTGGTGGATCTGGTGGATCTATGGATTACAAGGATGACGATGACAAG\*

MAAAAGRSLLLLLSSRGGGGGGAGGCGTLTAGCFPGLGVSRHRQQQHHRTVHQRIASWQNLGAVYCSTVVPSDDVTVVYQNGLPVISVRLPSRRERCQFTLKPISDSVGVFLRQLQEEDRGIDRVAIYSPDGVRVAASTGIDLLLLDDFKLVINDLTYHVRPPKRDLLSHENAATLNDVKTLVQQLYTTLCIEQHQLNKERELIERLEDLKEQLAPLE**ekkqvidrkahrRataiiwtglgycfaqaailarltwwdlswdiiepvsyfltfgsvligytyftmtktEftyealnhRlfskrqdKlfkrnnFpkedyenlvqaidkkek**elkelelatkydhthpgGGSGGSGGSMDYKDDDDK\*

**Chimera 6:**

ATGGCAGCTGCAGCAGGTCGATCGCTACTGCTACTCCTATCCTCTCGGGGAGGTGGAGGTGGAGGTGCCGGAGGTTGCGGGACGCTGACTGCCGGCTGCTTCCCTGGGCTGGGCGTCAGCCGCCACCGGCAGCAGCAGCACCACCGGACGGTACACCAGAGGATCGCTTCCTGGCAGAATTTGGGAGCTGTTTATTGCAGCACTGTTGTGCCCTCTGATGATGTTACAGTGGTTTATCAAAATGGGTTACCTGTGATATCTGTGAGGCTACCATCCCGGCGTGAACGCTGTCAGTTCACACTCAAGCCTATCTCTGACTCTGTTGGTGTATTTTTACGACAACTGCAAGAAGAGGATCGGGGAATTGACAGAGTTGCTATCTATTCACCAGATGGTGTTCGCGTTGCTGCTTCAACAGGAATAGACCTCCTCCTCCTTGATGACTTTAAGCTGGTCATTAATGACTTAACATACCACGTACGACCACCAAAAAGAGACCTCTTAAGTCATGAAAATGCAGCAACGCTGAATGATGTAAAGACATTGGTCCAGCAACTATACACCACACTGTGCATTGAGCAGCACCAGTTAAACAAGGAAAGGGAGCTTATTGAAAGACTAGAGGATCTCAAAGAGCAGCTGGCTCCCCTGGAAAAGGTACGAATTGAGATTAGCAGAAAAGCTGAGAAGAGGACCACTTTGGTGCTATGGGGTGGCCTTGCCTACATGGCCACACAGTTTGGCATTTTGGCCCGGCTTACCTGGTGGGAATATTCTTGGGACATCATGGAGCCAGTAACATACTTCATCACTTATGGAAGTGCCATGGCAATGTATGCATATTTTGTAATGACACGCCAGGA**gttcacctacgaggctctcaaccataggctgttcagcaagaggcaggacaagctgttcaaaagaaacaacttccctaaggaggactacgagaacctcgtgcaggccatcgacaagaaggagaaggagctcaaggagctcgagctcgccacaaagtacgatcacacccaccccggg**GGTGGATCTGGTGGATCTGGTGGATCTATGGATTACAAGGATGACGATGACAAG\*

**Combined:**

MAAAAGRSLLLLLSSRGGGGGGAGGCGTLTAGCFPGLGVSRHRQQQHHRTVHQRIASWQNLGAVYCSTVVPSDDVTVVYQNGLPVISVRLPSRRERCQFTLKPISDSVGVFLRQLQEEDRGIDRVAIYSPDGVRVAASTGIDLLLLDDFKLVINDLTYHVRPPKRDLLSHENAATLNDVKTLVQQLYTTLCIEQHQLNKERELIERLEDLKEQLAPLEKVRIEISRKAEKRTTLVLWGGLAYMATQFGILARLTWWEYSWDIMEPVTYFITYGSAMAMYAYFVMTRQE**ftyealnhRlfskrqdKlfkrnnFpkedyenlvqaidkkekelkelelatkydhthpg**GGSGGSGGSMDYKDDDDK\*

**Chimera 7:**

ATGGCAGCTGCAGCAGGTAGATCGCTACTGCTACTCCTATCCTCTCGGGGAGGTGGAGGTGGAGGTGCCGGAGGTTGCGGGACGCTGACTGCCGGCTGCTTCCCTGGGCTGGGCGTCAGCCGCCACCGGCAGCAGCAGCACCACCGGACGGTACACCAGAGGATCGCTTCCTGGCAGAATTTGGGAGCTGTTTATTGCAGCACTGTTGTGCCCTCTGATGATGTTACAGTGGTTTATCAAAATGGGTTACCTGTGATATCTGTGAGGCTACCATCCCGGCGTGAACGCTGTCAGTTCACACTCAAGCCTATCTCTGACTCTGTTGGTGTATTTTTACGACAACTGCAAGAAGAGGATCGGGGAATTGACAGAGTTGCTATCTATTCACCAGATGGTGTTCGCGTTGCTGCTTCAACAGGAATAGACCTCCTCCTCCTTGATGACTTTAAGCTGGTCATTAATGACTTAACATACCACGTACGACCACCAAAAAGAGACCTCTTAAGTCATGAAAATGCAGCAACGCTGAATGATGTAAAGACATTGGTCCAGCAACTATACACCACACTGTGCATTGAGCAGCACCAGTTAAACAAGGAAAGGGAGCTTATTGAAAGACTAGAGGATCTCAAAGAGCAGCTGGCTCCCCTGGAAAAGGTACGAATTGAGATTAGCAGAAAAGCTGAGAAGAGGACCACTTTGGTGCTATGGGGTGGCCTTGCCTACATGGCCACACAGTTTGGCATTTTGGCCCGGCTTACCTGGTGGGAATATTCCTGGGACATCATGGAGCCAGTAACATACTTCATCACTTATGGAAGTGCCATGGCAATGTATGCATATTTTGTAATGACACGCCAGGA**gttcacctacgaggctctcaaccataggctgttcagcaagaggcaggacaagctgttcaaaagaaacaacttc**GACCTAGAGAAATACAATCAACTCAAGGATGCAATTGCTCAGGCAGAAATGGACCTTAAGAGACTGAGAGACCCATTACAAGTACATCTGCCTCTCCGACAAATTGGTGAAAAAGATCCCGGGGGTGGATCTGGTGGATCTGGTGGATCTATGGATTACAAGGATGACGATGACAAG\*

MAAAAGRSLLLLLSSRGGGGGGAGGCGTLTAGCFPGLGVSRHRQQQHHRTVHQRIASWQNLGAVYCSTVVPSDDVTVVYQNGLPVISVRLPSRRERCQFTLKPISDSVGVFLRQLQEEDRGIDRVAIYSPDGVRVAASTGIDLLLLDDFKLVINDLTYHVRPPKRDLLSHENAATLNDVKTLVQQLYTTLCIEQHQLNKERELIERLEDLKEQLAPLEKVRIEISRKAEKRTTLVLWGGLAYMATQFGILARLTWWEYSWDIMEPVTYFITYGSAMAMYAYFVMTRQE**ftyealnhRlfskrqdKlfkrnn**FDLEKYNQLKDAIAQAEMDLKRLRDPLQVHLPLRQIGEKDPGGGSGGSGGSMDYKDDDDK\*

**Chimera 8:**

ATGGCAGCTGCAGCAGGTAGATCGCTACTGCTACTCCTATCCTCTCGGGGAGGTGGAGGTGGAGGTGCCGGAGGTTGCGGGACGCTGACTGCCGGCTGCTTCCCTGGGCTGGGCGTCAGCCGCCACCGGCAGCAGCAGCACCACCGGACGGTACACCAGAGGATCGCTTCCTGGCAGAATTTGGGAGCTGTTTATTGCAGCACTGTTGTGCCCTCTGATGATGTTACAGTGGTTTATCAAAATGGGTTACCTGTGATATCTGTGAGGCTACCATCCCGGCGTGAACGCTGTCAGTTCACACTCAAGCCTATCTCTGACTCTGTTGGTGTATTTTTACGACAACTGCAAGAAGAGGATCGGGGAATTGACAGAGTTGCTATCTATTCACCAGATGGTGTTCGCGTTGCTGCTTCAACAGGAATAGACCTCCTCCTCCTTGATGACTTTAAGCTGGTCATTAATGACTTAACATACCACGTACGACCACCAAAAAGAGACCTCTTAAGTCATGAAAATGCAGCAACGCTGAATGATGTAAAGACATTGGTCCAGCAACTATACACCACACTGTGCATTGAGCAGCACCAGTTAAACAAGGAAAGGGAGCTTATTGAAAGACTAGAGGATCTCAAAGAGCAGCTGGCTCCCCTGGAAAAGGTACGAATTGAGATTAGCAGAAAAGCTGAGAAGAGGACCACTTTGGTGCTATGGGGTGGCCTTGCCTACATGGCCACACAGTTTGGCATTTTGGCCCGGCTTACCTGGTGGGAATATTCCTGGGACATCATGGAGCCAGTAACATACTTCATCACTTATGGAAGTGCCATGGCAATGTATGCATATTTTGTAATGACACGCCAGGAATATGTTTATCCAGAAGCCAGAGACAGACAATACTTACTATTTTTCCATAAAGGAGCCAAAAAGTCACGTTTT**cctaaggaggactacgagaacctcgtgcaggccatcgacaagaaggagaaggagctcaaggagctcgagctcgccacaaagtacgatcacacccaccccggg**GGTGGATCTGGTGGATCTGGTGGATCTATGGATTACAAGGATGACGATGACAAG\*

MAAAAGRXLLLLLSSRGGGGGGAGGCGTLTAGCFPGLGVSRHRQQQHHRTVHQRIASWQNLGAVYCSTVVPSDDVTVVYQNGLPVISVRLPSRRERCQFTLKPISDSVGVFLRQLQEEDRGIDRVAIYSPDGVRVAASTGIDLLLLDDFKLVINDLTYHVRPPKRDLLSHENAATLNDVKTLVQQLYTTLCIEQHQLNKERELIERLEDLKEQLAPLEKVRIEISRKAEKRTTLVLWGGLAYMATQFGILARLTWWEYSWDIMEPVTYFITYGSAMAMYAYFVMTRQEYVYPEARDRQYLLFFHKGAKKSRF**pkedyenlvqaidkkekelkelelatkydhthpg**GGSGGSGGSMDYKDDDDK\*

**Chimera 9**

ATGGCAGCTGCAGCAGGTAGATCGCTACTGCTACTCCTATCCTCTCGGGGAGGTGGAGGTGGAGGTGCCGGAGGTTGCGGGACGCTGACTGCCGGCTGCTTCCCTGGGCTGGGCGTCAGCCGCCACCGGCAGCAGCAGCACCACCGGACGGTACACCAGAGGATCGCTTCCTGGCAGAATTTGGGAGCTGTTTATTGCAGCACTGTTGTGCCCTCTGATGATGTTACAGTGGTTTATCAAAATGGGTTACCTGTGATATCTGTGAGGCTACCATCCCGGCGTGAACGCTGTCAGTTCACACTCAAGCCTATCTCTGACTCTGTTGGTGTATTTTTACGACAACTGCAAGAAGAGGATCGGGGAATTGACAGAGTTGCTATCTATTCACCAGATGGTGTTCGCGTTGCTGCTTCAACAGGAATAGACCTCCTCCTCCTTGATGACTTTAAGCTGGTCATTAATGACTTAACATACCACGTACGACCACCAAAAAGAGACCTCTTAAGTCATGAAAATGCAGCAACGCTGAATGATGTAAAGACATTGGTCCAGCAACTATACACCACACTGTGCATTGAGCAGCACCAGTTAAACAAGGAAAGGGAGCTTATTGAAAGACTAGAGGATCTCAAAGAGCAGCTGGCTCCCCTGGAAAAGGTACGAATTGAGATTAGCAGAAAAGCTGAGAAGAGGACCACTTTGGTGCTATGGGGTGGCCTTGCCTACATGGCCACACAGTTTGGCATTTTGGCCCGGCTTACCTGGTGGGAATATTCCTGGGACATCATGGAGCCAGTAACATACTTCATCACTTATGGAAGTGCCATGGCAATGTATGCATATTTTGTAATGACACGCCAGGAAT**tcacctacgaggctctcaaccat**AGACAATACTTACTATTTTTCCATAAAGGAGCCAAAAAGTCACGTTTTGACCTAGAGAAATACAATCAACTCAAGGATGCAATTGCTCAGGCAGAAATGGACCTTAAGAGACTGAGAGACCCATTACAAGTACATCTGCCTCTCCGACAAATTGGTGAAAAAGATCCCGGGGGTGGATCTGGTGGATCTGGTGGATCTATGGATTACAAGGATGACGATGACAAG\*

MAAAAGRSLLLLLSSRGGGGGGAGGCGTLTAGCFPGLGVSRHRQQQHHRTVHQRIASWQNLGAVYCSTVVPSDDVTVVYQNGLPVISVRLPSRRERCQFTLKPISDSVGVFLRQLQEEDRGIDRVAIYSPDGVRVAASTGIDLLLLDDFKLVINDLTYHVRPPKRDLLSHENAATLNDVKTLVQQLYTTLCIEQHQLNKERELIERLEDLKEQLAPLEKVRIEISRKAEKRTTLVLWGGLAYMATQFGILARLTWWEYSWDIMEPVTYFITYGSAMAMYAYFVMTRQE**ftyealnhR**QYLLFFHKGAKKSRFDLEKYNQLKDAIAQAEMDLKRLRDPLQVHLPLRQIGEKDPGGGSGGSGGSMDYKDDDDK\*

**Chimera 10:**

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**HsMCUCeEDD**

ATGGCGGCCGCCGCAGGTAGATCGCTCCTGCTGCTCCTCTCCTCTCGGGGCGGCGGCGGCGGGGGCGCCGGCGGCTGCGGGGCGCTGACTGCCGGCTGCTTCCCTGGGCTGGGCGTCAGCCGCCACCGGCAGCAGCAGCACCACCGGACGGTACACCAGAGGATCGCTTCCTGGCAGAATTTGGGAGCTGTTTATTGCAGCACTGTTGTGCCCTCTGATGATGTTACAGTGGTTTATCAAAATGGGTTACCTGTGATATCTGTGAGGCTACCATCCCGGCGTGAACGCTGTCAGTTCACACTCAAGCCTATCTCTGACTCTGTTGGTGTATTTTTACGACAACTGCAAGAAGAGGATCGGGGAATTGACAGAGTTGCTATCTATTCACCAGATGGTGTTCGCGTTGCTGCTTCAACAGGAATAGACCTCCTCCTCCTTGATGACTTTAAGCTGGTCATTAATGACTTAACATACCACGTACGACCACCAAAAAGAGACCTCTTAAGTCATGAAAATGCAGCAACGCTGAATGATGTAAAGACATTGGTCCAGCAACTATACACCACACTGTGCATTGAGCAGCACCAGTTAAACAAGGAAAGGGAGCTTATTGAAAGACTAGAGGATCTCAAAGAGCAGCTGGCTCCCCTGGAAAAGGTACGAATTGAGATTAGCAGAAAAGCTGAGAAGAGGACCACTTTGGTGCTATGGGGTGGCCTTGCCTACATGGCCACACAGTTTGGCATTTTGGCCCGGCTTACCTGGTGGGAATATTCCTGGGACATCATGGAGCCAGTAACATACTTCATCACTTATGGAAGTGCCATGGCAATGTATGCATATTTTGTAATGACACGCCAG**tcatttgaatatccaagtgccagagaaaga**CAATACTTACTATTTTTCCATAAAGGAGCCAAAAAGTCACGTTTTGACCTAGAGAAATACAATCAACTCAAGGATGCAATTGCTCAGGCAGAAATGGACCTTAAGAGACTGAGAGACCCATTACAAGTACATCTGCCTCTCCGACAAATTGGTGAAAAAGATCCCGGGGGTGGATCTGGTGGATCTGGTGGATCTATGGATTACAAGGATGACGATGACAAG

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**HsEMRECeNterm**

**atgaccagcaagaccgtgttccagaacgccttcaagaccttcctggacttcgccatcaacagcctgcccagcacccagggcggcctgaacatcaccgccaccgcccccggcggcgtgggccagaggcccttcaccaacaaggccggc**CTTCTCCGTGTGTTCTCCATTGTGATCCCCTTTCTCTATGTCGGGACACTCATTAGCAAAAATTTCGCGGCACTATTAGAGGAACATGACATTTTTGTTCCAGAGGATGATGATGATGATGAC

**mtsktvfqnafktfldfainslpstqgglnitatapggvgqrpftnkag**LLRVFSIVIPFLYVGTLISKNFAALLEEHDIFVPEDDDDDD

**Cysteine-free MCU**

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