

Candidate Name Peptides from the 2014 Forbes List of the World's Billionaires

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Abstract

The 2014 Forbes List of the World's Billionaires contains 1,666 personal names. Of these names, 397 (24%) have letter sequences that are completely compatible with the International Union of Pure and Applied Chemistry-International Union of Biochemistry and Molecular Biology, Joint Commission on Biochemical Nomenclature single letter symbols for amino acids. This subset of names are potential candidates for use in creating name peptides.

Introduction

Forbes List of the World's Billionaires

Every year, Forbes.com publishes a list of wealthy people whose net worth is equivalent to, or exceeds, \$1 billion (US) [1]. The list includes the person's name, net worth, age, source of wealth, and country of citizenship. The 2014 list contains 1,666 names, and the total net worth of these individuals is \$6.4 trillion. The Forbes list is apparently taken quite seriously by at least some of its members, as one has recently sued Forbes because he felt that he was placed too low in the list's ranking of billionaires [2]. If these names are considered as sequences of letters, then they also could represent International Union of Pure and Applied Chemistry (IUPAC)-International Union of Biochemistry and Molecular Biology (IUBMB), Joint Commission on Biochemical Nomenclature (JCBN) single letter symbols for the names of gene encoded, amino acids (AAs) (Table 1) [3].

AAs, peptides and proteins

Peptides are polymers of AAs that are often compared to beads on a string, where the beads represent AAs and the string represents covalent chemical bonds, called peptide or amide, bonds that link successive AAs in the polymer (Figure 1) [4]. AA polymers containing less than 100 AAs are called peptides, and those containing 100 or more AAs are called proteins. Peptides are ubiquitous in nature, where they perform functions essential for life. An example of a well-known peptide is the hormone, insulin, a polymer containing 51 AAs that is essential for the regulation of carbohydrate and lipid metabolism in the body, and that is used in treatment of the disease, diabetes.

AA nomenclature and the name-to-peptide method

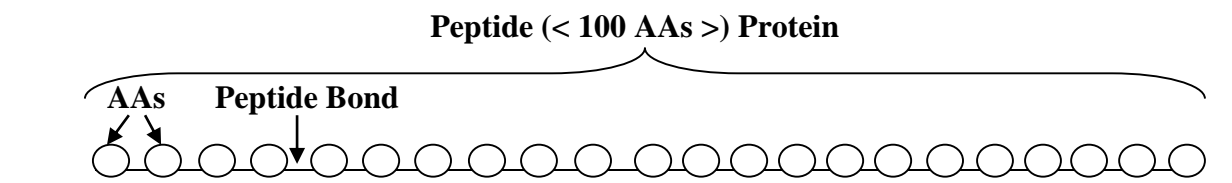
Several decades ago, the IUPAC-IUB, JCBN officially adopted a system whereby the formal chemical names of AAs are abbreviated by single letters of the English alphabet, and this system is used by chemists and molecular biologists throughout the world (Table 1) [3]. In 2003, Wade proposed a novel method, the name-to-peptide method for creating biologically active peptides, in which the strings of letters in personal and other names were considered as strings of IUPAC-IUB, JCBN single letter symbols for AAs [5-7]. The entire name could then be considered to be the AA sequence of a peptide. The major deficiency of the name-to-peptide concept is that two letters (J and O) do not have official IUPAC-IUB, JCBN AA assignments, and three letters (B, X, and Z) have ambiguous assignments. Of these five letters, O occurs most frequently (7.5%), B occurs much less frequently (1.5%), and the remaining three, J, X and Z occur with almost insignificant frequencies (0.1%) in English language text [8]. The name-to-peptide method was subsequently validated by Wade, Yang, and Lea using the name of a prominent US government official [7, 9], and the resulting peptide exhibited anticancer and immune stimulating properties.

The name-to-peptide method differs from standard peptide discovery methods, in that it does not use nature as a starting point, and the resulting peptide may, or may not, be found in nature. However, the method has the ability to generate peptides of potential medical usefulness, and, due to the fact that names are important in all cultures, it also has the potential benefit of increasing interest in peptide science among the general public by facilitating a better understanding of this field of research.

Table 1. The IUPAC-IUB, JCBN one letter symbols for AAs [3]. The letters B, J, O, X, and Z, marked with asterisks, are either unassigned, or have ambiguous assignments.

Symbol	AAs	Symbol	AAs	Symbol	AAs
A	Alanine	J*	(None)	S	Serine
B*	Aspartic acid or Asparagine	K	Lysine	T	Threonine
C	Cysteine	L	Leucine	U	Selenocysteine
D	Aspartic acid	M	Methionine	V	Valine
E	Glutamic acid	N	Asparagine	W	Tryptophan
F	Phenylalanine	O*	(None)	X*	Unknown or 'other' amino acid
G	Glycine	P	Proline	Y	Tyrosine
H	Histidine	Q	Glutamine	Z*	Glutamic acid or Glutamine
I	Isoleucine	R	Arginine		

Figure 1. The relationship between AAs, peptides, and proteins [4].



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Methods and Results

The 2014 Forbes List of Billionaires was analyzed as follows: (1) Names containing the letters B, J, O, X, and/or Z were excluded from consideration. (2) Names containing suffixes, such as “Jr.,” “II,” or “III,” and/or the phrase “& family” were included, but the suffixes and/or phrase were omitted from consideration of use in name peptides. This produced a list of 397 names (24% of the original 1,666 names) that can be considered as candidates for use in designing and creating name peptides (Table 2).

As previously described, the next step in designing and creating a name peptide from a candidate name is to combine the letters of the given and family names to produce a continuous series of letters that is considered the putative name peptide [10].

References

1. Kroll, L., Inside the 2014 Forbes Billionaires List: Facts And Figures. Forbes.com, March 3, 2014. (<http://www.forbes.com/sites/luisakroll/2014/03/03/inside-the-2014-forbes-billionaires-list-facts-and-figures/>)
2. Li, S., Saudi prince sues Forbes over his rank on billionaires list. Los Angeles Times, June 8, 2013. (www.latimes.com/business/money/la-fi-mo-saudi-prince-forbes-20130607,0,2292701.story)
3. Nomenclature and symbolism for amino acids and peptides. In Biochemical Nomenclature and Related Documents, 2nd ed., C. Liébecq, Ed., Portland Press, London, UK, 1992, pp. 39-69. (<http://www.chem.qmul.ac.uk/iupac/AminoAcid/>)
4. Nelson, D.L., and Cox, M.M., Lehninger Principles of Biochemistry, 5th edition, W.H. Freeman and Co., New York, 2008, pp. 71-140, 682-684, 878-881.

(References continued on last page.)

Table 2. Names from the 2014 Forbes List of the World's Billionaires with letter sequences that are compatible with the IUPAC one letter symbols for amino acids, and that are candidate name peptides.

	Name
1	Larry Page
2	Li Ka-shing
3	Carl Icahn
4	Lee Shau Kee
5	Phil Knight
6	Tadashi Yanai
7	Gina Rinehart
8	Mikhail Fridman
9	Michael Dell
10	Susanne Klatten
11	Lakshmi Mittal
12	Vladimir Lisin
13	Cheng Yu-tung
14	Paul Allen
15	Charles Ergen
16	Stefan Quandt
17	Serge Dassault
18	Ma Huateng
19	Dilip Shanghvi
20	Hans Rausing
21	Henry Sy
22	German Khan
23	Ananda Krishnan
24	Lee Kun-Hee
25	Shiv Nadar
26	Miuccia Prada
27	Petr Kellner
28	Klaus-Michael Kuehne
29	Sergei Galitsky
30	Marcel Herrmann Telles
31	David Tepper
32	Richard Kinder
33	Tsai Eng-Meng
34	Eric Schmidt
35	Alain Wertheimer

	Name
36	Gerard Wertheimer
37	Elaine Marshall
38	Ludwig Merckle
39	Pierre Castel
40	David Duffield
41	Tsai Wan-Tsai
42	Klaus Tschira
43	Graeme Hart
44	Ralph Lauren
45	Yang Huiyan
46	Nassef Sawiris
47	Quek Leng Chan
48	Dannine Avara
49	Patrick Drahi
50	Randa Williams
51	S. Truett Cathy
52	David Geffen
53	Richard LeFrak
54	Chan Laiwa
55	Filaret Galchev
56	Ira Rennert
57	Isak Andic
58	Hui Ka Yan
59	Hui Wing Mau
60	Sunil Mittal
61	Ray Lee Hunt
62	Michael Ashley
63	Arthur Irving
64	Stef Wertheimer
65	Philip & Cristina Green
66	Ken Griffin
67	Finn Rausing
68	Kirsten Rausing
69	David Green
70	Stein Erik Hagen

Table 2 Continued. Billionaire names compatible with IUPAC symbolism for amino acids.

	Name
71	Henry Kravis
72	Frederik Paulsen
73	Shashi & Ravi Ruia
74	Laurence Graff
75	Pauline MacMillan Keinath
76	Whitney MacMillan
77	Karl Wlaschek
78	Andrew Tan
79	Mike Adenuga
80	Diane Hendricks
81	Lynn Schusterman
82	David Sun
83	Kelcy Warren
84	Samvel Karapetyan
85	Lee Shin Cheng
86	Liang Wengen
87	Wang Chuanfu
88	William Ding
89	Ted Lerner
90	Friede Springer
91	Wang Wenyin
92	Ingvar Kamprad
93	Shahid Khan
94	Erich Kellerhals
95	Randal Kirk
96	Lars Larsen
97	Wang Wei
98	Martha Ingram
99	Walter Faria
100	Peter Hargreaves
101	Mitchell Rales
102	Steve Wynn
103	Guenther Fielmann
104	Nathan Kirsh
105	Murat Ulker
106	Vanich Chaiyawan

	Name
107	Michael Platt
108	Steven Rales
109	David Shaw
110	Michael & Marian Ilitch
111	Lu Guanqiu
112	Stewart & Lynda Resnick
113	Andreas Struengmann
114	Evan Williams
115	Chung Eui-Sun
116	Andrei Guriev
117	Lin Yu-lin
118	Israel Englander
119	Fu Liquan
120	Mikhail Gutseriev
121	Antti Herlin
122	Terrence Pegula
123	Matthias Reimann-Andersen
124	Stefan Reimann-Andersen
125	Renate Reimann-Haas
126	Stephan Schmidheiny
127	Sarik Tara
128	Samuel Yin
129	Austen Cargill
130	Frederick Smith
131	Stanley Druckenmiller
132	Andre Esteves
133	Taha Mikati
134	Isaac Perlmutter
135	Wang Yung-Tsai
136	Hans Peter Wild
137	Fred DeLuca
138	Edward Lampert
139	Michel Leclercq
140	Samuel Tak Lee
141	Paul Ramsay
142	Kushal Pal Singh

Table 2 Continued. Billionaire names compatible with IUPAC symbolism for amino acids.

	Name
143	Harry Stine
144	Tang Yiu
145	Anil Agarwal
146	Michael Pieper
147	Michael Ying
148	Gautam Adani
149	Saif Al Ghurair
150	Huang Rulun
151	Erman Ilicak
152	Krit Ratanarak
153	Chee Chen Tung
154	Yang Kai
155	Richard Chandler
156	Andrew & Peggy Cherng
157	Miguel Krigsner
158	Qiu Guanghe
159	Elaine Wynn
160	Ye Chenghai
161	Hui Lin Chit
162	Patrick Lee
163	Daniel Mate
164	Sean Parker
165	Richard Rainwater
166	Yasumitsu Shigeta
167	Martin Viessmann
168	Ty Warner
169	Clive Calder
170	Dan Friedkin
171	William Fung
172	Dan Gertler
173	Henry Hillman
174	Patricia Matte
175	Siegfried Meister
176	Michael Milken
177	Pang Kang
178	Phillip Ruffin

	Name
179	Teddy Sagi
180	Warren Stephens
181	William Wrigley
182	Tilman Fertitta
183	Ken Fisher
184	Esther Grether
185	Saleh Kamel
186	Kevin Plank
187	Peter Lim
188	Cai Kui
189	Chen Fashu
190	Clemmie Spangler
191	Wang Changtian
192	Semahat Sevim Arsel
193	Nadhmi Auchi
194	Martin Haefner
195	Kalanithi Maran
196	Richard Peery
197	Peter Thiel
198	Ted Turner
199	N. Murray Edwards
200	David Hains
201	Stephen Mandel
202	Ferit Faik Sahenk
203	Malvinder & Shivinder Singh
204	T.Y. Tsai
205	Dmitry Ananyev
206	William Fisher
207	Dmitry Pumpyansky
208	Chanchai Ruayrungruang
209	Matt & Dan Walsh
210	Dean White
211	Meg Whitman
212	Arne Wilhelmsen
213	Henry Samueli
214	Wu Yiling

Table 2 Continued. Billionaire names compatible with IUPAC symbolism for amino acids.

	Name
215	Fu Meicheng
216	Michael Klein
217	Richard Li
218	Hans Melchers
219	Pat Stryker
220	Tseng Shin-Yi
221	Wei Yin-Chun
222	Wei Yin-Heng
223	Ayman Asfari
224	Suna Kirac
225	Marc Ladreit de Lacharriere
226	Li Shufu
227	Stewart Rahr
228	Kavitark Ram Shriram
229	Tahir
230	Che Fengsheng
231	Chu Lam Yiu
232	Kenneth Feld
233	Susan Hirt Hagen
234	Guenther Lehmann
235	Gary Magness
236	Craig McCaw
237	Yuri Milner
238	Ravi Pillai
239	Gil Shwed
240	Tsai Cheng-da
241	Sunny Varkey
242	Wu Guangming
243	M.A. Yusuff Ali
244	David Nahmad
245	Huang Li
246	Huang Wei
247	Marc Lasry
248	Lee Myung-Hee
249	N.R. Narayana Murthy
250	Katsumi Tada

	Name
251	Gavril Yushvaev
252	Vladimir Kim
253	Ray Davis
254	Andrea Della Valle
255	Richard Elman
256	Gu Wei
257	Yuri Gushchin
258	Achmad Hamami
259	Pierre Papillaud
260	Patrick Ryan
261	Thaksin Shinawatra
262	Vincent Tan
263	Mehmet Sinan Tara
264	Tsai Ming-Kai
265	Cesar Mata Pires
266	Chang Yung Fa
267	Chen Yung-Tai
268	Murali Divi
269	Saad Hariri
270	Richard Hayne
271	Huang Shih Tsai
272	Mehmet Emin Karamehmet
273	Paul Singer
274	Mark Stevens
275	Dan Wilks
276	Farris Wilks
277	William Ackman
278	Sergei Katsiev
279	Richard Scaife
280	Wilma Tisch
281	Lina Maria Aguiar
282	Edmund Ansin
283	Clement Fayat
284	Alan Gerry
285	Peter Gilgan
286	Dmitry Kamenshchik

Table 2 Continued. Billionaire names compatible with IUPAC symbolism for amino acids.

	Name
287	Marius Nacht
288	Nandan Nilekani
289	Hamdi Ulukaya
290	Peter Unger
291	David Walentas
292	Luis Enrique Yarur Rey
293	Richard Yuengling
294	Anne Gittinger
295	Lee Hwa-Kyung
296	Lin Li
297	Henry Swieca
298	Chu Mang Yee
299	Ciputra
300	Frank Fertitta
301	Walter Frey
302	Allan Gray
303	Perenna Kei
304	Sidney Kimmel
305	Lee Man Tat
306	Lev Leviev
307	Michael Price
308	Stephen Saad
309	Lily Safra
310	Samih Sawiris
311	Shaul Shani
312	Peter Sperling
313	Edward Stack
314	Sun Pingfan
315	Alain Taravella
316	Lilian Werninghaus
317	Ashwin Dani
318	David Harding
319	Huang Yi
320	Seth Klarman
321	Allan Slaight
322	Lia Maria Aguiar

	Name
323	Steve Case
324	Claude Dauphin
325	Suat Günsel
326	Ayman Hariri
327	Fahd Hariri
329	Michael Krasny
330	Li Li
331	William Macaulay
332	Gilles Martin
333	Nikita Mishin
334	Nan Cunhui
335	Dan Snyder
336	Tian Ming
337	Lang Walker
338	Daisy Igel
339	Danny Tan Chee Sing
340	Ye Cheng
341	Marcel Adams
342	Ahmet Calik
343	Henry Engelhardt
344	Fang Wei
345	Yusuf Hamied
346	Ilkka Herlin
347	Niklas Herlin
348	Daniel Hirschfeld
350	Ray Irani
351	Isaac Larian
352	Alfred Mann
353	Lachhman Das Mittal
354	Charles Munger
355	Mark Pincus
356	Sudhir Ruparelia
357	Airat Shaimiev
358	Radik Shaimiev
359	Evgeny (Eugene) Shvidler
360	Michael Steinhardt

Table 2 Continued. Billionaire names compatible with IUPAC symbolism for amino acids.

	Name		Name
361	Rustem Sulteev	376	T.S. Kalyanaraman
362	Cheung Yan	377	Ryan Kavanaugh
363	K. Dinesh	378	Graham Kirkham
364	Vikram Lal	379	Li Denghai
365	Liu Ming Chung	380	Lin Ming-Hsiung
366	Alan Rydge	381	Michael Lynch
367	K. Rai Sahi	382	Andrea Reimann-Ciardelli
368	Wang Laichun	383	Vivek Chaand Sehgal
369	Wang Laisheng	384	Sergei Tsikalyuk
370	An Kang	385	Kenneth Tuchman
371	Ina Chan	386	Pavel Tykac
372	Fred Chang	387	Murat Vargi
373	Richard Chang	388	Wang Muqing
374	Feng Hailiang	389	Wu Chung-Yi
375	Fu Kwan	390	Yang Keng

References (continued from page 2)

5. Wade D. The name game: use of words composed of letters of the English alphabet as a source of novel bioactive peptides. *Chemistry Preprint Archive* (2003) 1: 159-170.
(<http://www.sciencedirect.com/preprintarchive>)
6. Wade D, Wade S. The name game: use of words composed of letters of the English alphabet as a source of novel bioactive peptides. *Biopolymers Peptide Science* (2003) 71: 322 (abstract P082).
7. Wade, D. The name game: use of words composed of letters of the English alphabet as a source of novel bioactive peptides, In *Peptide Revolution: Genomics, Proteomics & Therapeutics*, M. Chorev and T. K. Sawyer, eds., American Chemical Society, Cardiff, CA, USA, 2004, pp. 580-581.
8. Lewand, Robert (2000). *Cryptological Mathematics*. The Mathematical Association of America, p.36.
9. Wade, D., Yang, D., and Lea, M.A. Biological and structural properties of COLINPOWELL, a synthetic peptide amide. *Wade Research Foundation Reports* (2004) 1: 2-35.
(http://www.wade-research.mynetworksolutions.com/images/WRF_Reports_2004_1_1_.pdf)
(http://www.cbs.dtu.dk/~blicher/Courses/COLINPOWELL_10-25-04_.pdf)
10. Wade, D. Four billionaire name peptides that contain the CendR motif. *Wade Res. Found. Rep.* (2010) 5 (2): 1-23.
(http://www.wade-research.mynetworksolutions.com/images/WRF_Reports_2010_5_2_.pdf)

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