|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Predict Not Tolerated** | | | | | | | | | | | | | | | | | | | | | | **Position** | **Seq Rep** | **Predict Tolerated** | | | | | | | | | | | | | | | | | | | |
|  |  | d | h | g | n | c | e | | s | | w | r | k | p | y | q | t | a | f | v | i | **1M** | 0.19 | L | M |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  | w | f | m | y | c | h | i | **2T** | 0.36 | v | r | p | q | L | k | d | E | a | N | G | T | S |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | | w | y | f | c | m | h | i | v | p | l | g | **3E** | 0.67 | n | a | D | R | Q | T | S | K | E |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  | w | y | f | c | m | i | v | p | l | **4D** | 0.82 | n | r | A | S | G | H | T | E | D | Q | K |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  | w | y | f | c | m | i | **5K** | 0.83 | p | v | l | H | s | D | N | T | A | E | R | G | Q | K |  |  |  |  |  |  | |
|  |  |  |  |  | h | d | n | | w | | e | c | g | p | s | r | q | k | y | t | a | **6V** | 0.86 | M | F | I | L | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | w | f | m | y | h | c | | i | | l | r | q | e | v | k | p | g | d | a | s | **7T** | 0.86 | N | T |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  | **8G** | 0.86 | w | d | m | e | C | q | n | K | P | R | i | s | T | V | H | A | L | F | y | G | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  | **9T** | 0.86 | c | w | d | P | M | e | n | Q | g | K | i | R | S | v | A | H | T | l | F | Y | |
|  | d | h | n | g | e | c | s | | k | | r | p | q | t | w | a | y | v | m | i | F | **10L** | 0.88 | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  | g | w | | h | | y | d | n | r | q | f | e | k | c | p | S | **11V** | 0.88 | L | T | M | I | A | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  | d | h | | g | | n | e | k | r | c | s | q | p | t | a | w | **12F** | 0.88 | i | M | V | Y | F | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  | w | h | y | f | | m | | i | r | q | e | l | d | k | n | v | p | g | **13T** | 0.88 | C | T | S | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | h | q | w | p | d | n | | e | | c | r | k | s | g | y | a | t | m | f | L | **14V** | 0.88 | I | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  | **15I** | 0.88 | w | m | d | e | q | C | p | k | r | n | h | v | I | L | y | G | A | T | S | F | |
|  |  |  |  |  |  | w | h | | y | | f | m | r | c | q | e | l | d | k | n | p | **16T** | 0.88 | I | G | V | A | S | T |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | w | h | y | f | i | m | | n | | q | r | d | e | l | k | c | v | t | p | g | **17A** | 0.88 | S | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  | g | w | y | h | d | | n | | r | f | q | k | e | s | c | m | p | l | I | **18V** | 0.88 | T | A | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | d | h | g | n | e | c | | s | | w | r | k | y | p | q | t | a | f | v | m | **19L** | 0.88 | I | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | w | h | y | f | i | m | q | | r | | n | d | e | l | k | c | v | t | p | A | S | **20G** | 0.88 | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  | h | r | q | d | e | | c | | k | n | w | p | v | i | g | t | a | y | l | **21S** | 0.88 | F | M | S |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | d | h | n | g | e | k | | r | | c | s | p | q | t | a | w | v | m | y | i | **22F** | 0.88 | F | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | w | c | y | h | n | t | s | | d | | e | f | m | r | v | a | k | p | i | g | L | **23Q** | 0.88 | Q |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  | c | d | w | p | e | | n | | g | q | k | r | s | t | a | v | i | l | M | **24F** | 0.88 | H | Y | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | y | w | v | t | s | r | q | | p | | n | m | l | k | i | h | f | e | d | c | a | **25G** | 0.89 | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | k | q | h | n | r | d | | g | | e | p | c | t | s | a | m | v | i | w | l | **26Y** | 0.89 | F | Y |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  | m | i | w | v | f | | l | | c | y | r | p | q | a | t | h | k | e | G | **27D** | 0.89 | D | S | N |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  | d | | h | | g | n | e | w | c | y | s | r | k | p | q | **28I** | 0.89 | a | f | M | v | T | I | L |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | y | w | v | t | s | r | q | | p | | n | m | l | k | i | h | f | e | d | c | a | **29G** | 0.89 | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | y | w | t | s | r | q | p | | n | | m | l | k | i | h | g | f | e | d | c | a | **30V** | 0.89 | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | h | d | w | g | n | r | y | | e | | q | c | k | p | s | f | a | v | l | T | M | **31I** | 0.89 | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | y | w | v | t | s | r | q | | p | | m | l | k | i | h | g | f | e | d | c | a | **32N** | 0.89 | N |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | w | h | y | f | m | i | | q | | d | n | c | e | l | k | v | p | g | s | R | **33A** | 0.89 | T | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | y | w | v | t | s | r | q | | n | | m | l | k | i | h | g | f | e | d | c | a | **34P** | 0.89 | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | c | w | f | m | i | y | | l | | v | h | r | g | n | t | s | p | a | k | D | **35Q** | 0.89 | E | Q |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  | w | y | c | | f | | h | i | p | l | g | M | d | r | s | N | V | **36Q** | 0.89 | A | E | T | Q | K |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  | w | d | | c | | h | g | y | p | s | f | e | m | q | t | a | **37V** | 0.89 | l | R | K | N | I | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | d | h | n | g | e | c | | s | | w | r | k | p | y | q | t | a | f | m | v | **38I** | 0.89 | L | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  | c | w | f | | m | | y | v | g | h | s | p | l | n | d | t | a | **39I** | 0.71 | Q | K | I | R | E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  | w | y | f | c | **40S** | 0.72 | m | h | i | p | v | l | G | R | D | T | N | Q | A | S | K | E |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  | **41H** | 0.72 | m | c | i | W | v | p | r | l | q | t | k | a | y | E | g | S | H | D | N | F | |
|  |  |  |  | n | h | k | r | | q | | d | g | e | p | c | t | s | a | v | w | l | **42Y** | 0.72 | I | F | M | Y |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  | w | y | f | c | **43R** | 0.58 | m | h | i | p | v | l | G | d | T | Q | R | N | A | S | E | K |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  | w | c | f | y | **44H** | 0.57 | m | i | v | l | p | g | T | a | N | H | k | S | Q | R | E | D |  |  |  |  | |
|  |  |  |  |  |  |  |  | | w | | d | g | h | q | c | e | n | k | p | y | R | **45V** | 0.48 | M | l | i | A | F | S | T | V |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  | n | h | d | | k | | r | g | q | e | p | c | s | t | a | m | i | **46L** | 0.44 | V | f | W | Y | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | m | w | i | f | v | c | | l | | y | r | q | h | p | t | k | e | a | s | d | **47G** | 0.22 | N | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  | w | c | d | p | m | n | g | q | **48V** | 0.20 | r | s | h | t | f | E | i | K | A | L | Y | V |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  | **49P** | 0.19 | c | W | D | P | m | e | k | q | n | g | r | I | T | S | V | a | h | L | f | Y | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  | **50L** | 0.24 | W | c | m | h | q | e | r | f | y | P | k | i | v | d | g | N | a | t | S | L | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  | w | c | y | h | i | **51D** | 0.42 | F | v | l | p | g | r | M | t | q | a | N | S | K | D | E |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  | w | y | f | c | m | i | p | l | **52D** | 0.53 | t | s | a | R | V | Q | H | K | G | N | E | D |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | | w | f | c | m | h | i | v | l | Y | n | t | **53R** | 0.60 | G | P | E | D | S | A | Q | K | R |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  | w | **54K** | 0.47 | c | f | Y | m | H | I | P | v | L | G | n | R | Q | T | D | S | A | K | E |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  | **55A** | 0.43 | c | W | m | p | D | G | n | i | q | r | K | t | E | h | V | s | A | F | L | y | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  | **56I** | 0.38 | c | w | d | m | P | e | k | n | Q | s | R | G | h | A | T | F | y | V | L | I | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  | w | **57N** | 0.42 | c | f | m | y | H | p | I | v | L | G | r | t | d | Q | A | N | S | K | E |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  | w | y | f | c | **58N** | 0.50 | m | h | i | p | v | l | G | q | d | S | A | R | K | T | E | N |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  | c | p | d | m | e | k | n | g | r | **59Y** | 0.44 | i | v | a | l | H | Q | S | F | T | W | Y |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  | **60V** | 0.33 | c | W | p | M | D | q | n | G | e | k | I | R | T | s | h | V | A | f | L | y | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  | **61I** | 0.34 | w | c | m | f | H | I | P | y | V | G | L | n | R | q | D | T | s | a | k | E | |
|  |  |  |  |  |  |  | m | | i | | w | v | f | l | c | y | p | q | a | t | k | **62N** | 0.47 | H | s | E | G | D | R | N |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  | w | f | c | **63S** | 0.53 | Y | m | h | i | p | l | V | n | D | G | T | R | Q | A | K | S | E |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  | **64T** | 0.58 | w | c | m | i | P | h | f | v | n | d | Y | q | L | R | G | k | S | A | E | T | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  | **65D** | 0.54 | W | c | m | P | I | H | f | G | V | N | R | q | L | D | Y | t | S | a | K | E | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  | w | y | f | c | m | h | **66E** | 0.52 | p | v | L | I | G | N | R | q | D | S | A | k | T | E |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  | **67L** | 0.42 | w | c | m | P | h | f | G | d | n | I | q | r | y | V | L | e | K | a | T | S | |
|  |  |  | c | m | f | i | y | | h | | v | t | q | g | n | s | a | e | W | k | L | **68P** | 0.42 | D | R | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  | w | c | **69T** | 0.42 | p | i | d | n | M | f | e | k | R | H | a | y | Q | G | V | L | S | T |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  | **70I** | 0.22 | W | c | m | p | I | h | G | d | N | r | Q | V | f | T | L | k | S | e | y | A | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  | w | y | f | c | **71S** | 0.19 | m | h | i | l | n | G | P | V | q | R | a | D | k | E | T | S |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  | **72Y** | 0.16 | w | c | M | f | h | i | P | v | l | Y | G | n | r | q | d | T | A | K | E | S | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  | c | **73S** | 0.26 | W | f | y | m | h | i | v | L | G | n | P | q | d | R | T | A | k | E | S |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  | **74M** | 0.26 | w | c | M | p | d | I | G | n | Q | R | h | t | V | K | E | s | f | L | A | Y | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  | w | **75N** | 0.28 | c | f | m | Y | i | H | v | l | G | P | r | Q | N | T | a | S | D | K | E |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  | **76P** | 0.32 | w | c | m | D | n | q | I | G | h | v | R | k | s | T | E | a | F | L | y | P | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  | w | Y | **77K** | 0.38 | f | c | m | h | i | v | P | l | G | n | r | q | T | D | S | A | K | E |  |  | |
|  |  |  |  |  |  |  | w | m | | i | | f | c | v | l | y | h | q | a | k | e | **78P** | 0.27 | R | T | S | G | N | D | P |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  | w | **79T** | 0.26 | c | y | f | m | h | I | p | l | V | G | n | r | q | D | T | A | S | k | E |  | |
|  |  |  |  |  | w | h | y | | f | | m | r | q | i | c | e | d | k | n | v | g | **80P** | 0.23 | L | T | A | S | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  | c | d | m | **81W** | 0.33 | e | k | q | n | r | t | P | v | a | h | I | S | F | L | G | Y | W |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  | **82A** | 0.34 | w | c | M | p | F | H | y | I | V | l | n | Q | R | D | T | G | S | K | e | A | |
|  |  |  |  |  |  | w | c | | m | | i | p | f | v | l | q | a | g | d | k | Y | **83E** | 0.36 | N | S | R | H | T | E |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  | w | f | c | m | h | **84E** | 0.38 | i | Y | v | l | P | n | T | a | S | G | Q | K | R | D | E |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  | w | c | m | h | **85E** | 0.28 | F | I | Y | v | l | P | r | G | a | N | Q | D | S | T | K | E |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  | w | y | **86T** | 0.26 | C | F | m | h | i | v | l | P | G | N | r | Q | d | S | A | T | K | E |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  | w | **87V** | 0.24 | c | f | y | h | M | P | l | g | r | N | d | Q | V | I | T | a | S | k | E |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  | w | **88A** | 0.38 | c | y | f | m | H | I | P | v | l | G | n | r | T | q | d | S | A | K | E |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  | w | y | f | c | m | h | **89A** | 0.38 | I | l | r | g | n | q | V | D | t | e | P | A | K | S |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  | w | y | f | **90A** | 0.57 | c | m | h | i | l | v | r | P | n | q | G | T | k | D | S | A | E |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  | w | **91Q** | 0.55 | y | c | f | m | H | i | p | l | V | G | n | r | Q | d | T | a | S | K | E |  | |
|  |  |  |  |  |  |  | d | | g | | w | n | c | e | r | s | k | p | q | y | a | **92L** | 0.66 | H | m | V | I | F | T | L |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  | h | w | d | g | | n | | q | r | e | y | s | p | k | f | a | M | C | **93I** | 0.86 | T | I | V | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  | w | d | | f | | c | y | m | g | h | p | n | e | s | l | a | **94T** | 0.93 | R | K | I | V | Q | T |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |  | |  |  |  |  |  |  | w | h | f | c | y | **95M** | 0.88 | g | r | e | d | p | I | k | L | v | Q | N | M | A | S | T |  |  |  |  |  | |
|  |  |  |  |  | d | g | h | | n | | c | e | s | w | k | r | q | t | a | P | M | **96L** | 0.94 | I | F | V | Y | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | k | q | h | n | r | d | | e | | g | p | c | t | s | m | a | v | i | l | f | **97W** | 0.94 | Y | W |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | w | h | y | f | i | m | | q | | n | r | d | e | l | k | c | v | t | p | G | **98S** | 0.94 | A | S |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  | h | d | n | w | | e | | g | c | r | p | k | q | y | t | a | m | S | **99L** | 0.94 | F | I | V | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  | w | h | y | f | | m | | i | r | q | e | l | d | k | n | v | p | g | **100S** | 0.94 | C | T | A | S |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Predict Not Tolerated** | | | | | | | | | | | | | | | | | | | | **Position** | **Seq Rep** | **Predict Tolerated** | | | | | | | | | | | | | | | | | | | |
|  | y | w | t | s | r | q | p | n | m | l | k | i | h | g | f | e | d | c | a | **101V** | 0.94 | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | w | h | y | f | i | m | q | n | r | d | e | l | k | c | v | t | p | g | **102S** | 0.94 | S | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | h | w | q | d | n | p | e | r | g | c | k | y | f | t | a | l | M | **103S** | 0.94 | V | S | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | g | e | d | c | a | **104F** | 0.94 | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | w | f | h | y | m | r | i | e | l | q | k | d | v | p | g | N | **105A** | 0.94 | C | T | A | S |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | h | q | w | p | d | n | e | c | r | k | s | g | y | a | t | m | f | **106V** | 0.94 | L | I | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | f | e | d | c | a | **107G** | 0.94 | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | f | e | d | c | a | **108G** | 0.94 | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | d | h | g | n | w | e | r | y | s | c | k | q | p | t | a | f | l | V | **109M** | 0.96 | I | M |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | h | w | d | q | n | e | p | g | r | c | s | k | y | T | M | A | **110T** | 0.96 | F | L | V | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | w | h | y | f | i | m | q | n | r | d | e | l | k | c | v | t | p | **111A** | 0.96 | A | S | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | w | h | y | f | i | m | q | r | n | d | e | l | k | c | v | t | p | **112S** | 0.96 | A | G | S |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | d | h | g | n | e | c | s | r | k | w | p | q | t | y | a | m | I | **113F** | 0.96 | V | L | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | **114F** | 0.96 | h | m | y | r | q | e | d | i | C | F | k | n | v | p | L | G | T | a | S |  |
|  |  |  |  |  | h | q | p | w | d | e | n | c | r | k | s | y | a | m | f | **115G** | 0.96 | T | G | L | I | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | w | m | y | h | f | i | q | r | c | l | e | k | v | n | d | t | p | a | S | **116G** | 0.97 | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | d | c | e | g | n | p | k | r | s | h | q | t | **117W** | 0.97 | A | Y | M | V | F | I | W | L |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | h | d | n | e | w | c | g | s | p | r | k | q | y | t | a | **118L** | 0.97 | M | I | L | V | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | h | y | F | i | m | **119G** | 0.97 | n | q | r | d | e | k | l | c | t | V | p | S | G | A |  |  |  |  |  |  |
|  |  |  |  | m | w | i | f | c | v | l | y | r | p | h | t | a | k | g | S | **120D** | 0.97 | E | Q | D | N |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  | c | d | m | i | y | v | g | p | h | n | F | **121T** | 0.97 | a | e | S | T | q | L | W | K | R |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | d | g | h | n | c | e | s | w | y | k | p | q | t | a | m | **122L** | 0.97 | i | V | R | L | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | w | h | y | f | i | m | q | n | e | d | l | c | k | v | t | p | s | R | A | **123G** | 0.97 | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | m | c | f | w | y | i | v | h | n | t | s | d | e | l | q | a | k | g | P | **124R** | 0.97 | R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | c | w | d | m | **125I** | 0.97 | y | F | p | G | s | h | n | a | t | e | l | q | V | I | K | R |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  | c | w | f | m | i | v | y | **126K** | 0.97 | p | l | h | a | t | s | d | E | q | G | R | N | K |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | w | h | y | f | i | n | q | r | d | e | l | k | c | **127A** | 0.97 | M | v | t | P | G | A | S |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | d | h | g | n | e | c | s | w | k | r | y | p | q | t | a | f | v | i | **128M** | 0.97 | L | M |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | d | g | h | n | e | s | w | y | r | k | p | q | t | a | F | V | C | I | M | **129L** | 0.97 | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | d | h | g | n | w | e | c | s | r | k | y | p | q | t | **130V** | 0.97 | F | A | V | I | M | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | h | **131A** | 0.97 | M | y | f | q | r | d | c | e | N | k | l | I | p | t | V | G | S | A |  |  |
|  | m | w | i | f | c | v | y | l | h | q | t | a | p | e | k | s | g | d | R | **132N** | 0.98 | N |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | h | w | d | g | n | q | r | y | e | p | k | c | m | T | **133I** | 0.98 | F | A | S | L | I | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | d | g | h | n | e | c | s | w | r | k | y | p | q | t | v | m | A | I | **134L** | 0.98 | F | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | w | h | y | f | i | m | n | q | r | d | e | l | k | c | t | p | **135S** | 0.98 | V | S | G | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | h | d | w | n | e | p | q | c | g | r | s | k | y | t | **136L** | 0.98 | M | A | L | F | V | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | g | w | h | y | d | n | r | q | f | e | k | c | p | **137V** | 0.99 | m | S | T | A | L | I | V |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | w | h | y | f | i | m | q | n | r | d | e | l | k | c | v | t | p | **138G** | 0.98 | S | A | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | w | h | y | f | m | i | r | q | l | c | e | k | v | d | p | S | N | **139A** | 0.98 | T | A | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **140L** | 0.98 | w | d | p | m | e | q | k | n | r | G | T | h | C | S | I | f | A | V | Y | L |
|  |  |  | d | g | h | n | e | s | k | r | w | p | y | q | t | a | v | i | M | **141L** | 0.98 | F | C | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | h | d | n | w | e | c | y | r | k | q | p | t | s | a | f | v | i | G | **142M** | 0.98 | L | M |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | h | y | f | i | m | n | q | r | d | e | k | l | c | t | p | s | V | W | **143G** | 0.98 | A | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | d | g | h | n | e | k | r | p | q | t | a | y | v | W | **144F** | 0.98 | i | S | C | M | L | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | w | h | f | y | m | r | i | e | q | l | d | v | p | n | g | **145S** | 0.98 | K | C | T | A | S |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | w | y | f | c | i | v | L | G | e | A | M | R | S | T | H | P | Q | **146K** | 0.98 | D | N | K |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  | w | g | q | r | e | p | k | h | s | **147L** | 0.98 | N | y | D | C | F | T | M | A | I | V | L |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | h | y | f | m | i | q | r | n | e | l | k | V | p | **148G** | 0.98 | D | T | C | W | S | G | A |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | y | f | c | W | **149P** | 0.98 | m | i | V | L | H | G | N | P | d | T | Q | R | S | A | E | K |  |  |  |  |
|  |  |  | w | h | y | f | i | m | n | q | r | d | e | l | k | c | v | t | G | **150S** | 0.98 | A | P | S |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **151H** | 0.98 | c | d | P | W | m | e | k | q | n | G | r | t | s | I | a | V | l | H | F | Y |
|  |  |  |  |  |  |  | g | w | y | h | n | r | d | f | s | Q | k | c | p | **152I** | 0.98 | m | t | L | A | I | V | E |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | d | g | h | n | e | c | s | w | y | r | k | p | q | a | f | v | T | **153L** | 0.98 | I | L | M |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | h | d | n | e | w | c | g | s | r | p | k | q | y | t | a | f | **154I** | 0.98 | M | I | V | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | h | d | q | n | e | p | r | c | g | k | s | w | t | a | m | y | l | V | **155I** | 0.97 | F | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | d | h | g | w | n | r | y | e | q | k | c | p | t | m | **156A** | 0.97 | F | S | V | A | I | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | f | e | d | c | a | **157G** | 0.97 | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | q | p | n | m | l | k | i | h | g | f | e | d | c | a | **158R** | 0.98 | R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | w | m | d | n | q | h | i | e | k | y | t | v | **159S** | 0.98 | C | p | R | S | G | A | L | F |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | h | w | q | d | p | e | n | c | r | s | k | g | y | a | t | M | F | **160I** | 0.98 | L | V | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | h | w | g | d | q | r | y | n | e | k | c | p | f | a | l | **161S** | 0.97 | T | M | S | V | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | f | e | d | c | a | **162G** | 0.98 | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | h | d | w | n | g | e | r | q | c | p | s | k | y | t | m | **163L** | 0.99 | F | A | I | V | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  | w | c | m | i | q | r | v | e | k | t | **164Y** | 0.99 | a | l | P | s | g | H | d | N | F | Y |  |  |  |  |  |  |  |  |  |  |
|  |  | w | h | y | f | m | i | q | n | d | e | l | k | v | t | p | R | g | A | **165C** | 0.99 | S | C |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | f | e | d | c | a | **166G** | 0.99 | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | q | p | n | m | k | i | h | g | f | e | d | c | a | **167L** | 0.99 | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | **168I** | 0.99 | g | d | r | q | h | e | m | k | p | y | F | L | N | C | S | I | A | V | T |  |
|  |  |  | w | f | h | y | m | c | r | e | i | l | q | k | d | g | v | p | n | **169S** | 0.99 | A | S | T |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | w | h | y | f | i | m | q | r | n | d | e | l | k | c | v | t | p | A | **170G** | 0.99 | S | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | d | h | n | g | e | k | r | c | s | p | q | t | a | w | v | m | y | i | **171L** | 0.99 | F | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | g | w | y | h | d | n | r | f | q | k | e | s | c | p | m | l | I | **172V** | 0.99 | A | T | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | q | n | m | l | k | i | h | g | f | e | d | c | a | **173P** | 1.00 | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | d | h | g | n | e | c | s | w | r | k | y | p | q | t | a | f | i | V | L | **174M** | 1.00 | M |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | w | v | t | s | r | q | p | n | m | l | k | i | h | g | f | e | d | c | a | **175Y** | 1.00 | Y |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | h | q | p | w | d | e | n | c | r | k | s | g | y | a | t | m | f | **176I** | 1.00 | L | I | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | w | h | y | f | i | m | n | q | r | d | e | k | c | v | t | p | L | **177G** | 1.00 | A | S | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | g | f | d | c | a | **178E** | 1.00 | E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | h | q | w | p | d | n | e | r | c | k | s | g | y | a | m | f | T | L | **179I** | 1.00 | V | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | w | h | y | f | m | i | r | q | d | e | c | l | n | k | v | p | g | T | **180A** | 1.00 | A | S |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | q | n | m | l | k | i | h | g | f | e | d | c | a | **181P** | 1.00 | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | g | w | h | d | y | n | r | q | e | s | c | p | f | a | **182T** | 1.00 | M | K | I | V | L | T |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | f | y | c | **183A** | 1.00 | m | i | l | v | H | P | g | r | q | d | E | K | N | T | S | A |  |  |  |  |
|  |  | h | d | n | g | k | r | e | q | c | p | s | t | a | w | m | i | V | F | **184L** | 1.00 | Y | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | q | p | n | m | l | k | i | h | g | f | e | d | c | a | **185R** | 1.00 | R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | f | e | d | c | a | **186G** | 1.00 | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | w | h | y | f | i | m | n | q | r | d | e | l | k | c | v | t | p | s | **187A** | 1.00 | G | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | d | h | g | n | e | c | s | w | r | k | y | p | q | t | a | **188L** | 1.00 | M | I | V | F | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | f | e | d | c | a | **189G** | 1.00 | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | w | h | f | y | m | c | r | i | e | l | q | k | d | v | p | g | n | **190T** | 1.00 | S | A | T |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | d | h | g | n | e | c | s | w | r | k | y | p | q | t | a | m | F | I | **191F** | 1.00 | V | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | m | w | i | v | f | l | c | r | p | q | a | t | k | e | g | d | **192H** | 1.00 | S | Y | N | H |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | p | n | m | l | k | i | h | g | f | e | d | c | a | **193Q** | 1.00 | Q |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | d | h | n | g | e | c | s | w | r | k | y | p | q | t | a | f | m | i | V | **194L** | 1.00 | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | w | h | y | f | i | m | n | q | r | d | e | l | k | c | t | p | **195A** | 1.00 | S | V | G | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | h | q | w | p | d | n | e | r | c | g | k | s | y | a | m | f | T | **196I** | 1.00 | L | V | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | w | h | y | d | r | g | n | f | q | e | k | m | c | p | s | l | i | a | **197V** | 1.00 | T | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | h | q | w | d | p | n | e | r | c | g | k | s | y | a | m | **198T** | 1.00 | F | L | T | V | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | w | m | y | h | f | i | q | r | c | l | e | k | v | n | d | t | p | a | S | **199G** | 1.00 | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | d | h | g | n | e | c | s | w | r | k | y | p | q | t | a | f | v | M | **200I** | 1.00 | L | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Predict Not Tolerated** | | | | | | | | | | | | | | | | | | | | **Position** | **Seq Rep** | **Predict Tolerated** | | | | | | | | | | | | | | | | | | | |
|  | y | w | v | t | s | r | q | p | n | m | k | i | h | g | f | e | d | c | a | **201L** | 1.00 | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | h | q | w | p | d | e | n | c | r | s | k | g | y | a | t | f | **202I** | 1.00 | M | L | V | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | w | h | y | m | i | q | n | r | d | e | k | l | c | v | t | p | F | g | **203S** | 1.00 | S | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | m | c | y | w | f | i | h | v | n | t | l | s | e | r | d | k | a | g | P | **204Q** | 0.99 | Q |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | h | w | d | g | n | q | r | y | e | k | s | p | c | f | m | t | l | **205I** | 0.99 | A | I | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | d | h | g | n | w | e | c | s | r | k | y | p | q | t | m | **206I** | 0.99 | A | V | I | F | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | f | e | d | c | a | **207G** | 0.99 | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | d | g | h | n | e | c | s | w | y | r | k | p | q | t | a | f | v | M | **208L** | 0.99 | I | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | w | c | m | f | i | y | v | l | r | h | t | p | a | g | q | N | **209E** | 0.99 | S | K | D | E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **210F** | 0.99 | c | w | d | P | M | E | k | n | G | r | Q | t | I | A | h | V | S | L | F | Y |
|  |  |  |  | h | d | n | e | c | w | g | s | p | r | k | q | y | t | a | F | **211I** | 0.99 | M | V | L | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | d | g | h | n | e | c | s | w | k | r | p | y | q | t | a | v | i | F | **212L** | 0.99 | M | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | f | e | d | c | a | **213G** | 0.99 | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | w | f | y | m | h | c | r | l | i | e | q | g | k | v | p | d | a | **214N** | 0.99 | S | N | T |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | c | f | m | Y | i | **215Y** | 0.99 | v | l | g | H | r | t | P | S | K | Q | N | A | D | E |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | f | c | m | i | **216D** | 0.99 | H | p | l | g | V | Y | r | Q | N | A | K | T | S | D | E |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | c | w | d | **217L** | 0.99 | p | e | n | s | i | t | Q | v | a | k | f | M | R | H | G | Y | L |  |  |  |
|  | y | v | t | s | r | q | p | n | m | l | k | i | h | g | f | e | d | c | a | **218W** | 0.99 | W |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | m | c | i | y | w | f | v | q | t | n | s | e | l | a | r | k | d | g | **219H** | 0.99 | H | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | h | p | q | w | d | e | c | n | r | k | s | t | m | A | **220I** | 0.99 | Y | G | F | V | I | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | d | h | g | n | e | c | s | w | k | r | y | p | q | t | a | f | v | i | M | **221L** | 0.99 | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | d | h | g | n | e | c | s | r | k | w | p | q | t | y | a | m | i | V | **222L** | 0.99 | F | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | h | y | f | i | m | n | q | r | d | e | l | k | v | t | p | C | W | **223G** | 0.99 | S | A | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | h | d | n | w | e | g | s | r | p | k | q | y | t | a | m | C | **224L** | 0.99 | I | V | F | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | w | y | h | f | m | c | r | e | q | g | d | k | p | n | v | L | **225S** | 0.99 | I | A | S | T |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | h | q | p | w | d | e | n | c | r | k | s | y | t | **226G** | 0.99 | m | G | A | F | L | V | I |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | h | w | d | g | n | q | r | y | e | s | k | p | m | t | **227V** | 1.00 | F | C | A | L | I | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | w | h | y | f | m | d | n | i | c | q | e | t | k | v | s | g | R | L | A | **228R** | 1.00 | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | w | h | y | f | m | i | r | q | e | d | c | l | k | n | v | p | g | S | **229A** | 1.00 | T | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | h | w | d | q | n | e | p | g | r | c | s | k | y | t | f | M | **230I** | 1.00 | A | V | L | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | d | h | g | n | e | c | s | w | r | y | k | p | q | t | M | A | **231L** | 1.00 | F | I | V | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | p | n | m | l | k | i | h | g | f | e | d | c | a | **232Q** | 1.00 | Q |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  | w | g | d | h | n | r | q | y | e | k | p | **233S** | 1.00 | F | i | M | A | T | V | L | S | C |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | w | h | g | d | n | y | r | q | e | k | p | m | t | C | **234L** | 1.00 | S | F | A | L | V | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | g | d | h | w | n | y | r | e | s | k | c | q | p | F | I | **235L** | 1.00 | T | V | M | A | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | q | p | n | m | k | i | h | g | f | e | d | c | a | **236L** | 1.00 | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | d | h | g | n | e | c | s | r | k | w | q | t | y | a | **237F** | 1.00 | v | m | I | F | L | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | d | h | g | n | e | w | s | r | k | p | q | y | t | a | m | C | **238F** | 1.00 | I | V | L | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | w | h | m | y | i | f | q | k | n | r | e | d | l | t | v | p | s | g | A | **239C** | 1.00 | C |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | w | h | y | m | f | i | n | q | c | r | e | d | l | k | v | t | s | g | A | **240P** | 1.00 | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | c | w | m | f | i | y | v | h | l | n | t | r | s | g | p | a | q | d | **241E** | 1.00 | K | E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | r | q | p | n | m | l | k | i | h | g | f | e | d | c | a | **242S** | 1.00 | S |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | q | n | m | l | k | i | h | g | f | e | d | c | a | **243P** | 1.00 | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | c | w | f | d | m | i | y | v | p | h | s | l | n | t | a | e | q | G | **244R** | 1.00 | K | R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | k | q | h | n | r | d | g | e | p | c | t | s | a | m | v | i | w | l | **245Y** | 0.99 | F | Y |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | q | p | n | m | k | i | h | g | f | e | d | c | a | **246L** | 1.00 | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | h | n | k | r | q | d | e | g | c | p | s | t | a | m | v | i | w | **247Y** | 1.00 | f | Y | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | d | h | w | n | g | e | r | y | c | k | q | s | p | t | f | m | v | L | A | **248I** | 1.00 | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | **249K** | 1.00 | f | C | m | y | h | p | g | L | I | V | R | d | Q | a | e | T | S | K | N |  |
|  |  |  |  |  |  |  |  |  |  |  |  | w | d | f | m | y | i | C | g | **250L** | 0.99 | p | s | h | n | a | V | t | e | Q | L | K | R |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | f | **251D** | 1.00 | h | M | i | C | p | v | l | r | T | a | S | D | E | Q | G | K | N |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | c | f | **252E** | 1.00 | y | i | M | h | v | p | G | t | d | s | W | a | N | L | r | Q | K | E |  |  |
|  |  | c | w | f | y | h | i | r | l | g | n | s | p | k | a | q | T | M | D | **253E** | 0.99 | V | E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | f | c | **254V** | 1.00 | i | M | H | p | l | V | r | t | G | Q | S | D | N | A | K | E |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | f | c | m | i | v | **255K** | 1.00 | g | H | t | L | s | D | A | N | P | Q | R | K | E |  |  |  |  |  |  |  |
|  | w | h | y | f | m | n | q | r | d | e | k | i | c | l | t | p | s | g | V | **256A** | 1.00 | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | w | f | d | m | y | i | v | g | p | h | l | n | a | E | **257K** | 1.00 | C | S | Q | T | R | K |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | w | y | f | c | h | i | p | v | l | g | M | A | **258Q** | 1.00 | N | D | T | Q | R | E | S | K |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | h | y | f | m | **259S** | 1.00 | q | r | d | N | e | c | k | l | I | p | t | V | G | S | A |  |  |  |  |  |
|  | y | w | v | t | s | r | q | p | n | m | k | i | h | g | f | e | d | c | a | **260L** | 1.00 | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | c | w | f | m | d | y | g | p | n | s | e | H | **261K** | 1.00 | T | I | L | A | V | Q | R | K |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | c | d | f | m | i | y | v | g | p | s | h | n | a | l | t | e | Q | **262R** | 1.00 | W | K | R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | d | h | n | g | e | c | s | k | r | p | q | w | t | a | y | v | m | i | F | **263L** | 1.00 | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | c | d | f | m | i | y | v | g | p | s | h | n | l | a | e | **264R** | 1.00 | q | W | T | K | R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | w | h | y | f | i | m | n | q | r | d | e | l | k | v | t | p | s | C | **265G** | 1.00 | A | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **266Y** | 1.00 | C | m | p | q | i | G | k | D | N | W | H | R | V | E | f | A | L | Y | S | T |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | **267D** | 1.00 | C | m | f | H | Y | i | P | v | L | G | N | r | T | Q | D | S | A | k | E |  |
|  |  |  |  | c | w | f | m | i | y | v | h | r | g | t | n | p | k | L | Q | **268D** | 1.00 | E | A | S | D |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | g | w | y | h | d | n | r | f | k | e | s | c | m | l | Q | A | T | **269V** | 1.00 | I | P | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | f | c | h | p | l | **270T** | 1.00 | I | M | r | V | N | k | D | Q | A | G | E | T | S |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | f | c | **271K** | 1.00 | m | i | H | v | l | P | N | G | T | R | S | Q | A | D | E | K |  |  |  |  |
|  |  |  |  |  | w | c | y | f | h | r | n | g | s | i | p | t | k | q | L | **272D** | 1.00 | M | V | A | E | D |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | d | h | g | n | e | c | w | s | r | k | y | p | q | t | a | f | V | **273I** | 1.00 | M | L | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | f | c | m | h | **274N** | 1.00 | p | v | I | g | L | d | R | k | S | N | T | A | E | Q |  |  |  |  |  |  |
|  | c | w | f | m | i | y | l | v | h | r | g | n | t | s | p | a | k | D | Q | **275E** | 1.00 | E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | d | h | n | g | e | c | s | w | k | r | y | p | q | t | a | v | f | i | **276M** | 1.00 | L | M |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | c | w | d | f | m | i | y | v | g | p | s | h | n | a | l | t | q | E | **277R** | 1.00 | R | K |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  | w | y | f | c | m | h | i | v | p | l | g | **278K** | 1.00 | q | N | S | T | R | D | A | K | E |  |  |  |  |  |  |  |  |  |  |  |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | g | f | d | c | a | **279E** | 1.00 | E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | c | f | y | m | i | **280R** | 1.00 | v | p | l | t | q | H | d | A | N | G | R | E | S | K |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  | w | c | y | f | h | I | l | p | **281E** | 1.00 | g | n | t | V | s | k | M | Q | D | A | E | R |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  | c | w | f | m | i | y | v | d | g | **282E** | 1.00 | p | h | s | n | l | t | A | Q | E | R | K |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | h | w | d | y | n | e | c | r | k | t | p | f | s | **283A** | 1.00 | i | G | V | Q | L | A | M |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | f | c | **284S** | 1.00 | h | i | p | v | l | g | n | M | R | T | D | Q | A | K | S | E |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | c | y | f | **285S** | 1.00 | H | p | I | v | g | d | L | N | M | T | e | A | K | S | Q | R |  |  |  |  |
|  |  | c | w | y | f | h | m | g | r | n | i | s | t | p | k | a | d | V | Q | **286E** | 1.00 | L | E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | w | y | c | f | m | h | i | v | l | g | n | t | **287Q** | 1.00 | D | E | Q | A | S | P | R | K |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | c | w | d | f | m | i | y | v | g | n | l | a | e | **288K** | 1.00 | T | S | R | H | P | Q | K |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | h | w | d | n | q | g | r | e | p | s | c | k | y | f | t | A | M | **289V** | 1.00 | L | I | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | w | f | h | y | m | c | r | e | l | i | q | k | d | g | v | p | n | A | **290S** | 1.00 | T | S |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | h | w | q | d | p | n | e | r | c | g | s | k | y | a | f | **291I** | 1.00 | M | L | T | V | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | d | c | w | e | n | k | s | h | q | t | G | y | **292I** | 1.00 | R | A | F | V | P | M | I | L |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | c | w | f | m | y | i | l | h | g | n | t | p | a | k | V | D | **293Q** | 1.00 | R | S | Q | E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | d | h | g | n | e | c | s | w | r | y | k | p | q | t | a | f | m | V | I | **294L** | 1.00 | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | d | h | g | n | e | c | s | w | r | k | p | q | y | t | a | m | **295F** | 1.00 | V | I | L | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | f | m | y | **296T** | 1.00 | i | h | l | d | v | e | p | q | n | C | G | a | K | S | T | R |  |  |  |  |
|  |  |  |  |  |  | w | f | m | y | c | l | i | r | q | e | k | p | g | H | **297N** | 1.00 | A | D | V | T | N | S |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  | c | m | d | e | W | g | v | q | f | l | **298S** | 1.00 | y | I | N | t | k | H | A | R | S | P |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | **299S** | 1.00 | c | f | h | M | i | p | g | V | L | r | Q | D | N | T | K | e | S | A |  |  |
|  |  |  | d | c | w | e | g | n | p | k | s | r | q | t | a | v | m | i | F | **300Y** | 1.00 | H | L | Y |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Predict Not Tolerated** | | | | | | | | | | | | | | | | | | | | **Position** | **Seq Rep** | **Predict Tolerated** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | c | w | d | m | y | i | g | p | h | s | n | t | a | e | l | F | k | V | Q | **301R** | 1.00 | R |  |  |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  |  |  |  |  | w | d | c | y | h | f | n | g | m | s | e | t | v | k | **302Q** | 1.00 | R | A | L | I | P | Q |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  |  | w | h | y | f | m | i | n | r | c | l | d | k | e | v | t | s | g | **303P** | 1.00 | A | Q | P |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  |  |  | d | h | g | n | e | c | w | s | r | k | p | y | q | t | a | f | **304I** | 1.00 | V | M | I | L |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  |  |  |  | h | w | d | n | q | g | r | e | p | c | s | k | y | m | A | **305L** | 1.00 | T | V | F | L | I |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  | h | q | w | d | p | n | e | r | c | g | k | y | m | a | f | t | l | S | **306V** | 1.00 | V | I |  |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  |  |  | w | h | y | f | i | m | n | q | r | d | e | l | k | v | t | p | **307A** | 1.00 | C | G | S | A |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  |  | h | q | w | p | d | e | n | c | r | s | k | g | y | a | t | m | f | **308L** | 1.00 | V | L | I |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  |  |  |  |  | h | w | d | n | g | q | r | e | p | s | y | k | a | T | **309M** | 1.00 | F | C | L | I | M | V |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  |  | d | g | h | n | e | c | s | w | y | r | k | p | q | t | a | f | i | **310L** | 1.00 | V | M | L |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  |  | w | c | y | f | v | p | i | d | t | s | g | n | a | e | l | r | k | **311H** | 1.00 | M | H | Q |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  |  | d | g | h | n | e | c | s | w | y | r | k | p | q | t | V | M | A | **312V** | 1.00 | F | I | L |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  | w | h | y | f | m | i | q | r | n | d | e | l | k | c | v | t | p | g | **313A** | 1.00 | A | S |  |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  | y | w | v | t | s | r | p | n | m | l | k | i | h | g | f | e | d | c | a | **314Q** | 1.00 | Q |  |  |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  | y | w | v | t | s | r | p | n | m | l | k | i | h | g | f | e | d | c | a | **315Q** | 1.00 | Q |  |  |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  | d | h | n | g | e | k | r | c | s | p | q | t | a | w | v | m | y | i | **316F** | 1.00 | F | L |  |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  | y | w | v | t | r | q | p | n | m | l | k | i | h | g | f | e | d | c | a | **317S** | 1.00 | S |  |  |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | f | e | d | c | a | **318G** | 1.00 | G |  |  |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  | h | w | q | d | n | p | e | r | c | k | s | g | y | t | m | a | f | l | V | **319I** | 1.00 | I |  |  |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  | w | m | f | c | y | l | v | r | h | q | p | e | k | a | t | g | d | S | I | **320N** | 1.00 | N |  |  |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  | w | h | y | f | i | m | n | q | r | d | e | l | k | c | v | t | p | s | **321G** | 1.00 | G | A |  |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  | h | q | w | p | d | n | e | r | c | k | s | g | y | a | t | m | f | l | **322I** | 1.00 | I | V |  |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  | h | n | k | q | r | d | e | g | p | c | s | t | a | m | v | w | l | y | **323F** | 1.00 | I | F |  |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  | k | q | h | n | r | d | g | e | p | c | t | s | a | m | v | i | w | l | **324Y** | 1.00 | F | Y |  |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  | k | q | h | n | r | d | g | e | p | c | t | s | a | m | v | i | w | l | **325Y** | 1.00 | F | Y |  |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  | y | w | v | t | r | q | p | n | m | l | k | i | h | g | f | e | d | c | a | **326S** | 1.00 | S |  |  |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  | w | h | y | f | m | r | q | e | c | d | k | n | g | p | l | i | a | s | V | **327T** | 1.00 | T |  |  |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  |  |  |  |  |  |  |  |  | w | y | f | c | h | i | v | p | l | M | **328S** | 1.00 | t | q | N | K | D | E | R | A | G | S |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  | d | h | n | g | e | c | s | w | r | k | y | p | q | t | a | f | m | v | **329I** | 1.00 | L | I |  |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | g | e | d | c | a | **330F** | 1.00 | F |  |  |  |  |  |  |  |  |  |  |  |  | |  | | | |  | | |  | | | |  |  | | |  | | |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | f | c | i | p | l | **331Q** | 1.00 | H | g | V | n | R | D | A | T | S | M | Q | K | | E | | |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | f | c | m | h | **332T** | 1.00 | i | p | v | L | g | q | N | A | E | R | S | D | | | | T | K | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  | w | h | y | f | i | m | n | q | r | d | e | l | k | c | v | t | g | P | **333A** | 1.00 | S | A |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  | m | w | i | f | v | c | l | y | r | p | h | t | k | e | a | s | d | Q | N | **334G** | 1.00 | G |  |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  | h | w | d | q | n | p | r | e | g | c | s | k | y | f | m | t | A | **335I** | 1.00 | I | L | V |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | f | c | **336S** | 1.00 | m | h | i | v | P | l | n | G | R | D | T | A | | | | Q | K | | | S | | | E | |  | | |  | | | |  | |  | |
|  |  |  |  |  | w | c | f | m | i | v | p | l | g | d | a | H | Y | R | N | **337K** | 1.00 | T | K | S | E | Q |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  | w | y | f | h | m | i | c | r | n | l | v | t | k | q | d | s | g | **338P** | 1.00 | A | E | P |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  |  |  |  | w | g | y | h | d | r | n | f | q | c | m | p | l | E | **339V** | 1.00 | K | T | A | S | I | V |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  | h | n | k | r | q | d | g | e | p | c | t | s | a | m | v | w | l | I | **340Y** | 1.00 | F | Y |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | g | f | e | d | c | **341A** | 1.00 | A |  |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  | y | w | v | s | r | q | p | n | m | l | k | i | h | g | f | e | d | c | a | **342T** | 1.00 | T |  |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  | h | d | n | e | w | c | s | k | r | g | q | p | y | t | a | f | v | l | M | **343I** | 1.00 | I |  |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  | w | m | y | h | f | i | q | r | c | l | e | k | v | n | d | t | p | a | S | **344G** | 1.00 | G |  |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  |  |  |  |  | w | h | y | g | d | n | r | q | f | e | k | c | p | **345V** | 1.00 | t | l | M | S | I | V | A |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | f | e | d | c | a | **346G** | 1.00 | G |  |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  | w | g | h | d | y | n | r | q | e | k | f | s | c | p | m | t | l | **347A** | 1.00 | I | A | V |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  | h | q | w | p | d | n | e | c | r | k | s | g | y | a | t | m | f | L | **348V** | 1.00 | I | V |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  | w | f | y | c | i | h | q | v | r | k | e | t | p | a | l | s | d | g | **349N** | 1.00 | M | N |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  |  |  |  | g | w | y | h | d | n | r | f | q | e | k | p | l | S | **350M** | 1.00 | A | I | C | M | V | T |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  |  | h | w | d | g | n | q | r | y | e | s | k | p | c | f | m | t | **351V** | 1.00 | L | I | A | V |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  | h | n | k | r | q | d | e | g | p | c | s | t | a | v | i | w | l | y | **352F** | 1.00 | M | F |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  | y | w | v | s | r | q | p | n | m | l | k | i | h | g | f | e | d | c | a | **353T** | 1.00 | T |  |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  |  |  | h | w | d | g | n | r | q | e | y | s | k | c | p | f | t | **354A** | 1.00 | M | A | I | L | V |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  | h | w | g | d | n | y | r | q | e | s | k | c | p | f | m | t | A | I | **355V** | 1.00 | L | V |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  | y | w | v | t | r | q | p | n | m | l | k | i | h | g | f | e | d | c | a | **356S** | 1.00 | S |  |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  | h | w | d | q | p | n | e | c | r | s | g | k | y | a | t | f | m | **357V** | 1.00 | I | V | L |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  |  |  |  |  |  | d | h | w | n | g | r | e | y | k | q | c | s | **358F** | 1.00 | t | m | A | i | P | V | L | F |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  | d | h | g | n | e | c | s | w | r | k | y | p | q | t | a | f | M | I | **359L** | 1.00 | V | L |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  | h | w | d | q | n | g | r | e | p | c | s | k | y | f | t | a | l | **360V** | 1.00 | I | M | V |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  | c | w | m | f | i | y | l | v | h | r | g | t | n | s | p | a | k | q | **361E** | 1.00 | D | E |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  | c | w | d | f | m | i | y | v | g | s | p | h | n | a | l | t | e | q | **362K** | 1.00 | K | R |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  | w | y | g | h | d | n | r | q | f | e | k | s | c | p | i | L | M | **363A** | 1.00 | V | T | A |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | f | e | d | c | a | **364G** | 1.00 | G |  |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  | y | w | v | t | s | q | p | n | m | l | k | i | h | g | f | e | d | c | a | **365R** | 1.00 | R |  |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  | c | d | f | m | i | y | v | g | p | s | h | n | a | l | t | e | q | W | **366R** | 1.00 | K | R |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  | w | f | y | h | m | c | r | e | i | g | q | k | d | v | p | n | a | L | **367S** | 1.00 | S | T |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  | y | w | v | t | s | r | q | p | n | m | k | i | h | g | f | e | d | c | a | **368L** | 1.00 | L |  |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  |  |  | c | w | d | p | e | q | k | n | g | m | r | s | a | i | v | **369F** | 1.00 | Y | L | T | F | H |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  | d | g | h | n | e | c | s | w | k | r | y | p | q | t | a | v | i | F | **370L** | 1.00 | M | L |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  |  |  |  |  | h | w | q | d | p | n | e | c | r | g | k | s | m | **371I** | 1.00 | A | T | F | Y | L | V | I |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | f | e | d | c | a | **372G** | 1.00 | G |  |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  | d | g | h | n | e | c | s | k | r | w | p | y | q | t | a | v | i | **373M** | 1.00 | F | M | L |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  |  |  |  | w | h | d | n | r | e | c | q | k | y | t | p | v | F | **374S** | 1.00 | M | I | L | S | A | G |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | f | e | d | c | a | **375G** | 1.00 | G |  |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  | y | w | v | t | s | r | q | p | n | l | k | i | h | g | f | e | d | c | a | **376M** | 1.00 | M |  |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **377F** | 1.00 | w | d | n | q | e | r | h | k | m | p | I | T | | | | C | y | | | v | | | F | | s | | | G | | | | L | | A | |
|  |  |  |  |  |  |  | h | q | p | w | d | e | n | r | k | s | C | y | t | **378V** | 1.00 | A | m | G | F | L | V | I |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  |  |  |  | w | h | y | i | m | r | q | l | e | k | v | n | t | p | **379C** | 1.00 | D | G | A | F | S | C |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  | w | h | y | f | m | r | q | c | e | i | d | l | k | n | p | g | V | **380A** | 1.00 | T | S | A |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  |  | h | w | d | g | n | q | r | y | e | s | k | p | c | f | m | A | **381I** | 1.00 | T | L | V | I |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  |  |  | d | h | g | n | w | e | r | s | y | c | k | p | q | t | m | **382F** | 1.00 | I | A | V | F | L |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  | d | h | g | n | e | c | s | w | r | k | y | p | q | t | a | f | v | **383M** | 1.00 | L | I | M |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  | w | f | y | h | m | c | r | e | l | i | g | q | k | d | v | p | a | N | **384S** | 1.00 | S | T |  |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  | h | w | q | d | n | p | e | r | g | c | s | k | y | t | f | M | A | **385V** | 1.00 | L | V | I |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  | w | h | y | f | i | m | n | q | r | d | e | l | k | c | v | t | p | **386G** | 1.00 | G | S | A |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  | d | g | h | n | e | c | s | w | k | r | y | p | q | a | v | i | T | **387L** | 1.00 | M | F | L |  |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **388V** | 0.99 | w | c | p | M | d | g | q | N | r | e | H | S | | | | f | T | | | I | | | K | | y | | | V | | | | A | | L | |
|  |  |  |  | d | h | g | n | e | c | s | r | k | w | q | t | a | m | P | Y | **389L** | 1.00 | V | F | I | L |  |  |  |  |  |  |  |  | | | |  |  | | |  | | |  | |  | | |  | | | |  | |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | c | **390L** | 1.00 | M | f | i | y | d | h | p | G | n | V | e | a | | | | S | | T | | | Q | | | r | | L | | K | | | |  | |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | c | h | i | **391N** | 0.99 | M | F | p | v | l | G | q | R | A | N | K | S | | | | T | | D | | | E | | |  | |  | | |  | | |  | |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | c | **392K** | 1.00 | F | H | i | M | P | L | g | V | N | T | R | D | | | | A | | Q | | | S | | | E | | K | | |  | | |  | |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **393F** | 0.99 | c | w | p | M | D | k | q | g | r | N | t | s | | | | E | | A | | | H | | | I | | V | | | F | | | L | | Y | |
|  |  |  |  |  |  |  |  |  |  |  | w | y | f | c | m | h | i | v | l | **394S** | 0.98 | G | R | K | T | Q | N | E | A | D | S | P |  | | | |  | |  | | |  | | |  | |  | | |  | | |  | |  | |
|  |  |  |  |  |  |  |  |  |  |  |  | m | f | i | c | y | l | h | v | **395W** | 0.98 | R | e | Q | p | k | d | N | G | T | S | A | W | | | |  | |  | | |  | | |  | |  | | |  | | |  | |  | |
|  |  |  |  | d | h | g | n | e | c | s | r | k | y | p | q | t | a | f | W | **396M** | 0.98 | V | I | L | M |  |  |  |  |  |  |  |  | | | |  | |  | | |  | | |  | |  | | |  | | |  | |  | |
|  | w | f | y | m | h | c | l | i | e | g | v | k | d | a | Q | R | P | T | N | **397S** | 0.99 | S |  |  |  |  |  |  |  |  |  |  |  | | | |  | |  | | |  | | |  | |  | | |  | | |  | |  | |
|  |  | n | h | k | r | q | d | g | e | p | c | t | s | a | m | i | w | L | V | **398Y** | 0.99 | F | Y |  |  |  |  |  |  |  |  |  |  | | | |  | |  | | |  | | |  | |  | | |  | | |  | |  | |
|  |  |  |  | h | d | w | n | e | p | c | q | g | r | s | k | y | t | a | f | **399V** | 0.99 | M | I | L | V |  |  |  |  |  |  |  |  | | | |  | |  | | |  | | |  | |  | | |  | | |  | |  | |
|  |  |  | w | h | y | f | m | i | r | q | l | e | k | d | v | p | t | N | g | **400S** | 0.99 | A | C | S |  |  |  |  |  |  |  |  |  | | | |  | |  | | |  | | |  | |  | | |  | | |  | |  | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Predict Not Tolerated** | | | | | | | | | | | | | | | | | | | | **Position** | **Seq Rep** | **Predict Tolerated** | | | | | | | | | | | | | | | | | | | |
|  |  |  | h | q | w | p | d | n | e | c | r | s | k | g | y | a | t | f | L | **401M** | 0.99 | V | M | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  | w | h | q | r | c | e | y | d | k | n | m | f | p | **402I** | 0.99 | A | L | S | G | I | T | V |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  | w | h | y | f | m | i | n | q | r | d | e | k | c | v | t | p | g | **403A** | 0.99 | L | S | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  | h | w | q | d | n | p | r | e | g | c | k | s | y | m | a | l | F | **404I** | 0.99 | V | T | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  | h | n | k | r | d | g | q | e | p | c | s | t | a | v | w | i | M | **405F** | 0.99 | Y | L | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **406L** | 0.99 | w | C | D | q | e | n | M | k | p | r | h | t | f | S | G | y | A | L | I | V | |
|  |  | k | q | h | n | r | d | g | e | p | c | t | s | a | m | v | i | w | l | **407F** | 0.99 | Y | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | w | h | g | d | y | n | r | q | e | k | s | f | c | p | m | t | l | A | **408V** | 0.99 | I | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  | w | y | h | d | n | r | f | q | e | k | g | m | p | l | t | **409S** | 0.99 | C | I | S | V | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  | d | h | n | e | r | k | g | q | p | t | w | a | y | v | i | C | **410F** | 0.99 | L | S | M | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | g | e | d | c | a | **411F** | 0.99 | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | c | w | f | m | i | y | l | h | v | r | n | t | g | s | p | k | q | D | **412E** | 0.99 | A | E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  | h | q | w | p | d | n | e | c | r | k | g | y | a | t | f | L | **413I** | 0.99 | S | M | V | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | f | e | d | c | a | **414G** | 0.99 | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | y | w | v | t | s | r | q | n | m | l | k | i | h | g | f | e | d | c | a | **415P** | 0.99 | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | f | e | d | c | a | **416G** | 0.99 | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | w | h | f | y | m | c | i | r | e | l | q | k | d | v | n | g | a | T | **417P** | 0.99 | S | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | y | w | v | t | s | r | q | p | n | m | l | k | h | g | f | e | d | c | a | **418I** | 0.99 | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | y | w | v | t | s | r | q | n | m | l | k | i | h | g | f | e | d | c | a | **419P** | 0.99 | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | y | v | t | s | r | q | p | n | m | l | k | i | h | g | f | e | d | c | a | **420W** | 0.97 | W |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | d | h | n | g | e | r | k | c | s | q | p | t | a | w | v | i | y | L | **421F** | 0.97 | M | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  | d | h | g | n | e | c | s | w | r | k | y | p | q | t | a | V | **422M** | 0.97 | F | M | L | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | w | g | h | y | d | n | r | q | f | e | k | s | c | p | l | a | i | M | **423V** | 0.97 | T | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | w | h | y | f | m | i | q | r | n | d | e | l | c | k | v | p | g | T | S | **424A** | 0.97 | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | m | w | c | f | i | y | h | v | l | r | t | n | s | q | k | p | a | d | G | **425E** | 0.97 | E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | d | g | h | n | e | c | s | k | r | w | p | q | y | t | a | v | m | I | **426F** | 0.97 | F | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | g | e | d | c | a | **427F** | 0.97 | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | w | m | f | i | y | h | l | c | r | q | v | e | k | p | t | d | A | G | **428S** | 0.97 | N | S |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | y | w | v | t | s | r | p | n | m | l | k | i | h | g | f | e | d | c | a | **429Q** | 0.97 | Q |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | w | m | i | f | l | c | y | v | r | h | q | t | p | k | e | a | n | D | **430G** | 0.97 | S | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | w | h | y | m | f | i | n | q | r | d | c | e | l | k | v | t | s | g | **431P** | 0.97 | A | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | c | w | f | d | m | i | y | v | h | s | g | n | l | t | a | e | k | P | Q | **432R** | 0.97 | R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | w | h | y | m | f | i | n | q | r | c | d | e | l | k | v | t | s | g | A | **433P** | 0.96 | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  | w | h | y | f | m | r | i | q | c | e | d | k | n | v | p | g | L | **434A** | 0.97 | T | S | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | w | h | y | f | m | i | n | q | d | c | e | l | k | v | t | p | s | g | R | **435A** | 0.97 | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  | d | h | g | n | e | w | c | s | r | k | y | p | q | t | **436L** | 0.97 | A | F | V | L | I | M |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | w | h | y | f | i | m | n | q | r | d | e | l | k | c | v | t | p | g | **437A** | 0.97 | S | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  | h | q | w | p | d | n | e | c | r | s | k | g | y | a | t | f | M | **438I** | 0.97 | L | I | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | w | h | y | f | i | m | n | q | r | d | e | l | k | c | v | t | p | G | **439A** | 0.97 | S | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  | w | h | y | f | i | m | n | q | r | d | e | k | l | c | t | **440A** | 0.97 | p | s | V | A | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  | d | h | n | g | k | r | e | q | s | p | t | **441F** | 0.97 | a | w | v | m | i | y | C | L | F |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  |  |  |  | w | h | y | f | m | r | e | q | **442S** | 0.97 | d | k | l | i | g | p | n | A | C | V | T | S |  |  |  |  |  |  |  |  | |
|  | y | w | v | t | s | r | q | p | m | l | k | i | h | g | f | e | d | c | a | **443N** | 0.97 | N |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | y | v | t | s | r | q | p | n | m | l | k | i | h | g | f | e | d | c | a | **444W** | 0.97 | W |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  | w | g | y | h | d | r | q | n | e | k | c | p | l | F | I | A | S | **445T** | 0.97 | V | M | T |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  | w | h | y | f | i | m | n | q | d | e | l | k | v | t | p | R | **446C** | 0.97 | G | C | S | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | m | w | i | f | v | c | l | y | r | q | p | h | k | e | t | a | g | d | S | **447N** | 0.97 | N |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | g | e | d | c | a | **448F** | 0.97 | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  | h | q | w | p | d | n | e | c | r | s | k | g | y | a | t | f | m | **449I** | 0.97 | V | L | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | h | q | w | d | p | n | e | r | c | k | g | s | y | a | m | t | f | l | **450V** | 0.97 | I | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | w | h | y | f | i | m | q | n | r | d | e | l | k | c | v | t | p | S | **451A** | 0.97 | A | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  | d | g | h | n | e | c | s | w | k | r | y | p | q | t | a | v | F | **452L** | 0.97 | I | L | M |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **453C** | 0.97 | w | m | d | q | i | n | h | e | r | k | F | y | p | V | T | L | C | S | G | A | |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | g | e | d | c | a | **454F** | 0.97 | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  |  |  | c | w | f | y | m | i | h | v | n | **455Q** | 0.96 | g | t | s | r | a | L | k | d | E | P | Q |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | c | w | **456Y** | 0.96 | m | d | i | v | g | e | n | h | F | t | l | a | q | P | R | S | K | Y |  |  | |
|  |  |  |  |  | h | w | d | g | n | q | r | e | y | p | s | k | c | f | t | **457I** | 0.96 | M | L | A | I | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | f | c | m | h | **458A** | 0.96 | i | p | g | n | L | r | s | V | d | T | Q | K | E | A |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | c | **459D** | 0.95 | M | I | H | v | Y | P | F | l | g | r | S | N | K | A | Q | T | D | E |  |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **460F** | 0.95 | c | p | d | m | k | q | n | W | g | r | t | i | S | E | V | h | F | Y | A | L | |
|  |  |  |  |  |  |  | d | g | h | w | n | y | e | r | k | q | p | S | a | **461C** | 0.95 | T | f | v | I | M | C | L |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  | w | m | i | c | f | v | l | y | r | h | t | p | q | k | a | s | n | **462G** | 0.95 | D | E | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  | w | h | y | f | m | i | r | q | l | e | k | d | v | t | C | g | **463P** | 0.94 | S | N | A | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | k | q | h | n | r | d | g | e | p | c | t | s | a | m | v | i | w | l | **464Y** | 0.94 | F | Y |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | g | w | h | y | d | n | r | q | f | e | k | s | c | p | m | l | a | I | **465V** | 0.94 | T | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | y | w | v | t | s | r | q | p | n | m | l | k | i | h | g | e | d | c | a | **466F** | 0.93 | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  | h | d | w | n | e | c | p | q | g | r | s | k | y | t | a | m | **467F** | 0.93 | V | F | L | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  | h | d | w | n | g | e | q | r | c | s | k | y | t | a | f | m | **468L** | 0.93 | P | V | L | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | h | n | k | r | q | d | e | g | p | c | s | t | a | m | v | i | w | y | L | **469F** | 0.93 | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  | w | h | c | f | y | r | q | e | d | k | n | p | I | **470A** | 0.93 | G | L | M | V | S | T | A |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  | h | q | w | d | n | e | p | r | k | y | s | t | C | m | f | **471G** | 0.93 | A | L | G | I | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  | d | h | g | n | e | c | s | r | k | p | w | q | t | a | y | m | i | **472V** | 0.93 | V | F | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  | d | h | g | w | e | c | y | s | r | k | p | q | t | a | f | m | i | **473L** | 0.93 | N | V | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  |  | d | p | e | q | n | k | r | h | s | t | **474L** | 0.93 | m | y | W | G | C | F | A | V | I | L |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **475A** | 0.93 | w | d | p | C | m | e | q | k | n | r | S | h | T | A | G | y | F | V | L | I | |
|  | k | q | h | n | r | d | e | g | p | c | t | s | a | m | v | i | l | y | W | **476F** | 0.93 | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  | d | h | n | g | e | r | k | c | q | s | a | **477T** | 0.93 | P | v | m | i | y | W | T | L | F |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  | h | w | g | d | n | y | q | r | e | s | k | p | c | f | m | **478L** | 0.93 | T | A | L | V | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | h | n | k | r | q | d | g | e | p | c | t | s | a | m | i | w | l | V | Y | **479F** | 0.93 | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | w | y | h | f | r | d | q | e | g | m | k | n | p | l | s | v | C | A | **480T** | 0.93 | I | T |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | c | w | p | d | m | e | q | k | n | g | r | t | i | v | a | L | S | H | **481F** | 0.93 | F | Y |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  | d | h | g | n | e | w | y | s | p | r | q | t | C | a | **482F** | 0.93 | v | m | i | K | L | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | c | w | d | f | m | i | y | v | g | s | p | h | n | a | l | t | e | q | **483K** | 0.93 | R | K |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | h | n | q | k | r | d | e | s | c | p | g | m | t | w | a | i | l | y | F | **484V** | 0.93 | V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | m | c | y | w | f | i | h | v | n | t | l | e | r | s | d | k | a | g | Q | **485P** | 0.93 | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | c | w | m | f | y | i | v | h | l | t | n | r | s | g | p | a | q | d | K | **486E** | 0.93 | E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | w | m | f | y | h | c | i | q | e | r | l | k | v | d | n | g | a | s | P | **487T** | 0.93 | T |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | c | w | d | f | m | i | y | v | g | s | p | h | n | a | l | t | e | q | **488K** | 0.93 | R | K |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | m | w | i | v | f | l | c | y | r | p | q | h | t | a | k | s | d | E | **489G** | 0.93 | N | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | c | w | f | d | m | i | y | v | g | p | s | h | a | l | t | e | q | N | **490K** | 0.93 | K | R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | w | f | y | h | m | c | r | e | l | i | q | g | k | d | v | n | a | P | **491S** | 0.93 | S | T |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | d | h | g | n | e | r | k | c | s | p | q | t | a | w | v | m | y | L | **492F** | 0.93 | I | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | c | w | f | m | i | y | l | v | h | g | t | n | s | p | a | q | K | R | **493E** | 0.93 | D | E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  | c | w | f | m | i | y | l | v | h | r | g | n | t | s | p | a | K | **494E** | 0.93 | Q | D | E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  | h | w | q | c | n | e | r | y | m | d | k | f | p | t | g | l | v | a | S | **495I** | 0.93 | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  | w | h | y | f | m | c | r | e | i | d | k | v | p | n | g | **496A** | 0.93 | Q | L | T | S | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  | c | w | m | f | i | d | v | p | g | l | Y | **497A** | 0.93 | e | N | H | T | Q | K | S | R | A |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | **498E** | 0.93 | y | C | f | m | h | i | p | V | L | G | n | R | T | q | D | S | A | k | E |  | |
|  | h | q | r | k | n | e | d | c | m | t | p | g | i | v | a | w | l | y | S | **499F** | 0.93 | F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  | w | c | f | m | y | i | v | p | l | d | n | t | G | **500Q** | 0.72 | A | S | K | H | Q | E | R |  |  |  |  |  |  |  |  |  |  |  |  |  | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Predict Not Tolerated** | | | | | | | | | | | | | | | | | | | | **Position** | **Seq Rep** | **Predict Tolerated** | | | | | | | | | | | | | | | | | | | | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | f | c | m | **501K** | 0.89 | i | p | | l | V | N | D | a | S | T | E | H | G | Q | K | R |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | f | c | m | **502K** | 0.87 | i | H | | p | l | V | G | D | S | A | E | N | T | R | K | Q |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | f | c | **503S** | 0.85 | m | | i | H | l | V | P | r | q | T | D | G | N | e | K | S | A |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | c | f | y | i | M | **504G** | 0.85 | P | | n | t | V | R | Q | D | L | H | K | E | A | S | G |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | f | c | **505S** | 0.77 | M | | H | i | V | P | n | L | R | G | D | Q | T | K | E | A | S |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | c | f | **506A** | 0.72 | m | | Y | h | i | V | P | G | N | T | R | Q | L | D | e | K | S | A |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | f | c | **507H** | 0.72 | i | | M | l | V | H | G | P | T | N | R | a | D | S | K | E | Q |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | f | c | **508R** | 0.72 | h | | M | i | l | V | P | G | n | T | d | Q | R | A | S | K | E |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | f | c | **509P** | 0.62 | m | | h | i | l | V | N | t | G | Q | R | A | S | D | K | E | P |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  | w | c | y | f | m | i | p | v | H | n | **510K** | 0.58 | t | | r | d | A | L | Q | G | S | E | K |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | f | c | **511A** | 0.59 | m | | h | I | v | l | n | G | R | Q | D | P | S | E | T | K | A |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | c | **512A** | 0.59 | f | | h | M | I | v | l | r | G | N | q | P | d | T | k | E | A | S |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | y | h | g | f | **513V** | 0.59 | n | | r | c | q | D | P | s | k | M | l | I | E | A | T | V |  |  |  |  |  |
|  |  |  | w | c | f | y | m | h | i | g | p | r | s | k | d | V | A | L | N | **514E** | 0.61 | T | | Q | E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | g | h | n | c | e | s | w | k | r | y | p | t | a | v | D | F | Q | **515M** | 0.59 | I | | M | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  | w | c | f | y | m | i | v | **516K** | 0.57 | g | | L | r | t | P | s | a | K | D | H | Q | N | E |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **517F** | 0.50 | c | | w | D | m | P | E | k | q | n | g | r | T | i | S | V | a | H | L | F | Y |
|  |  |  | d | g | h | c | n | e | w | y | r | p | q | t | a | v | m | S | F | **518L** | 0.49 | K | | I | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | w | f | y | h | m | i | c | l | d | n | v | e | k | P | **519G** | 0.48 | S | | T | R | A | Q | G |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | f | m | y | c | i | **520A** | 0.47 | l | | H | r | v | d | n | e | k | Q | G | T | P | S | A |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | f | y | h | m | c | **521T** | 0.44 | l | | r | I | q | v | e | k | n | P | G | A | D | S | T |  |  |  |  |  |  |
|  |  |  |  |  |  | c | w | m | f | i | y | l | v | h | r | t | g | p | n | **522E** | 0.44 | a | | q | K | D | S | E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | w | f | y | **523T** | 0.33 | c | | m | h | i | l | v | p | g | r | d | N | e | A | Q | K | S | T |  |  |  |
|  | y | w | t | s | r | q | p | n | m | l | k | i | h | g | f | e | d | c | a | **524V** | 0.22 | V | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Figure 6: Possible amino acids substitution of GLUT2 protein using SIFT. The SIFT intolerance index starting point is 0.05. For amino acid, the color code of non polar, basic, uncharged polar and acidic amino acids are shown by black, red, green and blue color respectively. On the other hand, the amino acid alignment is indicated by capital letter while the results of prediction are shown by small letter. 'Seq Rep' is the proportion of sequences that contain one of the essential amino acids. The position that is either severely gapped or unalignable is shown by low fraction and it has little information which has poor prediction.