

Additional File 1

Table A: Predicted interfacial residues involved in hydrophobic and ionic interactions within the uS19- TMEM237 docked complex.

Interaction	Position	Residue	Chain	Position	Residue	Chain
Hydrophobic	75	PRO	uS19	25	LEU	TMEM237
	82	VAL	uS19	92	LEU	TMEM237
	109	PHE	uS19	316	TYR	TMEM237
	109	PHE	uS19	92	LEU	TMEM237
	128	ILE	uS19	81	PRO	TMEM237
	130	TYR	uS19	81	PRO	TMEM237
	132	PRO	uS19	133	VAL	TMEM237
	132	PRO	uS19	81	PRO	TMEM237
Ionic	17	ARG	uS19	32	GLU	TMEM237
	73	GLU	uS19	155	LYS	TMEM237
	81	GLU	uS19	155	LYS	TMEM237
	84	LYS	uS19	314	GLU	TMEM237
	113	GLU	uS19	29	LYS	TMEM237
	113	GLU	uS19	31	LYS	TMEM237

Table B: Predicted interfacial residues involved in hydrophobic and ionic interactions within the uS19- SLC22A23 docked complex.

Interaction	Position	Residue	Chain	Position	Residue	Chain
Hydrophobic	5	PRO	uS19	217	VAL	SLC22A23
	17	VAL	uS19	1741	ILE	SLC22A23
	17	VAL	uS19	1744	PRO	SLC22A23
	17	VAL	uS19	1780	TYR	SLC22A23
	18	MET	uS19	1785	MET	SLC22A23
	18	MET	uS19	117	VAL	SLC22A23
	18	MET	uS19	1785	MET	SLC22A23
	20	PHE	uS19	1776	PHE	SLC22A23
	20	PHE	uS19	1780	TYR	SLC22A23
	20	PHE	uS19	1741	ILE	SLC22A23
	63	LEU	uS19	1727	LEU	SLC22A23
	87	LEU	uS19	220	PHE	SLC22A23
	90	MET	uS19	220	PHE	SLC22A23
	104	TYR	uS19	217	VAL	SLC22A23
	111	PRO	uS19	111	PRO	SLC22A23
	117	VAL	uS19	117	VAL	SLC22A23
	117	VAL	uS19	118	MET	SLC22A23
	117	VAL	uS19	120	PHE	SLC22A23
	117	VAL	uS19	18	MET	SLC22A23
	118	MET	uS19	117	VAL	SLC22A23
	120	PHE	uS19	1785	MET	SLC22A23
	120	PHE	uS19	117	VAL	SLC22A23
	140	ILE	uS19	1755	LEU	SLC22A23
	208	PRO	uS19	1760	VAL	SLC22A23
	217	VAL	uS19	5	PRO	SLC22A23
	220	PHE	uS19	202	PRO	SLC22A23
	223	PRO	uS19	8	PRO	SLC22A23

	1738	ILE	uS19	1863	LEU	SLC22A23
	1767	PRO	uS19	1851	MET	SLC22A23
	1805	VAL	uS19	1849	VAL	SLC22A23
	1805	VAL	uS19	1851	LEU	SLC22A23
	1805	VAL	uS19	1860	MET	SLC22A23
Ionic	65	LYS	uS19	1750	GLU	SLC22A23
	112	ARG	uS19	1764	GLU	SLC22A23
	112	ARG	uS19	1742	ASP	SLC22A23
	1802	ASP	uS19	1853	ARG	SLC22A23

Table C: Possible interface residues of uS19 and SLC13A4 protein explored through the dual docking protocols.

Protein	Docking Servers	Interface Residues (<5Å)
uS19	ClusPro	PHE19, PHE22, THR23, TYR24, ARG25, GLN42, SER45, ALA46, ARG47, ARG49, ARG50, ARG51, ARG54, ARG57, LYS59, HIS86, LEU87, ARG88, ASP89, ASN105, GLY106, GLN111, VAL112, GLU113, LYS115, GLU117, MET118, HIS121, TYR122, LEU123, GLY124, GLU125, PHE126, SER127, ILE128, THR129, TYR130, LYS131, PRO132, VAL133
	PatchDock	ARG17, THR18, PHE19, ARG20, PHE22, THR23, TYR24, ARG25, GLY26, VAL27, ALA46, ARG47, ARG49, ARG50, ARG51, ASN53, ARG54, GLY55, LEU56, ARG57, ARG58, LYS59, HIS61, MET77, GLU78, LYS79, LYS107, THR108, ASN110, GLN111, VAL112, GLU113, LYS115, GLU117, MET118, HIS121, TYR122, GLU125, PHE126, SER127, ILE128, THR129, TYR130, LYS131, PRO132, VAL133, LYS134, HIS135, GLY136, ARG137, PRO138, GLY139, ILE140, GLY141, OXT141
SLC13A4	ClusPro	HIS19, SER22, VAL25, LEU26, LEU64, HIS65, THR67, ILE71, LEU72, VAL75, VAL78, PHE79, GLY81, PHE83, GLU84, THR85, GLN86, LEU89, ASN90, PHE92, ALA93, ASN94, SER95, PHE98, LEU101, LYS117, VAL225, TRP257, LEU285, PHE288, LYS289, SER290, PHE291, THR293, LEU294, LEU297, ILE300, LEU301, SER304, PHE305, ALA306, ARG307, HIS310, TRP311, LYS312, GLN315, ALA318, ASP319, TRP320, GLY321, LEU324, HIS19, ASN21, SER22, LEU23, VAL25, LEU26, ASP28, VAL29, PHE32, LEU33, TYR36, HIS37, PHE38, HIS43, ASN44, LEU47, PHE54, LEU64, HIS65, THR67, VAL68, ILE71, LEU72, VAL75, VAL78, PHE79, PHE80, GLY81, ILE82, PHE83, GLU84, THR85, GLN86, LEU89, ASN90, ASN91, PHE92, ALA93, ASN94, SER95, PHE98, LEU101, LEU285, PHE288, LYS289, SER290, PHE291, THR293, LEU294, LEU297, ILE300, LEU301, SER304, PHE305, ALA306, ARG307, TRP311, GLN315, LYS316, THR317, ALA318, ASP319, TRP320, GLY321, LEU324, SER22,

VAL25, LEU26, LEU64, HIS65, THR67, VAL68, ILE71, LEU72, VAL75, VAL78, PHE79, PHE80, GLY81, GLU84, THR85, GLN86, LEU89, ASN90, PHE92, ALA93, ASN94, SER95, PHE98, LEU101, LYS122, GLN128, LEU159, ASP170, PRO254, VAL255, ASN256, TRP257, ASP258, LYS259, VAL263, GLY266, ILE267, GLY269, LEU270, PHE273, LEU274, PHE277, PRO280, ILE281, ASN282, ALA283, ALA284, LEU285, GLY286, PHE288, LYS289, SER290, PHE291, THR293, LEU294, VAL295, LEU297, GLY288, LEU301, MSE302, SER304, PHE305, ALA306, TRP311, GLN315, LYS316, ALA318, ASP319, TRP320, GLY321, LEU324, ALA425, ILE426, PHE428, ALA429, SER430, GLY431, LYS434, LEU18, SER22, VAL25, LEU26, LEU64, HIS65, THR67, VAL68, ILE71, LEU72, VAL75, VAL78, PHE79, PHE80, GLY81, PHE83, GLU84, THR85, GLN86, LEU89, ASN90, PHE92, ALA93, ASN94, SER95, PHE98, LEU101, LEU159, LEU163, LEU285, GLY287, , PHE288, LYS289, SER290, PHE291, THR293, LEU294, LEU297, LEU301, MSE302, SER304, PHE305, TRP311, GLN315, ALA318, ASP319, TRP320, GLY321, LEU324, PHE375PRO418, VAL419, ALA425, PHE428, SER430, GLN435

PatchDock

SER22, VAL25, LEU26, LEU64, HIS65, THR67, VAL68, ILE71, LEU72, VAL75, VAL78, PHE79, GLU84, THR85, GLN86, LEU89, ASN90, ASN91, PHE92, ALA93, ASN94, SER95, PHE98, LEU101, HIS111, HIS112, GLN113, LEU115, LYS117, VAL118, ILE119, ALA120, LYS122, VAL123, LEU124, MSE126, ALA127, GLN128, MSE137, GLY140, VAL141, ALA143, LEU144, MSE147, TRP148, ALA156, LEU159, PRO160, LEU222, ALA225, MSE226, LEU229, ASN256, TRP257, ASP258, LYS259, GLY260, LYS261, VAL262, VAL263, LEU265, GLY266, ILE267, PHE268, GLY269, LEU270, VAL272, PHE273, PHE277, LEU285, PHE288, LYS289, SER290, PHE291, THR293, LEU294, LEU297, ILE300, LEU301, SER304, PHE305, ARG307, VAL308, HIS310, TRP311, LYS312, GLN315, ALA318, ASP319, TRP320, GLY321, LEU324, SER22, VAL25, LEU26, LEU64, HIS65, THR67, VAL68, ILE71, LEU72, VAL75, VAL78, PHE79, PHE80, GLU84, THR85, GLN86, LEU89, ASN90, PHE92, ALA93, ASN94, SER95, PHE98, LEU101, HIS111, HIS112, GLN113, LEU115, LYS117, VAL118, LYS122, LYS259, GLY260, LYS261, VAL262, VAL263, PHE288, LYS289, SER290, PHE291, THR293, LEU294, LEU297, ILE300, LEU301, SER304, PHE305, ALA306, ARG307, VAL308, TRP311, GLN315, LYS316, ALA318, ASP319, TRP320, GLY321, LEU324, HIS19, ARG20, ASN21, SER22, LEU23, VAL25, LEU26,

ALA63, LEU64, HIS65, THR67, VAL68, ILE71, LEU72, VAL75, VAL78, PHE79, PHE80, GLU84, THR85, GLN86, LEU89, ASN90, PHE92, ALA93, ASN94, SER95, PHE98, GLN113, GLY114, LEU115, LYS117, VAL118, ILE119, ASP121, LYS122, PRO160, LEU161, ASP170, ASP172, ALA253, PRO254, VAL255, ASN256, TRP257, ASP258, LYS159, GLY260, LYS261, VAL262, LEU265, PHE288, LYS289, SER290, PHE291, THR293, LEU294, LEU297, ILE300, LEU301, SER304, PHE305, TRP311, GLN315, LYS316, ALA318, ASP319, TRP320, GLY321, LEU324, PHE428, ALA429, SER430, LEU18, HIS19, ASN21, SER22, LEU23, VAL25, LEU26, LEU64, HIS65, THR67, VAL68, ILE71, LEU72, VAL75, VAL78, PHE79, PHE80, GLU84, THR85, GLN86, LEU89, ASN90, PHE92, ALA93, ASN94, SER95, PHE98, LEU101, PHE288, LYS289, SER290, PHE291, THR293, LEU294, LEU297, ILE300, LEU301, SER304, PHE305, TRP311, GLN315, ALA318, ASP319, TRP320, GLY321, LEU324, PRO418, ALA425, PHE428, ALA429, ILE433, GLN435

Table D: Possible interface residues of uS19 and CUBN protein explored through the dual docking protocols.

Protein	Docking Servers	Interface Residues (<5Å)
uS19	ClusPro	ARG47, ARG50, ARG51, ASN53, ARG54, GLY55, ARG57, ARG58, LYS59, GLN60, HIS86, LEU87, ARG88, ASP89, MET90, TYR104, ASN105, GLY106, LYS107, THR108, TYR122, GLY124, ILE128, THR129, TYR130, LYS131, VAL13, HIS135, ARG137, PRO138, GLY139, ILE140, GLY141
	PatchDock	ARG17, PHE19, ARG20, ARG47, ARG51, MET77, GLU78, LYS79, VAL82, HIS86, ARG88, ASP89, MET100, ASN105, GLY106, LYS107, THR108, PHE109, ASN110, GLN111, VAL112, GLU113, LYS115, GLU117, MET118, HIS121, TYR122, GLY124, GLU125, PHE126, SER127, ILE128, THR129, TYR130, LYS131, PRO132, VAL133, LYS134, HIS135, GLY139, ILE140, GLY141, OXT141
CUBN	ClusPro	CYS932, GLY933, GLU934, GLY955, ILE956, ASN957, CYS958, THR959, HIS961, GLN965, PRO965, GLU980, HIS982, TYR983, ASN984, CYS985, THR986, ASN987, TYR989, GLU991, TYR993, THR995, ASP996, SER997, ARG1003, SER1019, MET1021, VAL1023, VAL1025, THR1026, ASP1027, SER1028, ASP1029, LEU1030, HIS1187, SER1188, GLU1213, LEU1220, ASP1221, ASP1262, GLU1263, GLY1264, GLN1265, GLN1266

PatchDock	THR942, GLU975, LEU1036, ASN1038, LEU1085, ALA1087, VAL1088, HIS1089, PRO1118, LEU1119, LEU1120, GLY1121, PHE1123, TYR1124, PRO1129, PRO1130, THR1131, ILE1132, ILE1133, SER1134, HIS1135, TRP1158, ASP1159, GLY1160, SER1161, GLY1166, GLY1167, ASN1168, LEU1169, THR1170, THR1171, SER1172, SER1173, GLY1174, THR1175, PHE1176, TRP1194, LYS1196, SER1197, SER1198, HIS1199, GLU1206, LYS1208, PRO1229, SER1230, ASN1232, ASP1253, SER1254, LYS1271, GLU1273, TYR1274, ARG1275, ASN1285, GLN1286, THR1287, TYR1288, GLY1289, ILE1290, GLU1292, GLY1295, TYR1296, PRO1297, ASN1298, PRO1299, THR1321, LEU1323, LYS1380, GLN1383, GLN1385, TRP1386, PHE1387
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Table E: Possible interface residues of uS19 and CBLIF protein explored through the dual docking protocols.

Protein	Docking Servers	Interface Residues (<5Å)
uS19	ClusPro	ARG47, ARG50, ARG51, ARG54, GLY55, ARG57, ARG88, ASP89, TYR122, GLY124, GLU125, SER127, ILE128, THR129, TYR130, LYS131, PRO132, VAL133, ARG137, PRO138, GLY139, ILE140, GLY141,
	PatchDock	ARG17, ARG20, LEU29, ASP30, LEU33, ASP34, MET35, SER36, TYR37, LEU40, ARG68, LYS71, LYS72, GLU73, ALA74, PRO75, PRO76, MET77, GLU78, LYS79, PRO80, GLU95, VAL97, GLY98, SER99, MET100, GLU113, ILE114, LYS115, PRO116
CBLIF	ClusPro	PRO302, GLY303, PRO304, GLY305, PRO306, THR307, SER308, ALA309, ILE315, THR317, ASN319, GLN321, LEU322, GLU324, VAL325, GLU326, LEU327, LEU328, PHE329, GLU331, ILE333, LYS338, GLY391, PHE405, ASN406, HIS407, GLU408, HIS409, ASN413, PHE414, THR415, GLN416
	PatchDock	LEU219, GLY221, ILE222, TYR223, VAL224, LEU225, VAL226, LEU228, VAL229, LEU230, ALA234, TYR235, ARG237, ARG238, TRP239, ARG240, ARG241, LEU242, THR243, VAL244, CYS245, OXT245

Table F: Possible interface residues of uS19 and SLC7A1 protein explored through the dual docking protocols.

Protein	Docking Servers	Interface Residues (<5Å)
uS19	ClusPro	PHE19, PHE22, THR23, TYR24, ARG25, GLY26, SER45, ALA46, ARG47, ARG50, ARG51, LYS59, HIS86, ARG88, ASP89, TYR104, ASN105, GLY106, LYS107, HIS121, TYR122, GLY124, GLU125, PHE126, ILE128, THR129, TYR130, LYS131, PRO132, VAL133, LYS134, HIS135, GLY136, ARG137, PRO138, GLY139, ILE140
	PatchDock	ARG47, ARG50, ARG51, ARG54, GLY55, LEU56, ARG57, LYS59, GLN60, LEU87, ARG88, ASP89, TYR104, ASN105, GLY106, LYS107, THR108, GLY124, GLU125, PHE126, SER127, ILE128, THR129, TYR130, LYS131, PRO132, VAL133, LYS134, HIS135, GLY136, ARG137, PRO138, GLY139, ILE140, GLY141, OXT141
SLC7A1	ClusPro	HIS7, GLU6, ASN5, TYR3, PHE2, THR6, SER7, ASN8, PHE9, ASP10, ALA11, GLY12, ARG30, ASP32, ASN33, ARG34, SER35, GLU36, ARG44, THR46, TYR78, ASP79, ARG80, VAL81, ASN82, GLU102, PHE103, ASP104, SER105, HIS107, GLU116, GLU117, SER120, GLU121, GLU142, GLY143, ARG144, VAL221, HIS222, GLY223, ASN224, GLU237, ARG245
	PatchDock	HIS7, GLU6, TYR3, PHE2, GLN1, THR2, LEU3, SER4, ILE5, THR6, SER7, ASN8, ILE14, ASP15, VAL16, VAL17, SER18, CYS19, CLU20, ARG26, ARG28, ASN33, ARG34, SER35, ARG44, THR46, GLY47, ARG49, THR100, GLU102, ASP104, GLY138, ARG139, THR140, VAL141, GLU142, GLY143, ARG144, HIS222, ALA229, ALA230, ALA243, GLU244, ARG245, PRO247, VAL251

Table G: Possible interface residues of uS19 and RRP1B protein explored through the dual docking protocols.

Protein	Docking Servers	Interface Residues (<5Å)
uS19	ClusPro	SER36, TYR37, LEU40, LEU52, ASN53, ARG54, GLY55, LEU56, ARG57, ARG58, HIS61, LEU64, LYS65, ARG68, LEU93, GLU95
	PatchDock	ALA46, ARG47, ARG49, ARG50, ARG51, LEU52, ASN53, ARG54, GLY55, LEU56, ARG57, ARG58, LYS59, HIS86, LEU87, ARG88, ASP89, MET90, TYR104, ASN105, GLY106, LYS107, THR108, PHE109, TYR122, GLY124, GLU125, ILE128, THR129, TYR130, LYS131, VAL133, LYS134, HIS135, GLY136, ARG137, PRO138, GLY139, ILE140

RRP1B	ClusPro	GLU241, TRP242, ALA243, SER244, GLU245, TRP246, ASP247, GLN249, ASN250, ALA253, MET254, LEU255, GLU257, GLU260,
	PatchDock	GLU13, ALA16, HIS17, GLU18, CYS19, GLU20, SER21, THR22, ARG23, PRO24, GLU25, GLY26, PRO27, GLY28, ASP29, ALA30, ALA37, THR38, SER41, THR43, SER44, LYS45, MET47, ALA48, ALA50, ALA51, LYS52, LYS54, ALA55, PHE57, ALA58, ALA59, ASP61, ARG62, GLU65, ALA68, ALA69, ARG72, ALA73, VAL107, PRO108, ASP109, MET110, SER111, GLY112, ILE113, PRO114, GLY115, LEU117, PRO120, MET122, GLU123, TYR124, PRO125, SER126, ALA127, GLN159, TYR163, ALA267, GLN271, ILE272, GLN273

Table H: Possible interface residues of uS19 and LMP2 protein explored through the dual docking protocols.

Protein	Docking Servers	Interface Residues (<5Å)
uS19	ClusPro	ARG17, THR18, PHE19, LYS21, PHE22, THR23, TYR24, ARG25, GLY26, VAL27, ASP28, GLN31, MET35, GLN42, LEU43, ILE92, ASN105, THR108, ASN110, GLN111, VAL112, GLU113, LYS115, GLU117, MET118, HIS121, LEU123, PHE126, SER127, ILE128, THR129, TYR130, PRO132, VAL133, LYS134, HIS135
	PatchDock	ARG17, THR18, PHE19, ARG20, LYS21, PHE22, THR23, TYR24, ARG25, GLY26, SER45, ARG47, MET77, ASN110, GLN111, VAL112, GLU113, ILE114, LYS115, PRO116, GLU117, MET118, ILE119, GLY120, HIS121, TYR122, GLU125, PHE126, ILE128, TYR130, LYS131, PRO132, VAL133, LYS134, HIS135,
LMP2	ClusPro	THR22, PHE23, VAL25, VAL26, PHE27, VAL29, LEU30, VAL31, GLY33, SER34, LEU35, LEU37, VAL38, ILE41, LEU45, VAL87, ILE88, TYR90, ALA344, ILE347, LEU377ILE384, ALA387, CYS388, ALA390, LEU391, LYS397, PHE400, LYS401, LEU404, MET405, CYS406
	PatchDock	GLU118, TRP120, PRO125, ASN126, ALA129, LEU151, PRO152, VAL155, ARG156, PHE157, ALA158, LYS159, THR160, LEU162, ALA163, ASN164, SER165, SER166, PRO167, PHE168, ASN169, VAL170, GLU192, TYR195, LEU198, GLN201, VAL202, LYS204, ASP205, GLU208, LYS209, ILE210, MET212, LYS213, ILE214, LYS215, ASP216, ASN217, GLY221, ASP222, ILE223, LYS241, LYS242, GLN321, TYR385, GLN387, PHE388, LEU389, VAL392, THR393, PRO394, LEU395, ASN396, GLU397, GLN416, TYR417

Table I: Possible interface residues of uS19 and EBNA1 protein explored through the dual docking protocols.

Protein	Docking Servers	Interface Residues (<5Å)
uS19	ClusPro	ARG17, PHE22, ARG47, ARG50, ARG51, ARG54, GLY55, LEU56, ARG57, ARG58, LYS59, GLN60, THR85, HIS86, LEU87, ARG88, ASP89, TYR104, ASN105, GLY106, LYS155, GLU117, MET118, HIS121, TYR122, GLY124, GLU125, PHE126, SER127, ILE128, THR129, TYR130, LYS131, PRO132, VAL133, HIS135
	PatchDock	THR18, PHE19, PHE22, THR23, TYR24, ARG25, GLY26, VAL27, GLN39, MET41, GLN42, LEU43, SER45, ALA46, ARG47, ARG49, ARG50, GLU117, GLY120, HIS121, TYR122, GLU125, PHE126, ILE128, TYR130, VAL133, LYS134, HIS135, GLY136, ARG137, PRO138, GLY139, ILE140, GLY141, OXT141
EBNA1	ClusPro	PHE43, VAL44, TYR45, GLY46, THR69, PRO70, SER72, ARG73, LEU74, PRO75, MET78, PRO84, GLN85, PRO86, GLY87, PRO88, LEU89, ARG90, TYR96, MET98, PHE100, CYS126, ASN127, ARG129, VAL130, THR131, VAL132, CYS133, SER134, PHE135, ASP136, ASP137, GLY138, VAL139, ASP140, LEU141, PRO142, PRO143, TRP144, PHE145
	PatchDock	ARG486, HIS493, VAL494, GLU495, ARG496, GLY501, TRP503, PHE508, TYR510, ARG521, ARG522, ALA525, ILE528, PRO529, GLN530, CYS531, ARG532, LEU533, THR534, PRO535, LEU536, SER537, ARG538, LEU539, PRO540, PHE541, GLY542, MET543, ALA544, PRO545, PRO549, GLN550, PRO551, GLY552, PRO553, LEU554, ARG555, GLU556, SER557, VAL559, TYR561, MET563, PHE565, GLN567, GLU573, LYS576, LYS580, ARG594, VAL595, THR596, VAL597, CYS598, SER599, PHE600, ASP601, ASP602, GLY603, VAL604, ASP605, LEU606, PRO607, PRO608, TRP609, PHE610, PRO611, OXT611, LEU488, ARG491, GLY501, TRP503, PHE508, TYR510, GLY511, GLY512, SER513, LYS514, THR515, SER516, ARG521, ARG522, ALA525, ILE528, PRO529, CYS531, ARG532, LEU533, THR534, PRO535, LEU536, SER537, ARG538, LEU539, PRO540, PHE541, GLY542, MET543, ALA544, PRO545, GLY546, PRO547, GLY548, PRO549, GLN550, PRO551, GLY552, PRO553, LEU554, ARG555, GLU556, SER557, ILE558, VAL559, TYR561, MET563, PHE565, GLN567, GLU573, LYS576, LYS580, ASP581, MET584, THR585, LYS586, PRO587, ALA588, PRO589, CYS591, ASN592, ARG594, VAL595, THR596, VAL597, CYS598, SER599, PHE600, ASP601, ASP602, GLY603,

VAL604, ASP605, LEU606, PRO607, PRO608, TRP609, PHE610, PRO611, GLY501, TRP503, PHE508, TYR510, GLY511, GLY512, ARG521, ARG522, ALA525, ILE528, PRO529, CYS531, ARG532, LEU533, THR534, PRO535, LEU536, SER537, ARG538, LEU539, PRO540, PHE541, GLY542, MET543, ALA544, PRO545, GLY546, PRO547, GLY548, PRO549, GLN550, PRO551, GLY552, PRO553, LEU554, ARG555, GLU556, SER557, VAL559, TYR561, MET563, PHE565, GLN567, GLU573, LYS576, LYS580, VAL583, MET584, THR585, LYS586, PRO587, ALA588, CYS591, ASN592, ARG594, VAL595, THR596, VAL597, CYS598, SER599, PHE600, ASP601, ASP602, GLY603, VAL604, ASP605, LEU606, PRO607, PRO608, TRP609, PHE610, PRO611, ARG486, HIS493, VAL494, GLU495, ARG496, GLY501, TRP503, PHE508, TYR510, ARG521, ARG522, THR524, LEU526, ILE528, PRO529, GLN530, CYS531, ARG532, LEU533, THR534, PRO535, LEU536, SER537, ARG538, LEU539, PRO540, PHE541, GLY542, MET543, ALA544, PRO545, PRO549, GLN550, PRO551, GLY552, PRO553, LEU554, ARG555, GLU556, SER557, VAL559, TYR561, MET563, PHE565, GLN567, GLU573, LYS576, LYS580, ARG594, VAL595, THR596, VAL597, CYS598, SER599, PHE600, ASP601, ASP602, GLY603, VAL604, ASP605, LEU606, PRO607, PRO608, TRP609, PHE610, PRO611, OXT611, PHE478, ARG486, VAL494, GLU496, ARG496, THR497, ASP499, GLY501, TRP503, PHE508, TYR510, LYS514, THR515, TYR518, ARG521, ARG522, ALA525, ILE528, PRO529, GLN530, CYS531, ARG532, LEU533, THR534, PRO535, LEU536, SER537, ARG538, LEU539, PRO540, PHE541, GLY542, MET543, ALA544, PRO545, PRO549, GLN550, PRO551, GLY552, PRO553, LEU554, ARG555, GLU556, SER557, VAL559, TYR561, MET563, PHE565, GLN567, GLU573, LYS576, LYS580, ARG594, VAL595, THR596, VAL597, CYS598, SER599, PHE600, ASP601, ASP602, GLY603, VAL604, ASP605, LEU606, PRO607, PRO608, TRP609, PHE610, PRO611, LYS477, PHE478, ARG491, GLY501, TRP503, PHE508, TYR510, GLY511, GLY512, SER513, LYS514, THR515, SER516, TYR517, ASN519, ARG521, ARG522, ALA525, , ILE528, PRO529, CYS531, ARG532, LEU533, THR534, PRO535, LEU536, SER537, ARG538, LEU539, PRO540, PHE541, GLY542, MET543, ALA544, PRO545, GLY546, PRO547, GLY548, PRO549, GLN550, PRO551, GLY552, PRO553, LEU554, ARG555, GLU556, SER557, ILE558, VAL559, TYR561, MET563, PHE565, GLN567, GLU573, LYS576, LYS580, ASP581, VAL583, MET584, THR585, LYS586, PRO587, ALA588, CYS591,

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