

Functional Production, Extracellular Expression, and Antitumor Activity of Mouse Alpha Klotho in Model Microalga *Chlamydomonas reinhardtii*

Biotechnology Letters

Ramazan ÇAKMAK¹, Ugur UZUNER^{1,2*}

¹ Department of Molecular Biology and Genetics, Faculty of Science, Karadeniz Technical University, Trabzon, Turkey

² Synthetic and Systems Biology Innovation Hub, Texas A&M University, College Station, TX. USA

*Correspondence: uguruzuner@ktu.edu.tr

ORCID:

First AUTHOR : <https://orcid.org/0000-0002-8097-8994>

Second AUTHOR: <https://orcid.org/0000-0002-5308-3730>

Supplementary file

N- and O-glycosylation prediction data of mouse α -KL protein sequence using glycosylation prediction program (GPP) (Hamby and Hirst 2008).

No	Residue	O-Glycosylated	N-Glycosylated	No	Residue	O-Glycosylated	N-Glycosylated
1	L	-		31	A	-	
2	H	-		32	S	n	
3	D	-		33	I	-	
4	T	G	1	34	W	-	
5	F	-		35	D	-	
6	P	-		36	T	n	
7	D	-		37	F	-	
8	G	-		38	T	G	1
9	F	-		39	H	-	
10	L	-		40	H	-	
11	W	-		41	S	n	
12	A	-		42	G	-	
13	V	-		43	A	-	
14	G	-		44	A	-	
15	S	G	1	45	P	-	
16	A	-		46	S	G	1
17	A	-		47	D	-	
18	Y	-		48	S	G	1
19	Q	-		49	P	-	
20	T	n		50	I	-	
21	E	-		51	V	-	
22	G	-		52	A	-	
23	G	-		53	P	-	
24	W	-		54	S	G	1
25	R	-		55	G	-	
26	Q	-		56	A	-	
27	H	-		57	P	-	
28	G	-		58	S	n	
29	K	-		59	P	-	
30	G	-		60	P	-	

<u>No</u>	<u>Residue</u>	<u>O-Glycosylated</u>	<u>N-Glycosylated</u>
61	L	-	
62	S	G	1
63	S	G	1
64	T	n	
65	G	-	
66	D	-	
67	V	-	
68	A	-	
69	S	G	1
70	D	-	
71	S	n	
72	Y	-	
73	N	n	
74	N	n	
75	V	-	
76	Y	-	
77	R	-	
78	D	-	
79	T	G	1
80	E	-	
81	G	-	
82	L	-	
83	R	-	
84	E	-	
85	L	-	
86	G	-	
87	V	-	
88	T	n	
89	H	-	
90	Y	-	
91	R	-	
92	F	-	
93	S	n	
94	I	-	
95	S	G	1
96	W	-	
97	A	-	
98	R	-	
99	V	-	
100	L	-	
101	P	-	
102	N	G	1
103	G	-	
104	T	G	1
105	A	-	
106	G	-	
107	T	n	
108	P	-	
109	N	n	
110	E	-	
111	G	-	
112	L	-	
113	R	-	
114	Y	-	
115	Y	-	
116	R	-	
117	R	-	

<u>No</u>	<u>Residue</u>	<u>O-Glycosylated</u>	<u>N-Glycosylated</u>
118	L	-	
119	L	-	
120	E	-	
121	R	-	
122	L	-	
123	R	-	
124	E	-	
125	L	-	
126	G	-	
127	V	-	
128	Q	-	
129	P	-	
130	V	-	
131	V	-	
132	T	n	
133	L	-	
134	Y	-	
135	H	-	
136	W	-	
137	D	-	
138	L	-	
139	P	-	
140	Q	-	
141	R	-	
142	L	-	
143	Q	-	
144	D	-	
145	T	n	
146	Y	-	
147	G	-	
148	G	-	
149	W	-	
150	A	-	
151	N	G	1
152	R	-	
153	A	-	
154	L	-	
155	A	-	
156	D	-	
157	H	-	
158	F	-	
159	R	-	
160	D	-	
161	Y	-	
162	A	-	
163	E	-	
164	L	-	
165	C	-	
166	F	-	
167	R	-	
168	H	-	
169	F	-	
170	G	-	
171	G	-	
172	Q	-	
173	V	-	
174	K	-	

No	Residue	O-Glycosylated	N-Glycosylated
175	Y	-	
176	W	-	
177	I	-	
178	T	G	1
179	I	-	
180	D	-	
181	N	n	
182	P	-	
183	Y	-	
184	V	-	
185	V	-	
186	A	-	
187	W	-	
188	H	-	
189	G	-	
190	Y	-	
191	A	-	
192	T	n	
193	G	-	
194	R	-	
195	L	-	
196	A	-	
197	P	-	
198	G	-	
199	V	-	
200	R	-	
201	G	-	
202	S	G	1
203	S	G	1
204	R	-	
205	L	-	
206	G	-	
207	Y	-	
208	L	-	
209	V	-	
210	A	-	
211	H	-	
212	N	n	
213	L	-	
214	L	-	
215	L	-	
216	A	-	
217	H	-	
218	A	-	
219	K	-	
220	V	-	
221	W	-	
222	H	-	
223	L	-	
224	Y	-	
225	N	G	1
226	T	n	
227	S	n	
228	F	-	
229	R	-	
230	P	-	
231	T	n	

No	Residue	O-Glycosylated	N-Glycosylated
232	Q	-	
233	G	-	
234	G	-	
235	R	-	
236	V	-	
237	S	G	1
238	I	-	
239	A	-	
240	L	-	
241	S	n	
242	S	n	
243	H	-	
244	W	-	
245	I	-	
246	N	n	
247	P	-	
248	R	-	
249	R	-	
250	M	-	
251	T	n	
252	D	-	
253	Y	-	
254	N	n	
255	I	-	
256	R	-	
257	E	-	
258	C	-	
259	Q	-	
260	K	-	
261	S	n	
262	L	-	
263	D	-	
264	F	-	
265	V	-	
266	L	-	
267	G	-	
268	W	-	
269	F	-	
270	A	-	
271	K	-	
272	P	-	
273	I	-	
274	F	-	
275	I	-	
276	D	-	
277	G	-	
278	D	-	
279	Y	-	
280	P	-	
281	E	-	
282	S	n	
283	M	-	
284	K	-	
285	N	n	
286	N	G	1
287	L	-	
288	S	G	1

No	Residue	O-Glycosylated	N-Glycosylated
289	S	G	1
290	L	-	
291	L	-	
292	P	-	
293	D	-	
294	F	-	
295	T	G	1
296	E	-	
297	S	n	
298	E	-	
299	K	-	
300	R	-	
301	L	-	
302	I	-	
303	R	-	
304	G	-	
305	T	n	
306	A	-	
307	D	-	
308	F	-	
309	F	-	
310	A	-	
311	L	-	
312	S	n	
313	F	-	
314	G	-	
315	P	-	
316	T	n	
317	L	-	
318	S	G	1
319	F	-	
320	Q	-	
321	L	-	
322	L	-	
323	D	-	
324	P	-	
325	N	n	
326	M	-	
327	K	-	
328	F	-	
329	R	-	
330	Q	-	
331	L	-	
332	E	-	
333	S	n	
334	P	-	
335	N	n	
336	L	-	
337	R	-	
338	Q	-	
339	L	-	
340	L	-	
341	S	G	1
342	W	-	
343	I	-	
344	D	-	
345	L	-	

No	Residue	O-Glycosylated	N-Glycosylated
346	E	-	
347	Y	-	
348	N	G	1
349	H	-	
350	P	-	
351	P	-	
352	I	-	
353	F	-	
354	I	-	
355	V	-	
356	E	-	
357	N	G	1
358	G	-	
359	W	-	
360	F	-	
361	V	-	
362	S	G	1
363	G	-	
364	T	n	
365	T	n	
366	K	-	
367	R	-	
368	D	-	
369	D	-	
370	A	-	
371	K	-	
372	Y	-	
373	M	-	
374	Y	-	
375	Y	-	
376	L	-	
377	K	-	
378	K	-	
379	F	-	
380	I	-	
381	M	-	
382	E	-	
383	T	n	
384	L	-	
385	K	-	
386	A	-	
387	I	-	
388	R	-	
389	L	-	
390	D	-	
391	G	-	
392	V	-	
393	D	-	
394	V	-	
395	I	-	
396	G	-	
397	Y	-	
398	T	n	
399	A	-	
400	W	-	
401	S	n	
402	L	-	

<u>No</u>	<u>Residue</u>	<u>O-Glycosylated</u>	<u>N-Glycosylated</u>
403	M	-	
404	D	-	
405	G	-	
406	F	-	
407	E	-	
408	W	-	
409	H	-	
410	R	-	
411	G	-	
412	Y	-	
413	S	n	
414	I	-	
415	R	-	
416	R	-	
417	G	-	
418	L	-	
419	F	-	
420	Y	-	
421	V	-	
422	D	-	
423	F	-	
424	L	-	
425	S	n	
426	Q	-	

<u>No</u>	<u>Residue</u>	<u>O-Glycosylated</u>	<u>N-Glycosylated</u>
427	D	-	
428	K	-	
429	E	-	
430	L	-	
431	L	-	
432	P	-	
433	K	-	
434	S	n	
435	S	G	1
436	A	-	
437	L	-	
438	F	-	
439	Y	-	
440	Q	-	
441	K	-	
442	L	-	
443	I	-	
444	E	-	
445	D	-	
446	N	G	1
447	G	-	
448	F	-	
TOTAL:		23	7

KEY

G = Residue is glycosylated

n = Residue is not glycosylated

- = Other residue